

The Wireless World

A PRACTICAL RADIO JOURNAL
with
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4^D

Friday, August 5th, 1932.

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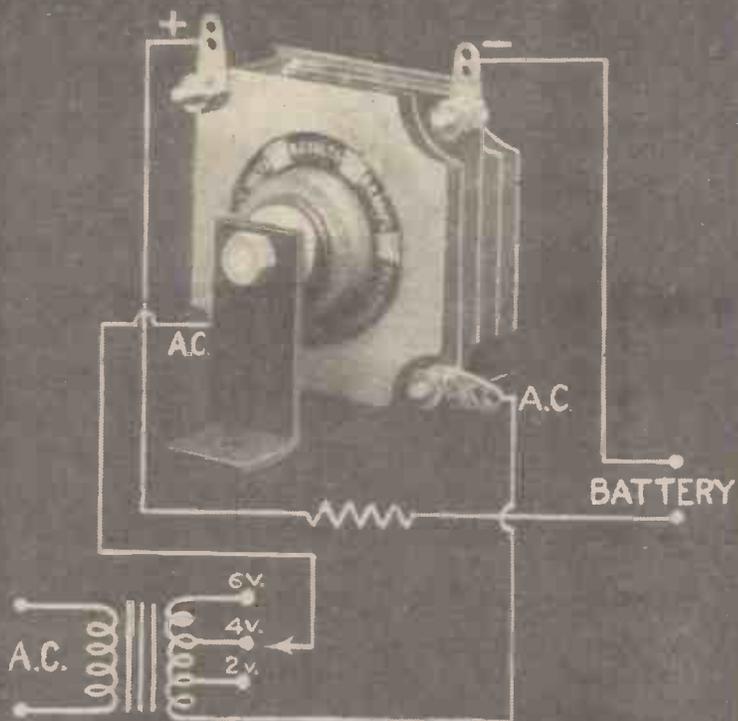
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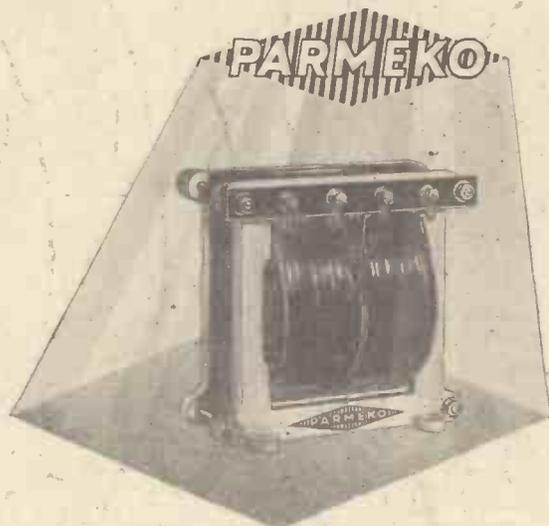
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The Wireless World

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EDITORIAL COMMENT.

Future of the Tuning Note.

THERE is evidence of a growing dissatisfaction with the B.B.C. tuning note in its present form. It is criticised not only on account of the inordinate length of time for which it is frequently allowed to persist, but also because of the irritatingly high pitch of the note.

The B.B.C. assert that the tuning note is "a technical necessity for the adjustment of all transmitters," but we have always understood that it was introduced originally to enable listeners to adjust their own sets properly and so reduce the chorus of heterodyne whistles which invariably accompanied the opening of every programme in the days when the oscillating detector type of receiver was almost universal. With modern sets and the increased skill exhibited by the average listener, the oscillations nuisance has almost completely disappeared, and we fail to see why the tuning note should be a technical necessity for the adjustment of modern transmitters. At Writtle in 1922 perhaps yes, but surely not at Brookmans Park.

There can be little doubt that the tuning note in its present form serves no useful purpose to the listener, but there is no reason why it should not be modified to provide useful data for the manufacturers of broadcast receivers and the serious amateur. Instead of modulating at a fixed frequency we would suggest a continuously rising tone covering the full range of frequencies normally used in the B.B.C. transmission. The degree of modulation would be constant throughout or, better still, might be made to conform to the average frequency characteristic of the station. By fixing a definite rate of increase of frequency the upper and lower cut-off and any major resonances in the receiver could be determined by noting the time interval from the commencement of the transmission. This could be marked conveniently by a 1,000 cycle "pip" which even the worst of receivers could hardly miss.

We suggest, therefore, that the tuning

note in programme hours should be dropped in favour of a special transmission of the above type.

A transmission of this character would find wide acceptance and could not fail to promote a fuller appreciation of the possibilities of high quality reception. Is it too much to ask the B.B.C. for this small service in the interests of better reception of their own programmes?

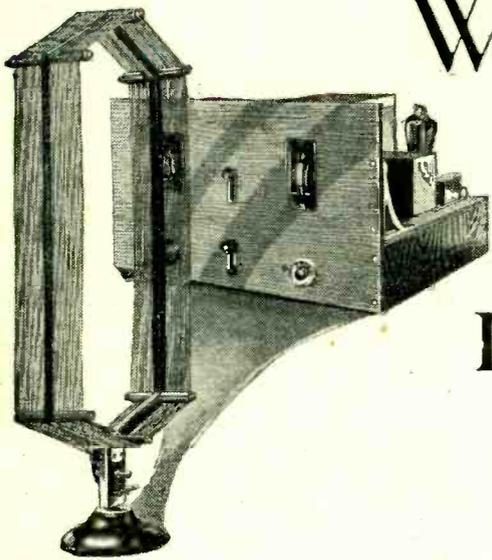
Stability.

WE doubt whether there is any other industry in the history of civilisation which has been effected by changing conditions to the extent which has occurred in the case of wireless. Only five or six years ago we could carry in our heads the names of the broadcasting stations operating in Europe, mutual interference of broadcasting stations was unknown, and the most unselective sets were entirely satisfactory for broadcast reception.

The number of stations in Europe increased at a prodigious rate and year by year the standard receiving sets became obsolete and had to be replaced by more up-to-date and selective equipment.

The position to-day is that the number and power of the stations in Europe has increased to a point which makes requirements of selectivity in receivers very stringent. Looking ahead, it seems unlikely that there can be any serious increase in the selectivity problem in Europe because stations are already at the point of overlapping in wavelength, and the position cannot get much worse before a halt is called in Europe. This being so, we must surely have reached a stage of some stability in receivers, for although in the future all sorts of improvements and refinements in broadcast receivers may be expected, yet the selective receivers of to-day will continue to be serviceable.

We believe that the public can have confidence that in acquiring a good selective receiver of to-day's make they will not be in the position of having to discard this as the result of any changes in broadcasting in Europe.



WHEN A FRAME AERIAL IS WORTH WHILE

The Virtues of the Centre-Tap.

By A. L. M. SOWERBY, M.Sc.

NO one, least of all the writer, would claim that in ordinary circumstances a frame aerial is a satisfactory substitute for an open aerial of the ordinary kind. Even when a proper outside aerial, stretching the whole length of the average small garden, cannot be erected, the frame aerial is usually beaten, so far as results are concerned, by a modest indoor aerial, or by even the shortest and most inefficient erection to which the term "outside aerial" could be applied.

Its relative inefficiency as a collector of energy accounts for only part of the present unpopularity of the frame; its awkward bulkiness and its complete failure to add dignity to even the most angularly modernistic of furnishing schemes provide the average listener with very good additional reasons for using in its stead the unobtrusive wire round the picture rail. And then, to make matters worse, the frame is inherently flimsy—all the more so because it has to be supported in such a way that it can be turned round when necessary. The average frame, whose windings are more or less exposed, will do well if it can survive the daily dusting for a year without suffering some harm or other.

Disturbers of Ethereal Peace.

On the credit side there is little to be said for the frame in average circumstances. The small amount of energy picked up makes it easier to tune out the local station, but one must set against that the fact that it is correspondingly harder to tune the distant station in. The apparent selectivity of a set goes up when a frame is substituted for an open aerial, but, unless there is a large reserve of sensitivity, this selectivity is of no practical use because the distant stations are now too faint to be heard. Only if the set possesses the necessary very high sensitivity is the substitution of a frame for an open aerial likely to increase the total number of stations that can be logged free of interference, even if the directional effect of the frame is also called in as an additional aid to selectivity.

There is a second, and little-known, advantage in the frame which can at times lead one to consider very seriously whether, in spite of its manifold drawbacks, it is not

worth while to adopt it. In places where there is a good deal of electrical machinery it is often found quite impossible to receive any station at all, other than the locals, without hearing at the same time a background—or in a bad case it may even be a foreground—of cracks, crashes, bangs, whirrs, and buzzes that kill all possible enjoyment in listening to the distant station. So far as the writer knows, there is no means

IN populated places where there is considerable electrical machinery it is often found impossible with an open aerial to listen even to the local station without a background of interference which kills all enjoyment of broadcasting. The author points out that in these circumstances a properly balanced frame aerial will reduce considerably the noise-signal ratio, and, incidentally, reception should not be accompanied by side-band heterodyning, which even tone control cannot remove.

of reducing this type of interference to complete silence save by operating upon the machines that are disturbing the ethereal peace. But a frame aerial, if properly built and connected, will generally reduce the interference to a mere fraction of the intensity it has when an open aerial is used.

This reduction of noise-level is not due, even partly, to the fact that the frame is less effective as a collector of energy than an open aerial. If this were the sole reason for the lessened noise, one would really be no better off, for, on increasing the sensitivity of the set to get the signal back at full strength, the noise would simultaneously come back to its original level.

In practice, this does not happen, for the frame manages to discriminate between signal and noise to some extent, picking up far more of the signal in proportion to the noise than does the open aerial. In other words, the use of a frame provides a very substantial increase in signal-noise ratio.

This difference between frame and open aerial depends upon the fact that the mechanism of collection is radically different in the two cases. The aerial acts as one plate of a condenser of which the earth

forms the second plate; the whole system is reproduced in little when a metal plate is put into the top of an all-mains set to act, in conjunction with the "earth" formed by the metal chassis beneath it, as a miniature aerial system for local reception.

A condenser of this type, with its plates widely separated, may be looked upon as tapping the energy of the oncoming wave by having its two "feelers" at points of different electrical potential. The continually changing charges produced on these plates as the wave passes by gives rise to currents in the wire joining them, and it is these currents that we send through the aerial coil of the set to feed it with the signals it requires. The essence of the whole scheme is that we receive on a condenser, making use of potential differences to do so.

Electro-magnetic Waves.

With a frame aerial the method of operation is quite different. A frame is nothing more than an overgrown tuning coil, and if properly designed and connected does not act as a condenser at all. Instead of making use of the electric component of the wave being received, the coil aerial makes use of the magnetic component, and has currents induced into it by the changing magnetic field of the passing wave.

Now, part of the theory of the electromagnetic waves by which all broadcasting is transmitted tells us that the magnetic and

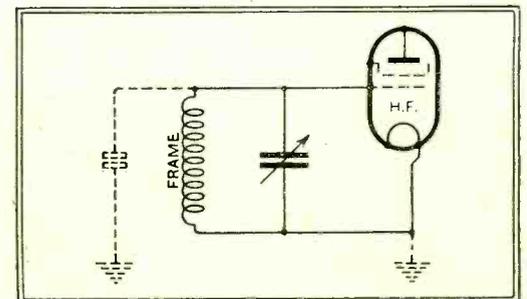


Fig. 1.—The usual method of connecting a frame. By the capacity of the top end to earth (shown dotted) it acts also as an elevated aerial.

electrical components of the wave carry equal amounts of energy. It would therefore appear to be a matter of complete indifference whether we derived the energy for our set from the one or from the other. When we consider reception from a considerable distance, this is undoubtedly true, so that

When a Frame Aerial is Worth While.—

we can receive our distant station equally well on either type of aerial. But there remains the fact that the magnetic and electric components do not necessarily establish this equal balance until the wave has travelled some distance from its source. Put in more human terms, we may say that the wave requires time to get into its stride.

The sources of disturbance that tend to blot out the distant stations we wish to hear are all fairly close to our receiver, so that we have every encouragement to hope that the electromagnetic wave has not yet settled down to its electromagnetic equality by the time it reaches the set. If its energy is still chiefly magnetic, we will try to minimise it by receiving on an aerial; if chiefly electric, we will achieve the same end by using a frame.

Motors and machinery send out most of their radiation by virtue of the fact that they transmit their disturbances down the supply mains that feed them, and these, being long,

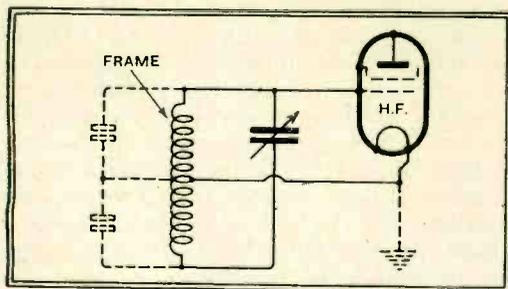


Fig. 2.—A centre-tapped frame, connected as shown, goes far to prevent "aerial effect." Both ends now act as elevated aeriels by their capacities to earth, but the resulting currents are in opposite directions and balance out.

radiate like aeriels. The wave emitted is therefore almost entirely electric near its source; an open aerial will be affected very strongly by it, and comparatively little will be picked up on a frame.

The Centre Tap of the Frame.

All this is just pure theory, but it is practical, too. The writer, who lives right in London, has long since found that in his particular locality all but the loudest foreign stations are drowned in a welter of noise if reception is attempted on any form of open aerial, whereas, by using a frame, the disturbances can be so reduced that quite a number of stations can be listened to with enjoyment. There must be many other listeners whose local conditions are similar, and who would find that a frame aerial would be of considerable help in eliminating the irritating noise from which they may now be suffering.

In putting the frame to practical use as a disturbance-reducer one has always to bear in mind that its virtue arises entirely from the elimination of electrical pick-up, and one must so arrange matters that it collects signals entirely in its function as a coil. If a frame is connected in the simplest and most usual way, as shown in Fig. 1, only a fraction of the possible benefit will be obtained. The reason for this is not far to seek, and is indicated by the dotted condenser in the diagram.

The frame is large, and is elevated above the earth, to which the set is either directly connected, or to which, at least, it has a large

capacity. That end of the frame which is connected to the grid of the valve has a capacity to earth, and so picks up a certain amount of signal in just the same way as if it were an ordinary open aerial. With that small amount of extra signal is picked up a disproportionately large amount of noise—which, it will be remembered, is picked up almost exclusively by an aerial of normal type. One might call a frame so connected an "elevated frame," in recognition of the fact that it is not a pure frame, but acts as an elevated aerial as well.

Balanced Frame.

If the frame is tapped at its centre-point and connected to the set in such a way that the tap is earthed, while one end goes to the grid of the first valve and the other end is free, it becomes much more nearly a true frame. Each end of the winding picks up a small signal by acting as an elevated aerial, but the currents in the two halves of the frame due to this unwanted energy flow inwards towards the centre, and so balance one another out. The currents picked up by the legitimate action of the frame, however, are all in the same direction, and so are not involved in this cancelling process.

To reduce the proportion of noise collected to the minimum, it is therefore necessary to make use of the centre-tapped "pure" frame of Fig. 2, and not to be content with the much less effective "elevated" frame of Fig. 1.

There are practical points, too, bearing on the "purity" of the frame. It is not good practice, for example, to mount the tuning condenser on the base of the frame and then to connect the combination to the set by two leads in the manner suggested in Fig. 3. If this is done, the whole length of the wire from the aerial terminal of the set to the frame is acting as an elevated

symmetrically by three wires, as in Fig. 4.

Careful comparisons have shown that the improvement made by changing from an elevated frame (Fig. 1) to a balanced frame properly connected (Fig. 4) is at least as great as that obtained by substituting an elevated frame for an open aerial. It is possible that if the detailed arrangements of the

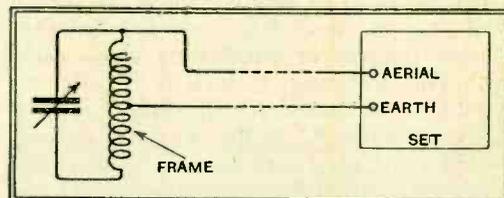
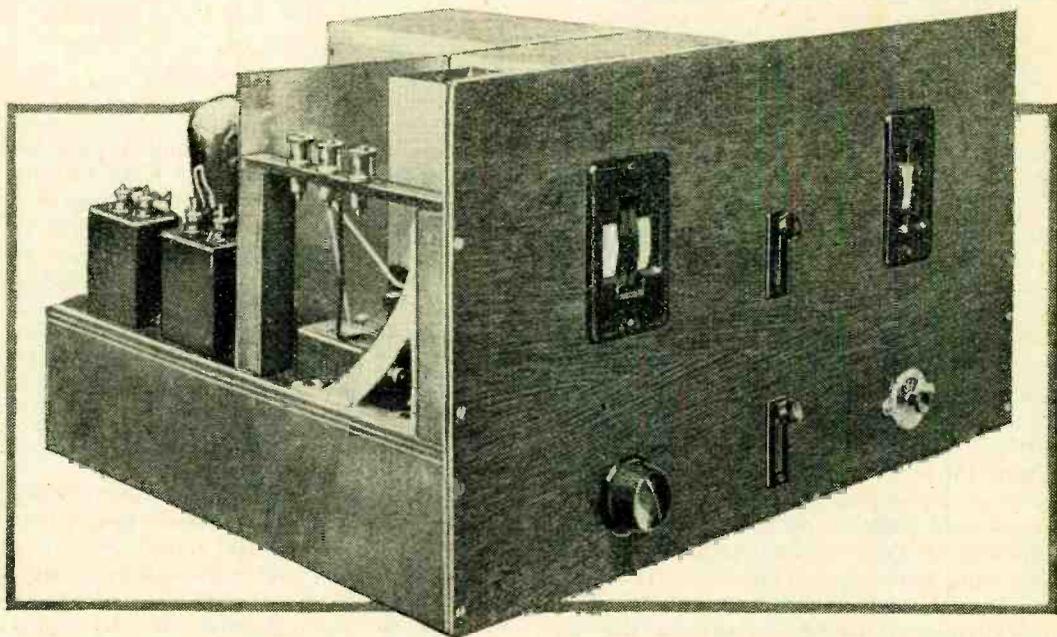


Fig. 3.—If the tuning condenser is mounted on the frame and the combination connected to the set by two leads, that connected to the aerial terminal acts as an elevated aerial and brings in the noise we are trying to eliminate.

balanced frame had been carried out in real laboratory style the local disturbances might have been even more completely eliminated.

For those who wish to make practical application of the circuit of Fig. 4, it may be helpful to give the full precautions that theory would demand for absolutely perfect elimination of elevated-aerial pick-up. They will then know what they ought to do, and will make as close an approximation to it as they feel inclined.

First, the two halves of the frame should be absolutely identical, and should be infinitely closely coupled. Next, the two outer leads should be exactly equidistant from the centre (earthed) lead, while these outer leads, and the ends of the frame, should be symmetrically disposed with regard to neighbouring conductors. Since perfect symmetry cannot usually be obtained where the wires join the tuning condenser and are connected to the grid and filament of the valve, the region in question (and prefer-



"The Wireless World" Band-pass Superheterodyne described in 1930. Terminals for the connection of a centre-tapped frame aerial can clearly be seen.

aerial, and is busy picking up the noise we are trying to get rid of. It is necessary to balance the connecting leads as well as the frame, for which purpose the tuning condenser must be situated in the set (or just beside it), and the frame must be connected

ably the whole set) should be enclosed in a screen of earthed metal gauze or sheet.

Of the demands made, the only one which cannot be fulfilled fairly readily by anyone who really sets out to do things properly, irrespective of the trouble involved, is that

When a Frame Aerial is Worth While.—

which insists on perfect coupling between the two halves of the frame. The residual imperfections can be almost completely removed by screening the frame by a series of parallel wires, as detailed in an article published some time ago in these pages.¹ In reading that article, it should be noted that it refers to an elevated frame, for which screening is absolutely essential for our present purpose of eliminating static pick-up. The screening, if such is resorted to, should be connected to the centre-tap of a balanced frame, and the connecting wires should only need screening in view of the necessarily incomplete coupling between the two sections of the frame.

Side-band Heterodyning.

In making alterations intended to contribute towards the perfection of such a system, it will be found convenient to observe the degree of completeness with which the local station can be cut out by setting the frame to a minimum position. For this purpose the volume-control may be equipped with a temporary scale so that the amplification necessary to make the local station audible may be gauged. It is one of the characteristics of a balanced frame that it has a very well-marked zero position, so that reception of stations removed by only 9 kc. from

¹ See *The Wireless World*, Sept. 11th, 1929, p. 252.

the local can be carried out with a set which tunes broadly enough to give really good quality without using tone-correction. In addition, the side-band heterodyning which even tone-control cannot remove should not make its appearance.

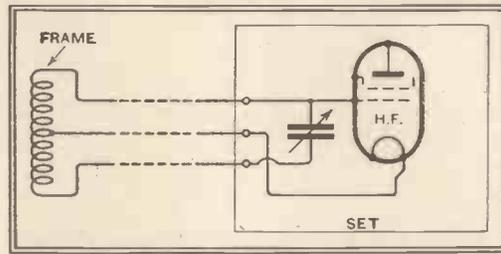


Fig. 4.—Correct connections. The connecting leads, as well as the frame, are now balanced, the tuning condenser being in the set. Short of taking laboratory precautions, this arrangement is the best possible for eliminating elevated aerial effect.

A balanced frame requires to be followed by a receiver of high sensitivity. A super-heterodyne, working on a low intermediate frequency to give high gain, and containing a preliminary high-frequency stage of good efficiency, is recommended. Apart from the obvious disadvantages of bulk and unsightliness, those who are impelled by local disturbances to make trial of the combination of a carefully balanced frame with such a set as this are not likely to find reason to regret their experiment.

receiver if properly designed electrically for high adjacent-channel selectivity, since the narrow frequency band-width of the intermediate-frequency amplifier is between the oscillator and the audio detector. The frequency modulation of the oscillator is the result of tuning-capacity changes caused by variable-condenser vibrations. These vibrations can be classified into two kinds, namely, "reed" or "diaphragm" vibrations of the rotor and/or stator end vanes and transverse vibration of the rotor gang structure. The second kind of vibration is usually the most troublesome, as this generally causes a greater change in capacity for a given amount of displacement of the parts concerned.

Condenser Vibration.

If the rotor structure consists of a number of gangs resulting in a spindle more than about ten times its diameter in length, it should be supported in more than two bearings, or else definite means should be employed at points along its length for damping out transverse vibrations. If it is impossible for any reason to make the condenser-rotor assembly not subject to resonant vibrations, the amount of feed-back, which in this case is mechanical between the speaker and the condenser, must be reduced. This may be achieved by mounting the radio-receiver chassis on soft rubber blocks, thus introducing resistance to mechanical transmission between the speaker and the condenser.

The "reed" or "diaphragm" vibrations of the vanes are usually produced by acoustic feed-back from the speaker, but as this feed-back is less than the former, sufficient damping is usually obtained by bracing the vanes where possible. It should be realised that all these effects are independent of H.F. and I.F. gain, and depend entirely on L.F. gain and the amount of feed-back present.

It may be worthy of note that the L.F. gain of a radio set varies with the R.F. or I.F. input to the detector in accordance with the law of rectification, and therefore the feed-back effect depends also on the condition that the H.F. or I.F. input to the detector shall be great enough to cause the L.F. gain to be sufficient for the effect to build up. In the case of the first and second problems, the only possible solution lies in a suitable design of valve-electrode supports, since it is very difficult to reduce the amount of acoustic feed-back in so confined a space.

These problems present many interesting difficulties, which, as has been stated, may be overcome by careful attention to the considerations of design already enumerated.

Practical Transformer Construction.

IN the article describing the construction of a mains transformer which appeared in our issue of June 29th last it was stated that the bobbin carrying the primary winding measured 1½ in., whereas the correct dimension is 1¼ in. Thus the three bobbins required measure 1¼ in., ½ in. and ¾ in. respectively.

The secondary is referred to as a 210-volt winding, but as the rectifier is rated at 200-210 volts this winding was designed to give 205 volts. The apparent discrepancy between the theoretical number of turns and actual turns, therefore, is explained.

MICROPHONIC FEED-BACK PHENOMENA.

Amplitude and Frequency Modulation in a Receiver.

By H. A. BROOKE, B.Sc.

(Research Staff of the Gramophone Co., Ltd.)

HITHERTO little information has been available on the subject of microphonic feed-back phenomena as applied to radio receivers, in particular those originating in the high-frequency portion of the instrument. It has been known for a long time that such a feed-back occurs between the first valve of a multi-stage L.F. amplifier and the loud speaker it drives, if sound waves from the latter impinge on the first valve or if the speaker vibrations are mechanically transmitted.

With the advent of self-contained receivers, such as radio-gramophones, midget sets, console and portable receivers, several difficulties have been encountered in connection with microphonic effects. The first difficulty to make itself known is a plain audio-frequency feed-back between the detector and loud speaker. This can only be effectively overcome by suitable design of the detector valve electrodes. The second difficulty is due to what may be called amplitude modulation of a radio-frequency signal in the receiver itself. This occurs usually in the first stage of the H.F. portion of a self-contained receiver. If the electrodes of the first valve in particular are not mounted

on supports which damp their natural vibrations they will vibrate, causing a periodic variation in the amplification factor of the valve at the natural frequency of either the grid or the cathode systems, or both together, thus producing amplitude modulation at these frequencies of any signal being received. The result is a sustained note emitted from the speaker, if the low-frequency gain of the receiver be sufficiently high to overcome existing damping.

Frequency Modulation.

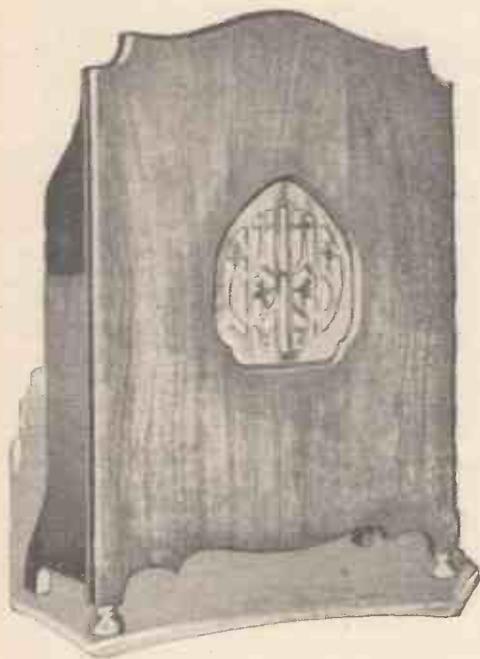
The energy fed back will, of course, build up until limited by the maximum power output of the receiver. The remedy lies in a suitable design of the valve-electrode supports, as the valves and the speaker must of necessity be mounted in the same cabinet. Since this feed-back is both mechanical and acoustic, it is of very little assistance to employ sprung valve-holders alone, which only eliminate the transmission of mechanical vibrations to the valves.

The third problem occurs in the case of the superheterodyne receiver, and is due to frequency modulation of the oscillator. The effect is very pronounced in this type of

NEW DUAL LOUD SPEAKER.

Combining the Best Qualities of Electrostatic and Moving-coil Units.

By H. A. HARTLEY.



been put into production (see *The Wireless World*, June 1st, 1932, p. 585) which has many interesting points. It may be considered a pure capacity, and its reactance will be determined by the well-known formula

$$X = \frac{1}{2\pi fC}$$

When connected in the anode circuit of a valve whose resistance is R ohms, the impedance of the circuit is $Z = \sqrt{R^2 + X^2}$, and it follows that the impedance goes down with increasing frequency, so that there will be good top response; this is further aided by the fact that the diaphragm has small radiation resistance. On the other hand, the impedance increases as we come down the frequency scale, so there is bound to be a bass cut-off. It would seem, therefore, to be logical to use the electrostatic and electrodynamic loud speakers in combination, each making good the deficiencies of the other.

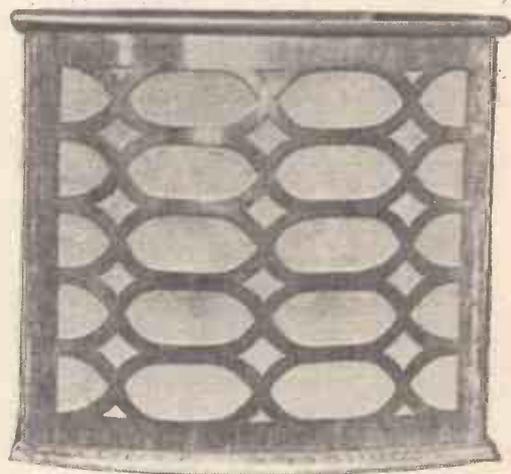
THE moving-coil loud speaker as usually sold may be said to be deficient in the reproduction of the higher audio-frequencies, and now that the importance of good "top" is beginning to be realised, many readers of *The Wireless World* are wanting to know how this may be done.

Without going into the mathematics of loud speaker operation it may be said that the moving-coil loud speaker has constant power output at all frequencies, but this holds good only up to a certain frequency, determined by the size of the cone, at which point the power begins to fall off rapidly. Usually this frequency is between 2,000 and 3,000 cycles per second, and unless the cone is specially designed to give a series of controlled resonances there will be a top cut-off.

PRACTICAL details are here given of dual speaker equipment combining the excellent high-note response of the electrostatic speaker with full-bass reproduction of the moving-coil type. The combination ensures that each speaker makes good the deficiencies of the other. This article should prove a useful contribution towards the achievement of realistic reproduction.

This, as it happens, is a method of getting quite good reproduction, but the application of the idea is not so simple as would appear on first thoughts.

To render the combination effective, two things must be done. First, we have seen that the electrostatic loud speaker will have a bass cut-off owing to its high impedance at low frequencies, but, owing to the small clearances in the design, the loud speaker will rattle unless the lower frequencies are prevented from reaching it. Secondly, the moving-coil loud speaker, having constant impedance, will act as a short circuit across the electrostatic at high frequencies unless the capacity of the electrostatic is so high that it acts as a short across the moving coil. In practice this is not so, and we must prevent the high frequencies from reaching the moving-coil unit. To take the latter problem first, the desired result can be attained by inserting a choke in series with the moving-coil speaker; this will raise the impedance at high frequencies and so the electrostatic will take up the work at this end of the scale. At the same time we must choose a transformation ratio for the moving coil unit so that, at low frequencies, the



The "primustatic" electrostatic speaker which forms one member of the dual unit.

apparent input impedance of this circuit is so low compared with that of the electrostatic speaker that all power will be diverted from the latter. The arrangement is shown in Fig. 1 where V is the output valve, T₁ the output transformer of the moving-coil speaker M.C., L₁ the high frequency "stopping choke," and E.S. the electrostatic loud speaker.

Output Transformer Ratio.

In some cases it will not be possible to choose a transformer ratio to achieve the desired result, as many loud speakers have non-variable transformers built into them. In such cases it will be necessary to connect a choke across the electrostatic speaker, so designed that the circuit formed has a resonant frequency at which it is desired that the electrostatic takes up the work. It will be necessary simultaneously to insert a condenser in series with this circuit whose

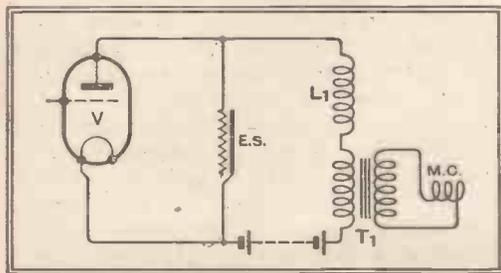


Fig. 1.—A suitable circuit where the transformation ratio of T₁ can be altered at will.

If the size of the cone is reduced the frequency at which this cut-off takes place will be raised, but, unfortunately, the bass will suffer. The smaller the cone the greater is the required displacement at the lower end of the scale, and while a cone of, say, two inches diameter would give excellent top, it would have to be mounted in such a way that the amplitude of vibration at 50 cycles would be several inches. This, of course, is impracticable, so the cone is usually made about seven inches in diameter as a compromise.

An electrostatic loud speaker has recently

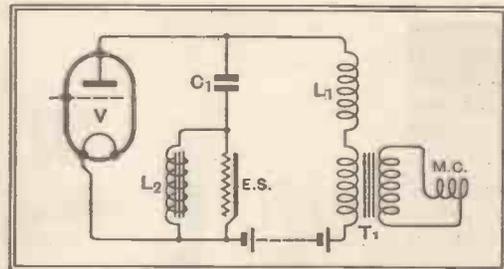


Fig. 2.—When the ratio of T₁ cannot be altered, a resonant circuit L₂ E.S. prevents the lower audio-frequencies from rattling the electrostatic loud speaker.

reactance at low frequencies is substantially greater than that of the choke. In Fig. 2, the resonant circuit is formed by E.S. and the choke L₂. This is insulated from the

New Dual Loud Speaker.— steady anode voltage by the condenser C_1 . So much for the theoretical considerations of the separation of the audio-frequency output into the two desired channels; we must now put this into practice.

The electrostatic loud speaker requires a polarising voltage of 200 to 250 volts, and in Fig. 1 it will be seen that the potential difference between the anode of V and H.T. can be used for this purpose. If the circuit of Fig. 2 has to be adopted, then this source of polarising voltage is removed; some other means must also be found in cases where the voltage on the anode of the output valve is in excess of 250 volts, as the electrostatic loud speaker is not designed for such voltages.

Polarising Voltage.

If the moving-coil speaker has a D.C. excited field of appropriate voltage then this will form a suitable source of supply, otherwise the polarising voltage must be derived from the eliminator in some way. If the maximum H.T. is 250 volts and the output valve is directly heated, no special precautions are necessary, but in the case of an indirectly heated cathode type of output valve it is advisable that the rectifier, if the eliminator is of the A.C. type, be also an indirectly heated valve, to prevent excessive voltages being applied to the electrostatic speaker before the output valve warms up. If the output valve calls for 400 or more volts on the anode, a potentiometer must be added to break down the voltage to the desired figure. These various arrangements are shown in Fig. 3, which also shows a filter system in the supply. The choke L_3 , as well as reducing mains hum, is essential to prevent audio-frequency energy being diverted

from the electrostatic loud speaker into the supply system. The resistance R is also required in order to pass a small D.C. current through the choke, otherwise there will be no smoothing of mains hum.

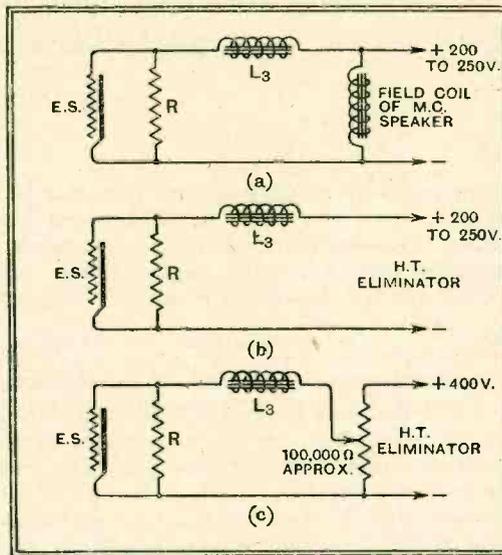


Fig. 3.—Various methods of obtaining the polarising voltage. The potentiometer in (c) should be adjusted so that the voltage applied to E.S. is about 220.

All the foregoing has been based on the assumption that the impedance relation between the electrostatic speaker and valve is such that the speaker forms an efficient load towards the upper limit of the frequency required. Where this is not the case, and, on the whole it will be exceptional, it will be necessary to feed the electrostatic speaker through a step-up or step-down transformer, according to the type of valve used. A step-down ratio will be required for valves of

very high impedance, and a step-up for super power valves of unusually low impedance, especially when such valves are used in parallel. For experimental purposes, a good quality audio-frequency transformer of about $3\frac{1}{2}$ to 1 ratio, and of low self capacity, will be quite suitable. Fig. 4 shows the connections.

Compensating Unit.

We are now in a position to construct the compensating unit for the two loud speakers. Fig. 5 gives all values and connections, and the reader is advised to study it closely. It will be seen that a choke of one henry inductance, L_1 is connected in series with the valve and the moving-coil output transformer, the function of which, as we have seen, is to prevent the higher frequencies from reaching this unit. The electrostatic loud speaker is in parallel with this; it is insulated from the steady anode voltage by C_1 of one microfarad capacity. The inductance L_2 of 0.2 henry and the electrostatic loud speaker E.S. together form a resonant circuit which is tuned to the desired cut-off frequency by the tappings on L_2 . The polarising voltage for E.S. is obtained from any convenient source and is fed through the filter system L_3 and R , L_3 being of 100 henries inductance and R 250,000 ohms.

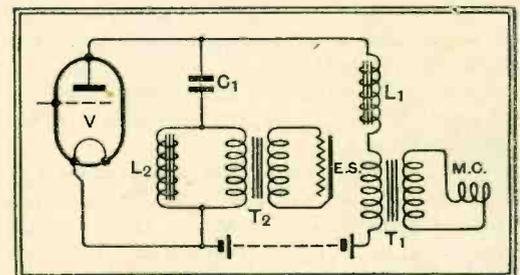
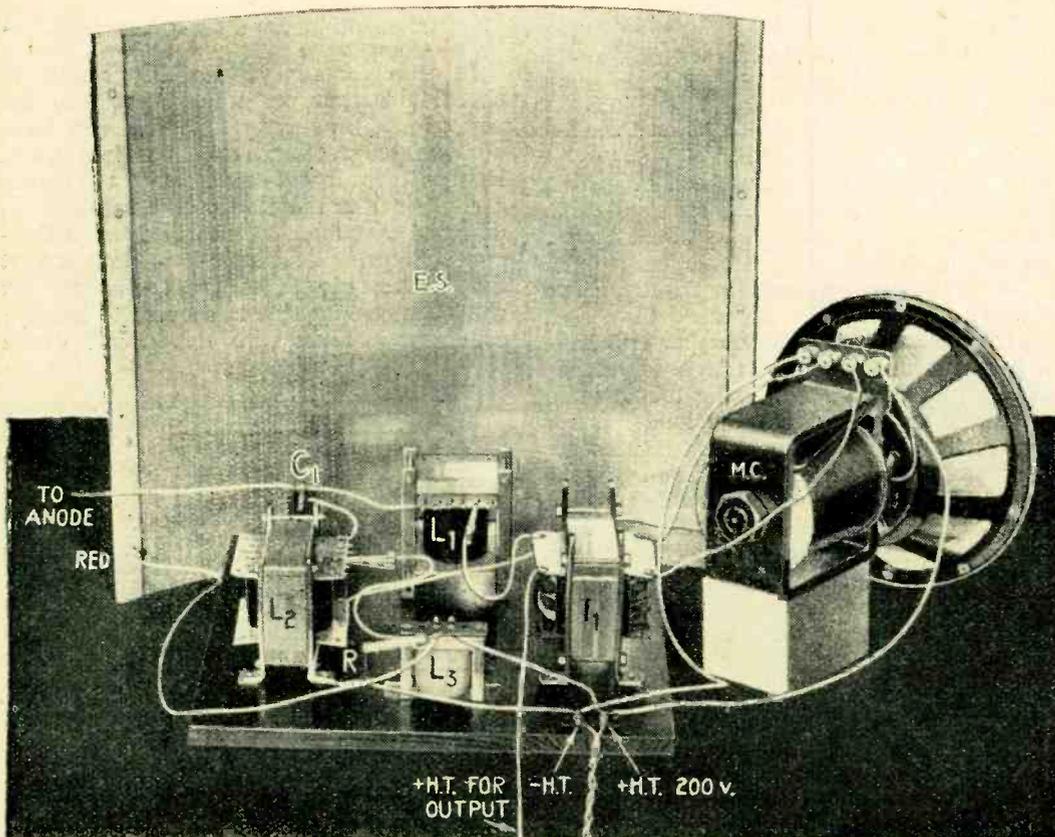


Fig. 4.—Where the impedance of E.S. is either too high or too low to act as an efficient load on the valve, the transformer T_2 is used to match the impedances at high frequencies.

First of all, it is necessary to balance the two loud speakers for sensitivity. Fig. 6 shows the connections of both speakers for this test, diagrams being shown for sets with direct output transformer feed, or choke feed. Arrangements should be made so that the circuits can be broken at the points X. Tune in a station with E.S. connected and M.C. broken at X (one of the leads from the secondary of the output transformer), then, as quickly as possible, break the lead between E.S. and H.T.—and connect in M.C. If the volume of sound, making allowance for the different character of the reproduction, appears to be about the same on both speakers, nothing more need be done, but if the moving-coil loud speaker seems to be the louder of the two an attempt should be made to reduce its sensitivity by adding a series resistance to the field coil. This method, although not the best which can be used in ordinary cases, is forced on one here, as the usual procedure, by adding a resistance to the output circuit, will affect the performance of the electrostatic. If of the permanent magnet type the sensitivity will probably be approximately equal to that of the electrostatic. On the other hand, the moving coil unit may be one of the inexpensive type now so popular, when the sensitivity will definitely be less; in this case nothing very much can



Experimental layout showing connections of electrostatic and moving-coil units together with filter components.

New Dual Loud Speaker.—

be done, as it is difficult to "desensitise" the "Primustatic" without impairing its performance.

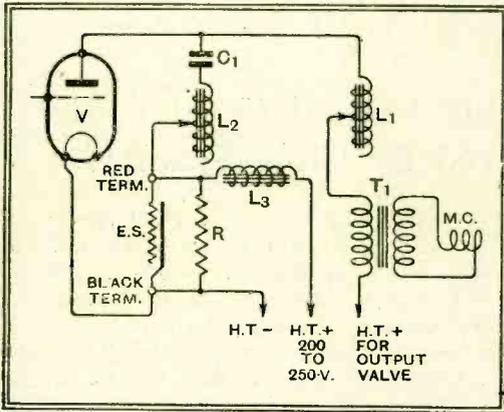


Fig. 5.—The complete schematic diagram. L_1 , 1 henry (tapped); L_2 , 0.2 henry (tapped); L_3 , 100 henrys; C_1 , 1 mfd.; R , 250,000 ohms; T_1 , moving-coil output transformer; M.C. moving-coil loud speaker; E.S. "Primustatic" loud speaker; V , output valve. If the matching transformer T_2 of Fig. 4 is required, one winding replaces E.S. in the above diagram, and E.S., R and L_3 are connected to the other winding.

Assuming now that we have the two loud speakers of approximately equal sensitivity, and that the complete unit has been assembled, a local station should be tuned in and the lead removed from the red terminal of the "Primustatic" loud speaker. The tapping on the choke L_1 must now be adjusted until there is a marked cut-off at 1,000 cycles on the moving-coil speaker. The reader may well ask how he will know when his cut-off is at this figure. It can be said that speech and music should sound very "woolly" and, if the loud speaker normally "peaks" at about 2,000 cycles (a common fault), all trace of brightness or shrillness must be removed. Now reconnect the "Primustatic" loud speaker and remove the

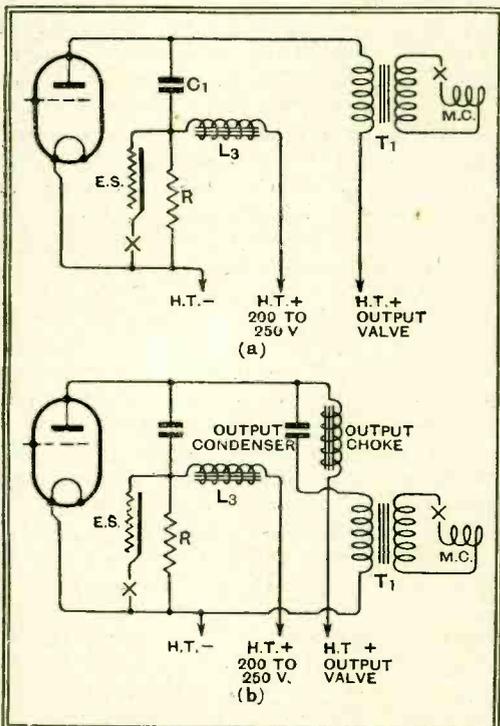


Fig. 6.—Connecting the two loud speakers for matching sensitivity. (a) Straight transformer output; (b) Choke output.

field supply from the moving-coil unit; if of the permanent magnet type disconnect one of the leads from the output transformer secondary winding. Adjust the tapping on the choke L_2 until all trace of lower frequencies has disappeared and the reproduction is so shrill as to be irritating. We can assume, somewhat casually, no doubt, that frequencies up to about 1,000 cycles have been removed. Returning the moving-coil speaker to its normal condition will result in a combination which ought to sound very pleasant indeed, but if the higher frequencies sound weak, it will be advisable to experiment with a suitable transformer feeding the electrostatic loud speaker as suggested earlier in this article and illustrated diagrammatically in Fig. 4.

It should be borne in mind that the dual unit has no better bass performance than the moving coil alone, and if this latter "grunts" at low frequencies, the combination will grunt also. The high-frequency response will, however, be so greatly improved as to commend the dual loud speaker to all discriminating listeners. The moving-coil loud speaker shown in the illustration has

been chosen as one not hitherto on the market, and it is hoped thus to avoid criticism from the maker of any particular brand of loud speaker who might object to any public attempt to alter the performance of his product, or from competitive makers who might equally strongly object to any one make being singled out for rejuvenating treatment. The device will work with any moving-coil speaker, and the excellence or otherwise of the original bass response will be a measure of the total excellence of the whole. The normal power-handling capacity of the "Primustatic" loud speaker is rather less than one watt, but the combination will handle 5 watts A.C. without distress, and readers with output valves of the L.S.6a type need have no hesitation in making up the arrangement as described. If the two loud speakers are not to be built into one cabinet, they should be as close together as possible, to avoid hearing separately the complementary halves of the frequency response of the two loud speakers. As there is only slight focusing of the high frequencies from the electrostatic speaker, the general diffusion of sound will be found very pleasing.

NEWS BY TELEVISION.

A New Marconi System.

APPARATUS has now been evolved by the Marconi Company for the commercial transmission of news by television. This is one of the applications of television which do not necessarily involve the use of wide frequency bands; the new instrument can be operated satisfactorily on a medium long wave of 1,000 metres.

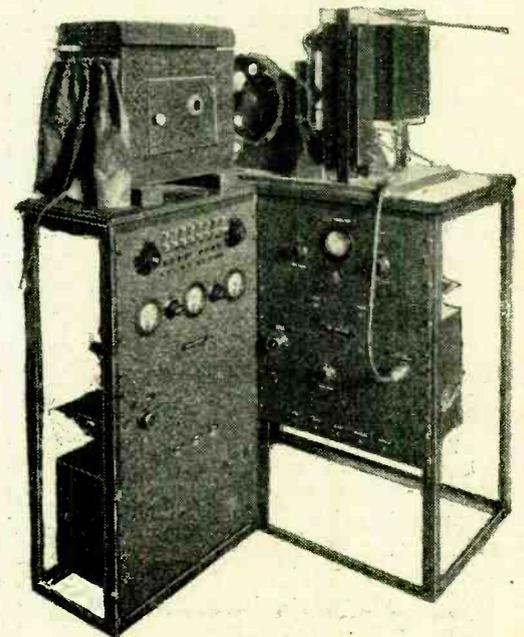
It is designed to transmit images of a moving tape on which characters are printed by a special typewriter. The light source is a 1,000-watt gas-filled metal-filament projector lamp mounted vertically with a reflector behind it. The light passes through a spherical condenser lens system, on to a reflecting mirror and an aperture, and thence through a system of lenses mounted in a spiral on a lens drum. There are fifteen such lenses on the drum, and the picture repetition frequency corresponding to the speed of the drum is twenty per second.

The Photo Cell Amplifier.

A sharp image of the aperture is projected by each lens on the tape, and is swept over it by the lens drum motion. The tape is carried vertically between two rollers, the bottom one of which is driven through suitable gearing by the same motor that drives the lens drum, and the tape can be given a speed of either 60 or 120 w.p.m. Behind the tape is mounted the photo cell and photo cell amplifier, both of which are contained in a single shielded unit. The lens drum driving motor is maintained at constant speed by means of a synchronous motor controlled by a tuning fork mounted in the bottom of the frame under the lamp house. Above the tuning fork is the fork amplifier unit, and above that is the control unit for the whole system. The frame which supports the lens wheel and tape drive carries two panels, the lower one being the line amplifier and the other the synchronising circuit, which sends out a special signal with the picture signal for the purpose of keeping the receiver scanning motor in step.

In this type of transmitter the frequency band necessary depends on the number of letters shown at the same time in the picture,

and a convenient method of adapting the television transmission to any width of band available is therefore to alter the length of the picture, which alters the number of letters shown accordingly. Thus, the frequency band required by the apparatus described is 13 k/cs., but by reducing the distance between the lenses on the drum which shortens the picture length and reduces the number of letters shown this band width can be reduced to any convenient value.



The new Marconi television transmitter designed for operation on the long waveband. The visual transmission of typed news bulletins is suggested.

The receiver shows a long, narrow picture having a size dependent on the power of the modulated light source, and with existing facilities pictures can be obtained from a few inches in length up to several feet.

STANDARD "MICROMESH" A.C. VALVES.

Remarkable Mutual Conductance
Achieved by Close Spacing.



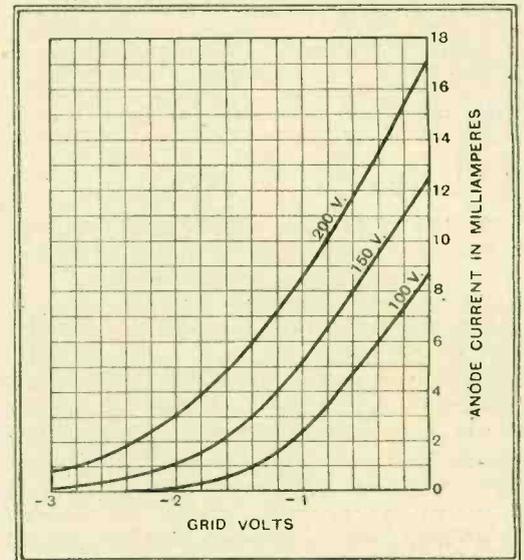
in "Micromesh" valves. Both anode and grid are fitted with large rectangular fins which serve the dual purpose of supporting their respective element and provide a large area for the radiation of heat.

The grid consists of a series of wires welded at either end to each half of the cooling fin, the welding extending as far as the

the heater wires are crimped and then threaded through twin bores in a Magnesia-insulating tube; this, in turn, is arranged to grip the cathode firmly, but the whole structure is permitted to move in an axial direction to compensate for thermal expansion. A guide wire is inserted, therefore, in the upper end of the assembly and passes through a guide fixed to a mica bridge held in position by extension of the anode- and grid-supporting wires.

Normally, the cathode runs at a dull-red heat and takes about fifty seconds to attain the full-emission state, which comparatively long period is due to its robust construction, giving good mechanical strength in addition to adequate electrical shielding. The heater requires about 1 amp. at 4 volts.

The assembly of the grid and anode electrodes and the method employed for mounting them is of paramount importance, for, as mentioned above, it is only by providing for rapid dissipation of heat, especially in the case of the grid, that it has been possible to work to such close clearances as obtained



Curves connecting anode current and grid volts for "Micromesh" HLA1 valve.

THE recourse to extremely small clearances between the electrodes in a valve to obtain improved characteristics has always been regarded as a theoretical possibility. Hitherto this has only been attainable in laboratory-made specimens, but hardly practicable where valves are made under conditions of quantity production.

Mechanical rigidity and the difficulty of avoiding undue temperature rise of the grid electrode in particular appear to have been the limiting factors, since if its temperature rises above a certain level grid emission ensues.

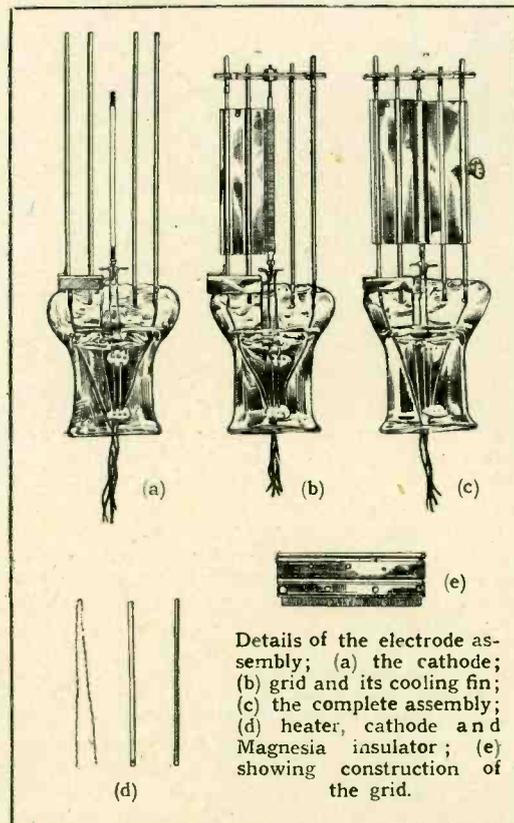
These difficulties have now been overcome successfully in the new "Micromesh" valves made by Standard Telephones and Cables, Ltd., and, although the clearances between the various electrodes are extremely small, indeed much smaller than it has been found possible to adopt by normal methods of construction, effective cooling of the grid has been achieved and a mechanically strong structure evolved. So effective is the cooling that, even though the cathode and anode are raised to a dull-red heat, there is no trace of grid emission.

As a result, exceptionally high amplification properties and very good mutual-conductance values are obtained, while the particular method of construction adopted has proved entirely satisfactory in quantity production.

Magnesia Insulation.

Emerging from the pinch of the valve are seven wires; in the middle is the cathode support, with the two heater connections adjacent, while on one side are the two grid-supporting wires, and on the other the two anode supports.

Since the cathode must of necessity be adequately insulated from the heater, but at the same time make good thermal contact,



inside channel in the fins. Thus perfect thermal contact is assured and the structure is very strong mechanically, an essential feature in view of the very small clearance allowed between adjacent electrodes. When finally completed, the grid takes the form of a flat fin having two longitudinal channels which embrace the supporting wire, while the effective portion consists of a series of wire loops enclosing the cathode.

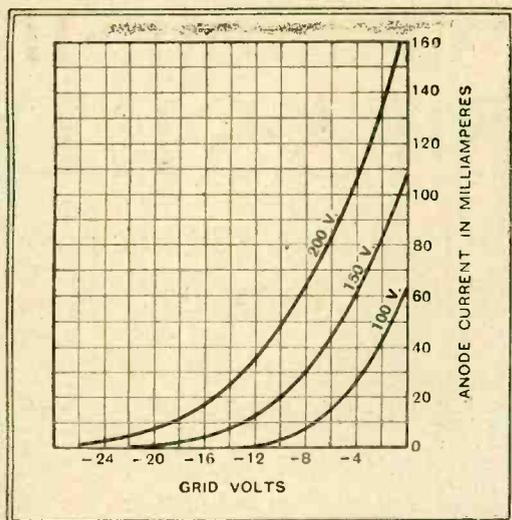
Exceptional Characteristics.

The anode is assembled in a somewhat similar manner, but with the exception that the portion enclosing the grid is fashioned in the form of a tube with a longitudinal slot through which passes the grid fin.

That this novel method of construction has been fruitful in producing valves of outstanding merit is well exemplified by the exceptional characteristics exhibited by the advanced specimens sent in for test. These consist of a detector, a power amplifier, and a mains rectifier. The detector, which is given the designation HLA1, has the following characteristics when measured with 100 volts H.T. and zero grid bias:—

- A.C. resistance, 10,000 ohms.
- Amplification factor, 80.
- Mutual conductance, 8 mA./V.

Although the maximum anode potential is 200 volts, as a cumulative grid detector



Anode current-grid voltage curves of "Micromesh" power valve, the PA1.

it functions quite satisfactorily with but 100 volts on the anode. For power-grid detection the valve may be operated with any value of H.T. up to the maximum, the only limiting factor being the current-handling capacity of the components in its anode circuit, for, as a matter of interest, the valve will pass up to 25 mA. without sustaining damage.

A Slope of 12.6.

The HLA1 is admirably suited to the amplification of small input voltages, and can be employed, with advantage, in the first stage of a gramophone amplifier, but it is often more convenient to utilise the detector and output valves of the broadcast receiver for this purpose.

Despite the high amplification of the valve and the very small clearances between the electrodes, by careful design the anode-to-grid capacity has been kept down to the very low figure of 5 m-mfds., so that the damping of the grid circuit is by no means as great as the high mutual conductance might seem to imply.

Under normal operating conditions the temperature of the glass bulb becomes some-

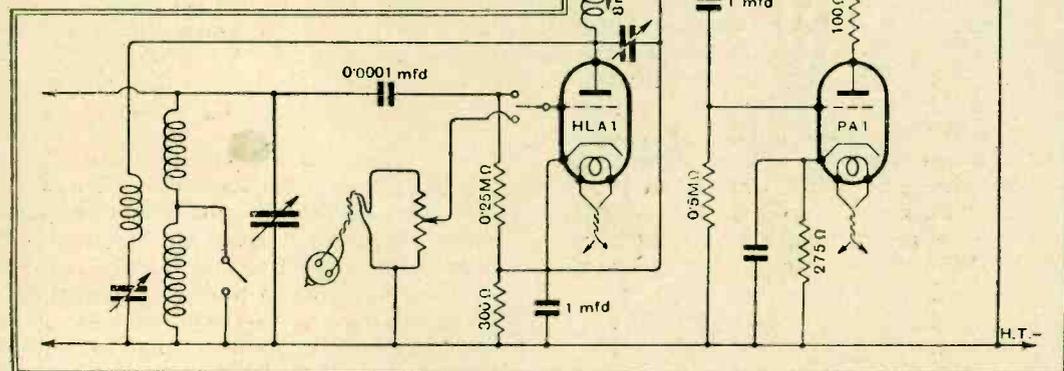


Fig. 1.—Suggested arrangement of detector and output stages using "Micromesh" HLA1 and PA1 valves

what higher than usual for valves of this type, and it will be necessary to provide adequate ventilation of the cabinet. For unless this precaution is observed it may nullify the cooling effect of the grid and anode fins.

The power valve of the series, which is given the type number PA1, has the following exceptional characteristics:—

A.C. resistance, 1,050 ohms.
 Amplification factor, 12.
 Mutual conductance, 12.6 mA./V.
 Measured at 100 volts H.T. and zero grid bias. Its normal operating conditions are with 200 volts on the anode and a grid bias of about -11 volts, which allows an anode current of 40 mA. to pass.

Thus, under normal operating conditions the anode dissipation is some eight watts and the maximum undistorted power output, allowing about 5 per cent. of second harmonic, is between 1.5 and 1.8 watts when working into a load of approximately 2,000 ohms. The input transformer fitted to present-day moving-coil loud speakers will be found, as a rule, provided with a tapping on the primary winding to give the correct matching between the valve and the loud speaker.

Preventing Parasitic Oscillations.

The correct value for the grid-bias resistance with the maximum anode potential is 275 ohms, but as this is not a standard size it may be necessary to employ two separate resistances connected in series, the one-watt type being quite suitable in the present case.

Very low impedance valves, particularly if they possess a high mutual conductance, often generate parasitic oscillations of a very high frequency and result in a considerable increase in the anode current accompanied by a falling off in the power output. However, the inclusion of a small non-inductive resistance of about 100 ohms connected directly to the anode terminal on the valve holder usually suffices to remedy the trouble.

The complete circuit of a detector and output stage embodying both "Micromesh"

to be 275 volts, being the smoothed D.C. output from the "Micromesh" R.I. rectifier at the full load of 60 mA. This valve gives full-wave rectification and is of the indirectly heated type, the cathode being connected internally to one end of the heater. There is no mark on the valve indicating to which filament pin the cathode joins, but if the valve holder is mounted so that the anode terminal is on the right hand the cathode connection is the filament pin nearest to the observer. Fig. 2 will, perhaps, make this clear.

The particular features of interest relating to this valve are that, although it gives an unsmoothed D.C. output of over 280 volts at 60 mA., the A.C. potential on each anode is but 250 volts R.M.S., and there are only 15 volts dropped across the rectifier at full load. The heater requires 4 volts at 1 amp., approximately, the supply being obtained from a separate L.T. winding on the mains transformer.

"Micromesh" valves will be distributed through the usual channels at B.V.A. prices current for valves of their respective types, but, in addition, arrangements have been made by the Electrical and General Distributors, Ltd., 154, King's Cross Road, London, W.C.1, to have stocks of all types available for immediate delivery.

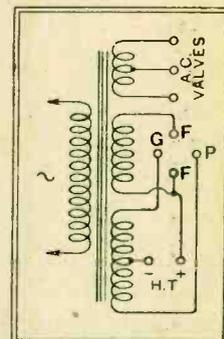


Fig. 2.—Showing connections to valve holder for the "Micromesh" indirectly heated H.T. rectifier type R.I.

NEW BOOKS.

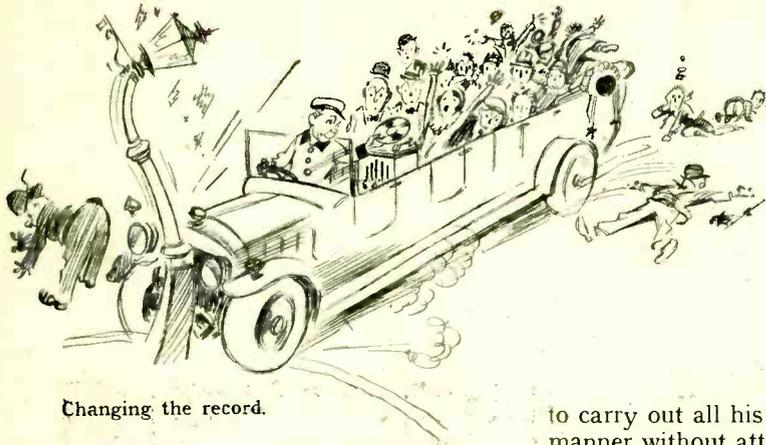
"Tin Solders."—A modern study of the properties of tin solders and soldered joints, by S. J. Nightingale, with an introduction by R. S. Hutton, D.Sc. The nature, properties, and strength of solder alloys, strength of soldered joints, fluxes, practical considerations, etc. Pp. 89+vi, with 44 illustrations and diagrams, including photomicrographs of various alloys and joints. Published by the British Non-ferrous Metals Research Association, London. Price 5s.

Studies on Industrial Relations, II, being the Report of the International Labour Office (League of Nations) upon the history, development, policy, conditions of employment, and relations between employers and employed in the following works: Zeiss Works, Jena; F.I.A.T., Turin; Philips Lamp Works, Eindhoven; and Sandvik Steel Works in Sweden. Pp. 162. Published in the United Kingdom for the International Labour Office, by P. S. King and Son, Ltd., Westminster, S.W.1. Price 3s. 6d., or 80 cents.

Testing Radio Sets, by J. H. Reyner, B.Sc. 2nd edition, revised and enlarged especially with regard to superheterodyne receivers, laboratory tests and component testing. Pp. 207+viii, with 95 illustrations and diagrams. Published by Chapman and Hall, Ltd., London. 1932. Price 10s. 6d.

Thermionic Emission.—A survey of existing knowledge with reference to the filaments of radio valves, compiled by W. S. Stiles, Ph.D. (Radio Research Board, Special Report, No. 11). Pp. 116, including bibliography of all the important papers on the subject published up to December, 1930. Issued by the Department of Scientific and Industrial Research, and published by H.M. Stationery Office, price 2s. 6d. net.

Handbuch der Bildtelegraphie und des Fernschens, by Dr. Fritz Schröter. A text-book of phototelegraphy and television. Pp. 487+xvi, with 365 illustrations and diagrams. Published by Julius Springer, Berlin, price Rm. 53.



Changing the record.

Sharrybang Radio.

I HAVE just been privileged to make a trial trip in two types of what I was told were the first wireless-equipped motor coaches. The first coach in which I travelled was one of the large saloon types intended for long-distance runs, and at the back of every seat there hung a pair of headphones. An aerial was concealed in the roof, the controls of the set being fixed in such a position that they were inaccessible to the driver unless he stopped the coach and left his seat; this latter arrangement was made in order to prevent him risking an accident by attempting to drive with one hand and to pull in distant stations with the other.

I was very impressed by the complete absence of interference from the ignition system, to eliminate which, I was told, exhaustive experiments had been carried out over a long period. The receiver itself was a specially made superheterodyne of exceedingly compact design, and it was normally tuned into the nearest station, although its range and selectivity were such that more distant transmissions could be received if occasion demanded.

It was hoped later on to carry out experiments with a view to providing alternative programmes by using two receivers, and two plug points associated with each seat. I suppose that even if the driver could drive with one hand and change a record with the other, it would be too much to expect a radiogramophone to provide an alternative programme, *via* the 'phones, as the vibration of the coach would merely joggle the needle off the record.

For Rubber-Neck Tours.

The other coach was an open air vehicle intended to carry out rubber-neck tours, as the Yanks call them, through large cities. In addition to the driver it carried the inevitable guide, whom, in London at any rate, one may see on any fine summer morning in the middle of a motor coach full of be-spectacled and gum-chewing Americans, making his voice heard above the din of the traffic by bawling through a megaphone.

In this latter coach the guide was ensconced by the side of the driver, a special microphone, designed to keep out extraneous sounds, being attached to him; the arrangement of the microphone was, in fact, rather similar to that adopted in the case of the mouthpiece associated with the speaking tube used by an aeroplane pilot for communicating with his mate. Thus, the guide was able

to carry out all his explanations in a normal manner without attracting undue attention to the coach, whilst those passengers who did not wish to listen to a recital of all the numerous hostelries in which Queen Elizabeth indulged her passion for beds merely had to refrain from donning the 'phones, although, from my personal experience of tourists, I cannot imagine any one of them doing so.

I thought that this avoidance of the use of a loud speaker showed unusual foresight on behalf of the coach proprietors who probably realised that such an instrument would cramp the style of women and other passengers who might prefer to indulge in idle chatter rather than to improve their minds by listening to the remarks of the guide.

A Costly "Extra."

I SUPPOSE that most of you, especially those like myself who are family men, are at this time of the year engaged in delivering yourselves over into the rapacious hands of the seaside landlady. I have myself but recently returned from a few days' seaside sojourn with the little Grid Leaks. When I arrived at my temporary home I was pleasantly surprised to find that there was a pair of headphones hanging over each bed. Unfortunately, however, all the well-meant efforts of the establishment were set at naught by the fact that the wiring was carried out with twin-laid bell wire which, owing to its unduly high self-capacity, well and truly chopped off everything worth listening to.

In disgust, I put down my 'phones and prepared to read in bed, only to be enraged at finding that the room was supplied with nothing more than a 20-watt lamp at the far end. This extra piece of rapacity on the part of the landlady put me, the next morning, to the expense of purchasing a 100-watt lamp, and since the voltage differed from that at home it was not worth bringing away with me, and so I was compelled, on the day of my departure, to present it to the owner of a miniature rifle range on the pier.

To add insult to injury, when I received my bill at the end of my stay, I found that wireless was charged as an extra.

My Name: An Explanation.

I HAVE just been the embarrassed recipient of an extremely neat and tasteful pocket wallet from a kind-hearted reader who lives at Southport. My embarrassment arises from the fact that the gift is engraved, or embossed, with another man's initials, the donor being under the mistaken impression that they are my own. In order to avoid further misunderstanding in this matter, perhaps I had better

mention that my own initials are actually F. G.

The derivation of my ancient family name of "Grid" is wrapped in the mists of time, although my great-grandfather (peace to his ashes), who made no small reputation for himself in the culinary art during the latter part of the eighteenth century, always attributed it to his calling, which the family had followed for generations past. My uncle, on the other hand, held the opinion that we are descended from Hubert de la Grille, who, it will be remembered, came over with William the Conqueror on a cheap day-excursion from Boulogne, and that Grid was merely an anglicised form of the name.

Whatever be the origin of the surname, the cause of my rather unusual Christian name of "Free" is well known. My father, who was one of the earliest pioneers of wireless, was, at the moment of my birth, engaged in experimenting with an outsize in amplifiers, using valves which were the forerunners of the modern L.S.6A type, costing nearly five guineas apiece. The nurse startled him by coming in the room with the announcement "It's a boy!" at the moment when he happened to have his hand on the grid bias wander plug, with the result that he unfortunately jerked the plug out, with disastrous results.



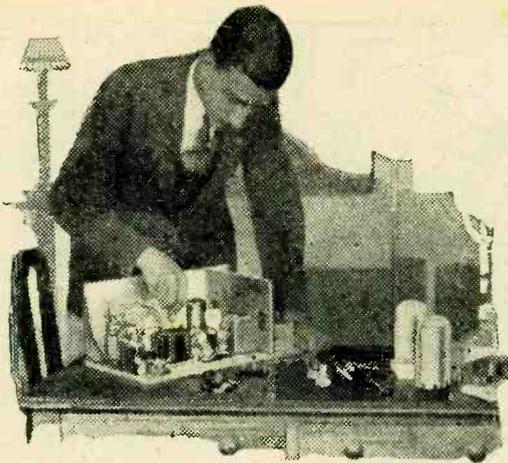
"It's a boy!"

Although it would seem obvious that my name was the result of a brilliant inspiration on his part, due to the fact that the announcement of my advent in the world had caused the grids of his costly valves to become free, he always alleged that the name was given sarcastically, after the manner of the ancient Greeks, who formed the habit of bestowing names on things which were the antithesis of the qualities which they happened to possess.

Nevertheless, public thanks are due to my Southport reader. Had I known him five years ago, when I spent a somewhat uncomfortable night on the pier waiting for the total eclipse of the sun, he would doubtless have offered me his hospitality and so have prevented me losing my hat and umbrella and suffering other indignities in the mad scramble for breakfast.

PRACTICAL HINTS AND TIPS.

AIDS TO BETTER RECEPTION.



THE scope of designers of D.C. sets is at present slightly restricted by the fact that the range of indirectly heated valves for direct-current working is rather less complete than that of the corresponding A.C. types. This handicap will probably disappear entirely in the near future, and there will remain only the limitation of a restricted H.T. voltage supply, which, of course, is inherent in a D.C. system.

A.C. Valves

in

D.C. Sets.

In the meanwhile, there are indications that many D.C. users would like to try circuits that have been devised specifically for A.C. valves. They realise that current consumption will inevitably be somewhat heavy, but are mainly deterred from embarking on their projects by fears that A.C. valves will not stand up to the work on D.C. supply systems.

There is some slight justification for these fears, although there has been a tendency in the past rather to exaggerate the risk of damage. The point to remember is that an A.C. valve-heating element is designed to work under constant voltage conditions, while the corresponding element of the D.C.-mains valve is made to operate at a fixed current, the voltage drop across it being a matter of rather secondary importance.

Having appreciated this somewhat subtle difference in design, it is not difficult to see how A.C. valves may be connected in series

current at roughly this value, and then to shunt each heater with a rheostat (of 30 ohms or so), which is adjusted until exactly 4 volts, as measured by a good high-resistance meter, is "dropped" across each valve. Several readjustments, both of the main voltage-regulating resistance and of the individual heater shunts, may be necessary, but the operation takes little time, and is by no means difficult.

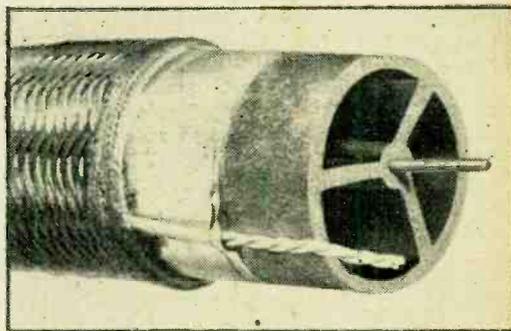
For purposes of illustration, the cathode-heater circuits of an imaginary H.F.-detector-L.F. three-valve set, originally designed for A.C. feed, but which is to be operated from D.C. mains, is given in Fig. 1. Shunt resistances (R , R_1 , R_2) are provided for each heater, and the appropriate cathode connections are also shown. Further, the H.T. supply system and the feed circuits for a variable- μ H.F. valve are indicated; the values given will not be applicable to every type of valve without some modification, but, assuming a D.C. supply of 220 or 230 volts and a smoothing choke of reasonably low resistance, they will be near enough to act as a guide.

THOSE of us who are not blessed with a good musical ear are often at a loss to say precisely in what respects our receivers are deficient in quality of reproduction; we may feel certain that something is lacking at the upper or lower end of the frequency scale, or that there is a marked resonance, but are unable to form clear-cut opinions as to the true nature of the imperfections of the set.

Now, it is useless to attempt a cure until the complaint is known, and, as an aid to diagnosis, it may be pointed out that, by listening critically at a considerable distance

limit of audibility, nothing but low-pitched and unintelligible sounds can be heard when speech is being transmitted. Conversely, a serious deficiency in bass response is equally easily detected in a similar way.

An A.C. receiver, of which the reproduction was distinctly unpleasing, was recently subjected to a "distant listening" test; the opinion was formed that high notes were being severely "cut," and that there was also a marked over-emphasis of a narrow band of frequencies in the upper middle register. Subsequent tests, made in a more scientific manner, proved this diagnosis to be essentially correct; stray reaction was responsible for severe sideband cutting in the tuned circuits, while the loud speaker was found to have a well-defined resonance.



The uses of screened H.F. cable for aerial down-leads, etc., was recently mentioned in these columns. The illustration shows the construction of another type of low-capacity shielded cable, as produced commercially in Germany. Rubber is used as an insulating material.

This instrument was returned to its makers, and replaced as defective; the decoupling system of the H.F. amplifier was put to rights, and all was well.

THE electrical connection between the rotary contact brush of a potentiometer and terminal is a fairly common source of background noises; these do not of necessity occur only when the knob is being turned.

Although many potentiometers are cleverly designed to ensure good and consistent electrical continuity throughout, some of them depend on contact between a spindle and bush designed entirely from the mechanical point of view. Even when a spring contact is fitted, its functioning may be impaired, in the course of time, by an accumulation of dust or dirt between the contacting surfaces.

A temporary "pigtail" connection of flexible wire, made directly between the rotary brush and the terminal, will soon show whether background noises are due to this cause. If they are, a cure may generally be effected by cleaning the bush and spindle, etc. Better still, recurrence of the trouble may be avoided by fitting a permanent "pigtail," so that it will no longer be necessary to depend on rubbing contacts.

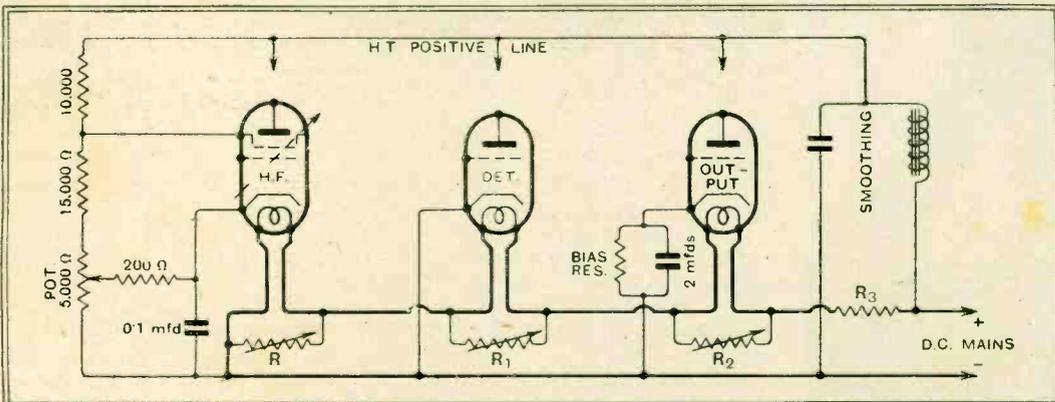


Fig. 1.—A receiver with A.C. valves, originally designed for A.C. mains working, but rearranged to operate from a D.C. supply system.

and joined through a suitable voltage-absorbing resistance across D.C. mains of normal voltage. The usual procedure is to adjust the resistance so that the current through the chain of series-connected heaters is exactly 1 ampere; it is better, in order to ensure constant-voltage conditions, to set the

from the loud speaker, it is generally possible to form a useful opinion of the trouble, even without any special ability in this direction.

If dull reproduction is due to severe high-note loss it will be observed that, as distance between the instrument and the listener is gradually increased towards the

News of the Week

Current Events in Brief Review.

Signals from the Stratosphere.

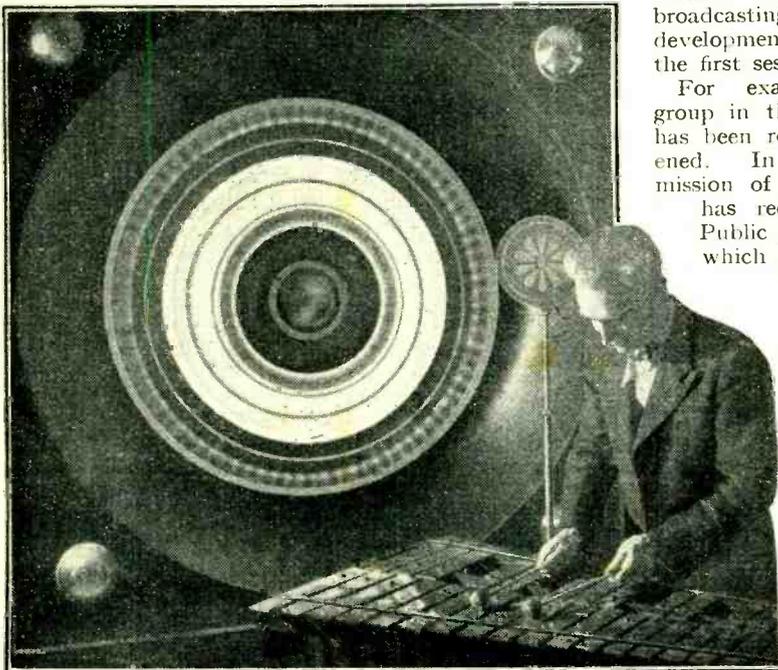
WAVELENGTHS of 41, 42.8, 75 and 85 metres are to be used by Professor Auguste Piccard, the Belgian balloonist, for radio transmissions during his new ascent into the stratosphere within the next few days.

It will be remembered that the professor achieved a record height of 52,000 feet in May, 1931. On that occasion he carried only a receiving set, and the lack of a transmitter rendered it impossible to locate him for several days after his descent in the Austrian mountains. When Professor Piccard makes his next ascent, from Zurich, he will be accompanied by M. Max Coseyns, who has installed the apparatus in the small round steel cabinet of the balloon. Both transmitter and receiver are built on the smallest possible scale. The transmitter has a power of 50 watts, derived from dry batteries, and the receiver, a four-valve instrument, is only about 8 in. square.

As the start of the attempt depends entirely on the state of the weather, it is, of course, impossible to provide any sort of schedule for radio observers or broadcasting authorities who might care to relay the transmissions for the benefit of European listeners. Watchful amateurs have, however, an excellent opportunity of creating reception records.

A New Excuse.

A WIRELESS pirate at Whiston, Lancs, told the Preston Bench last week that he had been waiting for the Post Office collector to call. He was fined £1.



THE COLOURPHONE. "Combining the use of Hertzian waves and the Baird scanning disc system," Mr. A. L. Smith, of Los Angeles, seen above, has devised this whirling disc instrument to express different colour formations representing varying musical tones. Its most practical application is to indicate visually the misdeeds of broadcast sopranos.

"Double-Modulation" for Television.

AN ultra short-wave transmitter which can send television images and sound simultaneously on the same wavelengths has been evolved by the engineers of the Columbia Broadcasting System, and, according to our Washington correspondent, the Columbia group has now applied to the Federal Radio Commission for a band of ultra short waves between 3.75 and 7 metres to carry on the experiments.

The new development is termed "double-modulation." Its inventor is William B. Lodge, a recent honours graduate of the Massachusetts Institute of Technology.

Radio Conscription in Iceland.

LACK of broadcast talkers in Iceland is responsible for a remarkable Bill which is to be introduced in the Icelandic Parliament. The Bill rules that every civil servant in Iceland will be conscripted for radio service during two months in every year. He may be required to serve in a variety of ways, one of them being to deliver lectures before the microphone without payment. Speakers will be merely paid their travelling expenses from the station of departure to Reykjavik, where the broadcasting studio is situated.

Hope Springs Eternal.

FRENCH radio enthusiasts are the most sanguine folk on the earth. According to our Paris correspondent, there are well-founded hopes that the new Parliament will endow France with a well-established broadcasting system. Significant developments marked the close of the first session.

For example, the "Radio" group in the Chamber of Deputies has been reorganised and strengthened. In addition, a new Commission of the Postal Department has received the report of a Public Works Commission which has been collecting reports for several months. Nor does this fill the cup of anticipation. The President-Deputy, M. James Schlafer, who has specialised in wireless matters, has strong convictions on the question of State help for broadcasting. The predominating opinion is in favour of State control.

M. Renaitour, a deputy who owed his election largely to wireless amateurs in his constituency, predicts that a wireless law will be voted without fail in 1933.

New Ideas in Radio Cabinets.

NEW designs for radio-gramophone cabinets are included in the display of competitors' efforts in the ninth annual open competition of Industrial Designs organised by the Royal Society of Arts. The exhibition is being held in the galleries of the Imperial College of Science and Technology, Imperial Institute Road, South Kensington, London, S.W., until August 31st.

Tit for Tat

AN interesting sidelight on the never-ceasing battle for broadcast power is afforded by a letter published in a French contemporary. It emanates from the Hungarian broadcasting authorities, and is a reply to the journal's statement that the construction of the new high-power transmitter in Hungary would not favour peace in Central Europe.

"The true object in building so costly a transmitter," protest the Hungarian authorities, "is that the high-power stations of Austria, Czecho-Slovakia, Germany, Poland, and Italy, which surround our country, menace the good reception of our 20-kilowatt station and the high reputation which it has hitherto enjoyed in Europe. We are compelled to install a station of equivalent power."

And so it goes on!

Radio Shows in Brussels and Paris.

THE 1932 Brussels Wireless Exhibition is to be held from September 3rd to 12th, thus clashing to some extent with the Paris Radio Salon, which opens on September 8th and runs till the 18th.

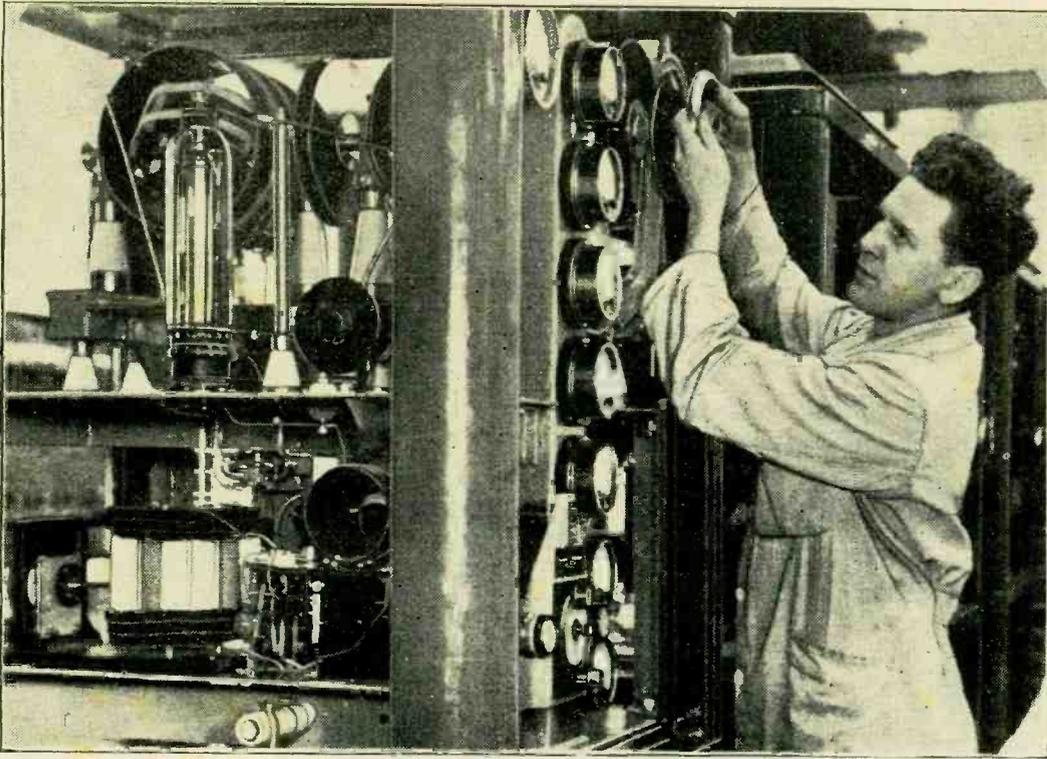
Impasse in Spain.

THE Spanish Government is in conflict with Catalonia on the question of broadcasting. According to a correspondent, the Spanish Government desires to control all the stations in the peninsular, including those in Catalonia, where, however, there is a strong demand for independent broadcasting; in fact, Catalonia demands stations of from 60 to 100 kilowatts and treats with contempt the Spanish plan for 20-kilowatt stations at Barcelona and other regional centres.

In view of the present troubles the Spanish Government is delaying the issue of contracts for the proposed regional scheme.

More Floods in Holland?

THE broadcasting of physical culture lessons recently brought a complaint from Austrian landlords that listeners indulging in the exercises were bringing down ceilings and damaging gas and electrical installations. People are now asking what will be the sequel of the swimming lessons which are about to be broadcast from Hilversum. Will enthusiastic learners place their baths beside their receivers and, obeying the energetic voice of the instructor, flood their own apartments and damage the ceilings of their unfortunate neighbours in the basement?



GERMANY'S MOST POWERFUL BROADCASTER. The first of the seven stages in the new 120-kW. transmitter to be installed by the Lorenz Company at Leipzig.

German Relay Wavelengths.

A NUMBER of German relay stations still work on international common waves or on wavelengths "lent" by other countries. With the closing down of the Cologne relay station, the 227.4-metre wave, which is exclusive to Germany, became free for use by other German stations. Recently the Hanover relay was put on this wavelength, and it has now been decided to use the same wavelength for all the North German relays, though Kiel will temporarily retain its present wavelength of 232.2 metres.

Regional Radio Shows.

SMALL regional radio exhibitions are to be organised in Switzerland during the winter in place of the all-Swiss Exhibition which was held last year. It is believed that this arrangement will enable more enthusiasts to become acquainted with the latest developments.

English Broadcasts from Brazil.

THE Brazilian Embassy announces that the Radio Club de Rio de Janeiro is broadcasting daily at 11.30 (B.S.T.) in English, French, German, Spanish, and Italian a programme of local news from Brazil on a 31.58 wavelength.

Any information regarding these transmissions will be welcomed by the Radio Club de Rio de Janeiro (Brazil).

Radio Doctoring in the Jungle.

RADIO doctors in the jungle country of the New World take on strange commissions. Mr. Armstrong Perry, director of the U.S. National Committee on Radio Education, reports that a friend now domiciled in Guatemala City recently received an urgent request from a coffee plantation owner in Coban, near the Mexican border, to come by aeroplane to repair a radio receiver. He was offered a fee of \$50 and four days' travelling expenses, the trip taking two days each way. Upon arrival he found it was only necessary to replace a 50 cent. resistor. Once before, he rode through the jungle on mule back for two days to answer a repair call; when he arrived he found that a valve had merely worked loose in its socket!

A Runner-Up.

AMERICA'S claim to have the second tallest wireless mast in the world—the 878ft. mast at WSM, Nashville—is being contested in Germany. It is declared that Nauen's two masts are each 880ft. high, which means that the American claim is beaten twice.

Eiffel Tower remains the highest radio mast in the world.

"Stenode."

A PARTICULARLY interesting brochure entitled "Stenode" has just been issued by Burne-Jones and Co., Ltd., 296, Borough High Street, London, S.E.1. Commencing with a brief survey of the principles involved it continues with extracts from the leading daily and technical journals, and cites the "Wireless World Monodial" as a typical example of modern practice embodying the "Stenode" principles.

It concludes with a description, operation notes and illustrations of the Burne-Jones A.C. "Stenode," a seven-valve radio-gramophone embodying a superheterodyne circuit. Copies are obtainable free on request.

State Ownership for German Broadcasting.

THE German broadcasting organisation is to be transformed, the Cabinet having now definitely decided to take over control. Under the new scheme, which was outlined in our issue of July 22nd, the German broadcasting companies will be invited to sell their shares to the Government; if they should refuse, the concession will be summarily taken over so that new State control can be inaugurated.

In Bavaria the State is already sole owner of the Broadcasting Company and in many other cases over 75 per cent. of the shares are already in the hands of the State-owned Radio-Reichs-Gesellschaft.

There are to be two Federal broadcasting commissioners, one responsible for finance organisation and technical matters and the second for programmes and political broadcasts.

Each regional company will have a special State Commissioner, who will take his orders direct from the Government.

Blow for American Listeners.

AMERICA, the land of free ether, seems at last to be having a taste of official restrictions at the microphone. The Eastern Inter-Collegiate Association has barred the microphone from the football game to be played by Harvard, Yale and other universities during the coming autumn, the feeling being that broadcasting definitely reduces gate money.

At present there is little public protest, but farseeing sports journalists predict that when the football season returns the radio public will raise a loud and vigorous outcry which will force the authorities to reverse their decision. Unfortunately, from the listener's point of view, the broadcasting authorities are not likely to fight in their defence for the simple reason that there is no financial return whatever in broadcasting these games. They involve heavy expense for a "sustaining" or non-commercial feature that wins only goodwill from the radio audience. So it rather appears that, whether they complain or not, American listeners will lose their football broadcasts next season.

To Stop Man-made Static.

AN "Anti-Static Congress" which will draft a Parliamentary Bill for the suppression of electrical interference with broadcast reception is to be held in Paris in the late autumn. Representatives of radio clubs, the leading technicians, and a large number of legal lights will be invited to attend. Mayors and municipal councillors will be asked to report on the prevalence of the trouble in their different districts.

"The Wireless World" Index and Binding Cases.

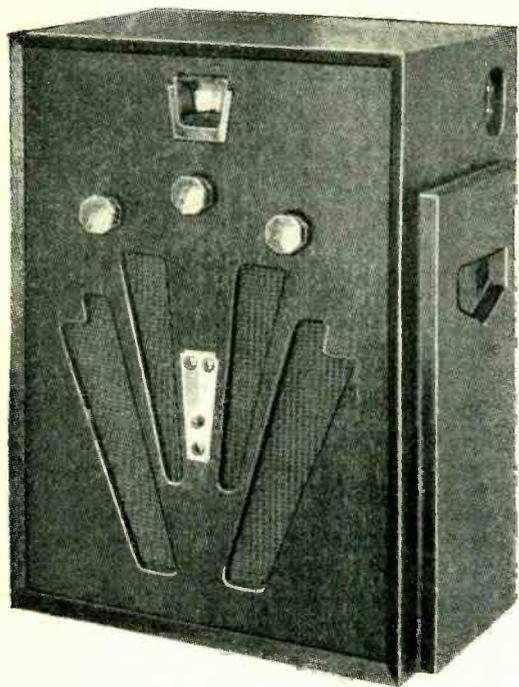
THE index for Volume XXX., January to June, 1932, is now ready, and may be obtained from the publishers, price 4d. post free, or with binding case, 3s. 1d. post free.



A 1-KILOWATT AMPLIFIER. The Tannoy battery-operated gramophone console and amplifying equipment installed in the "Daily Mirror" van now touring the health resorts.

MARCONIPHONE TYPE 248 RECEIVER.

A Two-valve Battery Set for Less than £5.



IN the early days of broadcasting the listener with limited means had no difficulty in equipping himself with adequate apparatus for receiving the B.B.C. programmes. Crystal sets and single-valve receivers for use with headphones were plentiful, and there can be little doubt that this factor was responsible for the rapid establishment of the broadcasting service in this country. The market for inexpensive battery-operated receivers has never diminished, but during the past two or three years the leading firms seem to have neglected it in their efforts to supply the demand for all-mains receivers—chiefly of the 3-valve type, costing about £20.

There are signs, however, that the balance will soon be restored, and the Model 248 Marconiphone set is an excellent example of the type of receiver which is required. It is a quality job throughout, and definitely disproves any suggestion that a receiver costing less than £5 must necessarily be skimped either in specifications or materials.

High Standard Maintained.

The cabinet, for instance, is constructed of solid oak, and in design and finish is not in the least inferior to any of the more expensive sets in the Marconiphone range. The same high standard is maintained in the receiver unit, which consists of a channel-section aluminium chassis mounted above the loud speaker cone inside the cabinet. The press-work and riveting have been exceptionally neatly executed, the materials are obviously of the best, and the switches and condensers work smoothly and with precision. An Exide 2-volt 20-ampere-hour battery is used for the L.T. supply, and one of the reintroduced Marconiphone dry batteries provides both H.T. and grid bias. Marconi valves are, of course, included.

The circuit consists of a metallised HL2 detector, followed by an LP2 power valve. Special attention has been paid in designing the tuning coils to the problem of selectivity, and three alternative tapings are provided to meet all possible local conditions. Both the tuning and reaction condensers are of the bakelite dielectric type, and the tuning con-

denser is driven through a friction slow-motion dial. A very simple and efficient rotary switch performs the combined functions of switching on the filaments and changing the wave-range.

The anode circuit connections of the leaky-grid detector are interesting on account of the unconventional position of the by-pass condenser. Instead of being connected directly between the anode and earth, it is joined to the "output" side of the reaction feed condenser. This arrangement has been found to give better distribution of reaction over the tuning scale, particularly on long waves.

Adequate Selectivity.

The transformer coupling the detector to the power valve is of universally generous design for a set of this type, and the windings of the balanced armature loud speaker unit have been specially wound to provide the correct working impedance for the LP2 output valve. As a result the reproduction is clear and remarkably free from harmonic distortion. The volume, too, can be increased to a higher level than is normally required in the average living room without signs of distress. One does not expect the same degree of response in the bass as one would demand, say, in a set equipped with a moving-coil loud speaker, but even so the quality of reproduction of music is definitely pleasing and is of a type that can be listened to for long periods without tiring. Speech is clear, and the character of individual voices faithfully rendered.

The makers' claims in the matter of selectivity were amply substantiated by a test at a distance of five miles from Brookmans Park. Here no difficulty was experienced in obtaining clear separation of the twin transmitters even in the least selective of the aerial tapings (A₁). Further, the overall sensitivity of the set was exceptionally good, having regard to the high degree of selectivity provided. There can be no doubt that alternative B.B.C. programmes would be available even in remote parts of the British Isles, while under favourable conditions five or six foreign stations would be received at moderate volume. The number of strong carrier waves to be found on the

medium waveband considerably exceeds this figure, but difficulty was experienced in resolving all but those with fairly deep modulation.

On long waves the Brookmans Park stations showed a tendency to break through near the bottom of the scale, but this effect was not serious outside a radius of ten miles. Daventry (5XX), Radio Paris, and Eiffel Tower all came in at good volume, with Hilversum, Motala, and one or two others in reserve at moderate strength.

FEATURES.

General.—Two-valve battery-operated receiver incorporating a balanced armature loud speaker. Designed for use with an external aerial.

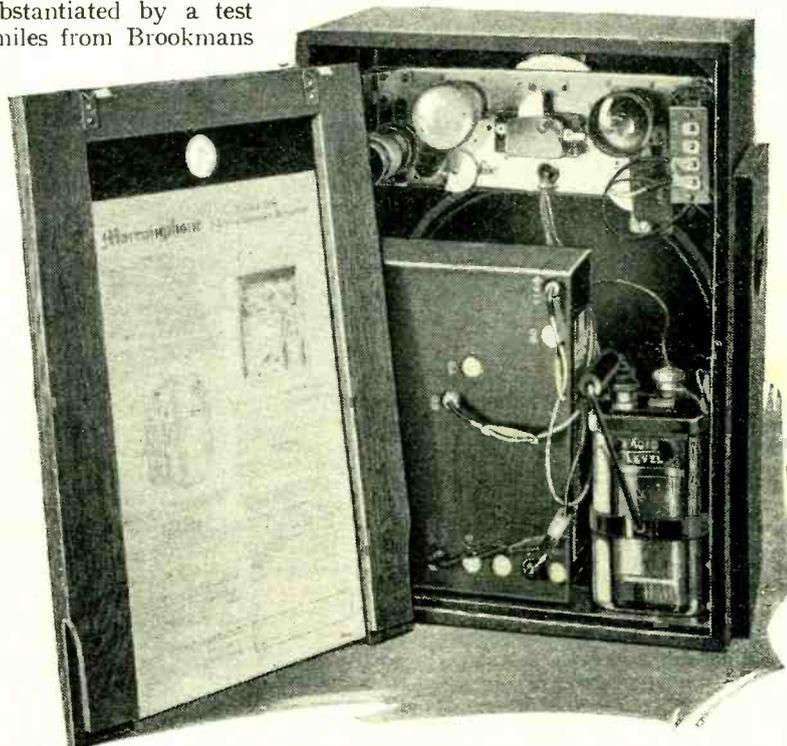
Circuit.—Single-tuned input circuit with alternative aerial tapings. Metallised grid detector with reaction, transformer coupled to three-electrode power output valve. Provision for an extra loud speaker.

Controls.—(1) Tuning, with slow-motion dial. (2) Reaction. (3) Combined wave-range and on-off switch.

Price.—£1 19s. 6d., including valves and batteries.

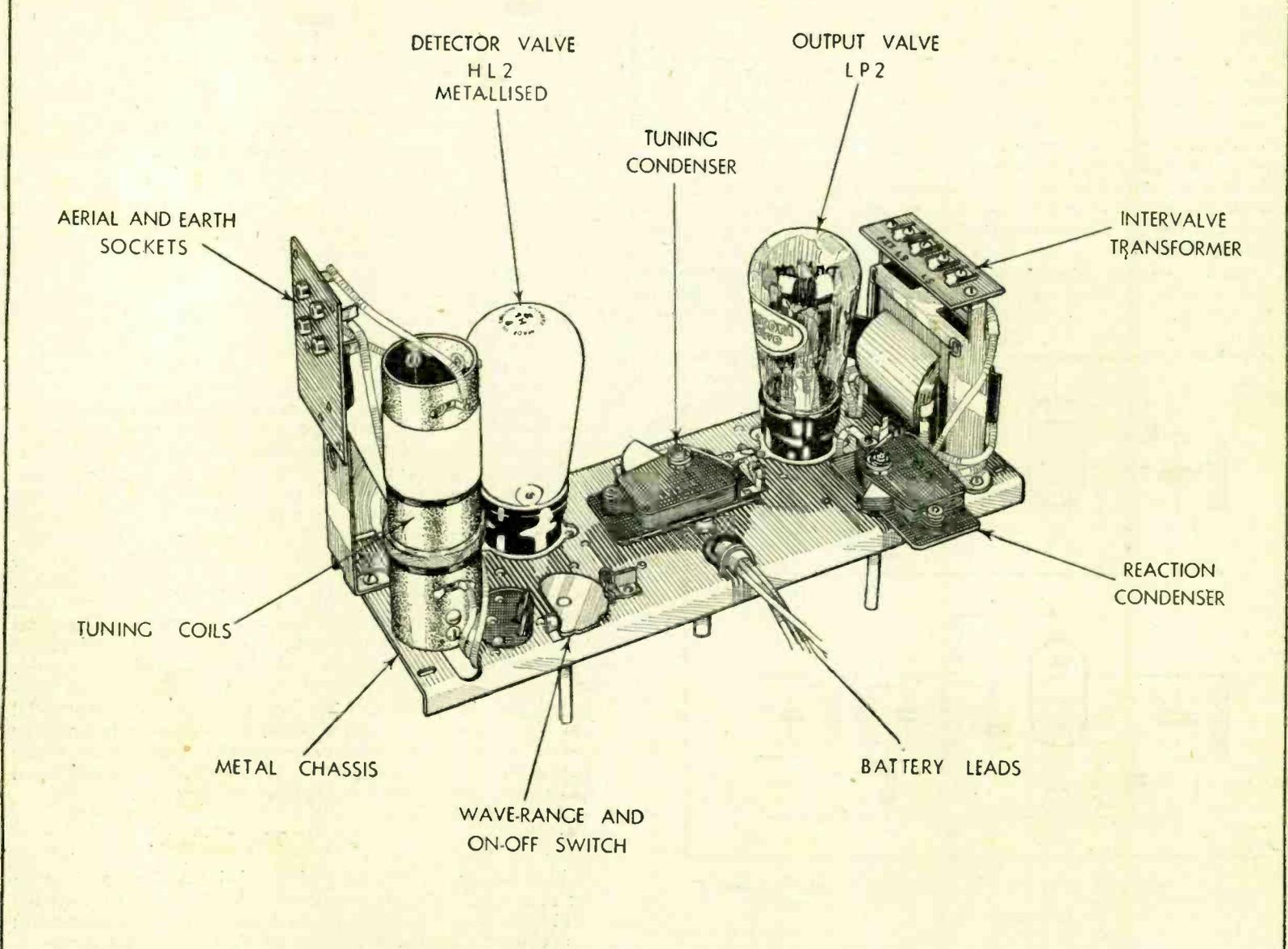
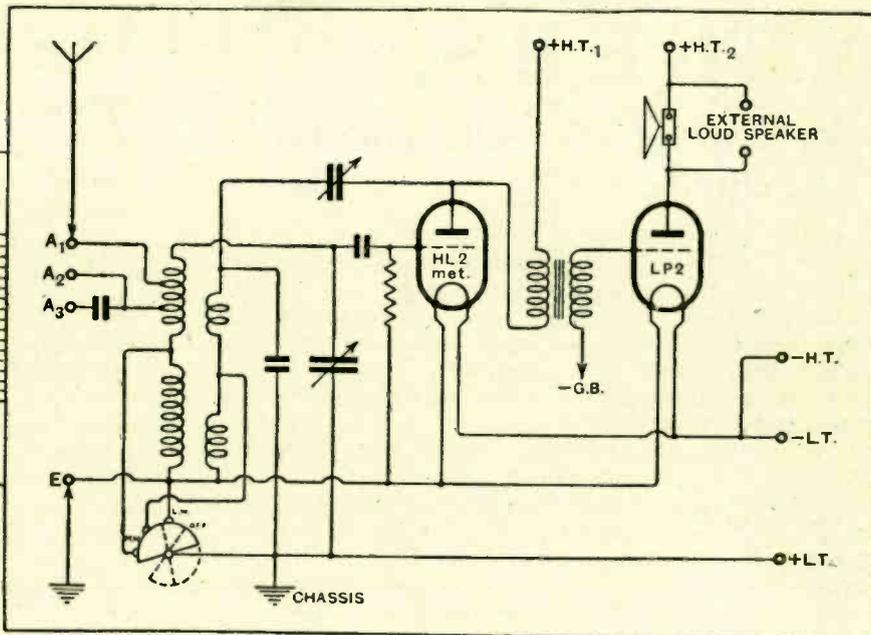
Makers.—The Marconiphone Co., Ltd., 210-212, Tottenham Court Road, London, W.1.

Without a shadow of doubt, the purchaser of a Marconiphone Type 248 set receives a very full measure of value for his money. High-tension battery replacements cost 11s., and should last at least six months as the current consumption of the set is very low. In the model tested it was 4.3 mA., or less than half that of the average portable.



The back panel, which carries full operating instructions, is completely detachable, giving ready access to valves and batteries.

A NEAT TWO-VALVE BATTERY RECEIVER.



A high standard of workmanship and simplicity of design characterise the receiver chassis in the Marconiphone Type 248 set.

SINGLE-VALVE FREQUENCY CHANGERS.

Part II.—The Development of the Self-Neutralised Pentode.

By W. T. COCKING.

THE experiments described in last week's issue made it abundantly clear that a screen-grid valve was unsuitable for a single-valve frequency changer, and it is obvious that a triode is equally unsuitable. The next step, therefore, was to try out the bi-grid, a four-electrode valve designed chiefly to act as a single-valve frequency changer. A commonly employed circuit is shown in Fig. 5a, and a modified form of greater efficiency in Fig. 5b; the signal input is applied to the outer grid which is biased negatively, in Fig. 5a by the flow of grid current through the grid leak, and in Fig. 5b by the flow of anode current through the cathode resistance. The tuned oscillator circuit is connected to the inner grid, and reaction is provided from the anode circuit.

Satisfactory oscillation can be readily secured, although a considerably tighter reaction coupling than usual is necessary, and some care is needed in securing freedom from "squegging" effects. The efficiency of the arrangement is very low, however, and this is to be accounted for by the low mutual conductance, some 0.25 mA./v., of this type of valve. Circuit interaction, however, is negligible, and in this respect the bi-grid represents a distinct improvement on the types of frequency changer already described in this article.

capacities cannot be greatly lower than those of a screen-grid valve, and the same degree of coupling is to be expected. This is confirmed by measurement, which shows that the outer grid-inner grid capacity is about 9 m-mfd.

The oscillator and pre-selector circuits, therefore, are as tightly coupled as in a screen-grid circuit, and yet circuit interaction is negligible. The explanation of this apparent anomaly is to be found in the fact that in the bi-grid the control grid-anode capacity is of the same order as the control grid-oscillator grid capacity, whereas in a screen-grid valve, the control grid-anode capacity is very much smaller than the control grid-screen-grid capacity.

If the circuit of Fig. 6 be studied, in which the valve capacities are shown at C_1 and C_2 , it will be seen that the potential across the tuned oscillator circuit causes a current to flow through C_2 , and, therefore, a potential at oscillator frequency to be developed on the control grid. In the anode circuit the same thing happens; the potential across the reaction coil causes a current to flow through C_1 , and another potential of oscillator frequency to be applied to the control grid.

Now, these two potentials are in opposite phase, so that if C_1 and C_2 are equal, and the oscillator voltages on the anode and the oscillator grid are also equal, the effective voltage developed on the control grid at oscillator frequency is zero. In other words, the circuit is self-neutralised as regards the oscillator circuits. Even if the capacities be unequal, the neutralising action can be obtained by adjusting the

relative value of the oscillator potentials on the anode and oscillator grid. With a screen-grid valve, however, the capacity ratio may be as high as 10,000 to 1, and it is obviously

THE use of the pentode as a single-valve frequency changer of equal efficiency to that of the conventional two-valve arrangement is here described for the first time.

impossible to maintain the balanced potentials in this case. It would, of course, be possible artificially to increase the control grid-anode capacity, but this would give an adjustment difficult to carry out correctly in practice.

Having thus accounted for the freedom from circuit interaction found with the bi-grid, the next step was to find some means

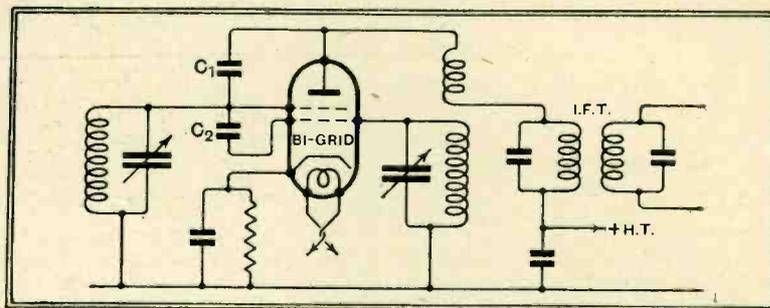


Fig. 6.—The bi-grid circuit re-drawn to show the valve capacities which account for the freedom from interaction.

of improving its efficiency, for this is very considerably inferior to that of a good screen-grid circuit. To be completely satisfactory, the frequency changer would have to combine the circuit isolation of the bi-grid with the efficiency of the American screen-grid circuit.

Now, from what has been said in this article, it will be obvious that the results depend very largely upon the type of valve adopted, and we are now in a position to postulate the characteristics of the ideal valve. A high mutual conductance between the control grid and anode circuits is the first requisite for efficiency, while approximately equal control grid-anode and control grid-oscillator grid inter-electrode capacities are necessary to secure freedom from interaction. The actual ratio of the valve capacities theoretically required, of course, will depend to some extent upon the mutual conductance between the oscillator grid and anode, and, within limits, the lower this mutual conductance the larger will be the reaction coil required, and the more nearly equal will be the oscillator potential changes on the anode and oscillator grid, and the more nearly equal should be the valve capacities.

The Pentode.

The bi-grid is ruled out of count because of its low mutual conductance between the control grid and anode, and the screen-grid valve because of the large disparity in its inter-electrode capacities. A valve with four or more electrodes is essential, and so the only remaining standard type is the pentode, which may be considered as a four-electrode

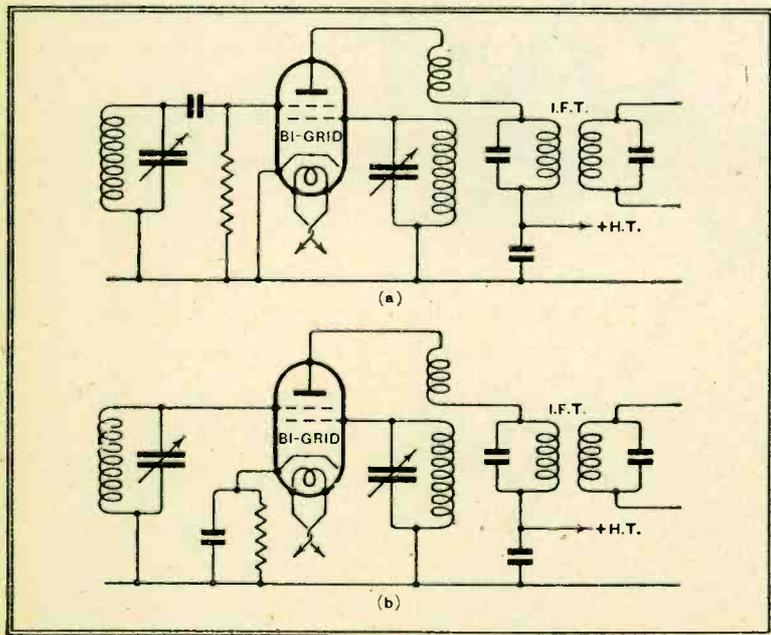


Fig. 5.—The commonly employed bi-grid circuit is shown at (a) and a more efficient arrangement at (b). Circuit interaction is negligible, but the efficiency is low.

Having thus found an arrangement which is free from the evil effects of circuit interaction, the reason for this freedom requires explanation, for it is obvious that the valve

Single-valve Frequency Changers.—

valve for our purposes, as the fifth electrode is connected internally, and is not available for external use.

The high mutual conductance of the pentode is well known, so that on this score it should prove satisfactory. Measurement indicated, moreover, that in certain makes of valve the important inter-electrode capacities were sufficiently alike to prove hopeful. A trial of the valve was accordingly made, and it may be said at once that, when suitable operating potentials were found, the results exceeded all expectations.

The circuit finally developed is shown in Fig. 7, and the Mazda AC/Pen. and the Marconi or Osram M.P.T.4 pentodes proved the most suitable; negative bias for the control grid is provided by the 500-ohms resistance in the cathode lead. The tuned-oscillator coil is connected to the anode circuit by a shunt-feed arrangement, with the I.F. transformer acting as an H.F. choke and feed condenser. The steady anode potential is 200 volts, and the space charge grid, which is used for reaction purposes, is fed from the same 200 volts supply through a 250,000-ohms resistance, so that its actual operating potential is quite small.

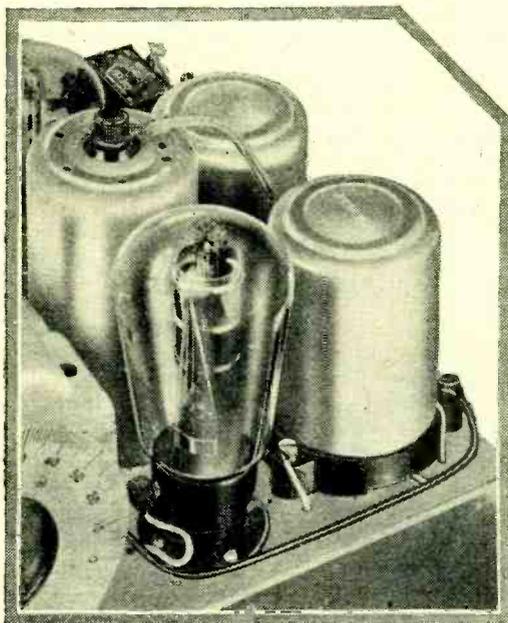
Reaction Coil Resonance.

The coil construction is important, owing to the low mutual conductance of the oscillator grid and anode. A very tight reaction coupling is needed to maintain oscillation, but this must not be provided by a large number of turns loosely coupled, for then resonance effects in the reaction coil upset the operation. The reaction coil must consist of a minimum of turns coupled tightly to the tuned winding.

When the oscillator coils are correctly proportioned, this self-neutralised pentode frequency changer is free from the effects of circuit interaction and radiation, so far as normal operation and adjustment will show. Theoretically, of course, it would be necessary to adopt special balancing precautions if the neutralising action is to be maintained over the whole tuning range of the receiver; in practice, however, these are quite unnecessary for all ordinary purposes. In respect of its efficiency, the circuit is equally satisfactory, and, indeed, on this point it is comparable with the American S.G. circuit.

Although these factors alone would be sufficient to justify the general adoption of the self-neutralised pentode frequency

types, for it is capable of handling without distortion a much greater signal input. In general, superheterodynes demand that an efficient pre-first-detector volume control be fitted to avoid overloading the frequency changer. The pentode frequency changer, however, requires only a moderate amount of signal-input volume control, even on a



An experimental superheterodyne receiver in which a single-valve pentode frequency changer can be seen in the foreground.

powerful local. This point alone is of considerable importance, for volume control has always presented a difficult problem to the designer of a superheterodyne, and this has been particularly so in cases where no pre-detector H.F. stage is to be used.

At this stage of the development it was realised that a single-valve frequency changer had been found which performed as satisfactorily as the more normal two-valve circuit, and that it was cheaper than the two-valve circuit. The design of a four-valve superheterodyne, therefore, which should be comparable in cost with, and give a generally more satisfactory performance than, the popular straight three-valve set had been brought within the limits of possibility.

The development of this was proceeded with, therefore, and it may be said that the resulting receiver was found to give a sensitivity rather better than that of a straight three-valve arrangement, while the quality was equally good. The selectivity, naturally,

was incomparably better, since it proved possible in the North of London, quite close to Brookmans Park, to receive weak Continental stations working with frequencies separated from those of the powerful locals by no more than 18 kc.

Although the results with such a four-valve superheterodyne are of an exceptionally high order, naturally they do not quite reach the

high standard set by the very ambitious type of superheterodyne with a greater num-

ber of valves, such as the Monodial A.C. Super. Nevertheless, where neither the maximum of selectivity nor the highest sensitivity are necessary, the four-valve superheterodyne will give a highly satisfactory performance.

The receiver which has been developed is for A.C. operation, and includes ganged tuning, pentode output, and built-in moving-coil loud speaker; it will be described in the near future.

TRANSMITTERS' NOTES AND QUERIES.

Madrid Conference.

SO many matters will probably come up for discussion at the Madrid Conference, which we understand will open on September 3rd, that amateur transmitters are somewhat anxious lest their own interests may be overlooked.

We understand that Mr. Gerald Marcuse and Mr. A. E. Watts have been in constant touch with the Post Office authorities on behalf of the R.S.G.B., and that the G.P.O. will welcome the presence of a representative of the R.S.G.B. at Madrid to advise them on matters affecting amateur radio. Mr. Watts, and possibly Mr. Marcuse, will, therefore, journey to Madrid at some period during the Conference when important amateur matters come up for discussion, but as the meeting will last for about three months it is not practicable for them to be in attendance all the time. Mr. K. B. Warner, the secretary of the A.R.R.L., and two other delegates, will, however, be at Madrid during the whole of the Conference, and will keep a watchful eye over the interests of amateur transmitters from all parts of the world.

The American delegates will endeavour to secure for amateurs the exclusive use of the wavebands made available for them under the Washington Convention, and the Canadian amateurs wish for an extension of the present use of the 7 m.c. band, but there are so many interests to consider that it will be necessary for them to bring forward strong arguments in support of their claims.

The New Call Book.

THE summer issue of the Radio Amateur Call Book is now available, and copies may be obtained from Mr. F. T. Carter, Flat A, Gleneagle Mansions Streatham, for 5s. 6d., post free. The list of amateur transmitting stations in all countries of the world now exceeds 30,000 names and addresses, while the very useful list of short-wave commercial stations has been increased to twenty-eight columns.

Olympic Games.

WE understand that the call-sign W6USA, which, as stated in our issue of June 29th, will be operated by Mr. W. A. Lippmann, Jr., for the benefit of athletes at the Olympic Games, in Los Angeles, was licensed too late for inclusion in the summer Call Book. This call will probably be used after August 15th.

CHANGES OF ADDRESS.

- G2CR A. L. Crane, Kenilworth, 29, Kingsland Road, Grove Park, S.E. 12.
- G2KB H. K. Bourne, 63, Shenstone Avenue, Hillmorton Paddock, Rugby.
- G2VR H. B. Old, The Shack, Spring Lane, Lambley, Nottingham.
- G2YI R. C. Horsnell, St. Neots, Wick Drive, Wickford, Essex.
- G5DA G. Gore, 41, Grendon Gardens, Wembley Park, Middlesex.
- G5DI T. Brown, Ashford, West Lane, Forest Hall, Newcastle-on-Tyne.
- G15WD W. S. Davison, 10, Mark Street, Portrush, Co. Antrim.
- G5WT A. S. Wood, Trebor, St. James Road, Forfar.
- G6CW J. J. Curnow, Tregenna, Garrard Road, Banstead, Surrey.

NEW CALL-SIGNS.

- G5CU (ex 2ANS) J. A. Cuthbertson, Radiohm, Acklam Road, Linthorpe, Middlesbrough, Yorks.
- G6FU (Ex 2BGM) J. H. Cant, 112, Torrison Road, Catford.
- 2AGT R. Walker, 18, Woodville Road, New Barnet, Herts.

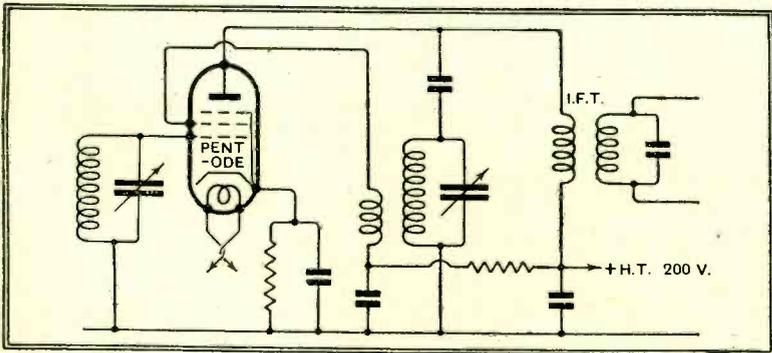


Fig. 7.—The final self-neutralised pentode frequency changer gives negligible circuit interaction, and is as efficient as a screen-grid type. The space-charge grid is operated with a very low positive potential.

changer in inexpensive superheterodynes, it has still another advantage over screen-grid

LABORATORY TESTS

ON NEW RADIO PRODUCTS.

WEARITE Q.V.C. VOLUME CONTROL AND FIXED RESISTANCES.

THE new Wearite volume control, which is made in the form of a potentiometer, is a most cleverly designed component, for, in addition to embodying some quite novel mechanical features, it lends itself admirably to ganging either to a companion component or to a switch, thereby lessening the number of visible controls.

The Q.V.C. model, as it is styled, is enclosed in a moulded bakelite shell fitted with a single hole fixing bush, and incorporates a tapered wire-wound resistance element, the grading being such that the change in resistance follows very closely a square law.

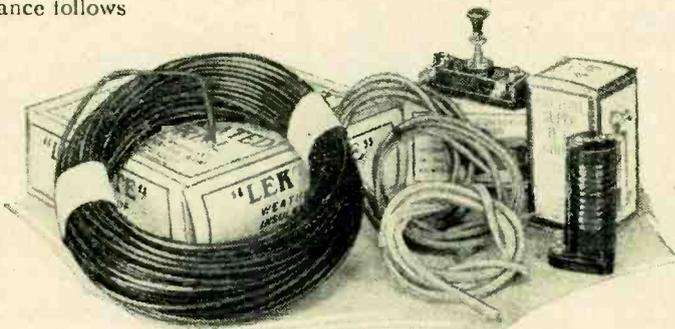
Wire of fine gauge must, of necessity, be used for the higher values so as to relieve the winding of as much mechanical strain as possible. A roller contact is employed carried on the end of a light but well-tensioned spring arm.

The terminals are mounted on three flats formed on the bakelite shell, the material being somewhat thicker here to give additional strength and prevent fracture where the terminals pass through the case.

These resistances are rated at 5 watts and are made in various standard sizes from 600 ohms to 100,000 ohms, the price being 4s. 6d. up to 50,000 ohms, and 5s. 6d. for the higher values. Two-ganged models are obtainable from 9s. 6d., and with the addition of an "on-off" switch from 11s.

Wire-wound resistances of 2- and 4-watt rating form a further addition to the Wearite range of components. These, styled R.D. resistances, are made in sizes of 50 ohms to 25,000 ohms in the 2-watt (A) type, and cost from 1s. to 2s. according to value, while the B type (4-watt rating) extend from 50 ohms to 50,000 ohms, the prices ranging from 1s. 3d. to 2s. 9d.

Both styles are obtainable either with baseboard mountings or with plug fittings for use as interchangeable resistances, the latter being



Selection of Goltone new season's components, also samples of screened sleeving.

poses to which twin sleeving of this type can be put. It is sold in 1-yard lengths, the price being 1s.

For screening mains leads and low voltage A.C. leads Ward and Goldstone, Ltd., have introduced a single and a twin 2 mm. bore tubing enclosed in a tinned iron braided covering. This possesses all the advantages of standard lead-covered wire, but is much easier to handle and, in addition, is very flexible. It costs 9d. for a yard length in single form, and 1s. for the twin tubing.

New components now available comprise a range of compression-type condensers with

maximum capacities of 0.0001 mfd., 0.0003 mfd., 0.001 mfd., and 0.002 mfd. The terminals are mounted on the side so permitting the condenser to be fixed to the underside of the baseboard or to the back of a panel so that only the control knob is visible. Provision is made for baseboard or panel mounting, and the price is 1s. up to 0.001 mfd. and 1s. 3d. for the 0.002 mfd. size.

A Super H.F. choke with an effective range of from 10 to 2,750 metres and listed at 4s. 6d. will meet most present-day requirements. Its high inductance and low D.C. resistance are two very useful features, for the choke is as effective in super-het. I.F. amplifiers of 110 or 126 kc. as in normal straight circuits. Its low self-capacity, about 5 m-mfd., enables it to be used, also, on the very short wavelengths.

Our measurements confirmed the maker's inductance value of 0.35 millihenry; the sample tested however showed a slightly lower D.C. resistance, being 216 ohms as against 225 ohms, as stated. The high inductance and low resistance are obtained by fitting a small laminated iron core and not by increasing the size of the component, for its overall height is but 3 ins., and the base measures 1 7/8 ins. x 1 1/8 ins.

Goltone "Lektrite" insulated aerial wire has the advantage that it is perfectly weatherproof and being well insulated is suitable, also, for indoor use. The seven-stranded copper conductor is enclosed in an impregnated insulated covering impervious both to water and the corrosive effects of coastal and city atmospheres. It is available in cartons containing 50 ft., 75 ft., or 100 ft. of wire, the prices being 1s. 6d., 2s. 3d., and 3s. respectively.

FULL O' POWER DRY CELL. Size 640.

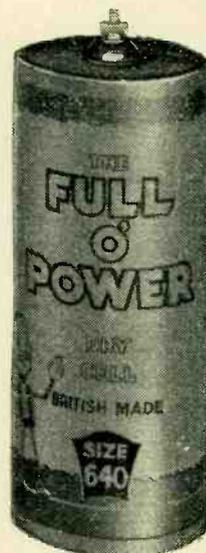
ALTHOUGH the fundamental principles of dry cell construction have changed little for many years, it is only by careful attention

to small details that cells of this type can be produced capable of a long life and possessing the ability to store without deterioration. Few better examples of this can be found than the new models introduced by Siemens Electric Lamps and Supplies, Ltd., 38-39, Upper Thames Street, London, E.C.4. They embody a patented device which hermetically seals the active material, but at the same time permits free exit for the gases given off during the operation of the cell.

When the gas pressure inside the depolariser increases sufficiently it forces some of the compound up through holes in the sealing cover, and when the pressure becomes great enough the small bubbles burst and allow the gases to escape into an air chamber in the top of the container. This chamber connects with small vent holes drilled longitudinally in the centre carbon, so giving access to the air. On collapse of the bubbles the depolarising compound again automatically seals the cell.

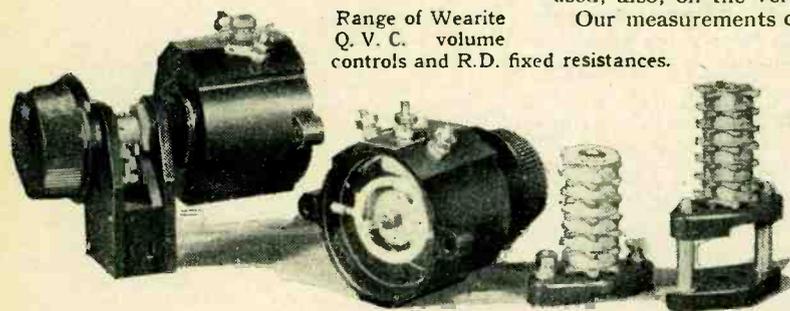
The vent holes in the carbon rod extend to the base of the container and so provide a means of exit for gases generated within the active depolarising material in the lower part of the cell.

It is an interesting fact that the size 640 cell delivers on short circuit a current of approximately 50 amperes, but it is the long life in normal service that the superior qualities of this cell are claimed to be most manifest.



Siemens' Full O'Power dry cell, size 640.

Range of Wearite Q. V. C. volume controls and R.D. fixed resistances.

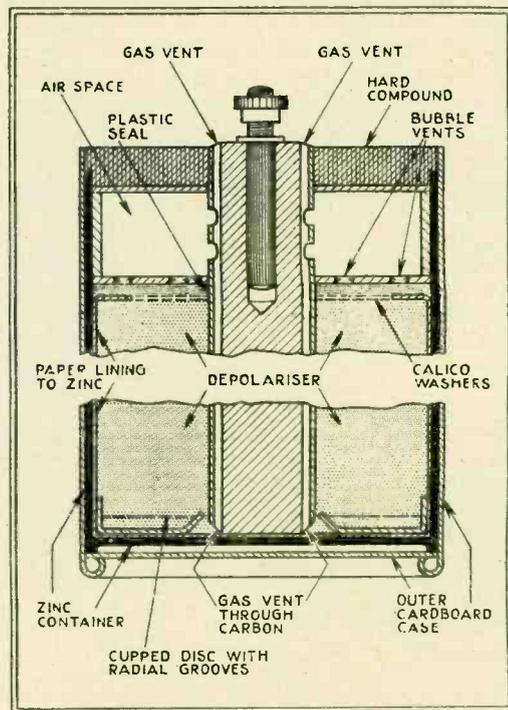


very useful for experimental work. The small, fixed base portion costs 3d.

GOLTONE COMPONENTS AND SCREENED TUBING.

OF the many recent additions to the range of Goltone components and accessories made by Ward and Goldstone, Ltd., Frederick Road (Pendleton), Manchester, especially interesting are the additional types of screened sleeving now available, as this material is used extensively in modern receivers.

In addition to the single screened tubing, there is available now twin insulated sleeving of 2 mm. bore enclosed in a common tinned copper-braided covering for use where two leads associated with the same circuit, but at different H.F. potentials, pass from one screened component to another. There are various other pur-



Sectional drawing showing construction of Siemens' size 640 dry cell.

The size 640 weighs 2 lb. 6 ozs., and measures 2 1/2 in. x 6 1/2 in. high, the price being 2s. In addition to being particularly well suited for operating electric bells, there are many opportunities for using cells of this type in the experimenter's workshop.

BROADCAST BREVITIES

By Our Special
Correspondent.

Music v. Vaudeville.

A BATTLE royal threatens to develop at Broadcasting House between the Music and Vaudeville departments on the question of who shall use the large concert studio.

The fun started when the vaudeville people found that the studio was just as good as the Waterloo warehouse for programmes of the "music-hall" type. Almost at once the music people made another effort to find space in the concert hall for the entire National Symphony Orchestra.

The Cramped Conductor.

The test was carried out on July 18th. The whole orchestra was accommodated, not without difficulty, and although the conductor's style was cramped, the results seemed to satisfy the engineers. Incidentally, the interesting discovery was made that the orchestra, "playing its damndest," could only just be heard in the basement studios beneath, and even then made no impression on the other microphone circuits.

Reluctant Decision.

Realising that a cramped orchestra can never do its best, the Music Department have reluctantly confirmed their original decision not to attempt performances in the concert hall by the entire orchestra; they still feel, however, that the hall is peculiarly their own and that vaudeville and other hilarious programmes should not be permitted in such a holy of holies.

The vaudeville people think differently, hence the squabble.

Why Not?

The best way out of the difficulty, I imagine, would be to permit vaudeville in the large studio at times when it is not required for more serious purposes. The dog-in-the-manger attitude is uncalled for. Some of the German stations manage quite successfully with only one studio for all performances.

Busmen's Holidays.

THE sight of Henry Hall enjoying a song and dance turn at the Palladium the other evening did not surprise me. The B.B.C. staff spend half their leisure in taking busmen's holidays.

Val Gielgud, the B.B.C. dramatic chief, haunts the theatres, while Gerald Cock, who organises outside broadcasts, is for ever on the prowl for suitable material.

Sleuths.

There are, of course, the recognised programme sleuths, whose work it is to tour London and provincial music-halls, cabarets, and dance halls for likely talent; but I am thinking of the staff people who spend their leisure in the public service, and are always ready to pass on their experiences to the ordinary listener. Louis Armstrong, last week's "hot" trumpet player, was "discovered" by a B.B.C. man who was taking a night off.

Good Fellows.

A "holiday" for a B.B.C. engineer more often than not means a journey to the Continent or to America to rub shoulders with foreign technicians and to exchange ideas.

Even if we do occasionally criticise the British Broadcasting Corporation, let us recognise the staff as a band of workers with a splendid *esprit de corps* and an unselfish desire to maintain the popularity of broadcasting.

Motor Race Thrills for Listeners.

THE Royal Automobile Club's International Tourist Trophy Motor Race takes place over the Ards Circuit on August 20th, and a running commentary will be relayed to National and Belfast listeners during the day. The course is nearly fourteen miles, runs through two small towns, and includes a long straight stretch where very high speeds are attained. There are thirty laps, and the full distance of the course is 410 miles. This year's race is particularly interesting, for two of the



A POPULAR VOICE. Miss Francine Lemaître, the young "annoncatrice" at Radio-Normandie (Fécamp), who is well known to English listeners.

greatest British racing drivers, Earl Howe and Sir Henry Birkin, are to drive Italian cars which are challenging the British entries. In all thirty-five cars will take part. The record is at present held by Borzacchini, who lapped, last year, at the amazing speed of over eighty-one miles an hour.

Impromptu Proms.

THE impromptu nature of the "Proms" is one of the surprising features of these popular concerts. Although most of the works performed are old and familiar, it is remarkable that the general standard of playing is so high.

The first rehearsals—for the strings alone—did not begin until Tuesday last, August 2nd, and yet, by to-morrow evening, Sir Henry Wood will have drilled his little army into an efficient machine.

From to-morrow onwards the Orchestra will lead the sort of hand to mouth existence which becomes inevitable when pieces can be rehearsed only on the day of their performance.

Television at Broadcasting House.

UNFORESEEN hitches have caused a delay in the inauguration of television transmissions from Broadcasting House, but I understand that we may rely on a start being made within the next few days.

By the way, my recent suggestion that the ultra-short wave transmitter might be used for television purposes has given birth to the most extravagant rumours. It has even been announced in one quarter that television will be restricted to the ultra-high frequencies. This is quite untrue.

The initial tests will follow the scheme outlined in these columns on July 15th, i.e., Midland Regional will transmit sound on 398.9 metres while London National supplies the images on 261.3 metres.

Awa' North.

ABERDONIANS are now accustoming themselves to transmissions on 214.3 metres, the new wavelength which becomes necessary with the opening of Scottish National on Aberdeen's original wavelength of 288.3 metres.

The "Q" transmitter which the B.B.C. are now using has been heard quite comfortably at 4 miles on a two-valve receiver using an indoor aerial. The same set gave satisfactory results with an outdoor aerial at 12 miles, at which distance the signal strength is 1.7 millivolts per metre.

Cats.

LISTENERS must not get the impression that the B.B.C. is broadcasting soprano auditions during the late evenings. Some of the high notes may be coming from the nether regions of Broadcasting House, where a number of stray cats have taken up residence and refuse to budge.

The intruders, who were first discovered by compassionate workmen when the foundations were being dug, were allowed to remain on the understanding that it would be a case of "Time, Gents!" when the Governors and staff arrived.

Unsporting.

Now that the Governors and the staff have fulfilled their part of the contract by duly arriving, the cats have adopted an unsportsmanlike attitude. They conceal themselves all day beneath boilers and in awkward corners beyond the reach of man, remaining there until the late dance music. Then, in families, they roam the deserted building.

It is said that there are already three generations.

A Summertime Quandary.

HERE is a poser which came in a letter to the B.B.C. Technical Correspondence Department last week:—

"having A portable set and not having nothing on Since 12 of June I would be very much oblige if you could inform Me how to Act or What to do . . ."

READERS' PROBLEMS.

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which particulars, with the fee charged, are to be found below.

Under-loaded Output Valve.

THE designer of a modern set generally tries to arrange matters so that the rectified output from the detector valve is just sufficient to load up the succeeding output valve. It is usual to allow a fair margin of safety, but to legislate for a large surplus would not be economical.

Consequently, readers should think twice before introducing sweeping modifications in the post-detector portion of sets described in this journal. For example, the detector of the "Modern Straight Five" delivers ample energy for the output valve specified, but not enough to load, say, a pair of high-power push-pull output valves linked by a transformer of normal step-up ratio. To make this modification, it would become necessary either to interpose an intermediate stage of L.F. magnification, or, alternatively, to use a transformer of abnormally high step-up ratio. Either course is likely to introduce complications.

Extra Smoothing.

WHEN extra smoothing over and above that provided by a loud speaker field is found to be necessary it is almost invariably correct to insert the additional choke between the rectifier output and the field winding, in the manner indicated in Fig. 1.

A querist who has inserted an extra choke in the alternative position—between the field winding and the receiver—finds that there is still a residue of hum; a series of stage-by-stage tests (which he describes) would indicate that the trouble is at any rate partly due to the loud speaker itself, and we think that the method of connection explained above will put matters right. The extra smoothing condenser

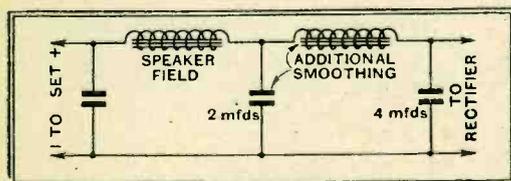


Fig. 1.—Normal position of an extra smoothing choke, connected in series with a loud speaker field winding.

is shown in the diagram as having a capacity of 2 mfd.; occasionally this value may be doubled with advantage.

L.T. Transformer Voltage.

WHEN a commercially made power transformer is fitted in a receiver it seldom happens that the loads imposed on the various secondary windings correspond exactly with the manufacturer's rating. But it should be emphasised that this should be a matter of no importance; provided that the transformer is designed on reasonably generous lines, its voltage regulation should be good enough to cope with small discrepancies. In other words, voltage should not rise by more than a

few per cent. when the load is well below the normal rating; similarly, it should be maintained at sensibly the full value when maximum current—or even a little more—is taken from the windings.

Several questions dealing with this subject have lately been received, and one correspondent appears to be doubtful whether it would be safe to wire two indirectly heated A.C. valves (consuming a total of 2 amperes) across a winding rated at 3 amperes. In this case, the transformer secondary will be delivering two-thirds of the full rated current, and even a badly regulated component should do this without an appreciable voltage rise.

Testing Mains Transformers.

HAVING obtained the loan of a highly accurate A.C. meter, a reader wishes to test his power transformer under working conditions, and asks for information as to how to calculate the value of the artificial loads which will be connected across the L.T. secondaries.

Although this is quite a simple matter in theory, we are inclined to suggest that our querist would do better to take the measurements with a natural load, i.e., that of the valve heaters, etc., which will ultimately be connected across the various transformer windings. The reason is that we doubt if he will have access to fixed resistors of suitably low value combined with adequate current-carrying capacity.

The calculation in question is easily made by dividing "rated voltage" by "current to be consumed" (in amps.). For example, a 4-volt secondary, which will be required to give 2 amperes, should be shunted by a resistance of 2 ohms. The measured R.M.S. voltage across the winding should then be 4 volts.

It may be added that, strictly speaking, measurement should only be made when all the secondary windings are delivering their normal outputs, as a reduction in the total load imposed on the transformer will introduce a rise of voltage even across those secondary windings that are fully loaded. The extent of this change will depend on the design of the transformer.

Yet Another Bias Scheme.

WE are asked whether it is permissible to bias an indirectly heated S.G. valve by inserting the necessary number of dry cells directly in the cathode lead. Our correspondent is using a ganged tuning condenser in the construction of an experimental receiver; he does not wish to go to the expense of fitting an automatic bias arrangement for this temporary set, and thinks, if it will work, that the proposed method of biasing offers the simplest solution of the problem. As the condenser rotors are earthed, the conventional way of applying battery bias is impracticable.

This method is quite practicable, but the diagram which our reader submits with his letter is incorrect, in that it shows the positive terminal of the bias battery as being connected to the earth line. Although this is the correct

method of connection in conventional battery bias circuits, it is wrong in this case. The normal procedure must be reversed, the positive pole of the battery being joined direct to the cathode terminal of the valve holder, and the negative pole to the earth line. The cathode will then be positive with respect to the grid, and so it follows that the grid will be negative with respect to the cathode—the correct operating condition for an amplifying valve.

Although we do not think that this method of biasing has any great practical utility, it may be useful to remember that it is practicable, especially in cases where the correct value of automatic bias resistor is not available at the moment.

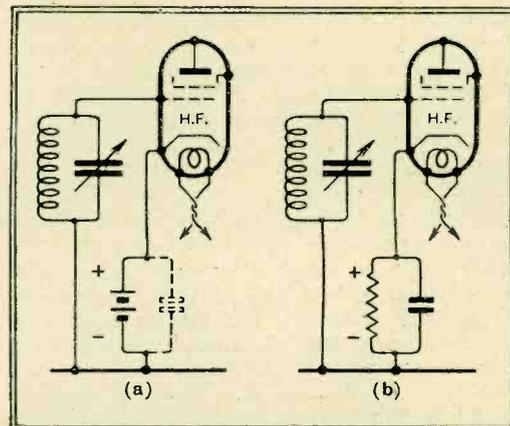


Fig. 2.—A bias battery, connected in the cathode lead, as shown in diagram (a), serves the same purpose as the usual bias resistance (diagram (b)).

The accompanying diagram (Fig. 2) shows that the polarity of a bias battery connected in the manner under discussion corresponds with the polarity of the voltage developed across the conventional bias resistor which it may replace.

Practical Wiring Detail.

REFERRING to a recently published "Readers' Problem," in which we gave some advice on the subject of charging an L.T. cell from a motor car battery, a correspondent asks the reason for showing the current-limiting resistance as connected in the positive lead of the charging battery.

This is a matter of very small importance, and, of course, from the theoretical aspect, it is quite immaterial whether the limiting resistance be inserted in the positive or negative leads. But, as the negative pole of the grid battery will probably be permanently "earthed" to the frame, the risk of damage to the car battery, due to an accidental short-circuit from the charging leads, etc., to any earthed metal work will be slightly reduced by adopting the method of connection shown in our diagram.

The Wireless World

INFORMATION BUREAU.

Conditions of the Service.

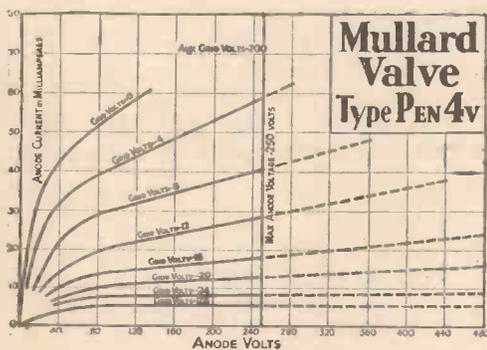
THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Tudor Street, E.C.4, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications

PEN4V

RIGID UNIT CONSTRUCTION

RECEPTION IS ONLY HALF THE BATTLE



Nowadays reproduction is the standard by which a set is judged. This Indirectly Heated Pentode gives a large margin of reserve power, which allows for perfect reproduction and purity of tone—it will operate a large moving coil speaker; the percentage second harmonic distortion is nil, and third harmonic less than 5%, while the new Rigid Unit Principle ensures perfect stability. PEN.4V is the output valve for every A.C. receiver employing an indirectly heated pentode.

PRICE 20/-. MADE IN ENGLAND

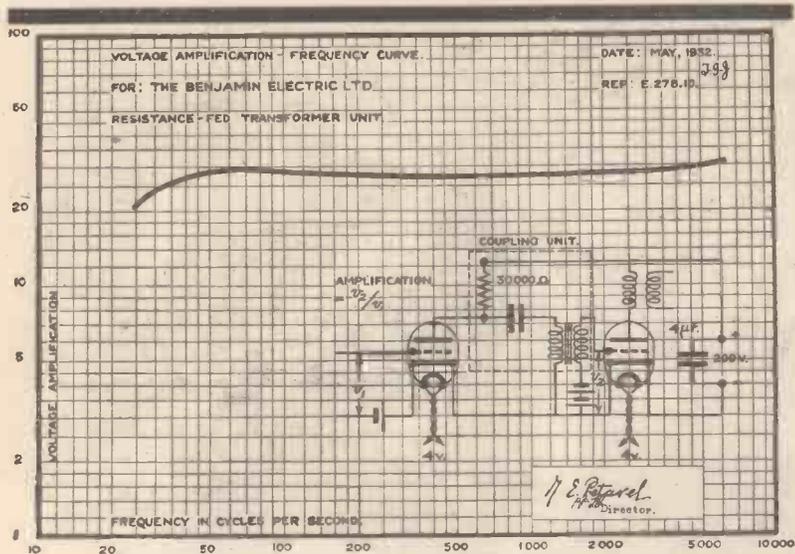
OPERATING DATA.		CHARACTERISTICS.	
Heater Voltage	4.0V	Optimum Load	8,000 ohms (At auxiliary grid volts 100, control grid volts zero)
Heater Current	1.0A	Grid Bias (at auxiliary grid volts 200)	10.0 volts
Max. Anode Voltage	250V	Mutual Conductance	3.0mA/V
Max. Auxiliary Grid Voltage	200V		

Mullard

THE · MASTER · VALVE

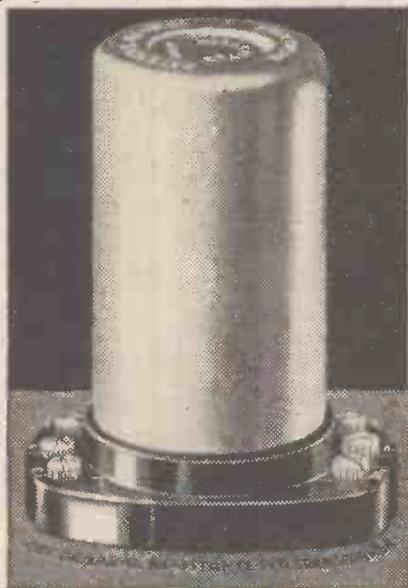


Advt. The Mullard Wireless Service Co., Ltd., Mullard House, Charing Cross Road, London, W.C.2.
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This N.P.L. curve shows why
 the
BENJAMIN (REGD)
"TRANSFEEDA"

is the
CHOICE
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CHIEF
DESIGNERS



PRICE **11/6**

Little wonder that the Chief Designers of some of the most famous British Made Receivers gave their preference to the BENJAMIN TRANSFEEDA and incorporated it as standard in their sets. The TRANSFEEDA is a neat job—looks well in your set, its case is of METAL so that stray oscillations are effectively screened, the components within the case are made from high-class material and individually matched (e.g. the anode resistance is wire-wound, not spaghetti or composition, the condenser has its own metal case, the transformer core is of special nickel iron, etc., etc.). Naturally a standard specimen of so well-designed and made an instrument, when submitted to the N.P.L. for their test, showed a response curve that gave Designers and Constructors "something to think about."

Wherever a L.F. Transformer is used or specified in your set, put in a BENJAMIN TRANSFEEDA and get a volume and purity that will delight you. Ask for leaflet No. 1292 which fully describes the TRANSFEEDA and gives circuits and connections.

THE BENJAMIN ELECTRIC LTD., TARIFF ROAD, TOTTENHAM, N.17.



S M O O T H
 your M.C. Speaker

P T a 2,000 mfd. T.C.C. Electrolytic Condenser in parallel with the field winding of your moving-coil loud speaker, and, once and for all, banish that annoying mains ripple.

Look at the oscillograms reproduced above—the top curve records the voltage applied before the connection of a T.C.C. Electrolytic Condenser, and below it is shown the voltage after—the ripple is negligible.

Only with a ripple-free background can you enjoy to the full the advantages of a moving coil.

Get a T.C.C. 2,000 mfd. Electrolytic Condenser from your dealer to-day. price 15/6.

NOTE. This condenser is suitable for working up to 12 V.D.C. only. It is therefore only applicable to speakers energised by low voltages up to about 9 V.

T.C.C.
 ALL-BRITISH
CONDENSERS

The Telegraph Condenser Co.,
 Ltd., Wales Farm Road,
 North Acton, W.3.

"ATLAS" AGAIN GO ONE BETTER



**ONLY "ATLAS"
CAN IMPROVE
ON "ATLAS"**



This year
every expert will vote for
**THE NEW "ATLAS" A.C. 300
ON STAND N° 91 !**

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"ATLAS"
A.C. 300
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Experts said it could not be done. But just as "ATLAS" last year improved the Olympia Ballot Winner of 1930, so have they improved the 1931 Ballot winner: adding amongst other refinements, the new "ATLAS" regulated output to ensure correct voltages irrespective of the milliamps consumed. And all without any increase in price!

This new "ATLAS" Model A.C.300 is emphatically the last word in mains unit design and most probably will remain the standard for years to come.

There are two variable H.T. Tappings of 0/100 and 0/120 volts and one fixed of 150 volts. Four G.B. Tappings of 1½, 3, 9, and 16 volts, independent of H.T. and

smoothed by electrolytic condensers. L.T. Trickle Charger for 2, 4 and 6 volt Accumulators at 0.5 amps. The H.T. Output is regulated by three tappings to give 12, 18 and 25 mA at 150 volts. Tapped Input for 200/250 and 100/125 volts, 40/120 Cycles. Safety Trickle Charger Isolating Switch. Combined Plug-Adaptor. Westinghouse Rectifiers. Size 10½" x 6" x 3½". Fully guaranteed for 12 months.

See it at Olympia. Test it for yourself. Ask your dealer for a demonstration to-day. There's no comparison with "ATLAS."

Post the coupon now for full details of "ATLAS" Mains Units for every set, and "ATLAS" Guaranteed Components.

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Please send full details of "ATLAS" Mains Units and Components.

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**"CLARKE'S
ATLAS"
MAINS UNITS**

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"ATLAS" WORKS, GEORGE STREET, PATRICROFT,
MANCHESTER. SOUTHERN OFFICES: Bush House, W.C.2.**

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A

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CO. (1925) LTD.
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HANDBOOK

of

TECHNICAL INSTRUCTION

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Author of "Wireless Telegraphy and Telephony," etc.

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THIS work constitutes a complete textbook for the use of wireless telegraphists, and provides a full theoretical course for the P.M.G. certificate. Twenty-six Spark and Valve Transmitters are described, and Thirty-three Receivers and Direction Finders.

A leaflet giving synopsis of chapters and other particulars will be sent on request.

ILIFFE & SONS Ltd., Dorset House, Tudor St., London, E.C.4

W.W.96

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your guarantee

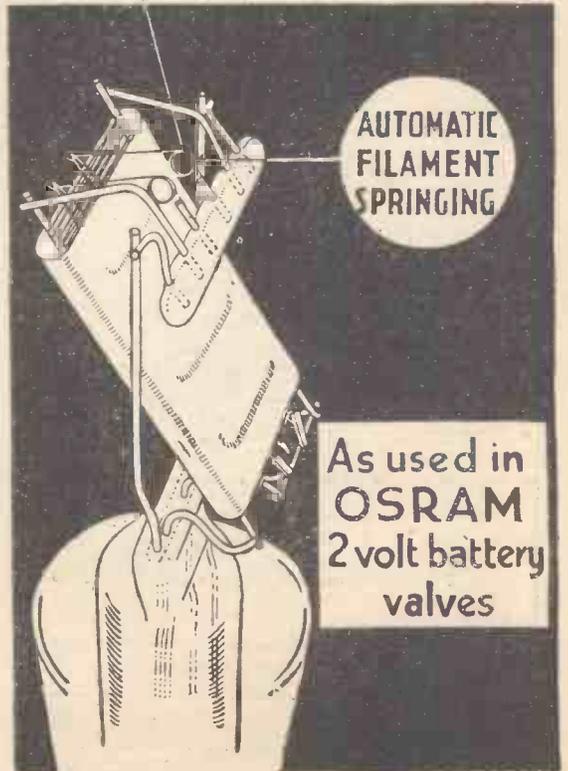


OSRAM
new automatic cushion
filament springing
ensures
ABSOLUTE CONSISTENCY

SATISFYING

VOLUME

Volume implies filament heating. When a filament expands the pre-determined position of the electrodes must vary, and you get erratic characteristics unless the expansion is *automatically compensated*. In all the OSRAM 2-volt battery valves there is a marvellous development which ensures consistency with satisfying volume. Effects of internal and external vibrations are eliminated. The OSRAM filament-springing means an end to *all* microphonics.



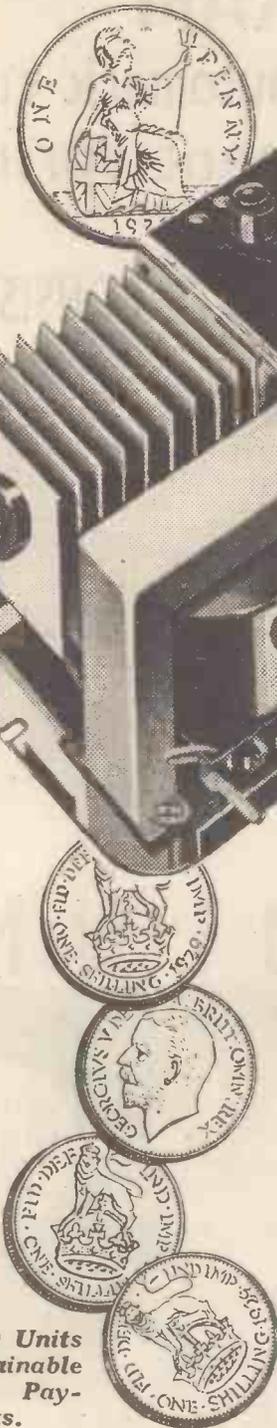
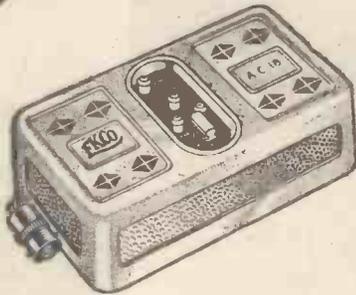
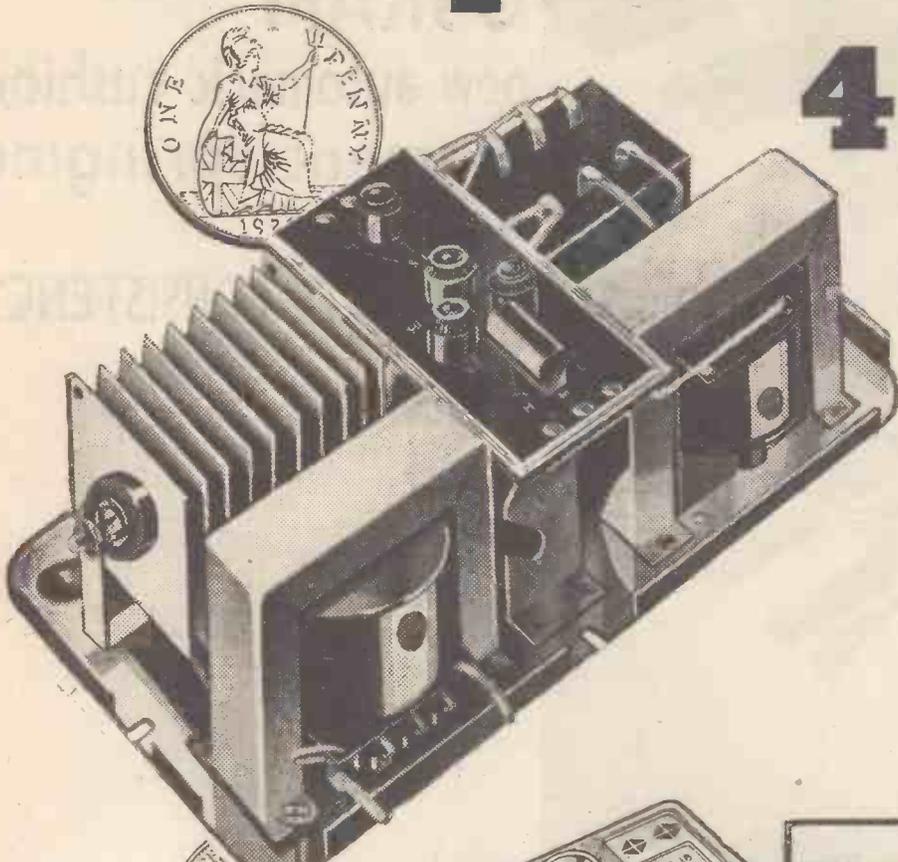
Osram
2 VOLT BATTERY
Valves
MADE IN ENGLAND
SOLD BY ALL WIRELESS DEALERS

WITH THE WEMBLEY FILAMENT

Advt. of The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

One penny buys 4/- worth of H.T.!



When you run your set from an EKCO Unit, every penny you spend on H.T. will buy *fifty times* as much current as from H.T. Batteries.

With batteries, you have to buy at least four every year—an expenditure of at least 50/-. An EKCO Unit's annual running cost is one shilling only—one *fiftieth* of the amount.*

Whatever the type or size of your radio set, there is an EKCO Unit for it. Just connect the appropriate model in place of your usual battery, then switch on—that's all!

Choose the Unit suitable for your set from the Table below, or post coupon for full details.

*Based on 1,000 hour's use per annum of a 3v. battery set.

All Models are similar in external appearance. Size 9x5x3 1/4.

All EKCO Units are obtainable by Easy Payments.

EKCO H.T. UNITS					
Model	Current Output	Voltage Tappings	Price	EASY PAYMENTS	
				Initial Payment	11 Monthly Payments of
A.C. 12	12 m/A	S.G.; 80; 120/150	£2. 15. 0	6/6	5/-
A.C. 18	18 m/A	S.G.*; 50/80*; 120/150	£3. 7. 6	7/9	6/2
A.C. 25	25 m/A	S.G.*; 50/80*; 120/150	£3. 17. 6	8/9	7/1
D.C. 15/25	15 or 25 m/A	S.G.*; 50/80*; 120/150	£1. 19. 6	6/-	3/8
Combined H.T. & L.T. Charger Units (for A.C. Mains)					
Model	Current & Voltage	L.T. Output (for charging accumulators)	Price	EASY PAYMENTS	
				Initial Payment	11 Monthly Payments of
K. 12	Current Output and Voltage Tappings same as Models A.C. 12, A.C. 18 and A.C. 25.	1/2 amp. at 2, 4 or 6 volts	£3. 19. 6	9/-	7/3
K. 18		1/2 amp. at 2, 4 or 6 volts	£4. 12. 6	10/3	8/5
K. 25		1/2 amp. at 2, 4 or 6 volts	£5. 7. 6	11/9	9/10

Tappings marked * are adjustable.



Woburn.

To E. K. Cole, Ltd., Dept. W. 11, Ekco Works, Southend-on-Sea.

Please send me full details of Ekco Power Units.

Name.....

Address.....

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 MAINTENANCE
 OF CHARACTERISTICS
 DUE TO THE
**MICA
 BRIDGE**



THE Cossor system of Mica Bridge Construction has two outstanding advantages. Firstly, it permits an exceptional degree of accuracy in the assembly of the valve, thereby ensuring absolute uniformity of characteristics. Secondly, it safeguards those characteristics throughout the valve's useful life. Variation is impossible. And, in addition, the Mica Bridge imparts great mechanical strength to the electrode assembly. As with the Battery-operated types, Mica Bridge Construction is employed in all Cossor A.C. Mains Valves.



COSSOR
 ALL-BRITISH
A.C. MAINS VALVES

A copy of the 40-page Cossor Wireless Book B17 will be sent you free on application to A. C. Cossor Ltd., Melody Dept., Highbury Grove, London, N.5.

Get one of the new Cossor Station Charts price 2d. Ask your dealer for a copy of this useful novelty or write to us enclosing 2d. stamp.

A. C. Cossor Ltd., Highbury Grove, London, N.5. Depots at Birmingham, Bristol, Glasgow, Leeds, Liverpool, Manchester, Newcastle, Sheffield and Dublin.

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BRITISH**

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DEALER'S
WINDOW

The amazing **MAZDA** THE BRITISH VALVES

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Nos. 75 & 230
RADIOLYMPIA**

(Aug. 19 27)

Mazda valves are standardised by most leading British receiving set manufacturers. They are designed by British engineers and manufactured throughout in our British factory devoted entirely to Mazda valve production. You can buy with confidence!

Always ask for Mazda valves—your dealer has them.

The Edison Swan Electric Co. Ltd.



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Mazda Radio Valves are manufactured for The British

Thomson-Houston Co. Ltd., London and Rugby.

V.164

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BROADCASTING STATIONS ABROAD.

ARRANGED IN ORDER OF WAVELENGTH.

Wavelength in Metres.	Frequency in Kilocycles.	Power in kW.	Station.	Tuning Positions.	Wavelength in Metres.	Frequency in Kilocycles.	Power in kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)		447.1	671	0.15	Rjukan (Norway). (Relays Oslo)	
1875	160	8.5	Huizen (Holland). (Exchanges wavelengths with Hilversum every three months.)		447.1	671	0.08	Notodden (Norway)	
1796	167	54	Lahti (Finland)		447.1	671	0.5	Tartu (Esthonia)	
1724	174	75	Radio Paris		441.2	680	50	Rome, IRO. (Short-wave Station, 2RO on 25.4 m.)	
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (Generally relays Berlin.)		435.4	689	55	Stockholm (Sweden)	
1600	187.5	10	Irkoutsk, RV14 (Russia)		431	696	2.5	Belgrade (Yugoslavia)	
1554.4	193	30	Daventry National		424.3	707	3	Madrid, EAJ7 (Union Radio). (After 7.0 p.m.)	
1538	195	7	Ankara (Angora) (Turkey)		424.3	707	1.3	Madrid, EAJ2 (Radio Espana). (Up to 7.0 p.m.)	
1481	202.5	100	Moscow, RV1 (Old Komitem) (Russia)		424.3	707	100	Moscow, Imini Stalina (Russia)	
1446	207.5	13	Eiffel Tower, FLE, Paris		419	716	1.5	Berlin, No. 1, Witzleben (Germany)	
1412	212.5	120	Warsaw 1 (Poland)		416.4	720.5	5	Rabat (Morocco)	
1380	217.5	100	Novosibirsk, RV6 (Russia)		413	725	1.2	Dublin (Irish Free State)	
1350	222.2	0.5	Tunis-Kashah (Tunisia)		408.7	734	16	Katowitz (Poland)	
1348	222.5	30	Motala (Sweden). (Relays Stockholm)		403.8	743	25	Sottens (Radio Suisse Romande) (Switzerland)	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)		398.9	752	25	Midland Regional	
1260	238	10	Baku, RV9 (Russia)		394.2	761	12	Bucharest (Roumania)	
1229.5	244	0.6	Boden (Sweden). (Relays Stockholm)		389.6	770	1.5	Frankfurt-a-M. (Germany)	
1200	250	5	Stamboul (Turkey)		389.6	770	10	Archangel, RV36 (Russia)	
1200	250	21	Reykjavik (Iceland)		385.1	779	8	Radio-Toulouse (France)	
1170	256	25	Tashkent, RV11 (Russia)		385.1	779	10	Stalino, RV26 (Russia)	
1154	260	7.5	Kalundborg (Denmark)		381	788	16	Lwow (Lemberg) (Poland)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)		379.7	790	1	Seville, EAJ5 (Union Radio) (Spain)	
1100	272.7			376.4	797	50	Scottish Regional (Falkirk)		
1105	271.5	35	Minsk Koloditschi, RV10 (Russia)		372.2	806	1.5	Hamburg (Germany)	
1083	277	60	Oslo (Norway)		370.1	810.5	0.8	Radio, LL, Paris	
1071	280	10	Tiflis, RV7 (Russia)		368.1	815	10	Helsinki (Finland)	
1035	290	36	Kiev, RV9 (Russia)		368.1	815	1	Bolzano (Italy)	
1000	300	100	Leningrad, Kolpino RV53 (Russia)		368.1	815	10	Kharkov, RV20 (Russia)	
968	310	10	Alma Ata, RV60 (Russia)		367.6	816	0.7	Fredrikstad (Norway). (Relays Oslo)	
938	320	20	Kharkov, RV4 (Russia)		364.1	824	1	Bergen (Norway)	
882	340	20	Saratov, RV3 (Russia)		363.6	825	16	Algiers (Algeria)	
849	353.4	4	Rostov-on-Don, RV12 (Russia)		360.6	832	60	Mühlacker (Stuttgart) (Germany)	
825	363.6	50	Sverdlovsk, RV5 (Russia)		355.9	843	50	London Regional (Brookmans Park)	
770	389	0.6	Ostersund (Sweden). (Relays Stockholm)		352.1	852	7	Graz (Austria). (Relays Vienna)	
760	395	1.3	Geneva (Switzerland)		348.8	860	7.6	Barcelona, EAJ1 (Spain)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)		348.8	860	10	Leningrad, RV70 (Russia)	
700	428.6	10	Minsk, RV10 (Russia)		345.2	869	11.5	Strasbourg, PTT (France)	
690	434.0	1.5	Oulu (Finland)		341.7	878	35	Brno (Brunn) (Czechoslovakia)	
575	521.5	1.2	Samara, RV16 (Russia)		337.8	888	15	Brussels II, Velthem (Belgium). (Flemish Programme.)	
574.7	522	2.5	Ljubljana (Yugoslavia)		335	896	5	Cadiz (Spain)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (Relays Stuttgart)		334.4	897	1.35	Poznan (Poland)	
568.1	528	2	Grenoble (France)		331.4	905	7	Milan (Italy)	
566	530	0.25	Hanover (Germany). (Relays Hamburg)		328.2	914	60	Poste Parisien (France)	
565	531	16	Wilno (Poland). (Relay Station)		325	923	1.5	Breslau (Germany)	
560	536	0.25	Augsburg (Germany). (Relays Munich)		321.9	932	10	Göteborg (Sweden). (Relays Stockholm)	
560	536	1.5	Kaiserslautern (Germany). (Relays Munich)		318.8	941	0.5	Sofia (Bulgaria)	
560	536	0.7	Hamar (Norway). (Relays Oslo)		318.8	941	0.25	Dresden (Germany). (Relays Leipzig)	
555.5	540	1	Tampere (Tammerfors) (Finland). (Relays Helsinki)		318.8	941	1.5	Naples, INA (Italy)	
550	545	18.5	Budapest No. 1 Lakihegy (Hungary)		315.8	950	1.6	Marseilles, PTT (France)	
542	554	10	Sundsvall (Sweden). (Relays Stockholm)		312.8	959	1.7	Cracow (Poland)	
533	563	1.5	Munich (Germany)		312.8	959	10	Genoa, IGE (Italy)	
525	571	3	Palermo (Italy)		309.9	968	1	Cardiff	
525	571	15	Riga (Latvia)		308.6	972	0.7	Radio Vitus (Paris)	
517	580	15	Vienna (Rosenhügel) (Austria)		307	977	0.5	Falun (Sweden)	
509	589	15	Brussels No. 1, Velthem (Belgium). (French Programme.)		307	977	0.75	Zagreb (Yugoslavia)	
508	590	10	Astrakhan, RV35 (Russia)		304	986	13	Bordeaux-Lafayette, PTT (France)	
501.7	598	10	Nijni Novgorod, RV42 (Russia)		301.5	995	50	North National (Manchester)	
500.8	599	20	Florence, IFI (Italy)		298.8	1004	11	Tallinn (Esthonia)	
495.8	605	1.2	Trondheim (Norway)		296.1	1013	7	Hilversum (Holland). (Up to 4.40 p.m.)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)		296.1	1013	20	Hilversum (Holland). (After 4.40 p.m.)	
486.2	617	10	Oufa, RV22 (Russia)		293.5	1022	0.7	Limoges, PTT (France)	
480	625	50	North Regional (Manchester)		293.5	1022	2.6	Kosice (Czechoslovakia)	
480	625	10	Ivanovo-Voznesenk, RV33 (Russia)		291	1031	10	Viipuri (Viborg) (Finland). (Relays Helsinki)	
472.4	635	60	Langenberg (Germany)		288.5	1040		British Relay Stations	
465.8	644	1.5	Lyons la Doua, PTT (France)		286.8	1046	0.7	Lyons (Radio-Lyon) (France)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland)		286	1049	0.8	Montpellier (France)	
453.2	662	0.6	San Sebastian, EAJ8 (Spain)		283.6	1058	0.5	Berlin, No. 2 (Germany)	(Relay Stations) Synchronised
453.2	662	1	Pori (Uleaborg) (Finland)		283.6	1058	0.5	Magdebourg (Germany)	
453.2	662	0.5	Danzig. (Relays Königsberg)		283.6	1058	0.5	Stettin (Germany)	
453.2	662	0.5	Klagenfurt (Austria). (Relays Vienna)		281.2	1067	0.75	Innsbruck (Austria). (Relays Vienna)	
453.2	662	0.7	Porsgrund (Norway). (Relays Oslo)		230	1071	20	Copenhagen (Denmark)	
453.2	662	1	Salamanca, EAJ22 (Spain)		278.8	1076	13.5	Bari (Italy)	
453.2	662	0.1	Tromsø (Norway)		276.5	1085	60	Bratislava (Czechoslovakia)	
453.2	662	0.5	Bodø (Norway)		273.7	1096	7	Heilsberg (Germany). (Relays Königsberg)	
453.2	662	0.15	Upsala (Sweden). (Relays Stockholm)		271.5	1105	1.3	Turin (Italy)	
450.4	666.7	10	Odessa, RV13 (Russia)		269.8	1112	0.25	Rennes, PTT (France)	
447.1	671	0.7	Paris, Ecole Supérieure, PTT		267.6	1121	8	Beemen (Germany). (Relays Hamburg)	
447.1	671	0.35	Aalesund (Norway)		265.8	1128.5	1.3	Valencia (Spain)	
					263.8	1137	11.2	Lille, PTT (France)	
								Moravska Ostrava (Czechoslovakia)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Table with columns: Wavelength in Metres, Frequency in Kilocycles, Power in kW, Station, Tuning Positions. Lists various international broadcasting stations and their technical specifications.

PRINCIPAL SHORT-WAVE STATIONS. ARRANGED IN ORDER OF WAVELENGTH.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent B.S.T.)

Table with columns: Wavelength in Metres, Frequency in Kilocycles, Call Sign, Station, Tuning Positions. Lists principal short-wave stations with their call signs and transmission times.

SUNDAY

AUGUST THE SEVENTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Violin recital. Orchestral concert. Instrumental concert. Orchestral concert. Song recital. Service from Wesley's Chapel, City Road, E.C.1. Orchestral concert from Park Lane Hotel.
LONDON REGIONAL	Pianoforte recital. Band concert. Chatham Dockyard Service. Concert of chamber music.
MIDLAND REGIONAL	Military Band concert. Service from Carr's Lane Church, Birmingham. London Regional programme.
NORTH REGIONAL	Mozart orchestral programme. Service relayed from the Blackpool Parish Church. London Regional programme.
WEST REGIONAL	Band concert. National programme.
SCOTTISH REGIONAL	Instrumental concert. Service from St. Cuthbert's Parish Church. National programme.
BELFAST	National programme.
ABROAD	
BRUSSELS (No. 2)	Wagner concert from Knocke Casino.
PARIS (Radio-Paris)	Programmes in English.
PRAGUE	Jazz on two pianofortes
VIENNA	Relay of Folk Song Competition from Pongau.
WARSAW	Concert by Warsaw Philharmonic Orchestra.

BARCELONA
RADIO - BARCELONA, Call EAJ1, 349 metres; 8 kW.—12 Noon, Chimes from the Cathedral and Weather Forecast. 2.0 p.m., Light Music on Gramophone Records. 2.30, Concert by the Station Sextet. 3.0, Theatre Notes, Popular Music on Gramophone Records, and Film Review. 3.20, Sextet Concert (cont'd.). 4.0, Programme for Hospitals and Benevolent Institutions, with Gramophone Records. 5.0 to 6.30, Interval. 6.50, Light Music on Gramophone Records. 7.0, Concert by the Station Orchestra: Military March No. 1 (Schubert); Selection from Gipsy Love (Lehár); Rondo española (Fernández); Appassionata (Filippucci). 7.30, Song Recital by Mario Marco (Tenor). 8.0, Agricultural Talk in Catalan. 8.10, Vocal and Orchestral Concert; Soloist: Francesca Marlet (Soprano); Soprano Solos: (a) Ich liebe dich (Grieg), (b) Schäfers Klage lied (Schubert); Minuet (Beethoven); Songs: (a) La Zingarella (Paisiello), (b) Heidenröslein (Schubert); Chinese Scene (Humphries). 9.0, Dance Music by the Melody Boys, relayed from the Excelsior Dance Hall. 10.0, Programme for Women. 10.30, Request Gramophone Concert, followed by Chess Lesson. 12 Midnight (approx.), Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN
KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—11.0 a.m., See Berlin (Witzleben). 11.40, Reinhold Muschler reads from his own Works. 12.5 p.m. (approx.), See Hamburg. 2.0, See Berlin (Witzleben). 2.30, Talk and Recitations. Streets of the World—Harbour Streets. 3.0, Talk: People and their Callings—the Landlady. 3.25, See Breslau. 4.10, See Berlin (Witzleben). 5.15, See Munich. 6.0, See Berlin (Witzleben). 6.45, Talk on Famous Germans: Körner. 7.5, Reading of Poems. 7.20, See Leipzig. 7.50, See Berlin (Witzleben). 8.0, See Hamburg. 9.40, See Berlin (Witzleben). 12.30 a.m. (Monday), Close Down.

BERLIN
WITZLEBEN; 419.5 metres; 1.5 kW.—11.0 a.m., Report on the Start of the Swimming Race through Stettin, relayed from Stettin. 11.10, Interval. 11.30, Report on the Finish of the Swimming Race, relayed from Stettin. 11.40, Programme for Children. 12.5 p.m. (approx.), See Hamburg. 2.0, Talk for Parents. 2.30, Max Zodykov reads from his own Works. 2.55, Choral and Instrumental Concert by Blind Artists. 3.45, Reading. 4.10, Concert of Popular Music by the Berlin Concert Society, conducted by Clemens Schmalstieg. 5.15, See Munich. 6.0, Concert (cont'd.). 6.45, Harry Schreck reads from his own Works. 7.10, Chamber Music by the Havenmann Quartet; Quintet in One Movement for Clarinet and Strings (Kurt Schubert); Quintet in A for Clarinet and Strings (Mozart). 7.50, Sports Notes. 8.0, Berlin wil es weint und lacht—a Potpourri of Farces and Sketches. 9.40, News Bulletin and Sports Notes. 9.50, Act Three of Lohengrin Opera (Wagner), relayed from the Open Air Theatre at Zoppot, followed by Weather Forecast, News Bulletin and Sports Notes, and Dance Music by the Gerhard Hoffmann Band. 12.20 a.m. (Monday), Close Down.

BERNE.—See Schweizerischer Landessender.
BEROMUNSTER.—See Schweizerischer Landessender.
BODEN.—See Stockholm.
BODO.—See Oslo.

BORDEAUX-LAFAYETTE
 304 metres; 13 kW.—12 Noon, Concert relayed from Paris (Ecole Supérieure) (447.1 metres). 2.0, Relay from Paris or Relay of a Local Celebration. 4.30, Maitena—Basque Opera relayed from the Public Gardens at St. Jean de Luz. In the interval at 6.15, Radio Journal. 8.0, Programme for Ex-Servicemen. 8.15, Lottery Results. 8.30, Variety Music on Gramophone Records. 9.0, Concert of Classical and Modern Music.

BRATISLAVA
 279 metres; 14 kW.—4.30 p.m., Promenade Concert, relayed from Piestany. 5.30, Gramophone Records of Light Music. 6.45, Reading. 7.0, See Prague. 9.0, See Brno. 10.0, See Prague. 10.15, Programme Announcements and News. 10.20, Concert by a Gipsy Band, relayed from Piestany.
BREMEN.—See Hamburg.

BRESLAU
 325 metres; 1.5 kW.; and **GLEIWITZ**, 253 metres.—10.0 a.m., Evangelical Service. 11.0, Talk and Reading: Books for the Summer Holidays. 11.30, Concert relayed from Liegnitz. 12.5 p.m., See Hamburg. 2.0, News Bulletin. 2.15, Concert by the Bunzlau Municipal Orchestra, relayed from Bunzlau, conductor, Arndt; The Kameradschaft Male Voice Choral Society, conductor, Rothé. 3.0, Talk for Farmers. 3.25, Goodbye to Holidays! Recollections of Holiday Fun and Games by Maria Brziva, Music by Hans Settler. 4.10, Talk on Cats. 4.25, Concert from Bad Altheide. 5.20, Programme in Honour of Felix Janoske on his 60th Birthday. 6.0, Running Commentary on the Second Half of the Football Match between Germany and Norway. 6.45, Schubert Recital by Alfred Stöckel (Tenor), Franz Bollon at the Pianoforte. 7.15, Weather Forecast, followed by Sports Results. 7.25, Talk by

Dr. Eugen Kuhnemann: My Impressions of America. 8.0, See Berlin (Witzleben). 9.25, News Bulletin. 9.50, The Third Act of Lohengrin—Opera (Wagner), from the Zoppot Open-air Theatre. 11.10, Time Signal, Weather Report, News Bulletin, Sports Notes, and Programme Announcements. 11.35, Dance Music by the Gerhard Hoffmann Orchestra, relayed from Berlin (Witzleben). 12.30 a.m., Close Down.

BRNO
 342 metres; 35 kW.—6.0 p.m., German Transmission: Viennese Songs. 6.45, Talk: Photography in Winter. 7.0, See Prague. 9.0, Concert of Rural Music. 10.0, See Prague. 10.15, News Bulletin. 10.20, See Prague.

BRUSSELS (No. 1)
 I.N.R., 509 metres; 15 kW.—5.0 a.m. and at hourly intervals throughout the day, Pigeon Flying Reports. 12 Noon, Organ Recital from the Carmelite Church. 12.40 p.m., Edgard Souffret in a Programme of his own Compositions. 1.0, Le Journal Parlé. 1.10, Orchestral Concert. 5.0, Orchestral Concert, conducted by M. Kumpis. 6.0, Gramophone Records of Popular Music. 7.15, Religious Address. 7.30, Music Review. 8.0, Sonatas for Violin and Pianoforte. 8.45, Humorous Dialogue (M. E. Ewbank). 9.0, Orchestral Concert, relayed from the Kursaal, Ostend. Soloist: Mlle. Adèle Kern (Songs): Marche slave (Tchaikovsky); Prelude, Cortège, Orage and Finale from Dinorah (Meyerbeer); Four Pieces (Glazounov): (a) Melody, (b) Serenade, (c) Cello Solo, (d) Bouquet; Song from Il Seraglio (Mozart); Airs from Le Maître à danser (Basse); Song from Die Fledermaus (Joh. Strauss); Selection from Tannhäuser (Wagner). 10.30, Le Journal Parlé. 10.40, Dance Music from the Casino, Knocke.

BRUSSELS (No. 2)
 N.I.R., 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Orchestral Concert. 1.0 p.m., Le Journal Parlé. 1.10, Recital of Popular Flemish Songs. 1.20, Organ Recital from the Carmelite Church. 5.0, Dance Music from the Kursaal, Ostend. 6.0, Gramophone Records of Classical Music. 7.15, Religious Address. 7.30, Music Review. 8.0, Orchestral Concert, conducted by M. Kumpis. 8.45, Reading from the Works of E. de Bom. 9.0, Concert relayed from the Casino, Knocke: Prelude from The Mastersingers (Wagner); Legend of the Graal, from Lohengrin (Wagner); The Prize Song, from The Mastersingers (Wagner); Forest Murmurs, from Siegfried (Wagner); Siegfried's Rhine Journey, from The Twilight of the Gods (Wagner); Air from Aida (Verdi); Three Songs: (a) Love went a riding (Bridge), (b) Negro Spiritual (Burligh), (c) Do Not Go My Love (Hageman); Overture, Tannhäuser (Wagner). 10.0, Le Journal Parlé. 10.10, Dance Music from the Casino, Knocke.

BUCHARES'I
 394 metres; 12 kW.—9.15 a.m., Programme for Children. 9.20, Religious Address. 9.45, Choral Selections of sacred Music. 10.0, Concert of Romanian Music by the Puciano Orchestra. 11.0, Light Music on Gramophone Records. 11.45, News Bulletin and Time Signal. 12 Noon, Popular Music on Gramophone Records. 2.0 p.m., Programme for Peasants. 4.0, Concert of Light Music and Romanian Music by the Ionescu Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Concert by the Ionescu Orchestra (cont'd.). 6.0, Educational Programme. 6.40, Light Music on Gramophone Records. 7.0, Concert by the Station Orchestra: March from Athalie (Mendelssohn); Andante (Sarlatti-Tommasini); Suite in Roccoco Style (Albouth); Aubade for Violin, Viola, and Cello (Enesco). 7.20, Talk (to be announced). 7.45, Song Recital by M. Jean Niculesco Nico: Arioso (Delibes); Chanson norvégienne (Fouldrain); The Black Gondola (Rottoli); Air (Lehár); Serenade (Niculesco-Nico). 8.5, Concert by the Station Orchestra (cont'd.): Dance from Prince Igor (Borodin); Meditation from Thais (Massenet); Intermezzo from William Rateliff (Mascagni); Intermezzo from L'amico Fritz (Mascagni); Jeux et sport (Rossow). 8.45, News Bulletin.

BUDAPEST
 550 metres; 18.5 kW.—Programme also relayed on 210 metres from 5.30 p.m. to 12 Midnight. 9.0 a.m., Press Review and Beauty Culture. 10.0, Protestant Service. 11.0, Catholic Service, followed by Time Signal, Weather Forecast, Tide Report, and Light Concert. 2.0 p.m., Selection from Il Trovatore—Opera (Verdi). 3.0, Programme for Farmers. 3.45, Concert by the Berend Salon Orchestra. 5.0, Reading. 5.30, Concert of Hungarian Music by the Budapest Concert Orchestra. 7.0, Reading. 7.30, Gipsy Music by the Saray Orchestra. 8.30, Sports Notes. 8.45, The History of the Opera; Concert by Members of the Royal Hungarian Orchestra; Conductor, Bela Nagypal; Talk in the interval; Soloists, Vilma Lorinczy and Ludwig Laurish; After the Concert, Time Signal and Sports Results, followed by Dance Music from the Rajna Park.
CASSEL.—See Frankfurt.

COPENHAGEN
 281 metres; 0.75 kW., and **KALUNDBORG**, 1,163 metres; 7.5 kW. 8.30 a.m., Gymnastics. 10.0, Divine Service Relay. 11.30, Weather and News. 12 Noon, Town Hall Chimes. 12.2 to 1.0 p.m., Orchestral Concert conducted by Emil Reesen: Overture, The Magic Flute (Mozart); Scherzo, Nocturne, Dance of the Apprentices, and Wedding March from A Midsummer Night's Dream (Mendelssohn); Two Pieces for Strings (Grétry): (a) Air de Danse, (b) Tambourin; Three Melodies from Sleeping

Beauty (Tchaikovsky); Overture Phèdre (Massenet). 2.0, Divine Service from the Cathedral. 3.30, Accordion Duet Recital. 4.0, Orchestral Concert, conducted by F. Hemme, relayed from the Faelledpark. 5.45 to 6.20, Interval. 6.20, Talk: Clowns. 6.50, Weather and News. 7.15, Time Signal and Sports Notes. 7.20, Talk by Prof. Ostrup. 8.0, Town Hall Chimes. 8.2, Orchestral Concert of Music from Danish Vaudevilles. 8.50, Steen Steensen Blicher, the Danish Poet and Novelist—Talk and Recital of Songs. 9.50, News Bulletin 10.0, Operatic Concert by the Radio Orchestra, conducted by Emil Reesen: Overture, The Secret Marriage (Cimarosa); Gavotte from Idomeneo (Mozart); Selection from The Barber of Seville (Rossini); Overture, Romeo and Juliet (Bellini); Selection from Hansel and Gretel (Humperdinck); Prelude to Susanna's Secret (Wolf-Ferrari). 10.55, Dance Music from the Wivex Restaurant. 12 Midnight (in an interval), Town Hall Chimes. 12.30 a.m. (Monday), Close Down.
CORK.—See Dublin.

CRACOW
 312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and News. 7.35, See Warsaw. 7.55, Programme Announcements. 8.0, See Warsaw. 10.45, Sports Notes. 10.50, Talk. 10.55, See Warsaw. 11.50 (approx.), Close Down.

DANZIG.—See Heilsberg.
DRESDEN.—See Leipzig.

DUBLIN
 Call 2RN, 413 metres; 1.2 kW.; and **CORK**, 224.4 metres.—8.0 p.m., Time Signal 8.32, Carillon Recital by Dr. Staf Gebruers, relayed from St. Colman's Cathedral. 8.45, Pianoforte Duets by May and Grace Hughes. 9.5, The Adventures of Ellis Palmer—presented by J. P. Mitchell and Co. 9.50, Traditional Fiddle Selections. 10.0, Bass-Baritone Solos. 10.15, Popular Music on Gramophone Records. 11.0, Time Signal, News, Weather Report, and Close Down.

FECAMP
 223 metres; 10 kW.—11.0 a.m., Programme for the Opening of the Cherbourg Exhibition and of the Cherbourg Harbour Station. Reception of the Minister of Trade by M. Appel, (Deputy), M. Lehrettevillois (Mayor), and M. Quoniam (President of the Cherbourg Chamber of Commerce. 12 Noon (approx.), Radio Gazette. 1.0 to 2.30 p.m., Symphony Concert. After the Banquet, Address by the Minister of Commerce. 4.0, A Stroll through Cherbourg Exhibition, with Items by the Municipal Band. 6.0 p.m. to 8 p.m., Programme in English by the I.B.C. 6.0, Programme for Children. 6.30, Organ Recital: Nola (Arndt); Who am I? (Milne); The White Dove (Lehar); Selection from the Indian Love Lyrics (Woodford-Findin); The Match Parade (Whele); In a Chinese Temple Garden (Kettelbey); Trees (Kilmar). 7.0, Vocal Quartet and Flute Quartet. Songs: (a) Come to the Fair (Easthope Martin), (b) Jeannie with the Light Brown Hair, (c) Bells of St. Mary's (Adams), (d) Me and My Little Banjo (Rose); Flutes: (a) Prelude No. 7 (Chopin), (b) Norse (Grieg); Songs: (a) Swing Low Sweet Chariot, (b) Peter Go Ring Dem Bells (Burligh), (c) Good News, Chariots Coming, (d) Swing Along (Cook); Flutes: (a) Scherzo (Jadassohn), (b) The Flight of the Bumble-Bee (Rimsky-Korsakov). 7.30, Concert by the Renis Quintet: Marigold; Come to Me; Have You Forgotten?; The Wedding of the Birds; I Know of Two Bright Eyes; Consolation; Now I Have You. 8.0 to 9.0, Programme in French. Variety Concert. 9.0 till Close Down, Programme in English by the I.B.C.: Moonlight Music: Grasshoppers' Dance (Bucalossi); Twilight on the Waters (Squire); The Moonbeams' Dance (Gibbons); Der Rosehoelzeitzug (Jessel); Titania (Rimmer); Scherzo, from Sylvia (Delibes); Serenade (Heykens); Dance of the Elves (Grieg). 9.30, Light Orchestral and Organ Selections, with Male Voice Choir: Around the Volga (Borchert); The Skaters' Waltz (Waldteufel); Tales from the Vienna Woods (Strauss); In a Monastery Garden (Kettelbey); Elegy (Massenet); The Sanctuary of the Heart (Kettelbey) (arr. Foster); Waltz, Gold and Silver (Lehar). 10.0, Pianoforte Recital: My Lovely Celia (arr. Lane Wilson); At Dawning (Cadman); The Floral Dance (Moss); Maire my Girl (Aitken); Song: The Blackbird (Scott); Down in the Forest (Landon Ronald); The Vagabond (Vaughan Williams); My Old Shako (Trotter). 10.30, Concert of Dance Music: Get Happy, I'm Yours, Here Comes the Sun, Media Luz, How I Wish I Could Sing a Love Song, Loving You, The Kiss, Waltz, Confession'. 11.0, Dance Music by Roy Fox and his Band: I've got Rhythm, The Lullaby of the Leaves, it Ain't no Fault of Mine, Oh Monah, Gone for Ever, Minnie the Moocher, The Echo of a Song, Goodnight Vienna, Don't Tell a Soul, Kicking the Gong Around. 11.30, Concert by the Renis Octet: The Butterfly (Bendix); The Picanninies' Picnic (Squire); Les Millions d'Ariquin (Origo); Barcarolle, from The Tales of Hoffmann (Offenbach); Meditation (Massenet); Gavotte, from Mignon (Thomas); Selection from Cavalleria Rusticana (Mascagni). 12 Midnight, Concert: The Clock is Playing (Blauw); Devil Dance (Peterson); Dreams (Strelzky); Unlucky Blues (Lewis); Four Little Blackberries (Sully); Union Reel, The Wedding of the Birds (Peterson); The Cuckoo Waltz (Jonasson). 12.30 a.m. (Mon-

AUGUST 7th

SUNDAY

continued.

day), Comedienne: He's a Good Man to Have Around (Ager), I Wonder What's Really on His Mind (Ward), I'm Doing What I'm Doing for Love (Milton), Don't Look at Me that Way (Cole). 12.45, Recital of Light Songs: I found a Million Dollar Baby (Warren), This is the Day of Days (Woods), Love Letters in the Sand (Coots), Christmas Bells are Ringing (Norman). 1.0, Accordion Recital: J'aime la musique (Parsons), Petit Jean (Cuvelier), Furgenie (Bozi), Les bas à pointes (Lefebvre). 1.15, Variety Concert: Mickey Mouse, Twenty Thousand Scotsmen, Forty Fousand Frushes, Iz Izzy azzy Wozz? Jock Joins the Navy, Up Around the Old North Pole, Yap Bow-wow, Fun at the 'Phone, Happy Day. 2.0, Concert of Dance Music: Bend down Sister; By the Fireside, Fallin' in Love Again, One Little Quarrel, I'm Sorry Dear, Ecstasy, Melody, Song of the Islands, You Try Somebody Else, Save the Last Dance for Me, I Idolize My Baby's Eyes, Flame of Desire, Destiny, It's Great to be in Love, Mona Lisa. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBERG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW; and CASSEL, 246 metres.—10.50 a.m., Reading from Thus Spake Zarathustra (Friedrich Nietzsche). 11.20, Dialogue: The Radio and National Education. 12.5 p.m., Concert from Hamburg. 1.0, See Langenberg. 2.0, Agricultural Talks. 2.10, Talks for Farmers. 3.0, See Stuttgart. 5.15, See Munich. 6.0, Variety Items. 6.30, Report on the Twenty-Fifth Middle Rhine Gymnastics Display in Trier. 6.50, Talk. 7.15, Weather for Farmers. 7.17 Sports Notes, followed by Report on the German Canoeing Championships (on Gramophone Records). 7.30 to 10.45, See Stuttgart. In the interval at 10.0, News from Berlin (Witzleben), followed by Frankfurt News Bulletin. 10.45, Concert from Langenberg. 12 Midnight, Close Down. FREDRIKSSTAD.—See Oslo. FREIBURG.—See Stuttgart. GENEVA.—See Radio-Suisse Romande. GENOA.—See Turin. GLEIWITZ.—See Breslau. GÖTEBORG.—See Stockholm. GRAZ.—See Vienna. HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by BREMEN; 270 metres; FLENSBURG, 218 metres; HANOVER, 566 metres; and KIEL, 232.2 metres.—12 Noon, Time and Weather. 12.5 p.m. Orchestral Concert, conducted by Fritz Gartz. 2.0, A Literary Programme with the collaboration of Unemployed Writers. 2.45, Gay Summer Music on Gramophone Records. 3.15, Märschen-guckkasten—a Revue for Children (Erich Kübb). 4.0, Concert from the Uhlenhorst Hotel. 4.30, Running Commentary on the Farnsen Grand Prix. 4.40, Relay of an Aviation Meeting in Warnemünde. 5.25, Music on Popular Instruments—Concert of Zither, Concertina, Guitar and Mandoline Music. 6.10, Reading (Johann Baptist Waas). 6.30, Chamber Music from the Convent of St. Anne, Lübeck: Concerto grosso for Chamber Orchestra and Harpsichord (Händel); Harpsichord Solos: (a) The Fifth French Suite in G, (b) Toccata in E Minor; Concerto in D Minor for Harpsichord and Chamber Orchestra. 7.30, With the Microphone at a Cannes Polo Match. 7.40, Sports Notes. 7.55, Weather Report. 8.0, Bunter Abend: The Norag Orchestra, the Norag Choir, Erna Kroll-Lange, Herbert Ernst Groh, Bernhard Jackschlat, Erwin Bolt, Hans Marten, Gustav Hauff, and Gerhard Gregor; Overture, Der Wildschütz (Lortzing); Waltz, Transaktionen (Strauss); Scene from Der Evangelimann (Kienzl); Herbert Ernst Groh and Choir, Song from Le Postillon de Longjumeau (Adam); Overture, Frau Meisterin (Suppé); Erna Kroll-Lange, Herbert Ernst Groh, Hans Marten, Gustav Hauff, Gerhard Gregor and the Choir: Church Scene from Act I of The Spanish Nightingale (Fall); Erna Kroll-Lange and Erwin Bolt: Duet from Act I of Der Rastel Cinder (Lehár); Bernhard Jackschlat: (a) Lacrimae Christi (Bohn), (b) Der Rolandsbogen (Mania); Overture, Nakisris Hochzeit (Lincke); Waltz, Dynamiden (Lincke); Erna Kroll-Lange and Women's Choir: Glow Worm Idylle, from Lysistrata (Lincke); Potpourri on Themes, from Paganini (Lehár); Egyptian March (Johann Strauss). 9.50, Third Act of Lohengrin (Wagner), relayed from the Sopot Forest Theatre. 11.10, News Bulletin. 11.30, Topical Talk. 11.40 (from Bremen), Dance Music from the Hotel Atlantic. HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW; and DANZIG, 453.2 metres.—11.30 a.m., Reading of German Lyrics of the Seventeenth and Eighteenth Centuries. 12 Noon, Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. 2.0, Chess Lesson. 2.35, Talk for Young People. 3.0, Talk on Animal Photographs. 3.30, A Relay from the Interberg Tournament. 4.10, Concert of Light Music by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. In the interval, Talk on Riding. 5.30, Sports Report, relayed from Carolinenhof. 5.50, Reading from the Mosel Amfortas. 6.15, Viola and Harp Recital by Friedel Elguth

(Harp) and Heinrich Lemke (Viola): Sarabande (Händel); German Dance (Dittersdorf); Gavotte (Martini); Air (Matheson); Bourrée (Händel); Rigaudon (Rameau); Andantino (Haydn); Adagio cantabile (Nardini); Minuet (Martini); Gavotte for Harp (Bach). 6.45, Interviews with Circus Artists—Rastelli, the Fratellinis, Grock, etc.—Radio Sequence. 7.45, Sports Notes. 8.0, See Berlin (Witzleben). 9.40, Announcements. 9.50, The Land of our Fathers—Reminiscences of the Masurian Lakes and the Battle of Tannenberg. 10.10, News Bulletin and Sports Notes. 10.30, Dance Music by the Small Station Orchestra, conducted by Eugen Wilcken. 12.30 a.m. (Monday), Close Down.

HILVERSUM

Announced HUIZEN; 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—8.10 a.m., Religious Programme by the Christian Radio Society (N.C.R.V.). 9.10 to 4.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 9.10, Variety Music on Gramophone Records. 9.50, Talk. 10.10, Mass from the Church of the Assumption, Reusel. 11.40, Talk. 11.55, Sextet Concert. 1.10 p.m., Religious Address. 1.35, Gramophone Records of Light Music. 1.50, Literary Talk. 2.10, Band Concert. 3.40, Programme for Invalids. 4.40 to 7.25, N.C.R.V. Programme. 4.40, Divine Service, relayed from a church in Hillegom, followed by Organ and Song Recital. 6.55, Programme arranged by the Salvation Army. 7.25 till Close Down, K.R.O. Programme. 7.25, Religious Address. 7.50, Football Results. 7.55, Orchestral Concert: Jubel-Ouverture (Weber); Herzwunden (Grieg); Selection from Mignon (Thomas); Overture, Friedensfeier (Reincke). 8.40, Recitation. 9.0, News Bulletin. 9.10, Gramophone Records of Light Music. 9.25, Concert (contd.): Gavotte from Idomeo (Mozart); Perpetuum mobile (Strauss); Doctrienwalzer (Strauss); Selection from Carmen (Bizet); Serenade (Pierne); Rhapsody Española (Chabrier); Two Hungarian Dances (Brahms); Kaiser Marsch (Wagner). 10.20, Epilogue by the Choir. 10.40 (approx.), Close Down. HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM; 1,875 metres; 8.5 kW.—7.55 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 7.55 to 8.10, Physical Culture Lesson. 8.40, Pigeon Flying Report and Football Results. 8.45, Talk on Horticulture. 9.10, Address. 10.10, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 11.40 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40; Time Signal. 11.41, Vocal and Orchestral Concert. 1.40 p.m., Weekly Book Talk. 2.10, Gramophone Records of Light Music. 2.40, Concert by the Hague Orchestra, relayed from the Kurhaus, Scheveningen. Soloist: Roman Totenberg (Viola). 4.10, Dance Music from the Kurhaus, Scheveningen. 4.40 to 7.40, V.A.R.A. Programme. 4.40, Accordion Concert. 5.40, Orchestral Concert. 6.25, Literary Talk. 6.55, Orchestral Concert (contd.). 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time Signal. 7.41, News Bulletin. 7.50, Orchestral Concert, conducted by Nico Treep. Grillenbann-Marsch (Komzak); Spanish Comedy Overture (Kéler-Béla); Roccoco Intermezzo (Aletter); Märchen (Aletter); Waltz, Etincelles (Waldteufel); Selection from the Tales of Hoffmann (Offenbach); March from The Gipsy Baron (Joh. Strauss); Viennese Waltz (Benatsky); Wiener Spaziergänge (Komzak); Wien bleibt Wien (Schrammel). 8.55, Reading. 9.15, Variety Music on Gramophone Records. 9.25, Songs at the Pianoforte, by Derickson and Brown. 9.40, Gramophone Records of Popular Music. 9.50, Programme by Roozje Köhler and her Harmony Ladies. 10.10, Variety Music on Gramophone Records. 10.25, Songs at the Pianoforte (contd.). 10.40, Light Concert by Jack and Mitchell's International Band, relayed from La Gaité, Amsterdam. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna. KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.15 p.m., Announcements, News Bulletin, and Popular Music on Gramophone Records. 7.30, Light Music on Gramophone Records. 10.5, Concert of Dance Music. 10.45, Sports Notes. 10.55, Concert of Dance Music.

KAUNAS

1,935 metres; 7 kW.—6.30 p.m., Concert of Popular Music. 7.30, Programme for Soldiers. 8.0, Weather Report and News. 8.20, Variety Items. 8.50, Talk. 9.0, Concert of Light Music. 10.30 (approx.), Close Down. KIEL.—See Hamburg. KLAGENFURT.—See Vienna. KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW; and HELSINKI, 368.1 metres.—5.59 p.m., Time Signal and Weather Forecast. 6.10, Talk. 6.36, Concert by the Station Orchestra. Berceuse (Gade); Albumblätter (Gade); Souvenir (Drdla); Serenade

(Braga); Potpourri of Finnish Songs and Dances (Kunla). 7.10, Song Recital by Erkki Elälund. 7.35, Talk. 8.0, Concert of Popular Music by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert of Light Music from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.0 a.m., Reading: The Gold-Diggers (Horst Lange). 11.30, Music for Workers. 11.55, Talk and Readings: Forgotten Lyric Poetry. 12.15 p.m., Talk on Rudolf von Bennigsen, on the 30th Anniversary of his Death. 12.35, Talk by Hans Ebert: The Music of the Week. 1.0, Concert by the Station Orchestra, conducted by Kühn: Military March (Schubert); Overture, Altonso und Estrella (Schubert); Theme, Variations and Polacca from the Suite in G (Tchaikovsky); Introduction to Act III, Dance of the Apprentices and Entry of the Mastersingers from The Mastersingers (Wagner); German Dances (Unger); Waltz, Frauenliebe und Leben (Bion). 2.30, Chess Lesson. 2.50, Talk, The Life of an Operetta Composer. 3.20, Unveiling of a Memorial to Soldiers of Central Westphalia who died as Prisoners of War. 4.5, Agricultural Talk. 4.30, Concert of Light Music conducted by Eysoldt: Overture, La belle Hélène (Offenbach); Suite, Masquerade (Sullivan); Siesta Waltz (Waldteufel); Melodies from The Daughter of the Regiment (Donizetti); Tango, Donna Vatra (Köpping); Curly Locks (Powell); Boston Waltz, Strahlender Mond (Künneke); Potpourri from The Geisha (Jones). 5.40 to 6.0, Programme from Munich. 6.5, Talk: German History illustrated by German Towns: Ochsenfurt. 6.30, Talk: Curious Old Characters of Cologne. 6.55, Round the World on Gramophone Records: Estonia. 7.25, Talk: The Growth of the Soul. 7.45, Sports Review. 8.0 to 9.40, Variety Programme from Berlin (Witzleben). 10.5, News Bulletin and Sports Notes. 10.45, Late Concert conducted by Eysoldt. 12 Midnight (approx.), Close Down. LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW; and DRESDEN, 319 metres.—11.30 a.m., Talk and Reading on the Sixty-fifth Birthday of Emil Nölde. 12.5 p.m., Concert from Hamburg. 2.0, Weather and Time. 2.5, Talk: The Programme for the Coming Week. 2.25, Agricultural Notes. 2.40, Esperanto Lesson. 3.0, Guitar Recital. 3.30, Talk: The Rogue. 4.0, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. 5.30, Minna von Barnhelm—A Comedy (Gott-hold Ephraim Lessing, arranged for Radio by Dr. Martin Kuntath). 7.0, See Munich. 7.20, Ludwig Manfred Lommel in an Original Programme. 8.0, Concert of Light Music relayed from Hmenau (Thuringen). 10.5, News, followed by Dance Music from Berlin (Witzleben). In the intervals: Reports on the Olympic Games. 12 Midnight (approx.), Close Down. LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—9.30 a.m., Concert of Sacred Music. 10.0, Religious Address. 10.30, Chess Lesson. 11.0, Quintet Concert. 12.0, Time, News Bulletin, and Light Music on Gramophone Records. 3.15, Dramatic Programme. 4.0, Yugoslav Songs on Gramophone Records. 8.0, See Vienna. 10.0, Time Signal and News Bulletin, followed by Concert of Popular Music.

LWOW

381 metres; 16 kW.—10.0 a.m., Divine Service. 11.58, Time Signal from Warsaw and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.10 p.m., See Warsaw. 12.15, Programme from Lodz. 12.55, Programme from Wilno. 1.10, Programme from Lodz. 2.0, See Warsaw. 4.5, Light Music on Gramophone Records. 4.45, See Warsaw. 7.15, Miscellaneous Items. 7.35, Answers to Technical Correspondence. 7.50, Popular Music on Gramophone Records. 8.0, See Warsaw. 9.50, Sports Notes. 9.52, Programme to be Announced. 10.0, See Warsaw. 10.50, Programme relayed from Cra-cow. 10.55, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—12 Noon, Relay from Paris (Ecole Supérieure), 447.1 metres. 2.0 p.m., Official Opening of a Mortuary at Douaumont, relayed from Paris (Ecole Supérieure). 8.30, Relay from Paris (Ecole Supérieure).

MADRID

ARANJUEZ, Call EAQ, 30.4 metres; 20 kW.—12.30 a.m. (Monday), Concert of Light Music. 12.45, Humorous Talk. 1.0, Concert: Selection from The Tales of Hoffmann (Offenbach); Indian Lament (Dvorák); Slav Dance (Dvorák); El contrabandista (Góngora) Sevilla en Semana Santa (Olmedilla); Fantasia, Cadiz. 1.35, Talk. 1.40, Light Music. 2.0 a.m. (approx.), Close Down.

MADRID

UNION RADIO, Call EAJT, 424.3 metres; 2 kW.—9.0 to 10 a.m., Topical Review. 3.30 to 5.0 p.m., Chimes, Time Signal, and Theatre Notes, followed by Concert. 8.0, Chimes and Request Gramophone Concert. 9.30 to 11.0, Interval. 11.0, Chimes and Time Signal. 11.5 (approx.), Flamenco Songs by Alfonso Gagozas, with Guitar Accompaniment by Domingo Martin, followed by a Concert by the Municipal Band, relayed from the Rosales. 1.30 a.m. (Monday), Chimes and Close Down. MALMO.—See Stockholm. MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres, 11 kW.—4.0 p.m., Orchestral Concert, conducted by Turdy: Overture, La Princesse jaune (Saint-Saëns); Scènes Alsaciennes (Massenet); Mazurka (Dvorak); Waltz, Tales from the Vienna Woods (Strauss); Talk: Triumphant March (Grieg); Elegy (Kocian); Mazurka, from Polenblut (Nedbal); Selection (Provanzik); Prague-Jawa (Jezek); Serenade (Provanzik); Polka (Tichy); Potpourri of Foxtrots (Smatek); 6.0, See Prague. 7.0, See Prague. 9.0, See Brno. 10.0, See Prague. 10.20, Programme Announcements and Theatre Notes. 10.25, See Prague.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talks in German and English: War and the Musheviks. 9.55, Time Signal. 10.0, Review of the Week and Answers to Correspondents in English. MOTALA.—See Stockholm. MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—10.0 a.m. (from Nürnberg), Protestant Service. 10.45, Chimes from Our Lady's Church. 11.0, Recital of Schiller's Ballads by Hans Schliekert. 11.25, Concert of Modern Chamber Music. 12 Noon (from Lindau), Talk: A Visit to Lindau Harbour. 1.5, Time, Weather, and Programme Announcements. 1.15, Agricultural Talk. 1.35, Gramophone Concert of Opera Music. 2.30, Chess Lesson. 3.15, Zither Recital. 3.35, Programme for Children. 4.0, See Stuttgart. 5.15 (from Passau), Report on the Twenty-First German Rowing Championship. 6.0 (from Nürnberg), Mandoline Concert by the Mandoline Lute Choir of Schweinfurt. 6.45, Famous Songs in Different Settings: Poems by Claudius, Herder, Goethe and Schiller, with Music by Schubert, Beethoven, Berlioz and others. 7.25, Weather and Sports Report. 7.35, Talk by Dr. V. Müller. 8.0, Uschi—Operetta in Three Acts (Jean Gilbert). 9.40, From the Circus—a Programme of Pianoforte Solos and Recitations: The Artist (Fred Colman); Golliwog's Cakewalk (Debussy); Lillian Leitzel (St. Lorrant); Boston (Hindemith); Zirkus (Polgar); Girls (Pierne); Two Songs (Hollueuder); About Myself (Grock); Eccentrics (Pierne); E. Rastelli (Colman); Der Jongleur (Toch); The Elephant that Played the Piano—an Anecdote; Jumbo's Lullaby (Debussy). 10.20, Time, Weather, News and Sports Notes. 10.45, Concert from Langenberg. 12 Midnight (approx.), Close Down. NAPLES.—See Rome. NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 550 metres; Notodden, 447.1 metres; Pors-grund, 453.2 metres; and Rjukan, 447.1 metres.—11 a.m., Divine Service in the Open Air, relayed from Bergen (364 metres). 5.30, p.m., Pianoforte Recital by Professor Wladyslaw Burkat of Poland. 6.15, Baritone Song Recital by Arne Haugen. 6.45, Talk from Stavanger (240.6 metres). 7.15, Weather and News. 7.30, Recitations. 8.0, Time Signal. 8.2, Orchestral Concert, conducted by Huro Kraamp. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Talk. 10.35, Dance Music, relayed from the Hotel Britannia, Trondheim (493.4 metres). 12 Midnight (approx.), Close Down. OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Concert of Popular Music by the Station Sextet. 6.30 to 8.0, Interval. 8.0, Announcements and Giornale Radio. 8.20, Sports Notes. 8.25, Light Music on Gramophone Records. 8.30, Time Signal and Announcements. 8.45, Symphony Concert, conducted by Rosolino de Maria. In the interval, Talk on Art. After the Concert, Theatre Notes. 10.0 (approx.), Variety Programme. 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals on 2,650 metres at 10.26 a.m. and 11.26 p.m. Preliminary and 6-dot Signals.—1.0 p.m., News Bulletin. 1.10, Weather Report. 1.25, to 2.30, Orchestral Concert, conducted by Edouard Flament. 6.45, Le Journal Parlé. 7.45, Programme for Children. 8.20, Weather Report. 8.30, Gramophone Concert of Variety Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—10.0 a.m., Press Review, 10.5 to 1.0, Sponsored Concerts, 1.0 p.m., Light Music on Gramophone Records, 2.0 to 7.0, Interval, 7.0, News Bulletin and Press Review, 7.5, Light Music on Gramophone Records, 7.45, Sports Notes, 7.30, Sponsored Gramophone Concert, 8.0, Talk on Gramophone Records, 8.15, Catholic News, 8.30, Journal Paris and News, 8.45, Concert by the Station Orchestra, Overture, The Grand Duchess Gerolstein (Offenbach); Waltz from La demoiselle du printemps (Goublier); Selection from Les Mousquetaires au couvent (Varney); Sonata for Clarinet and Piano (Weber); Ronde française (Boëllmann); Selection from La Timbale d'argent (Vasseur); Menuet des lutins (Delmas); Selection from Mamzelle Nitouche (Hervé); Sérénade à Ninon (Lacôme); Selection from Le Coeur et la Main (Lécocq); Chanson javanaise (de Séverac); Ent'acte and Dream from The Pearl of Brazil (David); March, L'écossaise (Sénéchal), 10.45, News Bulletin, 10.50, Experimental Transmission on the Electric Radio Organ; Organist, Olivier Messiaen.

PARIS

RADIO PARIS, Call CFR, 1725 metres; 75 kW.—7.45 a.m., Light Music on Gramophone Records, 8.0, News, Weather Forecast, and Press Review, 8.30, Physical Culture Course, 12 Noon, Religious Address by the Reverend Father Dieux, 12.20 p.m., Sacred Music, 12.30, Bilboquet at the Prize-Giving, 12.45, Press Review, News and Weather, 1.0, Gramophone Concert of Light Music, 1.30 to 3.0, Programme in English by the I.B.C., 1.30, Concert of Brunswick and Panachord Records, Mr. T. St. A. Ronald announcing, A Great Big Bunch of You, by Guy Lombardo and his Royal Canadians; The Drifter, Part One, by The Texas Drifter; My Silent Love, Jazz Nocturne, by Victor Young and his Orchestra with Frank Mann; My Lips want Kisses, by Connie Boswell; You can make my life a bed of roses, by Victor Young and his Orchestra; Russian Rag, by Dave Apollo and his All String Orchestra; Martha, by The Street Singer; How am I doing, Hey Hey, by Don Redman and his Orchestra, 2.0 p.m., Concert of Decca Records, Mr. T. St. A. Ronald, announcing: My Mom, by Ron Aldridge and his Reno Boys; Songs of Italy, Part I, by Alfredo Campoli and his Salon Orchestra; Lullaby of the Leaves, by Maurice Elwin (Baritone); Little Anna-gram, by Jack Hylton and his Orchestra; The Sun has got his hat on, by George Buck (Comedian), with Arthur Lally and his Orchestra; My Home town, by little Mary Hagen; It Ain't no fault of mine, by Roy Fox and his Band; Selection from Tannhäuser, by The New State Symphony Orchestra; The Flies crawl up the window, by Jack Hylton and his Orchestra; Old Sam, Part Two, by Fred Vernon; The Yodelling Blues, by Vanco and the Millionaires; I want your heart, by Alfred Picaver (Tenor); When we're alone, by Edith Baker (Pianoforte); Good-night Baby, by Billy Leonard and his Commanders; On a Local Train Journey, by Victor Ricardo and his Orchestra, 3.0 to 4.0 Interval, 4.0, Programme in English by the I.B.C., Gaumont-British Hour of Non-Stop Variety, Captain C. Clayton-Hutton announcing, 6.0 p.m., Gramophone Concert of Classical and Light Music, 6.45, Programme in English by the I.B.C., Second Concert on behalf of the Gaumont-British Picture Corporation, 7.45, Radio Paris Circus, 8.15, Press Review, News and Weather, 8.30, Programme of Gramophone Records and Songs, in the interval at 9.15, Sports Notes and News, After the Concert, Dance Music on Gramophone Records, 11.0 (approx.), Close Down.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by WBXX on 48.86 metres and 25.25 metres.—9.0 p.m., Cathedral of Song, from New York, 9.30, Friendly Hour, from New York, 10.0, Shady-side Presbyterian Church Services, 11.0, Time Signal, 11.1, Temperature Report, 11.2, Weather Report, 11.5, Tenberry Sport Review, 11.10, Press News Reeler, 11.15, Westinghouse Concert, 11.45, Rita Cavalieri (Soprano), 11.59, Time Signal, 12 Midnight, KDKA Players, 12.30 a.m. (Monday), The Commodores, from New York, 1.0, McCreary Brothers, 1.15 to 3.45, New York Relay, 1.15, R-R-O Programme, 2.0, Enna Jettick Melodies, 2.15, Goldman's Band, 3.45, The Old Singing Master, 3.45, The Fireflies, 4.0, Time Signal, 4.1, Tenberry Sport Review, 4.11, Temperature Report, 4.12, Weather Report, 4.15, Press Last-minute News, 4.20, Alexander Roy (Tenor), 4.30, Rhyme and Rhythm, from New York, 5.0, Time Signal and Good Night, 5.05, Close Down.

POZNAN

335 metres; 1.0 kW.—6.0 p.m., Instrumental and Vocal Concert, 7.0, Popular Music on Gramophone Records, 7.15, Announcements and News Bulletin, 7.35, Popular Music on Gramophone Records, 7.58, Time Signal, 8.0, See Warsaw, 9.50, Time Signal, Sports Notes, and Police Report, 10.15, Dance Music on Gramophone Records.

PRAGUE

488.6 metres; 120 kW.—11.0 a.m., Brass Band Concert from Teplice Sanov, 12 Noon, Chimes, 12.5 p.m., Brass Band Concert,

1.30, Agricultural Report, 4.0, See Moravská-Ostrava, 6.0, German Transmission: Travel, Talk, Recitations and Songs, 7.0, Popular Concert, 7.35, Concert, conducted by Milinovsky, 8.35, Song Recital by Hugo Dolnal, 9.0, Time and News, 9.5, See Brno, 10.0, News and Sports Notes, 10.20, Miscellaneous Announcements, 10.25, Gramophone Records and Jazz on two Pianofortes, by Professor Erwin Schulhoff and Dr. Letfus.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.: LAUSANNE, 680 metres; and GENEVA, 760 metres.—Programme from Geneva, Lausanne not transmitting.—10.0 a.m., Protestant Service, 11.0, Light Music on Gramophone Records, 12.30 p.m., News Bulletin and Weather Forecast, 12.40, Orchestral Concert, 2.0 to 6.0, Interval, 6.0, Variety Music on Gramophone Records, 7.0, Talk on Religion, 7.30, Gramophone Concert of Popular Music, 8.0, Schubert Sonatas by Mme. Jacqueline Blancard and M. Lidus Klein, 8.30, See Vienna, 10.30 (approx.), News Bulletin and Weather Forecast, 10.45, Close Down.

RUJUKAN.—See Oslo.

ROME Call 180, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 280, 25.4 metres.—9.40 a.m., News Bulletin, 9.45, Agricultural Notes, 10.0, Religious Programme, 10.15, Sacred Music, 10.45 to 11.0, Sports Notes and Amusement Guide, 12.30 to 2.0 p.m., Concert of Light Vocal and Instrumental Music, in the interval at 1.30, Time and Announcements, 4.15 (Naples), Programme for Children, Weather and Sports Notes, 5.0 to 6.15, Vocal and Instrumental Concert, in the interval, Sports Notes, 7.25 (Naples), Shipping and Sports Notes, 7.30, Football Report, Announcements, and News, 8.0, Time, Announcements and Sports Report, 8.30, Operatic Evening: Part I, *Livietta e Tracollo*—Opera (Pergolesi); Part II, *Secchi e Sberlecchi*—Opera (Virgilio Mortari); Part III, *La serva padrona*—Opera (Pergolesi); News after the Programme.

ROME

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—7.30 p.m. till Close Down, New York Relay, 7.30, Moonshine and Honeysuckle, 8.0, National Sunday Forum, 9.0, Iodent Programme, with Jane Froman, 9.15, Wildroot Institute, 9.30, Musical Programme, 9.45, Pastels, 10.0, Slow River, 10.30, Pop Concert, 11.0, Catholic Hour, 11.30, Musical Programme, 12 Midnight, Balkan Mountain Men, 12.30 a.m. (Monday), Orchestral Gems, 1.0, Chase and Sanborn Programme, 2.0, Our Government, by David Lawrence, 2.15, American Album of Familiar Music, 2.45, Shaeffer Lifetime Revue, 3.0, Musings, 3.15, L'Heure Exquise, 3.45, Sunday at Seth Parker's, 4.15, Russ Columbo and his Orchestra, 4.30, Mood Orientale, 5.0, Teddy Black's Orchestra, 5.30 (approx.), Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.: BASLE, 244 metres; and BERNE, 246 metres.—10 a.m. (from Basle), Catholic Address, 10.45 (from Basle), Musical and Literary Programme, 11.30 (from Basle), Promenade Concert, 12 Noon, Concert by the Station Orchestra, 12.28 p.m., Time Signal and Weather Forecast, 12.30, News Bulletin, 12.35 (from Zurich), Talk: The Ninth International Mountain Race, 1.5 (approx.), Concert by the Station Orchestra, 1.30 (from Basle), Zither Solos by Alfred Windt, in an interval, Reading by Dr. Ernst Witschi, 2.15 to 3.30, Interval, 3.30 (from Basle), Mandoline Concert, 4.0, Choral and Orchestral Music on Gramophone Records, 5.0 (from Basle), Swiss Authors' Programme, 5.30, Popular Melodies on Gramophone Records, 6.0 (from Basle), Talk on Philately, 6.30 (from Basle), Talk in English: The Emerald Isle, 7.0, Time Signal, Weather Forecast, and Sports Notes, and Etudes symphoniques for Pianoforte (Schumann) on Gramophone Records, 7.30 (from Basle), Talk by Agnes Seesemann: Karl Hauptmann—Philosopher and Poet, 8.0 (from Basle), Talk on Mozart's works, with Gramophone Illustrations, 8.30, See Vienna, 10.30 (approx.), Weather Forecast and News Bulletin, 10.40, Sports Notes, 10.50, Close Down.

STOCKHOLM

Gall SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—11.0 a.m., Divine Service Relay, 12.45 p.m., Weather Report, 1.30, Radio Report of the Motor Cycle Race in Järba, 3.1, Relay from a Meeting of Young People in Hällefors, 4.1, Talk on Alcohol, 4.30, Gramophone Records of Variety Music, 5.5 (from Sundsvall), Programme for Children, 5.30, Reading (Gustav Kolthoff), 6.0, Divine

Service, 7.15, Weather, News, and Sports Notes, 7.30, A Comedy in Three Acts (Palle Rosenkrantz), 8.45, Concert by the Radio Orchestra: First Suite from Peer Gynt (Grieg); Woodland Sketches (Percy Fletcher); Suite Murcia (Jaquet); Selection from Feramors (Rubinstein), 9.45, Weather and News, 10.0, Concert (cont'd.), *Synfonietta on Russian Folk Melodies* (Rimsky-Korsakov); *Nocturne* (Frank); *Pastorale and Rondino*, for Oboe and Orchestra (Mar-teau); *Danish Ballad for Strings*, Elverhøj (Hermann Sandby); *Prelude to Sigurd Slembe* (Strandsen), 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—10.45 a.m., Protestant Service, 11.30, Catholic Service, 12 Noon, Gramophone Concert of Classical Music, 12.45 p.m., News in French and German, 1.0, Time Signal, 1.2, Gramophone Concert of Popular Music, 2.15 to 2.30, Talk in French: The Strasbourg Home for the Blind, 3.0, Orchestral Concert, relayed from Plombières-les-Bains: Conductor, M. Wolfert; Overture, *Der Freischütz* (Weber); *Andante from the Fifth Symphony* (Tchaikovsky); Selection from Paganini (Lohar); Suite from Peer Gynt (Grieg); In the Steppes of Central Asia (Borodin); Selection from *Rigoletto* (Verdi). In the interval, Talk: From Louis XV to the Revolution, 4.15, Dance Music on Gramophone Records, 4.45, Talk in German: The Results of the Last International Labour Conference, 5.0; Dance Music by the Station Orchestra, 6.0, Medical Talk in French, 6.15, Sports Talk in French, 6.30, Orchestral Concert, conducted by Maurice de Villers: *Prelude to Lohengrin* (Wagner); *Scènes pittoresques* (Massenet); *Oriente* (Sporek); Selection from *Tosca* (Puccini); *Intermezzo* (Tcherepnin); *Valse lente* (Tcherepnin); *Violin Solo: Mazurka* (Wienlawsky); *Hungarian Dance* (Brahms), 7.30, Time, News in French and German, and Sports Notes, 7.45, Alsatian Programme, including a Comedy in Three Acts, 9.15, Concert by a Naval Band, relayed from Marseilles (315 metres), 10.30, Dance Music from the Casino, Niederbronn-les-Bains, 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—10.10 a.m., Recital of Folk Songs, 10.40 (from Karlsruhe), Evangelical Service, 11.30 (from Freiburg), Beethoven Recital by Margarethe Braun (Soprano), Yella Wrangel (Pianoforte), Bernhard Köhler (Bass), and the Chamber Orchestra, conducted by Heinrich Pfaff, 12.30 p.m. (from Karlsruhe), Concert of Marches by the Karlsruhe Concert Orchestra, 1.10 (approx.), Concert from Langenberg, 2.0 (from Karlsruhe), Zither Concert, 2.0 (from Mannheim), Choral Concert, 3.0, A Radio Play for Young People, 4.0 (from Mannheim), Concert of Light Music for Wind Instruments, conducted by Otto Homann-Webau, 5.15 (from Passau), Radio Pictures of the Twenty-First German Rowing Championship, 6.0, Reading (Adam Scharrer), 6.30, Sports Notes, 7.0, Recital of Viennese Songs by Hans Haus, 7.30, 'Cello Recital by Edmund Kurtz: Sonata in F Sharp Minor (Huvé); *Midnight on Maundy Thursday* (Turina); *Habanera* (Ravel); *Blues Hot* (Roters); *Cachie-Cache* (Buzelaire), 8.0, Three Tales (Franz Carl Endres), 8.20, The Children's Wedding—A Musical Play for Children in Two Acts (Jaroslav Kricka) (First Performance), 10.0, News from Berlin (Witzleben), followed by Stuttgart General News Bulletin, 10.35, Grand Tattoo for the Evening Celebrations in connection with the Twenty-First German Fire-Brigade Meeting, relayed from the Stadtgarten, Karlsruhe, 10.55, Radio Pictures from the Swabian Gymnastics Display (on Gramophone Records), 11.20, Concert from Langenberg, 12 Midnight (approx.), Close Down.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—12.30 p.m., Catholic Service, 1.0, News Bulletin, 1.15, Violin Recital, 1.40, Agricultural Report, 1.45, Protestant Service, 3.30, Transmission of Pictures, 5.0, Esperanto Lesson, 5.15, Orchestral Selections, 5.30, Songs from (a) *Il Trovatore* (Verdi), (b) *The Valkyrie* (Wagner), (c) *Siegfried* (Wagner), (d) *William Tell* (Rossini), 5.45, Orchestral Selections of Opera Music, 6.0, Sound Film Music, 6.15, Two Pieces (Rimsky-Korsakov): (a) *Spanish Caprice*, (b) *The Flight of the Bumble Bee*, 6.30, Horse Racing Results, 6.45, Selections from (a) *La Mascotte* (Audran) and (b) *Les Cloches de Corneville* (Planquette), 7.0, Orchestral Selections, 7.30, Programme Announcements and News, 7.45, Accordion Solos, 8.0, Military Music, 8.15, Selections from (a) *Werther* (Massenet), (b) *Louise* (Charpentier), and (c) *Manon* (Massenet), 8.30, Concert of Light Music, 9.15, Chansonnettes and Humorous Monologues, 9.30, Two Overtures: (a) *The Barber of Seville* (Rossini), (b) *Mireille* (Gounod), 9.45, Accordion Solos, 10.0, Operetta Music, 10.15, Dance Music, 10.30, North African News, 11.15, Spanish Songs, 11.30, Orchestral Selections, 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—9.55 a.m., Missa Cantata, from the Cathedral of San Giusto, 10.30 to 11.0, See Turin, 11.0, Agricultural Report, 11.5 (approx.), 7.5 p.m., See Turin, 7.5, Quintet Concert, 8.0 till Close Down, See Turin. TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—9.40 a.m., Giornale Radio, 10.30, Agricultural Report, 10.45, Religious Programme, 11.0, High Mass, relayed from the Church of the Annunciation, Florence, 12.30 to 2.30 p.m., Concert of Light Music, in the interval at 1.0, Time and announcements, 4.30, Dance Music from the Luna Park Lido, Milan, Sports Notes in the interval, 6.15 to 6.25, Sports Notes, 7.0, Announcements, 7.5, Variety Music on Gramophone Records, in the interval at 7.30, Time and Announcements, 8.0, Giornale Radio and Sports Notes, 8.30, Operatic Evening: Part I, *Livietta e Tracollo*—Opera (Pergolesi); Part II, *Secchi e Sberlecchi*—Opera (Virgilio Mortari); Part III, *La serva padrona*—Opera (Pergolesi). In the intervals, Talk and Theatre Notes. After the Opera, Giornale Radio.

VIENNA

517 metres, 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—10.20 a.m., Missa chorialis (Franz Liszt), by the Vienna Chamber Choir, 11.0, Folk Song Competition—the Procession, relayed from St. Johann im Pongau, 11.25, Concert by the Vienna Symphony Orchestra, conducted by Dr. Otto Egger: Soloist, Ernst Urbach (Baritone), 1.25 p.m., Schrammel Music, by the Pepl Wichart Quartet, 3.0, Time and Programme Announcements, 3.5, Readings (Dora Miklosch), 3.30, Chamber Music with Flute: Vittorio Borri (Violin), Gustav Gruber (Viola), Wilhelm Winkler (Cello), Franz Wangler (Flute), and Alma Borri (Pianoforte): *Trio Sonata in D for Flute, Violin, and Pianoforte* (Bach); *Serenade in D for Flute, Violin and Viola*, Op. 77a (Reger); *Quartet in A for Flute, Violin, Viola, and Cello* (Mozart), 4.30, Orchestral Concert, 6.5, Relay of the Folk Song Competition from St. Johann im Pongau, 6.40, Talk: The Dominion Republic, 7.10, Literature, Science, and Report—a Programme by Otto Löwe, 7.40, Song Recital by Fritz Joki: Four Songs (Schubert): (a) *Das Rosenband*, (b) *Der Blumebrief*, (c) *Laufen und Weinen*, (d) *Wohin? Three Songs* (Mahler): (a) *Ich at met einem Linden Duft*, (b) *Liebst du um Schönheit*, (c) *Ich ging mit Lust: Three Songs* (Richard Strauss): (a) *Säusle, lieb' Myrthe*, (b) *Freundliche Vision*, (c) *Schlechtes Wetter; Waltz, Frühlingsstimmen* (Johann Strauss), 8.15, Time, Sports Notes, and Programme Announcements, 8.30, I Seraglio—Opera (Mozart), relayed from the Festspielhaus, Salzburg, 10.50, News, Time, and Programme Announcements, 11.5, Dance Music from Hübners Kursalon.

WARSAW

1,411 metres; 120 kW.—10.0 a.m., Divine Service, relayed from Lwow (381 metres), 11.58, Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow, 12.5 p.m., Programme Announcements, 12.10, Weather Forecast, 12.15, Concert of Light Music by the Lodz Philharmonic Orchestra, 12.55, Talk, relayed from Wilno, (563 metres), 1.10, Concert (cont'd.), 2.0, Talk: The Magic of Cornfields, 2.15, Moniuszko Song Recital by S. Mossozy (Bass), 2.30, Agricultural Talk, 2.50, Violin Recital, by Paul Gedeonow: *Slav Dance in G minor* (Dvorak-Kreisler); *Berceuse* (Cui); *Elegy* (Melartin), 3.5, Agricultural Talk: Work in Autumn, 3.25, Recital (cont'd.): Bass Solos: (a) *Mou Etandard* (Rotoli), (b) *Widmung* (Schumann); Violin Solos: (a) *Tambourin chinois* (Kreisler), (b) *Perpetuum mobile* (Cui), 3.40, Weekly Radio Journal, 3.52, Programme for Young People, 4.5, Popular Music on Gramophone Records, 4.45, Talk on Pilsudski, 5.0, Concert by the Station Orchestra, 6.0, Talk: The Polish Casanova, from the series *Great Adventurers*, 6.20, Concert by a Military Band, 7.15, Miscellaneous Items, 7.35, Answers to Correspondents on Technical Problems, 7.50, Interval, 7.55, Programme Announcements, 8.0, Concert by the Warsaw Philharmonic Orchestra, conducted by Wilkomirski. Soloists: Salecki (Tenor) and L. Urstein (Pianoforte). *Pologneais* from Les Cracoviens et les Montagnards (Kurpinski); *Overture*, Edwige (Kurpinski); *Songs*: (a) *Kenst du das Land* (Moniuszko), (b) *Si j'étais plus jeune* (Gall), (c) *Serenade* (Gall); *Cracoviennes* (Rajczak); *Minuet* (Paderewski); *Dances of the Tatra Mountains* (Paderewski-Opienski); *Oberek fantastique* (Sonnensfeld), 8.45, Reading, 9.0, Concert (cont'd.): *Songs*: (a) *Air from La Gioconda* (Ponchielli), (b) *Air from Carmen* (Bizet), (c) *Air from Manon* (Massenet); Selection from *La Bohème* (Puccini); *Torch Dances* (Meyerbeer); Selection from *A Midsummer Night's Dream* (Mendelssohn), 9.50, Sports Notes, 10.0, Dance Music, 10.40, Aviation Weather Forecast, 10.45, Sports Notes, 10.50, Programme to be announced, 10.55, Dance Music from the Café Georges.

ZURICH.—See Schweizerischer Landessender.

BARCELONA

RADIO-BARCELONA, Call EAJI, 349 metres; 8 kW.—8.0 p.m., Trio Concert; Berceuse de Jocelyn (Godard); Selection from Le Cid (Massenet); Réverie (Marc); Ballet (Almayrac). 8.30, Exchange Quotations, Request Gramophone Concert, Sports Notes and News. 10.0, Chimes, Weather Forecast, and Market Prices. 10.5, Concert of Sardanas, by the Cobia Barcelona. 11.0, Musical Play in Three Acts (Guerrero). 1.0 a.m. (Tuesday), Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN; 1,635 metres; 60 kW.—10 Noon, Weather for Farmers; Concert of Schubert's Music on Gramophone Records, and Second Weather Report for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of Vienna and Berlin Music, relayed from Berlin (Witzleben). 3.0, Reading. 3.30, Weather and Exchange. 3.40, Programme for Young People. 4.0, Educational Programme. 4.30, See Berlin (Witzleben). 5.30, Talk: Morals and Freedom of Speech. 6.0, Making Music with Invisible Partners. 6.30, Spanish Lesson for Beginners. 6.55, Weather for Farmers. 7.0, Topical Talk. 7.25, Agricultural Talk. 7.55, Second Weather Forecast. 8.0, See Breslau. 9.0, See Vienna. 10.20, See Berlin (Witzleben). 10.40, See Vienna. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.30 p.m., Oboe and Pianoforte Recital by Hans Walter Schleich and Joseph Stabl: Ein Kränzlein Bagatellen, Op. 23 (Haas). 4.55, Lieder Recital by Gertrud Freimuth (Contralto): Four Songs (Schubert): (a) Wanderer an den Mond, (b) Frühlingseinsicht, (c) Nacht und Träume, (d) Gott im Frühling. Three Songs (Wolf): (a) Auf einer Wanderung, (b) In der Frühe, (c) Gesang Weylas. 5.5, Pianoforte Recital of Classical Dances by Kurt Appelbaum: Polonaise in C, Op. 89 (Beethoven); German Dances (Schubert); Invitation to the Dance (Weber). 5.30, Talk for Young People: Youth and the Press. 5.50, Talk: Military Training for Young People Abroad. 6.20, The Microphone visits Rheinsberg. 6.30, Sociological Review. 6.55, The Witzleben Station informs its Listeners. 7.0, Topical Talk. 7.10, Labour Market Report. 7.15, Concert of Light Music from the Traube Weinrestaurant. 8.0, The Radio Calendar for August. 9.0, See Vienna. 10.20, Weather Forecast, News Bulletin, and Sports Notes. 10.40, See Vienna. 12.0 Midnight (approx.), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin, Exchange Quotations, and Market Prices. 7.40, Sports Notes. 7.55, Lottery Results. 8.0, Light Music on Gramophone Records. 8.15, Charades. 8.20, News and Weather. 8.30, See Paris (Eiffel Tower).

BRATISLAVA

279 metres; 14 kW.—7.0 p.m., Orchestral Concert, relayed from Kosice (293 metres). 8.0, See Prague. 8.15, See Brno. 9.30, See Prague. 10.15, Programme Announcements and News. 10.20, Concert of Popular Music.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW., and GLEIWITZ, 253 metres.—4.30 p.m., Concert by the Station Orchestra: Conductor, Marszalek. 5.30, Market Prices, followed by a Review of Technical Books. 5.50, Variety Programme. 6.10, French Lesson. 6.25, Evening Concert of Gramophone Records: Ballet Music from Idomeneo (Mozart); Gavotte (Chaconne); Minuet (Haydn-Friedberg); Duet for Violin and Pianoforte in A (Schubert), by Rachmaninov and Kreisler; Scherzo in E Minor (Mendelssohn); Hungarian Rhapsody (Liszt); Moment Musical (Schubert); Le Cygne (Saint-Saëns); Träumerei (Schumann); Melody in F (Rubinstein); Minuet (Debussy). 7.30, Weather Forecast, followed by Talk: National Self-Realisation in German Classicism. 8.0, Das Feld—a Musical and Literary Programme. 9.0, See Vienna. 10.20, Time Signal, Weather Forecast, News Bulletin, Sports Results, and Programme Announcements. 10.50, See Vienna. 12 Midnight, Close Down.

BRNO

342 metres; 25 kW.—7.0 p.m., See Prague. 3.15, Harvest Songs. 8.55, Popular Concert. 9.30, See Prague. 10.15, News Bulletin. 10.20, See Prague.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Orchestral Concert. In the interval at 1.0 p.m., Le Journal Parlé. 5.0, Orchestral Concert, conducted by M. Meulemans: Overture,

Der Schauspielersdirektor (Mozart); The Surprise Symphony (Haydn); Joyeuse aventure (Gillet); Coquetterie (De Tave). 6.0, Gramophone Records: Airs from Le Roi malgré lui (Chabrier): (a) Chanson tzigane, (b) Romance and (c) Fête polonaise. 6.15, Talk: The Belgian Painter, Jan Stobbaerts. 6.30, Gramophone Records: Symphony No. 2 (Beethoven); Sonata, Il trillo del diavolo (Bartini); March from The Queen of Sheba (Gounod). 7.15, Talk: The Coal Industry in Belgium. 7.30, Le Journal Parlé; Talk for Women, and Theatre Review. 8.0, Variety Programme: Monologues, Sketches and Music. 9.0, Concert, relayed from the Casino, Knocke, Soloist: Ria Lenssens (Songs); The Military Symphony (Haydn); Santa's Ballad from The Flying Dutchman (Wagner); Symphonie Variations on a Popular Walloon Theme (André Collin); Song from Ghismonda (Février); Overture, Benvenuto Cellini (Berlioz). 10.30, Le Journal Parlé. 10.40, Concert, relayed from the Memline Hall, Antwerp.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish. 12 Noon, Orchestral Concert, conducted by M. Meulemans, Soloist: M. E. Walravens (Songs); Overture, Der Freischütz (Weber); Selection from The Valkyries (Wagner); Summer Evenings (Grieg); A Wedding Day on Troidhaugen (Grieg); Songs: (a) Air from De Scheelde (Benoit), (b) Berceuse (Meulemans), (c) Amoureux Liedekyn (Meulemans); Kiss Waltz (Arditi); Histoires (Ibert); Ballet russe (Luigini). 1.0 p.m., Le Journal Parlé. 1.10, Concert (continued): Overture: Tancrède (Rossini); Guitare (Bizet); Airs from The Damnation of Faust (Berlioz): (a) Will o' the Wisp Dance, (b) Dance of the Sylphs, (c) Hungarian March; Songs: (a) Het Lystertje (Moortgat), (b) Ik ken een lied (Demol); Petite Suite d'Antan (Février); Selection from Les Erynnies (Massenet). 5.0, Orchestral Concert, conducted by M. Kumps: Overture, Phaëton (Saint-Saëns); Petite Suite (Kulkman); Selection from Madame Butterfly (Puccini); Air (Bach); First Suite from Peer Gynt (Grieg); Kindertraum (Schumann); Conte amant (Godard); Estudiantina (Waldteufel). 6.0, Gramophone Concert: Selection from Dédé (Christiné); The Musical Box (Sauer); Quadrille from Orpheus in the Underworld (Offenbach); Iberia (Albeniz); La serrana de Valverde (Monteagudo); Extracts from Seven Spanish Songs (Falla); Selection from El amor brujo (Falla); Clavellitos (Valverde); Selection from Goyescas (Granados); Cantares (Turina); Scgidillas (Albeniz); Ronda Aragonese (Granados); Dances from La vida breves (Falla). 7.15, Variety Items. 7.30, Sports Review. 8.0, Orchestral Concert, conducted by M. Kumps: Overture, Semiramis (Rossini); Trois Pièces pour mes

MONDAY

AUGUST THE EIGHTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Light classical concert. Orchestral concert. Miss V. Sackville West: New Books, Sing-song from the Sussex Boys' Camp, Plashett Park, Isfield. Thirty Years Ago (imaginary programme of August 8, 1902). Dance music.

LONDON REGIONAL Orchestral concert. Organ music. Promenade concert from Queen's Hall. Dance music.

MIDLAND REGIONAL Orchestral concert. Orchestral programme. London Regional programme.

NORTH REGIONAL Organ music. Orchestral concert. Professor W. Sherrard Vines: Topical Reading for Northern Holidays, II—Yorkshire (from Leeds), London Regional programme.

WEST REGIONAL Band concert from Victoria Park, Bath. National programme.

SCOTTISH REGIONAL Organ music. Caravan-Ella—a Novelette with music, book by G. Rowntree Harvey; lyrics and music by Bunny Gordon. National programme.

BELFAST Organ music. Light music. Abbey Players present The Playboy of the Western World, a comedy by J. M. Synge. National programme.

ABROAD

HAMBURG "The Genius of Adventure"—a musical programme.

PARIS (Radio-Paris) Mozart concert from American Conservatoire at Fontainebleau.

STRASBOURG "Rip van Winkle"—comic opera in four acts (Planquette).

TURIN Operatic concert.

from the Wivex Restaurant. 2.50, Talk for Housewives. 3.0, Concert by the Carl Rydahl Instrumental Ensemble: Soloist, Ellen Metelling: Overture, The Barber of Seville (Rossini); La lettre de Manon (Gillet); Selection from The Rose of Stamboul (Fall); Valse lyrique (Sibelius); Der Rosehochzeitzug (Jessel); Ballet Scene (Rydahl); Songs: (a) Three Airs (Lange-Müller), (b) Three Airs (Grieg); Potpourri of Vaudeville Airs (Holstein-Magnussen); Waltz, España (Waldteufel); Dance of the Elves, from Wayland the Smith (Henriques); Mazurka, Helga (Lumbye); Czardas from Der Geist des Wojewoda (Grossmann). 5.0, Gramophone Concert: Aria from La Sonnambula (Bellini); Aria from The Force of Destiny (Verdi); Aria from A Masked Ball (Verdi); Aria from La Bohème (Puccini); Sei nicht böse, from Der Obersteiger (Zeller); Song from New Moon (Romberg); Foxtröf (Scotts-Schubert). 5.40, Exchange Quotations and Fish Market Prices. 6.20, Talk. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Literary Talk. 8.0, Chimes from the Town Hall. 8.1, Concert of Operetta Music by the Station Orchestra, conducted by Walter Meyer-Radon: Overture, Der Waldmeister (Johann Strauss); Ballet Music from Le belle Hélène (Offenbach); Selection from The Geisha (Jones); Polka from Der Obersteiger (Zeller); Selection from The Czarevitch (Lehár); One-step from No. No. Nanette (Youmans). 9.0, Sonata in B Flat for Pianoforte (Schubert), by Ole Willumsen. 9.30, Reading. 9.45, News Bulletin. 10.0, Symphony Concert by the Station Orchestra, conducted by Walter Meyer-Radon: Symphony No. 1 in B flat (Schumann); Academic Festival Overture (Brahms).

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items, News, and Programme Announcements. 7.35, Radio Journal. 7.45, Talk. 8.0, See Warsaw. 10.40, Sports Notes. 10.50, Talk. 10.55, Dance Music. 11.30 (approx.), Close Down.

DANZIG.—See Weinsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2BN, 413 metres; 1.2 kW.; and **CORK**, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Forecast, Stock Report, and Popular Music on Gramophone Records. 6.0, Light Music on Gramophone Records. 6.15, Programme for Children. 7.0, Popular Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Talk. 8.0, Recital by the Maudr Instrumental Trio. 8.10, Clarinet Solos by Pat Ryan. 8.30, The Maudr Trio (contd.). 8.50, Soprano Solos by Winnie McDonough. 9.0, Variety Programme by John MacDonagh and Company. 9.40, Sextet Concert. 10.0, Song Recital by Sean Neeson. 10.15, Airs by the Station Sextet. 10.30, Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Concert of Light Music. 7.30, Radio Gazette. 8.0, News Bulletin. 8.30, Wireless Notes. 8.45, Popular Music on Gramophone Records. 9.0, Concert, relayed from the Municipal Casino, Le Tréport. 10.0 pm. till Close Down, Programme in English by the I.B.C.—10.0 p.m., Concert of Dance Music: The Changing of the Guard; Eleven More Months and Ten More Days; Goopy Geer; This Is the Missis; Home; Honest, Really, Truly; I Don't Know Why; Mausie; How's Your Uncle?; In the Jailhouse Now; Got a Date With an Angel; Must It End Like This; Three Little Times; I'm For You a Hundred Per Cent.; Song of Happiness; Meet Me To-night in the Cowshed. 11.0, Studio Concert. Orchestra: My Sunshine is You (Stolz); Songs: (a) When Your Lover Has Gone, (b) I Still Have Dreams of You. Orchestra: The Musical Comedy Switch (arr. Hall). Songs: (a) To Whom It Might Concern, (b) I'm Yours. Orchestra: What's Next? Songs: (a) Balls, Picnics and Parties, (b) She Jumped on her Push-bike and Pedaled Away. Orchestra: Vienna, Vienna. Songs: (a) You Forgot Your Gloves, (b) Fanny the Fairy Queen. Orchestra: Good-night, Sweetheart (Noble). 12 Midnight, Concert of Dance Music: Here Comes the Sun; Ho Hum; Sing; The Queen was in the Parlor; I Am the Words; Sweet and Lovely; There's Something About an Old-Fashioned Girl; The Waltz You Saved for Me; I Found You; In a Little Rendez-vous; If You're Really and Truly in Love; I Like a Little Girl Like That; Lazy Day; Wrap Your Troubles in Dreams; When the Moon Comes Over the Mountain. 12.57 a.m. (Tuesday), I.B.C. Good-night Melody. 1.0, Close Down.

FLENSBERG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres, 1.5 kW., and CASSEL, 246 metres.—6.15 p.m., Economic Notes. 6.25, Report on the Goethe Exhibition in Frankfurt.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra; March, Die Jugend (Lindemann); Waltz, Toujours adorable (Popovici); Overture, Cavalleria rusticana (Mascagni); Suite, Travel Sketches (Holladay); Andante con variazioni (Weber); The Vision of Fuji San (Keteley); Waltz, Gold and Silver (Lehár). 5.0, News Bulletin and Time Signal. 5.10, Concert by the Station Orchestra (contd.); Selection from Lukmè (Delibes); Overture, Felix the Cat (Kark); Engelstraum (Rubinstein); Waltz Potpourri, Legends of the Danube (Morena). 6.0, Educational Programme. 6.42 to 6.40, Light Music on Gramophone Records. 7.0, Concert of Chamber Music. 7.30, Talk (to be announced). 7.45, Jazz Music on Two Pianofortes. 8.15, Chamber Music (contd.). 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on 210 metres from 6.30 to 12 Midnight.—5.0 p.m., Concert by the Misi Voros Cigány Orchestra. 6.0, Reading. 6.30, Concert by the Salon Orchestra, conducted by Istvan Bertha: Intermezzo (Tchaikovsky); Song (Huszka); Grossmutterchen erzählt (Szabados); Hungarian Folk Songs (arr. Demeny); Schmetterlingsliebe (Schütt); Hungarian Rhapsody (Szekely-Bertha). 7.30, Light Music on Gramophone Records. 8.30, Reading. 9.0, See Vienna. After the Programme: Time Signal, Weather Forecast, and News Bulletin, and Music by the Imre Magyari Cigány Orchestra.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW., and KALUNDBORG, 1,153 metres; 7.5 kW.—7.30 a.m., Physical Culture Course. 8.30, Divine Service from the Cathedral. 11.0, Weather Report. 11.10, Angling Notes. 12 Noon, Chimes from the Town Hall. 12.1 p.m., Concert by a String Ensemble, conducted by A. Bendix, relayed

AUGUST 8th

MONDAY

continued.

furt. 6.50, English Lesson. 7.15, Time, Programme Announcements, Weather, and Economic Notes. 7.30, Mandoline Concert. March, In Treue fest (Teike); Potpourri. Unter der Dorflinde (Ritter); March of the First Battalion of Guards (Zechlin); Heintzelmann's Wachtparade (Noack). 8.0, The Return Coach, or A Journey into the Past—Radio Play (Hörns Riecher). 9.0, See Vienna. 10.20, Time and News. 10.45, Concert from Vienna. 12. midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENOVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—5.55 p.m., The Young Richard Wagner as a Composer of Opera—Talk with Illustrations by Erna Kroll-Lange, Herbert Ernst Groh, and Bernhard Jackschat. 6.35 (from Hanover), Talk: Young People in Industry. 6.55, Exchange Quotations. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20, The Genius of Adventure—A Programme of Literature and Music. The Norag Orchestra, conducted by José Eihenschütz, with Ernst Glaser-Oslo (Violin); The Orchestra: Die Geschöpfe des Prometheus (Beethoven); I, Tilting Against the Windmills of Life, Cervantes (Creator of Don Quixote); II, The Crucifixion of the Soul, Dante (Creator of the Divine Comedy); III, The Demons of Music, Paganini (the Violin Virtuoso); IV, The Bohemian in the Salon, Abbé Liszt (Budapest - Weimar - Rome); Hungarian Rhapsody No. 6. 9.0, See Vienna. 10.20, News Bulletin. 10.40, Concert from Vienna. 12 Midnight (approx.), Close Down.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—11.30 a.m., Concert from Hamburg. 1.5 p.m., Gramophone Concert: Florentine March (Fucik); Overture, The Daughter of the Regiment (Donizetti); Selection from Samson and Delilah (Saint-Saëns); Cavatina from Faust (Gounod); Air from Masaniello (Auber); Air from Lohengrin (Wagner); Gretchen am Spinnrad (Schubert); Des Mädchens Klage (Schubert); Miserere from Il Trovatore (Verdi); Song from Martha (Flotow); Selection from Bluebeard (Offenbach); Potpourri, Viennese Operetta Revue (Robrecht); Potpourri, Streiflichter (Morena). 2.30 to 4.0, Interval. 4.0, Programme for Children. 4.50, Concert from Breslau. 5.30, Songs to the Lute. 5.50, Talk on East Greenland. 6.15, Agricultural Prices. 6.25 (from Danzig), The Hour of the City of Danzig—Danzig in the Eyes of Living Authors. 6.50, Talk: Memorable Days of the Week. 7.0, Talk in Memory of Jakob Burekhardt, Historian. 7.25, Concert Dances for Pianoforte—Recital by Egbert Grape; Tarantella, Venezia e Napoli (Liszt); Three Mazurkas (Chopin); (a) in C Sharp Minor, (b) in E Minor, (c) in A Minor; Old Viennese Dances, Nos. 1, 2 and 3 (Friedman-Gärtner); Concert Paraphrase on the Ballet Naïfa (Delibes-Dohnanyi). 7.55, Weather Forecast. 8.0, See Breslau. 9.0, See Vienna. 10.20 (approx.), Weather Forecast, News Bulletin, and Sports Notes.

HILVERSUM

Announced HUIZEN; 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—Programme of the Christian Radio Society (N.C.R.V.).—7.40 a.m., Bible Reading. 7.55 to 9.10, Light Music on Gramophone Records. 10.10, Programme for Invalids. 10.40, Religious Address. 11.10, Popular Music on Gramophone Records. 11.40, Police Notes. 11.55, Interval. 12.10 p.m., Organ Recital by Jan Zwart: Prelude and Fugue in C minor (Bach); Trio in C minor (Bach); Toccata in D minor (Bach); Three Songs for Organ (Zwart); Fantasia (Merkel); Grand Choral (Guilmant); Three Psalms for Organ (Zwart); Prelude and Fugue in E minor (Bach); Air in F (Bach); Toccata and Fugue in D minor (Bach). 1.40, Light Music on Gramophone Records. 2.35, Talk. 2.55, Dressmaking Lesson. 3.10, Fashion Notes. 3.25, Interval. 3.40, Programme for Invalids. 4.40, Concert by the Station Orchestra, conducted by Piet van den Hurk: Hin nach Zion (Ruh); Lobet Ihr Himmel (Nigel); Selig sind des Himmels Erben (Nigel); Selection from St. Paul (Mendelssohn); Kun je nog zingen (arr. Bouwman); Gebet fürs Vaterland (Hietschold); Vaterland, ruh' in Gottes Hand (Heim); Hinaus, hinaus es halt zum Streit (Ruh); Brüder seid die Bundesfahne (Müller); Selection from Traumbilder (Lumbye); Czardas (Grossmann). 6.30, Answers to Correspondents. 7.25, Press Review. 7.30, Police Notes. 7.40, Concert by the Station Orches-

tra, conducted by Marinus Adam, with Choral Items by the N.C.R.V. Women's Choir, conducted by Louise Lauenroth; Entr'acte Music from Rosamund (Schubert); Romance from Symphony No. 4 (Schumann); Entry of the Guests into the Wartburg, from Tannhäuser (Wagner); Introduction to the Third Act of Tristan and Isolde (Wagner); Hungarian Rhapsody No. 9 (Liszt); Valse triste (Sibelius); Overture, Cyrano de Bergerac (Wagenaar). 8.40, Talk. 9.10, Concert (contd.): Five Dutch Songs; Danse macabre (Saint-Saëns); Second Suite from L'Arlesienne (Bizet). 9.40 (approx.), Press Notes. 10.10, Light Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25, Gymnastics. 7.40, Gramophone Records of Variety Music. 8.40, Septet Concert. 9.40, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55 till Close Down, V.A.R.A. Programme. 9.55, Recitations. 10.10, Septet Concert. 10.40, Recitations. 10.55, Septet Concert (contd.). 11.25, Recitations. 11.40, Trio Concert: Overture, La finta giardiniera (Mozart); Valse lyrique (Sibelius); Polonaise, Op. 40, No. 1 (Chopin); Selection from Lilac Time (Schubert-Berté). Gramophone Records of Light Music: Selection from Tannhäuser (Wagner); Wedding Song and Hindu Song from Sadko (Rimsky-Korsakov); Waltz, Naples (Waldeufel). Gramophone Records of Variety Music: Violin Solos, (a) Quasi Balata. (b) Appassionata (Suk); Bird Song at Eventide (Coates); Intermezzo, Struzzi (Siede-Platen); Foxtrot Intermezzo, Little Indiarrubber Man (Siede-Platen); Finale. 1.55 p.m., Literary Programme. 2.40, Two Centuries on Gramophone Records—Talk with Illustrations. 4.10, Programme for Children. 4.40, Septet Concert of Light Music, with Gramophone Interludes. 6.10, Organ, Violin and Cello Recital: Marche gothique (Mouton); Passepied and Tambourin (Razigade); Gavotte tendre (Ganne); Gigue (Wormser); Selection from Le Martyre de Saint Sébastien (Debussy-Mouton); Le Baiser d'Éunice, from Quo Vadis (Nougues); To the Sea (MacDowell). Gramophone Records of Variety Music: Campana a Sera (Billi); Violin Solo, Pale Moon (Logan-Kreisler); Sabar de España (Fusté); Habanera (Chabrier); Secoud Waltz (Godard); Selection from Silvano (Mascagni); Danza esotica (Mascagni). 7.40, Talk arranged by the Post Office. 7.55, Orchestral Concert conducted by Jan van der Horst: March, Gruss Gott Wien (Komzak); French Comedy Overture (Kéler-Béla); Waltz, Flattergeister (Strauss); Tarantella, La danza (Rossini); Alt Wiener Reigen (Oscar Straus); Selection from La Bohème (Puccini). 8.40, Dramatic Programme. 9.10, Concert (contd.): Overture, Marinella (Fucik); Wedding Serenade (Klose); Torch Dance of the Brides of Kashmir, from Feranors (Rubinstein); Selection from Carmen (Bizet). 9.40, News Bulletin. 9.55, Concert (contd.): Overture, Banditenstreich (Suppé); Waltz, Wiener Bürger (Ziehler); Selection from Countess Maritza (Kalman); Polka, Nervös (Ziehler); Die Backisch-Parade (Lineke); Lineke Wincke Potpourri (Lineke). 10.40, Variety Concert on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.20 p.m., Popular Music on Gramophone Records, and News Bulletin. 7.45, Gramophone Concert.

KAUNAS

1,935 metres; 7 kW.—7.0 p.m., Variety Items. 8.0, Talk. 8.20, Concert of Chamber Music. 8.50, Talks. 9.30, Concert of Light Music. 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and HELSINKI, 368.1 metres.—6.15, Pianoforte Recital by Berta Anderson. Gavotte (Bach); Song without Words, No. 14 (Mendelssohn); Air from the Spanish Suite (Melartin); Ballade (Kaski); Conversation (Hannikainen); Albumblätter (Hannikainen); Finale from the Intermezzo lyrique (Palmgren). 6.35, Talk. 7.0, Concert by the Station Orchestra; Orchestral Suite, Op. 99 (Sibelius); Selection from Eugene Onegin (Tchaikovsky). 7.30, Recitation. 7.50, Vocal Quartet Concert. 8.10, Concert of Military Music by the Station Ensemble. 8.45, News Bulletin in Finnish. 9.0, News Bulletin in Swedish. 9.15, Light Music from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—12 Noon, Popular Concert, relayed from Stuttgart. 1.15 p.m., Weather, Announcements, Time Signal, and Report on the Olympic Games. 1.30, Concert by the Düsseldorf Symphony Orchestra, relayed from Düsseldorf: Hohenfriedberger March; German Dances (Mozart); Overture, Don Pasquale (Donizetti); Ave Maria (Gounod); The Sanctuary of the Heart (Ketebeby); Melodies from the Land of Smiles (Lehar); Pasodoble, Marietta (Kapplusch). 2.30, Meat Market Prices. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Reading for the Young. 5.0 to 6.15, See Frankfurt. 6.20, Talk for Parents: The Small Child's Toys. 6.45, Weather, Time, Economic Notes, and Sports Report. 7.0, Talk: Heresies of Our Day: Dramatic Films and Film Dramas. 7.30, Talk: Germany's Geographical Position Regarded as an Economic Factor. 7.55, News Bulletin. 8.0, Concert by the Station Orchestra, conducted by Eysoldt: Dionysisches Fest (Huppertz); Hungarian Rhapsody No. 12 (Liszt); Dance of the Elves (Moszkowsky); March of the Dwarfs (Moszkowsky); Waltz, Schwert und Leier (Jos. Strauss); Songs: (a) Frühling am Rhein (Höser). (b) Stolzenfels am Rhein (Meissler); Selections from White Horse Inn (Benatzky). 9.0, Mozart Concert, relayed from Vienna. 10.25, News and Sports Notes. 10.30 till Close Down, Light Music from Vienna.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW.; and DRESDEN, 319 metres.—6.0 p.m., Review of New Books. 6.30, Literary Talk: Flaubert (Dr. Martin Kunath). 6.50, Programme to be announced. 7.0, Talk: The Central German Agricultural Market. 7.30, Recital of Piano and Violin Music and Songs. Fritz von Bose (Pianoforte), André Kreuchauf (Teuor), and Kurt Stiebler (Violin); Three Preludes, Op. 27 (Bose) played by the Composer: (a) in D Minor, (b) in E, (c) in B Minor; Three Songs with Pianoforte accompaniment (Schumann): (a) Freisinn, (b) Anden Sonnenschein, (c) Wanderlied. Two Pieces (Sarasté): (a) Andalusian Romances, Op. 23, Nos. 3 and 4, (b) Jota Navarra. Two Songs (Richard Strauss): (a) Heimliche Aufforderung, (b) Zeugniss. Three Pieces (Fritz von Bose): (a) Gavotte, Op. 29, No. 1, (b) Etude, Op. 5, No. 5, (c) Scherzo, Op. 16, No. 2. Three Songs (Eugen Hildach): (a) Das Kraut Vergessenheit, (b) In meiner Heimat, (c) Der Lenz. Two Pieces (Sigfried Karg-Elert): (a) Canzone Burlesque Serenade, (b) Moto perpetuo. 8.30, Günther Birkenfeld reads from his own Works. 9.0, See Vienna. 10.5, News Bulletin, followed by Concert from Vienna. 12 Midnight, Report on the Olympic Games. 12.10 a.m. (Tuesday), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Trio Concert. 7.0, Talk: Sandro Botticelli. 7.30, Polish Relay. 8.0, Song Recital. 8.50, Dance Music, relayed from Bled. 10.30, Time Signal and News Bulletin, followed by Quartet Concert of Popular Songs.

LWOW

381 metres; 16 kW.—6.20 p.m., See Warsaw. 7.15, Miscellaneous Items. 7.35, See Warsaw. 7.45, Old and Young Folk—Programme by Elga Kern. 8.0, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.30 p.m., Radio Gazette for Lyons and the South-East. 7.40, Announcements. Exchange Quotations, Time Signal, and News. 8.0, Talk for Bee-keepers. 8.10, Music Review. 8.20, Talk. 8.30, Liszt and Saint-Saëns Gala Concert, relayed from the Casino, Vichy. Soloist: M. Robert Casadesu (Pianoforte).

MADRID

ARANJUEZ, Call EAQ, 30.4 metres; 20 kW.—12.30 a.m. (Tuesday), Light Music. 12.45, Radio Chronicle. 1.0, Popular Concert. 1.35, Talk. 1.40, Light Music. 2.0 (approx.), Close Down.

MADRID

Union Radio, Call EAJ7, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations and Market Prices, followed by a Request Gramophone Concert. 9.15, General News Bulletin. 9.30, Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—7.0 p.m., See Prague. 8.15, See Brno. 9.30, See Prague. 10.15, Programme Announcements. 10.20, See Prague.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Popular Music. 6.30, Young Communists' Radio Journal. 7.10, Musical Programme. 8.0, Talks in German and English: How Wars Begin. 9.55, Time Signal and Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—5.0 p.m., Orchestral Concert, conducted by Erich Kloss: Overture, Night in Madrid (Glinka); Valse triste (Sibelius); Fantasia on The Huguenots (Meyerbeer-Tavan); Waltz, Toujours ou jamais (Waldeufel); Suite orientale (Popy); Lautenstüchchen (Wismar). 6.15, Talk: China and Europe. 6.35, A Quarter of an Hour in China—Talk with Gramophone illustrations. 6.55, Time, Weather, and Agricultural Notes. 7.5 Talk: German Science in China. 7.30 (from Nürnberg), Concert by the Elfer Choral Society; Madrigals: (a) Innsbruck, ich muss dich lassen (Isaac), (b) An einem Büchlein (Waeltraut), (c) So wünsch' ich ihr ein' gute Nacht (Reichart), (d) Kommu', Geselle mein; Folk Songs: (a) Das Volkslied (Klenz), (b) Der Lindenbaum (Schubert), (c) Untreue (Gluck), (d) Das stille Tal. 8.0, See Breslau. 9.0, See Vienna. 10.20, Time, Weather, News, and Sports Notes. 10.45, Late Concert, from Vienna. 12 Midnight (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by FREDRIKSSTAD, 367.6 metres; HAMAR, 560 metres; NOTODDEN, 447.1 metres; PORSGRUND, 463.2 metres; and RJUKAN, 447.1 metres.—6.30 p.m., Violin Recital by Michael Lie. Ivar Johnsen at the Pianoforte. 7.0, Announcements, Weather and News. 7.30, Talk: The History of Manufactures and their Importance. 8.0, Time Signal. 8.2, Orchestral Concert, conducted by Hugo Kramm. Soloist: Ivar Andresen (Baritone), of the Berlin Opera House; Overture, The Master-singers (Wagner); Two Baritone Arias from Tannhäuser (Wagner); Celtic Suite (Goulda); Baritone Solos (Verdi): (a) Aria from Ernani, (b) Aria from Macbeth; Overture, Figaro (Mozart); Andantino from the Symphony No. 4 (Tchaikovsky). 9.20, Talk: Adventures in the Great Ports of the World. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Pianoforte Recital, by Rolf Brandt Rantzaun. 10.35 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 to 6.30 p.m., Light Music on Gramophone Records. 8.0, Announcements, Tourist Report, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Light Music on Gramophone Records. In an interval at 8.30, Time Signal and Announcements. 8.45, "Blame the Radio"—Comedy in Three Acts (Tiranti). In the intervals, Popular Music on Gramophone Records. 10.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE; 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (preliminary and 6-dot signals). 6.45 p.m., Talk: Making Films. 7.0, Le Journal Parlé. 8.30, Liszt-Saint-Saëns Concert, relayed from the Casino, Vichy. The Grand Casino Orchestra and Choir. Soloist, Robert Casadesu (Pianoforte). Symphonic Poem, Les Préludes (Liszt); Concerto in A for Pianoforte and Orchestra (Liszt); Symphonic Poem, Orphée (Liszt); Danse macabre for Pianoforte and Orchestra (Saint-Saëns); Le Déhugé (Saint-Saëns). 10.30 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—7.0 p.m., News Bulletin and Parliamentary Review. 7.5, Light Music on Gramophone Records. 8.0, Sports Notes. 8.20, Archaeological Talk on Paris. 8.30, Radio Journal and News Bulletin. 8.45, Sponsored Concert. 9.45, Dance Music, relayed from the "Ambassadeurs." 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture Lesson. 7.30, Weather and Second Physical Culture Lesson. 7.45, Opera Music on Gramophone Records. 8.0, Press Review and Weather. 12 Noon, Gramophone Concert: Act Two of Faust—Opera (Gounod), Act Three of Tosca (Puccini), Extracts from Les Cloches de Corneville (Planquette). In the intervals at 1.0 p.m., Exchange, News, and Weather, and at 1.30 and 2.0, Exchange Quotations.

AUGUST 8th

MONDAY

continued.

3.45, Exchange and Market Prices. 4.45, Mozart Concert, relayed from the American Conservatoire at Fontainebleau; M. Philipp and Mlle. Herrenschmidt (Pianoforte); M. André Pascal (Violin); and M. Paul Bazelaire (Cello). Quartet No. 1; Sonata for Pianoforte and Violin; Sonata for Two Pianofortes; Quartet No. 2. 6.30, Market Prices, Weather, Agricultural Talk, Exchange Quotations, and Racing Results. 7.0, Gramophone Concert: Pianoforte Solo: Prelude (Rachmaninov); Les oies de Lauterbourg (Héie); Nocturnes (Debussy); Song: Variations (Proch); La chaîne (Daniderff); Carolina Moon (Burke); Mascarade (Lacôme). 7.45, Commercial Prices and Announcements. 7.45, Picturesque Poetry (Rictus-Richepin), with Louis Seigner, Chamarrat, Baccinet, and Mme. Marie Cazeaux. In the interval at 8.40, News, Sports Results, and Weather. 9.15, Press Review, and News. 9.30, Concert of Chamber Music: Pianoforte Solos by C. (Bach-Busoni), (b) Novallette No. 7 (Schumann), (c) Evocation and El Puerto, from Iberia (Albéniz); String Quartet (Schubert). Gramophone Records: (a) Berceuse, Prelude and Dance from The Fire Bird (Stravinsky), (b) Air from Eugene Onegin (Tchaikovsky), (c) Aria from Pique Dame (Tchaikovsky), (d) Three Airs from Prince Igor (Borodin).

PITTSBURGH

WESTINGHOUSE ELECTRIC; KDKA; 205 metres; 25 kW. Relay by W3XK on 48.86 metres and 25.25 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.20, Weather Report. 9.32, Market Reports. 10, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Bulletin. 10.15, 10.12, Programme Announcements. 10.15, KDKA Kiddies' Klub. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News Today. 11.6, Teaberry Sport Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, Westinghouse Parade. 11.45 to 3.50 a.m. (Tuesday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Pepsoned Amos 'n' Andy. 12.15 a.m., Tastyest Jesters. 12.30, Stebbins Boys. 12.45, Billy Jones and Ernie Hare. 1.0, Time Signal. 1.1, Carnation Contented Programme. 1.30, Death Valley Days. 2.0, Singing Minstrels. 2.30, George Olson's Orchestra. 3.0, The Country Doctor. 3.15, Absorbine, Jr. in Footnotes. 3.30, Programme to be announced. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, The Music Box. 4.30, Jack Pettis and his Orchestra. 5.0, Terrace Gardens Orchestra, from New York. 5.30, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.0 kW.—7.0 p.m., Topical Talk. 7.15, Announcements and News Bulletin. 7.35, See Warsaw. 7.45, Popular Music on Gramophone Records. 7.58, Time Signal. 8.0, See Warsaw. 10.15, Time Signal, Sports Notes, and Police Report. 10.35 (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—3.55, Market Prices. 5.50, Talk, arranged by the Masaryk Institute: Paying Visits in the Nineteenth Century. 6.0, Talk for Housewives. 6.10, Agricultural Report. 6.15, Popular Music on Gramophone Records. 6.25, German Transmission: News and Talk: Salzburg and its History. 7.0, Song Recital by Redy Boden. 7.25, Violin Recital by Milan Lusk, of Chicago: Violin Concerto No. 4 in D minor (Vieuxtemps); Tango (Albéniz-Kreisler); A Dream Song (Moskowsky-Lusk); Guitarr (Moskowsky-Lusk). 8.0, Talk: The Theatre in Relation to Life. 8.15, See Brno. 9.0 (in the interval), Time Signal. 9.30, Pianoforte Recital by Prof. J. Herman. 10.0, Time Signal. 10.2, News and Sports Notes. 10.15, Theatre and Programme Notes. 10.20, Gramophone Records of Popular Music.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 580 metres; and GENEVA, 760 metres.—Programme from Geneva. Lausanne not transmitting.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40, Light Music on Gramophone Records. 1.0, Financial Notes. 1.5, Gramophone Records of Popular Music. 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.30, Concert by the Station Quintet. 7.0, Weather Forecast. 7.5, Variety Music on Gramophone Records. 7.40, Recitations by M. René-Louis Pielhaud. 7.55, News Bulletin. 8.0, Concert of Waltz Music by the Station Orchestra. 8.45, Reading by M. Henri Tanner. 9.0, See Vienna. 10.0, News Bulletin and Weather Report. 10.15, Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 441 metres; 50 kW. Relay by Naples, 319 metres, and 2RO, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio and An-

nouncements. 12.30 to 2.15 p.m., Weather, followed by Concert of Light Music on Gramophone Records. In the intervals at 1.15, Giornale Radio, and at 1.30, Time and Announcements. 5.0, Exchange, Children's Radio Review, Giornale radio and Announcements. 5.50, Song and Violin Recital: Nella Ranieri (Violin) and Maria Senes (Soprano); Violin Solos: (a) Chaconne (Vitali), (b) Rondino (Beethoven-Kreisler); Soprano Solos: (a) Song (Schumann), (b) Song from Fra Diavolo (Auber); Violin Solos: (a) Serenata napoletana (Sgambati), (b) Popular Russian Song (Kreisler); Soprano Solos: (a) Ma poupée chérie (de Sévère), (b) Spagnuola (de Lucia). 6.15, Tourist Report. 7.10, Naples, Shipping and Sports Notes. 7.15, Agricultural Notes, Announcements and Giornale radio. 8.0, Time, Announcements and Gramophone Records of Variety Music. 8.30, Sports Notes, Announcements and Review of Books. 8.45, Gastone the Trainer—Comedy in One Act (Luigi Ercole Morelli). 9.15, Concert of Light Vocal and Instrumental Music: You brought a New Kind of Love to me; Soprano Solo: Piccole rose (Stallelli); La Sirène (Waldteufel); Tenor Solo: Canta mio cuore (Mariotti); Soprano Solo, Non va (Bixio); Fantasia on Viennese Operetta Melodies (Hruby); Allegretto (Mascheroni); Tenor Solo: Se tu mi baci (Buzi); Soprano Solo: The Song is ended (Stolz); Soprano Solo (Heymann); Pattuglia degli izigani (Ranzato). After the Concert, Gramophone Records of Variety Music. 10.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 60 kW. Relay at intervals by W2XAF on 31.48 metres and by W2XAD on 19.55 metres.—9.0 p.m., Book Chat. 9.15, William Steven (Baritone). 9.30, Soloist, from New York. 9.45, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15, Pop's Pirate Club, from New York. 10.30, Swanee Serenaders, from New York. 10.40, ABC Thumbnail Sketches. 10.45, Swanee Serenaders, from New York (cont'd). 11.0, Waldorf Astoria Orchestra, from New York. 11.15, Musical Programme, from New York. 11.30, New Keimore Orchestra. 11.55, Baseball Scores. 12 Midnight, Under the Big Top. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Tuesday), Chandu, the Magician. 12.30 to 4.0, New York Relay. 12.30, Maxwell Tune Blenders. 12.45, The Goldbergs. 1.0, Soconyland Sketch. 1.30, Voice of Firestone. 2.0, A and P Gipsies. 2.30, Parade of the States. 3.0, National Radio Forum. 3.30, Do You Remember? 4.0, Arm Chair Chats. 4.15, Johnny Albright (Crooner). 4.30, Gordie Randall's Orchestra. 5.0, Rex Koury (Organist). 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASEL, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Report and News Bulletin. 12.40, Popular Music on Gramophone Records. 1.35, Weather Report and Exchange Quotations. 1.45 to 3.50, Interval. 3.30, Concert by the Small Station Orchestra. 4.0, Popular Concert on Gramophone Records. 5.0, Weather Report. 5.2 to 6.30, Interval. 6.30 (from Zürich): Talk for Young People. 7.0, Time Signal and Weather Forecast, followed by Gramophone Concert of Variety Music. 7.30 (from Zürich): Talk: Paths to Happiness. 8.0 (from Zürich), Operettas by the Station Orchestra, conducted by Erwin Gilbert, with Songs by Thea Herberger-Hosch. 9.0, See Vienna. 10.0 (approx.), Weather Forecast and News Bulletin. 10.15 (approx.) (from Zürich), Overture, Oberon (Weber) by the Station Orchestra. 10.30, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW, relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m. (from Boden), Accordion Recital. 5.45, Reading. 6.15, Gramophone Records of Light Music. 7.15, Weather and News. 7.30, Talk: The Election of Members of the Riksdag. 8.0, (from Göteborg), Choral Concert. 8.30 Talk relayed from Malmö, 231 metres. 9.0, Song Recital by Sven Nilsson with Pauline Brunius (Recitations): Songs (Peterson-Berger): (a) Minhyman vid Lambertsmässen and (b) Jungfrun under lind; Recitation, Two Songs (Peterson-Berger): (a) Sing efter skördanden and (b) Fanjunkare Berg; Recitation Songs: (a) Dröm (Emil Sjögren); I seralvens ljustgård (Emil Sjögren); Vingar i natten (Ture Rangström). 9.45, Weather and News. 10.0, Concert of Light Music by a String Orchestra: Overture, Zampa (Hérold); Waltz (Lincke); Two

Elegiac Pieces (Petersen); Ballet égyptien (Luigini); Spanish Dance (Fielitz); Selection from The Tales of Hoffmann (Offenbach); Valse triste (Sibelius); Slav Dances (Dvorak). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light Classical Music. 12.45 p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Concert from Bordeaux-Lafayette. 1.50, Gramophone Records of Variety Music. 2.0 to 4.45, Interval. 4.45, Talk in French: Dams. 5.0, Orchestral Concert conducted by M. Roskam: March, The League of Nations (Lincke); Waltz, On the Green Narenta (Komzak); Scherzetto, En Batifolant (Tellem); Russian Suite (Kostal); Melody, I Sing for Thee (Ropp); Overture, Pique Dame (Suppé); Selection from Jédé (Christiné); Esquisses provençales (Popy); Andalusian March (Krier). 6.0, Literary Talk in French. 6.15, Topical Review. 6.30, Sponsored Gramophone Concert. 7.30, Time Signal, and News in French and German. 7.45, Rip van Winkle—Comic Opera in Four Acts (Planquette). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—10.0 a.m., From the Rocco Period—Cinema Organ Recital by Kurt Albrecht: Two Minnets (de Montalant): (a) Manchettes et Jabot, (b) Tempo di Minuetto; Musette (Kurt Lubbe); Rocco Rondo (Franchetti-Crespi); Minuet (Manrice Baron); Powder and Perukes (Percy Fletcher); Trion (Walter Niemann); Gavotte, Sanssouci (Walter Neimann). 10.20, Song Recital by Maria Theresa Diemann, Artur Haagen at the Pianoforte: Prelude for Pianoforte (Kahn); Songs: (a) Am Oleanderbaum, (b) Gleich und gleich. (c) Das zerbrochene Krüglein, (d) Im Volkston (Julius Weismann). 10.40, Cinema Organ Recital: March from Ronny (Kalman); English Waltz from Stürme der Leidenschaft (Hollander); Foxrot from Ein toller Einfall (Jurmann-Kaper); Tango from Der Fruchtdaels (Samek); Six-eight from Das Lied einer Nacht (Mischa Spoliansky). 11.0, Time, Weather, and News. 11.55, Weather Forecast. 12 Noon (from Karlsruhe), Concert by the Karlsruhe Philharmonic Orchestra, conducted by Franz Dolezel: Second Military March (Schubert); Overture, La Belle Hélène (Offenbach); Waltz, Alpenrosen (Rösch); Paraphrase on the Song; Wie schön bist du (Nesvadba); Selection from Mam'selle Nitouche (Hervé); Volksliedchen und Märchen (Komzak); Selection from The Maid of the Black Forest (Jessel). 1.15 p.m., Time, Weather, News, and Programme Announcements. 1.30, Gramophone Concert of Songs by the Milan Scala Choir: Song from Don Pasquale (Donizetti); Song from The Force of Destiny (Verdi); Melody from Rigoletto (Verdi); Gipsy Chorus from Il Trovatore (Verdi); Easter Hymn from Cavalleria rusticana (Mascagni); Song from Cavalleria rusticana (Mascagni); Chorus of the Bells from I Pagliacci (Leoncavallo). 2.0 to 2.30, Sponsored Concert. 4.30, Talk: The Good Old Times. 5.0 (from Schlagenbad), Concert of Light Music. 6.15, Time and Weather. 6.25, Talk: The Reorganisation of Unemployment Welfare. 6.50, See Frankfurt. 7.15, Time, Weather, and Agricultural Notes. 7.30 to 9.0, See Frankfurt. 9.0, See Vienna. 10.20, Time, Weather, News, Programme Announcements, and Report on the Olympic Games. 10.45, Talk on Chess. 11.10, Concert from Vienna. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Hawaiian Guitar Solos. 5.45, Light Music. 6.15, Exchange Quotations and Horse Racing Results. 6.30, Variety Music on Gramophone Records. 7.30, News Bulletin. 7.45, Selections from (a) Boris Godounov (Mussorgsky), (b) Figaro (Mozart), and (c) Martha (Plotow). 8.0, Concert: In the Shades (Finck); Chanson triste (Tchaikovsky); Prelude (Rachmaninov); A Viennese Waltz (Benatzky); Baux yeux (Hlasek); Spring Song (Sibelius); Selection from The Czardévitch (Lehar). 8.30, Sound Film Music. 8.45, Concert: Overture, Die Fledermaus (Joh. Strauss); Marche joyeuse (Chabrier); Bourrée fantasque (Chabrier); By the Ramparts of Seville, from Carmen (Bizet); The Swallows Duet, from Mignon (Thomas); Mimi's Farewell from La Bohème (Puccini); Prayer and Opening Chorus from Lakmé (Delibes). 9.15, Accordion Solos. 9.30, Light Music. 9.45, Military Music. 10.0, Selections from (a) L'Africaine (Meyerbeer), (b) William Tell (Rossini), and (c) La Juive (Halévy). 10.15, Cello Recital: Meditation from Thais (Massenet); Intermezzo from Goyescas (Granados); Prelude, Le Déluge (Saint-Saëns); Aubade from Le Roi d'Ys (Lalo). 10.30, North African News. 10.45, Orchestral Selections from (a) Les Noces de Jeannette (Masse), and (b) Les Cloches de Corneville (Planquette).

11.0, Concert: Air from Tosca (Puccini); Air from Hérodiade (Masseuet); March of the Grenadiers (Schertzingler); La Tour Eiffel, s.v.p. (Buch-Laverne); Was it a Dream? (Heymann); Estudiantina (Waldteufel); Spanish Caprice (Rimsky-Korsakov); J'ai deux amours (Scott); La voix des chaînes (Goulier); Serenade (Toselli). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.5 p.m., Quintet Concert. 8.0, till close down, see Turin. TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relay by Milan, 331.5 metres; Cenoa, 312.8 metres; and Florence, 500.8 metres.—7.5 p.m., Variety Music Suite Saharienne (Ackermans); Memories of Ukraine (Ferraris); Piece (Humud). 7.30, Time and Announcements. 7.35, Variety Music on Gramophone Records. 8.0, Giornale Radio, Weather and Popular Music on Gramophone Records. 8.20, Review of New Books. 8.30, Orchestral Concert: Selection from Il Guarany (Gomez); Dance of the Waves from Loreley (Catalani); Selection from I Pagliacci (Leoncavallo); Intermezzo from Adrienne Lecouvreur (Cilea); Selection from Czar and Carpenter (Lortzing). 9.20, A Comedy in One Act. 10.0 (approx.), Concert (continued): Selection from The Force of Destiny (Verdi); Witches Ride from Hansel and Gretel (Humperduck); Selection from La Bohème (Puccini); Pantomime (Lacôme); Overture, Der Scheuspieldirektor (Mozart). 11.0, Giornale Radio.

VATICAN CITY

19.84 metres Morning, and 50.26 metres Evening; 10 kW.—11.0 to 11.45 a.m., Religious Information in Italian. 8.0 to 8.45 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relay by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—6.15 p.m., Talk by Dr. Marie Anna Schirrmann: The Forging of Pictures. 6.35, Books of Reference on the Week's Radio Talks. 6.40, Talk: A Tour through Vienna. 7.5, Talk: Art in the United States. 7.30, Time Signal, Weather Forecast, and Programme Announcements. 7.40, Vienna in the Summer—Concert. arr. Edmund Skurawy. Soloists, Greta Holm (Songs), Franz Hoffmann (Songs), Adolf Watzal (Songs), Rudolf Mauld and Heinrich Leisser (Duets), Adalbert Vesely (Zither); The Pepi Wichtel Folk Music Quartet and the Otto Romisch Orchestra. Robert Koglan at the piano. 9.0, Salzburg Festival, 1932. Mozart Concert by the Vienna Philharmonic Orchestra, conducted by Bernhard Paumgartner, relayed from the Old Episcopal Residence, Salzburg. March in D major; Serenade in D major; Adagio and Rondo; Three German Dances. 10.20, News Bulletin, Weather Forecast, and Announcements. 10.40 to 12 Midnight, Evening Concert of Orchestral Music. Conductor, Josef Holzer.

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Popular Music on Gramophone Records. 2.10, Interval. 3.0, Economic Report. 3.10, Gramophone Records of Popular Music. 3.30, Review of Traffic and Transport Problems. 3.40, Variety Music on Gramophone Records. 4.35, Hydrographic Report. 4.40, Talk in French. 5.0, Pianoforte and Song Recital by Adam Kapuscinski (Pianoforte), and C. Zolchowski (Baritone). Pianoforte Solos: (a) Pensée fugitive (Michalowski), (b) Norwegian March (Grieg), (c) The Little Shepherd, (Grieg), (d) Nocturne (Grieg), (e) Scherzo (Grieg). Songs: (a) Aria from Bevenuto Cellini (Diaz), (b) Aria from Tannhäuser (Wagner), (c) Aria from La Traviata (Verdi). Pianoforte Solos: (a) Songs Without Words in E and in A Minor (Mendelssohn), (b) Oriental Caprice (Stojowski). Songs: (a) Air (Ball), (b) Si tu ressentais (Denza), (c) Melody (Rubinstein), (d) Des yeux enchanteurs (Denza). 6.0, Talk relayed from Cracow (312.8 metres). 6.20, Light Music from the Café Gastronomica. 7.15, Miscellaneous Items. 7.35, Radio Journal. 7.45, Agricultural Notes. 7.55, Programme Announcements. 8.0, The Barber of Seville—Opera (Rossini) on Gramophone Records, by the cast of the Milan Scala. In the interval, Radio Journal. 10.15, Reading. 10.30, Aviation Weather Report. 10.35, Interval. 10.40, Sports Notes. 10.50, Talk, relayed from Cracow. 10.55, Dance Music from the Adria Café.

WILNO

563 metres; 10 kW.—7.15 p.m., Talk in Lithuanian. 7.30, Programme Announcements. 7.35, See Warsaw. 7.45, Sports Notes. 8.0, Pelléas et Mélisande—Opera (Debussy) on Gramophone Records with Introductory Talk. 10.15, See Warsaw. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

BARCELONA

RADIO-BARCELONA, Call EAJ1; 349 metres; 8 kW.—8.0 p.m., Trio Concert: Love Song (Toselli); Selection from Hélène (Saint-Saëns); Minuet (Steck); Gipsy Dance (Auvray). 8.30, Exchange Quotations, Request Gramophone Records and News. 10.0, Chimes, Weather Forecast, Programme for the Families of Sailors on the High Seas, and Market Prices. 10.10, Concert by the Station Orchestra: Military March No. 2 (Schubert); Selection from Lucia di Lammermoor (Donizetti); Waltz, Was die Donau erzählt (Morena); Gavotte (Dreyer); Die schöne Japanerin (Siede); Dance Idyll (Caylor). 11.0, Reading of Poems by Catalonian Authors. 11.10, Organ Recital: Toccata (Saint-Saëns); Siciliana (Widor); Gigue (Bach); The Village Festival (Almagro). 11.40, Concert by the Station Orchestra: Suite, Friedemann Bach (Leuschner); Overture, Semiramis (Rossini). 12.30 a.m. (Wednesday), Dance Music by the Melody Boys Dance Band, relayed from the Excelsior Dance Hall, 1.0 a.m. (approx.), Close Down.

BASEL.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather Report. 12.2 p.m., Gramophone Concert of Old and New Operetta Selections and Second Weather Report for Farmers. 12.55, News Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of Scandinavian Music, relayed from Berlin (Witzleben). 3.0, Talk for Young People. 3.30, Weather and Exchange. 3.45, Programme for Women. 4.0, Talk: Tradition and Convention. 4.30, See Leipzig. 5.30, Talk: Provincial and Metropolitan Life in the U.S.A. 6.0, Talk: The Amateur and the Pianoforte (VI): Jazz for the Pianoforte. 6.30, Talk: Would an Antarchy be a Way Out of the Crisis? 6.55, Weather for Farmers. 7.0, Talk: The Power of Resistance and Courage for Life. 7.35, See Frankfurt. 10.25, Weather, News and Sports Notes. 10.45, See Hamburg. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.5 p.m., Duets by Hede Türk (Soprano) and Maria Kandt (Contralto), with Accompaniment by Anna Linde (Harpichord); Air from Judas Macabens (Handel); Song (Purcell); Air from Thyrsis and Nice (Haydn); La sorgente (Marcello); Song (Carissimi). 4.30, Talk for Young People. 4.50, Book Review. 5.20, Reading from the Poems of Johann Friedrich, Baron von Cronegg. 5.45, Talk: The National Consciousness of the Chinese and Japanese. 6.10, A Visit with the Microphone to Zeelinerhütte. 6.20, Concert of Light Music and Dance Music by the Bela Sarközi and Adolf Ginsburg Bands, relayed from the Café Berlin. 6.55, Witzleben Station informs its Listeners. 7.0, Topical Talk. 7.10, Concert (cont.). 7.35, See Frankfurt. 8.30, Concert of Old Berlin Dances by the Felix Lehmann Orchestra: Vocal Refrains by Alexander Flessburg. 10.10, Weather Forecast, News Bulletin and Sports Notes.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News and Exchange. 7.40, Local Announcements. 7.55, Lottery Results. 8.0, Popular Music on Gramophone Records. 8.15, News and Weather. 8.30, See Strasbourg.

BRATISLAVA

270 metres; 14 kW.—7.0 p.m., See Prague. 9.0, Concert of Czech Music, relayed from Kosice (293 metres). 10.0, See Prague. 10.15, Announcements and News. 10.20, Concert by a Cigány Band.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW.; and GLEIWITZ, 253 metres.—5.50 p.m., Ernst Fleissler reads from his own Works. 6.20, Programme for Women. 6.40, Talk: A Journey Through Africa. 7.0, Concert by the Station Orchestra. 7.30, Weather Forecast. 7.35, See Frankfurt. 8.30, Pianoforte Recital by Margarete Foerster-Mundry with the Station Philharmonic Orchestra. 9.20, News Bulletin. 9.30, Concert of Popular Music by the Station Philharmonic Orchestra: Overture, Lord Spleen (Lothar); Perpetuum mobile (Strauss); Waltz, Gruss an Wien (Baussner); Overture, Der Bettelstudent (Müllacker); Festmarsch (Strauss). 10.20, Time, Weather, News, Sports Results and Programme Announcements. 11.5, Answers to Correspondents. 11.15, Dance Music by the Station Orchestra. 12.30 a.m. (Wednesday), Close Down.

TUESDAY

AUGUST THE NINTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Organ music. Instrumental concert. Promenade concert from Queen's Hall. A Brewer Revue. Dance music.
LONDON REGIONAL	Ballad concert. Orchestral concert. Band concert from Palace Pier, Brighton. Orchestral concert. Dance music.
MIDLAND REGIONAL	Ballad concert. Light music. Choral concert. Programme of Olde Tyme dance music. Orchestral concert. London Regional programme.
NORTH REGIONAL	Orchestral concert. Brass Band concert. Orchestral concert from Whitby. Vocal and instrumental concert. London Regional programme.
WEST REGIONAL	National programme.
SCOTTISH REGIONAL	Ballad concert. National programme.
BELFAST	Light music. Dance music. Band concert. National programme.
ABROAD	
BARCELONA	Classical organ recital.
BERLIN	Old Berlin dances with vocal refrains.
HAMBURG	Serenade concert in Hamburg Castle, by German Music Society's Orchestra.
HUIZEN	"The Vagabond King"—musical comedy.
LEIPZIG	Chopin recital.

BRNO

342 metres; 35 kW.—7.0 p.m., See Prague. 9.0, God, let me have a son—One Act Comedy. 10.15, News Bulletin. 10.20, See Prague.

BRUSSELS (No. 1)

I.N.R.: 509 metres; 15 kW.—12 Noon, Gramophone Records of Light and Classical Music. 1.0, Le Journal Parlé. 1.10, Gramophone Concert: Airs from (a) Kaatje (Bullin), (b) Louise (Charpentier), (c) Een Winteraachtdroom (De Boeck), (d) Romeo and Juliet (Gounod), (e) Les Noces de Jeannette (Masse), (f) Samson and Delilah (Donizetti), (g) The Daughter of the Regiment (Donizetti), (h) Patrie (Pardilhe), and (i) Thais (Massenet). 5.0, Orchestral Concert, conducted by M. Kups: Overture, The Bohemian Girl (Balfe); Petite Suite d'Antan (Février); Orientale (Cui); Kamarinskaya (Glinka); Fantasia on Harlequin (Max d'Ollone); Le Cygne (Saint-Saëns); Waltz from Wiener Blut (Joh. Strauss). 5.45, Programme for Children. 6.20, Literary Review. 6.30, L'Elisir d'amore—Opera in Italian (Donizetti) on Gramophone Records. 7.15, Report of the Belgian Catholic Radio Society. 7.30, Film Review. 8.0, Orchestral Concert conducted by Charles Walpot: March, Mieke en Janneke (Siroux); Melodie enchanteresse (Ackermans); Intermezzo (Brumagne); Ariette d'autrefois (Brusselmans); Tarantella (Caludi); Parfum d'avril (Berry); Songe d'amour (Marsick); Aphrodite (L. Jongen); Waltz, Ruse d'amour (Van Lück). 8.45, Talk. 9.0, Concert relayed from the Casino, Knocke. Conductor: Pierre Monteux. Soloist: Nadia de Cléry (Songs). Overture, Le Carnaval romain (Berlioz); Symphonic Poem, Les Préludes (Biszt); Air from Tannhäuser (Wagner); Song: Gretchen am Spinnrade (Schubert); Symphonic Suite, Scheherazade (Rimsky-Korsakov). 10.30, Le Journal Parlé. 10.40, Gramophone Records of Light Music.

BRUSSELS (No. 2)

I.N.R.: 338.2 metres; 15 kW.—12 Noon, Gramophone Concert: Marche triomphale (Closset); Les belges en diligence (Snaga); Amoureuse (Berger); Jolly Fellows (Vollstedt); Overture, Im Reiche des Indra (Lincke); Songs from Othello (Verdi); Ballet, La Source (Delibes); Norwegian Bridal Procession (Grieg); Soirées de Venie (Schubert-Liszt); Selection from Samson and Delilah (Saint-Saëns); Signora (Abraham); Hallo, Romania (Mieltaelov). 1.0, Le Journal Parlé. 1.10, Concert (cont.): Marche joyeuse (Chabrier); Soir d'été (Waldteufel); Pluie de diamants (Waldteufel); Selection from Marina (Arrieta); Rose Mousse (Bosc); L'amour (Lubbe); Anapola (Popy);

tion from King and Marshal (Heise); Waltz (Lumbye); Polka (Lumbye); March, Alexandra (Poulsen); March (Windsey); Overture, The Betrothal by Lanternlight (Offenbach); Waltz, Estudiantina (Waldteufel); Two Melodies from Aladdin (Danning); Selection from La Traviata (Verdi); Brudefaerden Hardanger (Kjerulf); March, San Lorenzo (Silva); Reading in the interval. 5.40, Exchange Quotations and Fish Market Prices. 6.20, Talk. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk with Pianoforte Illustrations: The Construction of the Canon. 8.0, Chimes from the Town Hall. 8.2, L'Assommoir—Play in Five Acts after Zola's Novel (Busuach and Gastineau). 10.15, News Bulletin. 10.30, Jazz Songs on Gramophone Records. 10.45, Dance Music, relayed from the Nimb Restaurant. 12 Midnight (in an interval), Chimes from the Town Hall. 12.30 a.m. (Wednesday), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., News Bulletin and Programme Announcements. 7.35, Radio Journal. 7.45, Talk: The Krah Mountains. 8.0, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN; 413 metres; 1.2 kW., and **CORK**, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Popular Music on Gramophone Records. 7.15, News Bulletin and British Market Report. 7.30, Time Signal. 7.31, Talk in Gaelic. 7.45, Talk: Round Ireland in a Motor Coach. 8.0, Orchestral Concert of Light Opera Music. 8.30, Songs from Light Opera by Gladys MacNevin (Soprano). 8.45, Harp Solos by Treasa NicChormaic. 9.0, Contralto Solos by Nora Finn. 9.30, Violin Solos by Moirín O'Connor. 9.45, Pianoforte Solos by Victor Love. 10.0, Orchestral Concert. 10.30, Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Variety Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Concert of Light Music. 7.30, Radio Normandy Gazette. 8.0, News Bulletin. 8.30, Popular Music on Gramophone Records. 9.0 (from Le Havre), Le Havre Chronicle and Concert. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0 p.m., Dance Music: Whistling in the Dark; Smile, Da'ff Ya, Smile; Pardon Me; What's Keeping my Prince Charming?; Two Heads in the Moonlight; Jolly Good Company; Le Chemin du Paradis; Roll on Mississippi; Mickey Mouse; Me; Maybe it's the Moon; Makin' faces at the Man-in-the-Moon; It must be True; It Always Starts to Rain; I Found You; Goodnight Sweetheart. 11.0, Quintet Concert with Light Songs. Quintet: By the Waters of Minnetonka; Songs: (a) Could I be Happy?, (b) Got the Bench, (c) If the World belonged to me; Quintet: (a) Everybody Sings a Love Song, (b) In my Heart, (c) Deep River, (d) Alone with my Dreams; Songs: (a) You didn't have to tell Me, (b) It's a long time between Kisses, (c) Hang out the stars in Indiana; Quintet: Wrap your Troubles in Dreams. 11.30, Hawaiian Band: My Bluebird was caught in the Rain; Life; Mari Mari; Pasadena Rose; My Waikiki Mermaid; Hawaiian Stars are Gleaming; Poor Kid; Somewhere in old Wyoming. 12 Midnight, Music for Dancing: Blue Again; Bubbling over with Love; Betty Co-ed; I Surrender, Dear; Lonesome Lover; Can't we be Friends?; Hello, Wonderful; I'm Yours; Changing of the Guard; Choo Choo; Springtime reminds me of You; Nevertheless; One Man Band; Oh Glory!; Dancing with the Devil. 12.57 a.m. (Wednesday), I.B.C. Goodnight Melody. 1.0 (approx.), Close Down.

FLENSBERG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW. and CASSEL, 246 metres.—6.15 p.m., Economic Notes. 6.25, Three Observations by Dr. Dolf Sternberger. 6.55, Time, Announcements, Weather and Economic Report. 7.0, See Berlin (Königs-wusterhausen). 7.35, The Saar District—Radio Picture (Ernst Nebhut). 8.30, Symphony Concert relayed from Wiesbaden: Concerto in D Minor for Pianoforte and Orchestra (Mozart); Symphony No. 5 in E Minor (From the New World) (Dvorak). 9.30, The Werther Fever—Radio Sequence (Johann Peter Konrad). 10.20, A Demonstration in the Saar District, relayed from Trier. 10.40, Time and News. 11.0, Dance Music from Stuttgart. 12 Midnight, Close Down.

A Dream (Bartlett); Selection from Sunny (Kern); Selection from Tip Toes (Gershwin); Ronde des lutins (Bazzani); Jota aragonesa (Saraste); Xylophone Solo: Selection from William Tell (Rossini). 5.0, Orchestral Concert: Overture, Pique Dame (Suppé); Selection from Boccaccio (Suppé); Ein Souper bei Suppé (Morena); Selection from Die schöne Galathee (Suppé). 5.45, Programme for Children. 6.30, Gramophone Records of Light Music. 7.15, Talk for Women. 7.30, Le Journal Parlé. 8.0, Orchestral Concert of Operetta Music. Soloists: Mme. Francine Bruylants and M. G. Vercamer. 9.0, A Radio Play. 10.0, Le Journal Parlé. 10.10, Gramophone Records of Variety Music. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Roumanian Music by the Motoi Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Orchestral Concert (cont.). 6.0, Educational Programme. 6.40, Light Music on Gramophone Records. 7.0, Orchestral Concert: Overture, Phèdre (Massenet); Waltz from Countess Maritza (Kálmán). 7.30, Talk (to be announced). 7.45, Song Recital by Blanche Grama: Villanella (Dell'Acqua); Aria from Lakmé (Delibes); Romanian Air (Dima); Romanian Air (Brediceanu). 8.5, Concert by the Station Orchestra: Intimacy (Golestan); Suite from Sleeping Beauty (Tchaikovsky); Two Waltzes (Dvorak). 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 210 metres, 6.0 p.m. to 12 Midnight.—5.30 p.m., Reading. 6.0, Concert of Opera Music by the Orchestra of the Royal Hungarian Opera House: Selection from (a) Nebuchadnezzar (Verdi), (b) A Masked Ball, (c) Carmen (Bizet), (d) Khovantschina (Mussorgsky), (e) Der Rosenkavalier (Strauss). 7.15, Reading. 7.45, Recital of Hungarian Folk Songs. 8.45, Humorous Programme, followed by Dance Music from the Dunapalo Hotel, and Cigány Music by the Imre Magyar Orchestra.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW., and **KALUNDBORG**, 1,153 metres; 7.5 kW.—7.30 a.m., Gymnastic Course. 8.30, Divine Service. 11.0, Weather Report. 11.10, Angling Notes. 12 Noon, Time Signal and Chimes from the Town Hall. 12.1 p.m., Concert by the Max Skalka String Ensemble, relayed from the Hotel d'Angleterre. 3.30, Concert by the Station Wind Instrument Ensemble, conducted by Johannes Andersen; Cortège (Danning); Prelude and Two Airs (Carl Nielsen); Selec-

FREDRIKSTAD.—See Oslo.
FREIBURG.—See Stuttgart.
GENEVA.—See Radio-Suisse Romande.
GENOA.—See Turin.
GLEIWITZ.—See Breslau.
GOTEBORG.—See Stockholm.
GRAZ.—See Vienna.
HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW.
Relayed by Bremen, 270 metres; Flensburg,
218 metres; Hanover, 566 metres; and Kiel,
232.2 metres.—5.55 p.m., Variety Programme;
Songs by Ellen Watteyne. 6.30, Talk on
Economics: Tsingtao since the Great War.
6.55, Exchange Quotations. 7.0, Topical
Talk. 7.15, Weather Report. 7.20, Heinz
Flügel reads from his own works. 7.45,
An Organ Potpourri (arranged Gerhard
Gregor); (a) Humoresque (Dvorak). (b)
Morgenblätter (Strauss), (c) Wolgalied
(Strauss), (d) Selection from Schön ist die
Welt (Lehar). 8.0, Ghosts and Ghouls.—
Readings in Dialect and Songs to the Lute
(Paul Behlau). 9.0, Serenade in Hamburg
Castle; Concert by the German Music
Society's Orchestra, conducted by Otto Ebel
von Sosen; Symphony in D (Mozart); Serenade
(Haydn); Harp Solos: (a) Harfners
Abendgesang, (b) Serenade (Wilhelm Kienzl);
Kleine Abendmusik, Op. 25 (Hermann Grabner).
10.0, News Bulletin. 10.20, Concert
by the Norag Orchestra, conducted by Horst
Platen; Overture, The Bartered Bride
(Smetana); Selection from Il-Trovatore (Verdi);
Piedmontese Dance No. 1 (Sinigaglia); Two
Pieces (Nicolé): (a) Liebesgästchen. (b)
Seltsamer Traum; Ballet Music from Rienzi
(Wagner); Selection from The Gipsy Baron
(Johann Strauss); Overture, Das Tal der
Liebe (Oscar Strauss); Reminiscences of
Josef Strauss (Fétras); Turkish March from
Fatinitza (Suppé); Waltz, Barcarolle (Fétras).

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW. and DANZIG, 453.2
metres.—11.30 a.m., Concert by the
Orchestra of the Königsberg Opera House.
Conductor, Ludwig Leschetizky: Overture,
Christlesein (Pitzner); Selection from
Othello (Verdi); Selection from Die
Fledermaus (Johann Strauss); Overture,
The Barber of Bagdad (Cornelius); Song
from Herbstmånöver (Kalmán); Selection
from Das Fürstkind (Lehar); Fantastic
Scherzo (Suk); Love Scene from Feuersnot
(Richard Strauss); Lagoon Waltz (Josef
Strauss); Symphonic Poem, Mazepa
(Liszt). 1.20, News Bulletin. 1.30,
Gramophone Concert of Popular Music.
2.30 to 3.30, Interval. 3.30, Musical
Improvisations for Children. 4.0, Concert
of Light Music by the Small Station Orchestra
conducted by Eugen Wilcken: Overture,
Ilka (Doppler); Waltz, Jungherrn-Tänze
(Gungl); Selection from Robert le diable
(Meyerbeer); Pierrots und Pierrettes
(Lindemann); Selection from
Where the Lark Sings (Lehar); Suite, Dance
Scenes (Richter); Verlorene Liebe
(Regow); Overture, The Nürnberg Doll
(Adam); March, Allen voran (Teike). 5.45,
Book Review. 6.15, Agricultural Prices.
6.30, Talk for Workers. 7.0 (from Danzig),
Talk The Telephone—Yesterday and To-
day. 7.25, Weather Forecast. 7.35, See
Frankfurt. 8.30 till Close Down, See Berlin
(W. tzleben).

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW.
(7 kW. up to 4.40 p.m.).—Catholic Radio
Society (K.R.O.). 7.40 a.m., Programme of
the Sung Mass, relayed from a Camp at
The Hague. 8.40, Interval. 9.40, Popular
Music on Gramophone Records. 11.10, Religious
Address. 11.40, Police Notes. 11.55,
Trio Concert. 1.25, Variety Music on Gramo-
phone Records. 1.40, Programme for Women.
2.40, Popular Music on Gramophone Records.
3.10 to 3.40, Interval. 3.40, Quartet Con-
cert: Trio Sonata in E Minor (Vivaldi); Trio
Sonata in C Minor (Boccherini); Piano
Quartet in B Minor No. 3 (Mendelssohn);
Trio in E Flat Op. 40 (Brahms). 4.40,
Gramophone Records of Variety Music.
5.10, Orchestral Concert, conducted by Piet
Lustenhower: Diavoletta Capriccieta
(Lindemann); Schmetterlings-Spiel (Hey-
kens); O Star of Eve, from Tannhäuser
(Wagner); Military Fanfare (Ascher); Il
natale de pierrot (Monti); Egyptisches
Ständchen (Lincke); Lortzing Potpourri
(Rosenkranz); Polichinelle (Rachmaninov);
Selection from Mignon (Thomas); Serenade
(Meyer-Köhl); Finale. 6.50, Talk. 7.10,
News and Police Notes. 7.25, Talk 7.40,
Orchestral Concert, conducted by Johann Ger-
ritsen; Soloist, Elsa Nolthenius (Pianoforte);
Concerto grosso No. 1 (Lazer); Concerto in
C Minor, Op. 18, for Pianoforte and Orchestra
(Rachmaninov). 8.10, St. Helen, or The
Last Days of Napoleon—Play in Three Acts
(Baladedux). 9.10, News Bulletin. 9.25,
Orchestral Concert, conducted by Johann
Gerritsen: Overture, Prometheus (Beetho-
ven); Selection from Fidelio (Beethoven);
Selection from Die tote Stadt (Korngold);
Dances from Prince Igor (Borodin); Selec-
tion from Manon Lescaut (Puccini); Selec-

AUGUST 9th TUESDAY continued.

tion from Eugen Onegin (Tchaikovsky);
Johanna Potpourri (Urbach). 10.40, Variety
Music on Gramophone Records. 11.40
(approx.), Close Down.
HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM; 1,875 metres; 8.5
kW.—Programme of the Algemeene Vereen-
igende Radio Omroep (A.V.R.O.). 7.40 a.m.,
Time Signal. 7.41, Light Music on Gramo-
phone Records. 8.40, Concert by the Small
Wireless Orchestra, conducted by Nico
Treep. 9.40, Time Signal. 9.41, The Daily
Service. 9.55, Variety Music on Gramophone
Records, 10.40, Concert, Jan Nieland (Organ)
and Jacques van Kinsbergen (Violin). Organ
Solo: Pastoral (Franck); Violin and Organ:
(a) Andante from the Concerto in E minor,
Op. 64 (Mendelssohn), (b) Caprice Viennois
(Kreisler); Organ Solos: (a) Dream of Love
(da Pauw), (b) Prelude (Nieland); Violin and
Organ: (a) Nocturne in E flat (Chopin-
Sarasate), (b) Tambourin chinois (Kreisler);
Organ Solo: Toccata (Dubois). 11.40, Time
Signal. 11.41, Concert by the Wireless
Chamber Orchestra, conducted by Gerard
Hemmes in the interval, Gramophone Rec-
ords. 1.40 p.m., Interval. 1.55, Concert:
Ké Koster (Soprano), Harry van Oss (Bari-
tone), and Felix de Nobel (Pianoforte): Io
son pur vezzozetta (Monteverdi); Die Furcht
des Herren (Schütz); Frau Nachtigall, mit
süssen Schall (Schein); Juch holla, freut
euch mit mir (Schein); Air from The Magic
Flute (Mozart); Air from Figaro (Mozart);
Air from Don Giovanni (Mozart); Six
Airs from the West-Ostliehen Divan
(Hugo Wolf); Two Folk Songs from Ticino
(arr. de Nobel); Two Neapolitan Folk Songs
(arr. De Heglio). 2.40, Popular Music on
Gramophone Records. 3.10, Concert of Light
Music by Willy Honsbeek and his Orchestra,
relayed from Grand Hotel Central, The
Hague. 4.10, Children's Hour. 5.10, Con-
cert by the Wireless Orchestra, conducted by
Nico Treep; Overture, Ilka (Doppler); Slav
Rhapsody No. 2 (Friedemann); Souvenir
(Drdla); Ballet des parfums (Popy); Gramo-
phone Records; Selection from Il-Trovatore
(Verdi); Negro Cradle Song (Clutsam); By
the Swanee River (Myddleton); Waltz, Gold
and Silver (Lehar); Song from A Waltz
Dream (O. Strauss); Wildfeuer (Joh.
Strauss); Accordion Solos: Selection from
Das Veilchen vom Montmartre (Kalmán);
Durchs Ziel (Translauteur). 7.10, Talk. 7.40,
Time Signal. 7.41, Popular Music on Gramo-
phone Records. 7.55, The Vagabond King,
Musical Comedy (Friml). In the interval,
Gramophone Records. 9.55, General News
Bulletin and Weather Forecast. 10.10, Light
Music on Gramophone Records. 10.40, Dance
Music by Ambrose's Blue Lytes from the
Palais de Danse, Scheveningen. 11.40, Close
Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.20 p.m., News Bulletin
and Popular Music on Gramophone Records.
7.45 and 10.5, Gramophone Concerts.

KAUNAS

1,935 metres; 7 kW.—7.0 p.m., Variety
Items. 7.30, Weather Forecast and News
Bulletin. 8.0, Agricultural Talk. 8.20, Con-
cert. 9.10, Talk. 9.30, Talk in Polish. 9.45,
Orchestral Concert. 11.0 (approx.), Close
Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and HELSINKI, 368.1
metres.—6.15, Talk. 6.40, Song Recital by
Olivia Gebhard. 7.5, Concert by the Radio
Ensemble: Overture, The Caliph of Bagdad
(Boieldieu); Selection from The Tales of Hoff-
mann (Offenbach); Waltz, Etincelles
(Waldtenfel); Gipsy Dance from Carmen
(Bizet). 7.45, Topical Talk. 8.5, Trumpet
Solos. 8.25, Concert by the Radio Ensemble.
8.45, News Bulletin in Finnish. 9.0, News
Bulletin in Swedish. 9.15, Light Music from
the Kappeli Restaurant. 10.0 (approx.), Close
Down.

LANGENBERG

473 metres; 60 kW.—11.20 a.m., Gramophone
Concert: Slav March (Tchaikovsky); Waltz,
Wiener Blut (Strauss); Potpourri of Verdi
Music (Morena). 'Cello Solo: Mazurka, Op.
11, No. 3 (Popper); Kamarinskaja (Gluck);
Song from Das Nachtlager von Granada
(Kreutzer); Potpourri, From Glück to Wagn-
er (Schreiner). 12.0, Noon, See Stuttgart.
1.15, Weather, News, Time, and Report on
the Olympic Games. 1.30, Concert of Musical
Travel Sketches by the Station Orchestra,
conducted by Kühn: Suite, Pictures from
the South (Nicolé); Travel Sketches from
Italy (Charpentier); Waltz, Nordseebilder

(Joh. Strauss); Finnish Fantasia, From the
Land of the Thousand Lakes (Dargomijsky).
3.30, Economic Notes and Time Signal. 3.50,
Programme for Children. 4.20, Talk: How
the Marines protect the Herring Fishing
Grounds. 4.45, Poetry Reading by Georg
Zemke. 5.0 to 6.15, See Munich. 6.20, Re-
view of English Books. 6.45, Time, Weather,
Economic Notes, and Advance Sports Re-
port. 7.0, Programme Announcements. 7.10,
Review of the Emergency Decrees issued
since the 14th June. 7.35, See Frankfurt.
8.0, Concert by the Station Orchestra and
Choir. In an interval, the 42nd Psalm,
arranged for Solo Voices, Mixed Choir, and
Orchestra (Mendelssohn). 10.5, News, An-
nouncements, and Sports Report. 10.15,
Silent Night.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW.; and DRESDEN, 319
metres.—4.30 p.m. (from Bad Elster), Orchestral
Concert conducted by Heinz Dressel:
Overture, The Tale of the Beautiful Melusina
(Mendelssohn); Serenade in F for String Or-
chestra, Op. 25 (Robert-Hundke); Selection
from Tosca (Puccini); Waltz, Goldregen
(Waldtenfel); Red Roses (Königsberger);
Deutschlands Ruhm (Martin Schröder);
Selection from La Belle Hélène (Offenbach);
Waltz, Pierrot and Pierrette (Lehar); So-
langer Schützenmarsch (Blon). 5.50, Economic
Notes, Weather, and Time Signal. 6.5 to
6.30, Talk for Women: Helen of Troy.
6.50, Programme to be announced.
7.0, Musical Talk. 7.30, See Frank-
furt. 8.30, Der Dorfbarbiere (The Vil-
lage Barber)—Comic Opera in Two Acts
(Chr. F. Weissel), Music by Johann Adolf
Hiller (arr. E. Oeser). 9.45, Chopin Recital
by Gerda Nette (Pianoforte): Six Preludes,
(a) In E, (b) In E Minor, (c) In A Flat, (d)
In C Sharp Minor, (e) In B Minor, (f) In
B Flat; Impromptu in A Flat, Op. 29; Five
Mazurkas, (a) In C, Op. 68, (b) In A Minor,
Op. 68, (c) In C Sharp Minor, Op. 63, (d)
In A Minor, Op. 67, (e) In D, Op. 32. 10.15,
News Bulletin. 10.25 (approx.), Concert of
Operetta Music by the Leipzig Symphony Or-
chestra conducted by Theodor Blumer: Overtu-
re, Prince Methusalem (Johann Strauss);
Selection from Bruder Straubinger (Eysler);
Selection from The Count of Luxembourg
(Lehar); Selection from Gri-Gri (Lincke);
Waltz from Der Landstreicher (Ziehrer);
Selection from Der Tenor der Herzogin
(Eduard Künneke). In the intervals, Reports
on the Olympic Games. 11.30 (approx.), Close
Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.30 p.m., Guitar Re-
cital. 7.30, Humorous Reading. 8.0, Es-
peranto Lesson. 8.30, Programme relayed
from Zagreb (307 metres). 10.30, Time Signal
and News Bulletin.

LOWO

381 metres; 16 kW.—7.15 p.m., Miscellaneous
Items. 7.35, See Warsaw. 7.45, Feuilleton.
8.0, See Warsaw. 10.0, Song Recital by Karol
Gross (Tenor). 10.20, See Warsaw. 11.30
(approx.), Close Down.

LYONS

LA DOUA; 465.8 metres; 1.5 kW.—7.0 p.m.,
Gramophone Concert: Selection from La
Belle Hélène (Offenbach); Melody, La Co-
carde de Mimi Pinson (Goublier); Air
from The Count of Luxembourg (Lehar);
Air from Rose-Marie (Friml); Air from
Nina Iloa (Romberg); Selection, Orpheus in
the Underworld (Offenbach); Selection from
Countess Maritza (Kálmán). 7.30, Radio
Gazette for Lyons and the South-East.
8.30, See Strasbourg.

MADRID

ARANJUEZ (Call EAQ), 30.4 metres; 20
kW.—12.30 a.m. (Wednesday), Light Music.
12.45, Radio Chronicle. 1.0, Popular Con-
cert. 1.35, Answers to Correspondents. 1.40,
Light Music. 2.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7; 424.3 metres;
2 kW.—8.0 p.m., Chimes, Exchange Quota-
tions, and Market Prices, followed by a
Request Gramophone Concert. In an inter-
val at 8.30, Talk on Hunting and Fishing
by Joaquin España Cantos. 9.15, News
Bulletin and Political Review. 9.30 to 11.0,
Interval. 11.0, Chimes, Time Signal, and
Political Review. 11.15 (approx.), Extracts
from I Paginacci—Opera (Leoncavallo), on
Gramophone Records. 1.15 a.m. (Wednes-
day), News Bulletin. 1.30, Chimes and
Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

253.3 metres; 11 kW.—7.0 p.m., See Prague.
9.0, See Erno. 9.30 See Prague. 10.15, Pro-
gramme Announcements and Theatre Notes.
10.20 See Prague.

MOSCOW

TRADES UNION, 1,204 metres; 100 kW.—
6.10 p.m., Musical Programme. 6.30, Young
Communists' Radio Journal. 7.10, Popular
Music. 8.0, Talk in Dutch: The Disarmament
Conference. 9.0, Talk in French:
War and the Mensheviks. 9.55, Time Signal
and Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg
und Kaiserslautern, 560 metres; and Nürn-
berg, 239 metres.—5.0 p.m., Concert con-
ducted by E. Kloss: Overture, The Gipsy
Baron (Joh. Strauss); Kirchweih im Tirol
(Krome); Item to be announced; Invitation
to the Dance (Weber); Heimatland
(Kistenmacher); Selection from The Czare-
vitch (Lehar); Schelmentanz and Nipp-
figuren-Ballett (Schebeck); Siamesische
Wachtparade (Lincke). 6.15, Talk on
Music: The Members of an Orchestra. 6.35,
Talk: The Need of Pianoforte Instruction.
6.55, Time Signal, Weather Forecast and
Agricultural Notes. 7.5, Song Recital by
Rudolf Gerlach (Tenor). 7.30, See Frank-
furt. 8.15, Concert by a Wind Instrument
Orchestra, conducted by E. Hagel: Overture,
Das Nachtlager von Granada (Kreutzer);
Fantasia, Dream Pictures (Lumbye); Im
Walzertrausch (Lincke); Potpourri, Wiener
Melodienstrauss (Kliment); March, Heim-
atgrüße (Krotaner). 9.15, Talk. 9.30,
Robert Koppel Concert, with the Small
Station Orchestra: Es führt kein anderer
Weg; Schade, dass Liebe ein Märchen ist;
In meinem kleinen Paddelboot; Ich möcht
heiraten; Ich setz' mir eine rosenrote Brille
auf; From Barcelona to Heidelberg; Ein-
mal möcht' ich keine Sorgen haben; Es wird
schon wieder besser; Wenn ich Urlaub hab';
Mit meiner Zieh-Zieh-Ziehharmonika; Eins,
zwei, drei, die ganze Kompanie. 10.20,
Time Signal, Weather Forecast, News Bul-
letin and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriks-
stad, 367.6 metres; Hamar, 560 metres;
Notodden, 447.1 metres; Porsgrund, 453.2
metres; and Rjukan, 447.1 metres.—6.0 p.m.,
Programme for Housewives. 6.45, Balalaika
Duets by the Stepaschko Brothers: Spanish
Dances (Moszkovsky); Toreh Dance of the
Brides of Kashmir (Rubinstein); Gipsy Pot-
pourri (Stepaschko). 7.0, Announcements,
Weather, and News. 7.30, Recitation. 8.0,
Time Signal. 8.2, Orchestral Concert, con-
ducted by Hugo Kramm: Overture, Im
Herbst (Grieg); Symphonic Poem, Zoro-
haya (Svendsen); Suite, Summer in Nor-
way (Torjussen); Gavotte (Larsen); Cradle
Song (Lund); Norwegian Potpourri (Schüt-
tauf). 9.0, Talk: Japan—a Nation at War.
9.30, News and Agricultural Report. 9.40,
Weather and News. 10.0, Topical Talk.
10.15, Violin Recital by Trygve Christiansen,
Petra Hendriksen at the Pianoforte: Sonata
in E (Paganini); Guitar (Lalo); Concert
Tango (Fernandes-Arbois); Mazurka No. 1
(Hubay). 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.40 p.m., Sextet Con-
cert: Macia Festiva (Alfano); Illusione
(Luzaschi); Second Suite, Impressioni
d'oriente (Amadei); Song, Coquette
(Manno); Selection from La Wally (Catalani);
Song, Se diventassi un gran signore
(Mascheroni). 8.0, Announcements, Tourist
Radio. Agricultural Notes, and Giornale
Radio. 8.20 to 8.45, Light Music on Gramo-
phone Records. 8.30 (in an interval), Time
Signal and Announcements. 8.45, Tann-
häuser—Opera in Three Acts (Wagner) on
Gramophone Records. In the intervals:
Talk on Books and Authors, and Art Notes.
10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres;
13 kW. Time Signals (on 2,650 metres) at
10.25 a.m. and 11.25 p.m. (Preliminary and
6-dot Signals). 6.45 p.m., Theatre Review.
7.0, Le Journal Parlé. 8.20, Weather Fore-
cast. 8.30, See Strasburg.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—7.0
p.m., News Bulletin and Parliamentary Re-
port. 7.5, Light Music on Gramophone
Records. 7.50, Sponsored Gramophone Con-
cert. 8.30, Radio Journal and News. 8.45,
Concert by the Station Orchestra: Overture,
Piccolino (Guiraud); Waltz (Lattés); Czardas,
Return to the Village and Serenade from
the Hungarian Rhapsody (Delannoy-Bril-
loun); Serenade for Trumpet, String Quintet
and Pianoforte (Duvernoy); Selection
from La Peau de chagrin (Lévadé); In the
Garden of Murcia (Turina); Suite brève
(Büsser); Légende bourguignonne (Viéne);
Selection from The Pink Lady (Caryl); Perdu
en mer (Lazzari); Divertissement, Le Ba-
pême de la ligne (Casadesu); Marche des
P'tits Matelots (Ganne). 10.45, News Bulle-
tin.

AUGUST 9th **TUESDAY** continued.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture Lesson. 7.30, Weather and Second Physical Culture Lesson. 7.45, Gramophone Records: Cavatina (Raff); Poem (Fibich); Melody (Rubinstein); Spanish Dance (Granados-Casals). 8.0, Press Review and Weather. 12 Noon, Gramophone Concert: In a Monastery Garden (Ketelbey); Mme. Ninon Vallin: Song from Thais (Massenet); Mlle. Jeanne Gauthier (Violin): Prelude and Allegro (Pugnani-Kreisler); M. Di Mazzei: Serenade from Iris (Mascagni); Mme. Yvonne Printemps: Song from Mozart (Hahn); Selection from Eva (Lehar); Serenade from La Dame Blanche (Boieldieu); Waltz, Estudiantina (Waldteufel); Georges Thill: Ninon (Tosti); The Unfinished Symphony (Schubert); Clair de lune from Werther (Massenet); Invitation to the Waltz (Weber); Ballet from Iolaine (Messager). In the intervals at 1.0, Exchange, News and Weather; at 1.30, Exchange Quotations; and at 2.0, Exchange and Announcements. 3.45, Exchange and Market Prices. 6.30, Market Prices, Weather, Agricultural Talk, Exchange Quotations, and Racing Results. 7.0, Gramophone Concert: Dance of the Sylphs from The Damnation of Faust (Berlioz); Burlesque (Krebs); Ninon Vallin: Songs (Debussy): (a) Fêts galantes, (b) Mandoline; Duet, Minuet and Finale from Puleinella (Stravinsky); Lucienne Radisse (Cello): Solveig's Song (Grieg); Waltz Potpourri (Irving Berlin); Tell me I'm forgiven (Katscher); March from Tannhäuser (Wagner). 7.45, Commercial Prices and News. 8.0, La Bohème—Opera (Puccini) on Gramophone Records by the Cast of the Scala, Milan. In the intervals at 8.30, News and Weather; at 8.40, Talk; and at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 366 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.25 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Booking Service. 10.12, Programme Announcements. 10.15, KDKA Kiddies' Klub. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day. 11.6, Teaberry Sport Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, Sheer Romance. 11.45, To-day's News by Lowell Thomas, from New York. 12 Midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Wednesday), Programme to be announced. 12.30 to 1.30, New York Relay. 12.30, The Stebbins Boys. 12.45, Soloist. 1.0, Time Signal. 1.2, You and Your Government. 1.30, Programme to be announced. 1.45 to 3.0, New York Relay. 1.45, Soloist. 2.0, Household Finance Programme. 2.30, Goldman Band. 3.0, The Country Doctor. 3.15, Westinghouse Pioneers. 3.30, Programme to be announced. 3.45, Pirates Two by Jane Weisel and Dona Errol. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Louise Frayne (Soprano). 4.30, Jack Pettis and his Orchestra. 5.0, Dancing in Milwaukee, from New York. 5.30, Time Signal and Good-night.

PORSCRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.15 p.m., Announcements and News Bulletin. 7.35, Popular Symphony Concert relayed from Warsaw. 7.45, Popular Music on Gramophone Records. 7.58, Time Signal. 8.0 to 9.50, See Warsaw. 9.55, Time Signal, Sports Notes, and Police Report. 10.15, Concert of Dance Music on Gramophone Records. 12 Midnight (approx.). Close Down.

PRAGUE

488.6 metres; 120 kW.—3.55 p.m., Market Prices. 5.45, Talk: Broadcasting. 5.55, Fashion Review. 6.5, Agricultural Report. 6.15, Talk for Workers. 6.25 German Transmission: Camille Horn Song Recital by Irmgard Richter. 7.0, Saxophone Solos. 7.25, Concert by the Vinohrady Vocal Quartet. 8.0, Brass Band Concert, relayed from the Kinsey Garden. 9.0, See Brno. 9.30, Violin Recital by Marianne Theiner. 10.0, Time News and Sports Notes. 10.15, Miscellaneous Announcements. 10.20, Variety Music on Gramophone Records.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE**, 580 metres; and **GENEVA**, 760 metres. Programme from Geneva, Lausanne not transmitting.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40, Light Music on Gramophone Records. 1.0, Financial Notes. 1.5, Popular Music on Gramophone Records. 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, Opera Music on Gramophone Records. 5.30, Concert by the Station Quintet. 7.0, Weather Forecast. 7.1, Concert of New Gramophone Records. 7.30, Talk: The Work

of the Disarmament Conference. 7.55, News Bulletin. 8.0, Concert by the Station Quintet. 9.0, Cabaret Programme. 10.0, News Bulletin and Weather Forecast.

ROME

Call **1RO**, 441 metres; 50 kW. Relayed by Naples, 319 metres; and **2RO**, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Light Music. 1.0 to 2.15, Sextet Concert: The Call to Arms (Siede); In gondola (Catalani); Selection from Madame Butterfly (Puccini); Amore in Riviera (Moutanaro); Selection from A Waltz Dream (O. Strauss); Hot-hot (Di Pirano). In the intervals at 1.15, Giornale Radio; and at 1.30, Time and Announcements. 5.0, Exchange, Children's Radio Review, Giornale Radio and Announcements. 5.30, Song Recital by Linda Cannetti (Soprano): Aria from Lohengrin (Wagner); Song from Farandola (Lozzi); Aria from The Pearl Fishers (Bizet). 5.45, Variety Concert: Danza fantastica (Cousinà); Serenata a Seny (Culotta); Danza dei fauni (Avitabile); Selection from Dejanice (Catalani); The Return of Ulysses (Donati). 6.15, Tourist Talk. 7.10 (Naples), Shipping and Sports Notes. 7.15, Atmospheric Signals, Agricultural Notes and Announcements. 8.0, Time, Announcements, Gramophone Records of Light Music, and Sports Notes. 8.30, See Turin. In the intervals, Talk and Announcements. News after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on 31.48 metres and by **W2XAD** on 19.55 metres.—9.0 p.m., Bridge Lesson. 9.15, The Studio Ensemble. 9.35, News Items. 9.45, Stock Reports and Police Notices. 10.0 to 11.0, New York Relay. 10.0, Sonata Programme. 10.15, Pop's Pirate Club. 10.30, Garden Melodies. 11.0, Joe and Eddie. 11.15, Musical Programme. 11.25, Baseball Scores. 11.30, With Gray McClintock in the Canadian North-West. 11.45, Sonata Programme. 12 Midnight, General Electric Programme. 12.0 (**W2XAF only**), Stock Reports. 12.15 a.m. (**Tuesday**), Chandu the Magician. 12.30 till Close Down, New York Relay. 12.30, Ray Perkins (Barbasoloist). 12.45, The Goldbergs. 1.0, Blackstone Plantation. 1.30, Walter Smith and his Band. 2.0, NBC Artists' Service Musicale. 2.30, Ed Wynn and the Fire-Chief Band. 3.0, Lucky Strike Dance Hour. 4.0, Russ Colombo and his Orchestra. 4.15, Opry House To-night. 4.30, Jack Denny and his Orchestra. 5.0, Ralph Kirbyer (Dream Singer). 5.5, Paul Whiteman and his Orchestra. 5.30 (approx.). Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE**, 244.1 metres; and **BERNE**, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Report and News Bulletin. 12.40, Concert by the Station Orchestra. 1.30, Weather Report and Exchange Quotations. 1.45 to 3.30, Interval. 3.30 (from Basle), Concert of Light Music and Symphonic Jazz conducted by Otto Wallrodt. 4.30, Concert by the Small Station Orchestra. 5.0, Weather Report. 5.2 to 6.30, Interval. 6.30 (from Zurich), Educational Talk. 7.0, Time Signal and Weather Forecast. 7.5 (from Zurich), Tourist Talk: Ragaz-Pfifers and its Surroundings. 7.30 (from Zurich), Talk for Women: The Domestic Servant Problem. 8.0, Concert by the Station Orchestra, conducted by Erwin Gilbert. 8.20 (from Basle), Concert. Helene Sandreuter (Soprano), Ernst Vogel (Flute) and Käthe Möller (Pianoforte). 9.30, Weather Forecast and News Bulletin. 9.45, Variety Concert by the Station Orchestra, conducted by Erwin Gilbert. 10.30 (approx.). Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call **SASA**, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and **Sundsvall**; 542 metres.—5.5 p.m., Programme for Children. 5.45, Gramophone Concert of Variety Music. 6.45, Talk on Museums, relayed from Falun, 307 metres. 7.15, Weather and News. 7.30, First Act of Tannhäuser (Wagner), relayed from the Royal Theatre. 8.30, Political Talk. 9.0, Cabaret Programme with Sketch. 9.45, Weather and News. 10.0, Concert of Light Music by a String Orchestra: Overture, Frau Luna (Lincke); Waltz (Lindsay-Theimer); Extase d'amour (Otoson); Swedish Dance (Tor Aulin); Suite, Americana (Thurban); Waltz-Intermezzo, Märchen der Liebe (Translatour); Potpourri, Dividenden (Morena). 11.0 (approx.). Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Classical and Light Music. 12.45 p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Gramophone Records of Variety Music. 1.30, Concert relayed from Toulouse (PTT), (255 metres). 2.15 to 4.45, Interval. 4.45, Talk in German: Through Alsace. 5.0, Dance Music on Gramophone Records. 6.0, Talk in German on Alsatian Poets. 6.15, Talk in French on Topical Problems. 6.30, Gramophone Concert: Le Chanteur inconnu (Sylviano-Weber); Paris-Mediterranean (Granchistaedten); Le Costaud des P.T.T. (Veber-Morette); Cocktail Bar (Cazals-Buchner); Valse d'amour (Heymann); Tumultes (Boyer-Hollaender); Quand vient le soir (Carré-Silesu); Vous serez ma femme (Boyer-Samek); Tout est fini (Mazelles-Stolz); Le Roi du Cirage (Willemetz-Erwin). 7.30, Time, and News in French and German. 7.45, Gramophone Concert: Selection from The Tales of Hoffmann (Offenbach); Song from Véronique (Messager); Selection from Les Saltimbanques (Ganne); Selection from The Merry Widow (Lehar); Two Pieces (Pierre Dupont): (a) La promenade du paysan, (b) La Vigne; Selection from Gipsy Love (Lehar); Selection from A Night in Venice (Strauss); Le printemps chante (Marinier); Rire, pleurer (Maquis); Evensoug (Richards); Minuet (Bocchorini); Two Pieces (Nevin): (a) The Rosary, (b) Narcissus; Wiener Mädln (Ziehrer); Mon rêve (Waldteufel). 8.30, Le Bourgeois Gentilhomme—Comedy Ballet in Five Acts (Molière), with music by Lully. 10.30 (approx.). Close Down.

STUTTART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG**, 570 metres.—10.0 a.m., Piano-forte Recital by Hanna Kuschke-Menzel: Prelude, Sarabande and Toccata (Debussy); Nocturne in D Flat for the Left Hand (Scriabin); Etude de Concert (Pierné). 10.30 (from Mannheim), Flute and Pianoforte Recital: Sonata in E Minor (Max Fühler); Hungarian Fantasia (Franz Doppler). 11.0, Time, News, and Weather. 11.15 to 11.30, Sponsored Concert. 11.45, Sponsored Concert (contd.). 11.55, Weather Forecast. 12 Noon, Orchestral Concert, conducted by Otto Seyfert; Soloist, Lisa Herzog (Songs); Selection from The Drum Major's Daughter (Offenbach); Selection from The Geisha (Jones); Waltz from Das Veilchen von Montmartre (Kálmán); Besuch bei Milläcker (Morena); Waltz from The Dollar Princess (Fall); Songs: (a) Was kann so schön sein, (b) Dort, wo die Wälder grün, from Gitta entdeckt ihr Herz; Selection from The Gipsy Princess (Kálmán). 1.15 p.m., Time, Weather, and News. 1.30, Arias by Gluck and Handel (on Gramophone Records): Aria from Armide (Gluck); Lascia ch'io pianga— from Rinaldo (Handel); O, del mio dolce ardor (Gluck); Il Penseroso (Handel); Aria from Orpheus (Gluck); Aria from Julius Caesar (Handel). 2.0 to 2.30, Sponsored Concert. 4.0, Horticultural Talk. 4.30, Talk for Women: Voyages of Discovery in and Around Stuttgart. 5.0, Concert from Munich. 6.15, Time, Weather, and Agricultural Notes. 6.30, Dialogue: In What Way Would You Wish to See Modern Universities Changed? 6.55, Time Signal. 7.0, Talk from Berlin (Königs Wusterhausen). 7.35 to 10.20, See Frankfurt. 10.45, Dance Music by the Stuttgart Philharmonic Dance Band. 12 Midnight (approx.). Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Concert: Overture, Fingal's Cave (Mendelssohn); Hungarian March (Berlioz); Selection from La petite dame du train bleu (Parès-van Parys); Selection from Louis XIV (van Parys). 6.0, Light Music. 6.30, Exchange Quotations and Horse Racing Results. 6.45, Violin Recital: Melody (Tchaikovsky); Meditation (Glazounov); Souvenir (Drda); Selection from Les Millions d'Arlequin (Drigo). 7.0, Orchestral Selections from (a) Sicilian Vespers (Verdi), and (b) Il Seraglio (Mozart). 7.15, Light Music. 7.30, Programme Announcements. 7.35, News Bulletin. 7.45, Military Music. 8.0, Accordion Solos. 8.15, Concert: Selection from Rigoletto (Verdi); Overture, L'Arlesienne (Bizet); Airs from (a) Hérodiade (Massenet), (b) The Prophet (Meyerbeer), (c) William Tell (Rossini), and (d) Il Trovatore (Verdi). 8.45, Concert: Selection from Cocoricò (Ganne); Glow-worm Gavotte (Lincke); Selection from Frederica (Lehar); Waltz from The Bird Fancier (Zeller); Airs from (a) The Gipsy Princess (Kálmán), (b) La Périchole (Offenbach), (c) Les Cloches de Corneville (Planquette), (d) L'Africaine (Meyerbeer), and (e) Aida (Verdi). 9.30, Chansonnettes. 9.45, Orchestral Concert; Selection from Tiesland (D'Albert); Rakoczy March; Selection from Cocoricò (Ganne); Andante from the Italian Sym-

phony (Mendelssohn); Waltz from Mireille (Gounod); Two Airs from Manon (Massenet); Air from Rigoletto (Verdi). 10.15, Light Music. 10.30, North African News. 10.45, Sound-Film Music. 11.0, Concert: Selections from (a) The Geisha (Jones), (b) Rose Marie (Friml); Divertissement on Russian Songs (Rabau); Masquerade (Lacôme). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.5 p.m., Quintet Concert. 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by **MILAN**, 337.5 metres; **GENOA**, 312.8 metres; and **FLORENCE**, 500.8 metres.—7.5 p.m., Variety Music: Overture, The Italian Girl in Algiers (Rossini); Russian Dance (Billi); Japanese March (Coschelli). 7.30, Time and Announcements. 7.35, Variety Music on Gramophone Records. 8.0, Giornale radio, Weather, and Gramophone Records of Popular Music. 8.30, Tela di ragno (The Spider's Web), Operetta in Three Acts (Laudi with music by Bona). In the intervals, Scientific Talk and Art Notes; after the Operetta Giornale radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—6.15 p.m., Talk: Life Saving. 6.30, Agricultural Talk. 7.0, Physical Culture. 7.30, Time Signal, Weather Forecast and Programme Announcements. 7.40, Concert of Military Music: Conductor, Anton Mader, March: Wiedersehensfest (Schneider); Overture, The Bohemian Girl (Baifé); Waltz, Genfer Kinder (Mader); Fantasia, Waldinau (Kliment); Intermezzo from The Tales of Hoffmann (Offenbach); Schönfeld March (Ziehrer); Waltz, Brüderlein fein (Fall); Potpourri (arr. Dominik Ertl); March, Rot-Weiss-Rot (Mader). 8.45, Dialogue: Holidays in Summer Health Resorts. 9.20, Die Neue Villa (The New Villa)—Tragi-Comedy (Lothar Ring). 9.30, News Bulletin, Weather Forecast and Announcements. 9.45, Dance Music by Frank Fox and his Orchestra.

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Variety Music on Gramophone Records. 2.10, Interval. 3.0, Economic Report. 3.10, Popular Music on Gramophone Records. 3.30, Aviation Notes. 3.35, Announcements. 3.40, Variety Music on Gramophone Records. 4.35, Announcements. 4.40, Programme for Women. 5.0, Concert of Popular Music by the Warsaw Philharmonic Orchestra; Conductor, B. Szulc; Soloist: E. Marjensztein (Pianoforte); Overture, Carnival (Glazounov); Introduction, Serenade and Entr'acte from The Snowman (Korngold); Night on the Bare Mountain (Mussorgsky); Symphonic Variations for Pianoforte and Orchestra (Franck); Valse mélancolique (Darzin); Scherzo from The Tale of Czar Saltan (Rimsky-Korsakov); Overture, The Wasps (Vaughan-Williams). 6.0, Talk: Ocean Giants. 6.20, Dance Music from Cichocinek. 7.15, Miscellaneous Items. 7.35, Radio Journal. 7.45, Agricultural Notes. 7.55, Programme Announcements. 8.0, Concert of Popular Music by the Warsaw Philharmonic Orchestra; Conductor: C. Wilkomirski; Soloist: Marie Ponnorska (Soprano); Overture, Djamilah (Bizet); Waltz, No. 2 (Godard); Entr'acte from Jocelyn (Godard); Hyun to St. Cecilia (Noskowski - Gounod); Serenade (Saint-Saëns); Danse tzigane (Saint-Saëns); Songs: (a) Aria from L'Enfant prodige (Debussy), (b) Air from Louise (Charpentier). 8.45, Reading. 9.0, Concert (contd.): Fantasia on Manru (Paderewski); Songs: (a) Ton coeur est d'or pur (Paderewski), (b) Song (Brahms), (c) Like a Blossoming Lilac (Brahms); Intermezzo from Nialla (Delibes); Abendlied (Schumann); Popular Songs (Noskowski); Wedding Polonaise Moniuszko-Grossinan). 9.50, Radio Journal. 9.55, Aviation Weather Report. 10.0, Dance Music from the Gastronomie Café. 10.40, Sports Notes. 10.50, Dance Music (contd.).

WILNO

563 metres; 10 kW.—7.45 p.m., Lithuanian Review. 7.30, Programme Announcements. 7.35, See Warsaw. 7.45, Talk on Wireless. 8.0, Song Recital by Mlle. Luba Lewicka (Soprano). 8.30, Concert from Warsaw. 11.30 (approx.). Close Down.

ZURICH.—See Schweizerischer Landessender.

BARCELONA

RADIO-BARCELONA, Call EAJI, 349 metres; 8 kW.—8.0 p.m., Trio Concert. Extase (Ganne); Barcarole (Mans); Selection from Parsifal (Wagner); Military March No. 2 (Schubert). 8.30, Exchange Quotations and Catalan Grammar Lesson. 9.0, Request Gramophone Records and News. 10.0, Chimes, Weather Forecast, and Market Prices. 10.5, Concert by the Station Orchestra; Military March No. 3 (Schubert); Selection from Le Roi l'a dit (Delibes); Waltz from Der Rosenkavalier (R. Strauss); Serenade of the Bells (Kockert); Largo appassionato (Beethoven); Nocturne (Ganne). 11.0, Reading from the Poems of Gustavo Adolfo Becquer and Talk on the Poet. 11.15, Concert by the Vilalta Sextet, relayed from the Café de la Ramba. 1.0 a.m. (Thursday), Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.2 p.m., Gramophone Records of Music by Debussy and Stravinsky, followed by Second Weather Report. 12.55, Nauen Time Signal. 1.35, News Bulletin. 2.0, Gramophone Records of Artists of the Berlin State Opera House, relayed from Berlin (Witzleben). 3.0, A Voyage Across the Pacific Literary Programme. 3.30, Weather and Exchange. 3.45, Talk for Women. 4.0, Talk: The History of Art as the History of the World. 4.50, See Hamburg. 5.30, Talk: Modern Parliaments and the Government of a State. 6.0, Talk: The Old Beggar's Opera. 6.35, Talk: Little-known England (IV). 6.55, Weather for Farmers. 7.0, Advanced English Lesson. 7.30, Talk: Distress in the Cities—an International Spectre, followed by Weather Report. 8.20, Programme from Munich, followed by Weather, News, Sports Notes, and Frontier Reports (on Gramophone Records). 10.45 (approx.), Concert from Hamburg. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.30 p.m., Concert of Light Music by Dr. Röhlmer and his Orchestra: Overture in D (Haydn); Serenade for Strings (Oscar Strauss); Four Novelettes, Op. 52 (Taylor); Abendstimmung (Kienzl); Volkslieder und Märschen (Kozak); St. Paul Suite (Holst). 5.50, The Children's Calendar for August. 5.50, Talk on Time and Calculations. 6.15, A Visit with the Microphone to Freienwalde. 6.25, Labour Market Report. 6.30, Concert of Light Music and Dance Music, relayed from the Kroll-Etablissement. 6.55, The Witzleben Station informs its Listeners. . . . 7.0, Topical Talk. 7.10, Legal Talk. 7.35, Concert by the Taunus Choir, conducted by Max Eschke. Von Freiheit und Vaterland (Göppfert), Belierzigung (Reichardt). Die grüne Mark (Steineck), Lied der Wandernden (Steineck), Heideröseln (16th Century Folk Song, arr. Neumann). 8.0, Frontier Report. 8.20, Meyer-Helmund Concert, conducted by Eugen Sonntag: Overture, Lucullus; Tanzweise No. 2; Wonnestraum; Serenade; An Evening in St. Petersburg. 9.10, Act Two of Frühlingsluft—Operetta (Josef Strauss-Reiterer), relayed from the Open Air Stage of the Rose Theatre. 10.0, Weather, News, and Sports Notes, followed by Dance Music, by Sam Baskini and his Band, with Vocal Refrains by Rainund Gessner. 12.30 a.m. (Thursday), Close Down.

BERNE.—See Schweizerischer Landessender.

BERGMUNSTER.—See Schweizerischer Landessender.

BREMEN.—See Stockholm.

BONN.—See Oslo.

BORDEAUX-LAFAYETTE

364 metres; 13 kW.—7.30 p.m., News and Market Prices. 7.40, Lottery Results. 7.45, Light Music on Gramophone Records. 8.15, News and Weather. 8.30, Orchestral Concert; Soloists; Jean Vieuille and M. Lafout.

BRATISLAVA

279 metres; 14 kW.—6.0 p.m., Literary and Musical Programme. 7.0, See Prague. 8.30, Orchestral Concert, relayed from Kosice (293 metres). 10.0, See Prague. 10.15, Programme Announcements and News.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW., and GLEIWITZ, 253 metres.—4.30 p.m., Pianoforte Recital by Eva Elner-Robert: Variations in F Minor (Haydn); Impromptu in A Flat (Schubert); Theme in E with Variations (Dechend). 5.0, Reading for Children. 5.20, A Talk with a Brickmaker. 5.40, Weather for Farmers. 5.42, Talk: A Girl Working Student in America. 6.0, Old Classical Music for the Violin: Günther Hille (Violin) and Franz Kauf (Pianoforte); Folles d'Espagne (Corelli); Third Sonata in D (Leclair). 6.30, Talk: Political Economics. 6.50, Talk: Plastic Art in the Life of the Worker. 7.15, Weather for Farmers. 7.17, Talk: How to Overcome Wireless Disturbances. 7.30, See Leipzig. 9.0, The Unknown Silesia—Play (Grundmann, with Music by Karl Szekula). 10.10, Time and News. 10.35, Dance Music from Berlin (Witzleben). 12 Midnight, Silent Night.

WEDNESDAY

AUGUST THE TENTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Organ music. Orchestral concert, from Bournemouth. Mr. Gerald Heard: This Surprising World. Vaudeville programme from Weston-super-Mare. Ann and Harold, a play by Louis Goodrich. Instrumental concert. Dance music.

LONDON REGIONAL Orchestral concert. Organ music. Promenade concert from Queen's Hall. Dance music.

MIDLAND REGIONAL Orchestral concert. Organ recital. Instrumental programme. London Regional programme.

NORTH REGIONAL Orchestral concert. Pianoforte and vocal recital. London Regional programme.

WEST REGIONAL Opening Ceremony: The Hospital Carnival in aid of the Queen Alexandra Memorial Hospital, relayed from Grove Park, Weston-super-Mare. Band concert. Welsh interlude. National programme. Vaudeville programme from Grove Park.

SCOTTISH REGIONAL Operatic concert. Organ music. National programme.

BELFAST Light music. Chamber music concert. National programme.

ABROAD

HAMBURG Recital on two and three pianofortes.

HUIZEN Accordion recital by Four Performers.

LANGENBURG "America in Song."

LYONS Bach concert.

WARSAW Pianoforte and violin recital.

BRNO

342 metres; 35 kW.—7.0 p.m., See Prague. 8.30, Accordion Solos. 9.0, See Moravská-Ostrava. 10.0, See Prague. 10.15, News Bulletin.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Concert by Max Alexys and his Orchestra. In the interval at 1.0, Le Journal Parlé. 5.0, Dance Music relayed from the Kursaal, Ostend. 6.15, Travel Talk: Spahn. 6.30, Pastoral Symphony No. 6 (Beethoven) on Gramophone Records. 7.15, Microphone Report on the Coal Industry in Belgium: The Nationalisation of the Mines. 7.30, Medical Talk. 8.0, Cello Recital by M. Frézin: Sonata in G (Béval); Fantasiestücke (Schumann); Litanei (Schubert); Serenade (Frézin); Humoresque (Goeyens); Dance of the Green Devil (Casado). 8.30, Clartés dans la nuit—Radio Sketch (de Mey and Mousenne). 8.55, Gramophone Records: Priests' Chorus from The Magic Flute (Mozart). 9.0, Concert-relay from the Casino, Knocke: Soloist: A. Crabbe (Songs); Grand Jubilee March (D'Hayer); La Barque d'or de Karnach (Daneau); Aria from Aci e Galatea (Handel); Three Spanish Dances (Granados); Ajas Tapados (Imendes); Smania (Dominghetti); Song. Jota española (Serrano); Rhapsody, España (Chabrier). 10.0, Le Journal Parlé. 10.40, Relay from the Ancienne Belgique.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by Max Alexys and his Orchestra. In the interval at 1.0 p.m., Le Journal Parlé. 5.0, Dance Music from the St. Sauveur Palais de Danse. 6.15, Talk on Economics. 6.30, Gramophone Concert: Wedding March (Mendelssohn); A Fairy Ballet (White); La Bagnerie Toulousaine (Gaillard); Unruhe (Raff); La Toulousaine (Delfès); Minuet (Bohlmann); Selection from Eugene Onegin (Tchaikovsky); Selection from Ciboulette (Hahn); Gitana (Kreisler); Selection from Der Orlov (Granichstaedten). 7.15, Review of New Books. 7.30, Review of International Events. 8.0, Ketyelberg Concert, conducted by Charles Walpot: Jungle Drums, Chal Romano, Piece, The Vision of Fuji San, In a Fairy Realm, Gipsy Waltz. 8.45, Readings. 9.0, Orchestral Concert, conducted by J. Tournant de Sutter, relayed from the Kursaal, Ostend: Soloist: Gaby Dorley (Songs) and M. Bouquette (Cello); Overture, Le Baruffe Chiozzotte (Sinigaglia); Ballet Music from Rosamund (Schubert); Symphonic Variations for Cello and Orchestra (Bohlmann); Aria from Der Freischütz (Weber); Selection from L'Africaine (Meyerbeer); Aria from Thais (Massenet); Waltz from Le Roi malgré lui (Chabrier). 10.30, Le Journal Parlé. 10.40, Concert relayed from the Ancienne Belgique. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra; Forward March! (Recktenwald); Waltz, España (Waldteufel); Souvenir (Hruhy); Intermezzo, Red Poppies (Percy Elliot); Suite, Straussfedern (Morena). 5.0 News Bulletin and Time Signal. 5.10, Concert (contd.); Intermezzo and Barcarole from The Tales of Hoffman (Offenbach); Selection from Die gold'ne Meisterin (Eysler); Pizzicati (Meyer-Helmund); Träumerei (Schumann); Türkische Scharwache (Michaelis). 6.0, Educational Programme. 6.40, Mass in B Minor (Bach), on Gramophone Records. 9.0, News Bulletin.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on 210 metres from 6.45 p.m. to 12 Midnight.—5.0 p.m., Concert by the Postal Officials' Orchestra. Conductor: Wilhelm Roubal: Hungaria (Nagypal), Selection from Sylvia (Delibes), Sisters (Lajtha), Selection from Sybill (Jacobi), Selection from The Gipsy Baron (Strauss), Selection from Cavalleria rusticana (Mascagni). 6.15, Reading. 6.45, Concert: Lili Kenez (Pianoforte), Annie Konings (Songs), and Paul Gyory (Songs); Tibor Polgar at the Pianoforte: Rondo in G (Beethoven); Fantasia in G minor (Beethoven); Selection from Il Seraglio (Mozart); Songs: (a) Auf den Flusse (Schubert), (b) Feldeinsamkeit (Brahms); Serenade (Strauss); Weylas Gesang (Hugo Wolf); Four Songs (Molnar); Mazurka (Chopin); Hungarian Folk Songs (arr. Lajtha); Selection from Dinorah (Meyerbeer); Poissons d'or (Debussy). 8.0, Dance Music on Gramophone Records. 9.0, Concert by the Bura Cigány Orchestra. 10.15, Concert by the Hungarian String Trio: Trio in C minor (Beethoven), Trio in B flat (Schubert), Serenade (Dohnanyi). After the Programme, Cigány Music from the Café Ostende.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW., and KALUNDBORG 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, conducted by Harald Andersen, relayed from the Bellevue Strandhotel. 2.0 to 3.0, Interval. 3.0, Talk for Women. 3.30, Orchestral Concert, relayed from the Wivex Restaurant. 5.0, Extracts from Rigoletto—Opera (Verdi), on Gramophone Records. 5.40, Exchange and Fish Market Prices. 6.20, Talk on George Borrow. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Agricultural Talk. 8.0, Chimes from the Town Hall. 8.2, Richard Wagner Concert. The Station Orchestra, conducted by Wal-

ther Meyer-Radon, Soloist: Preben Rovsing (Songs); Prelude to the Third Act and Bridal Chorus from Lohengrin; Legend of the Grail from Lohengrin; Good Friday Music from Parsifal; Prelude to the Third Act and Dance of the Apprentices, from The Mastersingers; Songs: (a) Walther's Prize Song from The Mastersingers. (b) The Helmsman's Song from The Flying Dutchman; Overture, The Flying Dutchman. 9.0, Talk on Topical Questions. 9.30, Flute Recital by Poul Toft-Pedersen; Romance and Scherzo (Widor); Capricciotta (A. van Leeuwen); Tourbillon (Andersen). 9.50, News Bulletin. 10.5, Orchestral Concert, conducted by Walther Meyer-Radon; Norwegian Rhapsody No. 2 (Svendsen); Waltz from Faust (Gounod); Second Suite from L'Arlesienne (Bizet); Two Slav Dances (Dvorak); Daphnis and Chloë from The Queen of Spades (Tchaikovsky); March from Modere (Nielsen). 11.0 (approx.), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., News Bulletin and Programme Announcements. 7.35, Radio Journal. 7.45, Answers to Correspondence. 8.0, See Warsaw. 10.25, Topical Talk. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal. Weather Forecast, Stock Report and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, German Lesson. 8.0, Orchestral Concert. 9.0, Pianoforte Recital by Dina Copeman. 9.15, Violin and Song Recital by P. Delaney (Violin) and Mme. Hefferman (Soprano). 9.35, Re-Incarnation—Play. 10.5, Baritone Solos by T. E. Atwooll. 10.20, Orchestral Music. 10.30, Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Concert of Light Music. 7.30, Radio Gazette. 8.0, News Bulletin. 8.30, Variety Concert. 10 p.m. till Close Down, Programme in English by the I.B.C. 10.0 p.m., Dance Music: Down beside a Dutch Canal; Love for Sale; Jolly Good Company; Fiesta; Underneath the Spanish stars; You're twice as nice; My sunshine came on a rainy day; Funny dear; Go home and tell your mother; Swinging in a Hammock; I don't mind walking in the rain; Heartaches; Got a bench; There's something in your eyes; Wash Moon. 11.0, Vocal and Orchestral Concert: Kisses in the dark (de Michelis); Songs: (a) The Drum Major (Newton), (b) The Wheel-tapper's Song (Thurban); Suite Americana (Thurban); Songs: (a) Mairie my girl (Aitken), (b) Vale (Kennedy Russell); Serenade (Heykens). 11.30, Light Orchestral Concert: Waltz, Sphärenklänge (Johann Strauss); The Dancing Doll (Poldini); Life in the Vienna Prater (Translatore); Stephanie Gavotte (Czibulka); Demande et réponse (Coleridge-Taylor); First Waltz Potpourri (Rohrecht). 12 Midnight, Dance Music: Bessie couldn't help it; Blue Lagoon; Sunny Days; We all go Oo Ha Ha together; By my side; All through the Night; When I close my eyes and dream; If you can't sing, whistle; Topsy Turvy talk; Chère, c'est vous; Pardon me, pretty baby; Lizzie; Cuban Love Song; Come and have a cuddle on the Common. 12.57 a.m. (Thursday), I.B.C. Good-night Melody. 1.0 (approx.), Close Down.

FLENSBERG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—6.15 p.m., Economic Notes. 6.25, Eskimo Literature—Readings from Knud Rasmussen's Eskimo Collections, with Introduction Talk. 6.50, See Stuttgart. 7.15, Time and Announcements. 7.20, Art and Economic Notes. 7.30, See Stuttgart. 9.10, Reading: Cornelia—a Narrative about Goethe (Margarethe Susman). 9.30, Concert. 10.15, Time and News. 10.45, See Munich.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 213 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—4.30 p.m. (from Hanover), Concert relayed from Bad Pyrmont: Overture, Egmont (Beethoven); Old Dutch Dances (Röntgen); Selection from The Valkyries (Wagner); Valse triste (Sibelius); Symphonic Poem, Les Préludes (Liszt). 5.30,

AUGUST 10th

WEDNESDAY

continued.

Talk: Hamburg and the North German Theatre. 5.55, Readings. 6.30 (from Hanover), Talk: German Handicrafts. 6.55, Frankfurt Exchange and Meat Market Prices. 7.0, Topical Talk. 7.15, Weather Report. 7.20, Recital on Two and Three Pianofortes: Concerto in F for Three Pianofortes (Mozart); Rondo in C for Two Pianofortes (Chopin). 8.0, "Münchhausen"—Tragi-Comedy in Three Acts (Robert Walter). 10.0, Time and News. 10.20 (from Hanover), Concert of German Dances by the Hanover Station Orchestra, conducted by Otto Ebel v. Sosen: Waltz, Trau, schau, wem, from Waldmeister (Joh. Strauss); March, Wiener Bürgerwehr (Wotitz); North German Dance Suite (Erdlen); Hamburg Gavotte (Czibulka); Waltz, Gruss an Hannover (Artemann); Rheinländer, Des Klarinetisten Fluch (Strube); March Polka, Im Rösehof bin ich geboren (Wappaus); Berliner Konzertbühnenwalzer (Leuschner); Mein liebes Bayernland (Silwedel); Husaren Quadrille (Joh. Strauss); Mazurka (Waldteufel); Quadrille, Auf dem Studentenball (Tourbie); Finsterwalder Sängermarsch (Bachhofer).
HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and **DANZIG**, 453.2 metres.—11.30 a.m., Gramophone Concert of Popular Music: First Movement from Symphony No. 1 in C Minor (Brahms); Selection from Hansel and Gretel (Humperdinck); Song from André Chénier (Giordano); Song from Manon (Massenet); Overture, Fra Diavolo (Auber); Two Arias from La Traviata (Verdi); Scene from Faust (Gounod); Nur wer die Sehnsucht kennt (Heykens); Even-song (Martin); Kasperls Wochenende (Flamm); Die Dorfsehmiede (Seibold); Potpourri, Mit Sang und Klang durch die Welt; Selection from Der Liebe Augustin (Fall). 1.15 p.m., Concert by the Small Station Orchestra conducted by Eugen Wilcken: Overture, Le Postillon de Longjumeau (Adam); Mighty lak' a Rose (Nevin); Chinesisches Märchen (Leuschner); Waltz, Ein Karnevalsstraum (Manfred); Selection from Faust (Gounod); Suite, Provincakusche (Jongen-Mouton); Ballet Music from Frau Luna (Lincke); March, Regimentskinder (Fucik). 2.30 to 3.20, Interval. 3.20, Talk for Housewives. 4.0, Talk for Parents. 4.30, Concert from Hamburg. 5.30, Book Review. 5.50, Tenor Song Recital by Paul Bernd: Four Songs (Wolf): (a) Wanderlied, (b) Verschwiegene Liebe, (c) Heimweh, (d) Klare Nacht; Three Songs (Loewe): (a) Prinz Eugen, (b) Tom der Reimer, (c) Fridericus Rex. 6.15, Agricultural Prices. 6.30, Talk on Heredity and Eugenics. 7.0, Humorous Tales from East Prussia, told by Max Weber. 7.25, Weather Forecast. 7.30, Concert by the Small Station Orchestra conducted by Eugen Wilcken: Overture, La belle Hélène (Offenbach); Grand Chromatic Voyage (Jalowicz); Selection from Izeyl (d'Albert); Waltz, Nachtfalter (Johann Strauss); Suite, The Troubadours (Amadei); Selection from The Land of Smiles (Lohár). 9.0, News Bulletin. 9.10 (from Danzig), The Maid of Orleans—Radio Play (Friedrich Burschell). 10.15, Weather Forecast, News Bulletin and Sports Notes. 10.30, Dance Music from Berlin (Witzleben). 12.30 a.m. (Thursday), Close Down.

HILVERSUM

Announced **HUIZEN**, 296.1 metres; 20 kW (7 kW. up to 4.40 p.m.).—Programme of the Christian Radio Society (N.C.R.V.). 7.40 a.m., Bible Reading. 7.55, Variety Music on Gramophone Records. 9.10 to 9.40, Interval. 9.40, Concert by the N.C.R.V. Women's Choir. 10.10, Programme for Invalids. 10.40, Harmonium and Song Recital. 11.40, Police Notes. 11.55, Concert: C.v. Ravenzwaay-Möllenkamp (Songs), H. Hermann (Violin), H.v.d. Horst, Jr. (Cello), and R. A.v.d. Horst-Bleekrode (Pianoforte): Trio Sonata No. 2 (Telemann); Five Dutch Songs; Larghetto from the Second Symphony (Beethoven); Four Pieces (Grieg): (a) Dem Lenz soll mein Lied erklingen, (b) Beim Sonnenuntergang, (c) Guten Morgen, (d) Des Dichters letztes Lied (Grieg); Extract from Samson and Delilah (Saint-Saëns); Songs (Cath. v. Rennes); Kein Hälmelein wächst auf Erden (Friedemann Bach); Das Veilchen (Mozart); Serenade, Liebes Mädchen hör' mir zu (Haydn); Wach auf du goldnes Morgenroth (Curschmann); Trio. 1.40 to 2.10 p.m., Interval. 2.10, Religious Reading. 2.40, Trio Concert; M.L. de Ruyter (Violin), M. H. J. Berghout (Cello), and Rie Beute (Pianoforte): Trio, Op. 50 (Tchaikovsky); Andantino (Martini); Scherzo Tarantella (Wieniawsky); Impromptu in F Minor (Schubert); Concertante Variations, Op. 17 (Mendelssohn); Trio, Op. 99 in B Flat (Schubert). 4.40, Programme for Children. 5.40, Recital by M. F. Meijere (Baritone), M. J. v. Ginkel (Clarinete), and Mlle. Louise Lauenroth (Pianoforte). 6.55, Talk. 7.10, Police Notes. 7.25, News Bulletin. 7.40, Religious Assembly of the Protestant Teetotallers' Association. 8.40, Orchestral Concert, conducted by Marinus Adam: Concerto in D Minor (Handel); Suite in D (Bach); Symphony No. 1 in C (Beethoven); Three German Dances (Mozart). In the interval, at 9.40 (approx.), News Bulletin. Overture, The Magic Flute (Mozart). 10.10, Popular Music on Gramophone Records. 11.10 (approx.), Close Down.
HORBY.—See Stockholm.

HUIZEN

Announced **HILVERSUM**, 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25, Physical Culture. 7.40; Light Music on Gramophone Records. 9.40, Religious Programme by the Protestant Radio Society (V.P.R.O.). 9.55 till Close Down, V.A.R.A. Programme. 9.55, Programme by Joh. Jong (Organ), Leo Fuld (Songs), Jan Lemaire (Recitations), with Gramophone Records; Potpourri, Von Wien durch die Welt (Hruby); Foxtrot, Ich möcht' heiraten (Krausz); Gramophone Records: Selection from Manon Lescaut (Puccini); Viennese Song, Im Prater blüh'n wieder die Bäume (Stolz); Gramophone Records: Waltz from Gri-Gri (Lincke); Tango (Simek); March, Ein bisschen Freude (Krausz); Gramophone Records: Violin Solo, Crazy Bow (Tower); Saxophone Solo, Schön Rosmarin (Kreisler); Tango, Liebe war es nie (Markush); March, Wenn ich Urlaub hab' (Egen). 1.25 p.m., Interval. 1.55, Concert (cont'd.). Potpourri, The World in Song (Intrator); Gramophone Records: Waltz, When love dies (Crémieux); Tango, Die alte Spieluhr (Marbo); Foxtrot, Makin' faces at the man in the moon (Rich); Old Dutch Peasant Dances (Siep). 3.0, Programme for Children. 5.10, Popular Music on Gramophone Records. 5.40, Educational Talk. 6.10, Programme arranged by the Dutch People's University. 6.40, Accordion Recital by the Four Serenaders; Foxtrot, Es wird schon wieder besser (Rotter); Tango, Die Frau die man liebt (Stransky); Waltz, Verselimihte Liebe (Lincke); Waltz, Ich weiss nicht, zu wem ich gehöre (Holländer); Foxtrot, Smile, darn ya, smile (Rich). 7.0, The Suicide—Play (Avertchenko). 7.30, Accordion Recital (cont'd.); Foxtrot, Heartaches (Hollman); Waltz, I'm alone because I love you (Young); Hungarian Rhapsody No. 2 (Liszt); Waltz (Abraham); Foxtrot, Piccolo Pete (Baxter). After the Accordion Recital 'n Geelbandje-Mencer!; Revue (Meyer Hamel) by the Nationale Revue Ensemble. In the interval, Radio Dialogue, The Adventures of Messrs. Wakker and Tropicuit, and Organ Recital by Joh. Jong. 10.55, News Bulletin. 11.10, Light Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.15 p.m., News Bulletin and Popular Music on Gramophone Records. 7.45, Gramophone Concert of Light Music. 10.5, Concert of Dance Music. 10.50, Gramophone Concert. 11.0, Answers to Correspondents in French.

KAUNAS

1,935 metres; 7 kW.—7.0 p.m., Talk. 7.30, Weather Report and News. 8.0, Variety Items. 8.30, Health Talk. 8.50, Talk on Old Monuments. 9.10, Orchestral Concert. 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and **HELSINKI**, 368.1 metres.—6.15 p.m., Programme for Children. 7.0, Sports Talk. 7.25, Song Recital by Gunnar Calenius. 7.55, Dance Music by Amarillo's Orchestra. 8.45, News Bulletin in Finnish. 9.0, News Bulletin in Swedish. 9.15, Light Music from The Kappeli Restaurant. 10.0, Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert: Overture, Poet and Peasant (Suppé); Waltzes from Intermezzo (Strauss); Two Songs (Schumann): (a) Widmung, (b) Du bist wie eine Blume; Ballet Music from Rosamund (Schubert); A Wedding Day from Trolldaugen (Grieg); Norwegian Bridal Procession (Grieg); Selection from Liselott (Künneke); Gallop, Rasch wie der Blitz (Müllöcker). 12.0 to 1.15, Concert from Munich. 1.15, Time, Weather, News, and Report on the Olympic Games. 1.30, Concert of Popular Opera Music, conducted by Eysoldt; Soloist: Heinz Kraavanger (Tenor); Overture, A Night in May (Rimsky-Korsakov); Suite from Much Ado About Nothing (Korngold); Aria, The Stars were Shining from Tosca (Puccini); O Paradise! from L'Africaine (Meyerbeer); Rhapsody in C (Dohnanyi); Two Songs from The Flower of Hawaii (Abraham); Waltz, Deutsche Lieder (Weinberger); March, Heldengrüsse (Teubner). 2.30, Sponsored Programme. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Nature Talk: The Heron of the Rhine Districts. 4.40, Talk for Women: The Working Woman and the Talkies. 5.0 to 6.15, See

Economics and Sociology by Paul Einzig. Stuttgart. 6.20, Review of Books on 6.45, Time, Weather, Economic Notes, and Advance Sports Report. 7.0, Around the World on Gramophone Records: From Granada to the Coast of Algiers. 7.20, Medical Talk. 7.35, Agricultural Talk. 7.55, First News Bulletin. 8.0, America in Song: A Lecture Recital: Sergius Sax (Songs); Kurt Stein and Henry Land (Two Pianofortes); Josef Breuer (Accompanist). 8.50 to 10.10, Doctor Klaus—A Comedy (Adolph L'Arrouge). 10.10, News Bulletin, Announcements, and Sports Report. 10.45, Late Concert from Munich.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2kW.; and **DRESDEN**, 319 metres.—5.0 p.m., Vocal and Instrumental Concert for Young People; Soloist: Alfred Stoekel (Tenor), Ferdinand Kollmanek and Erika Zschierschitz (Guitar); Accompanist: Friedbert Sammler; Three Songs with Pianoforte Accompaniment: (a) Rheinlegendchen (G. Mahler), (b) Sandmännchen (Brahms), (c) Guten Abend, gut Nacht (Brahms); Guitar Duet; Polka Mazurka, Gold-Else (Richter); Guitar Solo, Tonbild (Haustein); Rustic Dance for Two Guitars, Alpensträusschen (Huber); Three Songs with Pianoforte Accompaniment: (a) Lieblingsplätzchen (Mendelssohn), (b) Meine Sonne (Capua), (c) Aus der Jugendzeit (Radecke); Guitar Solo: Loin du bal (Gillet); Intermezzo for Two Guitars: Frohsinn (Kollmanek). 5.50, Economic Report, Weather Forecast, and Time. 6.25, Talk: Gernan Theatrical Enterprise in Czechoslovakia. 7.0, Dialogue: The Reform of Company Law. 7.30, Dances, Old and New: Concert of Old-time Dances by the Leipzig Symphony Orchestra, alternating with Modern Dance Music by the Emde Dance Band; Orpheus Quadrille (Offenbach); Rheinländer, Bummelkompagnon (Holländer); Fischer-Polonaise (Ziehler); Moulinet Polka (Josef Strauss); Mazurka, Rosige Laune (Joh. Strauss); Polka Française, Feuerfest (Jos. Strauss); Polka Mazurka, Liebe und Ehe (Joh. Strauss); Gallop, Petersburger Schlittenfahrt (Eilenberg); Gallop, Bruder Listig (Budik); Gilda Waltz (Müllöcker); Waltz, Hofballtänze (Lanner); Luna Waltz (Lincke). 9.0, Topical Talk. 9.15, Roses: A Garland of Prose and Verse culled from the Literature of Two Thousand Years. 10.15, News Bulletin. 10.45 (approx.), Dance Music relayed from Munich. In the intervals, Special Report from the Olympic Games. 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—7.0 p.m., Talk: Work in the Garden. 7.30, Literary Programme. 8.0, Song Recital. 9.0, Dance Music, relayed from Bled. 10.0, Time Signal, News Bulletin, and Light Music on Gramophone Records.

LWOW

381 metres; 16 kW.—5.0 p.m., See Warsaw. 7.15, Miscellaneous Items. 7.35, See Warsaw. 7.45, Literary Talk. 8.0, See Warsaw. 10.25, Talk in French: Polish Folk Music. 10.40, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert: Overture, Figaro (Mozart); Airs from (a) The Fair Maid of Perth (Bizet), (b) La Favorita (Donizetti), (c) Manon (Massenet); Reading from Ruy Blas (Victor Hugo); Selection from Noel Païen (Massenet); Air from Benvenuto Cellini (Diaz); Overture, The Secret Marriage (Cimarosa). 7.30, Radio Gazette for Lyons and the South East. 8.30, Orchestral and Vocal Concert of Music by Johann Sebastian and Philippe Emmanuel Bach. Conductor: M. Gaston Billet.

MADRID

Call **EAQ**, 30.4 metres; 20 kW.—12.30 a.m. (Thursday), Light Music. 12.45, Radio Chronicle. 1.0, Popular Concert. 1.30, A Microphone Tour of Madrid by Night. 2.0 (approx.), Close Down.

MADRID

UNION RADIO, Call **EAJJ**, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices and Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal and Political Review. 11.15 (approx.), Chamber Music Concert: Concertos by Bach, Beethoven and Ravel. 11.15 a.m. (Thursday), News Bulletin. 1.30, Chimes and Close Down.
MALMO.—See Stockholm.
MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—7.0 p.m., See Prague. 8.30, See Brno. 9.0, Orchestral Concert. 10.0, See Prague. 10.15, Programme Announcements.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talk in Czech: The Disarmament Conference. 9.0, Talk in Swedish: How Wars Begin. 9.55, Time Signal. 10.0, Review of the Week and Answers to Correspondents in French.
MOTALA.—See Stockholm.
MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayd by Augsburg and Kaiserlautern, 560 metres, and Nürnberg, 239 metres.—5.0 p.m., See Stuttgart. 6.15, The Art of Healing among the Chinese. 6.35, Programme for Workers. 6.55, Time Signal, Weather Forecast, and Agricultural Notes. 7.5, Talk: Traffic Regulations for Motor Vehicles. 7.30, Gramophone Concert of Light Music: Turkish March, from The Ruins of Athens (Beethoven); Overture, Si Pétain roi (Adam); Hungarian Rhapsody in F (Liszt); Caprice viennois (Kreisler); Aria from The Force of Destiny (Verdi); Duet from Tiefland (d'Albert); Song, Will dir die Welt zu Füssen legen; Tango, Drabo Viego (Arolas); Foxtrot, When the Circus comes to Town (Ranke); March. 8.20, "Mary Stuart"—Tragedy in Five Acts (Schiller). 10.20, Time Signal, Weather Forecast, News Bulletin, and Sports Notes. 10.45, Concert of Light Music, conducted by E. Kloss. 12 Midnight (approx.), Close Down.
NAPLES.—See Rome.
NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW, Relayd by Fredrikstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Bjukan, 447.1 metres.—6.30 p.m., Programme for Boys. 7.0, Announcements, Weather and News. 7.30, Talk: Mushrooms and their Food Value. 8.0, Time Signal. 8.2, Orchestral Concert, conducted by Hugo Kramm: Hungarian Comedy Overture (Keler-Béla); Selection from Der liebe Augustin (Fall); Sorgenfrei (Volstedt); Alte Refrain (Kreisler); In a Persian Market (Keterbey); Sailor's Dance (Ebenet); Waltz, Wiener-Bonbons (Joh. Strauss); Piece (Geisler); Carmen Quadrille (Ed. Strauss); Polka, Zig Zag (Waldteufel); Selection from The Gipsy Princess (Kálmán); Waldesgülfster (Czibulka); Polka (Johann Strauss). 9.30, Agricultural Report, News and Weather. 10.0, Topical Talk. 10.15, Talk and Recitation. 10.35, Gramophone Dance Music. 11.15, Cabaret Programme, followed by Dance Music. 12 Midnight (approx.), Close Down.
OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Light Music on Gramophone Records. 6.30 to 8.0, Interval. 8.0, Announcements, Tourist Notes, Agricultural Notes, and Giornale Radio. 8.20, Popular Music on Gramophone Records. 8.30 (in an interval), Time Signal and Announcements. 8.45, Popular Concert. Soloist: S. Lojancono (Violin); Napoli (Charpentier); Death of Isolde, from Tristan and Isolde (Wagner); La pendola armoniosa (Pick-Mangiagalli); Violin Sonata in A (Handel); España (Chabrier). In the intervals, Talk and Theatre Notes. 10.0 (approx.), Variety Programme. 10.55, News Bulletin.

PARIS

EIFFEL TOWER; Call **FLE**, 1,445.7 metres; 13 kW. Time Signals, on 2,650 metres, at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)—6.45 p.m., Talk on Music by Victor Larbey. 7.0, Le Journal Parlé. 8.20, Weather Report. 8.30, Debussy-Ravel-Roussel Orchestral Concert, conducted by Edouard Fiaument. Hommage à Rameau (Debussy-Branga); Pianoforte Solo: Jeux d'eau (Ravel); Joueurs de Flue (Roussel); Suite Bergamasque (Debussy-Mouton); Piece en forme de Habanera (Ravel-Mouton); Le Festin de l'araignée (Roussel-Branga); Violin Solo: La Fille aux cheveux de lin (Debussy); Pavane pour une Infante défunte (Ravel-Jemain); En Bateau (Debussy-Mouton). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—7.0 p.m., News Bulletin and Parliamentary Review. 7.5, Light Music on Gramophone Records. 7.30, L'Envie—Play in Two Scenes (Mazuyer), by the Amis de Guignol à Paris. 8.0, Talk for Tourists. 8.15, Popular Music on Gramophone Records. 8.30, Radio Journal and News Bulletin. 8.45, Sponsored Concert. 10.0, Concert by the Orchestra of the Hotel Chatham. 10.45, News Bulletin.

PARIS

RADIO PARIS, Call **CFR**, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont'd.). 7.45, Gramophone Records: Selections from (a) Rigoletto (Verdi), and (b) Tosca (Puccini). 8.0, Weather and Press Review. 12 Noon, Talk: Holiday Reading. 12.30 p.m., Gramophone Concert: Concert Piece for Harpsichord (Rameau); Whitsun Cantata (Bach); Quartet in F (Haydn); Andantino capriccioso (Paganini-Liszt); Pianoforte Solo: La caccia (Paganini-Liszt); Der Nussbaum (Schubann); Bourrée fantasque (Chabrier);

AUGUST 10th **WEDNESDAY** continued.

Le Manoir de Rosemonde (Duparc); Phydile (Duparc); Mazurka in B flat (Chopin); Fantaisie impromptu (Chopin); Sonata for Cello and Piano (Debussy). In the intervals, at 1.0, Exchange, News and Weather, and at 1.30 and 2.0, Exchange, 3.45, Exchange and Market Prices, 6.30, Market Prices, Weather, Agricultural Report, Talk, Exchange and Racing Results, 7.0, Gramophone Concert: Overture, Si j'étais roi (Adam); Adieu à la forêt, from L'Attaque du moulin (Bruneau); Air from Naphio (Massenet); Cocatina (Scarlatti); Pastorale variée for Harpsichord (Mozart); La Tendresse (Sylviano); De temps en Temps (Mac Nami); El Carretero (Navos); The Kinkajou (MacCarthy). 7.45, Commercial Prices and News, 8.0, Literary Readings: The Letters of Flaubert, 8.30, News and Weather, 8.40, Fashion Review by Mlle. José, 8.45, Chamber Music Concert: Piano Solo (Debussy): (a) Pour les cinq doigts, (b) Degrés chromatiques, (c) Arpeggios composés, (d) Octaves; Songs on Gramophone Records: (a) Two Songs (Schumann), (b) O Fraiche nuit (Frank), (c) Mazer Dolorosa (Frauck), (d) Les Herceaux (Fauré), 9.15, Press Review and News, 9.20, Concert (cont.): 'Cello Solos; Songs on Gramophone Records: (a) Soir (Fauré), (b) Clair de lune (Fauré); (c) When the Flame of Love, from The Fair Maid of Perth (Bizet), (d) Die Lotusblume (Schumann); Quartet (Ducasse); Overture and Selection from Der Freischütz (Weber) on Gramophone Records.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 266 metres; 25 kW. Relayed by W3XK on 48.86 metres and 25.25 metres.—9.0 p.m., Teaberry Baseball Scores, 9.5, Business News, 9.55, Programme to be announced, 9.30, Weather Report, 9.32, Market Reports, 9.45, Programme to be announced, 10.0, Teaberry Baseball Scores, 10.5, David Lawrence Dispatch, 10.10, KDKA Artist Bulletin, 10.12, Programme Announcements, 10.15, KDKA Kiddies' Klub, 10.30, The Singing Lady, from New York, 10.45, Little Orphan Annie, 11.0, Time Signal, 11.1, Temperature Report, 11.2, Who's News Today, 11.6, Teaberry Sport Review, 11.11, Press News Reeler, 11.14, Weather Report, 11.15, Westinghouse Watchmen, 11.45 to 3.15 a.m. (Thursday), New York Relay, 11.45, Literary Digest Topics in Brief by Lowell Thomas, 12 Midnight, Amos 'n Andy, 12.15 a.m., Royal Vagabonds, 12.30, The Stebbins Boys, 12.45, Billy Jones and Ernie Haro, 1.0, Time Signal, 1.2, Talk by Senator L. J. Dickinson: The Agricultural Marketing Act as it affects the Producer, 1.15, The Fireflies, 1.30, Jack Frost Melodies, 2.0 to 3.30, New York Relay, 2.0, The Island Boat Dance Club, 2.30, Canada Dry—George Olsen's Orchestra with Jack Benny, 3.0, The Country Doctor, 3.15, Absorbine, Jr., in Footnotes, 3.30, Programme to be announced, 3.45, Around the Cracker Barrel, 4.0, Time Signal, 4.1, Teaberry Sport Review, 4.11, Temperature Report, 4.12, Weather Report, 4.15, Press Last Minute News Flashes, 4.20, The Music Box, 4.30, Jack Pettis and his Orchestra, 5.0, Orchestra, from New York, 5.30, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.0 kW.—7.15 p.m. Announcements and News Bulletin, 7.35, See Warsaw, 7.45, Popular Music on Gramophone Records, 7.58, Time Signal, 8.0 to 9.50, See Warsaw, 9.55, Time Signal, Sports Notes, and Police Report, 10.15, Dance Music on Gramophone Records, 12 Midnight (approx.), Close Down.

PRAGUE

483.5 metres, 120 kW.—3.55 p.m., Market Prices, 5.50, Light Music on Gramophone Records, 6.0, Talk: Children, 6.10, Variety Music on Gramophone Records, 6.25, German Transmission: News, Talk for Workers, and Sports Notes, 7.0, Popular Songs, 7.20, Concert by a Balalaika Orchestra, 7.30, Monthly Review, 8.20, Talk by Joseph Hobeil, 8.30, Violin Recital: Sarabande (Bach); Cantabile (Kjnj); Allegro appassionata (Saint-Saëns); Nocturne (Chopin); Scherzo (Goens). In the interval, at 9.0, Time and News, 10.0, Time, News, and Sports Notes, 10.15, Miscellaneous Announcements.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—Programme from Geneva, Lausanne not transmitting.—12.30 p.m., Time Signal from Neuchâtel Observatory, 12.31, News Bulletin and Weather Forecast, 12.40, Orchestral Concert, 1.0, Financial Notes, 1.5, Concert (cont.), 1.45 to 5.0, Interval, 5.0, Time Signal from Neuchâtel Observatory, 5.1, Dance Music on Gramophone Records, 6.0, Literary Talk, 6.30, Instrumental Concert, 7.0, Weather Forecast, 7.1, Popular Music on Gramophone Records, 7.55, News Bulletin, 8.0, See Schweizerischer Landessender, 9.0, Concert by the Station Orchestra, 10.0, News Bulletin and Weather Forecast, 10.15, Close Down.

ROME

Call 1R0; 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2R0, 80 metres.—

3.15 to 8.30 a.m., Giornale radio Announcements, 12.30 p.m., Weather and Gramophone Records of Light Music, 1.0 to 2.15, Sextet Concert: Overture, Tutti in maschera (Pediotti); Boulevard (de Serra); Selection from Cavalleria rusticana (Mascagni); Pianoforte Solos: Syncopated Music Canzonetta (Murtucci); Cuore di Sarriegna (Pulgheddu); Selection from The Merry Widow (Leliat). In the intervals at 1.15, Giornale radio, and at 1.30, Time and Announcements, 5.0, Exchange, Report of the Royal Geographical Society, Children's Radio Review, Giornale radio and Announcements, 5.30, Song Recital by Pina Ulisse (Soprano) and Vincenzo Tanlongo (Tenor): Aria from the First Act of Loreley (Catalani); Duet from the First Act of Tosca (Puccini), 5.45, Variety Concert: Ronda di notte (Cerrri); Selection from The Gipsy Princess (Kálmán); Murruring of the Waves (Blon); Ke-Sa-Ko (Chapuis); Ronda allegria (Martelli), 6.15, Tourist Report, 7.10 (Naples), Shipping and Sports Notes, 7.15, Agricultural Report, Announcements, and Giornale radio, 8.0, Time, Announcements, Gramophone Records of Variety Music, and Announcements, 8.15, Medical Talk, 8.30, See Turin. After the relay; Dance Music, 10.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.43 metres and by W2XAD on 19.56 metres.—9.0 p.m., Song Souvenirs, from New York, 9.30, Soloist from New York, 9.45, Studio Ensemble, 9.50, News Items, 10.0, Stock Reports and Police Notices, 10.15, Pop's Pirate Club, from New York, 10.30, Beau Balladeer, from New York, 10.40, A B C Thumbail Sketches, 10.45, Musical Programme from New York, 11.0, Ma Frasier's Boarding House, 11.15, Studio Ensemble, 11.25, Health Talk, 11.30, Wheel Day is Done Programme, 11.55, Baseball Scores, 12 Midnight, Intermezzo d'Italia Programme, 12.0 (W2XAF only), Stock Reports, 12.15 a.m. (Thursday), Chandu the Magician, 12.30 to 4.15, New York Relay, 12.30, Maxwell Tune Blenders, 12.45, The Goldbergs, 1.0, Big Time, 1.30, Musical Programme, 2.0, Goodyear Programme, 2.20, Mobiloil Concert, 3.0, The Corn Cob Pipe Club of Virginia, 3.20, Echoes of the Palisades, 4.0, Nellie Revell (Pianist), 4.15, Carmelo Cascio (Pianist), 4.30, Vincent Lopez and his Orchestra, from New York, 5.0, Al Stimpfeler and his Orchestra, 5.30 (approx.), Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASLE, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory, 12.30, Weather Report and News Bulletin, 12.40, Popular Concert on Gramophone Records, 1.35, Weather Report and Exchange Quotations, 1.45 to 3.30, Interval, 3.30, Variety Concert on Gramophone Records, 4.30 (from Zurich), Programme for Children, 5.0, Weather Report, 5.2 to 6.30, Interval, 6.0 (from Zurich), Talk on Films, 7.0, Time Signal, Weather Forecast, and Market Prices, followed by Gramophone Records of Light Music, 7.30 (from Zurich), Poems of a Miner, 8.0 (from Zurich), Concert by the Station Orchestra, conducted by Hermann Hofmann: Soloists, Gertrud Furrer-Schneider (Soprano) and Otto Strauss (Pianoforte), 9.0, Military Symphony in G, No. 100 (Haydn), by the Station Orchestra, conducted by H. Hofmann, 9.30, Weather Forecast and News Bulletin, 9.45, Concert of Dance Music by the Station Orchestra, 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA; 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Programme of Swedish Music by Gustav Wetter, 5.25, Reading, 5.45, Gramophone Concert of Light Music, 6.45, Sociological Talk, relayed from Malmö (231 metres), 7.15, Weather and News, 7.30, Topical Talk, 8.0, Concert of Swedish Music by the Station Orchestra, Soloist, Ernst Törnqvist (Violin), En Lykoriddare (Bror Beckman); Suite for Strings (Wilhelmi); Two Lyric Romances for Viola and Orchestra (Stenhammar); Lapland Rhapsody (Wesslen); Swedish Dance (Aulin), 9.15, Talk on Dalarna, relayed from Falun (307 metres), 9.45, Weather and News, 10.0, Dance Music, relayed from the Berns Dance Hall, 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Variety Music, 12.45 p.m., News in French and German, 1.0, Time Signal and Exchange Quotations, 1.10, Concert from Bordeaux - Lafayette, 1.50, Gramophone Records of Variety Music, 2.0 to 4.45,

Interval, 4.45, Talk in French: The Benefits of the Electric Ventilator, 5.0, Orchestral Concert, conducted by M. Roskam: Spanish March (Siecle); Waltz (Lincke); Serenade (Padilla); Selection from La Traviata (Verdi); Dolorosa (Lindemann); Nocturne for Cello and Orchestra (Lumkay); Selection from Lischen et Fritzchen (Offenbach); Pizzicati (Gillet); March, Apollo (Gauwin), 6.0, Talk in French: The Italian Painter Carducci, 6.15, Medical Talk in German, 6.30, Orchestral Concert, conducted by Maurice de Villera: Second Suite from L'Arlesienne (Bizet); Overture, Le roi l'a dit (Delibes); Serenade in B flat (Widor); Selection from Werther (Massenet); Torch Dance of the Brides of Kashmir, from Feramos (Rubinstein); Torádor et Andalouse (Rubinstein), 7.30, Time, and News in French and German, 7.45, Gramophone Concert: In a Persian Market (Kettelbey); Egyptian March (J. Strauss); Frühlingserwachen (Bach); Waltz from Faust (Gounod-Liszt); Selection from La Belle (Hélène (Offenbach); Wiener Bonbons (J. Strauss); Moonlight on the Alster (Fébus); Selection from Hansel and Gretel (Humperdinck); Waves of the Bosphorus (Milok); Volutpe (Milok), 8.45, Symphony Concert by the Municipal Orchestra, conducted by M. Minch, relayed from the Orangerie Restaurant, Soloist, Mme. Debonte (Contralto), La Tragédie de Salomé (Florent Schmitt); Two Ballads by François Villon (Debussy); Lied der Waldtaube, from Gurrelieder (Arnold Schönberg); Spanish Caprice (Rimsky-Korsakov), 10.30, Dance Music from the Savoy, 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—10.0 a.m. (from Karlsruhe), Violin and Pianoforte Recital of Bach and Beethoven Music: Allemande (Bach, arr. Schumann); Corrente (Bach, arr. Schumann); Sarabande (Bach, arr. Schumann); Romance (Beethoven); Romance in F (Beethoven); Sonata for Violin and Pianoforte (Beethoven), 11.0, Time, News, and Weather, 11.15, Sponsored Concert, 11.55, Weather Forecast, 12 Noon, Concert from Munich: Overture, L'Isola disabitata (Haydn); Rondino (Beethoven); Turkish March (Mozart); Ave Maria (Bach-Gounod); Ballet Music from Paris and Helen (Gluck); German Dances (Schubert); Hungarian Dances Nos. 2 and 4 (Brahms); Der Vogel als Prophet (Schumann); Mazurka brillante (Liszt); Walther's Prize Song from The Mastersingers (Wagner); Waltz from Der Rosenkavalier (Richard Strauss); Maria Wiegand (Reger); Sérénade pittoresque (Graener); Modern Dance Suite (Niemann), 1.15 p.m., Time, Weather, News, and Programme Announcements, 1.30, See Langenberg, 2.0 to 2.30, Sponsored Concert, 3.30 (from Freiburg), Programme for Children, 4.30, Talk, arranged by the Post Office, 5.0, Orchestral Concert, conducted by Otto Seyfert: Overture (Dvorák); Sketches from Russia (Pétras); Hungarian Shepherds' Dance (Gungl); French Serenade (Grieg); Ballet, Spring Festival (Gounod); Angoisse d'amour (Benatzky); Flower Waltz (Delibes); Lelariana (Geiger), 6.15 p.m., Time and Weather, 6.25, Talk: The Transylvanian Gypsies, 6.50, Talk, 7.15, Time, Weather, and Agricultural Notes, 7.50 (from Karlsruhe), Accordion Concert: March, Frühlingsschritt (Ingold); Appenzeller-Ländler (Helbling); Tone Picture (Thöni); Sehnsuchts-Walzer (Börlin); March, Fürs Vaterland (Bestgen), 8.0 (from Caonstatt), Concert of Overtures and Arias by the Philharmonic Orchestra, conducted by Emil Kühn, and Anita Oberländer (Soprano): Overture, Rosamund (Schubert); Aria from Zaide (Mozart); Overture, Genova (Schumann); Scene and Cavatina from Euryanthe (Weber); Overture, Hans Heiling (Marschner); Aria from Hans Heiling (Marschner); Overture, Ruy Blas (Mendelssohn), 9.10 to 10.15, See Frankfurt, 10.15, Time, Weather, News, Programme Announcements, and Report on the Olympic Games, 10.45, See Munich, 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI; 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures, 5.15, Exchange quotations, 5.30, Dance Music, 5.45, Orchestral Music: Dances from Prince Igor (Borodin); Airs from Begonia (Mercier), 6.15, Light Music, 6.30, Exchange Quotations and Horse Racing Results, 6.45, Variety Music, 7.15, Orchestra: Norwegian Dances Nos. 1, 2 and 3 (Grieg), 7.30, News Bulletin, 7.45, Arias from (a) Hamlet (Thomas) and (b) Il Trovatore (Verdi), 8.0, Arias from (a) The Gipsy Baron (Joh. Strauss) and (b) Kadubec (Yvain), 8.15, Military Music, 8.30, Accordion Solos, 8.45, Songs from (a) Tosca (Puccini), (b) La Bohème (Puccini), and (c) Carmen (Bizet), 9.0, Light Music, 9.30, Orchestral Music, 10.0, Sound Film Music, 10.15, Melodies from (a) Carmen (Bizet), (b) Cavalleria rusticana (Mascagni)

and (c) Manon (Massenet), 10.50, North African News, 10.45, Concert: La Filenise (Dunkler); Serenade (Piercé); Allegro (Kreisler); Indiana Love Call from Rose Marie (Prinl); Melodies from (a) Le Châlet (Adam), (b) Patrie (Paladille), (c) Sigurd (Reyer) and (d) L'Attaque du Moulin (Bruneau); Ballet Music from Les Dyex Pigeons (Messager); Impressions d'Italie (Charpentier), 11.45, Dance Music, 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.5 p.m., Quintet Concert: When Buddha dreams (Brown); Piece (Rhode); Suite, Souvenirs of Athens (Leopold); Canta Pulcinella (Zucconi); Mary (Jannone); Selection from The Pearl Fishers (Bizet); Air (Salzer); A più B (Cortopassi), 8.0 till Close Down, see Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres, Genoa, 312.8 metres, and Florence, 500.8 metres.—7.5 p.m., Variety Music: Suite campestre (Amadei); Ronda mussulmana (Billi); Furiant (Bayer), 7.30, Time and Announcements, 7.35, Variety Music on Gramophone Records, 8.0, Giornale Radio and Weather, 8.15, Sponsored Medical Talk, 8.30, A Three Act Comedy (to be announced), followed by Dance Music from the Luna Park Lido, Milan, 11.0, Giornale radio.

VATICAN CITY

19.84 metres (Morning), and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish, 3.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW.—Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—6.15 p.m., Talk on Engineering, 6.30, Talk: Personalities in the Time of Caaletto, 8.50, Talk on Hygiene, 7.10, Talk on Alpine Flora, 7.35, Time Signal, Weather Forecast, and Programme Announcements, 7.45, Orchestral Concert, conducted by Arthur Löwenstein, 9.15, Talk on the Reproduction of Sound by Means of Paper, with Musical Illustrations, 9.45, News Bulletin, Weather Forecast, and Announcements, 10.0, Evening Concert by Emil Bauer and his Orchestra.

WARSAW

1.411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow, 12.5 p.m., Programme Announcements, 12.10, Polish Press Review, 12.20, Interval, 12.40, Weather Forecast, 12.45, Light Music on Gramophone Records, 1.25, Interval, 1.35, Gramophone Concert (cont.), 2.10, Interval, 3.0, Economic Report, 3.10, Popular Music on Gramophone Records, 3.30, Boy Scouts' Report, 3.35, Naval and Colonial Report, 3.40, Programme for Young People, 3.52, Children's Letter Box, 4.5, Variety Music on Gramophone Records, 4.35, Announcements, 4.40, Answers to Correspondence, 5.0, Concert by the Station Orchestra, conducted by G. Wikomirski: Overture, Sakuntala (Goldmark); Poem (Eibeli); Wedding Scene (Smetana); Suite, The Minaret (Leopold); Persian Dance (Musorgsky); Elegy (Tchaikovsky); Malaguena (Moszkowsky); Dance of the Elves and March of the Dwarfs (Moszkowsky), 6.0, Talk on Witchcraft, 6.20, Dance Music from the Hotel de l'Europe, 7.0, Announcements, 7.15, Miscellaneous Items, 7.35, Radio Journal, 7.45, Agricultural Notes, 7.55, Programme Announcements, 8.0, Choral Concert of Popular Polish Songs, 8.35, Literary Programme, 8.50, Pianoforte and Violin Recital by Borunski (Pianoforte) and Karminski (Violin): Violin Solos: (a) Prelude and Fugue in E minor for Violin (Reger), (b) Meditation (Glazunov), (c) Melody (Tchaikovsky), (d) Caprice viennois (Kreisler), (e) Tambourin chinois (Kreisler); Pianoforte Solos: (a) Prelude No. 8 (Debussy), (b) Etude No. 2, Op. 63 (Friedman), (c) Les sifres (Dandrieu-Friedman), (d) Navarra (Albeniz), (e) Rigoletto-Paraphrase (Liszt); Sonata in C minor, Op. 45, for Violin and Pianoforte (Grieg), 9.50, Radio Journal, 9.55, Aviation Weather Report, 10.0, Dance Music, 10.25, Talk in French: Polish Musical Folklore, relayed from Lwów (381 metres), 10.40, Sports Notes, 10.50, Dance Music (cont.).

WILNO

563 metres; 16 kW.—7.15 p.m., Reading in Lithuanian, 7.20, Programme Announcements, 7.35, See Warsaw, 7.45, Topical Talk, 7.55, Miscellaneous Announcements, 8.0, See Warsaw, 10.25, Recital of Music by Bach, 10.40, See Warsaw, 11.20 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

THURSDAY

AUGUST THE ELEVENTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Organ music. Sonata recital. Evensong from Westminster Abbey. Early organ music recital. Promenade concert from Queen's Hall. Mr. Vernon Bartlett: The Way of the World. Dance music.
- LONDON REGIONAL** Orchestral concert from Whitty. "Cuttings from the Pottling Shed," his programme, by Old Todd, the gardener. Ann and Harold, a play by Louis Goodrich. Dance music.
- MIDLAND REGIONAL** Organ music. Orchestral programme. "Tom Thumb the Great" (Henry Fielding), played by Sir Barry Jackson's Malvern Festival Company, from the Malvern Theatre, Worcestershire. London Regional programme.
- NORTH REGIONAL** Orchestral concert from Spa, Whitty. Organ music. London Regional programme.
- WEST REGIONAL** Organ music. Band concert from Grove Park, Weston-super-Mare. Vaudeville programme from Hospital Carnival, Grove Park.
- SCOTTISH REGIONAL BELFAST** Organ recital. Scottish concert. National programme. Light music. Instrumental concert. National programme.

ABROAD

- BUDAPEST** Pianoforte recital by Dr. E. Dohnanyi.
- COPENHAGEN** Evening of popular Danish music.
- HILVERSUM** Reception of Lord Baden Powell at Dutch Boy Scouts' camp at The Hague.
- MADRID** Municipal Band concert from Rosales.
- STOCKHOLM** Song and pianoforte recital of Slav music.

Cotton (Sousa). 5.40, Exchange and Fish Market Prices. 6.20, Talk by Marguerite Balck. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk: Unemployment Legislation in Denmark. 8.0, Time Signal from the Town Hall. 8.2, Orchestral Concert of Popular Danish Music. Soloist, Kaj Oluf Buch (Songs). Overture, Little Christie (Hartmann); Andantino con moto and Scherzo from the Noveletten for Strings (Gade); Melody from Et Folkesagn (Gade); Songs: (a) Har jeg min Baad, mit Sejl og mit Net (Weyse), (b) Hr. Peder kastet Runer over Spange (Rung), (c) Sommerfatsblink (Hartmann) and (d) Serenade (Hartmann); Overture and Ballet Music from Aladdin (Horneman); Prelude and Dance of the Elves, from Wayhand the Smith (F. Henriques); Songs: (a) Spillemanden (Gade), (b) Barcarolle (Gade), (c) Jomfru, du ma ikke sove (F. Henriques), (d) Farvel min velsignede Fodeye (Carl Nielsen); Overture, Elverhof (Kuhlau). 9.15, Reading. 9.40, Violin Recital by Christian Esbensen; Chamber Sonata in G minor (Locatelli); Waltz (Field); Minuet No. 2 (Haydn); La capriciosa (Ries). 10.5, News Bulletin. 10.20, Concert of Hawaiian Music by Assman's Hawaiian Quartet. 11.5, Dance Music from the Industri Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Friday), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and News Bulletin. 7.35, Radio Journal. 7.45, Review of New Books. 8.0, Instrumental and Vocal Recital. 9.20, Programme to be announced. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Forecast, Stock Report, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.10, News Bulletin. 7.30, Time Signal. 7.32, French Lesson. 7.45, Literary and Dramatic Talk. 8.0, Uilleann Pipes. 8.15, Recital of Anglo-Irish Songs by Sam Joy (Baritone). 8.30, Orchestral Concert of Irish Music. 9.0, Violin Solos by Sydney Roschill. 9.15, Soprano Solos by Mamie Dingle. 9.50, Melrose State Dance Band. 10.30, Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Variety Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Variety Concert. 7.30, Radio Normandy Gazette. 8.0, News Bulletin. 8.30, Concert relayed from the Town Hall, Rouen. 10.0 p.m. till Close Down, Programme in English by the I.B.C.—10.0 p.m., Dance Music: Crying Myself to Sleep; Dixiana; Would You like to take a Walk; Sing something simple; Have a little Faith in Me; For you; I like to do things for You; What a fool I've been; I haven't heard a single Word from Baby; In my little Hope Chest; A little Love Song; Sing you Sinners; It must be true; Old Spanish Moon; Little Old Church in the Valley. 11.0, Orchestral and Vocal Concert: The Match Parade (Wehle); Song, My Ideal (Nicholls); Duet: While You love Me (Noble); River, stay away from my Door (Woods); When it's night time in Nevada (Hahn); Duet from Waltzes from Vienna (arr. Hylton); Dance while the Music is Ringing (Lee). 11.30, Pianoforte Solos: Reminiscences (arr. Andrews); Just one more Chance (Johnston); Down Sunnyside Lane (Campbell); One night alone with you (Jeffreys); Heartaches (Hoffmann); There's Something in your Eyes (Grothe); When You wore a gingham gown (Gilbert); Let love take care of You (Van Philips). 12 Midnight, Dance Music: At your command; Life is just a Bowl of Cherries; Sweet and Lovely; Guilty; I believe in You; How's your Uncle; Smile; Close your Eyes; I wanna be loved by You; Sing a little jingle; By the Fireside; Balls, Picnics and Parties; The Queen was in the Parlour; You try somebody else; Life's Desire. 12.57 a.m. (Friday), I.B.C. Goodnight Melody. 1.0 (approx.), Close Down.

FLENSBERG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW., and CASSEL, 246 metres. 3.30 p.m., Programme for Young People. 4.55, Economic Notes. 5.0, See Langenberg. 6.15, Economic Notes. 6.25, Review of Books about Goethe. 6.50, Talk by W. Herrmann. 7.15, Time, Programme Announcements, and Weather. 7.30, From the Valley of the Werra—Radio Picture (Ernst Nebhut). 8.0, Faust—Opera in Three Acts (Verdi), relayed from the Opera House. 10.20, Time, Weather, News and Sports Notes. 10.45 (approx.), Silent Night.

FREDEKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

BARCELONA

RADIO-BARCELONA, Call EAJJ, 349 metres; 8 kW.—8.0 p.m., Mozart Concert by the Station Trio: Selection from The Magic Flute; Andantino con espressione; Serenade from Don Giovanni; Rondo alla turca. 8.50, Exchange Quotations, Request Gramophone Records, and News. 10.0, Chimes, Weather Forecast, and Market Prices. 10.5, Concert by the Station Orchestra: March (Frankovsky); Selection from Henry the Eighth (Saint-Saëns); Serenade from the Suite, Impressions d'Italie (Charpentier); Souvenir (Renée); Mi serenata (Stafelli); Gavotte (Henneberg). 11.0, Recital of Catalonian Poems. 11.15, Concert of Light Music, relayed from the Café Español. 1.0 a.m. (Friday), Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, See Berlin (Witzleben). 1.0 to 1.35, Interval. 1.35, News Bulletin. 2.0, See Berlin (Witzleben). 3.0, Talk: The Consequence of a Leopard Hunt. 3.30, Weather and Exchange. 3.45, Talk for Women. 4.0, Educational Talk. 4.30, See Berlin (Witzleben). 5.30, Talk: Difficulties in the English Language, with Illustrations. 6.0, Talk on Modern Songs, with Illustrations. 6.30, Advanced Spanish Lesson. 6.55, Weather for Farmers. 7.0, Topical Programme. 7.30, Agricultural Talk, followed by Weather for Farmers. 8.0, See Berlin (Witzleben). 12.30 a.m. (Friday), Close Down.

BERLIN

WITZLEBEN; 419.5 metres; 1.5 kW.—12 Noon, National Celebrations, relayed from the Reichstag. The Berlin Philharmonic Orchestra, conducted by Prof. Julius Prüwer: Overture, Egmont (Beethoven); Address by Baron von Gayl, Minister of the Interior; Third Movement from Symphony No. 4 in E minor (Brahms); Address by Herr von Papen, Reichskanzler; Community Singing of the National Anthem; Radio Report: Before the Reichstag. 1.25 p.m., Report on the Olympic Games at Los Angeles. 2.0, Gramophone Concert of Music by Franz Schubert. 2.55 to 3.20, Interval. 3.20, Educational Talk. 3.40, Talk: Towns with Two Faces. 4.5, Talk: The Campaign Against Smuggling. 4.30, Concert for Organ and String Orchestra. 5.30, Talk for Young People: Mecklenberg. 5.50, Talk: Men and their Callings—the Chauffeur. 6.10, With the Microphone through the Mark—Driessen. 6.20, Helene Kibbat reads from her own Works. 6.35, Wind Instrument Concert from the Zoological Gardens. 6.55, The Witzleben Station informs its listeners. 7.0, Topical Talk. 7.10, Concert (contd). 7.30, Talk: The Political and Educative Value of Travelling Abroad. 8.0, Concert by the Berlin Philharmonic Orchestra, conducted by Julius Prüwer. In the interval at 9.0 (approx.), News and Sports Notes. 10.15, Weather, News and Sports Notes. 10.30 (approx.), Dance Music from the Europa Pavilion. 12.30 a.m. (Friday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., Exchange Quotations. 7.40, Talk: Labour and the Causes of War. 7.55, Lottery Results and Charades. 8.0, Talk: The Wine Industry from the Legal Point of View. 8.15, News and Weather. 8.30, Light Music on Gramophone Records. 9.0, The Menace—Comedy in Four Acts (Frondeira).

BRATISLAVA

279 metres; 14 kW.—7.0, See Prague. 10.15, Programme Notes and Announcements.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW.; and GLEIWITZ, 253 metres.—6.10 p.m., That will interest you—A Surprise Programme. 6.30, Orchestral Concert: Suite from Ekkehard (Homann-Webau); Comedy Overture, Fahrend Volk (Leuschner); Greig Reminiscences (Urbach); Waltz, Verschmähte Liebe (Lincke). 7.30, Weather for Farmers. 7.32, Reading (Balder Olden). 8.0, Concert by the Silesian Philharmonic Orchestra, conducted by Herman Behr: Symphony No. 1 in G (Draseke); An mein deutsches Land (Zilcher); Siegfried Idyll (Wagner); Serenade (Frankenstein); German Dances (Schubert-Webner). In the interval at 9.0, News. 10.10, Time and News. 10.35, Talk: The Silesian Swimming Season, 1932. 10.50, Talk for Workers, in Esperanto. 11.0, Silent Night.

BRNO

342 metres; 35 kW.—7.0 p.m., See Prague. 10.15, News Bulletin. 10.20, See Prague.

BRUSSELS (No. 1)

I.N.R.; 509 metres; 15 kW.—12 Noon, Excerpts from Carmen—Opera (Bizet) on Gramophone Records. In the interval at 1.0 p.m., Le Journal Parlé. 5.0, Orchestral Concert, conducted by Jean Kumps: Overture, Don Pasquale (Donizetti); Selection from Zaza (Leoncavallo); Song without words (Tchaikovsky); Selection from Manon (Massenet); Ballet, La

Source (Delibes). 5.45, Programme for children. 6.15, Talk: The Suppression of Employment Agencies. 6.30, Gramophone Concert: Flamenco Tango, En reliant vos lettres (Masson); Spanish Serenade (Glazounov); Fantasia on William Tell (Krüger); Melody (Wiedoeff); Jealousy (Gade); Après un rêve (Fauré); La corquette (Cléric); Sax Serene (Wiedoeff); Souvenir (Drdla); Variations in E minor (Armandinho); Liebesfreud (Kreisler); Piece (May); Scottish Dance (Rosse). 7.15, Talk for Workers. 7.30, Sports Review. 8.0, Orchestral Concert, conducted by Meulemans: Bourrée (Bach); Minuet (Bocherini); Sarabande (Grieg); Rigaudon (Chaminade); Pavane (Ravel); Mazurka (Debussy); Waltz (Johann Strauss); Habanera (Chabrier); Tango (Albéniz); Gopak (Mussorgsky). 8.45, Talk: Municipal Autonomy. 9.0, Concert, conducted by François Rasse, relayed from the Kursaal, Ostend. Soloist, Lucien Van Obbergh de la Monnaie (Songs). Jubilee March (Jellin); Fantasia on a Popular Liègeois Theme (Ysaeye); Violin Solo, Meditation from Thais (Massenet); Aria from Don Giovanni (Mozart); The Nutcracker Suite (Tchaikovsky); Aria from The Barber of Seville (Rossini); Overture, Mignon (Thomas). 10.30, Le Journal Parlé. 10.40, Gramophone Concert: Scherzo from the Quartet in A minor (Schumann); Waltz, Phryné (Ganne); Andalusian Cavaliers (Vellones); La Tourterelle (Damaré); La Tziganne (Ganne); Italian Retreat (Drescher).

BRUSSELS (No. 2)

N.I.R.; 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Gramophone Concert of Popular Music: The Lancers Quadrille (Metra); Piece (Lochmann); Military Waltz, La Hussarde (Goule); Grossväterchen (Langer); Coq et Poule (Paradis); Gavotte, Stéphanie (Czibulka); Schottische (Paradis); Minuet (Bocherini); Czardas (Monti); Gigue (Thomé); Spanish Waltz, Santiago (Corbin); Pavane (Lucena); Polovtsian Dance (Borodin); Passepied (Debussy); Gopak (Mussorgsky); Hindu and Turkish Music; Liszt Potpourri; Selection from The Chocolate Soldier (O. Straus); Walter's Prize Song from The Mastersingers (Wagner); Slav Rhapsody (Friedemann); Tango (Dambosi); Serenade (Tosti); Overture, Maritana (Wallace). In the interval at 1.0 p.m., Le Journal Parlé. 5.0, Orchestral Concert, conducted by Meulemans: March, Liberty Bell (Sousa); Waltz from Wienerblut (Johann Strauss); Selection from Hans the Flute-Player (Ganne); Japanese Bell Dance (Yoshitomo); Stolz Potpourri (Dostal). 5.45, Programme for Children. 6.30, Programme arranged by the Boerinebond. 7.10, Report of the K.V.R.O. 7.15, Talk: The Educational Task of the Workers' Christian Movement. 7.30, Programme for Women. 8.0, The Prodigal Son—Radio Play (Yvonne de Man). 8.45, Talk for Catholics. 9.0, Orchestral Concert, conducted by Jean Kumps. K.V.R.O. Strijldied

(Meulemans). Overture, Fingal's Cave (Mendelssohn); Song without words (Mendelssohn); Selection from Lilac Time (Schubert); Waltz, Wiener Bonbons (Johann Strauss); Viennese Waltz (Gilson); Viennese Operetta Potpourri (Hrubý). 9.55, Evening Prayer. 10.0, Le Journal Parlé. 10.10, Gramophone Concert: Wedding March (Rathke); Piece (Armandola); In a Clock Store (Orth); In the Bazaar (Siede); Puppe and Hampelmann (Siede); The Musical Box (Krome); Parade im Märchenwald (Noack); The Sparrows' Parade (Rathke); Clog Dance (Petras).

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Military Music. 5.0, News Bulletin and Time Signal. 5.10, Concert of Military Music (contd.). 6.0, Educational Programme. 6.40, Gramophone Records of Light Music. 7.0, Song Recital by Mme. Trante Liencet: Se tu m'ami (Pergolesi); Amarilli (Caccini); Tra la la (Gordigiani); Eighteenth Century Bergerettes: (a) Bergère légère, (b) Chantons, Chantons les amours de Jean, (c) L'amour s'envole, (d) Maman, dites-moi, (e) Jeunes fillettes. 7.20, Symphony Concert, conducted by M. Carlo Brunetti: Overture, Titus (Mozart); Suite in G Minor (Bach-Reger); Suite for String Quartet and Orchestra (Rosario-Scalero); Overture, Music for Radio (Lazar); Three Caprices (Mahaud). 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on 210 metres from 6.30 p.m. to 12 Midnight.—5.0 p.m., Concert by the Budapest Salon Orchestra. 6.0, Reading. 6.30, Recital of Hungarian Folk Songs. 7.30, Talk on Foreign Politics. 7.45, The Czikas—Folk Play. 9.45, Pianoforte Recital by Dr. E. Dohnanyi. 10.30, Dance Music from the Royal Hotel. 11.15, Cigány Music from the Baross Café.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, conducted by Max Skalka, relayed from the Hôtel d'Angleterre. 2.0 to 3.30, Interval. 3.30, Orchestral Concert, conducted by Emil Reesen. Soloist, Agda Lhoir (Pianoforte). Overture, Semiramis (Rossini); Serenata di baci (Michele); Waltz, Barcarolle (Waldteufel); Selection from Rigaro (Mozart); Introduction to Carmen (Bizet); Pianoforte Solos: (a) March, Op. 33 (Prokofiev), (b) Two Pieces (Recikov), (c) Caucasian Melody (Zadora), (d) Clair de lune (Debussy), (e) Trolldog (Grieg); Overture, Ruy Blas (Mendelssohn); Norwegian Folk Melody (arr. Halvorsen); Mazurka, Columbine (Lumbye); Selection from The Daughter of the Regiment (Donizetti); Melody from Hakon Jarl (Hartman); March, King

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hannover, 566 metres; and Kiel, 232.2 metres.—5.55 p.m., North German Authors' Programme—the Sixtieth Birthday of Fritz Lau. Talk and Readings by the Author from his own works. 6.35, Blacklegs in the Building Industry—a Sketch by Oskar Feemöller. 6.55, Exchange Quotations. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20, Nikolaus Lenau Programme—Songs and Recitations by Käthe Wittenberg, Herbert Ernst Gholz, Bernhard Jakseliat and Karl Pündter. Introductory Talk by Karl Marey; Song, Die drei Zigeuner (Liszt); Recitations: (a) Der Postillon. (b) Die drei Indianer. (c) An meine Gitarre; Song: Stille Sicherheit (Franz); Recitations: (a) Nichtliche Wanderung, (b) Die Rose der Erinnerung, (c) Der traurige Mönch; Song: Liebesfeier (Weingartner). 8.0, Concert of Light Music by the Station Choir and the Small Station Orchestra, conducted by Fritz Gartz: Overture, Jean de Paris (Boieldieu); Selection from Undine (Lortzing); Concert Waltz in E (Moszkowsky); Suite, In a Fairy Realm (Kételbey); Choir: (a) Spielmann und Mägdlein (Röntgen), (b) Die schwarzbraune Hexe (Folk Song, arr. G. Schumann); Romantic Overture (Kéler-Béla); Selection from Der Orlov (Granichstaedten); Waltz, September (Godin); Song, Küssen ist keine Sünd from Bruder Straubinger (Eysler); Foxrot, Küssen kann man nicht erlernen (Stolz); Intermezzo, Mohamed (Urack); Märchen (Kozak); Landler, Frohsinn auf den Bergen (Fétras); Potpourri, Rendez-vous bei Lehar (Aruby); March, Uncle Teddy (Fucik). 10.0, News Bulletin and Sports Notes. 10.20, Concert of Dances by the Station Orchestra conducted by Fritz Gartz: Polonaise (Weber); Waltz, Ganz allerliebste (Waldteufel); Coppélia-Quadrille (Fährbach); Waltz, Wiener Kinder (Josef Strauss); Polka from La Vie parisienne (Offenbach); Rheinländer Die Schöne Winerin (Zikow); Siren Waltz from The Merry Widow (Lehar); Gallop, Bei Nacht und Nebel (Fährbach); Polka (Hérold); Gavotte, Bennende Liebe (Johann Strauss); Waltz, Nordseebilder (Johann Strauss); Champagne Gallop (Lumbye); Mazurka, Der Klügere gibt nach (Johann Strauss); Polka Mazurka; Aus der Ferne (Josef Strauss); Polka, An Liebe reich (Fährbach); Marsch des Wiener Bürgermilitärs (Lanner).
HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW, and DANZIG, 453.2 metres. 11.0 a.m., Weather Report. 12 Noon, See Berlin (Witzleben). 1.5 p.m., Gramophone Concert of Light Music; March, Das ist mein Oesterreich (Fétras); Five Songs from the Dichterliche Cycle (Schumann); Selection from Lilac Time (Schubert-Berté); Overture, Orpheus in the Underworld (Offenbach); March (Forn); Song from Eva (Lehar); Selection from Countess Mariza (Kalman); Bei einer kleinen Tasse Tee (Schanzer-Richards); Die Augen der Liebe sehen alles so schön (Jermann); Mutterhände (Wellisch); Rosen und Frauen (Gröthe); Graf-Dürckheim-Marsch (Krug); Grüss an München (Jais); Potpourri of Hunting Songs (Kohlmann); March, Holoderoch (Lorenz); 2.30 to 3.30, Interval. 3.30 (from Danzig), Talk for Young People. 4.0, Concert of Operetta Music by the Small Station Orchestra conducted by Eugen Wilcken; Overture, Ten Maids and No Man (Suppé); Waltz from Der Feldprediger; Selection from The Arabian Nights (Johann Strauss); Selection from Der Bettelstudent (Müllacker); Overture, Die schöne Galathée (Suppé); Waltz from A Night in Venice (Johann Strauss); Waltz from Der arme Jonathan (Müllacker); Selection from Boccaccio (Suppé); Overture, Cagliostro in Wien (Johann Strauss). 5.55, Talk: Striking Advertisements. 6.15, Agricultural Prices. 6.30, Agricultural Dialogue. 7.0, Trio in F, Op. 62 (Georg Schumann); by the Ninko Trio. 7.30, Talk: Goethe as a Living Influence Today. 7.55, Weather. 8.0, See Vienna. 9.30, Announcements. 9.40, Reading of Grotosques by Deutschbliff. 10.10, Weather, News and Sports Notes.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW, (7 kW, up to 4.40 p.m.).—7.40 to 8.55 a.m., Gramophone Records of Variety Music, arranged by the Catholic Radio Society (K.R.O.). 8.55 to 9.40, Interval. 9.40 to 10.40, Programme of the Christian Radio Society (N.C.R.V.). 9.40, Popular Music on Gramophone Records. 9.55, Programme for Invalids. 10.25, Light Music on Gramophone Records. 10.40 to 1.40 p.m., K.R.O. Programme. 10.40, Reception of Lord Baden Powell of Gilwell by the Bishop of Harlem, relayed from the Dutch Boy Scouts' Camp at The Hague. 11.10, Religious Address. 11.40, Police Notes. 11.55, Orchestral Concert, conducted by Johann Gerritsen: March of the Little Soldiers (Rebattu); Overture, Undine (Lortzing); Hofballtänze (Lanner); Selection from Hansel and Gretel (Humperdinck) Overture, Peter Schmol (Weber); Dance of the Sailors (Ebdond); Indian Canzonetta (Dvorák); Musikalische Telegramme (Offenbach); Frühling in Wien (Stolz); March, Liberty Bell (Sousa). 1.40 till Close Down.

AUGUST 11th

THURSDAY

continued.

N.C.R.V. Programme. 1.40, Variety Music on Gramophone Records. 3.10 to 3.40, Interval. 3.40, Programme for Invalids. 4.40, Handwork Lesson for Young People. 5.25, Harmonium Recital by Ton Brandes: Fantasia in C (Bach); Prelude and Fugue in E Minor (Bach); Hymn Tune, Voluntary (Mote); Two Hymn Tune, Préludes (Flekher); Four Madrigals (Karg-Elert); Four Pieces (Boellman). 6.25, Dressmaking Lesson. 6.40, Recital of Frisian Poems. 7.10, Police Notes. 7.25, News Bulletin. 7.40, Song Recital by Gertruida van Vladeracken, Jan Poortenaar at the Piano. 8.40, Talk. 9.10, Concert by the Onders Ono Mandoline Orchestra: Anamitischer Zaubere (Siede); Demone (Angelo); Wiener Praterleben (Translateur-Rosenthal); Fantasia (Bert); Comedy Overture (Keler-Béla); Wien bleibt Wien (Schrammel); In the intervals, at 8.40, News Bulletin. 10.10, Variety Music on Gramophone Records. 11.10 (approx.), Close Down.
HORBY.—See Stockholm.

HUIZEN

Announced MILVERSUM, 1,875 metres; 8.5 kW.—7.40 a.m., Time Signal. 7.41, Light Music on Gramophone Records. 9.40, Time Signal. 9.41, The Daily Service. 9.55, Variety Music on Gramophone Records. 10.10, Recital by Toos van Veen (Soprano) and Chris Veelo (Pianoforte): Pianoforte Solos, (a) Fantasia (Handel), (b) Prelude, Op. 82, No. 10 (Rachmaninov), (c) Scherzino (Maykopar); Songs, (a) Ninon (Tosti), (b) Vorrei morire (Tosti), (c) Pour un baiser (Tosti). 10.40, Original Dutch Short Stories by Gustav Czopp. 11.10, Recital (contd.): Pianoforte Solos, (a) Triana (Albeniz), (b) Petite chanson (Glière), (c) Paganini—Etude No. 2 (Liszt); Songs, (a) Solveig's Song (Grieg), (b) Ich liebe dich (Grieg), (c) Maria Wiegenlied (Reger), (d) Das Veilchen (Mozart). 11.40, Time Signal. 11.41, Concert by Tuschinsky's Orchestra conducted by M. Tak. 1.10 p.m., Concert by Naaldwijk's Male Voice Choir. 1.55, Interval. 2.10, The Bishop of Harlem and Lord Baden Powell with the Dutch Boy Scouts at Wassenaar, The Hague. 3.10, Popular Music on Gramophone Records. 3.40, Programme for Hospitals. 4.40, Pianoforte Recital by Ida Rosenheimer: Variations on Ah, vous dirai-je Maman (Mozart); Ballad in G Minor (Chopin); Etude (Chopin); Sevillana (Albeniz). 5.10, Concert by the Station Chamber Orchestra conducted by Gerard Hemmes: Overture, Lachendes Leben (Rust); Suite, Ein Abend in St. Petersburg (Meyer-Helmund); Ballade expressive (Caludi); Minuet (Frontini); Waltz, Scheiden und Meiden (Fétras); Selection from Gioffè-Girola (Leocq); Ronde d'amour (Chaminade); Patrouille enfantine (Gillet). 6.10, Sports Talk. 6.40, Concert (contd.): Hungarian Comedy Overture (Kéler-Béla); Millocker Potpourri (arr. Morena); Tango, Bixochito (de Caro); Wiener Marsch (Ziehrer); Waltz, Wiener Bonbons (Joh. Strauss); Two old Viennese Songs (Arnold), (a) Na hab'n ir Wiener Sorgen! (b) Beim Bugtor am Michaeler Platz; Selection from Die Puppenfee (Bayer). 7.40, Time Signal. 7.41, Concert by the Russian Ensemble. Soloists, N. Wischnjewsky (Tenor) and I. Litwinzew (Balalaika). Potpourri of Russian Songs (arr. Michailowsky); Andante cantabile (Tchaikowsky); Mazurka No. 2 (Wieniawsky); Songs, (a) Snowdrifts, (b) Siberian Song; Balalaika Solos, (a) Two Russian Songs, (b) Variations on Russian Folk Songs; Male Voice Choir, (a) Ukrainian Folk Songs (arr. Doubout), (b) Burlak (Triodia). (c) Gefangene Cossacks (Nischtschensky). 8.25, A Miracle—Radio Play. 8.45, Concert by the Wireless Orchestra conducted by Nico Treep. Soloist: Fernando Zepparoni (Violin). 9.40, Weather Forecast and News Bulletin. 9.55, Concert (contd.). 11.10, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.25 p.m., Popular Music on Gramophone Records. 7.30, News Bulletin and Popular Music on Gramophone Records: 7.45, Gramophone Concert of Popular Music.

KAUNAS

1,935 metres; 7 kW.—7.0 p.m., Variety Items. 7.30, Weather Report and News. 8.0, Agricultural Talk. 8.20, Review of Foreign Affairs. 8.40, Concert of Light Music. 9.30, Talk. 9.30, Orchestral Concert. 11.0 (approx.), Close Down.
KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and HELSINKI, 368.1 metres.—6.15 p.m., Concert by the Radio Ensemble: Overture, Orpheus in the Underworld (Offenbach); Waltz (Lehar); Czardas (Grossman); Rocco Serenade (Meyer-Helmund);

Legende d'amour (Becce); Suite, Memories of Cairo (Armandola). 7.0, Talk. 7.25, Cello Recital. 7.45, Song Recital. 8.5, Talks. 8.25, Concert by the Radio Ensemble: Humoresque (Vepsala); Selection from The Geisha (Jones). 8.45, News Bulletin in Finnish. 9.0, News Bulletin in Swedish. 9.15, Light Music from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert: Overture, Czur and Carpenter (Lortzing); Waltz, Frühlingsstimmen (Joh. Strauss); Oriental Suite (Poppy); Let her believe, from The Girl of the Golden West (Puccini); Minuet (Paderevsky); Ein bisschen Liebe (Sileu); Melodies from The Count of Luxembourg (Léhar); March from Carmen (Bizet). 12.0 till 1.0 p.m., Anniversary Celebration of the New German Constitution, relayed from the Reichstag Building. 1.15, Time, Weather, News and Report on the Olympic Games. 1.30, Vocal and Instrumental Concert, conducted by Eysoldt; Soloist, Frida Hummel (Songs with Lute Accompaniment): Selections from Rigoletto (Verdi); Glücksritter and Humoristischer Marsch (Clemus); Songs, (a) Brauns Maidelein, (b) Laridal (Bierbaum), (c) Es zogen itzt die ungarischen (Husaren); Old Dutch Air, In the Tuileries (Amadel); Minuet (Bolzoni); Overture, The Gipsy Baron (Joh. Strauss). 2.30, Sponsored Programme. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Review of New Scandinavian Books. 4.40, Talk: Economics and Culture: The Essentials of Technical Knowledge. 5.0 to 6.15, Concert by the Station Orchestra conducted by Kühn; Soloists, Hansen (Soprano) and Schömmmer (Tenor): Overture, Euryanthe (Weber); Elizabeth's Greeting in the Hall of Song and Duet from Tannhäuser (Wagner); Selection from The Flying Dutchman (Wagner); Duet from Lohengrin (Wagner); Court, Festival and Love Song from Das Herz (Pitzner). 6.20, Literary Talk: Masters of the Travel Sketch: Goethe's Faustball in Mistra. 6.45, Time, Weather, Economic Notes and Sports Report. 7.0, Talk: Heresies of our Day: Dramatic Films and Film Dramas. 7.20, Talk: The Theory and Practice of Health and Unemployment Insurance for Workers. 7.55, First News Bulletin. 8.0, Symphony Concert relayed from Berlin (Witzleben). 10.15, News Bulletin, Announcements and Sports Report. 10.30, Dance Music relayed from Berlin (Witzleben). 12 Midnight (approx.), Close Down.
LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW.; and DRESDEN, 319 metres.—4.0 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Overture, In Reiche des Indra (Flotow); North German Folk Dances (Holzner); Cote d'Azur (Felber); Festival Waltz (Lampe); Rustic Dance (Lampe); Nachklänge aus Ossian (Gade); Lyric Suite, Op. 54 (Grieg); Waltz, Nachtschwärmer (Ziehrer); Herjeminah — Polka (Joh. Strauss); Melodies from Der Operball (Heuberger). 5.30, Time, Weather, and Economic Report. 6.0, A Penny the Lot—Radio Farce (Leopold Lehmann). 6.50, The Leipzig Station informs its Listeners. . . . 7.0, Talk: The Biological Effect of High Altitude. 7.15, Talk to Taxpayers. 7.30, Reading from The Judgment of Midas (C. M. Wieland). 8.0, Concert relayed from Brestau. 10.5, News Bulletin.

LJUBLJANA

574.7 metres; 25 kW.—6.0 p.m., Concert of Light Music on Gramophone Records. 7.0, Concert of Music on Nature Themes. 7.30, Talk: Academic Careers. 8.0, Light Music on Gramophone Records. 8.30, Concert by the Ljubljanski Zvon Choir. 9.30, Concert of Light Music, relayed from Bled. 10.30, Time Signal and News Bulletin.

LWOW

381 metres; 16 kW.—6.0 p.m., Talk: Hunting in Swamps and on the Water. 6.20, See Warsaw. 7.15, Miscellaneous Items. 7.35, See Warsaw. 7.45, Talk: The Beginning of Polish Aviation. 8.0, See Warsaw. 9.20, Programme, relayed from Wlino. 9.50, See Warsaw. 10.0, Song Recital by Lola Miszkiewicz (Soprano). 10.20, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA; 465.8 metres; 1.5 kW.—7.0 p.m., Light Music on Gramophone Records. 7.30, Radio Gazette for Lyons and the South-East. 7.50, A Tour through Lyons. 8.0, Charades. 8.10, Talk. 8.30, Instrumental Concert. Soloist, Mme. Rottier Nott (Songs). First and Second Movements from the Quintet in G minor (Brahms); Suite for Two Violins

(Louis Aubert); Song of Dido, from Les Troyens (Berlioz); Quartet No. 5 (Dalyrac); Adagio and Allegro (Marcello); Songs: (a) La mer est infinie (Fauré), (b) Diane Séléné (Fauré), (c) Chanson de la nuit durable (Séverac), (d) Serenade (Mussorgsky); Sonata for Two Violins and Pianoforte (Milhaud); Scherzo and Finale from a Quintet (Brahms).

MADRID

Call EAQ, 30.4 metres; 20 kW.—Programme for Listeners in Brazil. 12.30 a.m. (Friday), Light Music. 12.45, Radio Chronicle. 1.0, Popular Concert. 1.35, Talk. 1.40, Light Music. 2.0 (approx.), Close Down.

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices and Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal, and Political Review. 11.15 (approx.), Song Recital by Maria Fantoli and Ernesto Lecuona. After the Recital, Municipal Band Concert, conducted by Villa, relayed from the Rosales. 1.15 a.m. (Friday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—7.0 p.m., See Prague. 10.15, Programme Announcements and Theatre Notes. 10.20, See Prague.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Review of the Week and Answers to Correspondents, in English and German. 9.55, Time Signal and Close Down.
MOTALA.—See Stockholm.

MÜHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—4.5 p.m., Concert. Soloists: Gertraud Dirrigal (Pianoforte), Willy Hejdel (Bass), Rudolf Götz at the Piano. 4.40, Talk. 5.0, See Langenberg. 6.15, Talk: Mass Organisations throughout the World. 6.35, Agricultural Talk. 6.55, Time, Weather, and Agricultural Report. 7.5, Talk: New Traffic Regulations for Motor Vehicles. 7.25, Song Recital by Thea Linhard (Soprano); Ludwig Schmidmerer at the Pianoforte. 8.0, See Berlin (Witzleben). 9.5, Variety Concert conducted by E. Kloss. 10.20, Time Signal, Weather Forecast, News Bulletin, and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by FREDRIKSSTAD, 367.6 metres; HAMAR, 560 metres; NOTODDEN, 447.1 metres; PORSGRUND, 453.2 metres; and RJUKAN, 447.1 metres.—5.40 p.m., Talk: Wireless at Sea. 6.0, Variety Music on Gramophone Records. 6.30, Talk: Luther as Poet and Composer. 7.0, Announcements, Weather and News. 7.30, Song Recital by Mme. Anna Brekke Thibell. 8.0, Time Signal. 8.1, Agricultural Report. 8.30, Beethoven Concert, conducted by Hugo Kramm; Overture, Egmont; Symphony No. 3, Eroica; Two Contradances; 9.40, Weather and News. 10.0, Topical Talk. 10.15 (approx.), Close Down.
OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Popular Music on Gramophone Records. 6.0, Programme for Children. 6.30 to 8.0, Interval. 8.0, Announcements, Agricultural Notes and Giornale Radio. 8.20, Light Music on Gramophone Records. In an interval at 8.30, Time Signal and Announcements. 8.45, Concert of Operetta Music; Overture, Die schöne Galathée (Suppé); Waltz, Mio amore (Becce); Selection from La collana di Pasquer (Luparini); In the Mystic Land of Egypt (Kételbey); Festa al villaggio (Bill); Intermezzo Pizzicato (Fauchey); La réponse du berger à la bergère (Gillet); Overture, Si j'étais roi (Adam); Act One of Primarosa—Operetta (Pietri). 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)—6.45 p.m., Theatre Review. 7.0, Le Journal Parlé. 8.20, Weather Report. 8.30, Gramophone Concert of Popular Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—7.0 p.m., News Bulletin and Parliamentary Report. 7.5, Sponsored Talk. 7.15, Light Music on Gramophone Records. 7.30, Sponsored Gramophone Concert. 8.0, Popular

AUGUST 11th **THURSDAY** continued.

Music on Gramophone Records. 8.30 Radio Journal and News Bulletin. 8.45, Concert by the Station Orchestra: Overture, Le Roi l'a dit (Delibes); Waltz, Autrefois (Waldteufel); Selection from Joséphine vendue par ses Sœurs (Roger); Second String Quartet (Saint-Saëns); Piano Solo: Waldesrauschen (Liszt); Selection from La Vie Parisienne (Offenbach); Intermezzo from La Cabreria (Dupont); Divertissement (Luigini); Selection from Miss Decima (Audran); Cortège catalan (de Séverac); Selection from J'adore ça (Christine); Danse burlesque (Pesse); March from La petite Bohème (Hirschmann). 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Messenger Music on Gramophone Records. 8.0, News, Weather Forecast, and Press Review. 12 Noon, Protestant Address. 12.30 p.m., Gramophone Concert for Children: A ma petite Marianne; Béatrice prend le Tramway; March from Cinderella; Berceuse à Nonnource (Zimmermann); La chanson des Abeilles (Filipucci); Bilboquet and his Pig; Chanson pour le petit Cheval (de Séverac); Lanterne magique (Godard); Recitation, Le chat et le vieux rat (La Fontaine); The Forge in the Forest (Eilenberg); The Little White Cat (Nain); Il était une bergère; Le rêve de Djoha (Ben Danou); Nous n'irons plus au bois; Le petit poucet; Orchestra: Sautze, Bébé (Paradis); Suite carnavalesque (Thomé). In the intervals, at 1.0, Exchange Quotations, News, and Weather Forecast, and at 1.20 and 2.0, Exchange Quotations. 3.45, Exchange and Market Prices. 4.45, Concert relayed from the American Conservatoire, Fontainebleau: Soloists: Mme. Hilda Roosevelt (Soprano) and M. Paul Babelais ('Cello); Concerto for 'Cello and Quartet (Vivaldi-d'Indy); Songs: (a) Air from Radamisto (Handel), (b) Adelaide (Beethoven); Sonata for 'Cello and Pianoforte (Telerepini); Songs (Franck): (a) La Procession, (b) Le Mariage des Roses, (c) Mater Dolorosa, from Les Béatitudes; 'Cello Solos: Burlesque (Paul Bazelaire); Two Pieces for 'Cello (Philipp, arr. Paul Bazelaire): (a) Cygnes noirs, (b) Sérénade grotesque; 'Cello Solo: Butterflies (Harty); Songs: (a) Le Colibri (Chausson), (b) L'âne blanc (Georges Hüe), (c) Le Poisson (Grove), (d) Les Cigales (Chabrier), (e) La Caisse (Canteloube). 6.30, Market Prices, Weather, Agricultural Report, Talk, and Racing Results. 7.0, Gramophone Concert: Concerto in A Minor (Grieg); La Cloche (Saint-Saëns); Berceuse (Fauré); Interlude from the First Act of Pelléas et Mélisande (Debussy); Four Melodies from King David (Honegger). 7.45, Commercial Prices and News. 8.0, Dramatic Evening: Le Troubadour—Play (Pierre Soulain). 8.30, News, Sports Results, and Weather Forecast. 8.40, Review by Bonnaud. 8.45, Dramatic Evening (contd.): Aux Autobus de la Trinité—Sketch (Galipaux). 9.0, Gramophone Records: Three Old Viennese Melodies (Kreiser): (a) Liebesleid, (b) Liebestreud, (c) Schön Rosmarin, Sicilienne (Respighi); Mazurka (Popper). 9.15, Press Review and News Bulletin. 9.30, Concert: Part I, I Pagliacci—Opera (Leoncavallo) on gramophone records by the Cast of the Scala, Milan; Part II, Extract from Moldavia (Sinetina); Gipsy Songs (Dvorak).

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW.—Relayed by W8XK on 48.86 metres and 25.25 metres. 9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, Programme Announcements. 10.15, KDKA Kiddies' Klub. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day. 11.6, Teaberry Sport Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, Westinghouse Musical Maids. 11.45 to 1.0 a.m. (Friday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Royal Vagabonds. 12.30, The Stebbins Boys. 12.45, Soloist. 1.0, Time Signal. 1.2, Samuel Di Primio (Tenor). 1.15, Ring Tin Tin Thrillers. 1.30, School Room Frolics, from New York. 2.30, Thompkins Corners. 3.0, The Country Doctor, from New York. 3.15, Absorbine, Jr., in Footnotes, from New York. 3.30, Programme to be announced. 3.45, Object Matrimony, from New York. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Songs in French Manner by Diane Laval. 4.30, Jack Pettis and his Orchestra. 5.0, Clyde Morse and his Dance Orchestra, from New York. 5.30, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.15 p.m., Announcements and News Bulletin. 7.35, See Warsaw. 7.45, Popular Music on Gramophone Records. 7.53, Time Signal. 8.0, Instrumental and Vocal Concert. 9.0, Popular Music on Gramophone Records. 9.20, Dramatic Programme from Wilno

(536 metres). 9.50, See Warsaw. 9.55, Time Signal, Sports Notes, and Police Report. 10.15 (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—3.55 p.m., Market Prices. 6.0, Talk for Women, relayed from Brno. 6.5, Agricultural Report and Talk for Workers. 6.25, German Transmission News. 6.30, Two Talks: (a) Insurance, (b) The Economic Situation of the World. 7.0, Song Recital. 7.20, Popular Music. 8.0, Violin Recital. 8.30, Talisman—Play (Fulda). In the interval at 9.0, Time and News. 10.15, Miscellaneous Announcements. 10.20, Concert of Light Music.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE**, 680 metres, and **GENEVA**, 760 metres.—Programme from Geneva. Lausanne not transmitting.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40, Light Music on Gramophone Records. 1.0, Financial Notes. 1.5, Variety Items. 1.20, Popular Music on Gramophone Records. 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.4, Chamber Music on Gramophone Records. 5.30, Concert by the Station Quintet. 6.45, Programme for Young People. 7.0, Weather Forecast. 7.1, Film Review. 7.20, Theatre Notes. 7.40, Gramophone Records of Light Music. 7.55, News Bulletin. 8.0, Humorous Programme by M. M.-W. Sues. 8.20, Cavalleria rusticana—Opera in One Act (Mascagni). 10.0, News Bulletin and Weather Forecast. 10.15, Close Down.

RJUKAN.—See Oslo.

ROME

Call IRP, 441 metres; 50 kW. Relayed by Naples, 319 metres, and 2RO, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio, Announcements, and Weather. 12.30 p.m., Gramophone Records of Light Music. 1.15, Giornale Radio. 1.30, Time and Announcements. 5.0, Exchange Quotations. 5.5, Children's Radio Review. 5.25, Song Recital: Song from Marina (Arrieta); Aria from The Tales of Hoffmann (Offenbach); Aria from Mireille (Gounod). 5.45, Variety Concert: Ronda al Tabarin (Guarino); Roseto d'amore (Hamud); Selection from Il Ventaglio (Cucinà); In Morocco (Avitabile); Scottish Lassies (Cattolica). 6.15, Tourist Report. 7.10 (Naples), Shipping and Sports Notes. 7.15, Agricultural Notes, Announcements, and Giornale Radio. 8.0, Time, Announcements, and Gramophone Records of Light Music. 8.20, Talk for Housewives, and Announcements. 8.30, See Turin. In the intervals, Talk and Announcements. News after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m. to 11.30, New York Relay. 9.0, Three Mustachios. 9.15, Famous Loves. 9.30, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15, Pop's Pirate Club, from New York. 10.30, Swanee Serenaders, from New York. 11.0, Joe and Eddie. 11.15, Nimble Fingers. 11.30, Kenmore Orchestra. 11.55, Baseball Scores. 12 Midnight, Cost of State Government Series. 12.0 (W2XAF only), Stock Report. 12.15 a.m. (Friday), Chiandù, the Magician. 12.30 to 4.15, New York Relay. 12.30, Ray Perkins (Barbasoloist). 12.45, The Goldbergs. 1.0, Fleischman Hour. 2.0, Big Six of the Air. 2.30, Adventures of Sherlock Holmes. 3.0, Lucky Strike Dance Hour. 4.0, Russ Columbo and his Orchestra. 4.15, Floyd Walter (Organist). 4.45 till Close Down, New York Relay. 4.45, Paul Whiteman's Orchestra. 5.0, Ralph Kirberry (Dream Singer). 5.5, Hotel New Yorker Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE**, 244.1 metres; and **BERNE**, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Report and News Bulletin. 12.40 (from Basle), Concert by Edgar Adeler and his Empire Orchestra. 1.35, Weather Report and Exchange Quotations. 1.45 to 3.30, Interval. 3.30 (from Basle), Talk for Women. 4.0, Concert by the Small Station Orchestra. 5.0, Weather Report. 5.2 to 6.30, Interval. 6.30 (from Basle), Luiza Stetelin-Hözlinger reads from her own Poems. 7.0, Time Signal, Weather Forecast, and Traffic Report, followed by Dream Music on Gramophone Records. 7.30 (from Basle), Talk: The Significance of Dreams. 8.0, Concert by the Station Orchestra. 8.20 (from Basle), Old Heideberg—Play (Meyer-Förster), for the Author's Seventieth Birthday. 10.0, Weather Forecast and News Bulletin. 10.15, Variety

Concert by the Station Orchestra. 10.30, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,248 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Religious Talk, relayed from Norrköping. 5.20, Light Music on Gramophone Records. 6.30, Talk. 7.0, Recital of Swedish National Music for Two Violins by Fritz Johansson and Olle Kjellberg. 7.15, Weather and News. 7.30, Topical Talk. 8.0, Variety Programme, relayed from Norrköping. 8.30, Talk. 9.0, Song and Pianoforte Recital of Slav Music by Margareta Högfors (Songs) and W. Witkowski (Pianoforte); Songs: Spring Waters (Rachmaninov); Lilae (Rachmaninov); Cradle Song (Gretchaninov); My Country (Gretchaninov); Pastoral (Stravinsky); Pianoforte Solos: (a) Melody in G Flat (Faderewsky), (b) Polish Dance (Rozycki), (c) Polka (Rachmaninov), (d) Elegy (Rachmaninov); and (e) Prelude in G Minor (Rachmaninov); Five Songs (Dvorak). 9.45, Weather and News. 10.3, Concert by a String Orchestra: Overture, Fra Diavolo (Auber); Meditation from Thais (Massenet); Waltz from Eugene Onegin (Tchaikovsky); Selection from Le Bohème (Puccini); Song from Samson and Delilah (Saint-Saëns); Dance Scene from Masquerade (Nielsen); Blues from Jonny spielt auf (Krenek); Selection from Tiefland (d'Albert). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light and Classical Music. 12.45 p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Concert relayed from Bordeaux-Lafayette. 1.50, Gramophone Records of Light Music. 2.0 to 3.0, Programme for Children. 4.15, Literary Lesson in French. 4.30, Programme for Children, relayed from Bordeaux-Lafayette. 6.0, Historical Talk in French. 6.15, French Lesson in German. 6.30, Orchestral Concert, conducted by Maurice de Villers: Overture, Kundine (Lortzing); Ballet russe (Luigini); Selection from Mignon (Thomas); Prelude, Waltz, and Serenade (Rachmaninov); Overture, Une fête à Arminze (Demersmann). 7.30, Time Signal, and News in French and German. 7.45, Orchestral Concert, conducted by Maurice de Villers: Songs by Mlle. Germaine Lambert and M. Alfred Abondance; Overture, Le Roi d'Ys (Lalo); Songs: (a) Larmes (Février), (b) Des ailes (Charles René); Suite variée (Pierné); Songs: (a) Le Paradis en fête (Canteloube), (b) Au pays des amourettes (Cuvillier); Selection from Le petit Duc (Lecoq); Duet, La petite bergère (Weckerlin); Waltz, Dorfschwaben aus Oesterreich (Josef Strauss); La lettre de Manon (Gillet); March, Le rêve passe (Helmer-Krier). 8.45, Concert by the Municipal Orchestra, conducted by M. Munch, relayed from the Orangerie Restaurant: Overture, Oberon (Weber); Minuet and Saltarello (Mendelssohn); Entr'acte and Ballet Music from Rosamunde (Schubert); Fantasia and Caprice (Mozart); Sons de Cloches (Guy Ropartz); Overture, The Merry Wives of Windsor (Nicoli). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG**, 570 metres.—10.20 a.m. (from Karlsruhe), Chamber Music; Quintet, Op. 81 for Pianoforte, Two Violins, Viola, and 'Cello (Dvorak). 11.0, Time, News and Weather. 11.15, Sponsored Concert. 11.55, Weather Report. 12 Noon, See Berlin (Witzleben). 1.20 p.m., Time and News. 1.20, Gramophone Concert of Mountain Melodies. 2.0, Sponsored Concert. 2.30 to 3.0, Interval. 3.0, See Frankfurt. 4.0, Concert of Swabian Music, relayed from Wildbad: O Schwarzwald, O Heimat (Abt-Leilmann); Ballade from Astorga (Albert); Movement from the Symphony in D Minor (Halm); Württembergischer Kriegsmarsch (Springer); Three Swabian Folk Songs: (a) Die Loreley, (b) Heiderölein (c) Abschiedslied; Intermezzo from König Heige (Speidel); Kleine Kammermusik im alten Stil (Herrmann); König Karl Marsch (Unrath). 5.0, See Langenberg. 6.15, Time, Weather, and Agricultural Report. 6.25, Legal Talk. 6.50, See Frankfurt. 7.15, Time, Weather, and Agricultural Notes. 7.30 to 10.20, See Frankfurt. 10.20, Time, Weather, News, Programme Announcements, and Report on the Olympic Games at Los Angeles.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Picture Transmission. 5.15, Exchange Quotations. 5.30, Light Orchestral Music. 5.45, Operetta Music: Airs from The Duchess of Chicago (Kálmán) and The Czarevitch (Lehar). 6.0, Songs. 6.15, Military Music. 6.30, Exchange Quotations and Racing Results. 6.45, Orchestral Music: Verschmälte Liebe (Lincke); Selection from Il Guarany (Gomez); Bacchanale

from Philémon et Baucis (Gounod). 7.0, Sound Film Music. 7.45, Instrumental Music: Trio in B (Haydn); Trio, Op. 23 (Goldmark); Chanson triste (Tchaikovsky); Narcissus (Nevin). 7.20, Programme Announcements. 7.35, News Bulletin. 7.45, Light Orchestral Music. 8.0, Operetta Music: Waltz from The Girl in the Taxi (Gilbert); Waltz from The Gipsy Princess (Kálmán); Selection from Pas sur la Bouche (Yvain). 8.15, Five Songs. 8.30, Music by a Viennese Orchestra. 9.0, Operatic Melodies: Arias from Mireille (Gounod); Madame Butterfly (Puccini); Lakmé (Delibes); and Nappho (Massenet). 9.15, Military Music. 9.30, Accordion Solos. 9.45, Operatic Music: Melodies from Aida (Verdi) and Faust (Gounod). 10.0, Concert of Light Music: Pacific No. 231 (Honegger); Glow worm gavotte (Lincke); Amina (Lincke); Four Melodies from Kaducee (Yvain). 10.30, North African News. 10.45, Operatic Music: Prelude to the Third Act of Louise (Charpentier); Selection from La Traviata (Verdi). 11.0, Light Music. 11.15, Accordion Solos. 11.30, Operatic Music: Overture, Patrie (Bizet); Selection from Fidelio (Beethoven). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.5 p.m., Quintet Concert: My Dear (Davis); Waltz, Transaktionen (Johann Strauss); Alba campestra (Cortopassi); Under the Cypress Tree (Kral); Piece (Debiasi); Wagner Fantasia (arr. Urhach); Caba (Moldt); Disco chiuso (Manoni). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.5 p.m., Variety Music: Overture, The Secret Marriage (Cimuroso); Negro Dance (Malvezzi); Air (Myddleton). 7.30, Time and Announcements. 7.35, Variety Music on Gramophone Records. 8.0, Giornale Radio, Weather, and Gramophone Records of Popular Music. 8.20, Sponsored Talk for Housewives. 8.30, La bella Molinara—Opera in Two Acts (Paisiello). Conductor, Luigi Gerussi. In the intervals, Talk and Literary Notes. After the Opera, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in French. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres, and Salzburg, 218 metres.—6.15 p.m., Talk: Coincidence in Drama. 6.40, Talk: From the Baltic to the Murman Coast. 7.5, Talk: Austria as the Centre of German Baroque Literature. 7.30, Time Signal, Weather Forecast, and Programme Announcements. 7.40, Reading: In der Schelka, by Alma Johanna Koenig. 8.0, Concert of Sacred and Secular Music by the Don Cossack Choir, conducted by Serge cast, and Announcements. 9.45, Dance Music by the Charly Gaudriot Orchestra, relayed Jaroff. 9.30, News Bulletin, Weather Forecast from the Schönbrunn Parkhotel.

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Craeow. 12.5 p.m., Programme Announcements. 12.10, Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Gramophone Concert (contd.). 2.10, Interval. 3.0, Economic Report. 3.10, Variety Music on Gramophone Records and Announcements. 4.40, Talk: The Virgin Forests of Poland in Olden Times. 5.0, Schubert Concert of Chamber Music by L. Kmita (Violin), Georges Lefeld (Pianoforte), M. Janowski (Tenor), and J. Przybowski ('Cello); Trio in E flat for Violin, 'Cello, and Pianoforte; Songs. 6.0, Talk, relayed from Lwow (381 metres). 6.20, Dance Music and Light Music, relayed from the Cristal Restaurant. 7.15, Miscellaneous Items. 7.35, Radio Journal. 7.45, Agricultural Report. 7.55, Programme Announcements. 8.0, Concert of Light Music by the Warsaw Philharmonic Orchestra, conducted by S. Nawrot, and a Horn Ensemble: March from Aida (Verdi); The Awakening of Spring (Bach); Ballet Scene (Czibulka); Andalusian Nocturne (Infante); Waltz, Les Fleurs (Waldteufel); Spanish Dance, No. 2 (Moszkowski); Horn Ensemble: (a) March (Lorenz), (b) Serenade (Abb); Potpourri, Dividends (Morena); The Spinner (Moniuszko); Minuet (Paderewsky); Myrthenwalz (Johann Strauss); Gavotte (Helmesberger); Cherek (Lewandowsky). 9.20, Dramatic Programme, relayed from Wilno (563 metres). 9.50, Radio Journal. 9.55, Aviation Weather Report. 10.0, Dance Music. 10.40, Sports Notes. 10.50, Dance Music (contd.).

WILNO

563 metres; 16 kW.—7.15 p.m., Talk: Napoleon. 7.35, See Warsaw. 7.45, Programme Announcements and Miscellaneous Items. 8.0, See Warsaw. 9.20, Humorous Item. 9.50, See Warsaw. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

BARCELONA

RADIO-BARCELONA, Call EAJ1; 349 metres; 8 kW.—8.0 p.m., Trio Concert: Pastorale (Lovreglio); Selection from Manou (Massenet); Largo from String Quartet No. 12 (Haydn); March, In Treue fest (Fueck). 8.30, Exchange Quotations, Request Gramophone Records and News. 10.0, Chimes, Weather Forecast, Programme for the Families of Sailors on the High Seas, and Market Prices. 10.10, Concert by the Station Orchestra: March of the Grenadiers (Schertzing); Danza nora (Fernandez). 10.20, Popular Dance Music by the Demon Jazz Band. 11.0, Orchestral Concert (contd.): Danse galiléenne (Massenet); Noche en la bahia de Palma (Turina); Elégie (Faure); Carese (Giordano). 11.30, String Quartet in B flat (Mozart). 12.0 Midnight, Light Music on Gramophone Records. 1.0 a.m. (Saturday), Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.2 p.m., Gramophone Concert of Old Music, followed by Weather for Farmers. 12.55, Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of Dances and Songs, relayed from Berlin (Witzleben). 3.0, Talk for Girls. 3.30, Weather and Exchange Quotations. 3.40, Talk for Young People. 4.0, Talk with illustrations: How the Danish Radio Listeners learn German. 4.30, See Leipzig. 5.30, Talk: Women in the Early Days of Germany. 6.0, Talk on the Harpsichord, its Possibilities and Limits. 6.30, Talk on the Kreuger Crash. 6.55, Weather for Farmers. 7.0, See Vienna. In the interval at 9.30, News from Berlin (Witzleben). 10.30, See Berlin (Witzleben).

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—6.10 p.m., Dialogue on Plastic Art. 6.35, With the Microphone through the Mark—Pieskow am Scharnützelsee. 6.45, The Witzleben station informs its Listeners. . . . 6.50, Topical Talk. 7.0, See Vienna. In the interval at 9.30, News and Sports Notes. 10.30, Talk: Hints for the Week-end. 10.35, Weather, News and Sports Notes. 10.45 (approx.), Orchestral Concert from the Town Hall, Magdeburg.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin. 7.40, Variety Music on Gramophone Records. 7.55, Lottery Results. 8.0, Spanish Lesson. 8.15, News Bulletin. 8.30, Concert of Light Music.

BRATISLAVA

279 metres; 14 kW.—7.0 p.m., See Prague. 10.15, Programme Announcements and News. 10.20, See Prague.

BREMEN.—See Hamburg.

BRESLAU

325 metres, 1.5 kW.; and GLEIWITZ, 253 metres.—6.10 p.m., Talk with Gramophone Illustrations: Caruso and Chaliapine. 6.30, Talk: The Silesian Mystic, Angelus Silesius. 7.0, Spanish Music on Gramophone Records. 7.30, Weather for Farmers. 7.32, Topical Talk. 8.0, Orchestral Concert: Overture, Die Frau Meisterin (Suppé); Selections from Mignon (Thomas - Urbach); Zigeunermusik (Pataky); Scherzo, Sonnenknd und Wolkenmann (Clemus); Waltz, Un soir d'été (Waldteufel); Melody (Gabriel-Marie); Erzhzog Albrecht Marsch (Komzak). 9.0, News Bulletin. 9.10, Jeder ist seines Glückes Schmied—Comedy (Otto Zoff, with Music by Harry Ralton). 10.25, Time and News. 10.50, Sports Notes. 11.10, Weekly Sound News from the Gloria Palast. 11.25, Concert from Berlin (Witzleben). 12.30 a.m. (Saturday), Close Down.

BRNO

342 metres; 35 kW.—7.0 p.m., See Prague. 10.45, News Bulletin.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Concert by the Brasserie Orchestra, conducted by Charles Walpot: Overture, Le Domino Noir (Auber); Bolero (Vivien); Evening Bells (Walter); Pizzicato and Saltarelle (Hubans); Pour un baiser (Sudessi); Selection from Miss Decima (Audran); Popular French Songs: Gavotte des baisers (Popy); Waltz, Jeunesse dorée (Waldteufel); Selection from Le petit Duc (Lecoq). 1.0, Le Journal Parlé. 1.10, Concert (contd.), Spanish Music: chants d'Espagne (Albeniz). Suite, Juegos (Turina); Popular Spanish Songs; Spanish Dance (Fallas); Spanish pieces (Granados). 3.0, Symphony Concert, conducted by François Rasse, relayed from the Kursaal, Ostend. Soloist: Arthur de Greef (Piano-forte), Symphony in E minor, from the New World (Dvorak); Concerto

FRIDAY

AUGUST THE TWELFTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Organ recital. Orchestral concert. Troise and the Mandoliers. Promenade concert from Queen's Hall. Mr. Gerald Barry: Here and Now. Dance music.
 - LONDON REGIONAL** Organ music. Orchestral concert. "Oberon," Act II, relayed from Salzburg. Vaudeville programme. Dance music.
 - MIDLAND REGIONAL** Organ music. Light music. Choral concert. London Regional programme.
 - NORTH REGIONAL** Orchestral concert. London Regional programme.
 - WEST REGIONAL** Summer Laughter (No. 2): "The Pie and the Tart," adapted from a French Farce of the Fifteenth Century, by Mathurin Dondou. National programme.
 - SCOTTISH REGIONAL** Organ music. Instrumental concert. National programme.
 - BELFAST** Organ recital. Light music. National programme.
- ABROAD**
- BERO-MUNSTER** Concert of Marches of the Nations.
 - BRUSSELS (No. 2)** Evening with the Brass Band.
 - HEILSBURG** Modern music by Königsberg Opera House Orchestra.
 - HUIZEN** Symphony concert by Residentic Orchestra from the Kurhaus, Scheveningen.
 - PARIS (Eiffel Tower)** Russian concert.

No. 5 in E flat, for Piano-forte and Orchestra (Beethoven); Passacaglia and Gigue (Jongen). 5.0, Concert by the Station Orchestra, conducted by Jean Kumps: Marche Russe (Ganne); En Montagne (Mariotte); Eley (Massenet); Suite, Bouton d'Or (Perné); Souvenir (Drda); Mandolines (Eilenberg); Loin du Bal (Gillet); Selection from Gianni Schicchi (Puccini); Waltz, Roses from the South (Johann Strauss). 6.0, Gramophone Records: Symphonic Poem, Le Chasseur maudit (Franck); Scherzo—Waltz (Chabrier). 6.15, Talk, International Relations among Students. 6.30, Gramophone Concert: March (Preekker); Valse lumineuse (Ganne); Sous les sapins (Clément); Torna a Sorriento (Curtis); Les fleurs que nous aimons (Crémieux); Selection from The Girl in the Taxi (Gilbert); Cavatina (Raff); Tango, Siempre (Bianco); La Lettre de Manon (Gillet); Le Pic (Kahn); Ninety-nine out of a Hundred (Lewis); Overture, Les Saltimbanques (Ganne). 7.15, Talk on Belgian Folklore: The Cross of Tancrément. 7.30, Literary Review. 8.0, Dramatic Programme. 8.45, Introductory Talk and Readings from the Works of Francis André. 9.0, Orchestral Concert, conducted by Karel Candael, relayed from the Casino, Knocke. Soloist: Robert Casadesus: Prelude, Ingweld (von Schillings); Concerto in E flat for Piano-forte and Orchestra (Beethoven); Symphonic Poem, Idylle du Printemps (Mortelmans); Three Piano-forte Solos: (a) Le Retour du Muletier (de Séverac), (b) Reflets dans l'eau (Debussy), (c) Tocata (Ravel); Selection from The Flying Dutchman (Wagner). After the Concert, Le Journal Parlé and Dance Music on Gramophone Records: Onestep, The Changing of the Guard (Flotsam); Waltz, We Two (Campbell); Foxtrot, Oh, Glory (Robin); Tango, O cara mio (Brodsky); Foxtrot, Confession (Neiburg); Onestep, Shinamikida (Carlton). 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—12 Noon, Gramophone Concert: Overture, A Midsummer Night's Dream (Mendelssohn); Capriccio (Moszkowsky); Bohemian Dance (Smetana); Rondo Capriccioso (Mendelssohn); Andante, for Flute and Orchestra (Mozart); Gavotte from Idomeneus (Mozart); Poem (Fibich); Song without Words (Mendelssohn); Concert Waltz (Glazounov); Overture, The Magic Flute (Mozart). 1.0, Le Journal Parlé. 1.10, Gramophone Concert (contd.): On the Banks of the Volga (Borchert); Nocturne (Chopin); Czardas (Monti); Potpourri of Classical Music (arr. Debroy); Groot Rotterdam (Schootemeyer); L'Apache et son chien (Timmers); Selection from The Count of Luxembourg (Lehar); Waltz from the Ballet, Gretina Green (Guiraud); American Dance (Lauweryns). 5.0, Concert by the Station Orchestra, conducted by Arthur

Meulemans: Overture, Le Domino noir (Auber); Selection from The Little Dutch Girl (Kálmán); The Spinner (Dvorak); Gavotte (Gosse); Habanera (Chabrier); Selection from Gri-Gri (Lincke); Hungarian March (Berlioz). 5.45, Variety Items. 6.30, Gramophone Concert of Chamber Music: Trio No. 3 in E (Mozart); Sonata in F minor, Op. 57, for Piano-forte—the Appassionata (Beethoven); Canzonetta (Mendelssohn); The Hunt (Mendelssohn). 7.15, Talk on a Flemish Gymnastics Society. 7.30, Le Journal Parlé. 8.0, Band Concert, conducted by Guido Lemmens. Soloists: Jos. Lemmens (Trumpet), M. Stenecker (Piano-forte), M. Matheve (Clarinet), Leonard Lemmens (Tuba), and M. Verstappen (Accordion). March, Hallo, Ici Vlaamra (Lemmens); Trumpet Solo (Arban); Fugue in A, for Piano-forte (Mendelssohn); Réve d'enfant (Vermaelen); Fontaine (Vermaelen); Concerto for Clarinet (Weber); Air with Variations for Tuba (Cannivet); Potpourri of the Music of Peter Benoit. 8.45, Talk: The Flemish Movement in Campine. 9.0, Band Concert (contd.): March, Old Comrades (Teike); March, A l'Yser (Lemmens); Caprice for Clarinet (Benoit); Waltz for Accordion, Orphilia; American March; Mazurka; Overture, Elmar (Strauwen); Duet for Trumpet and Tuba (Cannivet); Cavatina for Clarinet from The Barber of Seville (Rossini); Selection from Fleurs de Niece (Martin); March, Jacques van Artevelde (Miry); De Vlaamsche Leeuw (Miry). 10.0, Le Journal Parlé. 10.10, Dance Music by the Jazz Band, conducted by Guido Lemmens. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Romanian Music by the Station Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Concert by the Station Orchestra (contd.). 6.0, Educational Programme: 6.40, Light Music on Gramophone Records. 7.0, Violin Recital by Nina Alexandresco: Concerto in C (Vivaldi-Kreisler); Andante (Faure); Berceuse de Sylvie (Klingsor); Rondino (Beethoven-Kreisler). 7.30, Talk (to be announced). 7.45, Piano-forte Recital by M. Georges Ciolac: Sonata in A (Mozart); Impromptu (Simonis); Triana (Albeniz). 8.15, Dance Music by the Golden Serenaders Jazz Band. 9.0, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 210 metres from 5.0 p.m. to 12 Midnight. 5.0 p.m., Concert of Military Music. Conductor: E. Friesay. 6.30, Reading. 7.0, See Vienna. After the Programme: Cigany Music by the Bela Kiss Orchestra from the Gellert Hotel.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, relayed from the Bellevue Strand Hotel. 2.0 to 3.0, Interval. 3.0, Orchestral Concert, conducted by Emil Reesen: Overture, Die Fledermaus (Joh. Strauss); Selection from La Jolle Parliumese (Offenbach); Arab Dance and Chinese Dance from The Nutcracker Suite (Tchaikovsky); Canzonetta (Herbert); Waltz from The Merry Widow (Lehar); Motor March (Rosey); Reading; Waltz, The Evening Star (Lanner); Suite, Algerian Nights (Grieg); Selection from Die Puppenfee (Bayer); Pizzicato, Gavotte (Borregaard); Finnish March. 5.0, Programme for Children. 5.40, Exchange and Fish Market Prices. 6.20, Talk on the Danish Author and Poet, Knud Lyne Rahbek. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Military Talk. 8.0, Town Hall Chimes. 8.2, Programme by Per Knutzon. 8.10, Orchestral Concert of Overture, The Corsair (Berlioz); Symphonic Poem, Le rouet d'Omphale (Saint-Saëns); Suite, Scenes alsaciennes (Massenet). 8.55, Les caprices de Marianne—Comedy in Two Acts (Alfred de Musset). 9.55, News Bulletin. 10.10, Orchestral Concert of Marches and Waltzes, conducted by Emil Reesen. 10.55, Dance Music from the Bellevue Strand Hotel. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Friday), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.0 p.m., See Vienna. 8.0, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down. DANZIG.—See Heilsberg. DRESDEN.—See Leipzig.

DUBLIN

Call 2RN; 413 metres; 1.2 kW., and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Forecast, Stock Report, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Popular Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gardening Talk. 7.45, Talk. 8.0, Promenade Concert, relayed from the Queen's Hall, London. 9.0, Baritone Solos by A. J. O'Farrell. 9.15, Orchestral Concert. 10.0, Songs at the Piano by Mike Nono. 10.15, Selections by the Station Orchestra. 10.30, Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Gramophone Records of Light Music. 12.30 p.m., News Bulletin. 12.45, Variety Concert. 7.30, Radio Gazette. 8.0, News Bulletin. 9.0, (from Le Havre), Concert. 10 p.m., till Close Down, Programme in English by the I.B.C. 10.0 p.m., Dance Music. One Night Alone With You; Mause; My Future Just Passed; A Quiet little Corner; Medley; The Pick-Up; Falling in Love; You were my Salvation; I owe You; You Taught me all I Know; Without a Song; Love is Like That; Springtime in the Rockies; In a Japanese Garden; A Cottage for Sale; Good-night. 11.0, Quintet Concert with Songs: Albulmblatt (Wagner); Songs: (a) My old Shako (Trotiere), (b) The Vagabond (Vaughan Williams); Romance (Saint-Saëns); Träumerei (Schumann); Songs: (a) Mother Town (Squire), (b) If I might come to You (Squire); Minuet from Berenice (Handel). 11.30, Concert of Light Music. Orchestra: In the Sudan (Sebek); Songs: (a) Oh, dry those Tears (del Riego), (b) O Sole Mio (Di Capua); Orchestra: Black Eyes (Ferraris); Song: Goodbye (Tostfi); Duets: (a) Homing (del Riego); (b) O Lovely Night (Landon Ronald); Orchestra: Poem (Fibich); On the Wings of Song (Aehron); Duets: (a) Watchman! What of the Night (Sargeant), (b) The Moon hath rained her lamp Above (Benedict); Orchestra: Baci al duio (de Micheli). 12.15 a.m. (Saturday), Dance Music: Ad Me; Marianne; Lonesome little Doll; Sweetheart; Dance after the Night; That's what I like about You; There'll never be another Mary; That's when I learned to Love; You; The way with every Sailor; Moonshine is better than Sunshine; Neath the Spell of Monte Carlo; Go to Bed. 12.57, I.B.C. Good-night Melody. 1.0, Close Down. FLENSBERG.—See Hamburg. FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW. and CASSEL, 246 metres.—12 Noon (from Coblenz), Orchestral Concert conducted by Hermann Rausch: March, Am deutschen Eck (Hermann Rausch); March, Koburger Josias; Roses from the South (Johann Strauss); Sei gegrüsst du mein schönes Sorrent (Waldmann); Waltz Song from Das süsse Mädel (Reinhardt); Graf Zeppelin March (Teike); Two Alsatian Peasant Dances

AUGUST 12th

FRIDAY

continued.

(Merkling); March, Aus alter Zeit (Rausch); Potpourri, Vom Rhein zur Donau (Rhode); Dat Kowelenzer Schlingeleche (Krämer); Am schönen deutschen Rhein (Rausch). 1.15 p.m., Report on the Olympic Games, News and Weather. 1.20, See Langenberg. 2.0, News Bulletin. 2.10, Sponsored Concert. 3.0, Weather Report. 3.10, Time and Economic Notes. 4.55, Economic Notes. 5.0, Concert from Munich. 6.15, Economic Notes. 6.25, Talk: Romain Rolland. 6.50, Medical Talk: The Prevention and Treatment of Infectious Diseases of Childhood. 7.15, Time, Programme Announcements and Weather. 7.30 to 10.30, See Stuttgart. 10.30, Time, Weather, News and Sports Notes. 10.45, See Stuttgart. 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.
FREIBURG.—See Stuttgart.
GENEVA.—See Radio-Suisse Romande.
GENOA.—See Turin.
GLEIWITZ.—See Breslau.
GÖTEBORG.—See Stockholm.
GRAZ.—See Vienna.
HAMAR.—See Oslo.

HAMBURG

Call HA, in Morse, 372 metres; 1.5 kW. Relayed by Bremen, 270 metres, Flensburg, 218 metres, Hanover, 566 metres, and Kiel, 232.2 metres.—5.55 p.m.—Book Review. 6.25, Grieg Potpourri on Gramophone Records. 6.35 (from Bremen), Talk for Workers. 6.55, Frankfurt Exchange and Hamburg Egg Market Prices. 7.0, Topical Talk. 7.15, Weather Report. 7.20, Gramophone Cabaret, with Willy Hagen. 8.15, Peer Ring—A Musical Play in North German Dialect (Emil Hecker, Music by Michelson). 9.0, News Bulletin. 9.10, Verdi and Puccini Concert: The Hamburg Philharmonic Orchestra, conducted by José Bibenschütz: Soloist: Herbert Ernst Groh (Songs); Prelude to Aida (Verdi); Song from Tosca (Puccini); Selection from Othello (Verdi); Song from Rigoletto (Verdi); Song from A Masked Ball (Verdi); Selection from Tosca (Puccini); Song from Turandot (Puccini). 10.0, Time and News Bulletin. 10.10, Concert from the Hotel Reichshof.

HANOVER.—See Hamburg.

HEILSBERG

276.5 metres; 60 kW. and DANZIG, 453.2 metres.—11.30 a.m., Concert from Hamburg. 1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Coronation March from The Prophet (Meyerbeer); Overture, Die schöne Melusine (Mendelssohn); Suite from Emeralds (Drigo); Waltz, Wiener Bonbons (Johann Strauss); Selection from Iolanthe (Tchaikovsky); Amina (Lincke); Gaukler aus dem Orient (Lindenmann). 4.0, Talk for Women. 4.30, Concert of Light Music by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, La Cenerentola (Rossini); Minuet (Paderewsky); Rustle of Spring (Sindling); Waltz, Grillenbanner (Johann Strauss); Selection from Der Tenor der Herzogin (Künneke); Overture, L'épreuve villageoise (Grétry); Serenade (Leonecavallo); Albumblatt (Humperdinck); Potpourri of the Music of Glinka (Urbaek). 5.55, Reading: A Voyage to Corfu. 6.15, Agricultural Prices. 6.25, Concert by a Zither Trio. 7.0, Talk: The German Sail-Planing Movement—Yesterday and Today. 7.25, Lieder Recital by Lotte Kuhrt: Five Settings to Poems by Ijns (Grüner), (a) Das bitterste Lied, (b) Erwartung, (c) Der Kuckuck, (d) Die Rose, (e) Verspruch; Four Songs (Mahler), (a) Erinnerung, (b) Ich atmet einen linden Duft, (c) Liebst du um Schönheit, (d) Um Mitternacht. 7.55, Weather Forecast. 8.0, Summer 1932—a Dialogue (Wolfgang Weyrauch). 8.25, Concert of Modern Music by the Orchestra of the Königsberg Opera House, Conductor, Ludwig Leschetzky: Brigg Fair—Symphonic Rhapsody for Full Orchestra (Dellus); Symphony in one Movement (Leschetzky); Symphonic Poem, Till Eulenspiegels Merry Pranks (Richard Strauss); Italian Capriccio (Tchaikovsky). In an interval at 9.0 (approx.), Announcements. 9.50, Trost der Nacht—Poems (Hermann Hesse). 10.15, Weather Forecast, News Bulletin and Sports Notes.

HILVERSUM

Announced HUIZEN: 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—Programme of the Catholic Radio Society (K.R.O.).—7.40, Gramophone Records of Variety Music: 8.55 to 9.40, Interval. 9.40, Gramophone Records of Light Music. 11.10, Programme for Hospitals. 11.40, Police Notes. 11.55, Quiet Concert: March, Con Brio (Stabel); Das ist das Herz (Fall); Bacchanale (Filippucci); Du darfst nicht glauben (Sieczynsky); Selection from La Bohème (Puccini); Cigány Song (Bóldi); Schlager Parade (Golwiny); Con Amore (Stabel); Overture, Die Landstreicher (Ziehrer); Mir ist heut' so nach Liebe (Elwin); That Tender Melody (Lindern). 1.25 to 1.40 p.m., Interval. 1.40, Gramophone Records of Light Music. 2.10, Song Recital by Mlle. Olga Schwind, with

accompaniment on Various Instruments. 2.50, Pianoforte Recital: Barcarolle (Chopin); Reflets dans l'eau (Debussy); Hommage à Rameau (Delmas); Toccata (Debussy). 3.10, Song Recital (contd.). 3.30, Pianoforte Recital (contd.): Minuet (Ravel); Jeux d'eau (Ravel); Two Pieces (Turina); Triana (Albeniz). 3.50, Talk: The Garden. 4.10, Orchestral Concert, conducted by Jean Oosterman: Overture, Poet and Peasant (Suppé); Andante from the Emperor Quartet (Haydn); Souvenir de Chopin (Fetras); Salut d'amour (Elgar); Waltz from Der Rosenkavalier (Richard Strauss); Prelude (Rachmaninov); Selection from La Traviata (Verdi); Serenade (Toselli); Ballet Music from Coppélia (Delibes); Marechiaro (Tosti); Intermezzo from Cavalleria Rusticana (Mascagni); March, Der Tausendkünstler (Blankenburg). 6.0, Talk on Esperanto. 6.20, Gramophone Records of Variety Music. 6.50, Talk. 7.10, Police Notes. 7.25, Gramophone Records of Variety Music. 8.0, Part Relay of an Opera from Vienna. 10.40 (approx.), Variety Concert on Gramophone Records. 11.40 (approx.), Close Down.
HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25, Gymnastics. 7.40, Gramophone Records of Variety Music. 9.15, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55 to 11.40, V.A.R.A. Programme. 9.55, Recitations. 10.10, Septet Concert. 10.55, Recitations. 11.10, Concert (contd.). 11.40 to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time, and Orchestral Concert, conducted by Nico Troop. 1.40 p.m., Reading. 2.10, Concert by the A.V.R.O. Chamber Orchestra, conducted by Gerard Hemmes: Overture, Così fan tutte (Mozart); Three Dances from Nell Gwynn (German); Serenade (Simouetti); Florenzine Intermezzo (Waghalter); Selection from Hérodiade (Massenet); Gramophone Records of Variety Music: Waltz, Flott durch's Leben (Translateur); Tango, Alice (Lucciesi); Selection from Der Obersteiger (Zeller); Spanish March, Curro Cochares (Metallo). 3.40 to 7.40, V.A.R.A. Programme. 3.40, Gramophone Concert of Light Music. 4.10, Programme for Children. 4.40, Orchestral Concert, conducted by Jan van der Horst: Soloist: Johan Jong (Organ); March, King Cotton (Souza); Waltz, España (Waldteufel); Serenata (Bruga); Dance from Czar and Carpenter (Lortzing); Narcissus (Neyin-Heuber); Potpourri, Waldteufeln (Kling); Organ Solos: (a) American Parrot (Meacham), (b) Tesorito (Beucel), (c) Selection from La Traviata (Verdi); Gramophone Records of Variety Music: Eins, zwei, drei, die ganze Kompagnie (Kollo); Foxtrot, Delicious (Gershwin); Selection from Delicious (Gershwin); Tango from The Countess of Monte-Christo (Gray); Lasz uns von Liebe sprechen (Buder); Ein Lied, ein Kuss, ein Mädel (Stolz); Sag, was sagt der Don zur Donna in Sevilla? (Stolz). 6.40, Reading. 7.0, Concert (contd.): Organ Solos: (a) Overture, Frau Luna (Lincke), (b) When its sleepy time down south (Olia Rene), (c) Si vous l'aviez compris (Denza), (d) Temptation Rag (Lodge); Gramophone Records of Variety Music: Potpourri, Achtung Achtung wir senden Tanzmusik! (Dostal); Selection from The Flower of Hawaii (Abraham). 7.40, V.P.R.O. Announcements. 7.45, News Bulletin. 7.55 to 9.55, A.V.R.O. Programme: Symphonic Concert by the Residentie Orchestra, conducted by Carl Schuricht, relayed from the Kurhaus, Scheveningen. In the interval at 8.40, V.P.R.O. Literary Reading, arranged by the V.P.R.O., and at 9.40, V.P.R.O. Religious Notes. 10.40, V.A.R.A. Programme: Variety Concert on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.
KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.10 p.m., Announcements, News and Popular Music on Gramophone Records. 10.45, Gramophone Concert. 11.0, Answers to Correspondents in French.

KAUNAS

1,935 metres; 7 kW.—7.0 p.m., Variety Items. 7.30, Weather Report and News. 8.0, Talk: Penal Laws. 8.20, Concert of Light Music. 9.0, Talk: Sleep. 9.20, Talk: G. K. Chesterton. 9.40, Concert of Orchestral Music. 11.0 (approx.), Close Down.
KIEL.—See Hamburg.
KLAGENFURT.—See Vienna.
KOSICE.—See Prague.

LAHTI

1,796 metres, 54 kW.; and HELSINKI, 368.1 metres.—6.15, Talk. 6.40, Flute Solos by Hauns Gruska: Romance (Reger), Barcarolle (Fesca), Waltz (Chopin), Prece (Sabathil). 7.5, Monologue. 7.25, Concert by the Radio Orchestra. 8.45, News Bulletin in Finnish.

9.0, News Bulletin in Swedish. 9.15, Light Music from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert: Overture, Light Cavalry (Suppé); Waltz, Wiener Praterleben (Translateur); Melodies from Madam Butterfly (Puccini); Polka Mazurka, Frauenherz (Strauss); Selections from The Merry Widow (Lehar). 11.45, Sponsored Programme. 12.0 to 1.15, Concert from Frankfurt. 1.15, Weather, News, Time Signal, and Report on the Olympic Games. 1.30, Vocal and Instrumental Concert, conducted by Eysoldt. Soloist: Hanni Büttenes (Soprano). Overture, Poet and Peasant (Suppé); Waltz, In lauslicher Nacht (Ziehrer); Rosza-Czardas (Hubay); Wedding of the Dragon Flies (Barro); Songs: (a) German Folk Song, In einem kühlen Grunde, (b) Scandinavian Folk Song, (c) English Folk Song, The Miller of Dee, (d) Slav Folk Song, Zvojenje, and Pod Okonce plidem, (e) Russian Folk Song, (f) German Folk Song, Rosenstock, Holderblüh; Rustic Suite (Altbout). 2.30 to 3.30, Sponsored Programme with Gramophone Records. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Reading for Children. 5.0, Vocal and Instrumental Concert. Soloist: Ellen Schiffer (Soprano). Pianoforte Solos: (a) Polonaise in F sharp minor (Chopin), (b) Rondo in E flat (Hummel); Songs (Hugo Wolf): (a) Verborgtheit, (b) Ellenlein, (c) Er ist's; Pianoforte Trio (Götz); Songs (Rich. Danz): (a) Ja, ich wels, (b) Kleines Liebsteil, (c) Wie lieb' ich dich, O gold'ne Sonne; Pianoforte Solos: Waltz, from Faust (Gounod); Concerto Paraphrase on The Blue Danube Waltz (Strauss-Evler). 6.20, Around the World on Gramophone Records: A Breton Village Festival. 6.45, Weather, Time, Economic Notes, Sports Report, and First News Bulletin. 7.0 to 10.30, See Vienna. In the interval at 10.15, News Bulletin, Announcements and Sports Notes. 10.45, Light Music and Dance Music. 12.0 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW.; and DRESDEN, 319 metres.—4.30 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer. Soloist: Herbert John (Violin). Little Ball Suite (Grétry); Violin Concerto (Dittersdorf); German Dances (Schubert); Waltz, Morgenblätter (Joh. Strauss); Waltz from the Second Serenade, Op. 63 (Volkmann); Movement from the Oriental Sketches (Mrazek); Selections from Das Fürstentum (Lehar). 5.50, Economic Report, Weather Forecast, and Time Signal. 6.0, Review of Books. 6.30, Talk on Aviation. 6.40, The Leipzig Station informs its listeners. . . . 6.50, An Architect builds with Words—Sketch written by Erhard Göppel on the Work and Theories of Adolf Loos. 7.30, Recital of Songs to Sing at Work by Lotte Theile (Soprano), accompanied by Friedbert Samm. 8.0, Orchestral and Choral Concert by the Arnstadt Orchestra and Male Choir, relayed from Arnstadt: Florentine March (Frick); Overture, Egmont (Beethoven); Procession of the Women to the Minster, from Lohengrin (Wagner); Choral Selections: (a) Thüringer Land (Rinkens), (b) Vor Jenu (Stade), (c) Der Lindenbaum (Sillcher); Torch Dance in B flat No. 1 (Meyerbeer); Waltz, Im Reiche der Venus (Gräschel); Selection from Undine (Lortzing); Choral Selections: (a) Abendfrieden am Rhein (Neumann), (b) Deutscher Glaube (Nagler); (c) Nur die Hoffnung festgehalten (Surlány); Selections from The Merry Peasant (Fall); March, Zum Städtele hinaus (Meissner). 9.30, Economic Questions of the day. 9.40, The Blue Flower—a Symposium of Letters, Poetry and Music of the Romantic School, arranged by Hans Eich. 10.20, News Bulletin, followed by Concert by the Gewandhaus Wind Orchestra: Quintet for Flute, Oboe, Clarinet, Horn and Bassoon, Op. 14 (Köttschau); Septet, Op. 80, for Flute, Oboe, Clarinet, Horn, Bassoon, Harp, and Percussion Instruments. 11.30, Special Report from the Olympic Games. 11.40, Close Down.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Concert of Light Music. 7.0, See Vienna. 10.0, Time Signal and News Bulletin, followed by Concert of Light Music.

LWOW

331 metres; 16 kW.—6.10 p.m., Miscellaneous Items. 6.30, Talk: Latest Developments in Plastic Art. 6.45, See Warsaw. 7.0, See Vienna. 10.40, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Records: Petite Suite (Debussy); Moment musical (Schubert); Parce

Domine (Fauchet); Agnus Dei (Bizet); Chant du Crapuscule (Fauchet); Selection from The Damnation of Faust (Berlioz). 7.30, Radio Gazette for Lyons and the South-East. 8.30, "Carmen"—Opera (Bizet), on Gramophone Records.

MADRID

Call EAQ; 30.4 metres; 20 kW.—12.30 a.m. (Saturday), Light Music. 12.45, Radio Chronicle. 1.0, Concert of Popular Music. 1.35, Answers to Correspondents. 1.40, Light Music. 2.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices, and Request Music on Gramophone Records. In an interval at 8.30, Educational Talk. 9.15, News Bulletin and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal, and Political Review. 11.15 (approx.), Symphony Concert on Gramophone Records: Overture, Iphigenia in Aulis (Gluck); Nocturnes: (a) Nagues, (b) Fêtes (Debussy); Symphony No. 5, from the New World (Dvorák); La oración del torero (Turina); Hindu Song (Rimsky-Korsakov); La Valse (Ravel). 1.15 a.m. (Saturday), News Bulletin and Programme Announcements. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.
MILAN.—See Turin.

MORAVSKA-OSTRAVA

253.8 metres; 11 kW.—7.0 p.m., See Prague. 10.15, Programme Announcements. 10.20, Theatre Notes, followed by Relay from Prague.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talk in Swedish: The Agricultural Labourer in the U.S.S.R. 9.0, Talk in German: Magnitogorsk. 9.55, Time Signal. 10.0, Talk in French: How Wars Begin.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—4.5 p.m., Pianoforte Recital by Erich Flinsch: Polonaise in F Sharp Minor (Chopin); Prelude in F Sharp Minor (Rachmaninov); Au Couvent (Borodin); Terek (Liapounov); Poem in F Sharp and Etude in D Sharp Minor (Scriabin). 4.35, Educational Talk. 5.0, Orchestral Concert conducted by E. Kloss: Overture, Pique Dame (Suppé); Russian Song (Lalo); Scenes from The Merry Wives of Windsor (Nicola); Violin Solo; Ballad and Polonaise (Vieuxtemps); Waltz, Kind, du kannst tanzen (Fall); Selection from A Waltz Dream (Strauss); March, Wien bleibt Wien (Schrammel). 6.15, Talk on Psychology. 6.35, Programme for Workers. 6.50, Introduction to the following Transmission. 7.0, See Vienna. 10.20, Time Signal, Weather Forecast, News Bulletin, Sports Notes, and Traffic Report.

NAPLES.—See Rome.
NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 367.6 metres; Mamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—5.40 p.m., Orchestral Concert, conducted by Oscar Gustavson: March, Hoch Heidecksburg (Herzer); Waltz, An dich (Waldteufel); Legend of Love (Becke); Gavotte (Sgambati); Für Elise (Beethoven); Selection from Zaza (Leonecavallo); Gavotte and Dance (Hauticainen). 6.40, Talk. 7.0, Announcements, Weather, and News. 7.20, Talk. 8.0, Time Signal. 8.2, Radio Play. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Orchestral Concert, relayed from the Hotel Continental. 11.15 (approx.), Close Down.
OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Light Music on Gramophone Records. 6.30 to 8.0; Interval. 8.0, Announcements, Tourist Notes, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Popular Music on Gramophone Records. 8.30 (in an interval), Time Signal and Announcements. 8.45, Concert of Operatic Music conducted by Fortunato Russo: Soloists, Delli (Soprano) and Pollicino (Tenor); Overture, Sicilian Vespers (Verdi); Soprano Solo from Othello (Verdi); Tenor Solo, Flamens Song (Mascagni); Soprano Solo from Lololetta (Mascagni); Tenor and Soprano duet from Il piccolo Marat (Mascagni); Act Four of La Wally (Catalini); Overture, William Tell (Rossini). In the interval, Talk. 10.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE; 1,445.7 metres; 13 kW. Time Signals, on 2,650 metres, at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk: Dramatic Art. 7.0, Le Journal Parlé. 8.20, Weather Report. 8.30, Russian Concert, conducted by Edouard Flament. Soloist: Mme. Manassevitch (Songs); Kamarinskaja (Glinka-Winter); Air and Ariette from The Snow Maiden (Rimsky-Korsakov); Selection from Boris Goudounov (Mussorgsky-Goldmann); Songs: (a) The Spring (Rachmaninov), (b) Berceuse (Tchaikovsky), Andante cantabile (Tchaikovsky-Schmid); Aria from The Tsar's Bride (Rimsky-Korsakov); Ukrainian Pictures (Akimenko-Chapelier). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—6.30 p.m., Sponsored Concert. 7.50, News Bulletin and Parliamentary Report. 7.35, Concert of Light Music on Gramophone Records. 8.0, Topical Talk. 8.20, Talk on the Theatre. 8.30, Radio Journal and News Bulletin. 8.45, Concert by the Station Orchestra: Prelude from the Chants d'Espagne (Albeniz); Valse romantique (Debussy); Selection from Monsieur Beaucaire (Messager); Variations by Ten Russian Composers on a Russian Theme; Suite, Bouton d'or (Pierne); Ségovia (Roussel); Selection from Monsieur Dumoulet (Urgel); La pelota (Laparra); Selection from La Korrigane (Widor); Serenade (Wolff); Suite, Joyous Youth (Coates); Norwegian Dance No. 3 (Grieg). 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (cont.). 7.45, Gramophone Records; Rondo and Adagio from Les Biches (Poulenc); Le Printemps (Milhaud); Spanish Suite (Falla). 8.0, News, Weather, and Press Review. 12 Noon, Beethoven Programme on Gramophone Records: Kyrie and Gloria from the Mass in D; First and Second Movement from the Symphony in A No. 7; Aria from Fidelio; Rondino for Violin; Overture, Egmont. In the intervals, at 1.0, Exchange, News and Weather; at 1.30, Exchange; and at 2.0, Exchange and Announcements. 3.45, Exchange and Market Prices. 6.30, Market Prices, Weather, Agricultural Report, Talk, Exchange, and Racing Results. 7.0, Gramophone Concert: Selection from Les Vingt huit jours de Clairette (Roger-Tavian); Duet from La Mascotte (Audran); Selection from La Fille de Madame Angot (Lecocq); Two Airs from Le Petit Duc (Lecocq); Overture, La Princesse jaune (Saint-Saëns); Ballet Music and Quadrille from Virginie (Bruneau). 7.45, Commercial Prices and News. 8.0, Concert of French Music: Les Saisons (Massé-Missa); Extracts from Les Dragons de Villars (Maillart); In the intervals, at 8.30, News and Weather; and at 8.40, Review by Paul Reboux. 9.15, Press Review and News. 9.30, Concert (cont.). Scènes Napolitaines (Massenet); Leda (Trémisot); Priaral (Trémisot); Danse alsacienne (Trémisot); La Désespérée (Trémisot). 10.0, Gramophone Concert; Overture, Patrie (Bizet); Romance and Duet from The Pearl Fishers (Bizet); Suite from L'Arlésienne (Bizet); Liebestraum (Liszt); Overture, A Midsummer Night's Dream (Mendelssohn); Capriciosa for Violin (Ries).

PITTSBURGH

WESTINGHOUSE ELECTRIC KDKA, 306 metres; 25 kW. Relayed by W8XX on 48.86 metres and 25.5 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Report. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Bulletin. 10.12, Programme Announcements. 10.15, KDKA Kiddies' Klub. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News Today. 11.6, Teaberry Sport Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, KDKA Orchestra. 11.45 to 3.30 a.m. (Saturday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Royal Vagabonds. 12.30, Stebbins Boys. 12.45, Billy Jones and Ernie Hare. 1.0, Time Signal. 1.2, Nestlé's Programme. 1.30, Candle Lighting Time. 1.45, Sisters of the Skillet. 2.0, Friendship Town. 2.30, Armour Programme. 3.0, The Country Doctor. 3.15, Soloist. 3.30, Programme to be announced. 3.45, Object Matrimony, from New York. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, The Music Box. 4.30, Jack Pettis and his Orchestra. 5.0, Cotton Club Orchestra, from New York. 5.15, Time Signal and Good-night.

PORSGRUND.—See Oslo.

POZNAŃ

335 metres; 1.0 kW.—7.0 p.m., See Vienna. 10.5, Talk. 10.20, Time Signal, Sports Notes, and Police Report. 10.40, Concert of Dance Music on Gramophone Records.

AUGUST 12th

FRIDAY

continued.

PRAGUE

488.6 metres; 120 kW.—3.55 p.m., Market Prices. 5.45, Educational Talk. 5.55, Light Music on Gramophone Records. 6.5, Agricultural Report. 6.25, German Transmission: Talk: Films. 7.0, See Vienna. In the interval at 9.0, Time and News. 10.0, Time, News, and Miscellaneous Announcements. 10.20, Programme to be announced.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE**, 680 metres; and **GENEVA**, 760 metres. Programme from Geneva, Lausanne not transmitting.—12.30 p.m., Time Signal. 12.31, News Bulletin and Weather Forecast. 12.40, Light Music on Gramophone Records. 1.0, Financial Notes. 1.5, Gramophone Concert (cont.). 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, Programme for Women. 5.15, Reading by Mlle. Deralaine. 5.30, Cookery Notes. 5.45, Concert by the Station Quintet. 7.0, Sports Notes. 7.20, Report of the Swiss Automobile Club. 7.30, Topical Talk: Across the World. 7.55, News Bulletin. 8.0, Dramatic Programme. 8.30, Song Recital by Mlle. Marcelle Privat (Soprano). 8.50, Concert by the Station Orchestra. 10.0, News Bulletin, followed by Weather Forecast.

RJUKAN.—See Oslo.

ROME

Call 1RO, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2RO, 80 metres.—8.15 to 8.30 a.m., Giornale radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Light Music. 1.0, Sextet Concert, Soloist: Morosina (Violin), Fischia che ti passa (Aru); Malesch (Rigallah); Fantasia on Motives by Strauss (Weber); Violin Solos: (a) Playera (Sarastate); (b) Minimere (Sarastate); Intermezzo from L'amico Fritz (Mascagni); Selection from I monelli fiorentini (Ranzato). In the intervals at 1.15, Giornale radio and at 1.30, Time and News. 2.15 to 4.45, Interval. 4.45 (from Naples), Talk for Women. 5.0, Exchange, Children's Radio Review, Giornale radio and Announcements. 5.30, Song Recital by Otella Parisini (Soprano) and Vittorio Sensi (Baritone); Soprano Solo from La Cabrera (Dupont); Baritone Solo from Khovanschina (Mussorgsky); Duet from Il piccolo Murat (Mascagni). 5.45, Variety Music: Danza esotica (Mascagni); Piccolo pastore (Gragnani); Arabesque (Hamud); Pastorale from La figlia di Jorio (Franchetti); Danza selvaggia (Avitabile). 6.15, Tourist Talk. 7.10, (from Naples), Shipping News and Sports Notes. 7.15, Agricultural Report, Announcements, Giornale radio and Light Music on Gramophone Records. 8.0, Time and News. 8.5, Report of the International Institute of Agriculture (in Italian, French, English, German and Spanish). 8.30, Sports Notes and Announcements. 8.45, See Turin. In the interval, Talk. After the Programme, Variety Music on Gramophone Records. 10.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—9.0 p.m., Musical Programme, from New York. 9.15, Ollie Yettru (Pianist). 9.30, Business and Professional Women's Club. 9.45, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15, Pop's Pirate Club, from New York. 10.30, Echoes of Erin, from New York. 11.0, Ma Frasier's Boarding House. 11.15, Waldorf Astoria Orchestra, from New York. 11.25, Baseball Scores. 11.30, With Gray McIntock in the Canadian North-West. 11.45, Song and Story Man. 12 Midnight, General Electric Programme. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Saturday), Chandu, the Magician. 12.30 to 1.30, New York Relay. 12.30, Maxwell Tute Blenders. 12.45, The Goldbergs. 1.0, Cities Service Concert. 1.30, WGY Agricultural Programme. 2.0 to 4.0, New York Relay. 2.0, Chequot Club Eskimos. 2.30, Pond's Programme. 3.0, Paul Whiteman's Chieftains. 3.30, Erno Rapee's Orchestra. 4.0, Al Stulmaker and his Orchestra. 4.30 to 5.30, New York Relay. 4.30, Vincent Lopez and his Orchestra. 5.0, Ralph Kirberly (Dream Singer). 5.5, Joe Moss and his Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres, 60 kW.; **BASLE**, 244.1 metres; and **BERNE**, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Report and News Bulletin. 12.40, Concert by the Station Orchestra. 1.35, Weather Report and Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Musical Programme for Children, on Gramophone Records. 4.30 (from Basle), Programme for Children. 5.0, Weather Report. 5.2 to 6.30, Interval. 6.30 (from Basle), Reading: A Hunting Adven-

ture. 7.0, Time Signal, Weather Forecast, Market Prices, Tourist Report and Sports Notes. 7.30 (from Basle), Talk: The Joys and Sorrows of a Peasant's Life. 8.0 (from Zürich), Concert of Marches of the Nations, conducted by G. B. Mantegazzi, relayed from Schaffhausen. 9.0 (approx.), Music from Operettas by Suppé, Ziehrer, and Millocker. The Station Orchestra, conducted by Erwin Gilbert. 9.30, Weather Forecast and News Bulletin. 9.45, Concert by the Station Orchestra. 10.30, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Emil Sjögren Programme by Astrid Axelsson and S. Munthe (Songs) and Werner Ekstrom (Pianoforte), relayed from Borås, 207 metres. 5.35, Agricultural Talk. 6.5, Gramophone Concert of Light Music. 7.0, The Practical Corner. 7.15, Weather and News. 7.30, (from Östersund), Talk. 8.0 (from Göteborg), Song Recital by Ivar Andresen; Wanderers Nüchtlied (Schubert); Du holde Kunst (Schubert); Odins Meeresritt (Loewe); Nachtigung (Richard Strauss); Zweignung (Richard Strauss); Gipsy Song (Merikanto); Two Songs (Sjögren); Air (Althén); Reading in the interval. 8.45, A Play in One Act (Edmond Sée). 9.30, Popular Music on Gramophone Records. 9.45, News and Weather. 10.0, Organ, Song and Cello Recital, relayed from the Concert House; Suite for Organ (Theophil Mottet); Aria with 'Cello Obligato (Handel); Aria from Ode to St. Cecilia (Handel); 'Cello Solos: (a) Larghetto (Handel); (b) Russian Song (Lalo); (c) Prelude in E (Moor); and (d) Adagio (Bach-Siloti); Piece for Organ (Widéen); Songs: (a) Procession (Franck); (b) Nocturne (Franck); and (c) Elégie (Massenet); Minuet for Organ (Salomé). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light Classical Music. 12.45 p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Concert relayed from Bordeaux-Lafayette. 1.50, Gramophone Records of Variety Music. 2.0 to 4.30, Interval. 4.30, Trio Concert, relayed from Lille (PTT), 265.4 metres. 5.30, Literary Talk in French: Some Aspects of France. 5.45, Gramophone Records of Light Music. 6.0, Talk in German on Topical Problems. 6.15, Talk in German: Sport and the Law. 6.30, Orchestral Concert, conducted by Maurice de Villers: Overture, Le Caid (Thomas); Canzonetta (Godard); Selection from Tannhäuser (Wagner); Suite, Caucasian Sketches (Ippolitov-Ivanov); Hungarian March, from The Damnation of Faust (Berlioz). 7.30, Time Signal and News in French and German. 7.45, Mozart Concert by the Radio Orchestra, conducted by Maurice de Villers. Soloists: M. Poyet (Horn), and M. Jude (Flute). Concerto in E Flat No. 3 for Horn and Orchestra; Suite, Mozartiana (Tchaikovsky); Concerto in D for Flute and Orchestra. 8.45, Concert by the Municipal Band, relayed from the Esplanade, Metz. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG**, 570 metres.—10.0 a.m., Wall-hach Song Recital. 10.30, Educational Talk. 11.0, Time, News, and Weather. 11.15, Sponsored Programme. 11.45, Sponsored Music. 11.55, Weather Report. 12 Noon, See Frankfurt. 1.15 p.m., Time and News. 1.30, See Langenberg. 2.0, Sponsored Concert. 2.30 to 3.30, Interval. 3.30 (from Freiburg), Talk: Animals in Motor Regulations. 4.0, Orchestral Concert, relayed from Freudenstadt: Overture, Iphigenia in Aulis (Gluck); Wiegienlied (R. Strauss); Ständchen (R. Strauss); Mozartiana (Tchaikovsky); Waltz, Wiener Bürger (Ziehrer); Selection from Don Pasquale (Donizetti). 5.0, See Munich. 6.15, Time, Weather, and Agricultural Report. 6.25, Talk: The Earth Throughout the Ages. 6.50 (from Freiburg), Medical Talk. 7.15, Time, Weather, and Programme Announcements in Esperanto. 7.30, Authors Whom We Ought to Know—A Sequence of Dialogues (Georg von der Vring)—II, Christian Wagner, relayed from Warmbronn. 8.15, Mozart Concert by the Stuttgart Philharmonic Orchestra; Soloists, Willy Hahn and Otto Seyfert (Pianoforte): Overture, Figaro; Concerto in B Flat for Two Pianofortes; Symphony in E Flat. 9.30, Variety Programme on Gramophone Records. 10.20, Time and News. 10.45, Dance Music by the Stuttgart Philharmonic Dance Band. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Picture Transmission. 5.15, Exchange Quotations. 5.30, Orchestral Music. Symphony No. 39 (Mozart); Overture, Eg-

mont (Beethoven). 6.0, Opéra Comique Music: Arias from L'Enfant prodige (Debussy), The Fair Maid of Perth (Bizet), Mireille (Gounod), and Cavalleria rusticana (Mascagni). 6.15, Accordion Solos. 6.30, Exchange Quotations. 6.45, Dance Music. 7.0, Sound Film Music. 7.15, Programme Announcements. 7.30, Concert: Old Hungarian Dances (Bolza); Sans femme et sans vin (Man); Selection from The Count of Luxembourg (Lehár); Selection from The Merry Widow (Lehár); Pomona Waltz (Waldfenfel); Chantilly (Waldfenfel); Qui prend l'amour au sérieux (Rotter). 8.0, Instrumental Music. 8.15, Airs from Louise (Charpentier) and Mireille (Gounod). 8.30, Military Music. 8.45, Accordion Solos. 9.0, Operatic Music: Two Melodies from Le Roi d'Ys (Lalo); Pamina's Aria from The Magic Flute (Mozart); The Death of Siegfried and Song at the Forge from The Twilight of the Gods (Wagner). 9.15, Orchestral Music: Eglogue (Rabaud); Sphinx (Popy); Valse poudrée (Popy). 9.30, Airs from Le cœur y est (Parès van Parys). 9.45, Music by an Argentine Orchestra. 10.0, Instrumental Music: Le canari (Poliakin); Wiegienlied (Schubert); Clair de lune from Werther (Massenet); Nocturne from La Navarraise (Massenet). 10.15, Songs. 10.30, North African News. 10.45, Operetta Music: Selection from La Ciboulette (Hahn) and Le jour et la nuit (Lecocq). 11.0, Popular Songs. 11.15, Operatic Melodies: Arias from Hérodiade (Massenet). The Tales of Hoffmann (Offenbach), Pelléas et Mélisande (Debussy), and Parsifal (Wagner). 11.30, Concert of Light Music. 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.5 p.m., Quintet Concert, Consuetia (Firpo); The Caravan (Bayer); Fantasia tripolina (Billi); Air (Krome); Tramonto (Malvezzi); Potpourri Hallo America! (Lobbe); L'onda (Metra); Melody (Kálmán). 8.0 till Close Down, see Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.5 p.m., Variety Music: Selection from The Girl in the Taxi (Gilbert); Norwegian Dance (Grieg); La cecilia (Magro). 7.30, Time and News. 7.35, Variety Music on Gramophone Records. 8.0, Giornale Radio and Weather. 8.40, Wireless Notes. 8.45, Choral and Instrumental Concert. Soloist: Clelia Zotti (Soprano) Selection from La scala di seta (Rossini); Chorus from Samson and Delilah (Saint-Saëns); Suite for Strings, Aus Holbergs Zeit (Grieg); Aria and Chorus from The Force of Destiny (Verdi); Two Preludes (Bach); The Pilgrim's Chorus from Tannhäuser (Wagner); Florentine Serenade for Strings (Godard); Chorus from Nabucco (Verdi); Selection from Tutti in maschera (Pédrotti). In the interval, Talk. 10.15, Variety Music on Gramophone Records. 11.0, Giornale Radio.

VATICAN CITY

19.84 metres Morning and 50.26 metres Evening; 10 kW.—11.0 to 11.15 a.m., Religious Information in German. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—6.40 p.m., Sports Review. 6.50, Time, Weather, and Programme Announcements. 7.0, Oberon, King of the Elves—a new Arrangement of Weber's Opera by Gustav Mahler, by the Vienna Philharmonic Orchestra and Soloists, conducted by Bruno Walter, relayed from the Festspielhaus, Salzburg. 10.30, News, Weather, and Announcements. 10.45, Concert by the Robert Hülgl Orchestra, relayed from the Hotel Krantz-Ambassador.

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Press Review. 12.20, Interval. 12.40, Weather Report. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Popular Music on Gramophone Records. 2.10, Interval. 3.0, Economic Report. 3.10, Light Music on Gramophone Records. 4.35, Hydrographic Report. 4.40, Talk: Self-Control in Connection with Shicides. 5.0, Concert by a Mandolin Orchestra, conducted by Szczeglow: March (Teike); Overture, Mignonetta (Bauer); Russian Song, Siciliana and Intermezzo from Cavalleria rusticana (Mascagni); Potpourri of Popular Songs (Wicke); Mattinata (Leoncavallo); Waltz, Frühlingstimmen (Johann Strauss); Intermezzo (Lincke); Mazurka (Naimyslawski). 5.50, Talk. 6.10, Miscellaneous Items. 6.30, Review of the Foreign Agricultural Press, relayed from Wilno, 563 metres. 6.40, Programme Announcements. 6.45, Introductory Talk to the following Transmission. 7.0, See Vienna. 10.30, Radio Journal. 10.35, Aviation Weather Report. 10.40, Sports Notes. 10.50, Dance Music.

WILNO

563 metres; 16 kW.—6.30 p.m., Agricultural Notes. 6.45 till Close Down, See Warsaw.

ZÜRICH.—See Schweizerischer Landessender.

SATURDAY

AUGUST THE THIRTEENTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Orchestral concert. Organ music. Song recital. Orchestral concert. Dance music. Instrumental concert.
 - LONDON REGIONAL** Promenade concert from Queen's Hall. "Mask of Neptune," an operetta by Herbert Farjeon.
 - MIDLAND REGIONAL** Melody—a recital of gramophone records. Military Band concert from Canon Hill Park, Birmingham. London Regional programme.
 - NORTH REGIONAL** Variety programme. Recital of English organ music. London Regional programme.
 - WEST REGIONAL** Dance music. Recital of Welsh gramophone records. Bridgwater Band Festival relayed from the Blake Gardens, Bridgwater. National programme.
 - SCOTTISH REGIONAL** Dance music. Bernard Frutin and Sons present "Play Time at Prestwick," produced by Peter Sinclair, from the Beach Pavilion, Prestwick. National programme.
 - BELFAST** Organ music. Light music. Military Band concert. National programme.
- ### ABROAD
- BRESLAU** Marine Festival relayed from the Wappenhof.
 - BRUSSELS (No. 2)** Special concert for opening of New Sarov building.
 - DUBLIN** Verdi and Fuccini concert by Station Orchestra.
 - MOSCOW** Talk in English on Second Five Year Plan.

BRNO

342 metres; 35 kW.—7.0 p.m., See Prague. 8.0, Talk: Motoring in 1932. 8.15, Programme in Honour of the 56th Anniversary of the State College at Telc: Speeches and Concert, by the Slav Quartet. 9.15, Dance Music. 10.0, See Prague. 10.15, News Bulletin. 10.20, See Moravská-Ostrava.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Concert by the Max Aelys Orchestra. 1.0 p.m., Le Journal Parlé. 1.10, Concert (cont'd.). 5.0, Concert by the Brasserie Orchestra, conducted by Charles Walpot: Marche républicaine (Allier); Four Orchestral Pieces (d'Ambrosio); Selection from Hans the Flute Player (Ganne); Idylle Passionelle (Razigade); Waltz Potpourri (Fétras); Potpourri (Morena); Waltz, Violettes (Waldteufel). 6.0, Gramophone Records: Kadar Kata (Kodaly); Schottische, for Bagpipes (arr. Bouscatel); Les Postillons (Rodionov). 6.15, Talk: The Production of Walloon Dramatic Literature at Verviers. 6.30, Gramophone Concert: Ave Maria (Franck); Symphony No. 4 (Tchaikovsky). 7.15, Talk: The Origins of Football in Belgium. 7.30, Talk on International Events. 8.0, Concert by the Station Trio: Oriental March (Rosse); Minuet from a Septet (Beethoven); Kashmiri Song (Woodforde-Finden); Arlequin for Cello (Popper); Caprice viennois, for Violin (Kreisler); Moment musical (Schubert); Le Baïser d'Élanie, from Quo Vadis (Nougues); Serenade for l'Amant jaloux (Grétry); Petite Suite (Dukas). 8.45, Reading of Poems written about Belgian Rivers. 9.0, Orchestral Concert, conducted by François Rasse, relayed from the Kursaal, Ostend. Soloist: Elvira de Hidalgo (Songs). Selection from Milenka (Block); Night on the Bare Mountain (Mussorgsky); Elegy for Cello (Faure); Song: Waltz from Dinovah (Meyerbeer); Selection from Carmen (Bizet); Song from La Traviata (Verdi); Overture, Le dernier jour de la Terreur (Litolff). After the Concert. Le Journal Parlé and Dance Music relayed from the Kursaal, Ostend.

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW.—12 Noon, Extracts from La Traviata—Opera (Verdi). 1.0 p.m., Le Journal Parlé. 1.10, Extracts from La Traviata (cont'd.). 5.0, Concert of Theme Songs from Sound Films. 5.45, Programme for Children. 6.30, Gramophone Concert of Viennese Music and Waltzes. 7.15, Talk on International Affairs. 7.30, Agricultural and Horticultural Notes. 8.0, Concert on the Occasion of the Opening of the new Sarov Building. Soloists: Mlle. Ségard, M. Rubeau and M. Toutenel (Songs), Paul Doulier (Pianoforte), M. Belloy (Recitations) and De Langhe (Oboe). Pianoforte Solos: (a) Rhapsody No. 12 (Liszt), (b) Ballade No.

1 (Chopin), (c) Impromptu in B Flat (Brenta), (d) Spanish Caprice (Moszkowsky). 8.45, Opening Address by M. Faélens. 9.0, Concert (cont'd.). 10.0, Le Journal Parlé. 10.01, Concert (cont'd.). 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Romanian Music by the Sibiceanu Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Orchestral Concert (cont'd.). 6.0, Educational Programme. 6.40, Gramophone Records of Light Music. 7.0, Dramatic Programme. 7.45, Concert of Romanian Music by the Luca Orchestra. 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 210 metres from 6.45 p.m. to 12 Midnight. 5.0 p.m., Concert by the Virany Salon Orchestra: Selection from Der Waffenschmied (Lortzing); Italian Suite (May); Chanson triste (Grieg); Selection from Feramors (Rubinstein); The Gipsy Queen (Nagypal); A Carnival Wedding (Poldini); Spanish Dance (Sarasate); Emperor Waltz (Strauss). 6.15, Reading. 6.45, Cigany Music by the Imre Magyar Orchestra. 8.0, Concert by the Budapest Concert Orchestra, relayed from the Zoological Gardens. Soloists: Ferenc Jemesin (Violin) and Alexander and Martha Arda (Songs); Selection from Figaro (Mozart); Violin Concerto (Paganini); Serenade (Weiner); Aria from Prince Igor (Borodin); Aria from Wikerlaased (Aaw); Duets from Eugene Onegin (Tchakovsky); Scheherazade (Rimsky-Korsakov); Carnival (Giazunov). After the Programme, Light Music on Gramophone Records.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW. and KALUNBURG, 1,153 metres; 7.5 kW.—7.30 a.m., Physical Culture Course. 8.30, Divine Service from the Cathedral. 11.0, Weather Report. 11.10, Angling Notes. 12 Noon, chimes from the Town Hall. 12.1 p.m., Concert by a String Ensemble conducted by A. Bendix, relayed from the Wivex Restaurant. 2.30, Gramophone Concert: Aria from Tannhäuser (Wagner); Aria from La Gioconda (Ponchielli); Aria from The Prophet (Meyerbeer); Song from Il Trovatore (Verdi); Waltz from Mireille (Gounod); Waltz Boston, Mon Ami (Steffan); Wer weint heut' aus Liebe Tränen (Kaper-Jurmann). 3.0, Concert for Children. 3.30, Concert by the Station Orchestra conducted by Walther Meyer-Radon; Soloist: Poul Vendelbo (Songs); Overture, The Mikado (Sullivan); Waltz, Dichterliebe (Johann Strauss); Second Suite from Peer Gynt (Grieg); Selection from Aida (Verdi); Selection from Aladdin (Carl Nielson); Over-

ture, The Barber of Seville (Rossini); Songs; Miniature Overture, The Merry-makers (Coates); Suite, Jeux d'Enfants (Bizet); Castilla secudillas (Albeniz); Selection from The Arabian Nights (Johann Strauss); Overture, La Belle Hélène (Offenbach). 5.40, Exchange Quotations and Fish Market Prices. 6.20, Talk: Icebergs. 6.50, Weather Report. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk. 8.0, Chimes from the Town Hall. 8.2, Concert of Old Time Dance Music by the Station Orchestra conducted by Walther Meyer-Radon: Dances (Johann Strauss), (a) Annen Polka, (b) Waltz, Dichterliebe, (c) Mazurka, Ludmila, (d) Waltz from Die Fledermaus; Quadrille from Mamzelle Nitouche (Hervé); Gavotte from Jung Heideberg (Müllcker); Waltz, The Skaters (Waldteufel); Dances (Lumby), (a) Britta Polka, (b) Queen Louise Waltz, (c) King Christian IX March. 9.0, Reading. 9.25, Recital of Danish Folk Songs. 9.45, News Bulletin. 10.0, Saxophone Recital by Poul Strøbach Kisbye: Simple Avenu (Thomé); Salut d'amour (Eigar); Valse élégante (Schroder); Romance (Kahn); Air (Andersen). 10.20, Reading. 10.30, Pianoforte Solo by Viktor Fischer: Suite, Dresden China (Niemann). 10.45, Dance Music by the Otto Lington Orchestra relayed from the Ritz Restaurant. In an interval, at 12 Midnight, Chimes from the Town Hall. 12.15 a.m. (Sunday), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., News Bulletin and Programme Announcements. 7.35, Radio Journal. 7.45, Review of Foreign Affairs. 8.0, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Forecast, Stock Report and Light Music on Gramophone Records. 7.20 News Bulletin. 7.30, Time Signal. 7.31, Talk. 7.45, Gaelic Talk. 8.0, Verdi and Puccini Concert by the Station Orchestra; Soloist, Irvine Lynch (Baritone). 9.15, A Sketch. 9.35, Tenor Solos by Hughes Macklin. 9.50, Soprano Solos by Edie O'Dwyer. 10.0, Uilleann Pipes. 10.15, Irish Airs by the Station Orchestra. 10.30, Time Signal, News, and Weather Report. 10.40, Weekly Sports Review and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Popular Concert. 7.30, Radio Gazette. 8.0, Tour de Garde Programme. 8.45, News Bulletin. 9.0, Variety Concert. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0 p.m., Dance Music: Sitting on a Rainbow; June Time is Love Time; I've got a Feeling; The Lights of Paris; I'd rather be a Beggar with You; Say a little Prayer for me; Roll on, Mississippi; Pagan Serenade; Hold my Hand; Live, laugh, and love; Honeymoon lane; My angel Mother; Guilty; Just imagine; Blaze away; Just once for all time. 11.0 Concert: Violin Solo: Songs of Araby (Clay); Song: Roses at Dawning (Kahn); Duets: Indian Love Lyrics (Woodforde-Finden); Cornet Solos: (a) The Rosary (Nevin), (b) I hear you calling me (Marshall); Song: Just one of my Dreams (Carter); Violin Solo: A Perfect Day (Jacoba-Bond). 11.30, Violin and Song Recital of Popular Scottish Music; Violin Solo: March of the Cameron Men; Songs: (a) Johnnie Cope, (b) Kirkconnell Lea; Violin Solos: (a) Mary Morrison, (b) Lord Lovat's Lament; Songs: (a) A Fond Kiss, (b) The Bell's Awa'; Violin Solo: Lea Rises. 12 Midnight, Concert by the Studio Chorus: March of the Grenadiers (Schertzinger); You will remember Vienna (Hammerstein); Ranger's Song (Tierne); Orchestral Item: Splinter's Selection (Gibbons); Ol' man river (Kern); Song of the Vagabonds (Friml); Song of the Dawn (Whitman). 12.30, Dance Music: All hands on Deck; Doin' the Raccoon; A Man, a Maid; Sweetheart, we need Each Other; Cuckoo in the Clock; Sleep, baby; A Peasant Love Song; You're Always in my Arms. 1.0 a.m. (Sunday), Orchestral Concert with Duets; Eleniada; Duets: (a) Okay Baby, (b) The Girl Friend of a Boy Friend of Mine; Memories of Leslie Stuart; Duets: (a) She was poor but she was honest, (b) Open up dem pearly gates; Frelside Memories. 1.30, Songs from Films: Lovin' you the way I do (Morrison); Over-night (Connelly); More than You know (Eliuse); I'm walking in the Sun (King); Orchestral Selection from Great Day (Youmans); In apple-blossom time (Tobin); They'll all be there but me (Kahn); Orchestral Selection, High Society (McCarthy). 2.0, Dance Music: Alice in Wonderland; Blue is the Night; Under a Texas Moon; Good-bye to all that; Cigarette; Hello, Baby; Mysterious Mose; Mother's Smile; I've never seen a smile like yours; Tondeleyo; If I can't have you; A night of happiness; An Old Italian Love

BARCELONA
RADIO-BARCELONA, Call EAJ1, 349 metres; 8 kW.—8.0 p.m., Trio Concert; Spanish Dance No. 5 (Granados); Souvenirs de Schumann (Fusté); Selection from La Dolorosa (Serrano); Suspiros de España (Alvarez). 8.30, Exchange Quotations, Request Gramophone Records, and News. 10.0, Chimes, Weather Forecast and Market Prices. 10.15, Concert by the Station Orchestra; March (Blanckenburg); Selections from Das Veilchen von Montmartre (Kálmán); Intermezzo (Henneberg); Russian Dance No. 2 (Bullerian); Canción morisca (Turina); Danza Oriental (Perez Moya). 11.0, El Rayo—Comedy in Three Acts (Pedro Muñoz Secer and Juan Lopez Nufez). 1.0 a.m. (Sunday), Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.2 p.m., Gramophone Concert of New Records, followed by Weather for Farmers. 12.55 p.m., Time Signal. 1.35 p.m., News Bulletin. 2.0, Gramophone Concert of Operetta Music, relayed from Berlin (Witzleben). 3.0, Reading: Wilhelm von Humboldt to his friend Charlotte Diede. 3.30, Weather and Exchange Quotations. 3.45, Talk: The German Authoress, Ruth Schumann. 4.0, Talk on the Peasant World. 4.30, See Hamburg. 5.30, Health Talk. 5.50, Talk: The Rhenish Palatinate—the Land of Forests and Vineyards. 6.5, Review of Music. 6.30, Talk with illustrations: The Eternal Harlequin. 6.55, Weather for Farmers. 7.0, Elementary English Lesson. 7.30, The Quiet Hour, followed by Weather for Farmers. 8.0, See Munich. 8.45, News and Sports Notes. 9.0, Dance Music from Leipzig. In an interval at 10.15 (approx.), Weather, News and Sports Notes. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.5 p.m., Wind Instrument Concert, conducted by Johannes Fuhsel: March, Wir Präsentieren (Alibout); Overture, Der Freischütz (Weber); Peer Gynt Suite No. 1 (Grieg); Waltz, Tales from the Vienna Woods (Joh. Strauss); March, Grosser Kurfürst (Simon); Slav Rhapsody (Friedemann); Two Marches: (a) He guet Bréndenburg allewege (Henrion), (b) Parademarsch der ehemaligen 18 Husaren (Müller); Overture, Rienzi (Wagner); Waltz, The Blue Danube (Joh. Strauss); Badoviller Marsch (Fürst); A Morning in Sanssouci (Kockert); Mazurka, Blauveilchen (Ellenberg); March Potpourri, Die Wache zieht auf (Kochmann); 6.0, Talk by Korffz Holm on himself on the occasion of his Sixtieth Birthday. 6.20, With the Microphone through the Mark—Buckow. 6.30, Technical Talk. 6.45, Sports Notes. 6.55, The Witzleben station informs its Listeners. . . . 7.0, Topical Talk. 7.10, Berlin Poems by Helmut Bergmann. 7.25, Gustav Mahler Song Recital by Fritz Düttherrnd (Baritone); Lieder eines fahrenden Gesellen: (a) Wenn mein Schatz Hochzeit macht, (c) Ich hab' ein glühend Messer, (d) Die zwei blauen Augen von meinem Schatz. 7.40, The Narrative of the Week. 8.0, See Munich. 8.40, News and Sports Notes. 8.50, Variety Programme in Dialect. 10.15, Weather, News and Sports Notes. 10.30 (approx.), Dance Music from the Eden Hotel. 12.30 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—6.30 p.m., Radio Journal. 8.0, News, Exchange and Lottery Results. 8.5, Sports Review. 8.10, English Lesson. 8.25, News and Weather. 8.30, Light Music on Gramophone Records. 9.0, La Maison sous l'Orage—Comedy in Three Acts (Fabre).

BRATISLAVA

279 metres; 14 kW.—7.0, See Prague. 10.15, Programme Announcements and News. 10.20, See Moravská-Ostrava.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW. and GLEIWITZ, 253 metres. 4.45 p.m., Yoshitomo Concert by the Station Orchestra, conducted by Franz Marszalek; Introductory Talk; In the Tea House with the Hundred Steps; In the Temple of Bells; Street Scenes in Hongkong; Japanese Bell Dance; Japanese Lantern Dance. 6.0, This will interest you—Surprise Programme. 6.30, Gramophone Concert of Opera and Light Music. 7.30, Weather for Farmers. 7.32, Talk by Dr. Hans Krause. 8.0, Marine Festival, relayed from the Wappenhof. 9.0, Variety Programme with Gustav Jacobi and Franz Baumann; The Station Orchestra, conducted by Franz Marszalek. 10.20, Time and News. 10.50, Dance Music from Berlin (Witzleben). 12 Midnight, Silent Night.

Song; I Gotta Have You; Sittin' by the Window. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBERG.—See Hamburg.
FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW; and CASSEL, 246 metres.—5.0 p.m., Concert of Popular Music. 6.15, Economic Notes. 6.25, Talk by Dr. Gustav Adolf Bothe. 6.50, Talk for Workers. 7.15, Time, Programme Announcements and Weather. 7.30, See Stuttgart. 8.0, See Munich. 8.40, See Stuttgart. 8.50, See Berlin (Witzleben). 10.20, Time, Weather, News and Sports Notes. 10.45, Dance Music from Berlin (Witzleben). 12.30 a.m. (Sunday), Close Down.
FREDRIKSSTAD.—See Oslo.
FREIBURG.—See Stuttgart.
GENEVA.—See Radio-Suisse Romande.
GENOA.—See Turin.
GLEIWITZ.—See Breslau.
GÖTEBORG.—See Stockholm.
GRAZ.—See Vienna.
HAMAR.—See Oslo.

HAMBURG

Call Ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—4.30 p.m. (from Hanover), Concert relayed from Bad Nenndorf: Overture, Euryanthe (Weber); Selection from The Pearl Fishers (Bizet); Selection from Fedora (Giordano); Russian Fantasia, Sang und Klang aus dem Osten (Eberle); Waltz, Was die Donau erzählt (Morena). 5.30, Report from the Exhibition in the New House of Progress: From the Stone Axe to the Rocket. 5.55, Report on the German Tennis Championships at the Rothenbaum. 6.35, Talk on Economics: The Mandate District in Japan. 7.0, Topical Talk. 7.15, Weather Report. 7.20, Concert by the Ndrag Male Voice Quartet: Freut euch des Lebens (Naegele); Weinlied (Bret); Der Umtrunk (Kost); Wann ich weiss (Lachner); Der Küfer und die Blume (Veit); Heidle lass Dir was erzählen (Folk Song); Der sakrische Bass (Koschat); Festgesang (Landbrief); Hochzeitfest (Illinack); Tschied (Eberwein); Harmonische Blüten Froschkantate (Hennig). 8.0, See Munich. 8.40, See Leipzig. 10.0, Time and News Bulletin. 10.20, Dance Music from the Boccaccio. 11.10, Dance Music from the Hans Sieger Café.
HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW; and DANZIG, 453.2 metres.—11.30 a.m., Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky: Overture, The Magic Flute (Mozart); Finale from Symphony No. 6—The Pathetic (Tchaikovsky); Serenade from Don Juan's Last Adventure (Graener); Prelude to Lohengrin (Wagner); Symphonic Prelude to Sakuntala (Goldmark); Overture, Auld Nature (Dvorak); Selection from Lucrezia Borgia (Donizetti); Dance from Die Kaiserin (Fall); Selection from Le Postillon de Longjumeau (Adam). 1.20, News. 1.30 (from Königsberg), Gramophone Concert of Light Music. 2.30 to 3.30, Interval. 3.30, A Play for Children. 4.30, Concert of Light Music by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Hunyadi Laszlo (Erkel); Selection from The Miracle (Humperdinck); Waltz, Marienkäuge (Josef Strauss); Modern Ballet Suite (Armandola); Selection from The Mikado (Sullivan); March (Morena). In the interval, at 5.15 (approx.), (from Danzig), Talk on Films. 6.0, Programme Announcements for the following week. 6.10, Programme Announcements in Esperanto. 6.15, Agricultural Prices. 6.20, World Market Report. 6.35, Talk: Books for Music Lovers. 7.0, Talk: The Economic Importance of the East Prussian Lumber Trade. 7.25, Talk, Nikolaus Lenau. 7.55, Weather Forecast. 8.0, See Munich. 8.30 (from Danzig), Variety Programme. 10.15, Weather Forecast, News Bulletin and Sports Notes, followed by Dance Music from Berlin (Witzleben). 12.30 a.m. (Sunday), Close Down.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Catholic Radio Society (K.R.O.). 7.40 a.m., Gramophone Records of Light Music. 8.55, Interval. 9.40, Trio Concert. 11.10, Religious Address. 11.40, Police Notes. 11.55, Sextet Concert: Goldblondes Mädchen (Grulichsteden); Murrmando (Rachon); Waltz, Die Schönbrunner (Lanner); Good-night, Sweetheart (Noble); Potpourri, Für alle (Dostal); The Little Pagoda (Siede); Souvenir de Chopin (Fétras); Ahade priantière (Lacombé); Potpourri of Russian Waltzes (Borchert); Ich möcht' heiraten (Krausz); Heut' bin ich gut aufgelegt (Jurnann). 1.25, Interval. 1.40, Variety Music on Gramophone Records. 2.10, Programme for Children. 3.40, Accordion Concert: Hungarian Comedy Overture (Kéler-Béla); Irene (Dazur); My Bluebird's Back Again (Friend); Im Krug zum grünen Kranz (German); Mir fehlt zum Glück nur ein Mädel wie du! (Ricardo). 4.0, Lute Recital. 4.20, Accordion Concert (contd.): Overture,

AUGUST 13th

SATURDAY

continued.

Alessandro Stradella (Plotow); Ich weiss nicht zu wem ich gehöre (Hollender); Me (L. Berlin); Spiel mir ein Lied aus meiner Heimat (Hajos); The Hollandia Three-step (Theunisse). 4.40, Announcements in Esperanto. 4.55, Gramophone Records of Light Music. 5.40, Press Review. 6.0, Wireless Technical Talk. 6.10, Gramophone Records of Popular Music. 6.50, Talk. 7.10, Police Notes. 7.25, Sports Talk. 7.40, Orchestral Concert: March from A Waltz Dream (O. Strauss); Waltz from Eva (Lehar); Mazurka from Frauentanz (Jos. Strauss); Selection from the Bayadere (Kalmán); Siamesische Wachtparade (Lincke); Du blonde Lindenwirtin von Rhein (Krausz); Selection from The Love Parade (Scherzinger); Singin' in the Rain (Brown); Valse poudrée (Popy). 8.40, News Bulletin. 8.55, A Sketch in One Act (Davidovsky). 9.40, Orchestral Concert (contd.): March, Hail to the Spirit of Liberty (Sousa); Cello Solo: Mazurka, Oberas (Wieniawsky); Selection from Frau Luna (Lincke); Waltz, Flott durchs Leben (Translatour); The Little Pagoda (Siede); March, The Matador (Siede); The Call of the Angelus (Walton); Waltz, Neu Wien (Strauss); Victoria March (Blon). 10.40, In the South—Farce in One Act. 10.55, Gramophone Records of Popular Music. 11.40 (approx.), Close Down.
HÖRBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25 a.m., Physical Culture. 7.40, Variety Music on Gramophone Records. 9.40, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55, till Close Down, V.A.R.A. Programme. 9.55, Variety Programme, Mandoline Music, Recitations and Dramatic Items. 11.40, Septet Concert: Indian Summer (Moret); Waltz, Remembrance (Joyce); Violin Solo, Canzonetta (D'Ambrosio); Variety Music on Gramophone Records: Dance Potpourri, Wir stellen uns vor (Golwyn); Menuet Rose (Ganne); Variety Music on Gramophone Records; Waltz Potpourri, Schlagsahne (Kernbach); Scherzando (Beethoven); Caravane hindoue (Popy); Popular Music on Gramophone Records; Mendelssohn Potpourri; Im Rosengarten Mendelssohns (Urbach); Waltz, So küsst man nur in Wien (Abraham); Variety Music on Gramophone Records; Valse brune (Krier); Tango, Liebe war es nie (Markush); Jantischarenmarsch (Siede). 1.25, Interval. 1.55, Talk. 2.10, Variety Music on Gramophone Records. 2.40, Sports Talk. 2.55, Trio Concert: A Southern Serenade, Sirocco (Trinkaus); A Northern Idyll, Boreas (Trinkaus); An Eastern Dance, Erius (Trinkaus); Cherry Ripe (Scott); Gavotte, A Wutte u Produce (Sturdy); Az Yashir (Pauer); Cello Solo: Elchenu (Gernstein); Melody (Rubinstein). 3.25, Talk for Socialists. 3.30, Concert (continued): Canto amoroso (Samelint-Elman); Morgen (R. Strauss); Cécilie (R. Strauss); Sixteenth Century Dance, La Romanesca; Violin Solos: (a) La Gitana (Kreisl); (b) Hindu Song (Rimsky-Korsakov); Toréador et Andalouse (Rubinstein). 3.55, Topical Talk. 4.10, Concert (continued): Nur wer die Sehnsucht kennt (Tchaikovsky); Pianoforte Solo: Paraphrase on Rigoletto (Verdi-Liszt); Romance (Rubinstein); Un peu d'amour (Silén); Rendez-vous bei Lehar (Ilrudy). 4.40, Programme for Children. 5.40, Liberty—Drama in Four Acts (Herbert Kranz). 6.10, Septet Concert: Overture, Prinz Carneval (Schreiner); Waltz, Ich weiss nicht zu wem ich gehöre (Holländer); Dutch Windmill (Heykens); Potpourri, Von Lenz und Liebe (Körner); Waltz, Meine Liebe blüht alle Jahre aufs neu (Salter); Waltz, Carnaval de Nice (Decouelles); I dream of a Garden of Sunshine (Lühr); March, Parade of Jack and Jill (Lake). 6.55, Address by M. A. de Vries. 7.10, Variety Programme. 10.40, News, followed by Popular Music on Gramophone Records. 11.40 (approx.), Close Down.
INNSBRUCK.—See Vienna.
KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.20 p.m., Popular Music on Gramophone Records. 7.45, Sports Notes. 10.50, Gramophone Concert.

KAUNAS

1,935 metres; 7 kW.—7.0 p.m., Rifle Club Programme. 7.30, Weather Report and News. 8.0, Variety Items. 8.30, Health Talk. 8.50, Concert of Light Music. 9.30, Talk on Graphology. 9.50, Concert of Orchestral Music. 11.0 (approx.), Close Down.

KIEL.—See Hamburg.
KLAGENFURT.—See Vienna.
KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW; and HELSINKI, 368.1 metres.—6.40, Song Recital by Alexis af Enehjelm. 7.0, Violin Recital, Evert Linden.

7.20, A Radio Play (Ero Alpi). 8.0, Concert of Waltzes by the Station Orchestra—Hofballtänze (Lanner); Du und Du (Joh. Strauss); Dorfschwalben aus Österreich (Joseph Strauss); Waltz from Faust (Gounod); Müncher Kind (Konzak); Cambrinus (Beutel). 8.45, News Bulletin in Flemish. 9.0, News Bulletin in Swedish. 9.15, Light Music from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert. 12.0, Concert of Chamber Music. 1.15, Weather, News, Time and Report on the Olympic Games. 1.30, Concert of Light Opera Music from Stuttgart. 2.35, Gramophone Concert. 3.30, Economic Report and Time Signal. 3.50, Programme for Children. 4.20, Reading: Zwischen Rhein und bergischen Höhen (Hermann Ritter). 4.40, Talk for Women: The Woman Worker and the Sound Film. 5.0, Concert of Old Dance Tunes by the Station Orchestra, conducted by Kühn; Merry Dance and Siciliana (Gluck-Mott); Minuet (Boccherini); Gavotte (Gossec); Polonaise in A (Chopin); Dornbacher Ländler (Lanner); Court Quadrille (Faust); Teresa Waltz (Faust); Polka, Singelstreu (Strauss); Mazurka, Das liegt bei uns im Blut (Ziehrer); Waltz, Morgenblätter (Strauss); Polka, Im Kahlberger Dörf (Fährbach); Waltz, Die letzten Tropfen (Kratz); Waltz, Gold and Silver (Lehar); Galop, Bahn frei (Ed. Strauss). 6.15, Talk: The Crisis of the Peasantry of Europe. 6.45, Weather, Time, Economic Notes and Sports Report. 7.0, Talk: Nature and Spirit: The Renewal of Life. 7.20, Wireless Hints. 7.30, Talk for Workers: The Unemployed Factory Worker in Agriculture. 7.55, First News Bulletin. 8.0, Zither Concert from Munich. 8.45, Variety Programme in Dialect from Berlin (Witzleben). 10.5, News, Announcements and Sports Report. 10.45, Dance Music from Berlin (Witzleben). 12.0 (approx.), Close Down.
LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW; and DRESDEN, 319 metres.—4.30 to 6.0 p.m., Concert relayed from Berlin (Witzleben). 6.30, Talk and Readings for Rudolf G. Binding's Fiftieth Birthday. 6.50, A Modern Dictionary. 7.0 p.m., Astronomical Talk. 7.30, Talk by Ulrich Franz Kropf. 8.0, See Munich. 8.40, Concert of Dance Music by the Emdé Orchestra. Soloist: Max Mensing (Tenor). 10.5, News Bulletin. 10.15 (approx.), Dance Music by the Emdé Orchestra (contd.). In the interval: Report on the Olympic Games. 12 Midnight (approx.), Close Down.
LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Tambourin Concert. 7.0, Physical Culture Course. 7.30, Talk for Parents. 8.0, Song Recital by M. Zivko. 8.30, Yugoslav Song Recital by a Vocal Quartet. 9.0, Dance Music, relayed from Bled. 10.0, Time Signal and News Bulletin, followed by Concert of Light Music.

LWOW

381 metres; 16 kW.—5.0, Orchestral Concert conducted by Tadeusz Serejnski. 6.0, See Warsaw. 7.15, Miscellaneous Items. 7.35, See Warsaw. 7.45, Answers to Correspondents. 8.0, See Warsaw. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Concert of Light Music on Gramophone Records. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Les Salmiblanques—Operetta (Ganne), relayed from Paris (Ecole Supérieure), 447.1 metres.

MADRID

Call EAQ, 304 metres; 20 kW.—7.0 p.m., Concert: Alma española (Franco); Song, Vizcaya (Anglada-Castillo); Song, A unos hechiceros; Selection from The Fire Bird (Stravinsky); Por tus ojos de española (Lorenzo-Bóddalo); Song, El mantoncito de manila (Raffles-Pont); Barberillo alegre, Mujer morena (Ledesma-Oropesa); Selection from Cavalleria rusticana (Mascagni); Jota aragonesa, Courante (Bach); Sonatina in A for Guitar. Radio Chronicle in the interval. 9.0 to 12.30 a.m. (Sunday), Interval. 12.30, Light Music. 12.45, Radio Chronicle. 1.0, Popular Concert. 1.35, Talk. 1.40, Light Music. 2.0 a.m. (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices and Request Music on Gramophone Records. 9.15, News Bulletin. 9.30 to 11.0, Interval. 11.0, Chimes. 11.15 (approx.), Excerpts from (a) La Viejeita, (b) El Duo de la Africana—Two Musical Plays (Caballero).

lero). 1.15 a.m. (Sunday), News Bulletin. 1.30, Chimes and Close Down.
MALMO.—See Stockholm.
MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—7.0 p.m., See Prague. 10.15, News Bulletin. 10.20, Popular Programme.

MOSCOW

TRADES UNION; 1,364 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talk in Spanish: The Disarmament Conference. 9.0, Talks in English and German: Cultural Construction in the Second Five Year Plan. In the interval at 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserstern, 560 metres, and Nürnberg, 239 metres.—4.10 p.m., An Interview with the Organ Builder, Pasteter, relayed from Arnolding; Recital on both the organs built by Herr Pasteter. 4.35, Reading. 5.0, See Frankfurt. 6.15, Programme for Young People: Dialogue on Flying, followed by Two Readings. 7.0, Recital of Chinese Songs set to Music by Wolfgang von Bartels, Li Mörke (Soprano), Dr. Rudolf Gutz at the Pianoforte. 7.30, A Local History Museum—a Conversation with the Mayor, relayed from Ruhpolding. 8.0, Zither Concert: Soloists, H. Cheloth (Yodeling Solos), and H. Sauer (Tyrolean Harp); Festmarsch (Mickenscheider); Waltz Idyll, Sonntag auf der Alm (Koschat); Yodeling Duets to the Tyrolean Harp: (a) Begrüssung, (b) Juchhe, mein liebe Bua, (c) Über die Alma; Waltz, Isarkinder (Fr. Wocher); Yodeling Solos: (a) Von der hohen Alm, (b) D'Holleralm, (c) Drei dreistimmige Jodeler; Schützleukönigsmarsch (Schwarz). 8.40 (from Nürnberg), Variety Programme. 10.20, Time Signal, Weather Forecast, News Bulletin, and Sports Notes. 10.45, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—5.0 p.m., Popular Music on Gramophone Records. 5.45, Programme for Children. 6.15, National Music on the Hardanger Fiddle and Songs. 6.45, Economic Talk. 7.0, Announcements, Weather, and News. 7.30, Talk: Morons and Criminality. 8.0, Time Signal. 8.1, Orchestral Concert, conducted by Hugo Kramm: Overture, Die Jägerbraut (Weber); International Dance Suite, Aus aller Herren Länder (Moszkovsky); Summer Breeze (Jensen); Piece (Merikanto); Piece (Backer-Grönfahl); Melodies (Rubinstein); Aufschwung (Schumann); Waltz, Over the Waves (Rosas); Potpourri, Telefonken (Morena); Waltz (Svendsen); Ballet Suite (Popy); Selection from Phi Phi (Christiné). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Recitation. 10.45, Gramophone Dance Music. 12 Midnight (approx.), Close Down.
OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Gramophone Records of Light Music, followed by Programme for Children. 6.30 to 8.0, Interval. 8.0, Announcements, Tourist Report, Agricultural Report, and Giornale radio. 8.30, Gramophone Records of Light Music. In the intervals at 8.25, Sports Notes, and at 8.30, Time and Announcements. 8.45, The Count of Luxembourg—Operetta (Lehar). In the intervals, Review of New Books and Announcements. 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk on Music by Victor Larbey. 7.0, Le Journal Parlé. 8.20, Weather Report. 8.30, Three Plays: (a) The Postscript—One-act Comedy (Néel), (b) The Interrupted Proposal—One-act Play (Caillas), (c) A Crocodile in the Marne—Comedy (Bourgauf). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—7.0 p.m., News Bulletin and Parliamentary Report. 7.5, Light Music on Gramophone Records. 7.15, Sponsored Gramophone Concert. 7.45, Talk: The Event of the Week. 8.0, Talk on Music by Louis Schneider. 8.15, Dramatic Programme. 9.0, Concert of French Songs by Music Hall Artists. 10.0, Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records: Valse des musettes (Paig-Silbermann); Cricri (Lombardo); Les

AUGUST 13th

SATURDAY

continued.

Corsaires (Ries); Vision de Salomé (Joyce). 8.0, Weather and Press Review. 12-Noon, Gramophone Concert: Bébé Jacques (Loy-raux); Le chien du berger (Morceanu); La douce tendresse (Paradis); Lorsque l'amour vient (Mercier); Cortège des nations (Berniaux); Maria-Mari (Di Capua); Romanian Dance (Bartok); Autour du moulin (Féret); C'est pour toi (Verdun); Jules (Yvain); Le raccomodeur de Faïence (Solier); Picolo (Da mare); Just once for all Time (Werner Heymann); Spring (Lehár); Dans la fumée (Bos); Old Dance (Peterson-Berger); Tes beaux doigts roses (Cazais); Suivez-la (Lonscherer); Bells across the Meadow (Kettelhey); Selection from Schön ist die Welt (Lehár); El Relicario (Padilla); Selection from Rose Marie (Friml). In the interval, News and Weather. 6.30, Market Prices, Weather, Agricultural Report, Talk, Exchange and Racing Results. 7.0, Talk arranged by the Union des Grandes Associations Françaises. 7.10, Gramophone Concert: Harlequin (Lalo); Rigaudon (Lacôme); By the Blue Hawaiian Waters (Kettelhey); When your Lover has Gone (Swan); Song (Donaldson); You brought a new kind of love to me (Fain); Wedding Waltz (Lincke); Selection from The Gipsy Baron (Johann Strauss); Viens ma p'tite Loulou (Gavel); Barcarolle in F Sharp (Chopin). 7.45, Commercial Prices and News. 8.0, Romantic Poems on Gramophone Records: Le Lac (Lamartine); La Tristesse d'Olympio (Hugo); Souvenir (de Musset). 8.30, News and Sports Notes. 8.40, Review by Rioux. 8.45, Soirée de Chansonniers arranged by Dominique Bonnaud. 10.0, Gramophone Dance Music. 11.0 (approx.), Close Down.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA); 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.5 metres.—9.0 p.m., Saturday Matinee, from New York. 9.30, Behind the Law—Tales of the Pennsylvania State Police. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Bulletin. 10.12, Programme Announcements. 10.15, Talk: Health through Recreation. 10.30, Programme for Children. 10.45, Little Orphan Annie, from New York. 10.50, Temperature Report. 10.51, Weather Report. 11.0, Time Signal. 11.2, Who's News To-day. 11.6, Teaberry Sport Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, Programme to be announced. 11.30, The Little German Band. 12 Midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Sunday), Dance Masters, from New York. 12.30, Sacred Songs. 1.0 to 3.0, New York Relay. 1.0, The Play's the Thing. 1.30, Dance with Countess D'Orsay. 2.0, Eltoro Week-End Review with Gus Van, the Pickens Sisters and Orchestra. 2.30, The First Nighter. 3.0, Homey and Old Fashioned. 3.30, Twenty Fingers of Harmony, from New York. 3.45, Object Matrimony, from New York. 4.0, Time Signal. 4.1, Teaberry Sports Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News. 4.20, Messages to the Far North. 5.0, Jack Pettis and his Orchestra. 5.30, Time Signal and Goodnight. **PORSGRUND**.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.15 p.m., Announcements and News Bulletin. 7.35, See Warsaw. 7.45, Popular Music on Gramophone Records. 7.58, Time Signal. 8.0, See Warsaw. 10.40, Concert of Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—5.50 p.m., Talk. 6.0, Light Music on Gramophone Records. 6.10, Agricultural Report. 6.15, Talk: Life in an Up-to-date Mill. 6.25, German Transmission: News and Talk: The History of Music. 7.0, Concert by the Cechura Quartet. 8.0, Talk. 8.15, Dance Music. 9.0, Time Signal. 9.1, Orchestral Concert. 10.0, Time, News, and Sports Notes. 10.15, Miscellaneous Announcements. 10.20, See Moravská-Ostrava.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres. Programme from Geneva, Lausanne not transmitting.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40, Light Concert on Gramophone Records. 1.0, Financial Notes. 1.5, Gramophone Concert (cont'd.). 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, Variety Music on Gramophone Records. 5.30, Concert by the Station Orchestra. 6.58, Weather Forecast. 7.0, Chimes from St. Peter's Cathedral. 7.10, Talk: The Treasure of the Keeling Islands. 7.30, Talk: The Week in International Affairs. 8.0, Popular Programme of Accordion Solos and Dialogues. 9.10, Concert by the Station Orchestra. 10.0, News Bulletin and Weather Forecast. 10.15, Dance Music. 11.0, Close Down. **RJUKAN**.—See Oslo.

ROME

Call 1R0, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2R0, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio, Announcements and Weather. 12.30 p.m., Gramophone

Records of Light Music. 1.0 to 2.15, Instrumental Concert: March, Entry of the Boyards (Halvorsen); Rumba, Iberia (Siciliani); Delirio (Marchetti and Candolito); Fantasia on Popular Songs of all Nations, The World in Song (Intrator and Golwyn); Le vie della città (Sperino). Selection from Countess Maritza (Kálmán). In the intervals at 1.15, Giornale Radio; and at 1.30, Time and Announcements. 5.0, Exchange, Report of the Royal Geographical Society, Giornale Radio and Announcements. 5.15, Reading. 5.30, Song Recital by Vera Nadia Poggioni (Soprano) and Riccardo Spinelli (Tenor); Two Songs for Soprano (Cimara): (a) Demi, (b) Nuvole. Tenor Solo from Othello (Verdi); Duet from the Second Act of André Chénier (Giordano). 5.45, Variety Concert: Song Without Words (Grünfeld); Selection from Loreley (Catalani); Piece (Chaminade); Marionette (Sassoli); La Giava (Cusnani). 6.15, Tourist Report. 7.10 (Naples), Shipping and Sports Notes. 7.15, Atmospheric Signals, Agricultural Report and Giornale Radio. 8.0, Time, Announcements and Gramophone Records of Light Music. 8.45, Police Band Concert, conducted by Andrea Marchesini: Overture, Sigurd (Reyer); Hymn to Light from Oedipus Rex (Aytano-Marchesini); Selection from Il piccolo Marat (Mascagni); Talk; First Suite from Abruzzian Scenes (de Nardis); Siegfried's Funeral March from The Twilight of the Gods (Wagner); Triumphal March from Tannhäuser (Wagner); Monologue Bolero for Clarinet (Bléman); Easter Scene from Siberia (Giordano); Overture, Cleopatra (Mancinelli). 10.55, News Bulletin. **SALZBURG**.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—7.0 to 9.45 p.m., New York Relay. 7.1, Rice String Quartet. 7.30, Symphonic Matinée. 8.0, Merry Madcaps. 8.30, Soloist. 8.45, Matinée Gems, from New York. 9.30, Soloist (cont'd.). 9.45, Studio Ensemble. 10.15, Pop's Pirate Club, from New York. 10.30, Old Favourites, from New York. 11.0, Joe and Eddy. 11.15, Waldorf Astoria Orchestra. 11.30, American Trio. 11.45, Baseball Scores. 11.50, American Trio. 12 Midnight, Swimming Lessons. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Sunday), Intermezzo, from New York. 12.30, The Kolliickers, from New York. 12.45, The Goldbergs, from New York. 1.0, Lady Fingers. 1.15, Bernard Silberg (Cello). 1.30 to 5.30, New York Relay. 1.30, K-7, Secret Service Spy Story, from New York. 2.0, Cuckoo. 2.30, Balkan Mountain Men. 3.0, Lucky Strike Dance Hour. 4.0, Rnas Colombo and his Orchestra. 4.15, Merle Thorpe. 4.30, Paul Whiteman's Orchestra. 5.0, Ralph Kirberly (Dream Slinger). 5.5, Buddy Rogers and his California Cavaliers. 5.30 (approx.), Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASLE, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Report and News Bulletin. 12.40, Popular Music on Gramophone Records. 1.50, Weather Report and Exchange Quotations. 1.55 to 3.30, Interval. 3.30, Variety Concert on Gramophone Records. 4.0 (from Zürich), Talk on Choosing a Profession. 4.30 (from Zürich), Accordion Recital. 5.0 (from Zürich), Talk. 5.30, Weather Report. 5.32 to 6.30, Interval. 6.30 (from Zürich), Talk: The Mathematical and Technical Miracle of the Cheops Pyramid. 7.0 (from Zürich), Chimes from the Zürich Churches. 7.15, Time Signal, Weather Forecast, Market Prices, and (from Basle) Wireless Notes. 7.30, Popular Concert on Gramophone Records. 8.0 (from Basle), Orchestral Concert by the Basle Orchestral Society, conducted by Gottfried Becker; Soloists: Senta Bergmann (Violin) and Res Filscher (Viola). 9.30, Weather Forecast and News Bulletin. 9.45 (from Basle), Theobald Bärwart reads from his own Works in Dialect. 10.0, Dance Music on Gramophone Records. 11.0 (approx.), Close Down. **SOTTENS**.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.20 p.m., Concert of Light Music by a String Orchestra: Waltz (Waldteufel); By the blue Hawaiian Waters (Kettelhey); Air (Ottoson); Selection from Schön ist die Welt (Lehár). 5.5, Programme for Children. 5.30, Popular Music on Gramophone Records. 6.30 (from Göteborg), Talk on Fishing. 7.0, Recital of Swedish Folk Songs, by Signe Stridsberg. 7.15, Weather and News. 7.30, Military Band Concert, conducted by Ivar Widner: Marinmarsch (von Blon); Overture, Le Postillon de Longjumeau (Adam); Exotic Dance (Mascagni); Selection from The Flying Dutchman (Wagner); Potpourri

of Swedish Folk Songs and Dances (arr. Herrman); Waltz (Widquist); March (Widner). 8.30, Reading. 9.0, Old Dance Music by Pineta Orchestra, relayed from Gröna Lund. 9.45, Weather and News. 10.0 (from Göteborg), Dance Music by Fagerlunds Orchestra. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Popular Music. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.2, Gramophone Concert of Light Music. 1.30, Concert from Toulouse (PTT), (255 metres). 2.10, Talk in French: The Protection of the Worker. 2.30, Dance Music on Gramophone Records. 3.15 to 3.45, Interval. 3.45, Music Talk in French: Schumann's Kinderszenen—with Illustrations. 4.0, Dance Music on Gramophone Records. 4.45, Talk in German on Sociology. 5.0, Orchestral Concert, conducted by M. Roskam: March, Toledo (Kalkmann); Waltz from Das Fürstehkind (Lehár); Intermezzo, Polospiel (Petras); Overture, Die Schöne Galathée (Suppé); Selection from Passionné (Messager); In the Shadows (Finck); Valse alsacienne (Fourdrain); Suite, Fête Nippone (Mouton); March, Amitiés françaises (Rico). 6.0, Talk in French on Camping. 6.15, Talk in German on Horticulture. 6.30, Gramophone Concert: Pastoral Suite (Scassola); Minuet from Così fan tutte (Mozart); Overture, Poet and Peasant (Suppé); Till Eulenspiegel's Merry Pranks (Richard Strauss); Hymn to the Sun, and Hindu Song (Rimsky-Korsakov); Ideale (Tosti); Les deux coeurs (Fontenailles); Get happy (Seymour); A Big Bouquet for You (Hilen). 7.30, Time Signal and News in French and German. 7.45, Orchestral Concert, conducted by M. Roskam: Soloists, M. Jean Weber (Saxophone), M. Jude (Flute), M. Caron (Oboe), M. Pogoda (Pianoforte), and M. Eby (Bassoon): Overture, Alceste (Glink); Sonata, Il trillo del diavolo, for Violin and Pianoforte (Tartini); Suite brève (Henri Busser); First Suite from L'Arlesienne, for Saxophone and Flute (Bizet); Fantaisie concertante for Oboe and Pianoforte (Maurice Le Boucher); Jota Aragonesa (Saint-Saëns); Piece for Saxophone and Pianoforte: In the Orient (Wiedoeff); Barcarolle (Tchaikovsky); Adagio and Allegro from the Concerto for Bassoon (Weber); Overture, Preciosa (Weber). 10.0, Quintet Concert, relayed from Radio Coloniale (Paris) (25.63 metres). 11.0, Dance Music (from the Savoy). 12 Midnight, Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—10.0 a.m., Organ Recital of Modern Music, relayed from Christ Church, Mannheim. 11.0, Time and News. 11.15 to 11.30, Sponsored Music. 11.45, Sponsored Music (cont'd.). 12 Noon, Weather Report. 12.5 p.m., Sponsored Music. 12.20, Humour in Song: Recital by Otto Müller-Neutz; Die Alte (Mozart); Bauernregel (Marschner); Reigen (Weber); Der Papagei (Loewe); Der letzte Ichthyosaurus (Lachner). 12.40, Gramophone Records of Barnabas von Gezey and his Band. 1.15, Time and News. 1.30, Orchestral Concert, conducted by Otto Seifert: Overture, Lysistrata (Lincke); Glow-Worm Idyll (Lincke); Das erste Herzklopfen (Eikenberg); Waltz, Donauwellen (Ivanovici); Grossmütterchen (Langer); Der Rose Hochzeitszug (Jessel); Loin du Bal (Gillet); Traum der Sennnerin (Lahitzky); The Mill in the Black Forest (Eilenberg); Die Post im Walde (Schäffer); Ballgellister (Meyer-Helmund); The Parade of the Tin Soldiers (Jessel); Petersburgers Schlittenfabrik (Eilenberg). 2.30 (from Freiburg), Tenor and Bass Duets by Willy Rhoden and Bernhard Köhler. 3.0, Recital of Folk Songs by a Quartet. 3.30, Programme for Children. 4.30, English Marches on Gramophone Records. 5.0, See Frankfurt. 6.15, Time, Weather, and Sports Notes. 6.25, Talk: The Reduction in Cost and Improvement of Building at the Present Time. 6.50 (from Karlsruhe), Talk: A Tour Through the Workers' Camp at Pforzheim. 7.15, Time and Weather. 7.30, Concert of Operetta Music by the Stuttgart Philharmonic Orchestra, conducted by Emil Kahn. Soloist: Hedi Kettner (Soprano). 8.0, See Munich. 8.40, Swedish Anecdotes. 8.50, See Berlin (Witzleben). 10.15, Time and News. 10.45, Dance Music from Berlin (Witzleben). 12.30 a.m. (Sunday), Close Down. **SUNDSVALL**.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Picture Transmission. 5.15, An Argentine Orchestra. 5.30, Operetta Melodies; Arias from Les Cloches de Corneville (Planquette), Rose Marie (Friml), and Robert the Pirate (Romberg). 5.45, Overture to and Air from Manfred (Schumann). 6.0, Sound Film Music. 6.15, Orchestral Music; Overture, Carnaval romain (Berlioz); Selection from Preciosa (Weber). 6.30, Exchange Quotations. 6.45, Popular Songs. 7.0, Music by a Viennese Orchestra; Selection from Der Rosenkavalier (Richard Strauss); Tales from the Vienna Woods (Johann Strauss); Vienna, City of my Dreams

(Siczynsky); The Bells of Love (Benatzky); Spanish Dance (Kvans); Neapolitan Night (Zemenick). 7.30, Programme Announcements. 7.35, News Bulletin. 7.45, Accordion Solos. 8.0, Military Music. 8.15, Four Songs. 8.30, Orchestral Music; Ballet from Sylvia (Delibes); Selection from Gwendoline (Chabrier). 8.45, Music by a Viennese Orchestra. 9.0, Extracts from Faust—Opera (Gounod). 10.0, Opera-Comique Music; Selections from Carmen (Bizet) and I Pagliacci (Leoncavallo). 10.15, Operetta Music; Melodies from Veronique (Messager) and Gillette de Narbonne (Audran). 10.30, North African News. 10.45, Dance Music; Waltz, Frauenherz (Jos. Strauss); Le joyeux mari; Dance (Cowler); Waltz, Accelerationen (Strauss). 11.0, Light Music. 11.15, Instrumental Music; Melody (Rubinstein); The Angels' Serenade (Braga); Ich liebe dich (Grieg); Valse frisson. 11.30, Selection from Scheherazade (Rimsky-Korsakov). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.5 p.m., Quintet Concert: Danza negra (Malvezzi); Spring Song (Mendelssohn); Serenata nostalgica (Manno); Selection from Die geschiedene Frau (Fall); Moresca (Frontini); Selection from The Duchess of Chicago (Kálmán); Serenade (Tosti); Melody (Salter). 8.0 till Close Down, See Turin. **TRONDHEIM**.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.5 p.m., Variety Music: Overture, Giovanna d'Arco (Verdi); Corteggio tartaro (Scassola); La gate falatrice (Gillet). 7.30, Time and News. 7.35, Variety Music on Gramophone Records. 8.0, Giornale Radio and Weather, followed by Gramophone Records of Light Music. 8.30, Topical Talk. 8.45, See Rome. In the interval, Talk. 10.55 (approx.), Dance Music from the Luna Park Lido, Milan. 11.0 (in the interval), Giornale Radio. 11.55, News Bulletin.

VATICAN CITY

19.64 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—6.20 p.m., Country Programme, relayed from Landfrass bei Gmünd, in Carinthia. 6.50, Topical Talk. 7.20, Time, Weather, Sports Notes, and Programme Announcements. 7.35, Frauenliebe und leben—Song Cycle (Schumann). Songs by Chaminisso. Soloist: berta Kurina. Dr. Paul Amadeus Pisk at the Pianoforte. 8.0, Zither Concert from Munich. 8.20, Der G'wissenswurm—Peasant Comedy in Three Acts (Anzengruber). 10.30, News and Announcements. 10.45, Dance Music by The Blue Boys, with Songs by Egon Grosz, relayed from the Graben Café.

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Press Review. 12.20, Interval. 12.40, Weather-Forecast. 12.45, Popular Music on Gramophone Records. 1.25, Interval. 1.35, Light Music on Gramophone Records. 2.10, Interval. 3.0, Economic Report. 3.10, Variety Music on Gramophone Records. 3.30, Military News. 3.40, Programme for Children, relayed from Lwow, 381 metres. 4.5, Light Music on Gramophone Records. 4.35, Hydrographic Report. 4.40, Talk, relayed from Wlno, 563 metres. 5.0, Concert by the Station Orchestra, conducted by C. Wilkomirski: March, Caramba (Marrone); Suite, Les Pyrenées (Lacôme); Two Songs (Tosti): (a) Neapolitan Song, (b) Non t'amo più; Cracovienne (Noskovsky); Arab Song, Mahomet (Stolz); The Song of the Wind (Yoshitomo); Habanera (Ferraris); French Polka (Johann Strauss); Mazurka (Namsylosky); The Mysteries of Love (Eilenberg); Un giorno in Venezia (Nevin); Extract from the Suite Pearls of Yugoslavia (Leopold); Mazurka (Hosson). 6.0, Talk on a Military Subject. 6.20, Dance Music. 7.15, Miscellaneous Items. 7.35, Radio Journal. 7.45, Agricultural Notes. 7.55, Programme Announcements. 8.0, Concert of Light Music by the Warsaw Philharmonic Orchestra, conducted by S. Nawrot. Soloist: Umberto Macnez (Tenor). Topical Talk in the interval. 9.50, Radio Journal. 9.55, Aviation Weather Report. 10.0, Interval. 10.5, Chopin Pianoforte Recital by Jeanne Famiel-Hepner: Ballade in F minor; Waltz in F major; Etude in D flat, No. 27; Nocturne in B, Op. 9. Mazurkas: (a) in B minor; (b) in C, Op. 33; (c) in F minor, Op. 63. 10.40, Sports Notes. 10.50, Dance Music.

WILNO

563 metres; 10 kW.—7.30 p.m., Programme Announcements. 7.45, Humorous Monologues. 8.0 till Close Down, See Warsaw.

ZURICH.—See Schweizerischer Landessender.

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NOTICES.

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ADVERTISEMENTS for these columns are accepted up to **FIRST POST** on **SATURDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Tudor Street, London, E.C.4, or on **FRIDAY MORNING** at the Branch Offices, 19, Herford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham; 260, Deansgate, Manchester; 26a, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

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All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

RECEIVERS FOR SALE.

HIRE a McMichael Portable Set, 3/6 daily, or from 15/- weekly.—Alexander Black, Wireless Consultant, 55, Ebury St., S.W.1. Sloane 1655. [0328]

PART Exchange Receivers at Bargain Prices, overhauled, guaranteed; state approximate requirements for quotation.—Coutts, Wireless Engineers, Horley. [8543]

232/-—A.C. Super 60 radiogram, 50 stations, cost £1.35 recently.—7, Pond Rd., Blackheath, S.E.3. [9027]

£3/19/6, c.o.d., without valves, with valves £5/19/6; Edison D.C. electric set, Power Pentode Three model, original packing, unused; list £21.—Kav. 287, City Rd., Islington, E.C.1 [8093]

McMICHAEL 4-valve Super Screen Grid Portable; originally cost 22 guineas, will accept £12/10, or near.—W. J. H., 14, Church Walk, Breatford. [9073]

EKCO 1931 D.C. 3-valve Receiver, as new; £11.—Bland, Wharfe View Rd., Ilkley, Yorks. [9070]

8-VALVE Fada Set: £4/10, bargain.—Lipton, 614, Old Ford Rd., Bow, East 3345 [9079]

MAJESTIC Radiogram, De Luxe model, 7 valves, beautiful walnut, scarcely used, as new; cost £70, sell £50, genuine bargain.—Box 4455, c/o The Wireless World. [9081]

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SOUND SALES Can Supply Everything Necessary to construct the "Wireless World" H.T.8. Mains Transformer, wire, Stalloy stampings, etc.

SOUND SALES Have Further Extended Their Premises and Installed additional Machinery.

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BRYCE PRODUCTS—Mains transformers and I.F. chokes, always guaranteed for their perfect output voltages and smoothing, will in future be wound exclusively with Lewcos wire; insulation tests are raised to 15,000 volts, all transformers being electrostatically screened.

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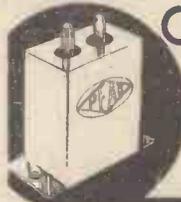
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2 " " 3/9
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LISTS of Ganged Condensers, etc., from Trevor Pepper, 48, Wakegreen Rd., Birmingham. [9083]

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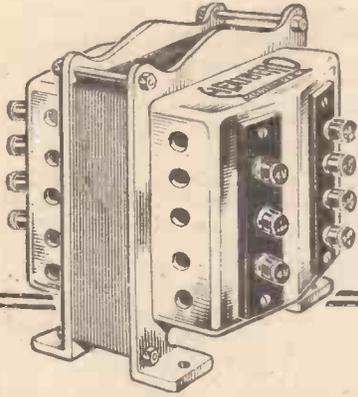
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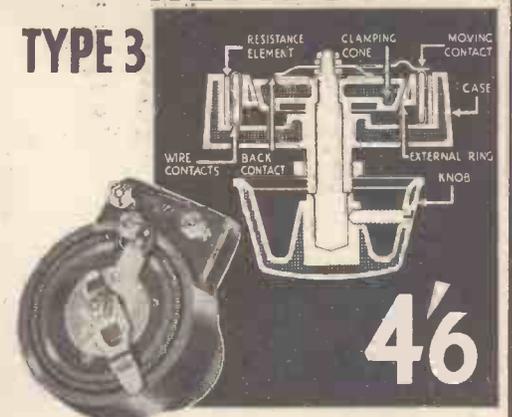
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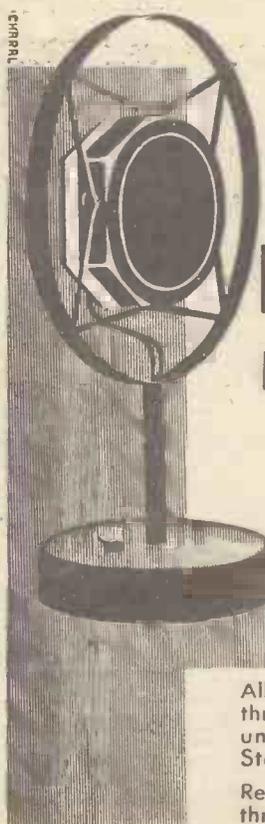
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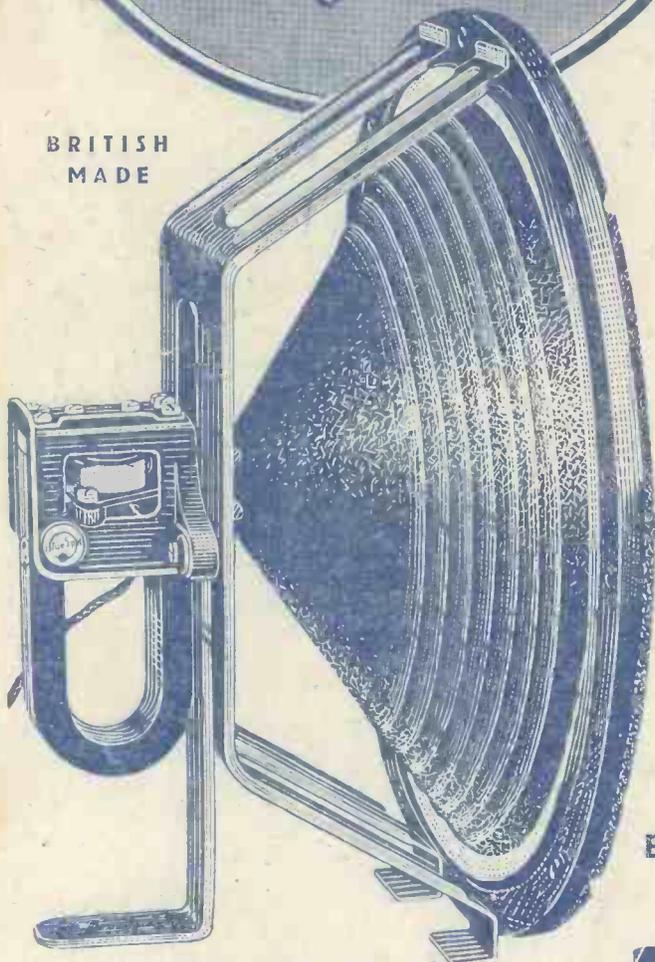
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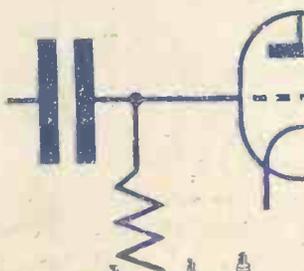
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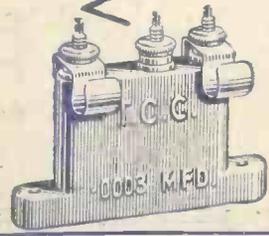


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As many of the circuits and apparatus described in these
pages are covered by patents, readers are advised, before making
use of them, to satisfy themselves that they would not be
infringing patents.

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EDITORIAL COMMENT.

Olympia 1932.

WITH August the 19th only a week ahead of us we have an excuse for allowing our thoughts to run to the Olympia Radio Show which this year promises to be of outstanding interest.

It is not proposed to touch here upon the apparatus which will be exhibited, for this will be fully dealt with in next week's issue and the two following numbers of *The Wireless World*, which together comprise our exhibition "specials." Next week's issue will be a Guide to the Show, drawing attention to items of special interest and generally providing the visitor to Olympia with an indication of "what to see." The second exhibition number, August 26th, will contain a detailed stand-to-stand report on the exhibits, prepared by the technical staff of *The Wireless World* after the opening of the Show. Our third number, appearing on September 2nd, will review the outstanding tendencies in design and the principal improvements observed from a close study of the exhibits as a whole.

1932 — The Best Show.

All the information which we have had up to the present goes to show that the organisers, the Radio Manufacturers' Association, are sparing no efforts to make the wireless show 1932 far ahead of any previous wireless exhibition. The main hall at Olympia is to house the Show and is being decorated and fitted up on entirely new lines.

There are certain points of detail in connection with the Exhibition to which we would like to draw attention. In our opinion, every wireless receiver sold should carry with it a carefully prepared book of instructions and a description giving all essential relative information

including the circuit, wiring diagrams and other details. Manufacturers in this country, with one or two outstanding exceptions, seem to be extraordinarily unappreciative of the importance of this detail of their job, for we believe that not only would the supply of information of this nature, carefully and attractively prepared, give confidence to the purchaser of a set, but it would, no doubt, overcome quite a substantial percentage of the trivial servicing which is at present necessary in connection with many receivers, largely, we suggest, on account of the inadequate information supplied to the purchaser. No manufacturer in America would think of putting out a set without full explanatory literature concerning it, and his booklet would, in all probability, contain, in addition, a large amount of useful general information on the erection of an aerial and general points on the maintenance of the set and tracing faults.

Descriptive Literature.

The mention of literature and the Show reminds us of another point on which we would like to touch. Leaflets and other matter concerning the exhibits should certainly be available, but in past years it has seemed to us that more of these leaflets are scattered about on the floor than are actually taken home by the visitors. Literature should not be forced on to visitors by the stand attendants, only to be dropped on the ground a yard or two farther on. And those paper bags! They may be good publicity for individual firms, but they encourage the idea of collecting leaflets, and we notice that the tendency is for the size of the paper bags to grow, apparently with the idea that the bag bearing a firm's name should be big enough to contain the bags of any rivals indulging in the same form of publicity!

AUTOMATIC VOLUME CONTROL— — IS IT WORTH WHILE ?

The Various Methods Employed.

By W. T. COCKING.

LITTLE published data has appeared in this country on the subject of automatic volume control, and at the time of writing it is believed that no British set includes this refinement. Such controls are quite common in America, but their absence in British sets does not indicate any inability on the part of their designers to include them, but rather a doubt as to whether, in actual fact, they are a desirable feature. This is by no means a technical matter; it is more a psychological point upon which both the technical and the non-technical are equally competent to judge. It is in an endeavour to obtain opinions as to the desirability of automatic volume control that this article has been written, for it is obvious that a fair judgment cannot be formed without knowing at least the audible effects of such a control, and preferably also having at least some idea of the methods by which it may be achieved.

The object of an automatic volume control is to adjust the sensitivity of a receiver in such a manner that, whatever the actual strength of the signal tuned in, the audible sound output from the loud speaker remains at a constant value. As the tuning dial of the receiver is rotated, therefore, all stations should come in at the same volume, and it should prove impossible to distinguish distant stations from the local merely by their strength. It must not be assumed, however, that the control smooths out the light and shade, the loud and soft, passages of musical reproduction. It does not, for it is operated by the carrier of the incoming signal, and not by its modulation, upon which the reproduction depends.

It will be obvious that the automatic volume control must be operated by the voltage developed by the carrier of the incoming signal after it has been amplified, and that, furthermore, it must act to reduce the amplification given by the H.F. stages. It is normally impracticable to make this voltage operate any potentiometer device for the control of volume, and the usual procedure, therefore, is for the rectified carrier voltage to be applied to the grid or screen grids of the H.F. valves in such a way as to reduce their mutual conductance.

Separate Valve A.V.C.

One of the commonest circuits for the attainment of this is shown in Fig. 1; in this particular example a variable-mu H.F. stage is transformer-coupled to an anode-bend detector, but this does not directly affect the control, and other methods could be employed. Under conditions of no input signal

the H.F. valve has its minimum negative bias due to the voltage drop along its bias resistance R_1 , while the detector is also self-biased by the resistance R_2 . The A.V.C. valve has its grid negatively biased to the point at which the anode current is zero by the voltage developed between the points "A-B" on the voltage divider across the H.T. supply. The grid of the H.F. valve is returned to the voltage source through the decoupling resistance R_3 and through the

valve just as in an ordinary anode-bend detector, and a current flows through R_4 . This current sets up a voltage across the resistance which is applied through R_3 as additional bias to the H.F. valve, and so reduces its amplification. As the amplification is reduced the voltage applied to the detector and the control valve is also reduced, and a balance point is reached at which the system is stable.

It is obvious that the greater the signal voltage applied to the detector the greater will be the H.F.-valve bias voltage and the lower the amplification. It is obvious, further, that for a strong input signal the detector input must be greater, in order to provide the higher bias voltage, than for a weak signal. It is thus impossible for the control completely to fulfil its function of maintaining the detector input at a constant level. The real action of the control, therefore, is to keep the detector input more nearly constant than it would be in the absence of any such automatic volume control, and this may be achieved to such an extent that variations in volume are aurally negligible.

The merit of this particular method of obtaining control is that a wide range of control is possible, and that it permits the receiver design to be more or less normal. It suffers from several practical disadvantages, however, for it has been found that in certain cases the A.V.C. valve must be a picked specimen, and that there is also a possibility of distortion being introduced.

Furthermore, the A.V.C. valve requires a positive anode potential which must be added to that required by the H.F. valves, so that the total H.T. voltage is increased. If all the valves be heated from the same winding on the mains transformer, this A.V.C. anode voltage appears as a potential difference between the heaters and cathodes of the H.F. valves, where it might have a detrimental effect upon valve life.

Diode A.V.C.

Although this circuit is very widely used, therefore, it is open to certain objections which are not present in another type of control which is shown in Fig. 2. This control is considerably simpler than the one just described, and it does not necessarily

WILL automatic volume control become popular in this country? Such controls are to be found in a large number of receivers in America, but in spite of obvious advantages there are certain shortcomings which are difficult to obviate. The article affords a valuable topic for discussion and explains the underlying principles of automatic volume control.

automatic control bias resistance R_4 . With no signal there is no current flow through R_4 , and so the bias on the H.F. valve is only that due to its own self-bias resistance.

When a small signal is applied the conditions are substantially the same, and the

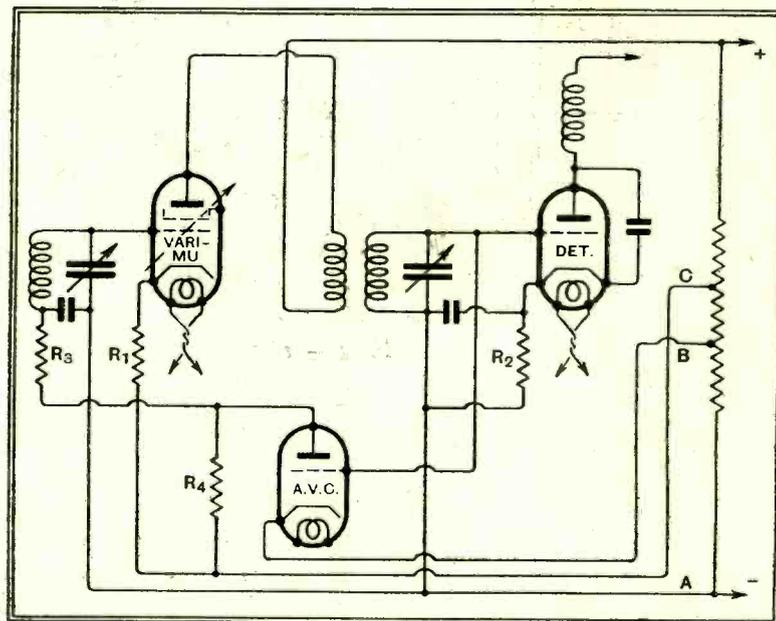


Fig. 1.—A popular American A.V.C. circuit in which an extra valve is used purely for control purposes.

control valve has little or no action. The circuit functions as any other, therefore, until the signal voltage applied to the detector is sufficient to actuate the control valve. When this occurs there is rectification in the control

Automatic Volume Control—Is It Worth While?—entail the use of an extra valve. It will be seen that a diode detector is used, and that the automatic bias potentials are obtained directly from this. The H.F. valve is self-biased in the usual way by the resistance R_1 , and this bias is applied to its grid through the decoupling resistance R_2 and the detector resistance R_3 , through which there is no current flow in the absence of a signal.

When a signal is applied to the diode there is a direct-current flow through the resistance R_3 , with the result that the anode is maintained at a potential negative with respect to its cathode. There is no current flow through R_2 , however, so that the grid of the H.F. valve is at the same D.C. potential as the diode anode, and negative with respect to the diode cathode. The diode cathode, however, is negative with respect to the H.F. cathode on account of the bias resistance of this valve, so that it will be seen that the rectified carrier voltage appearing across R_3 is wholly applied to the H.F. valve as negative grid bias.

The application of the signal to the diode also causes a modulation-frequency current to flow through R_3 , and hence a modulation-frequency voltage to be set up across it, and this is communicated to the L.F. valve through the usual coupling condenser C and grid leak R_4 . This L.F. voltage, however, must not be allowed to reach the first valve, so that the decoupling resistance R_2 and condenser C , are essential features of the circuit.

If the resistance R_3 be high compared with the internal resistance of the diode, we may assume roughly that rectification is 100 per cent. efficient, so that if we choose a value of 1 meg. for R_3 we shall obtain 1 volt of bias for every signal volt applied to the diode. The maximum signal input to the diode, therefore, must obviously depend upon the maximum bias voltage required for the H.F. valves, and if conditions were such that 50 volts bias were required, then we should have to operate the diode with a signal input of this same figure. In the diode itself this does not necessarily lead to any difficulty, but it may complicate the design of the preceding H.F. stage.

In practice it would probably be rarely necessary to work with such a high input voltage, and it should be generally satisfactory to legislate for a voltage of about 20 only, at which figure no particular difficulty should be met with. This method of volume control has the advantage that the same valve is used both for volume control and for detection; at first sight, therefore, no additional valve is needed. This is only true, however, when the receiver with which it is being compared is also fitted with a diode detector, for if a comparison be made with an ordinary set fitted with grid or anode-bend detection, then an additional stage of amplification is necessary to make up for the loss due to the use of a diode.

Such additional amplification can take the

form of extra H.F. amplification, but more usually a further stage of L.F. amplification is employed. On the score of cost, therefore, there is little to choose between the two methods of automatic volume control. The diode, however, has the advantage of being simpler, of giving rise to no abnormal potential difference between heaters and cathodes, of requiring no extra H.T. supply, and of giving less risk of distortion.

The Wunderlich Valve.

Although of little practical interest at the moment in this country, it is important that the newest method of all should not be omitted from this discussion. Within the last few months, a new type of valve has been developed in America expressly for the purpose of simplifying automatic-volume control circuits, and it is an extension of the diode method just described. The circuit is given in Fig. 3, and the special valve, which is known as the Wunderlich, contains, in addition to the usual heater, cathode, and anode, two identical grids. These grids are connected in a push-pull

are thus effectively in parallel. These potentials then affect the anode current, and the L.F. signal appears amplified in the anode circuit in the usual way. The H.F. input voltages, however, although they are applied to the grids in equal proportions, are applied in exactly opposite phase, so that they do not affect the anode current, and signal frequency

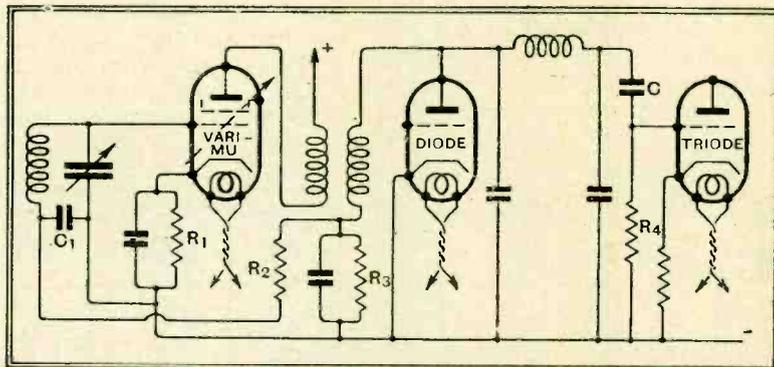


Fig. 2.—A circuit employing a diode for both detection and automatic volume control; an additional valve is usually needed as an amplifier to compensate for the low efficiency of the diode.

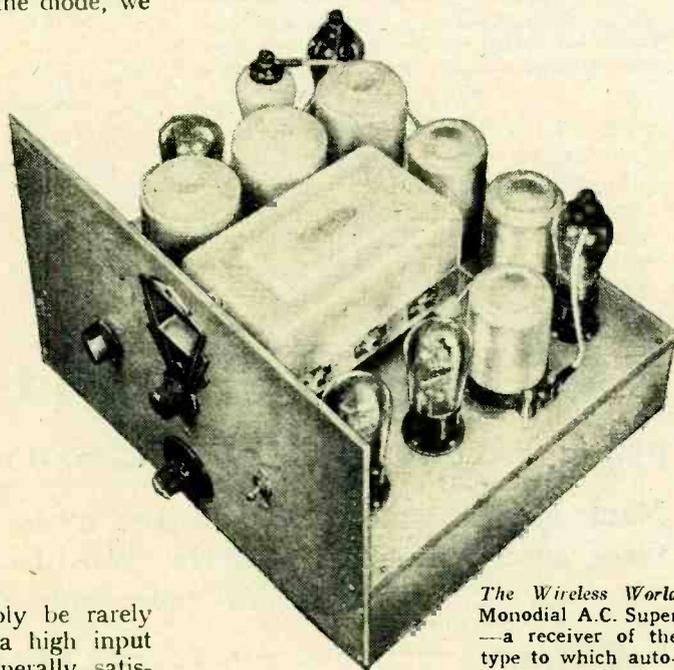
H.F. currents are not found in the anode circuit.

In its action as a volume control valve the Wunderlich valve is the same as that of the diode circuits previously discussed. The novelty lies chiefly in the special type of valve, which is enabled to act both as a diode and as an L.F. amplifier. The use of automatic volume control with this valve, therefore, does not necessitate the use of an extra stage of amplification.

A.V.C. in Practice.

Now that we understand some of the methods by which automatic volume control may be obtained, and we realize that it is a perfectly practical proposition, it is fitting to enquire what effect it will have upon the operation of a set. In the first place, if the desired signal be so weak that the receiver must be working at full sensitivity for its reception, the control will have no effect, and the action of the set will be no different from that of any ordinary type. It is only on the reception of stations for which the volume control of an ordinary set would have to be reduced that the automatic control comes into action.

Over the range of the control, all stations, whatever their actual strength, will deliver the same volume from the loud speaker, provided that they are all modulated to the same extent. The volume variation of fading, therefore, is counteracted, and this is perhaps the most important advantage of automatic volume control, particularly in short-wave receivers. When a station is fading, however, the general mush level caused by atmospheric and extraneous noises does not usually fade as well. The result of a controlled receiver, therefore, on a fading signal is to give the curious effect of a constant signal with a fading background. A signal which is fading, moreover, is usually distorted at times, due to the fading effect being different for the carrier and sidebands; although automatic volume control will hold the volume level constant, it will do nothing to counteract the distortion introduced by fading. It is



The Wireless World Monodial A.C. Super—a receiver of the type to which automatic volume control could be applied.

manner to the tuned input circuit, from the centre tap of which a resistance R_3 , shunted by a condenser, is connected to the cathode.

Full-wave rectification of the signal is obtained, therefore, and the rectified D.C. and signal currents flow through R_3 , across which they set up potential differences. The D.C. voltage is applied as automatic bias to the H.F. valve through the decoupling resistance R_2 , and the usual minimum bias is obtained through the use of R_1 . The modulation-frequency voltages across R_3 , however, are applied simultaneously, and in the same phase to both the grids of the detector, which

Automatic Volume Control—Is It Worth While?—quite possible, therefore, for the full volume distortion and fading mush level of an automatically controlled set to prove more unpleasant than the normal signal fading of an uncontrolled receiver.

Visual Tuning.

Since the automatic control holds the output constant, irrespective of the signal input, within limits, it is almost impossible to tune in a station by ear in the usual manner, for no optimum setting of the tuning dial can be found. It is essential, therefore, for receivers to have some form of visual tuning indicator, which may take the form of a neon tube, or more usually a milliammeter operated either directly or indirectly by the H.F. valve bias voltage. With such an indicator, of course, no tuning difficulty is met with, and it is in fact easier than the normal tuning by ear. The cost of the indicator, however, must not be overlooked when computing the extra expense of an automatic volume control.

A further point in the operation of a controlled set which may prove disadvantageous is that as the tuning dial is rotated the sensitivity of the set is continually varying in accordance with the variations in the signal inputs. As the set is mis-tuned from a station the sensitivity rises until it is at its maximum when the set is tuned midway between two stations. At this point, therefore, the full output of the set will be obtained on mush, local interference, and frequency modulation interference. Instead of obtaining silent points between stations, therefore, we should normally obtain strong mush points.

Volume Control.

Since the automatic volume control is really a control only over the sensitivity of the set, and is intended to keep the detector input constant, it is necessary to fit in addition a

normal type hand-operated volume control in the L.F. circuits, so that the loud speaker volume can be regulated to the desired level. This control, of course, requires only occasional adjustment when a change in the speaker volume is needed, and not for every station tuned in. By reducing the setting of this control when tuning, however, the disadvantage of the automatic control in giving a high mush level between stations can be overcome, so that this effect alone need be no great deterrent to its use.

An effect which is often stressed as a great advantage of automatic control lies in the elimination of the terrific bursts of volume

for instance, it may be made to overload when the input exceeds a certain value and excessive volume is then avoided without the use of additional apparatus. This course has been adopted in the more sensitive receivers described in *The Wireless World*, notably in the Monodial A.C. Super and the Modern Straight Five, and has proved very satisfactory in practice.

It will be seen, therefore, that the advantages of an automatic volume control are the elimination of overloading when tuning through a local, the reception of all stations at approximately the same volume level, and the avoidance of the volume variations of fading. The disadvantages are a high level of background noise between stations, a variable mush level on a fading signal, and the reproduction of fading distortion at full volume, and, of course, the additional apparatus.

It will be obvious that the control is unsuitable for inclusion in the less sensitive types of receiver, and it would only prove useful in superheterodynes and multi-H.F. straight sets. Moreover, the control cannot normally be added to an existing receiver, for the whole apparatus must be designed from the start for working with automatic volume control.

In the writer's opinion, the advantages and disadvantages of automatic volume control are rather evenly balanced, with the result that it is difficult to form an opinion as to whether its use is justified in high quality receivers. This article has been written, therefore, not with the idea of either advocating or condemning the system, but rather with the hope of stimulating interest in the subject. Opinions will naturally differ as to the relative values to be assigned to the merits and demerits, and it is hoped that as a result of this article some conclusion may be reached as to the way in which automatic volume control would be regarded. Should there be a definite consensus of opinion in its favour, then it will undoubtedly be included in some future receiver design.

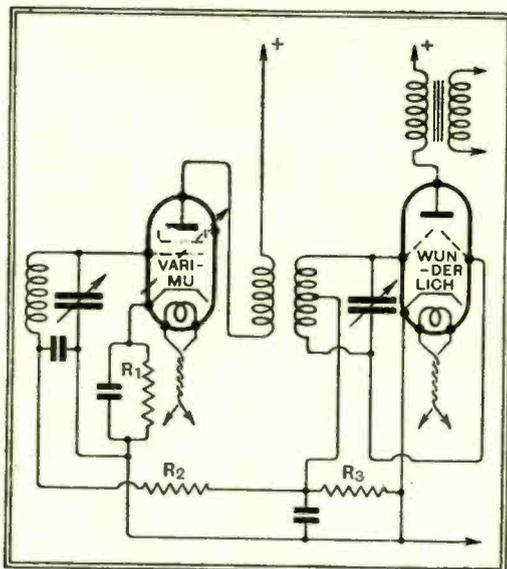


Fig. 3.—A circuit employing the new American Wunderlich valve, which acts as a full-wave diode detector, an L.F. triode amplifier, and a volume control.

sometimes found when inadvertently tuning through the local station. This is undoubtedly true, but it is not necessarily a great point in favour of the control, for it may be obtained more simply by other means. If the detector operating conditions be correctly adjusted,

OLYMPIA RADIO SHOW

FRIDAY, AUGUST 19th, to SATURDAY, AUGUST 27th, INCLUSIVE

AUG. 19

GUIDE TO THE SHOW

A complete guide to "What to See" at Olympia, giving first details of new apparatus and components. The issue will also contain information on how to build a new four-valve superheterodyne receiver, self-contained, with loud speaker: "The Wireless World BABY SUPERHET."

Next week's issue, dated August 19th, will be the first of three special numbers of **THE WIRELESS WORLD** dealing with the Olympia Radio Show.

AUG. 26

STAND-TO-STAND REPORT

A detailed, fully illustrated record of the Olympia Show, entirely compiled by the technical staff of THE WIRELESS WORLD from first-hand information collected after the opening of the Show.

SEPT. 2

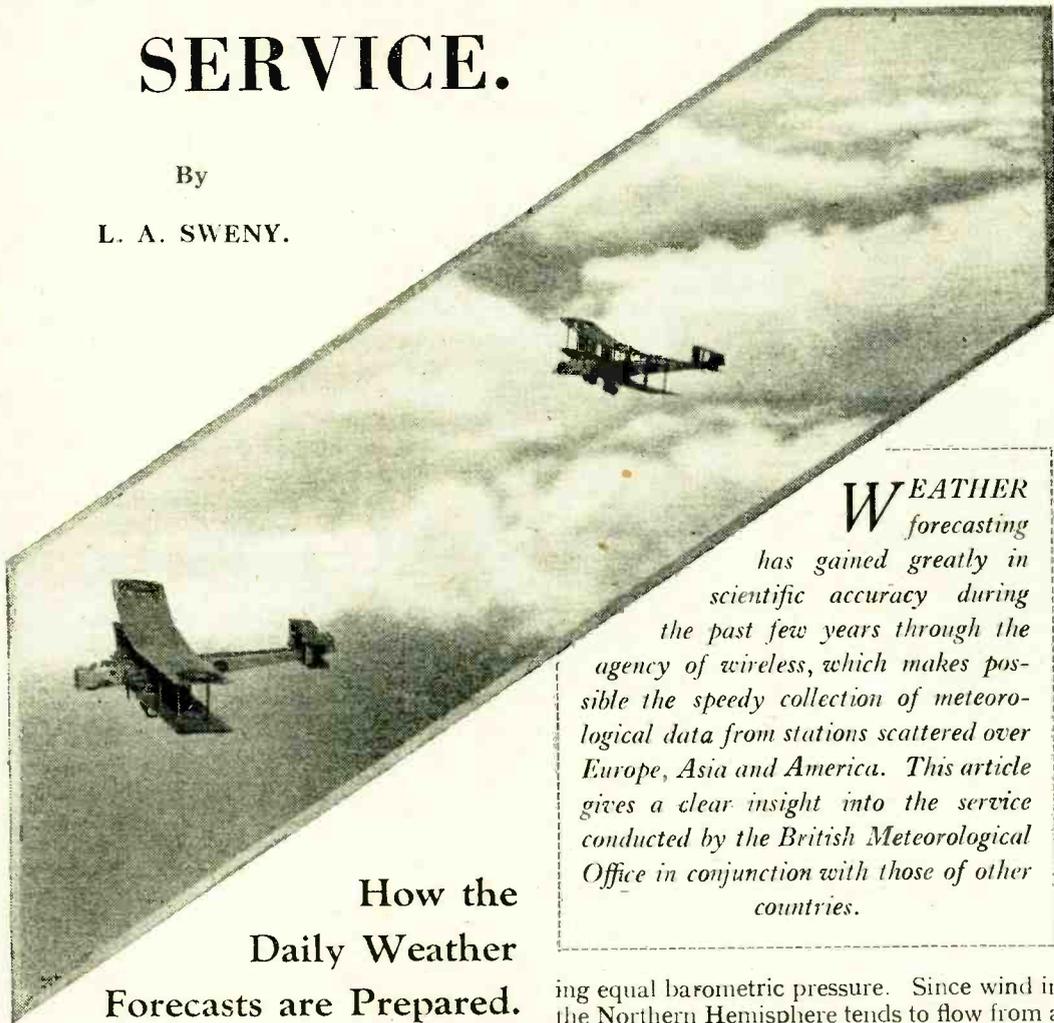
SHOW REVIEW

An issue which will record the progress of the year as revealed by the new products at Olympia, giving detailed information on many of the new products. Fully illustrated.

RADIO AND THE METEOROLOGICAL SERVICE.

By

L. A. SWENY.



W EATHER forecasting has gained greatly in scientific accuracy during the past few years through the agency of wireless, which makes possible the speedy collection of meteorological data from stations scattered over Europe, Asia and America. This article gives a clear insight into the service conducted by the British Meteorological Office in conjunction with those of other countries.

How the Daily Weather Forecasts are Prepared.

OF recent years the daily forecast has only excited comment from the general public when its prophecies have not been fulfilled—sure proof that it is an essential to be regarded in almost the same light as other utility services which, while receiving criticism for their shortcomings, rarely get credit for their part in easing the burden of present-day civilisation.

Accurate weather forecasts depend entirely upon the study of all aspects of the meteorological situation over a large area, and only by the frequent inspection of the fluctuations of pressure, the changes in wind-direction and speed, and the state of the sky can deductions be drawn by the forecaster. A gradual fall in the atmospheric pressure in Southern England, accompanied by a high cloud-sheet and a freshening south-easterly wind, will always precede the issue of a weather forecast from our broadcasting stations announcing rain. The phenomena mentioned above are the outward and visible signs of facts that the meteorologist, by the study of his weather maps, had embodied in the previous evening's "further outlook."

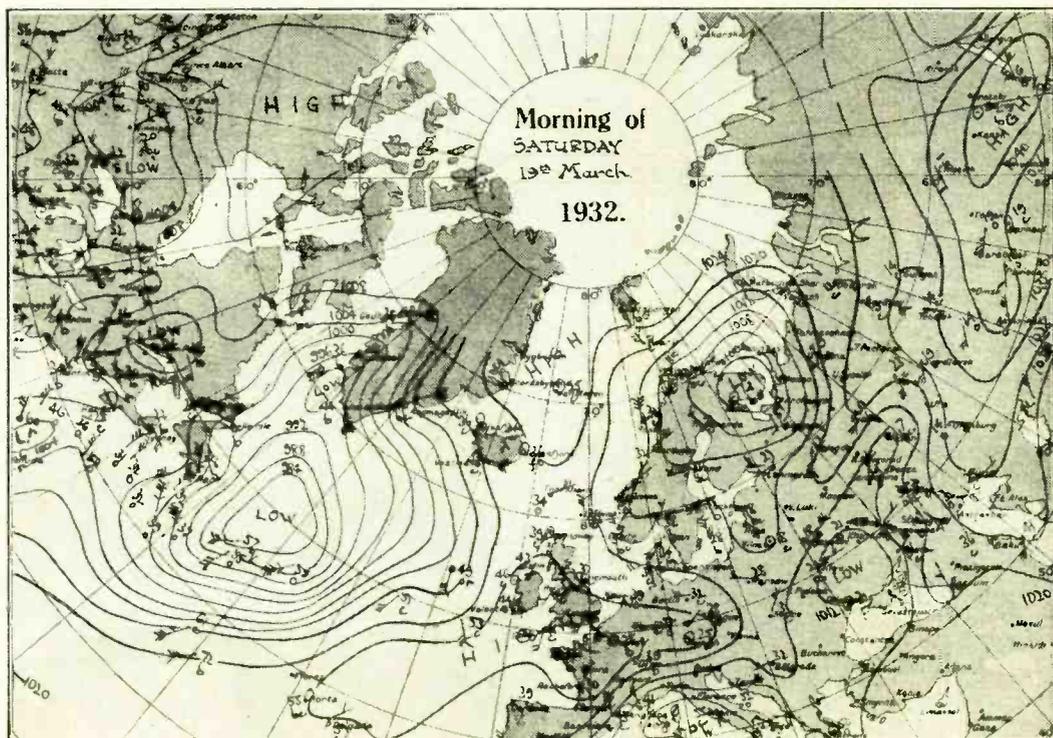
The collection of weather data, i.e., pressure and temperature changes, wind, state of sky and sea, are used by the meteorologist to compile such a map as that illustrated, which is reproduced by courtesy of H.M. Stationery Office. As each report is received, the meteorologist marks the information against the place from which it emanates and gradually joins up by lines those places show-

ing equal barometric pressure. Since wind in the Northern Hemisphere tends to flow from a high-pressure area to a "low," or depression, in a direction approximately parallel to the lines of equal barometric pressure (or isobars), he has a further clue to the position and

identity of the depression, which is again aided by the distribution of general weather, cloud, and temperature. By the study of the sequence of events as disclosed by successive weather maps, depressions are tracked down, their behaviour watched, their direction of travel noted, and their bearing on the prospect of, say, an "outdoor" week-end or a seasonable Christmas deduced. Although we have become accustomed to hearing our loud speakers advertising Iceland as the spiritual home of depressions which always seem to be antagonistic to the anticyclone that dwells near the Azores, it is a fact that although the weather maps now prepared four times a day would, if numbered consecutively from their commencement, exceed 60,000, no two maps exhibit identical features, although there may be general resemblances amongst them. This being the case, the meteorologist is ever striving for more information from more sources in order that he may examine to a greater depth the infinite variety of meteorological expression, and so improve the scope and accuracy of his forecasts.

Twelve Years' Development.

All forms of electrical communication are used in the collection of the data from which the forecasts are compiled, but radiotelegraphy is by far the most important factor in the rapid collection of reports from places many miles apart, and its development in the last twelve years has enabled the meteorological services to obtain information from an increasing number of stations in Europe, Asia, and North America. It is therefore playing no mean part in assisting the meteorologist to forecast more accurately, since the more complete his knowledge of weather changes taking place within a large radius of



A portion of a typical weather chart of the Northern Hemisphere, rapidly prepared in the Meteorological Office at the Air Ministry, London, from wireless and other messages received from observation stations dotted all over Europe and North America. The lines join up those points showing equal barometric pressure.

Radio and the Meteorological Service.

his headquarters the greater are his chances of foretelling the conditions in his own immediate vicinity.

The assistance to be obtained from electrical communication was recognised in 1860, for in that year the Meteorological Department of the Board of Trade commented the daily collection by telegraphy of weather reports from fifteen stations in the United Kingdom as well as from certain places on the Continent.



A wireless operator at the Air Ministry whose duty it is to tune in some forty British and foreign stations each day for the latest weather news. He "tours" the Northern Hemisphere with the aid of the map shown above his instrument.

From 1905 to 1914 the increasing use of radiotelegraphy enabled the meteorologist to cast his net wider, and a daily broadcast was commenced from the Eiffel Tower of the weather conditions at many places on the European Continent. In addition, arrangements were made for weather reports to be transmitted by radiotelegraphy from H.M. ships at sea and Atlantic liners.

A Day-and-Night Task.

Since 1919 the British meteorological radio services have been centred at the Air Ministry, Kingsway, where the Meteorological Office has its headquarters, and here operators are employed all day and night in the collection of reports from meteorological centres in Europe, the Mediterranean, North America, and the U.S.S.R. Transmissions of reports from places in the United Kingdom, Ireland, and Scandinavia are made at various times of the day from this station, which also broadcasts aviation weather forecasts and international collective weather messages.

In order that the meteorologist can frequently obtain as complete a picture as possible of the weather distribution over large portions of the earth's surface, arrangements have been made internationally for observations to be made simultaneously at a great number of stations in the Northern Hemisphere. Each country in the Northern Hemisphere collects simultaneous observations from its own network of stations, and broadcasts them from one or more stations of such power that the transmissions can be received by other countries interested. These are known as the National Synoptic Issues, and it is from the information contained in these transmissions that the weather maps are drawn and forecasts for large areas deduced.

The collection of these reports demands the

employment of a special staff of operators, and at the Air Ministry upwards of fifty transmissions, containing reports from over 500 stations, are received daily from European and adjacent countries. At the busiest hours as many as five receivers are employed simultaneously. In addition to the national synoptic reports, weather messages are taken from America. Reports from places in

Canada, the United States, and the Gulf of Mexico, combined with those transmitted by certain ships in the Atlantic Ocean, are of great importance to the British Meteorological Office, as they indicate the conditions that are likely to spread eastward and eventually affect the United Kingdom.

All the weather information, as it is received, is passed to the Meteorological Office, and from it charts are constructed showing the distribution of atmospheric pressure, temperature, wind direction and speed, and the general weather conditions. By the comparison of a chart with an earlier one the trend of the weather is established and the forecast drawn up.

The weather transmissions made by the Air Ministry consist of:—

(1) The National Synoptic reports which are broadcast by radiotelegraphy on 73.2 kcs. (4,098 metres) eight times a day, and contain observations taken by some seventy-three stations in the United Kingdom, the Faroes, Iceland, Portugal, and ships

at sea, at 0100, 0500, 0700, 1000, 1300, 1600, and 1800 hours G.M.T. The information from which these messages are compiled is received at Headquarters by telegraph, telephone, and radio.

(2) The International Collective Messages sent out four times a day, twice from the Air Ministry on 73.2 kcs. (4,098 metres) and 9,295 kcs. (32.8 metres) simultaneously, and twice from Rugby on 16.01 kcs. (18,740 metres), 19,640 kcs. (15,275 metres), and 9,220 kcs. (32.54 metres) simultaneously.

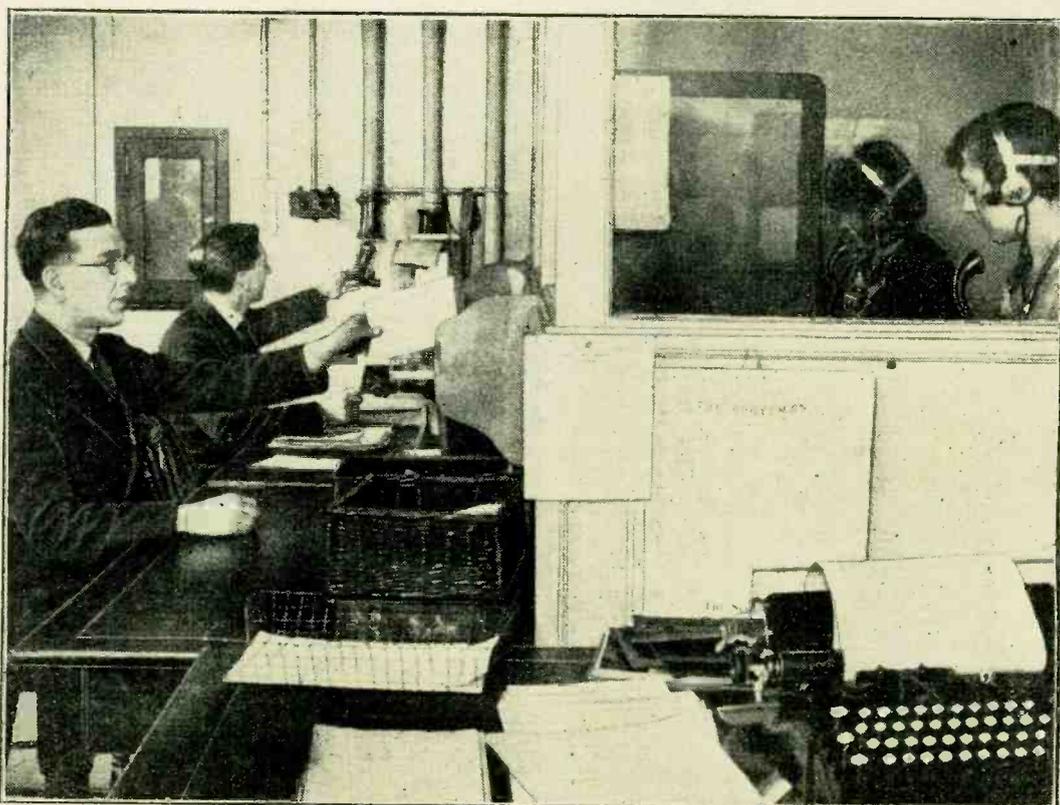
(3) The General Inference, "Weather Shipping," and Forecast messages which are transmitted by Rugby at 0910 and 2118 hours G.M.T. daily on 16.01 kcs. (18,740 metres). These messages contain a plain language statement of the main features of the weather situation in the seas adjacent to the British Isles, and forecasts of wind and visibility for twelve hours for the various areas round the coast of Great Britain. Reports in code from coastal stations are also included.

(4) Aviation weather forecasts for Great Britain and Northern Ireland broadcast in code four times a day. Two forecasts for daylight flying are transmitted at 0615 (0825 hours when Summer Time is not in force) and 1200 hours G.M.T., followed by the prospects for night-flying issued at 1530 hours G.M.T. and the transmission of a forecast for the next day at 1600 hours G.M.T. These messages are sent out on 73.2 kcs. (4,098 metres) by the Air Ministry.

All these messages are prepared for transmission at the Air Ministry W/T Station, being punched on a tape with a Creed machine. The tape is fed through circuits which are connected as requisite by land-line to Rugby or the Air Ministry's own remote high-power transmitters.

Weather News for Ships.

Most of the information contained in the shipping messages broadcast by Rugby is, of course, repeated by Daventry (5XX) for the benefit of fishing and other small vessels which are not provided with the skilled personnel or the necessary apparatus for receiving direct from Rugby. In addition, the shipping messages are also transmitted twice a day by the coast stations at Valentia, Sea-



The Meteorological Office not only receives weather bulletins but transmits them, thus co-operating in an elaborate exchange system. Air Ministry clerks are here seen compiling reports received by telephone from British stations and arranging for their retransmission by wireless for the benefit of observers abroad.

Radio and the Meteorological Service.

forth, Niton and Cullercoats on 500 kcs. (600 metres), special information being added to show the state of the weather at various places within the area served by each station. This service, combined with the issue of gale warnings—which are transmitted in plain language—from the coast stations at Wick, Humber, Niton, Fishguard, Valentia, and Malin Head, provides shipping with the means of obtaining all the meteorological data necessary for safe navigation. Liners from America, South Africa, and India commence to receive the weather shipping messages from Rugby whilst still on the high seas, whilst the trawler man out in the North Sea listens to the same message broadcast from Davenry (5XX).

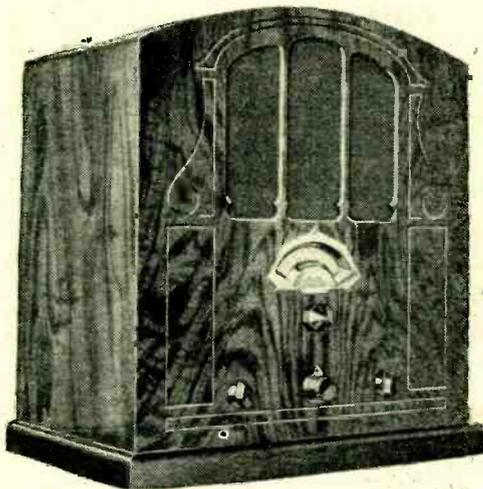
A New Radio Plan.

It has been said that the accurate preparation of all this information depends upon the reception at the Air Ministry of a large number of weather reports from stations in various parts of the world. In order to reduce the amount of reception necessary to obtain the data for the weather map, a plan is in process of execution for the meteorological reports of the most important meteorological observation posts in the Northern Hemisphere to be transmitted by five high-power radio stations, each being responsible for the broadcasting of weather reports from stations in the area served by it. These radio stations have been so chosen that by the reception of a few transmissions the European meteorological centres can obtain complete weather information from America, the Atlantic Ocean, Europe, Siberia, and North Africa. Similarly, the American weather bureaux obtain reports from ships in the Atlantic and stations in Europe and Siberia. At present, five stations are employed in the network, Eiffel Tower, transmitting on both long and short waves, issues reports of West and North-West European, North African, and Eastern Atlantic conditions three times daily; while Königswusterhausen and Hamburg, transmitting simultaneously six times daily on long and short waves respectively, broadcast information received from meteorological stations in Northern, Central, and South-East Europe. Moscow is responsible for the issue of Russian and Siberian reports, and the American and Western Atlantic data is broadcast by Annapolis. Rugby is responsible for the transmission of the European and Eastern Atlantic conditions to America. Later, another high-power radio station situated in South-Eastern Europe will be brought into the organisation.

The Continental air services from this country have their own meteorological centre at Croydon. To the data received at the Air Ministry station is added information from the aviation weather centres in France, Belgium, Holland, and Germany. A special organisation exists at Croydon for the radio reception of reports at half-hourly intervals during flying periods from these countries. Similarly the weather conditions in South-Eastern England are broadcast by Croydon at five and thirty-five minutes past each hour. The reports as received are distributed to the control tower, and so complete and up-to-date information about the weather on the air routes from England to the adjacent Continental centres is always available to pilots.

IN NEXT WEEK'S ISSUE

**Wireless World
Baby Superhet.**



Showing the four controls and speaker grille.

A SELF-CONTAINED four-valve superheterodyne with built-in moving-coil loud speaker, metal rectifier for H.T. supply from A.C. mains, and electrolytic smoothing condenser to ensure hum-free operation with a minimum of equipment. An input band-pass filter precedes the new self-neutralised pentode single-valve frequency changer, and its tuning condensers are ganged to that controlling the oscillator circuit, giving single control operation over both wavebands. A total of four tuned

**An Inexpensive 4-Valve
Superheterodyne of
Exceptional Performance.**

circuits is employed in the intermediate frequency amplifier, in which a variable-mu valve is used, and as the band-pass principle is partially adopted high selectivity is obtained with moderate sideband cutting. The grid detector is arranged to permit the connection of a gramophone pickup, and is transformer-coupled to a pentode output valve delivering some 1,500 milliwatts to the loud speaker.

Tone Correction.

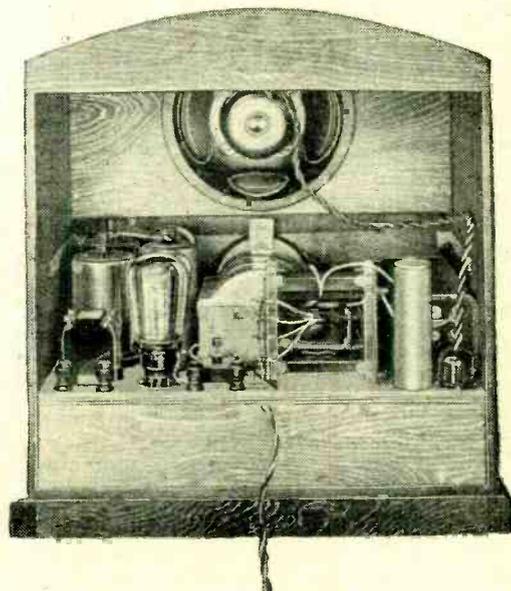
Automatic tone correction to compensate for the sideband cutting of the intermediate frequency circuits is secured in the output stage, and a high standard of quality is ensured without a sacrifice of selectivity. The sensitivity is adequate for the reception of the majority of worth-while Continental transmissions, and the number of controls has been reduced to four—the tuning control, the wave-change switch, the radio-gramophone switch, and the combined volume control and mains on-off switch.

LIST OF PARTS.

After the particular make of component used in the original model, suitable alternative products are given in some instances.

- 1 Three-gang superhet condenser (Polar "Star")
- 1 Dial (Cydon "Sector Vision" type V.D.)
- 1 Set of Coils (Colvern Type K.B.L.C. ganged, for under baseboard mounting, with 1 Type K.53.)
- 2 I.F. Transformers, 110 kc. (Wearite Type W.W.I.F.)
- 1 Wire-wound volume control, 15,000 ohms and mains switch (Wearite Type Q.V.C. and C.40)
- 1 Switch (Wearite C.40)
- 1 Mains transformer for H.T.9 rectifier with 4 volts 4 amps. C.T. secondary, and primary 200-250 volts (Junit Type W.H.T.9S)
- 1 H.T.9 rectifier (Westinghouse)
- 5 5-pin valve holders, sub-base type with terminals (Clx) (Eddystone.)
- 1 Electrolytic condenser, 8 mfd. (T.C.C. Type 802)
- 2 Fixed condensers, 4 mfd., 800-volt D.C. test (T.C.C. Type 80)
- 3 Fixed condensers, 1 mfd., 500-volt D.C. test (T.C.C. Type 65)
- 4 Fixed condenser, 2 mfd., 500-volt D.C. test (T.C.C. Type 65)
- 1 Fixed condenser, 1 mfd., 400-volt D.C. test (T.C.C. Type 50)
- 4 Fixed condensers, 0.1 mfd., 400-volt D.C. test (T.C.C. Type 50)
- 1 Fixed condenser, 0.0001 mfd. mica (T.C.C. Type 34)
- 1 Fixed condenser, 0.005 mfd. mica (T.C.C. Type 34)
- 1 Semi-fixed condenser, 0.0001/0.00001 mfd. (R.I. "Varicap No. 2")
- 1 Semi-fixed condenser, 0.002/0.0005 mfd. (R.I. "Varicap No. 8")
- 4 Ebonite Shrouded terminals, Aerial, Earth, and two Pick-up (Belling-Lee Type "B")
- 2 Metallised resistances, 1 watt, 250,000 ohms (Dubilier)
- 1 Metallised resistance, 1 watt, 50,000 ohms (Dubilier)
- 3 Metallised resistances, 1 watt, 20,000 ohms (Dubilier)
- 1 Metallised resistance, 1 watt, 15,000 ohms (Dubilier)
- 1 Metallised resistance, 1 watt, 1,000 ohms (Dubilier)
- 1 Metallised resistance, 1 watt, 500 ohms (Dubilier)
- 2 Metallised resistances, 1 watt, 250 ohms (Dubilier)
- 1 Metallised resistance, 3 watts, 25,000 ohms (Dubilier) (Claude Lyons, Ltd.)
- 1 L.F. transformer, 5:1 ratio (Varley "Nictet" D.P.22)
- 1 Valve screen, open top type (Colvern)
- 1 5-pin plug (Bulgin P.3)
- Screened sleeving (Goltone)
- (Lewcos, Harbros.)
- 1 Loud speaker, 2,500-ohm field, Pentode transformer and hum-bucking coil (Rola F.P. 2,500)
- (Magnavox Model 142.)

- 1 Cabinet (Camco "Empire")
- 1 Plymax base, 15 1/4 in. x 10 in. x 3 in.; 2 Pieces 3 in. ply wood, 9 1/4 in. x 3 in.; 1 Piece 3 in. ply wood 15 1/4 in. x 3 in.; 1 Piece 16 gauge aluminium 15 1/4 in. x 3 in. (Peto-Scott)
- Flex, tinned copper wire, screws, systollex, etc.
- Valves
- 2 Mazda AC/Pen, 1 Marconi VMS4, 1 Mullard 354V. (2 Marconi MPT4 or Osram MPT4, Osram VM84 or Mazda AC/S1VM, Mazda AC/HL or Marconi MH4 or Osram MH4.)



Rear view of the Baby Superhet. On the right can be seen the electrolytic condenser which greatly assists in smoothing.

THE DESIGN OF SINGLE-LAYER COILS.

Simplified Calculations for Close-wound Inductances.

By R. T. BEATTY, M.A., B.E., D.Sc.

LET us suppose that we have a paxolin tube of 2 inches diameter and some 28-gauge wire, double cotton covered, and that we wish to make a coil of 200 microhenrys inductance for a high-frequency tuned circuit. How many turns are required? The answer depends on the length of the coil.

If we decide on a coil one inch long, then we find from Radio Data Charts, abac 17, that 62 turns are needed. But since, even with close winding, only 40.2 turns of this particular wire can be wound in a length of one inch (see Table A), no such coil can be wound.

Let us therefore try again, making the coil 3 inches long. We now find from the abac that 87 turns are required. Hence, in order to get the length right, the turns must be spaced, for close winding would give $40.2 \times 3 = 121$ turns.

Making the Chart.

By repeated trials we could, of course, find the turns and corresponding length so that close winding would give the correct result. But it is preferable to have a chart which gives the answer directly, and such a chart is given in this article.

The basic formula from which the chart has been constructed is $L = SD^2n^2$, where $L =$ microhenrys,

$D =$ diameter of coil in inches,*

$n =$ turns per inch,

$S =$ shape factor depending on ratio of length to diameter of coil.

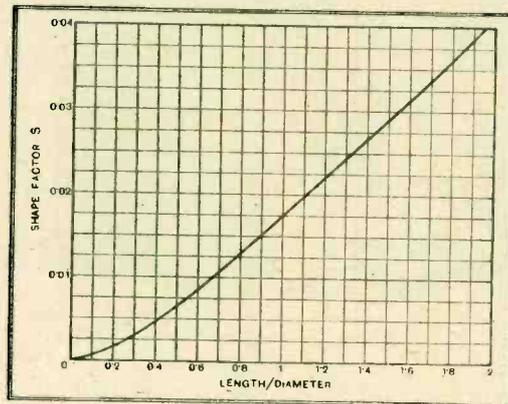
The first operation, as shown in the

TABLE A.

Standard Wire Gauge.	Turns per inch.			
	Enamel.	Double Cotton.	Single Silk.	Double Silk.
20	26.1	21.7	26.3	25.3
21	29.4	23.8	29.4	28.2
22	33.3	26.3	33.3	31.8
23	38.8	29.4	38.5	36.4
24	42.1	31.3	42.1	40.0
25	46.0	33.3	46.0	43.5
26	50.6	35.7	50.6	47.6
27	55.9	37.9	55.1	51.6
28	61.4	40.2	60.4	56.2
29	66.2	42.4	65.2	60.2
30	73.3	44.7	72.0	67.1
31	77.8	46.3	76.3	70.9
32	83.0	50.5	81.3	75.2
33	88.9	52.6	87.0	80.0
34	98.0	54.9	93.4	85.5
35	106	61.0	101	91.8
36	116	64.1	110	102
37	128	67.6	121	110
38	143	71.4	133	121
39	168	75.8	149	134
40	180	78.1	159	142

* Diameter of coil = diameter of former + diameter of wire.

skeleton inset, divides L by D^2 . Then on returning from right to left we divide by n^2 , thus obtaining the shape factor S . Actually no scale of S appears on the chart, but it was placed there temporarily when the chart was being constructed, and by joining corresponding values of S and



Curve giving length/diameter of coil and shape factor S . This assists in the construction of the abac shown on the next page.

length/diameter a set of lines was obtained from which a curve was drawn to touch all the lines. Accordingly the third operation is to draw a line touching this curve and

TABLE B.

Standard Wire Gauge.	Diameter in thousandths of an inch.			
	Enamel.	Double Cotton.	Single Silk.	Double Silk.
20	38	46	38	39
21	34	42	34	35
22	30	38	30	31
23	26	34	26	27
24	24	32	24	25
25	22	30	22	23
26	20	28	20	21
27	18	26	18	19
28	16	25	17	18
29	15	24	15	17
30	14	22	14	15
31	13	22	13	14
32	12	20	12	13
33	11	19	11	12
34	10	18	11	12
35	9	16	10	11
36	9	16	9	10
37	8	15	8	9
38	7	14	7	8
39	6	13	7	7
40	6	13	6	7

giving the required value of length/diameter. Then total turns = length/diameter \times diameter \times turns per inch.

Example.

A zin. former of circular section is available, and a reel of 30-gauge enamelled wire. How many turns are required to produce a coil of inductance 755 microhenrys?

Table B shows that the diameter of this wire is 0.014 inch, while Table A gives 73.3 turns per inch corresponding to close winding. Hence

Inductance = 755 microhenrys,

Coil diameter = 2.014 inches,

Turns/inch = 73.3.

Accordingly we find from the chart that length/diameter = 0.99.

Hence total turns = $0.99 \times 2.014 \times 73.3 = 146$.

NEW "ETA" S.G. VALVE

THE range of "ETA" valves, distributed by the Electrical Trading Association, Ltd., Aldwych House, Aldwych, London, W.C.2, has been augmented recently by the addition of a new indirectly heated screen-grid valve for A.C. operation, and styled the D.W.7. Its nominal characteristics are:—

A.C. resistance 200,000 ohms,

Amplification factor 600,

Mutual conductance 3 mA/V,

when measured with 100 volts on the anode, 75 volts on the screen and zero grid bias.

The heater requires 4 volts at 1 amp., and under normal conditions it operates with 200 volts on the anode, 80 volts on the screen, and a grid bias of between -1.5 and -3 volts; the average anode current being of the order of 5 mA.

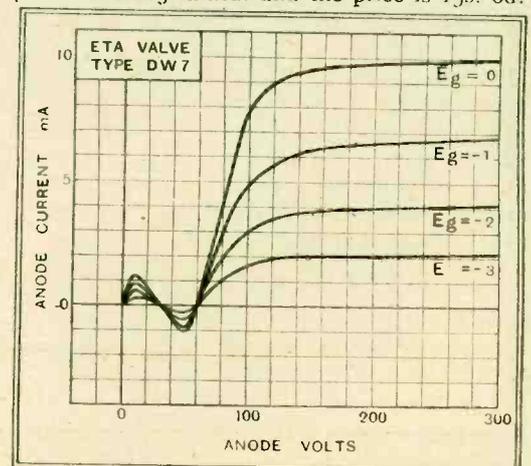
Tested in a typical three-valve receiver fitted with one H.F. stage and a tuned-grid circuit the valve gave exceptionally good results, and in view of its high amplification the precaution was taken of enclosing it in a metal screen.

A slight reduction of the screen voltage may be necessary in certain cases to obtain perfect stability at the lower end of the medium wave-band, and if a potentiometer is used for this purpose it will serve, also, as a volume control. Incidentally, volume can be controlled satisfactorily by over-biasing the valve, using a variable resistance in series with a 500-ohm fixed resistance to provide the optimum grid bias when the control is set to the position for maximum volume.

The anode-to-grid capacity of the valve is given as 0.005 mmfd. and the price is 15s. 6d.

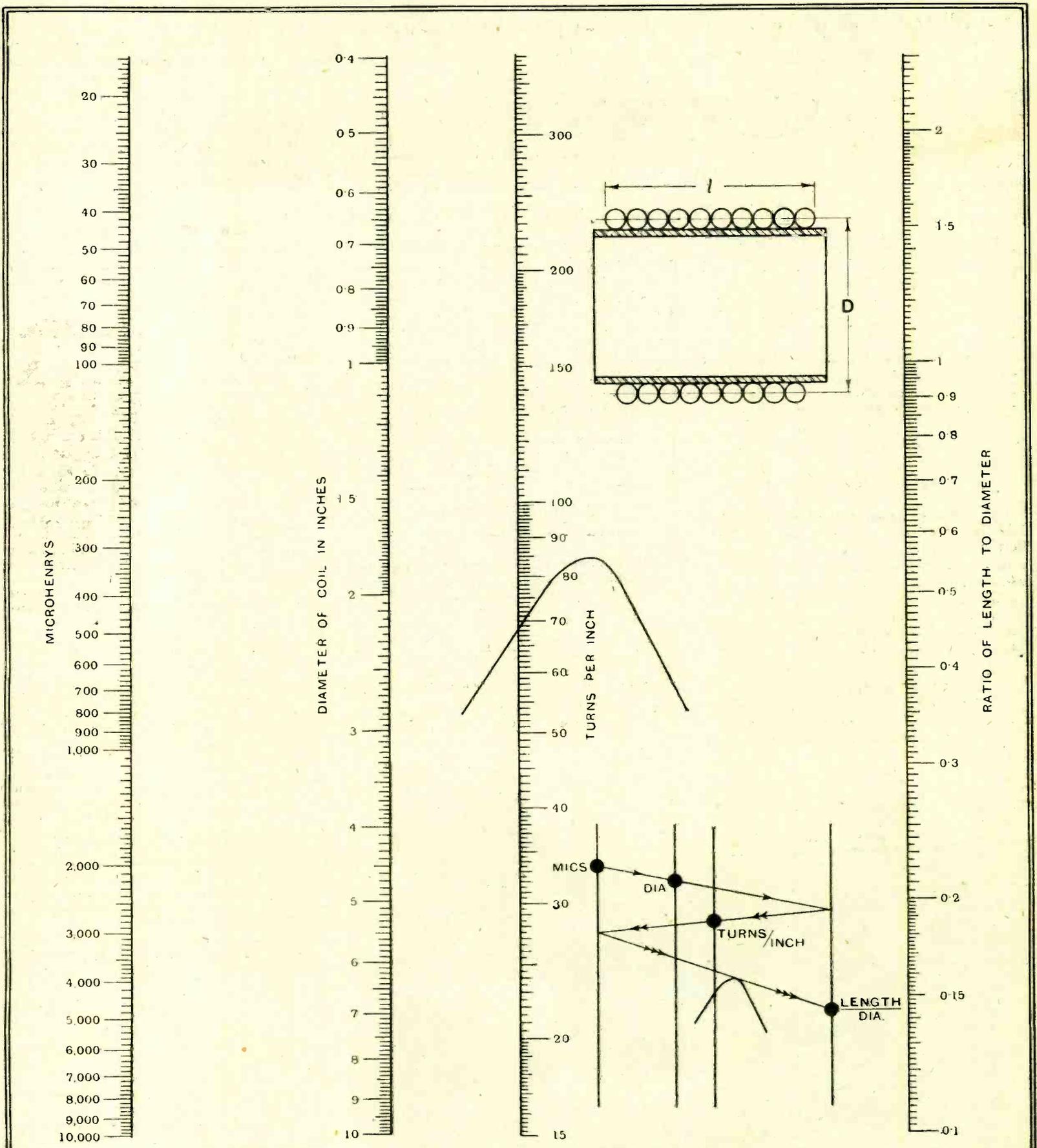


New "ETA" indirectly heated screen grid valve, Type D.W.7.



Anode current-anode voltage curves of "ETA" D.W.7 indirectly heated screen-grid valve.

CHART FOR CLOSE-WOUND TUNING COILS



SELF INDUCTANCE OF SINGLE LAYER COILS OF CIRCULAR SECTION

This time-saving abac gives the necessary data for winding tuning coils of any inductance and diameter having turns touching.

News of the Week



Current Events in Brief Review.

Prosecuting a Private Listener.

A PRECEDENT seems to have been created by the Hereford Bench in fining Wallace Ollerhead, a local dentist, 10s. for operating a wireless set at his house in Castle Street, and thereby causing a nuisance to other residents. Evidence was given that the loud speaker was exceptionally loud, and Councillor Mrs. E. E. Harris, who resides close by, said that it had kept her awake at night.

Hitherto prosecutions concerning noisy loud speakers have been limited to cases of noisy instruments used on commercial premises. It will be interesting to see whether the action of the Hereford Bench in fining a private resident goes unchallenged.

Paris Opera from "Radio Paris."

LISTENERS to Radio Paris are promised the privilege of hearing performances from the famous Paris Opera House, as the result of a special agreement providing for ten relays from this famous musical centre before the end of the year. We learn that the arrangement is part of a general scheme for broadcasting the Paris Opera from all the French National stations.

I.F.S. Radio Show.

THE Irish Wireless and Gramophone Radio Show is to be held in the Mansion House, Dublin, from September 19th to 24th next.

German Stations Attacked.

BROADCASTING stations are now the recognised butt of excited crowds. During the extremely hectic weeks preceding the German elections persons attempted to upset one of the aerial masts at the Langenberg broadcasting station, but were discovered in time by the police watch. They were able to escape unrecognised.

On the Saturday night preceding the elections an attempt was made to set fire to the Breslau broadcasting station. Stones were thrown at the transmitter valves. Here again the men managed to escape unseen. The damage was not considerable and broadcasting was not interrupted.

Coalmine Wireless.

A WIRELESS aerial may soon become a common sight at every pithead as the result of the enterprising experiments now being conducted at the Manor Haigh and Roundwood Collieries, near Wakefield. Wireless apparatus has been installed for humanitarian as well as commercial purposes. A telephony transmitter and receiver at the pithead maintains communication with transmitters and receivers installed far underground in different sections of the pit. It is hoped to make the arrangement permanent.

Soviet Radio Plans.

WHAT is the truth about Russian broadcasting? Official news from Russia on this point is not easily available, which lends special interest to a communication we have received from the Press Service of the Soviet Union Year Book. It is stated that at the beginning of this year the broadcasting system of the Soviet Union consisted of "55 wireless stations and 57 transmitters of an aggregate capacity of 901.9 kW." During the present year the Soviet Union will build another 44 broadcasting stations with an aggregate capacity of 380 kW. These figures, it is stated, include both new construction and work to be completed under the 1931 plan. Among the stations to be completed this year must be mentioned the 200 kW. transmitters now under course of construction at Kiev, Misk, and Sverdlovsk.

We look in vain for any mention of a desire among Russians to join the International Broadcasting Union.

New York "Radio" Show.

THE possibility that radio will take second place in the annual New York Radio Show is now definitely mooted, according to our New York correspondent. This year the show, which will be held from September 16th-24th, will be under different auspices, with the result that electrical refrigerators and other homely appliances will probably be featured just as prominently as the radio sets themselves.

The first intrusion of non-radio appliances began several years ago. Last year the non-radio appliances began to invade the main floor at Madison Square Garden.

Gen. Saltzman's Retirement.

MAJOR-GEN. CHARLES MACKINLEY SALTZMAN has created some surprise in American Radio circles by his sudden resignation from the chairmanship of the Federal Radio Commission. The reason given is that of ill health.

Gen. Saltzman, who was 60 last October, was appointed to the commission in 1930 after his retirement as chief signal officer of the army. When his appointment was being considered by the Senate, it was found that he held large interests in companies engaged directly or indirectly in the communication fields. At the request of the Senate he disposed of the stock. This was regarded as a "lucky break" for him, for shortly afterwards, says our Washington correspondent, the bottom dropped out of the market!

Mr. Nikola Tesla.

ONE of the more picturesque of American radio inventors is Mr. Nikola Tesla, inventor of the Tesla coil and other radio power transmitting devices, who has just celebrated his seventy-sixth birthday in New York City. Mr. Tesla, who received many congratulations, told his interviewers that he was at work on a "new and startling invention," the nature of which he would not disclose.



SCHOOL WIRELESS IN THE FIELD. At the public school cadets' annual training camp in Cirencester Park the wireless section is provided by Stourbridge School. The picture shows the transmitter and receivers constructed by the cadets.

A Tale of a Map.

APPARENTLY French Colonial broadcasting suffers from the circumlocutory methods so often associated with our own Whitehall. The latest story in this connection is that the officials at the Colonial short-wave station in Paris required a map of Western Africa, and asked for it in a letter addressed to the West African office in the Palais Royal. A reply was received stating that the request was being transmitted to the Governor at Dakar.

The Old Dispute.

FOOTBALL authorities in all countries seem to be at loggerheads with the broadcasting organisations. The latest feud of the kind is reported from Scandinavia, where the football federation asks a fee of the broadcasting companies for the privilege of giving running commentaries on matches played in Sweden and Denmark. We understand that the dispute is still raging.

The Canary Question.

OUR Paris correspondent reports that ornithologists are considering a campaign against the use of loud speakers at open windows. It appears that canaries and other caged birds all over the French capital now perch silent and sullen, having given up attempting to "beat" the loud speaker and have the last note.

The Poulsen Telegraphone.

AN American counterpart of the Blattner-phonograph is about to be introduced under the name of "Telegraphone," according to our Washington correspondent. The device uses magnetised wire instead of steel tape, and is said to cover an unusually wide tonal range.

Basic patents on the Telegraphone have been issued to Waldemar Poulsen, of Copenhagen, whose Poulsen arc was, of course, one of the most important developments in early long-distance radio transmissions. Actually the device is not new, having been used on German submarines during the war, but since then legal disputes have held up its development.

Besides its use in connection with broadcasting the Telegraphone will probably be employed for office dictation, telegraphy, telephony and home recording.

Tuning by Eye.

A SMALL needle swinging back and forth over a narrow arc is much more accurate than the human ear when tuning to the position for best reception. Trained sound experts are the only persons capable of tuning receivers by tone. The average radio user is not a judge of accurate reproduction. It is better for him to trust implicitly to a visual indicator." These (writes our New York correspondent) are the opinions of Ray H. Manson, Chief Engineer of the Stromberg-Carlson Co., and former President of the Institute of Radio Engineers.

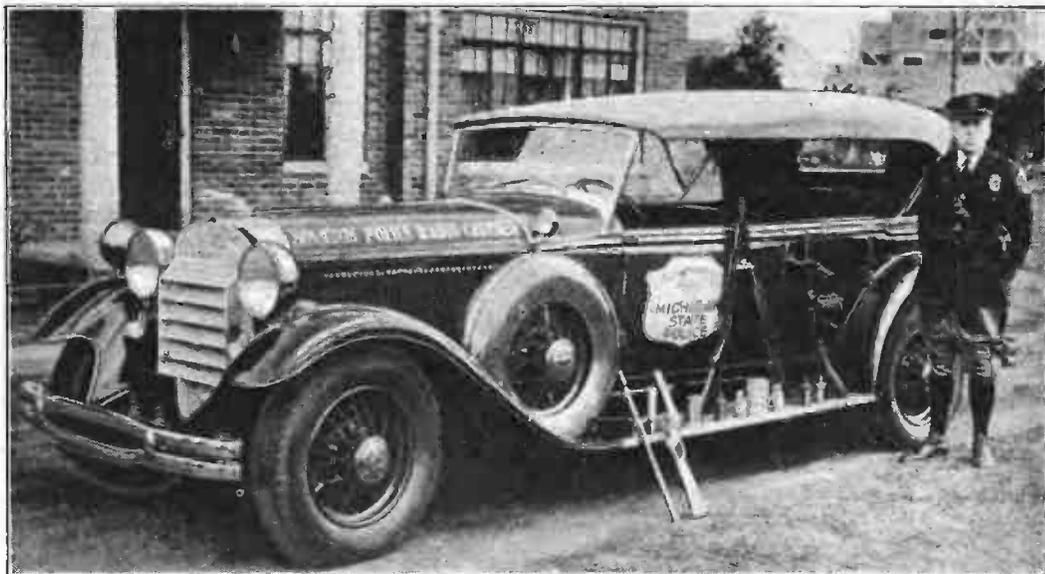
Mr. Manson points out that the need for a visual tuning indicator has arisen because the automatic volume control of the modern (American) receiver raises the sound output automatically to the level set by the volume control knob and holds this level for an appreciable movement of the tuning dial. There is no peak of maximum loudness to indicate when the receiver is tuned to exact resonance, as is the case in a receiver having manual volume control only.

Failure to obtain exact resonance with automatic volume control receivers results in distortion, and when no tuning meter is provided, quality of tone rather than loudness is the only method whereby correct tuning can be determined. But nowadays aren't we all "trained sound experts"?

Reveillé by Wireless.

THE B.B.C. might take a hint from the French postal authorities who, according to our Paris correspondent, have inaugurated a "wake me early" service for telephone subscribers. At an hour arranged, a two-minute ring is given on the 'phone.

A similar service could easily be rendered by broadcast. By means of a time switch the British listener could contrive that his set should become "alive" at, say, 6.25 a.m.; at 6.30 a.m. the voice of the announcer would gently call the sleeper back to reality without that brutal harshness usually associated with the ordinary alarm clock.



RADIO v. GANGSTERS. Uncle Sam's newest gangster chasing car, as used by the Michigan State Police. Two receivers, long- and short-wave, are employed. On a recent night, we are told, radio messages from headquarters assisted in securing seventeen arrests.

World's Champion Listener?

IN the absence of any superior claim we feel inclined to "hand it" to Mr. Chesley B. Pickle, a Hawaiian radio amateur, who has reported to the American Radio Relay League the logging of 1,296 amateur stations in nearly sixty countries in the world.

The A.R.R.L. computes that if all this listening had been done in one stretch, about six weeks of work would have been accomplished—provided not one minute was lost!

We seem to remember the claim of a Cardiff woman never to have missed any item broadcast by the B.B.C., but that was some years ago.

All About "Ekco."

FEW commercial histories have been more spectacular than that of E. K. Cole, Ltd., manufacturers of "Ekco" all-electric radio, whose start in 1925 in two small rooms led eventually to the construction of the great Southend factory with a floor space of 175,000 square feet and 2,000 employees.

The history of the achievement is set forth in a bright little brochure issued by the firm and available, we understand, on application. The story is told, with illustrations, from the time when the firm's capital was £50 to the point when the figure reached £400,000.

Busy Days in Toulouse.

RADIO-TOULOUSE, which prides itself on being one of the most "sportive" of French stations, will, on Monday next, August 15th, broadcast the great car rally organised by the Automobile Club du Midi. On Sunday, August 28th, the station will superintend a great radio rally for the watering places in the

South of France. The station will give not only a running commentary on the proceedings, but suitable music for reproduction on public address loud speakers.

4,043 Risk Solitary Confinement.

PROBABLY the strictest country in the world in the matter of wireless licences is Bulgaria, where not only a fine but a year's solitary confinement can be meted out for failure to pay the annual fee of about 7s. 6d. Nevertheless, we learn from Sofia that although 3,957 sets were licensed at the end of last year, at least 8,000 sets are believed to be in operation.

German P.O. "Takes Over."

THE German Post Office has decided, probably wisely, to take over the detection of man-made static, which has hitherto been conducted by armies of enthusiastic amateurs. According to our Berlin correspondent, the Post Office is fully organised for the work, and no additions will be required to the official staff. The net result of the new move is that a keen body of amateurs now sigh for other worlds to conquer. Possibly they may take over the chase for pirates, or, as they are known in Germany, "black-hearers."

During the first half of this year the "Funkhilfe" amateur organisation referred to received 53,000 applications from listeners, and of these 49,000 proved to be actual cases of electrical interference. In 33 per cent. of the cases domestic electric motors were the cause; medical high-frequency apparatus was responsible for 28 per cent., while a further 5 per cent. were caused by electric power works. In 12 per cent. of the cases the disturbances were located in the actual receiving set; only in 8 per cent. of the cases was no cause of interference found.

Interference was eliminated at the source in 67 per cent. of the cases, while alterations in the receiver proved effective in another 25 per cent.

The average cost of tracking and eliminating interference in each case was between 5s. and 7s. 6d.

The Wireless World Index and Binding Cases.

THE index for Volume XXX., January to June, 1932, is now ready, and may be obtained from the publishers, price 4d., post free, or with binding case, 3s. 1d., post free.

THE VARLEY SQUARE PEAK 3.

A Three-Valve A.C. Transportable.



A WIRELESS receiver is no longer accepted solely upon the grounds of its electrical performance, for it has come to be regarded, if not as an article of furniture, at least as an object whose appearance must harmonise with the furnishing of the room in which it is to be used. Where so many sets of good performance, and of an approximately equal price, are available, therefore, the final choice often rests largely upon their appearance.

The designers of the Varley Square Peak 3 are to be congratulated in having secured a high electrical efficiency with a most pleasing appearance for the complete apparatus. The cabinet work is of good quality and exceptionally well finished, and the walnut shade adopted tones well with almost any furnishing scheme. The overall dimensions, moreover, are small enough to allow of the set being unobtrusive in even the smallest of modern rooms. The receiver is completely self-contained, and requires only an aerial, earth, and a mains point for its operation; it is readily transportable, for it is fitted with a disappearing carrying handle, and so can be moved from room to room at a moment's notice.

An examination of the receiver reveals the closest attention to detail throughout the design. Not only is there a disappearing carrying handle, but fitted to the rear of the cabinet are clips over which the mains flex can be wound when the set is not in use. An unusual point is also to be found in the means for connecting an external loud speaker, for this is not arranged merely for use as well as the internal speaker, but can be employed as a true alternative if desired. Thus either the internal or the external speaker may be used alone, or both together, for the internal speaker circuit can be broken by the movement of a switch.

The Circuit.

The circuit diagram shows that the three receiving valves are employed in the popular combination of a screen-grid H.F. amplifier, a power-grid detector, and a pentode output stage, while a fourth valve is used to rectify the alternating mains current for the H.T. supply. Every circuit is thoroughly decoupled, and the field winding of the

moving-coil speaker acts as a smoothing choke, and thereby derives its energisation. In all cases the grid bias is obtained by the well-tried method of including resistances in the valve cathode leads, and the screen voltage of the H.F. valve is obtained from a potentiometer, which serves also to maintain a load on the mains equipment while the valves are warming up.

The H.F. valve is preceded by two tuned circuits dual-capacity coupled to form a constant peak separation band-pass filter; this dual-capacity coupling, of course, takes the form of a common high-capacity condenser

The detector is transformer-coupled to the pentode output valve, which is, in turn, transformer-coupled to the moving-coil loud speaker, and is provided with the usual compensating circuit. The mains equipment follows standard practice, and the speaker field is used as a smoothing choke in conjunction with high-capacity electrolytic condensers. Fuses are provided in the mains circuits.

Results.

On test, the sensitivity proved adequate for all normal purposes, and good reception of Langenberg was possible in daylight without unduly forcing reaction. The sensitivity, moreover, was well maintained over the whole of both wavebands. At a distance of nine miles from Brookmans Park the selectivity was sufficient to allow of interference-free reception of stations on wavelengths higher than that of the Midland Regional, and lower than that of Fécamp. Between these two points the London transmitters were inclined to blanket the weaker foreign stations, but no trace of mutual interference between the London stations themselves could be found. On the long waveband practically every station was available with the exception of Königswusterhausen, which is in the unfortunate position of being sandwiched between Daventry National and Radio Paris.

The quality of reproduction is well balanced, and the bass is well reproduced considering the small baffle area of the cabinet. Excellent volume is obtainable, and the speaker fitted is evidently of a sensitive type. Mains hum can be heard during intervals in the transmission, but is not noticeable during modulation.

FEATURES.

General.—Self-contained three-valve set with built-in moving-coil loud speaker, and provision for additional or alternative use of external speaker. For 200 to 250 volts A.C. mains.

Circuit.—Screen-grid H.F. stage preceded by constant peak separation band-pass filter, and tuned grid coupling to power-grid detector with reaction. Provision for gramophone pick-up to be connected to the detector, which is transformer coupled to the pentode output valve delivering some 2,000 milliwatts to the speaker. H.T. supply by valve rectifier with speaker field acting as smoothing choke.

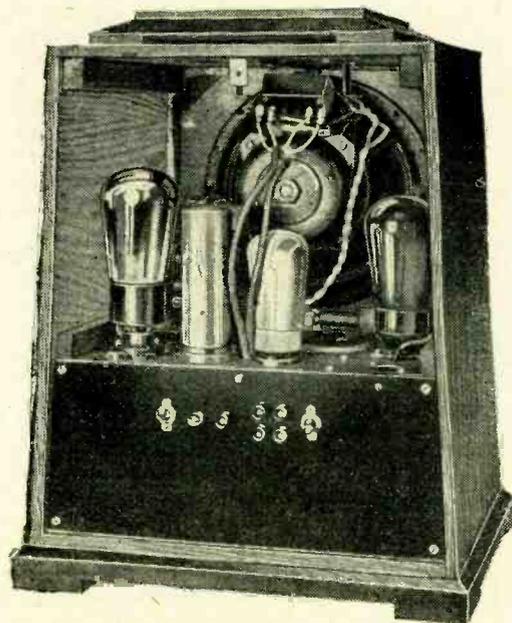
Controls.—(1) Single-knob tuning with station calibrated and illuminated scale. (2) Wave-range switch. (3) Reaction. (4) Volume control by variable resistance between aerial and earth. (5) Mains on-off switch. (6) Switch for breaking internal speaker circuit.

Price.—17 guineas.

Makers.—Varley Ltd., Kingsway House, Kingsway, W.C.2.

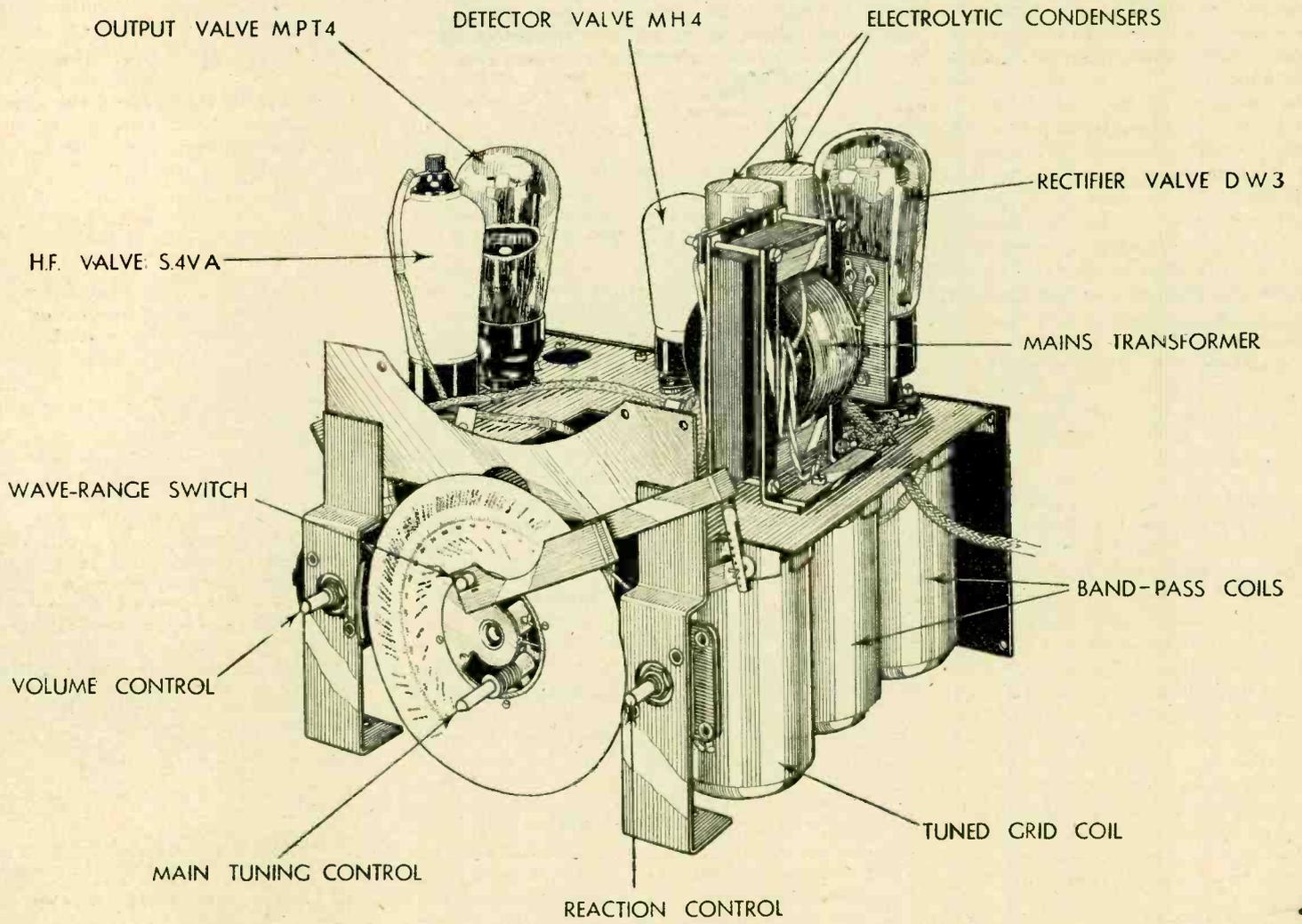
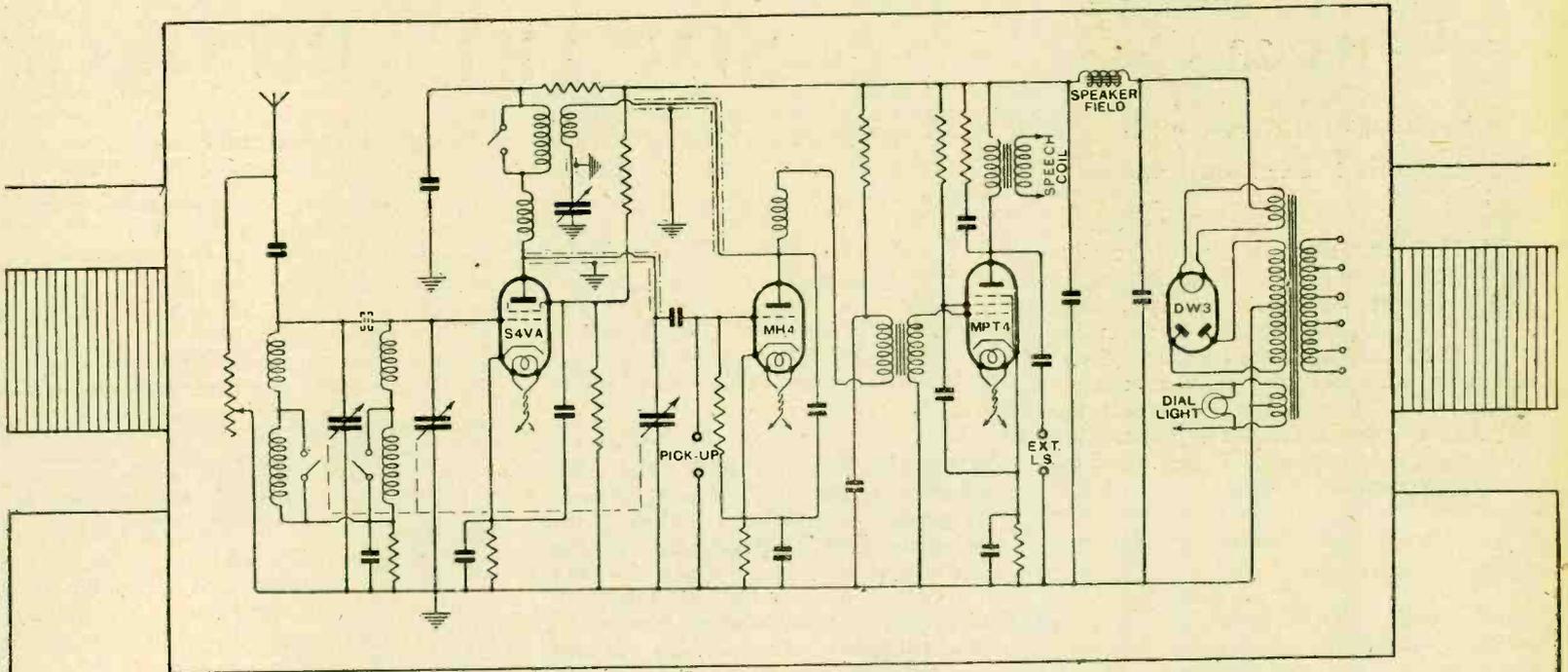
at the low-potential ends of the circuits, and a very small coupling capacity at the high-potential ends. The aerial is coupled to the primary filter coil through a small-capacity condenser, and a variable resistance connected between the aerial and earth terminals acts as a pre-H.F. volume control to avoid overloading and distortion on strong signals.

These circuits are tuned by two sections of the three-gang condenser, the third of which tunes the tuned-grid intervalve coupling. Reaction is provided from the anode circuit of the detector, and it is interesting to note that straight reaction is preferred to differential. Each tuned circuit is individually screened with built-in wave-range switches which are linked together and operated by an ingenious series of levers by the movement of the tuning-dial escutcheon. This is a most unusual method, and one which has much to commend it. The escutcheon slides vertically and operates the wave-change switch; at the same time, however, different surfaces on the illuminated wavelength scale are exposed for the two wavebands. There is thus no possibility of error arising as to the waveband actually in use.



Showing the compactness and clean layout of the receiver.

CIRCUIT AND CHASSIS DETAILS OF THE VARLEY SQUARE PEAK THREE.



The complete receiver chassis, showing the principal components.

WIRELESS ENCYCLOPEDIA

No. 23

Brief Definitions with Expanded Explanations.

KIRCHHOFF'S two laws of the electric circuit come next in importance to Ohm's law; in fact, taken together, they amount to an extension of Ohm's law to more complicated circuits with branches and internal electromotive forces. Ohm's law states that the current in a simple resistance is proportional to the applied or impressed E.M.F., and inversely proportional to the value of the resistance. If E is the electromotive force in volts applied to a resistance of R ohms, the current is given by $I = \frac{E}{R}$ amperes.

Now, when a circuit is divided up into branches and closed loops, themselves containing internal electromotive forces, Ohm's law is not sufficient to enable the circuit to be solved—that is, to enable the currents in the various parts to be calculated. In the first place, it is essential to know the conditions existing at a point where currents divide and meet at a junction of wires or conductors in a circuit. This information is given by Kirchhoff's first law, which states that the algebraic sum of all currents meeting at a point is zero. This means that, taking currents approaching the junction as positive and those leaving as negative, the total sum is zero; in other words, the sum of all currents approaching the junction is equal to the sum of the currents leaving.

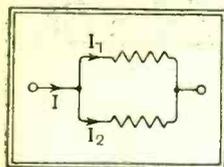


Fig. 1.—Application of Kirchhoff's first law to a simple divided circuit. $I - I_1 - I_2 = 0$ or $I = I_1 + I_2$.

The simplest example is that in which a circuit divides into two branches, as in Fig. 1. If I is the total current flowing to and from the circuit, and I_1 and I_2 are the currents in the branches, then $I - I_1 - I_2 = 0$, or $I = I_1 + I_2$. This rule is so simple that it is usually taken for granted, and applied without question of its verity.

The second law relates to any closed loop in a circuit where currents are flowing and where electromotive forces are acting within the loop itself. The second of Kirchhoff's laws is not quite so simple as the first either in its wording or its application. But it applies equally well to the case where the loop concerned comprises the whole circuit as to the more general case where the loop forms one part of a more complex circuit. So, in explanation, the simplest possible single loop circuit will be taken as a first example, the circuit referred to consisting merely of a resistance R ohms connected across a battery whose electromotive force is E volts and whose internal resistance is r ohms, as shown in Fig. 2(a).

In this case there is only one E.M.F.

acting round the loop, and there are no branch circuits. If I is the current, then, according to the second law, the E.M.F. is equal to the sum of the products of current and resistance in each part of the circuit, namely $E = IR + Ir$. Since the circuit is a simple one without branches, Ohm's law can be applied in the ordinary way, namely, $I = \frac{E}{R+r}$ amps, where $R+r$ is the total resistance of the loop. It will be seen that this equation is the same as the previous one, being merely transposed into a different form.

KIRCHHOFF'S LAWS (of the electric circuit). Two laws of fundamental importance relating to currents and electromotive forces in an electric circuit. They are: (1) The algebraic sum of all currents meeting at a junction of a number of conductors is zero; (2) In any closed loop forming the whole or part of a circuit, the algebraic sum of all the electromotive forces acting round that loop is equal to the algebraic sum of the products of current and resistance in each part of the loop.

Now let us consider another single loop, but this time containing more than one E.M.F., as in Fig. 2 (b). Electromotive forces acting in a clockwise direction round the loop are taken as positive, whereas those in the reverse direction must be considered negative (or vice versa). So in this case the resultant clockwise E.M.F. is $E_1 - E_2 + E_3$. If R_1 and R_2 are the only two resistances in the loop and I is the current, we have, according to Kirchhoff's second law:

$$E_1 - E_2 + E_3 = IR_1 + IR_2$$

Each term on the left is an electromotive force or electrical driving force, whereas each term on the right is a potential drop due to resistance.

Two Laws.

In a circuit of a more general character, having branches and internal loops, it is necessary to use both the first and second of Kirchhoff's two laws. The first is involved

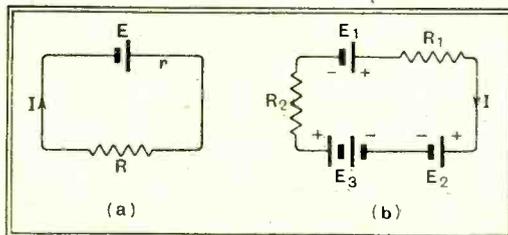


Fig. 2.—Two single loop circuits in which the current can be found by Kirchhoff's second law. In each case the resultant E.M.F. acting round the circuit is equal to the total "resistance drop."

at each junction of three or more conductors, and the second can be applied to every closed loop in the circuit. For instance, in the circuit of Fig. 3, if I_1 , I_2 , and I_3 are the

current values in the various parts as shown, we know from the first law that $I_1 = I_2 + I_3$ amperes; and, applying the second law to the two loop circuits A and B, one obtains the equations $E_1 = I_1 R_1 + I_3 R_3$, and $E_2 = I_2 R_2 - I_3 R_3$ respectively, taking the clockwise-direction as positive in each case. By writing in the numerical values of the resistances and E.M.F.s, and combining the three last equations, the numerical values of I_1 ,

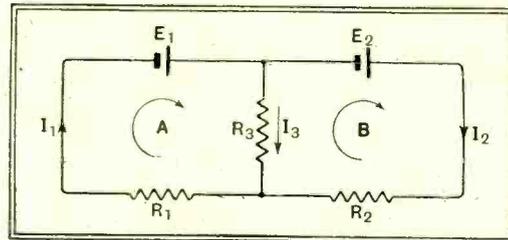


Fig. 3.—A more complex circuit the solution of which involves both the first and second laws. The circular arrows indicate directions taken as positive.

I_2 , and I_3 can be found. If I_3 is found to be negative, it simply means that the direction of I_3 is opposite to that initially assumed.

It should be realised that in a circuit like that of Fig. 3 Ohm's law cannot be applied to find the currents in loops A and B because the resistance R_3 is common to both loops.

The Wireless World INFORMATION BUREAU.

Conditions of the Service.

(1) THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

(2) Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Tudor Street, E.C.4, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

(3) The fee of 5s. covers the reply to any wireless technical difficulty, but in special cases, where the enquiry may involve a considerable amount of investigation, an increased fee may be necessary. In such cases a special quotation will be made.

(4) Questions should be clearly written and concisely worded in order to avoid delay. Where enquiries relate to trouble experienced in receivers built to specifications in *The Wireless World* a complete account should be given of the trouble, and especially the symptoms.

(5) Where reference is made to published articles or descriptions of apparatus, the title of the article, the date of publication in *The Wireless World*, and the page reference number should be given, in order to facilitate reply.

(6) Full circuit diagrams, constructional details of apparatus, or values of components for home-designed receivers cannot normally be supplied, but circuit diagrams sent in with queries will be checked and criticised.

(7) Particular makes of components cannot, in general, be recommended, but advice will be given as to the suitability of an individual component for a particular purpose specified by the enquirer.

Practical HINTS and TIPS.

TO make a neat joint in a telephone cord or loud speaker lead is not an easy matter. The best cords frequently have copper tinsel for the conducting strands, sometimes interwoven with cotton or silk threads, and soldering is quite unsuitable in such cases. The following method has been found to make a neat and permanent joint which is adequate both electrically

**Jointing
Tinsel
Leads.**

and mechanically. The braided outer covering is first slid back and the twin leads freed for two or three inches. One of each pair is then shortened by about an inch and a half. About half an inch of each lead is then bared down to the copper wires or tinsel. This stage is shown in Fig. 1 (a). The bared conductors are then bound to each other and to the adjacent leads as shown in diagram (b). A thin bare copper wire should be used for this purpose—about No. 40, for instance. If this is not available, a single copper strand from a piece of ordinary flex is quite suitable. When each connection has been bound in this way, the braided outer cover can be slid back over the joins as in Fig. 1 (c). Finally, a single-layer binding can be made, covering the cord to about half an inch beyond each join (diagram (d)). This binding can be made with a stout linen or silk thread—or the braided covering from a piece of flex is also very suitable and takes less time to put on.

Incidentally, the following is a simple method of making a very neat self-locking binding of this kind. The binding material is looped back along the object to be bound, and the binding is then made with the free end. This end is threaded through the loop

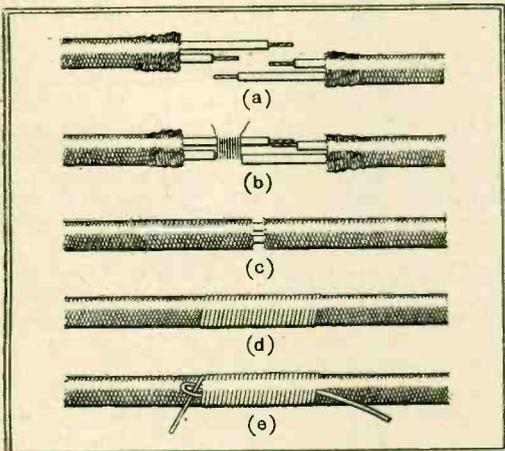


Fig. 1.—Repairing telephone or loud speaker leads; these usually embody tinsel conductors, which cannot be joined satisfactorily by soldering.

as in diagram (e). A pull on the other end of the binding thread will now close up the loop. It is usually advisable to pull the loop, with the free end caught in it, under the last few turns of the binding. Finally, both ends of the thread can be cut off close to the binding, which is now securely locked.

AIDS TO BETTER RECEPTION.

EVEN the beginner nowadays is apt to consider, rightly enough, that the construction of an all-mains set is by no means beyond his legitimate scope. These sets are now just as easy to get into a state of satisfactory operation as are battery receivers, and all that the constructor need remember is that he will probably be dealing with fairly high voltages, which

**Don't
Earth the
Mains.**

should be treated with a certain amount of respect. Further, it should perhaps be emphasised that he is under an obligation to the Supply Company (and, in a roundabout way, to other wireless users) to take care that neither of the mains leads shall be earthed, either directly or even through a resistance of high value. In certain circumstances, quite a small leakage is apt to be embarrassing to the Company's engineers, and if the number of such leakages reaches considerable proportions restrictive rules, regulations, and even legislation, are bound to follow.

Care should be taken that the fixed condenser commonly inserted in the earth lead of a D.C. receiver is beyond suspicion; it should preferably be rated to work at twice the mains voltage. Special care should also be taken to see that the general insulation between mains and earth is of a high order.

AT this time of year quite a number of portables—and many of them, it is feared, of out-of-date design—are again put into commission on the occasion of their owners' holidays. Not a few of these sets are incapable of covering the present broadcast wave-band, and some of them are incapable of being tuned in stations operating in the region of 250 metres.

**The
Holiday
Set.**

It is the purpose of this note to point out that the lower limit of the tuning range may often be extended in a very satisfactory manner, without the need for disconnecting any wires internally, simply by wiring a tuning coil across the frame aerial winding. By this procedure, the inductance of the built-in frame is reduced, as two inductances in parallel must always have a lower value than either used singly.

Any commercial coil of suitable inductance will do well for a shunt; one of the plug-in variety with from 75 to 100 turns will generally meet the case, and is convenient to use, as it may be withdrawn in a moment when not required.

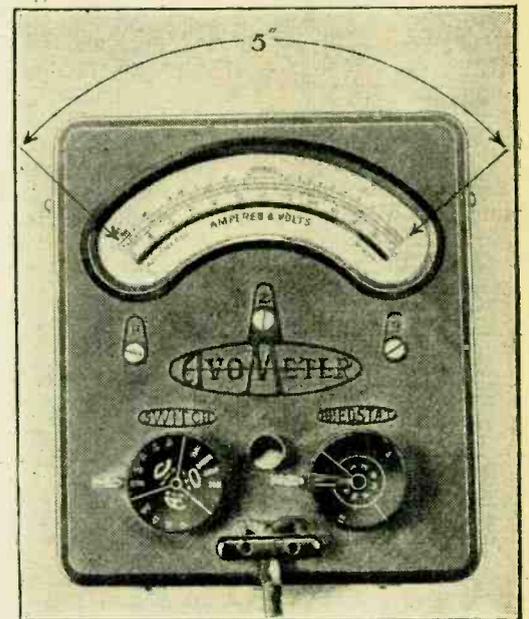
All this applies particularly to sets with aperiodic H.F. amplifiers, and it may be added that, by reducing the effective inductance of the frame, apparent selectivity is sometimes increased at low wavelengths.

EVERYONE knows that it would be ridiculous to choose, say, a meter rated at 0.100 milliamps. when it is anticipated that the current to be measured will be in the order of 1 or 2 milliamps. When extreme accuracy is needed, one takes a meter of which the maximum scale reading is only slightly in excess of the current—or voltage, for that matter—to be

**Meter
Sensitivity.**

measured. Without a veritable array of meters, this ideal can seldom be realised.

Although the need for extreme quantitative accuracy seldom arises in ordinary wireless work, the ability to appreciate small



The scale length of a measuring instrument has an important bearing on the accuracy with which readings may be taken.

changes is often valuable. This applies particularly to a detector anode current meter, which is certainly one of the most valuable instruments the experimenter can possess. Here changes in current are particularly informative, and precise quantitative measurements are seldom important.

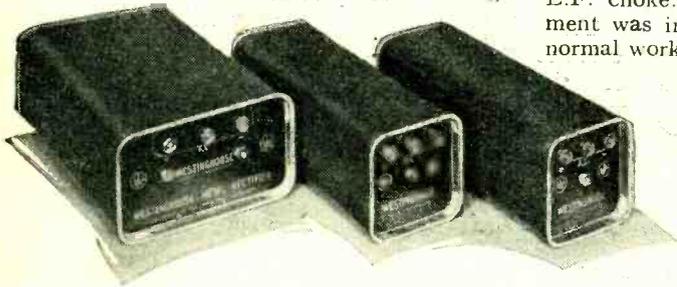
It is not always appreciated that, from the point of view of sensitivity, the length of a meter scale is just as important as its range. Put another way, it should be remembered that accurate readings can be made, and that small changes can be appreciated, equally well with a meter having a short scale and a limited range, as with one having a greater range and a longer scale.

As an example of this, we may take the combination instrument shown in the accompanying illustration; its lowest current range is 0.12 milliamps., but the scale is approximately 5 in. long; consequently, all other things being equal, current readings may be taken just as accurately as with a milliammeter having twice the sensitivity (0.6 milliamps.) but with a 2½ in. scale.

LABORATORY TESTS

NEW WESTINGHOUSE H.T. RECTIFIERS.

THE Westinghouse Brake and Saxby Signal Co., Ltd., 82, York Road, King's Cross, London, N.1, have now extended their range of H.T. rectifiers by the addition of three new models styled the H.T.9, H.T.10, and H.T.11, respectively. These are intended to be operated in a voltage-doubling circuit, which arrangement gives full-wave rectification with a single secondary winding on the mains transformer. The A.C. voltage supplied by this winding is



The new Westinghouse rectifiers, models H.T.9, H.T.10, and H.T.11.

a little more than half that of the rectified output from the rectifier, and so precludes the need for mains transformers giving very high secondary voltages.

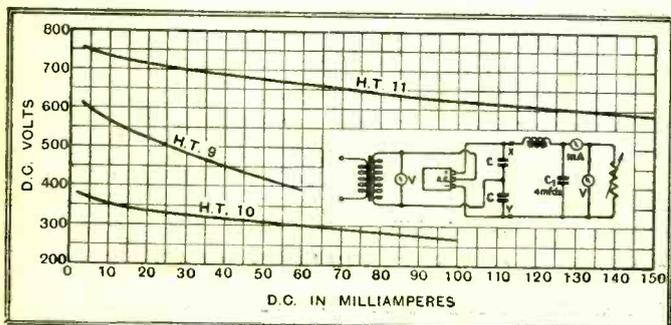
The H.T.9 model is rated to give a D.C. output after smoothing of 300 volts at the maximum load of 60 mA., with an A.C. input of 240 volts. The reservoir condensers, marked C in the diagram, each have a capacity of 4 mfd.

NEW WESTINGHOUSE H.T. RECTIFIERS.

Model.	A.C. Input.	Rated D.C. Output. (Smoothed).		Reservoir Condensers (C)		Working D.C. Voltage Filter Condenser (C ₁).
		Volts.	mA.	Cap. mfd.	Working A.C. Voltage.	
H.T.9	240 volts (200 mA.)	300	60	4	250	500
H.T.10	150 volts (550 mA.)	200	100	8	200	400
H.T.11	300 volts (550 mA.)	500	150	8	400	800

The H.T.10 rectifier, however, operates with a lower input, requiring 150 volts A.C. only, but it will give 100 mA. of D.C. on full load at about 200 volts after smoothing. In this case the reservoir condensers must have a capacity of 8 mfd. each.

Hitherto the only Westinghouse rectifier capable of giving a high output voltage at a relatively heavy load was the model H.T.2. This was bridge-connected and somewhat bulky, but otherwise a most satisfactory unit. The new model H.T.11 now replaces this unit, for it has a rated output of about 500 volts at 150 mA. and operates in a voltage-doubling circuit using two 8 mfd. reservoir condensers. The A.C. input is 300 volts.



Regulation curves of new Westinghouse rectifiers, models H.T.9, H.T.10 and H.T.11, with constant input voltage and measured before smoothing.

ON NEW RADIO PRODUCTS.

For easy reference the essential data relating to these three new models is given in tabulated form.

Tests made with specimens of each new rectifier show that the makers rating is very conservative in every case, even though allowance be made for the voltage dropped in the L.F. choke. Although the smoothing equipment was included in the circuit to simulate normal working conditions the curves show the unsmoothed D.C. voltage across X and Y, correction having been made for the volts lost in the choke.

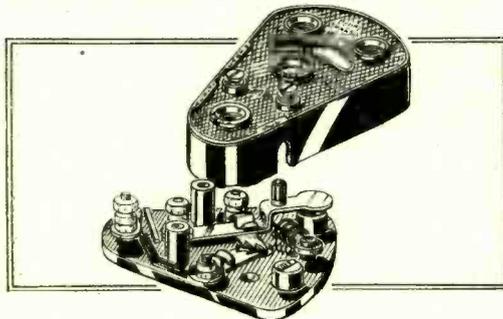
It was felt that this information would prove the more useful, for there are so many suitable smoothing chokes on the market and their D.C. resistance varies between quite wide limits. Knowing the D.C. resistance of the choke to be used correction can easily be made to the output figures.

In each case the A.C. voltage was maintained at the correct value for the particular rectifier, thus these curves show the true characteristics of the unit and not the combined regulation of rectifier and transformer. A well-made mains transformer has a good regulation and the full load output should not be more than 5 or 7 per cent. lower than the initial voltage on light load.

With these additions, the Westinghouse range of metal rectifiers now includes a model suitable for every requirement, and the prices are very reasonable, being 21s. for H.T.9 and H.T.10, and 35s. for the H.T.11.

BULGIN LIGHTNING SWITCH.

IN these latitudes we are not often visited by severe electrical storms, nevertheless it is hardly wise to ignore their potential dangers



Bulgin lightning switch, incorporating safety fuse and spark gap.

when an outdoor aerial is used, especially when adequate protection can be provided by fitting an inexpensive device for safeguarding the radio receiver and avoiding possibly more serious consequences.

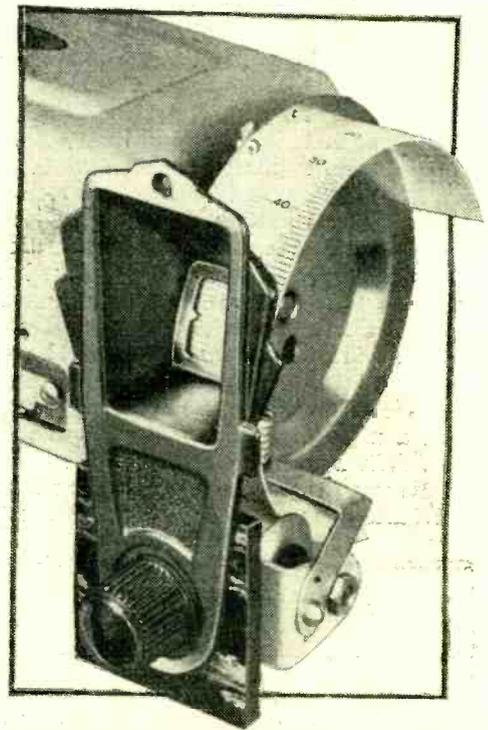
Of the many protective devices now available few are so compact, or embody so many distinctive features, as the new Bulgin lightning switch. So far as we are aware, this model is the only one of its kind having a quick make-and-break action and, in addition, incorporating a safety fuse as well as a spark gap.

The switch arm, which is spring loaded, moves from the "on" to the "off" position

with a reassuring snap action and is held securely in either position by the tension of the spring.

A useful feature is the rather novel method of indicating whether the aerial is to earth or joined through to the receiver. The moving arm of the switch is made slightly longer than really necessary and the free end, which is in the shape of a disc, discloses the engraving "on" or "off" as the case may be. "On" indicates the aerial is free, while the "off" serves as a reminder that the aerial is earthed.

The switch mechanism is totally enclosed in a



British Radiophone slow-motion drum dial fitted to a three-gang condenser.

bakelite case provided with apertures through which protrude the knob and for examining the spark gap, fuse and indicators.

Made by A. F. Bulgin and Co., Ltd., Abbey Road, Barking, Essex, this most useful accessory costs a modest 2s. 6d.

BRITISH RADIOPHONE DRUM DRIVE.

MADE by British Radiophone, Ltd., Aldwych House, Aldwych, London, W.C.2, this slow-motion drum drive has been designed especially for use with the gang condensers made by this firm. It is exceptionally robust and well made, and will drive the four-gang model without the slightest trace of slip.

The reduction ratio, which is 16:1, is happily chosen, for it affords perfect control even of superheterodyne receivers, where accurate adjustment is essential, but it is not too tedious to operate when exploring the ether for distant stations.

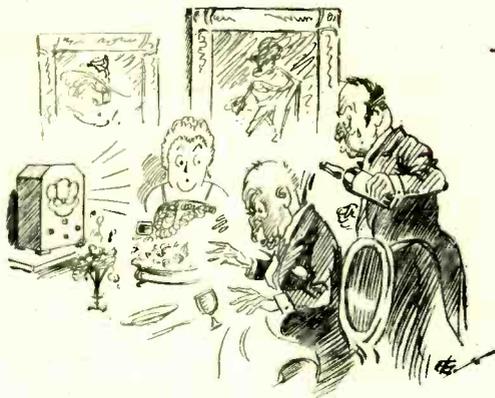
A translucent ivorine scale, divided into 100 divisions, is fitted, and a small lamp bracket is provided for illuminating the dial.

Escutcheon plates finished either in oxidised silver or in Florentine bronze, with black or brown knobs to match are available, and the aperture is so designed that it affords perfect vision of the illuminated scale from various angles.

The dial is quite easy to fit, provided the various parts are assembled in the correct sequence, but no difficulty will be experienced if the instructions given in the accompanying leaflet are followed. The price of this dial is 8s. 6d.

UNBIASED

By FREE GRID.



Hollywood's missed opportunity.

Shocks and Stares.

I WAS filled with righteous indignation a little while ago when the B.B.C. peremptorily discontinued its broadcasts of the Stock Exchange reports, thereby robbing me of the opportunity of making a cool million or two from my armchair, apart from depriving me of one of the brightest features of the evening programme.

It appears that I am by no means the only one who enjoys hearing about the merry gambols of the bulls and bears in Throgmorton Street, for prior to the news being received that the feature was to be resumed, many people sent stern letters of protest to several of the "dailies." There was one particular letter from an indignant female which compelled my attention, and I simply cannot refrain from quoting part of it herewith. " . . . It was an event of the day to hear how things were going in the city, not only to my family, but to my servants, who are of many years' standing, and all have their small investments. . . . Shades of William Q. Shakespeare, the great scenario writer! What an opportunity Hollywood has missed in not giving us a close-up of an English butler trying, while doling out the port, to preserve perfect *sang-froid* as the loud speaker bellows forth news of the complete wipe-out of his capital.

But stay, surely this is the very thing which should provide material for one of the radio playwrights. Imagine listening to the heartrending sobs of the scullery maid as she learns that the bottom has fallen out of silk, taking half of her last week's wages with it!

A Literary Discovery.

ONE reads in the newspapers the complaints of M.P.s that at times when certain controversial bills are before Parliament their post-bags are filled to bursting point by a noisy but well-organised minority. It appears that M.P.s may receive thousands of letters all couched in similar terms, and are thus apt mistakenly to assume that the whole country is speaking as one man.

I have always been inclined to doubt that this sort of thing did go on, but a recent experience has opened my eyes. A few days ago I read in one of our best-known weekly reviews a letter to the Editor in which the writer, after referring to the forthcoming Olympia Exhibition, demanded that it should include, among other things, a section, to quote his own words, "Showing new radio users how to tune in without oscillating neighbours' sets." I sadly shook my head at this despoiling of the King's English, and

after wondering for a while what on earth he meant by "oscillating neighbours' sets," I dismissed the matter from my mind.

Later that day I happened to board a tram-car, and, having nothing to read, picked up a paper, which, judging from its appearance, had been used by a day excursionist from Birmingham to wrap up his lunch. You can judge of my amazement when, on turning to the Correspondence Pages, I found the identical letter, word for word the same, and signed by the same man.

Hastily leaping off the tram I dived into a nearby public library. Reaching the Reading Room I dislodged an ardent student of form at the nearest reading desk and turned to the Correspondence Columns. To my delight I found the same letter again, and quickly elbowing my way from desk to desk, leaving a trail of indignant readers in my wake, I found the same letter in practically every other journal.

Very Obliging.

Having revealed this rather surprising state of affairs I must express my astonishment and admiration at the willingness shown by the organisers of the Wireless Exhibition to accept suggestions from the public, for the very next day there appeared a letter from the Lord Chief Organiser himself, stating that all the things suggested by the previous day's correspondent were already provided for, even to the extent of having demonstrations to show people how to tune in "without oscillating neighbours' sets."

My curiosity is thoroughly piqued, and I have already resolved to attend a demonstration in order that I may avoid committing this dreadful crime against my neighbour. I fear, however, that I shall have to hang my head and confess shamefacedly that I do not know how to "oscillate my neighbour's set," and shall have to take the



Oscillating a neighbour's set.

humblest position in the beginners' class to learn how to perform this wonder before I am in a fit state to learn how to refrain from doing it. Needless to say, I shall first have to take a preliminary course in English in order to find out what the expression really means.

Selling "Time on the Ozone."

I HAD occasion a little while back to refer to an unhappy wireless experience which befell me when spending a few days' well-earned rest by the sad sea waves, but lest it be thought that my experiences in this direction were entirely unfortunate, I would hasten to say that during my sojourn I was privileged to hear finer quality of reproduction than I have heard for many a long day.

The local Municipality had resolved that visitors to their resort should be put on a level with the young lady in the celebrated nursery rhyme, and have music wherever they went. Realising the expense of providing about a dozen orchestras distributed about the cliffs, they had equipped each promenade shelter with a first-class loud speaker. In addition, deck chairs were arranged at certain spots where normally one might expect to find a bandstand, and here, also, excellent loud speakers with truly prodigious baffles were provided.



Agreed it was undesirable.

Needless to say, all these loud speakers were connected up to a central point where a band was actually performing.

A microphone was also provided for announcing the items on the programme, but the whole scheme was rather spoilt, in my estimation, by annoying interruptions from the town publicity merchant, who interspersed the musical items with exhortations not to miss the fat woman on the pier, and other attractions which the town had provided for its visitors.

A resident agreed with me that this was very undesirable, and informed me that still more regrettable features were being mooted, as the City Fathers were considering the question of selling time on the air to local motor coach proprietors and other traders, so that they could advertise their wretched services.

Of course, as this publicity matter would be distributed to various parts of the town solely by private land lines erected by the Council, the P.M.G. could have no say in the matter, but I do hope that common sense will prevail, and that if other resorts adopt this method of providing music cheaply for the benefit of visitors they will profit by experience and omit less desirable features.

NUTS TO CRACK.

THE present series has been started by *The Wireless World* for the benefit of readers who like to work out little problems for themselves and be sure that the results they obtain are correct. At frequent intervals wireless problems are presented, and in the following instalment the answers are given with the methods of working them out, and hints on possible points of difficulty. Problems 59, 60, and 61 have already been given, and below the answers appear, whilst another set of problems is included this week for treatment in the next instalment.

QUESTION 59.—If 10 kilocycles be taken as the necessary frequency "spread" of a broadcasting station, how many stations could be operated on wavelengths between (a) 100 and 600 metres; (b) 3 and 8 metres?

Answer—(a) 250; (b) 6,250.

All that is needful here is to express the various specified wavelengths as frequencies. The frequency corresponding to a wavelength of λ metres is given by $3 \times 10^8 / \lambda$ cycles per second, or $3 \times 10^6 / \lambda$ kilocycles per second. The first band of broadcast stations will thus have frequencies between 3,000 and 500 kilocycles. This range occupies a band of 2,500 kc., so that it could accommodate $2,500/10$, or 250 stations.

The second group of stations will occupy that part of the frequency "spectrum" between 100,000 and 37,500 kc., i.e., a band of 62,500 kc. It will thus provide room for no fewer than 6,250 stations.

It is interesting to note that the second group could contain 25 times the number of stations in the first; in other words, it has provision for exactly 6,000 more stations! This illustrates in a very striking manner the possibilities offered by the very short waves in overcoming the congested state of the ether in present-day broadcasting. With the growing improvement in short-wave technique, the vexed problems of quality and interference may ultimately be solved along these lines.

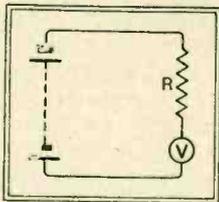
QUESTION 60.—In order to measure the resistance of a grid leak, a 200-volt meter of 980 ohms per volt resistance is employed in conjunction with a dry battery. The direct voltage reading of the battery is 144 volts, but if the grid leak be included in the circuit the reading drops to 24 volts. What is the value of the leak?

Answer—980,000 ohms.

This is quite a good method of ascertaining the approximate value of a grid leak or similar large resistance if a reliable high-resistance voltmeter is available. The meter resistance in ohms per volt is usually quoted by the maker, but, if not, it can be readily calculated by the simple expedient of measuring the current taken by it in order to produce a given deflection and applying Ohm's Law. In the present case, since the meter is scaled for 200 volts, its resistance will be 200×980 , or 196,000 ohms.

Let us denote the unknown value of the grid leak by R ohms. Then, when the volt-

meter is connected to the battery through R , the circuit will appear as in the figure. Now, since the battery resistance may be assumed negligible in comparison with the other resistances in the circuit, we may regard the P.D. of the battery when measured directly by the meter as equivalent to the



Measuring an unknown value of resistance: when it is included in the circuit, the voltmeter reading falls to a value much below the E.M.F. of the battery.

E.M.F. in the circuit illustrated. The current flowing will therefore be:

$$I = E / \text{Total Resistance} = 144 / (196,000 + R) \text{ amperes.}$$

Now we know that this current, flowing through the voltmeter, causes it to register a deflection of 24 volts, which is thus the IR drop across its terminals. But this IR drop is also given by the product of the current flowing and the meter resistance, so that we may write:

$$\left(\frac{144}{196,000 + R} \right) \times 196,000 = 24.$$

Solving this equation for R , we have $24 \times (196,000 + R) = 144 \times 196,000$; $\therefore 24R = 120 \times 196,000$; $\therefore R = 980,000$ ohms.

QUESTION 61.—A transformer-coupled stage of L.F. amplification incorporates a device for tone-control by the use of which the effective amplification of the stage may be varied between 3 times and 0.15 times the magnification factor of the valve. What is the amplification range of the tone-control in decibels?

Answer—26.02 decibels.

Perhaps the simplest way of looking at the decibel is to regard it as the unit in terms of which the difference between two power levels may be measured. If we take the symbols P_1 and P_2 to represent two power values, then the difference, D decibels, in their power levels is given by

$$D = 10 \times (\log P_1 - \log P_2) \\ = 10 \log \frac{P_1}{P_2} \dots (1).$$

The difference in power level thus depends on the ratio between the two powers.

Since the decibel is defined in terms of a ratio between powers, we must be wary in applying it to measure ratios between other quantities such as voltages and currents. In cases where it is wished to express a ratio between voltages in decibels, we must first translate the voltage ratio into an equivalent power ratio. This we can do by making a convention, viz., that

Instructive Problems and their Solution.

the two voltages are imagined to operate across the same resistance, R ohms, so that the resulting power expenditures may be compared. Thus, if the difference between V_1 and V_2 volts is to be expressed in decibels, we assume each to operate across a resistance R ohms. The

two powers are then $\frac{V_1^2}{R}$ and $\frac{V_2^2}{R}$ watts, and

the power ratio is $\frac{V_1^2}{V_2^2}$. We can now substitute this for the ratio $\frac{P_1}{P_2}$ in equation (1),

obtaining

$$D = 10 \log \frac{V_1^2}{V_2^2}, \text{ i.e., } D = 20 \log \frac{V_1}{V_2} \dots (2).$$

In the example, we are dealing with voltage amplification, which, of course, is quite a different thing from power amplification. Equation (2) will therefore apply, V_1 being

$$3 \times \mu, \text{ while } V_2 \text{ is } 0.15 \times \mu. \frac{V_1}{V_2} \text{ is thus } \frac{3}{0.15}$$

$$= 20. \text{ Whence, } D = 20 \times \log 20 = 20 \times 1.301 = 26.02 \text{ decibels.}$$

NEXT SERIES OF PROBLEMS.

QUESTION 62.—An electric lamp is marked 40-watt 220-volt. What current will it take from 220-volt D.C. mains, and what resistance will it have at that voltage? What further specification would be required before employing such a lamp in a D.C. mains receiver?

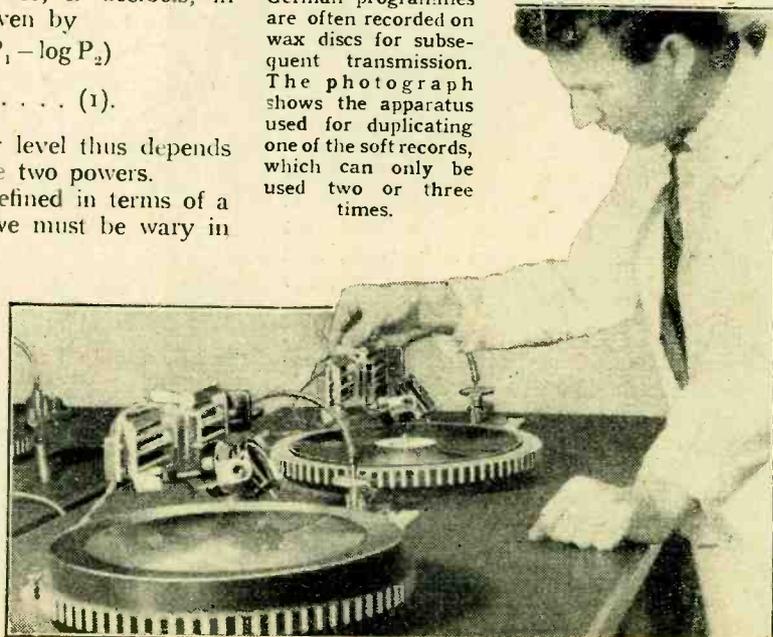
QUESTION 63.—For a certain double-range voltmeter, a current of 2 mA. gives a full-scale deflection on both the 6-volt and 250-volt ranges. What is the rated resistance in ohms per volt for the two cases?

QUESTION 64.—The H.F. current at 300 kc. in a certain reaction primary coil is known to contain a 15 per cent. third harmonic. If the fundamental frequency E.M.F. induced in the coupled coil has an amplitude of 12 mV., what will be the induced E.M.F. of the third harmonic?

NUTCRACKER.

RECORDING FOR REBROADCAST

German programmes are often recorded on wax discs for subsequent transmission. The photograph shows the apparatus used for duplicating one of the soft records, which can only be used two or three times.



BROADCAST BREVITIES

By Our Special Correspondent.

The New "Empire Department."

FOR two reasons the appointment of Mr. C. G. Graves as director of the "Empire Department" of the B.B.C. is of special interest. In the first place Mr. Graves' translation from the post of Assistant Director of Programmes will involve a little earthquake among the B.B.C. staff, leading to some well-deserved promotions. For instance, when the smoke clears we shall probably behold Adrian Boult as an Assistant Controller, the musical side of programme building having at last come into its own.

Several hard workers in the provinces will also obtain recognition long overdue.

An Experienced Chief.

Secondly, the new move establishes Empire broadcasting on a firm basis. In Mr. Graves the listeners of the Dominions and Colonies will find a keen and sympathetic guardian of their interests with experience in practical programme building. For more than five years he has been Mr. Roger Eckersley's right-hand man. He is a nephew of Viscount Grey of Falloden.

Operatic Developments at Broadcasting House.

ONE of the more important staff changes at Broadcasting House will be the transfer of a leading member from the Vaudeville to the Music Department for the production of studio opera.

It is a surprisingly long time since the B.B.C. gave us a series of operas specially adapted for broadcasting. The reason is not far to seek. In its original state the average opera is as unwieldy an art form as could well be imagined. The work of whittling it down and eliminating absurdities in the libretto which pass muster on the stage but never in the studio calls for the patience of Job and the energy of a Titan.

A German Offer.

For some time the German broadcasting authorities have been concentrating on the task and have now produced a library of nearly seventy operas in specially shortened versions suitable for the microphone. I understand that

the whole collection has been generously placed at the disposal of the B.B.C., with the result that next winter British listeners will be able to enjoy a season of fireside opera on a scale never attempted before.

Each opera will occupy from an hour to an hour and a half.

Scottish National Tests.

BY the time that the Edinburgh Radio Show is opened, i.e., October 12th, both B.B.C. transmitters at Falkirk should be giving a full-time service. Scottish National will probably begin the first public tests on August 22nd.

A One-Armed Pianist.

A POIGNANT item in the Promenade Concert on Tuesday next, August 16th, to be broadcast Regionally, is Ravel's Pianoforte Concerto for the left hand, written expressly for the soloist, Paul Wittgenstein, the distinguished pianist who lost his right arm in the War. With only five fingers, Wittgenstein performs in such an amazing way that Ravel is only one of the composers who have written music specially for him. Richard Strauss wrote his "Parergon" for Wittgenstein, while Korngold and Prokofiev have also ensured that the one-armed pianist's art shall not be wasted for lack of suitable compositions.

Broadcasters "On the Air."

MEMBERS of the Theatrical and Film "professions," according to a leaflet issued by Mr. James Raglan and Mr. Rivers Oldmeadow, joint honorary secretaries, have formed a Stage and Aero Club, with the primary object of bringing aviation within the reach of its members under ideal conditions. The club is to be open also to "persons engaged in broadcasting."

"Obsession."

ONE of the outstanding play successes of the year 1930, "Obsession," is at last to be repeated on August 24 (Regional) and August 25 (National), thus complying with the demands of a host of listeners received after the broadcast two years ago. "Obsession" is an original play by Dulcima Glasby, one of the B.B.C.'s "play-doctors" — those important people who can seize upon a wholly unsuitable stage play and, by condensation and interpolation, make it endurable to the man at the loud speaker.

Miss Glasby has a flair for microphone technique, and has incorporated a good deal of her knowledge in her original work, which is to be produced by Howard Rose. "Obsession" is a play worth listening to.

Can You Beat it?

THE day of broadcast stunts evidently is not yet over, for the American Columbia Broadcasting System has just broadcast the voice of Gertrude Ederle as she skimmed along the Hudson River at 40 miles per hour behind a speedboat piloted by Mrs. Guy Lombardo.



Miss Ederle will be remembered as the first woman to swim the English Channel, nearly six years ago.

As an aquaplane is nothing more than a flat board six feet in length, towed approximately 35 feet behind the speedboat, Miss Ederle had a difficult feat to accomplish, for her microphone had to be guarded from water. Although a spray-proof and wind-proof microphone

of the small hand variety was constructed specially for this broadcast, it could not stand complete immersion, so one of the new lapel types was employed.

Transmitter in Speed Boat.

A short-wave receiver was installed on the balcony of the Hudson River Yacht Club at 92nd Street, and the Hudson River, New York, a one-watt transmitter being placed in the seating compartment in the stern of Mrs. Lombardo's speedboat. A waterproof cable, attached to the tow-line of the aquaplane, carried the microphone circuit to Miss Ederle.

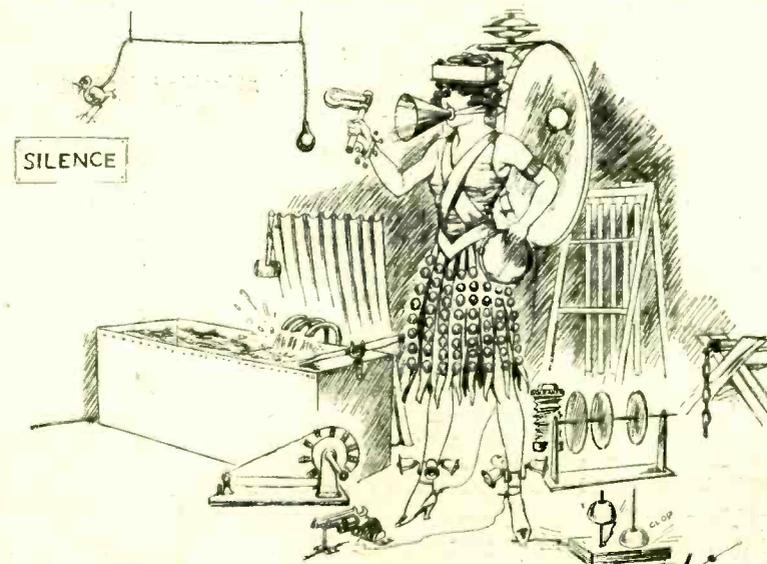
Another one-watt transmitter was installed on the clubhouse docks. Through the use of earphones, Miss Ederle was able to conduct a two-way conversation with officials on shore during a portion of the actual broadcast.

Opera on the Piano.

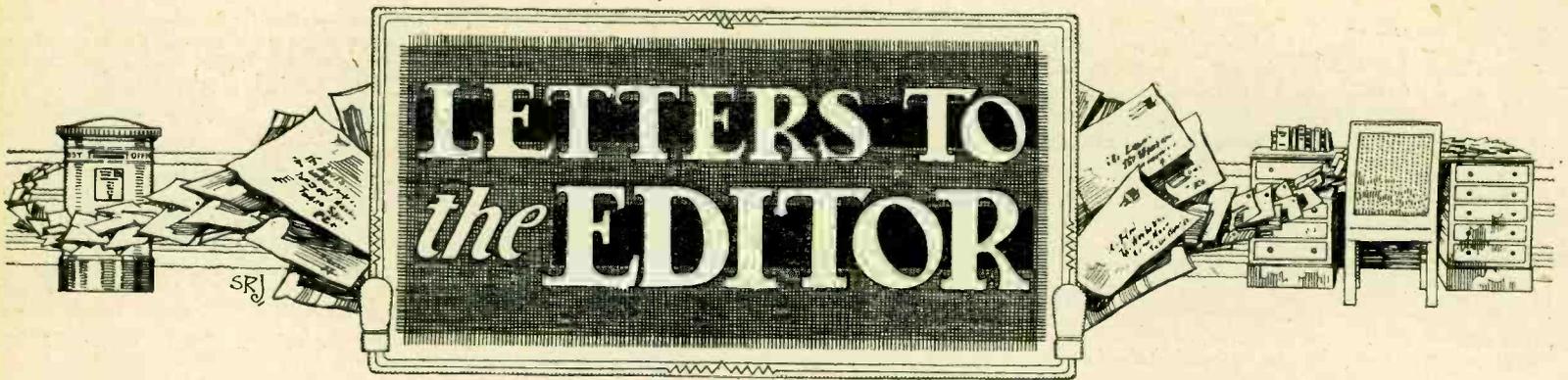
A RECITAL by George Mantle-Childe of some of Liszt's transcriptions of operatic music will be given for Midland Regional listeners on August 14th. The task is a difficult one for so young a player, as Liszt's music offers great technical difficulties. In his transcriptions the composer cleverly caught the inner spirit of the original music and managed to suggest orchestral effects on the piano with great skill.

He Said It.

WHILE Mr. Bernard Shaw and his colleagues on the B.B.C. pronunciation Advisory Committee have been discussing how to pronounce "beret," Mr. C. Drummond, an announcer at 2YA, Sydney, has single-handed had to decide how to say "Taumatawhakatangihangakoauauataenui-arangikitanetahu." It is the name of the Maori locality which, as you know, is twenty-six miles from Dannevirke.



B.B.C. DRAMA. Our artist has sent us this exclusive portrait of Miss Ella Van Noÿs, whose presence makes (or mars) a radio play. This celebrated star can imitate all sounds from the squeaking of a new shoe to the crash of a naval engagement. In the "atmosphere" thus created, the lesser stars are often quite befogged.



The Editor does not hold himself responsible for the opinions of his correspondents.

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Tudor Street, E.C.4, and must be accompanied by the writer's name and address.

The Quality of B.B.C. Transmissions.

FROM the many illustrations that are published from time to time showing the working of the B.B.C. organisation, it would appear that the control engineers manipulate their controls largely as the result of what they hear from earphones. The limitations of earphones, especially in the bass register, are, of course, well known, and it would therefore be very interesting to have some concise information as to the use of earphones for the purpose in question. Is any other and more satisfactory means of control actually used at the same time?

J. BAGGS.

New Moston, Manchester.

100 Divisions or 180-degree Scale?

I HOPE that some of our manufacturers of wireless apparatus will see and read that excellent letter by W. A. B., Edgware, published in your number of July 29th.

I am sure that many wireless enthusiasts will agree with me in saying that the great majority of sets made in this country leave much to be desired in matter of tuning controls and dials, though in respect of their electrical efficiency and compactness of chassis they are all that we could wish for.

Ease and accuracy of reading are unfortunately sacrificed too frequently for the sake of appearance, and one sometimes regrets the passing of the 1925 types of set with their convenient sloping panels and large, well-made and graduated dials, whose sole defect was their multiplicity.

Many sets are fitted with control knobs which are too small, badly made, and often eccentric, and some manufacturers even copy the dreadful American practice of fitting knobs which look like the door handles of a doll's house.

I dare say that many engineers feel, as the writer does, a strong aversion for all types of friction gearing, and certainly some of those fitted to wireless sets can cause a whole heap of trouble. I note that W. A. B. suggests a toothed gear 2:1 drive to increase the drum dial surface available for graduation, and this would seem to be a very sound scheme, and one that might well be adopted. Also, why do we never find a set fitted with the highly efficient and convenient worm drive of which a beautifully made foreign example was on sale in London last summer at about 4s.?

As regards ease of reading, in the case of many sets, one of which is unfortunately in the writer's possession, it is necessary to:—

- (1) Fetch a pocket torch,
- (2) Go down on one's knees,
- (3) Use a magnifying glass

in order to obtain an accurate reading of any setting.

Of the practice of graduating dials in two-degree spaces, or with the names of stations only, the less said the better.

I heartily agree with W. A. B. that every

tuning dial should carry a scale graduated in degrees, whatever other scale may be engraved on it, and it is very satisfactory to note that one famous firm have just put on the market a set fitted with a vernier reading dial for degrees of arc, which should prove a boon to all lovers of mathematical accuracy which is a necessary adjunct to satisfactory reception in these days. Let us hope that other manufacturers will copy this scheme.

May I take this opportunity of expressing appreciation of the recent additions to your journal, and also of the most interesting articles on trade sets which you have been publishing for some years past. May I say that the perspective sketches of apparatus attached to these articles are works of art.

G. G.

Bournemouth.

Empire Broadcasting.

MR. MANN, in his article which appeared in your issue of June 22nd, treated us to an outspoken criticism on the futile efforts of G5SW to reach out to the various countries which constitute our far-flung Empire, when many foreign stations succeed as a matter of course.

Like Mr. Mann, I, too, am situated in an outpost of Empire, close to the North-East Frontier of India to be concise, and the results I have obtained in the past three years are precisely the same as are apparently obtained in Kenya, 4,000 miles away. This statement only strengthens the opinion that Mr. Mann's diagnostics are unfortunately only too true.

As the criticism on broadcasting has already been very ably put, I would bring up yet another subject which calls for a frank expression of opinion, and that is the general apathy shown by British manufacturers in capturing Empire markets. With a very few exceptions, it is patent to anybody out here that no attempt is being made by British manufacturers to study the various conditions and requirements obtaining in various parts of the Empire. This remark is amply illustrated by a perusal of manufacturers' advertisements in *The Wireless World*. The various types of receiving sets advertised very seldom incorporate the short-wave band (an essential feature in this country of artillery-barrage atmospherics), and in practically all cases are entirely operated by A.C. or D.C. mains. The first point will be easily understood by those with even the most meagre knowledge of radio technology, but the second, I think, needs a word of explanation. It must be remembered that a great proportion of radio enthusiasts in the Empire live many miles from a town, where such things as A.C. or D.C. mains are unknown, but who nevertheless look for their sole contact with the outer world on their radio receiver. For these many thousands, therefore, dry batteries are the only source of electrical energy available. The suggestion

occurs, then, "Could not the British manufacturers reach out to this latent market by duplicating their well-known models in battery-operated form?"

What the British leaves undone the American does for them, and that accounts for the popularity of the American receivers out here. The clarion cry of "Buy British" is heard even in this land, and those of us with American receivers can only answer, "Let England remember us, and we will readily respond to the call."

My remarks apply to the industry as a whole, and not to the select few who are showing signs of really studying Empire conditions.

M. W. P. LAWS.

Power-handling Capacity of Loud Speakers.

MR. HARTLEY very refreshingly points out that "with a moving-coil loud speaker having a 7in. cone, with a flux density of 10,000 lines per sq. cm., a free movement of the cone and coil of approximately three-quarters of an inch at 50 cycles with 5 watts input is required." May I be permitted to transpose and give the further information that "With the engine of the Royal Scot having a boiler painted blue, with 50 tons of coal on the tender, wheels one mile in diameter would be required to use up all the water"?

It is difficult to see why the Gramophone Company and Mr. Hartley feel it necessary to interest themselves in an effusion which I would hardly have expected from one of the columnists "Free Grid" so soundly berates, if his aural appendages are so equipped by nature that they respond to watts input rather than the more usual acoustic output, leave him in his misery.

In gratitude for all his valuable information I will reciprocate and give "Free Grid" a tip how to double the power-handling capacity of his loud speaker—leave the field coil open.

Hendon, N.W.4. L. W. MURKHAM.

A Defect in Transmissions.

THE article in *The Wireless World* of July 22nd entitled "A Defect in Transmissions" brings to light a type of interference which is likely to become increasingly troublesome. This interference is undoubtedly due to the effects of over-modulation, but I doubt whether it can fairly be described as "frequency modulation," since there is no relation between this deformation of the carrier and the form of the amplitude modulation which is being applied. The radiation during the peaks of the over-modulation is a series of pulses of very complex form, analogous to the output of a primitive spark transmitter, which they resemble very closely in their audio-frequency effect. Owing to the complex nature of the pulses, corresponding to components of many different frequencies, selectivity is of

little use. Moreover, these pulses affect a receiver mainly by exciting the natural oscillations of the tuned circuits, so that any attempt to increase selectivity by reducing the decrement of the tuned circuits will increase the response of the receiver to this type of interference.
D. A. BELL.

Berkhamsted, Herts.

Points for Manufacturers.

I HAVE recently noticed several instances in which manufacturers of transformers and chokes have given values which are exceedingly high and do not obtain in actual practice.

As the permeability varies over very wide limits with different values of magnetising force, it follows that as the inductance is a direct function of the permeability, the inductance which obtains in practice is dependent upon the operating conditions.

Reference to characteristic curves of representative alloys shows that the permeability is more than doubled between a field strength of perhaps 0.05 gauss and 0.4 gauss. When the transformer is subjected to a steady polarising field, the effective permeability is then very much the same irrespective of the A.C. field after a value of perhaps 0.5 D.C. gauss, the lowest value obtaining.

Obviously for inductance values to have any meaning at all, the conditions under which they are measured must definitely be stated. Values such as the mutual conductance of a valve are always given at specified working voltages. Why, therefore, should manufacturers fail to specify the conditions under which they measure their inductances, when the inductance value varies more than the parameters of a thermionic valve.

Many figures are to my mind quite misleading and I think that the trade as a whole would do well to demand greater detail in this direction. I am not for one moment suggesting that manufacturers' published figures are inaccurate, but it is just as feasible to say that a transformer has an inductance of perhaps 60 henrys as it is to state that a 7 h.p. motor car will attain a speed of 200 miles per hour. In the latter case it is a perfectly true statement providing that it is very much "down hill with the wind behind," but this is a condition which does not generally obtain.

Similarly, 60 henrys would not be obtained under radio set operating conditions, with the type of transformer which I have in mind.

PAUL D. TYERS.

Watford.

IT was only in January last year that valve manufacturers at last let D.C. users enjoy privileges which those who could boast an A.C. supply could long enjoy. But our triumph was short-lived. The variable-mu, A.C. and battery, came to put us behind once more. I expect that we shall have to wait as long for an indirectly heated D.C. valve to be advertised and then half a year more before we can obtain one! Meanwhile, the A.C. user will go from strength to strength.

Harrow.

R. M. C. KITTOE.

Quality and the Transmitter.

IT would indeed be delightful if the side-bands in a broadcast transmission could be eliminated without spoiling the reproduction, as Mr. Maugham suggests in his letter to *The Wireless World* of June 15th. Especially do we realise this here in Cambridge, where the field strengths of interfering stations may rise to as much as a fifth of those of Brookmans Park or Midland Regional.

I am afraid, however, that if Mr. Maugham will work it out in detail he will find that the association between the side-bands and the amplitude modulation is not a matter of accident,

nor yet of a physical law, but of a mathematical identity depending upon the relation:

$$(1 + a \cdot \sin pt) \cdot \sin qt$$

$$= \sin qt + \frac{a}{2} \cdot \sin (q - p) t - \frac{a}{2} \sin (q + p) t,$$

where the left-hand side represents a modulated sine wave, and the right-hand side a carrier wave and two side-bands. Thus the amplitude modulation and side-bands are not concomitants, but are different ways of expressing the same thing. Even the "Monodial Super" could not give us the high notes if its tuned circuits entirely cut out the corresponding side-bands. This, of course, they do not do. It might seem at first sight as though the use of true frequency modulation, and a detuned receiving circuit, would solve the difficulty, since with this system the whole range of sounds could be reproduced with as small a frequency variation of the carrier wave as we please; but a little consideration will show that we could not use a circuit with a smaller decrement than those in use without cutting the high notes, so that intelligible interference would be as bad as ever. There would be no need for heterodyning, however, and something might be done with tone-correction. There would be some difficulty connected with the introduction of harmonics by the tuned circuits, but this should not be insuperable.

This system is not likely to come into use just yet, however, and a more practical method of getting rid of heterodyne interference at

separately from the band-pass filter which one might incorporate after the first valve, but this is not a matter of immense importance.

Cambridge. P. S. H. HENRY, Ph.D.

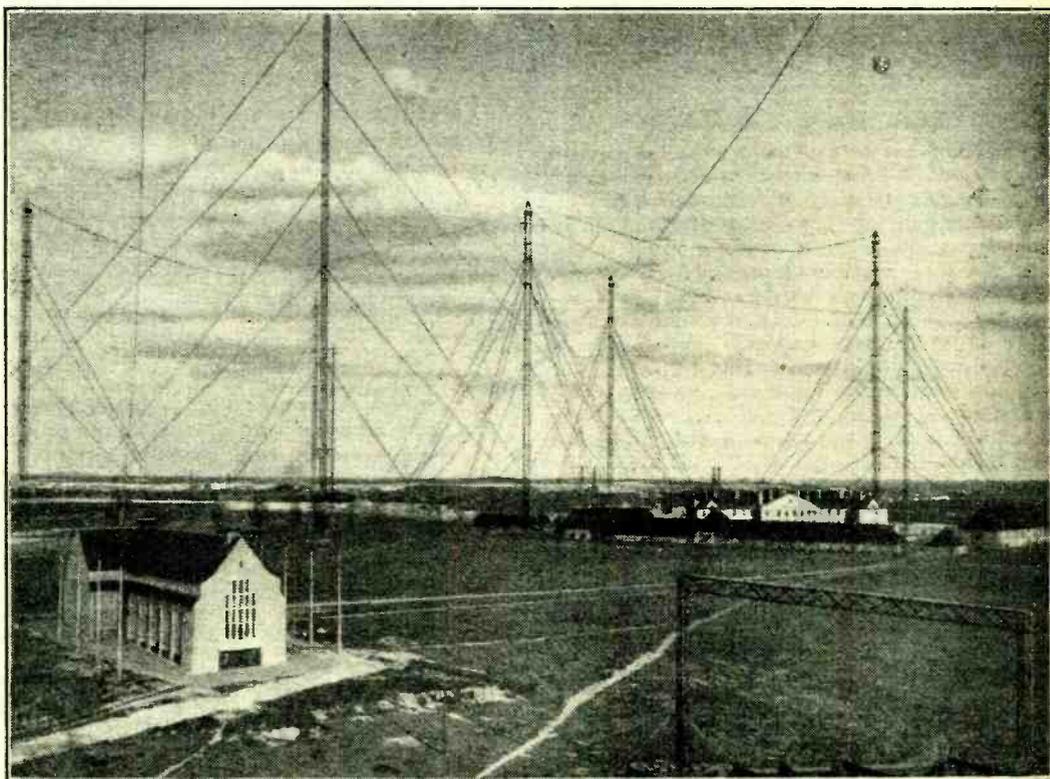
Accentuating Upper Frequencies at the Transmitter.

I DO not think that the plan of raising the upper end of the transmitter-frequency characteristic mentioned by your correspondent, Mr. P. W. Willans, can be dismissed as easily as, perhaps, Mr. Finlay would wish; anyhow, the B.B.C. has apparently been doing this in its somewhat secretive manner.

It is an old principle in talking-film work that the recording level at above, say, 4,500 cycles may be increased relative to the rest of the range, as the harmonics produced by the overloading of the sound track with an occasional very loud note above this frequency are not reproduced by the reproducing amplifier system, being above 9,000 cycles.

Thus, given a transmitting amplifier which overloads at audio-frequency just before overloading the carrier (and thus avoiding frequency modulation), it is possible to make the selectivity of the receiver as good as the present band-pass and yet get a distinctly longer overall response.

The fact that another station on an adjacent channel was doing the same thing would make very little difference, as one cannot modulate



A GERMAN BROADCASTING CENTRE.—Zeesen, situated near Berlin, is the site of the famous Konigs Wusterhausen broadcasting station. The photograph shows the masts of the long- and short-wave transmitters.

present is one which seems to have fallen into neglect. I refer to the use of a directional aerial having a sharp minimum (though even here one is stumped when the stations to be separated are in the same straight line with the receiver!). Now that variable-mu valves and high-frequency pentodes have got rid of the necessity of introducing the main selective circuit before the first valve, such an aerial has considerable possibilities in eliminating interference. With a little care, a frame aerial can be made to show a much better minimum than those usually fitted to portable sets, and if made large, can be much more efficient. True, the aerial would probably have to be tuned

a 50-kilowatt carrier at more than 100% even at 8,000 cycles.

This brings us to the arguments against either a steadily rising or steadily falling characteristic which nobody wants, anyway. The real reason against such an arrangement is its inefficiency, as at a normal frequency of, say, 800 cycles only a very small proportion of the carrier could be modulated.

May I finally heartily endorse your plea for a multi-frequency test from the B.B.C. occasionally so that, with the help of a simple valve voltmeter or metal rectifier moving-coil meter, we could tell what quality we are getting.

Orpington, Kent. B. T. WEDMORE,

READERS' PROBLEMS.

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which particulars, with the fee charged, are to be found on page 128.

Resistance Combinations.

IT is obvious that manufacturers cannot produce fixed resistances in an infinite number of ratings, and so it often happens that a particular value of fixed resistor—required, say, for experimental work—is not available commercially. This is inevitable, but fortunately the range of values produced is so large that ordinary needs are well catered for.

Querists who write to us on this subject seem often to ignore the possibilities of connecting a number of resistances in series, in parallel, or in series-parallel, so that the desired value may be attained. For the benefit of these readers, they may be reminded that the value of a number of resistances in series is equal to the sum of their individual resistances. The effect of connecting two resistors in parallel is most easily ascertained by multiplying together their individual values; the result is then divided by the sum of the individual values.

Eliminating a Circuit.

A READER who has just constructed a det-2 L.F. radio-gramophone, which, so far as the radio side is concerned, is intended to give only reception of the local station, is in difficulty with his tuning system. It is stated that the reproduction of gramophone records is excellent, but no wireless signals are receivable. A diagram of the two-circuit input tuner is submitted, and our correspondent, who logically concludes that this part of the set is almost certainly at fault, asks us to criticise it and to say where the defect is most likely to be. It is stated that all components have been tested.

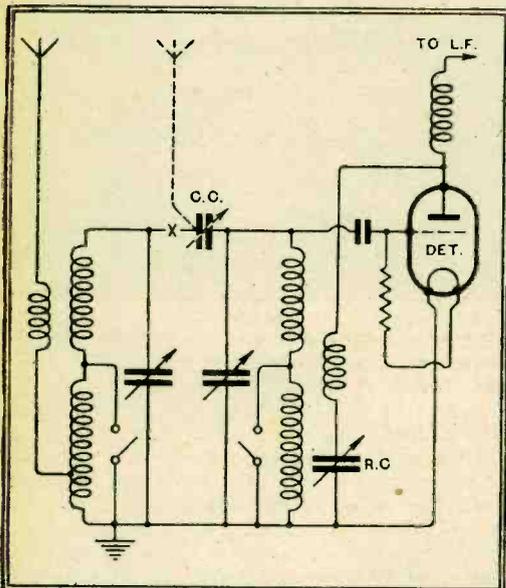


Fig. 1.—Stage-by-stage filter tests: the primary circuit is temporarily eliminated by interrupting the inter-circuit coupling at point X and transferring the aerial to the coupling condenser C.C.

As the arrangement shown is entirely conventional, and moreover is extremely simple, any derangement should be revealed by

straightforward tests. We are inclined to think that in all probability there is no fault at all; as the set is being used at something approaching the limit of its range, failure to receive signals is probably due to the user's lack of familiarity with this type of tuner. It seems probable that, without an exceptionally good aerial-earth system, nothing whatever would be heard until the two circuits are brought approximately into resonance.

The right procedure in such cases is temporarily to concentrate one's efforts on the secondary circuit; any fault that may exist in it should then be traceable quite easily, as the factor of uncertainty is largely eliminated. As capacity coupling is employed in the case with which we are dealing, it should be particularly easy to eliminate the primary circuit by employing the existing coupling capacity as an aerial feed condenser. This point is illustrated in Fig. 1.

Voltages for Variable-mu Valves.

VARIOUS methods have been suggested for ensuring the application of sensibly constant anode and screening grid voltages to variable-mu H.F. valves under changing conditions of grid bias. But it should be made clear that these schemes are always based on the assumption of a fixed voltage supply from the source from which the valves are fed. Moreover, it is necessary that the voltage of this source should not be very greatly in excess of that at which the valves are to work.

For example, it would be impossible to devise a fixed resistance feed for a variable-mu valve that would give reasonably constant anode and screen voltages from a 500-volt supply. At any rate, to do so would involve the use of a potentiometer of such a low resistance that the current consumed by it might well be excessive from the point of view of economy.

This is the difficulty of a reader who wishes to add a variable-mu H.F. valve to a high-power local-station set, of which he does not give full details, but where we suspect that a sufficiently large surplus output is not available.

We can only suggest that he attempts to adapt the voltage distribution system of an up-to-date receiver like the "Modern Straight Five" to his own particular needs. A simplified diagram of this system appeared in the "Hints and Tips" section of our issue for July 15th.

Field Current.

IT is admittedly something of a problem to know how to obtain rectified current for the field winding of a loud speaker, originally designed for connection to a D.C. mains, when one's supply system is changed over to alternating current.

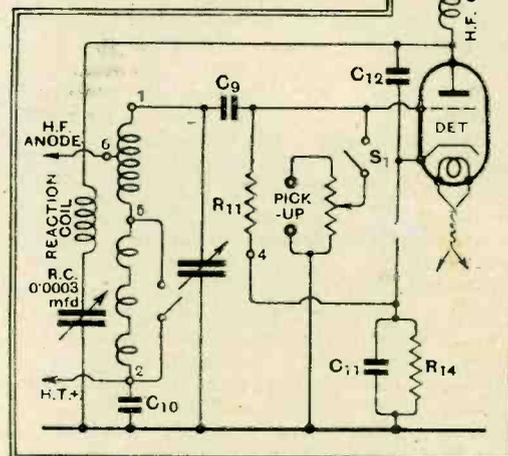
To a reader who finds himself in this predicament, and who asks for our advice, we can only suggest that he should first ascertain the ohmic resistance of the winding, and also the minimum current necessary for energising the field. With this information it will not be difficult to choose a high-voltage rectifier capable of supplying the necessary current at the correct voltage.

There is also the possibility that the instrument could be used as a smoothing choke in the manner which is now so popular in A.C. sets. Further, it may be that the field coil could be rewound to a resistance that might suit our correspondent's set better than the present winding. But it must not be forgotten, if this latter suggestion is followed up, that the field ampere-turns must not be sensibly less than at present. At any rate, if they are, there is a risk that the field will not be sufficiently intense for good results.

Adding Reaction.

IT is asked whether reaction can be added to the "Modern Straight Five" (*The Wireless World*, June 22nd and June 29th), and, if so, how this addition should be carried out.

Fig. 2.—A suitable reaction control circuit for the "Modern Straight Five." Component references correspond with those of the original constructional article.



As this set has two H.F. stages, and a total of four tuned circuits, the additional complication of reaction should hardly be necessary, either as an aid to sensitivity or selectivity. Its use might, in exceptionally difficult receiving conditions, confer a slight benefit, but would tend to upset the overall frequency characteristics.

However, done with care and used in moderation, the addition of reaction may be regarded as permissible, and the normal method of connection, as shown in Fig. 2, is applicable to the receiver in question. In dealing with any "2-H.F." set, the possibility of introducing instability through the extra wiring must be envisaged, and it would probably be wise to screen some, at least, of the reaction leads.

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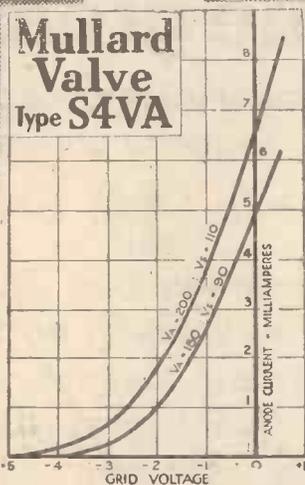
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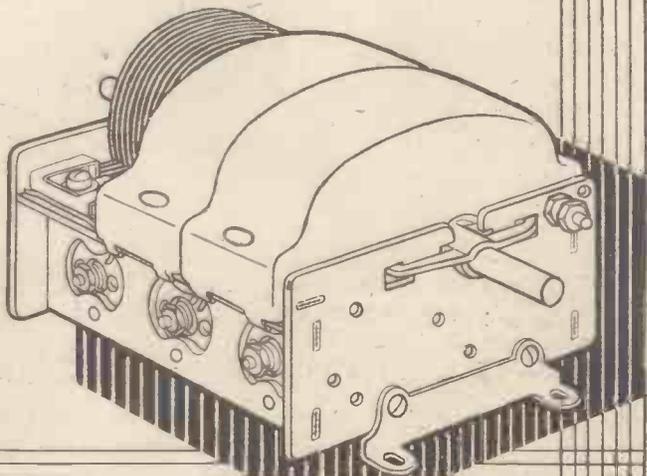
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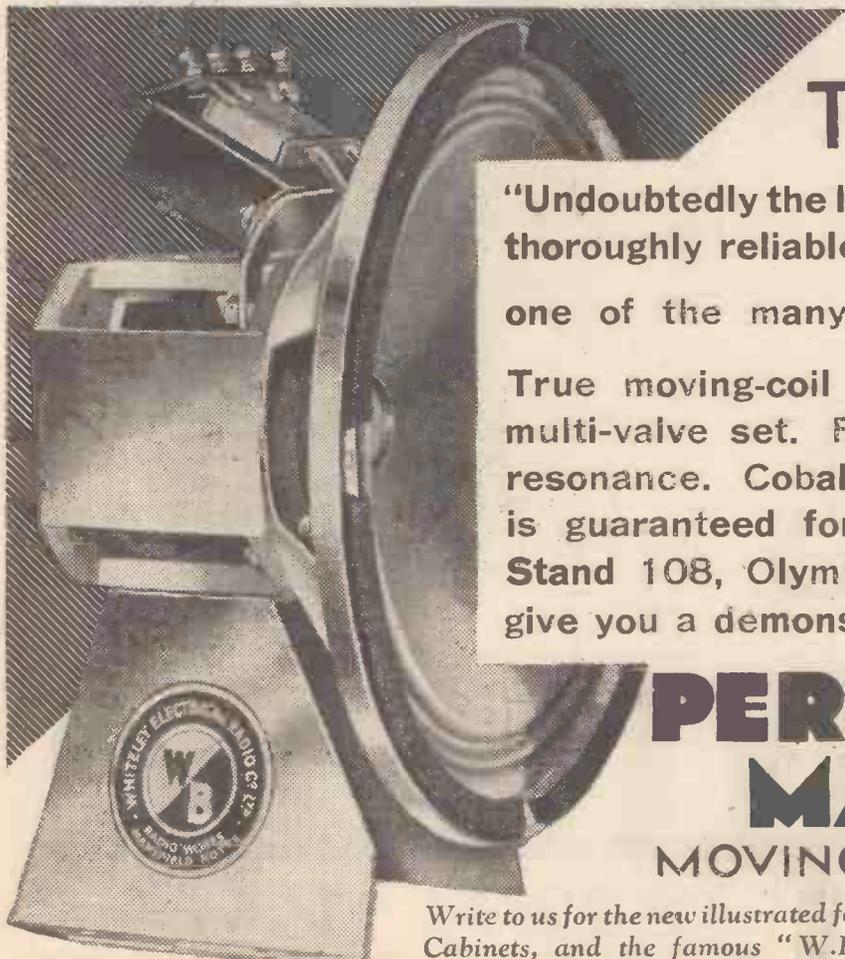
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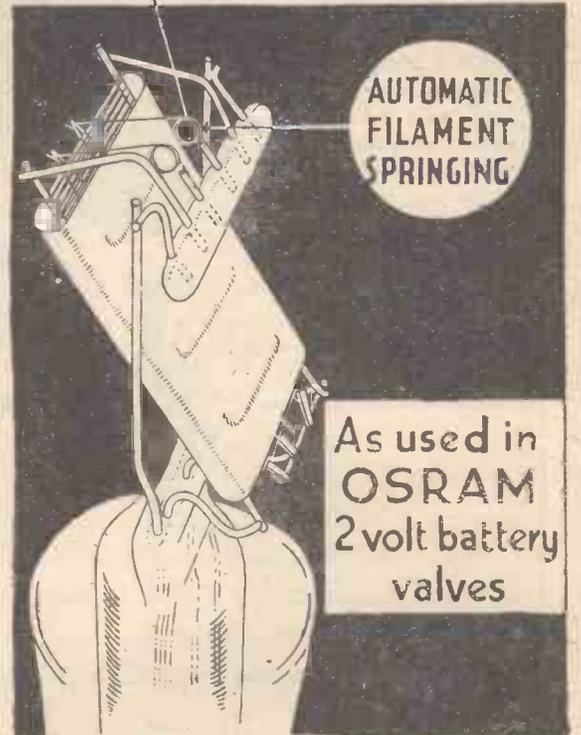
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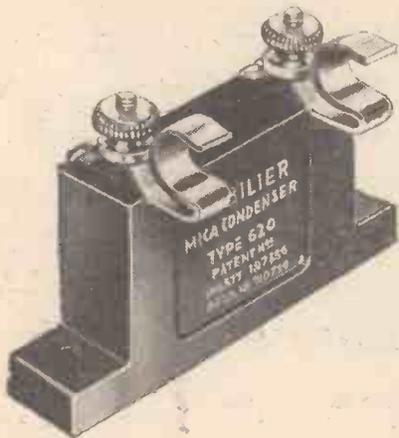
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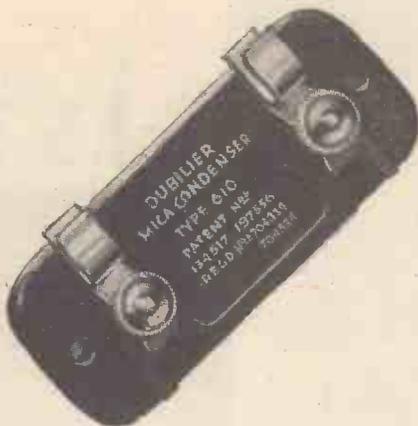
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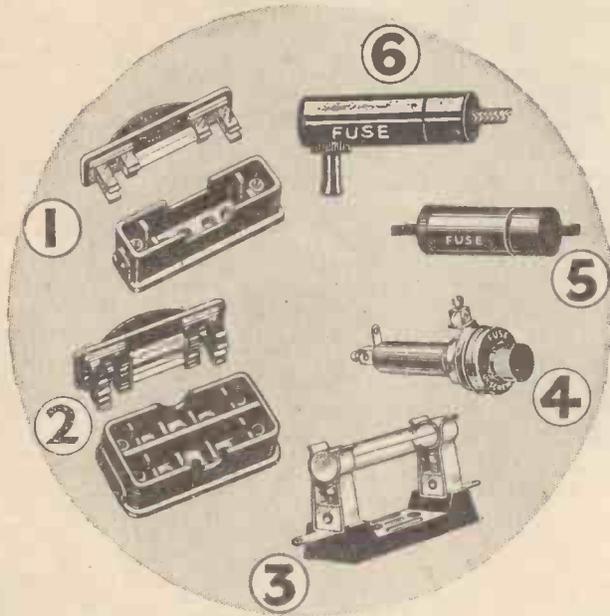
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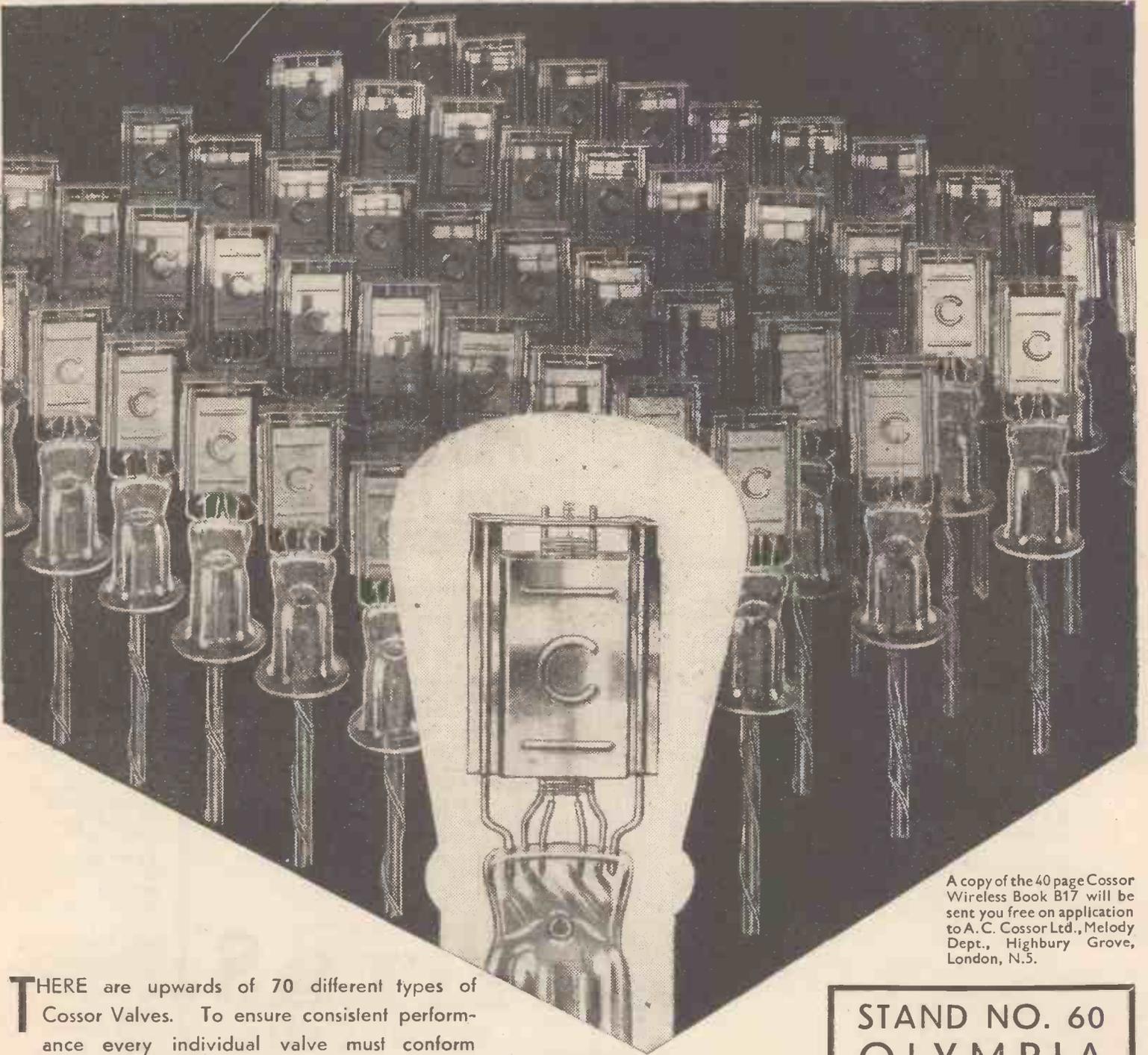
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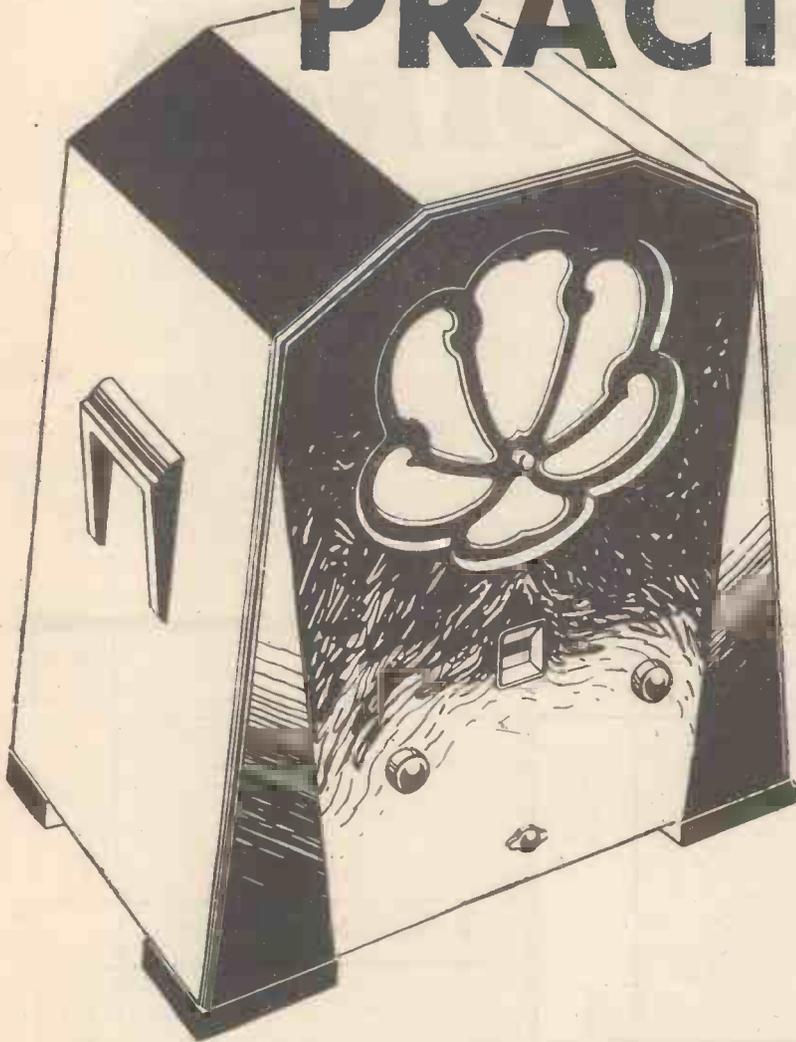
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Y.D.2	Steep Slope Power	6/6	P.440N	Pentode (for silent background)	13/6	K.450/40	Anode Dissipation, 40-Watt	50/-		
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P.215	Pentode	12/6	S.409	Screened Grid	12/6	RECTIFIERS				
D.210	Double Grid	13/6	W.420	Resistance Coupling	6/6					
4-VOLT TYPES			A.430	Detector	6/6	G.429	Half Wave, 30 mA.	7/6		
S.408	Screened Grid	12/6	P.520	Pentode	13/6	G.431	Full Wave, 30 mA.	8/6		
D.410	Double Grid	13/6	0.07 AMP.			G.470	Full Wave, 70 mA. up to 500 anode volts.	9/6		
W.412	Resistance Coupling	5/-	Y.G.5	Power	6/-	G.4120	Full Wave, 120 mA.	16/6		
H.412	High Frequency	5/-	Ask for catalogue with detailed characteristics.					G.4100	Half Wave, 100 mA.	15/6
A.420	Super Detector	5/-								
E.414	Power	6/6	A FREE SERVICE! Submit your radio problems to us! Our Technical Dept. will gladly answer your Wireless problems without charge or obligation.					G.4150	Half Wave, 150 mA.	48/-
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BROADCASTING STATIONS ABROAD.

ARRANGED IN ORDER OF WAVELENGTH.

Wavelength in Metres.	Frequency in Kilocycles.	Power in kW.	Station.	Tuning Positions.	Wavelength in Metres.	Frequency in Kilocycles.	Power in kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)		447.1	671	0.08	Notodden (Norway). (Relays Oslo)	
1875	160	8.5	Huizen (Holland). (Exchanges wavelengths with Hilversum every three months.)		447.1	671	0.5	Tartu (Esthonia)	
1796	167	54	Lahti (Finland)		441.2	680	50	Rome, IRO. (S.W. Station, 2RO on 25.4 m.)	
1724	174	75	Radio Paris, C.F.R.		435.4	689	55	Stockholm, SASA (Sweden)	
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (Generally relays Berlin.)		431	696	2.5	Belgrade (Yugoslavia)	
1600	187.5	10	Irkoutsk, RV14 (Russia)		424.3	707	2	Madrid, EAJ7 (Union Radio). (After 7.0 p.m.)	
1554.4	193	30	Daventry National, (S.W. Stn. G5SW on 25.53 m.)		424.3	707	1.3	Madrid, EAJ2 (Radic Espana). (Up to 7.0 p.m.)	
1538	195	7	Ankara (Angora) (Turkey)		416.4	720.5	1.5	Moscow, Imini Stalina (Russia)	
1481	202.5	100	Moscow, RV1 (Old Komitern) (Russia)		413	725	5	Berlin, No. 1, Witzleben (Germany)	
1446	207.5	13	Eiffel Tower, FLE, Paris		408.7	734	1.2	Rabat (Morocco)	
1412	212.5	120	Warsaw 1 (Poland)		408.7	743	25	Dublin (Irish Free State)	
1380	217.5	100	Novosibirsk, RV6 (Russia)		398.9	752	16	Katowitz (Poland)	
1350	222.2	0.5	Tunis-Kasbah (Tunisia)		394.2	761	25	Sottens (Radio Suisse Romande) (Switzerland)	
1348	222.5	30	Motala (Sweden). (Relays Stockholm)		389.6	770	12	Midland Regional	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)		389.6	770	1.5	Bucharest (Roumania)	
1260	238	10	Baku, RV8 (Russia)		389.6	770	10	Frankfurt-a-M. (Germany)	
1229.5	244	0.6	Boden (Sweden). (Relays Stockholm)		385.1	779	10	Archangel, RV36 (Russia)	
1200	250	5	Stamboul (Turkey)		385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
1200	250	21	Reykjavik (Iceland)		381	788	10	Stalina, RV26 (Russia)	
1170	256	25	Tashkent, RV11 (Russia)		376.4	797	16	Lwow (Lemberg) (Poland)	
1154	260	7.5	Kalundborg (Denmark)		372.2	806	50	Scottish Regional (Falkirk)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)		370.1	810.5	1.5	Hamburg (Germany)	
1100	272.7				370.1	810.5	0.8	Radio, LL, Paris	
1105	271.5	35	Minsk Koloditschi, RV10 (Russia)		368.1	815	1	Seville, EAJ5 (Union Radio) (Spain)	
1083	277	60	Oslo (Norway)		368.1	815	10	Helsinki (Finland). (Relays Lahti)	
1071	280	10	Tiflis, RV7 (Russia)		368.1	815	1	Bolzano (Italy)	
1035	290	36	Kiev, RV9 (Russia)		368.1	815	10	Kharkov, RV20 (Russia)	
1000	300	100	Leningrad, Kolpino RV53 (Russia)		367.6	816	0.7	Fredrikstad (Norway). (Relays Oslo)	
988	310	10	Alma Ata, RV60 (Russia)		364.1	824	1	Bergen (Norway)	
938	320	20	Kharkov, RV4 (Russia)		363.6	825	16	Algiers (Algeria)	
882	340	20	Saratov, RV3 (Russia)		360.6	832	60	Mühlacker (Stuttgart) (Germany)	
849	353.4	4	Rostov-on-Don, RV12 (Russia)		355.9	843	50	London Regional (Brookmans Park)	
825	363.6	50	Sverdlovsk, RV5 (Russia)		352.1	852	7	Graz (Austria). (Relays Vienna)	
770	389	0.6	Ostersund (Sweden). (Relays Stockholm)		348.8	860	7.6	Barcelona, EAJ1 (Spain)	
760	395	1.3	Geneva (Switzerland). (Relays Sottens)		348.8	860	10	Leningrad, RV70 (Russia)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)		345.2	869	11.5	Strasbourg, PTT (France)	
700	428.6	4	Minsk, RV10 (Russia)		341.7	878	35	Brno (Brunn) (Czechoslovakia)	
690	434.6	1.5	Oulu (Finland)		338.2	887	15	Brussels II, Velthem (Belgium). (Flemish Programme.)	
680	441.2	0.6	Lausanne (Switzerland). (Relays Sottens)		335	896	5	Cadiz (Spain)	
575	515.1	1.2	Samara, RV16 (Russia)		334.4	897	1.9	Poznan (Poland)	
574.7	522	2.5	Ljubljana (Yugoslavia)		334.4	905	7	Milan (Italy). (Relays Turin)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (Relays Stuttgart)		328.2	914	60	Poste Parisien (France)	
563.1	528	2	Grenoble (France)		325	923	1.5	Breslau (Germany)	
566	530	0.25	Hanover (Germany). (Relays Hamburg)		321.9	932	10	Göteborg (Sweden). (Relays Stockholm)	
565	531	16	Wilno (Poland). (Relay Station)		318.8	941	0.5	Sofia (Bulgaria)	
560	536	0.25	Augsburg (Germany). (Relays Munich)		318.8	941	0.25	Dresden (Germany). (Relays Leipzig)	
560	536	1.5	Kaiserslautern (Germany). (Relays Munich)		318.8	941	1.5	Naples, INA (Italy). (Relays Rome)	
560	536	0.7	Hamar (Norway). (Relays Oslo)		315.8	950	1.6	Marseilles, PTT (France)	
550	545	18.5	Budapest, No. 1 Lakihegy (Hungary)		312.8	959	1.7	Cracow (Poland)	
542	554	3	Palermo (Italy)		312.8	959	10	Genoa, IGE (Italy). (Relays Turin)	
542	554	10	Sundsvall (Sweden). (Relays Stockholm)		309.9	968	1	Cardiff	
533	563	1.5	Munich (Germany)		308.6	972	0.7	Radio Vitus (Paris)	
525	571	15	Riga (Latvia)		307	977	0.5	Falun (Sweden)	
517	580	15	Vienna (Rosenhügel) (Austria)		307	977	0.75	Zagreb (Yugoslavia)	
509	589	15	Brussels No. 1, Velthem (Belgium). (French Programme.)		304	986	13	Bordeaux Lafayette, PTT (France)	
508	590	10	Astrakhan, RV35 (Russia)		301.5	995	50	North National (Manchester)	
501.7	598	10	Nijni Novgorod, RV42 (Russia)		298.8	1004	11	Tallinn (Esthonia)	
500.8	599	20	Florence, IFI (Italy). (Relays Turin)		296.1	1013	7	Hilversum (Holland). (Up to 4.40 p.m.)	
495.8	605	1.2	Trondheim (Norway)		296.1	1013	20	Hilversum (Holland). (After 4.40 p.m.)	
488.6	614	120	Prague, No. 1 (Czechoslovakia)		293.5	1022	0.7	(Exchanges wavelengths with Huizen every three months.)	
486.2	617	10	Oufa, RV22 (Russia)		293.5	1022	2.6	Limoges, PTT (France)	
480	625	50	North Regional (Manchester)		291	1031	1	Kosice (Czechoslovakia)	
480	625	10	Ivanovo-Voznesenk, RV33 (Russia)		291	1031	10	Tampere (Finland). (Relays Helsinki)	
472.4	635	80	Langenberg (Germany)		288.5	1040	—	Viipuri (Viborg) (Finland). (Relays Helsinki)	
465.8	644	1.5	Lyons la Doua, PTT (France)		286.8	1046	0.7	British Relay Stations (Bournemouth, Plymouth, Swansea)	
459.4	653	60	Beromünster (Schweizerischer Landessender) (Switzerland)		286	1049	0.8	Lyons (Radio-Lyon) (France)	
453.2	662	0.6	San Sebastian, EAJ8 (Spain)		283.6	1058	0.5	Montpellier (France)	
453.2	662	1	Pori (Uleaborg) (Finland)		283.6	1058	0.5	German Relay Stations (Berlin, Magdebourg, Stettin)	
453.2	662	0.5	Danzig. (Relays Heilsberg)		283.6	1058	0.5	Innsbruck (Austria). (Relays Vienna)	
453.2	662	0.5	Klagenfurt (Austria). (Relays Vienna)		282.2	1063	2	Lisbon CT 1AA (Portugal). (Short-wave Station on 31.35 m.)	
453.2	662	0.7	Porsgrund (Norway). (Relays Oslo)		281.2	1067	0.75	Copenhagen (Denmark)	
453.2	662	1	Salamanca, EAJ22 (Spain)		278.8	1076	13.5	Bratislava (Czechoslovakia)	
453.2	662	0.1	Tromsø (Norway)		276.5	1085	60	Heilsberg (Germany)	
453.2	662	0.5	Bodö (Norway)		273.7	1096	7	Turin (Italy)	
453.2	662	0.15	Upsala (Sweden). (Relays Stockholm)		271.5	1105	1.3	Rennes, PTT (France)	
450.4	666.7	10	Odessa, RV13 (Russia)		269.8	1112	0.25	Bremen (Germany). (Relays Hamburg)	
447.1	671	0.7	Paris, Ecole Superieure, PTT		269.3	1115	20	Bari (Italy)	
447.1	671	0.35	Aalesund (Norway)		267.6	1121	8	Valencia (Spain)	
447.1	671	0.15	Rjukan (Norway). (Relays Oslo)		265.8	1128.5	1.3	Lille, PTT (France)	
					263.8	1137	11.2	Moravska Ostrava (Czechoslovakia)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Wavelength in Metres.	Frequency in Kilocycles.	Power in kW.	Station.	Tuning Positions.	Wavelength in Metres.	Frequency in Kilocycles.	Power in kW.	Station.	Tuning Positions.
261.5	1147	50	London National (Brookmans Park)		235.5	1274	0.07	Nimes (France)	
259.3	1157	2	Leipzig (Germany)		235.5	1274	0.5	Kristiansand (Norway)	
257.1	1167	10	Hörby (Sweden). (Relays Stockholm)		233.8	1285	1.65	Lodz (Poland). (Relay Station)	
255.1	1176	0.7	Toulouse, PTT (France)		232.2	1292	0.25	Kiel (Germany). (Relays Hamburg)	
253.1	1185	5	Gleiwitz (Germany). (Relays Breslau)		232.2	1292	0.25	Norrköping (Sweden)	
253.1	1185	1	Barcelona, EAJ15 (Assoc. Nat.) (Spain)		230.6	1301	—	Swedish Relay Stations. (Malmö, Karlstad, Hälsingborg, Umea)	
249.6	1202	—	Almeria, EAJ18 (Spain)		230.6	1301	0.25	Trollhätten (Sweden)	
249.6	1202	0.2	Prague, No. 2 (Czechoslovakia). (Temporary)		227.4	1310	0.5	Uddevalla (Sweden)	
249.6	1202	0.8	Kalmar (Sweden). (Provisional)		226	1328	0.15	Hüdiksvall (Sweden). (Provisional)	
247.7	1211	10	Juan-les-Pins, Nice (France)		224.4	1337	1	Cork (Irish Free State)	
245.9	1220	0.3	Trieste (Italy)		223	1345	10	Fécamp, Radio-Normandie (France)	
245.9	1220	0.01	Varberg (Sweden)		221.4	1355	0.4	Helsinki, No. 2 (Finland)	
245.9	1220	0.5	Bloemendal (Holland). (Sundays only)		218.5	1373	0.5	Flensburg (Germany). (Relays Hamburg)	
245.9	1220	0.4	Berne (Switzerland)		218.5	1373	0.5	Salzburg (Austria). (Relays Vienna)	
245.9	1220	0.2	Cartagena (Spain)		217	1382	0.5	Königsburg (East Prussia) (Germany)	
245.9	1220	0.2	Eskilstuna (Sweden). (Relays Stockholm)		215.6	1391	0.2	Halmstad (Sweden)	
245.9	1220	0.25	Cassel (Germany). (Relays Frankfurt)		215.6	1391	0.1	Brussels, Radio-Conference	
245.9	1220	0.5	Linz (Austria). (Relays Vienna)		214	1400	1	Aberdeen	
245.9	1220	0.5	Pietarsaari (Finland)		214	1400	10	Warsaw, No. 2 (Poland)	
245.9	1220	0.4	Säffle (Sweden). (Relays Stockholm)		211.3	1420	1	Newcastle	
245.9	1220	0.1	Schaerbeck (Belgium)		209.8	1430	—	Budapest, No. 2 (Hungary)	
245.9	1220	0.5	Turku (Abo) (Finland). (Relays Helsinki)		207	1450	0.15	Boras (Sweden)	
244.1	2229	0.5	Basle (Switzerland)		206	1460	0.2	Ornsköldsvik (Sweden)	
242.3	1238	1	Belfast (N. Ireland)		204.1	1470	0.2	Gävle (Sweden)	
240.6	1247	0.5	Stavanger (Norway)		202.7	1480	0.25	Kristinehamn (Sweden)	
240	1250	1.5	Béziers (France)		201.3	1490	0.25	Jönköping (Sweden)	
238.9	1256	2	Nürnberg (Germany). (Relays Munich)		195	1530	0.2	Karlskrona (Sweden)	
236.2	1270	3	Bordeaux, Sud-Ouest (France)						

PRINCIPAL SHORT-WAVE STATIONS.
ARRANGED IN ORDER OF WAVELENGTH.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent B.S.T.)

Wavelength in Metres.	Frequency in Kilocycles.	Call Sign.	Station.	Tuning Positions.	Wavelength in Metres.	Frequency in Kilocycles.	Call Sign.	Station.	Tuning Positions.
14.47	20,720	LSY	Buenos Aires (Argentina). (Sun. 22.00)		34.68	8,650	W2XV	Long Island, N.Y. (U.S.A.). (Fri. 23.00)	
14.55	20,618	PMB	Malabar (Java). (Daily 11.00-16.00)		36.92	8,125	PLW	Bandoeng (Java). (Daily 11.00-15.00)	
15.5	19,350	—	Nancy (France). (Daily 21.00-22.00)		37.2	8,060	OUIH	Vienna (Techn. Colleg). (Mon. and Thurs. 21.30)	
15.93	18,830	PLE	Bandoeng (Java). (Tues. 14.40-16.40)		38.0	7,890	PK3BK	Soerabaya (Java). (Tues., Fri., Sat. 11.40)	
16.32	18,300	FZA	Saigon (Fr. Indo China). (Sun. 19.00-21.00)		39.7	7,556	HKP	Bogota (Colombia). (Westinghouse Labs.)	
16.57	18,105	W9XAA	Chicago, Ill. (U.S.A.). (Relays WCFL)		40.7	7,370	X26A	Nuevo Laredo (Mexico). (Thurs. 17.00)	
16.82	17,804	PCV	Kootwijk (Holland). "Voice of Holland" (Sat. 15.40)		41.0	7,320	HSP2	Bangkok (Siam). (Mon. 14.00)	
16.9	17,750	HSP	Bangkok (Siam). (Sun. and Tues. 21.00)		41.5	7,320	—	Budapest (Hungary). (Tech. Sch.) (07.30-08.10)	
19.56	15,340	W2XAD	South Schenectady, N.Y. (U.S.A.) (Daily 21.00)		41.5	7,230	HB9D	Zurich (Radio Club) (Switzerland). (1st and 3rd Sun.)	
19.68	15,244	FYA	Pontoise (France). (Colonial Stn. E-W)		41.6	7,211	EAR58	Teneriffe (Radio Club) (Canary Islands)	
19.72	15,210	W8XK	East Pittsburg, Pa. (U.S.A.) (Relays KDKA)		41.7	7,195	VS1AB	Singapore (Malay States). (Sun. and Wed. 15.30)	
19.73	15,200	DJB	Zeesen (Germany). (Daily 14.00-18.00)		42.0	7,143	VK2HR	Sydney (Australia)	
19.84	15,120	HVJ	Vatican State, Rome. (Daily 12.00)		43.0	6,970	EAR110	Madrid. (Tues. and Sat. 23.30)	
19.9	15,075	T14NRH	Heredia (Costa Rica). (Sat., Sun., Mon. 17.00 and 22.00)		43.0	6,970	PK3BK	Soerabaya (Java). (Tues. and Thurs. 11.40)	
20.5	14,630	XDA	Chapultepec (Mexico). (Daily 20.30)		45.0	6,667	FM8KR	Constantine (Algeria). (Mon. and Fri. 23.00)	
21.5	13,950	—	Bucharest University (Roumania). (Wed. and Sat. 20.00)		45.38	6,611	REN	Moscow	
23.38	12,820	—	Rabat (Morocco). (Sun. 12.30)		46.69	6,425	W3XL	Bound Brook, N.J. (U.S.A.). (Fri. 22.00 and 04.00, Sat. 18.30 and 04.00)	
25.2	11,900	FYA	Pontoise (France). (Colonial Stn. N-S)		48.0	6,250	CN8MC	Casablanca (Morocco). (Relays Rabat)	
25.25	11,880	W8XK	East Pittsburg, Pa. (U.S.A.). (Relays KDKA)		48.2	6,220	2RO	Rome (Italy)	
25.27	11,870	VUC	Calcutta (India). (Weekdays 02.45 and 15.15)		48.35	6,205	HKC	Bogota (Colombia). (Daily 16.00)	
25.34	11,840	W9XAA	Chicago, Ill. (U.S.A.). (Relays WCFL)		48.62	6,170	HRB	Tegucigalpa (Honduras). (Daily 01.00)	
25.4	11,810	2RO	Prato Smeraldo, Rome. (16.00 and 19.30)		48.65	6,167	X1F	Mexico City (Mexico)	
25.42	11,800	VE9GW	Bowmanville (Canada). (Daily 18.00)		48.8	6,147	VE9CE	Winnipeg (Canada). (Daily ex. Sun. 00.30)	
25.46	11,777	F3ICD	Saigon (Fr. Indo China). (Fri. 15.30)		48.86	6,140	W8XK	East Pittsburg, Pa. (U.S.A.). (Relays KDKA)	
25.5	11,760	XDA	Chapultepec (Mexico). (Daily 21.00)		49.02	6,120	W2XE	Long Island, N.Y. (U.S.A.). (Relays WABC)	
25.53	11,750	G5SW	Chelmsford. (Relays Dacentry National daily, ex. Sun.)		49.05	6,122	F3ICD	Saigon (Fr. Indo China). (Daily 12.30)	
25.6	11,715	VE9JR	Winnipeg (Canada). (Daily ex. Sat. and Sun. 17.45)		49.18	6,100	W3XAL	Bound Brook, N.Y. (Relays WJZ)	
25.63	11,700	FYA	Pontoise (France). (Colonial Stn. E-W, daily 21.00)		49.22	6,095	VE9GW	Bowmanville, Ont. (Canada). (Daily 21.00)	
26.83	11,180	CT3AQ	Funchal (Madeira). (Tues. and Thurs. 10.30-12.30)		49.34	6,080	W9XAA	Chicago, Ill. (U.S.A.). (Relays WCFL)	
28.2	10,365	PLR	Bandoeng (Java). (Daily 11.00-15.00)		49.34	6,080	W2XCX	Kearny, N.J. (U.S.A.). (Relays WOR)	
28.98	10,350	LSX	Buenos Aires (Argentina). (Daily 21.30)		49.4	6,072	UOR2	Vienna. (Tues. 13.00, Thurs. 15.00, Sat. 23.00)	
29.3	10,238	T14NRH	Heredia (Costa Rica). (Daily 23.00 and 03.00)		49.4	6,072	ZTJ	Johannesburg (S. Africa). (Daily 16.30)	
30	10,000	—	Belgrade (Yugoslavia). (Mon. 21.00)		49.43	6,069	VE9CS	Vancouver, B.C. (Canada)	
30.4	9,869	EAQ	Aranjuez (Spain). (Daily 00.30, Sat. 19.00)		49.46	6,065	—	Motala (Sweden). (Relays Stockholm)	
31.10	9,640	HS2PJ	Bangkok (Siam). (Mon. 02.00-03.00)		49.5	6,060	W3XAU	Philadelphia, Pa. (U.S.A.). (Relays WCAU)	
31.25	9,598	CT1AA	Lisbon (Portugal). (Thur. and Fri. 23.00-01.00)		49.5	6,060	W8XAL	Mason, Ohio (U.S.A.). (Relays WLW)	
31.28	9,590	VK2ME	Sydney (Australia). (Sun. 04.00, 08.30, 10.30, 17.30)		49.5	6,060	YQ7LO	Nairobi (Kenya Colony). (Daily 16.30)	
31.3	9,582	W3KAU	Philadelphia, Pa. (U.S.A.). (Daily ex. Thurs. and Fri. 21.00)		49.59	6,050	VE9GX	Halifax (Nova Scotia). (Relays CHNS)	
31.35	9,570	W1XAZ	East Springfield, Mass. (U.S.A.). (Relays WBZ)		49.67	6,042	W2XAL	Coytesville, N.J. (U.S.A.). (Relays WRNY)	
31.35	9,370	SRI	Posen (Poland). (Tues. and Thurs. 19.30)		49.7	6,040	PK3AN	Soerabaya (Java). (Daily 11.40)	
31.38	9,560	DJA	Zeesen (Germany). (Daily 14.00)		49.83	6,020	W9XF	Chicago, Ill. (U.S.A.). (Relays WENR)	
31.48	9,530	W2XAF	Schenectady, N.Y. (U.S.A.). (Relays WGY)		49.96	6,005	HRB	Tegucigalpa (Honduras). (Daily ex. Sun. 00.00-05.00)	
31.51	9,520	OXV	Skamlebaek (Denmark). (Relays Copenhagen)		50.0	6,000	EAR25	Barcelona, Radio Club (Spain). (Sat. 21.00)	
31.55	9,510	VK3ME	Melbourne (Australia). (Wed. and Sat. 11.00)		50.0	6,000	RW59	Moscow	
31.75	9,450	—	Rio de Janeiro (Brazil). (Daily 23.30)		50.0	6,000	ZL3ZC	Bucharest (Roumania)	
31.86	9,415	PLV	Bandoeng (Java). (Tues. 14.40)		50.0	6,000	—	Christchurch (New Zealand). (Wed. 03.00, Sat. 07.30)	
32.26	9,300	—	Rabat (Morocco). (Sun. 20.00)		50.26	5,970	HVJ	Vatican State, Rome. (Daily 20.00)	
33.00	9,090	—	Radio LL (Paris). (Daily 12.30 and 20.00)		51.22	5,857	XDA	Chapultepec (Mexico)	
33.50	8,928	TGX	Guatemala City (S. America)		54.52	5,502	W2XBH	Brooklyn, N.Y. (U.S.A.). (Relays WCGU)	
					58.0	5,172	OK1MPT	Prague (Czechoslovakia). (Tues. and Fri. 20.30)	
					58.3	5,145	PMY	Bandoeng (Java). (Tues. 14.40)	
					62.5	4,800	W2KV	Long Island, N.Y. (U.S.A.). (Fri. 24.00)	
					70.2	4,273	RW15	Khabarovsk (Russia). (Daily 10.00-13.00)	

SUNDAY

AUGUST THE FOURTEENTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Organ recital. Instrumental concert. Orchestral concert. Recital for two violins. Welsh service. Service from St. Martin-in-the-Fields. Band concert.
LONDON REGIONAL	Light music. Song recital. Concert from Ostend Kursaal.
MIDLAND REGIONAL	Band concert. Pianoforte recital. London Regional programme.
NORTH REGIONAL	Brass Band concert. London Regional programme.
WEST REGIONAL	Orchestral concert. National programme. Welsh Service from Peniel Baptist Chapel, Rhosilanerch-rugog, Wrexham.
SCOTTISH REGIONAL	National programme.
BELFAST	National programme.

ABROAD

BRUSSELS (No. 1)	Concert from Knocke Casino.
MOSCOW	English talk: The Jews in Russia.
MUNICH	Opera: "Götterdämmerung" (Wagner), relayed from the Prince Regent Theatre.
STRASBOURG	Greig concert.
VIENNA	Peasant Festival, relayed from Gmünd, in Carinthia.

9.0, Two Comedies: (a) La rente viagère (Gabriel d'Hervilliez), and (b) Le pianiste est en retard (Alphonse Crozière).

BRATISLAVA

279 metres; 14 kW.—4.0 p.m., Orchestral Concert conducted by A. Motál, relayed from Trenčianske Teplice: Selection from Werther (Masseuet); Overture, Mignon (Thomas); Introduction to Dalibor (Smetana); Under the Lime Tree (Motál). In the interval: Talk on Trenčianske Teplice. 5.30, Reading. 5.45, Light Music on Gramophone Records. 6.15, Concert of Popular Music, conducted by Gumbir. 7.0, Talk: Bee-keeping in Czechoslovakia. 7.30, See Prague. 9.0 (approx.), See Moravsko-Ostrava. 10.0, See Prague. 10.15, (approx.), Programme Announcements and News Bulletin. 10.20, Cigány Concert, relayed from Trenčianske Teplice.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW., and GLEIWITZ, 253 metres.—10.0 a.m. (from Gleiwitz), Catholic Service. 11.0, Concert by the Silesian Philharmonic Orchestra. Conductor, L. Borchard: Ballet-Suite (Grétry-Mottl); Overture, The Hebrides (Mendelssohn); Suite, From the Middle Ages (Glazunov); Selection from Hansel and Gretel (Humperdinck); Overture, Richard III (Volkmann); Ballet Suite (Reger); Slav Dances Nos. 3 and 8 (Dvorak); Overture, The Gipsy Baron (Strauss). 12.55 p.m., See Schweizerischer Landessender. 2.0, News Bulletin. 2.10, The Rhymed Unrhymed, by Traugott Conrad. 2.25, Talk on Commercial Law. 2.45, Talk on Photography. 3.30, See Munich. 4.50, Running Commentary on the Grass Track Races in Obernigk. 5.15, Reading. 5.35, Concert by the Station Orchestra. Conductor, F. Marszałek: Potpourri (Gollwyn); Waltz from Liselott (Künnecke); Two Songs from Madonna, wo bist du? (Haselbach); Two Songs from Der Pudel (Geisler); Waltz, Es war in Wien (Santta); Hungarian Ballet, Etelka (Alibont); Potpourri, The World in Song (Intrator). 6.40, Arnold Ebel Concert. Soloist, Minna Ebel-Wilde (Soprano). The Composer at the Piano-forte: Songs for Soprano and Piano-forte: (a) Schifferliedchen, (b) An den Tod, (c) Liebesprobe, (d) Abendlied; Pieces from the Impressions for Piano-forte, Op. 33 and 34: (a) Morgenlied, (b) Der chinesische Pavillon, (c) Lustiges Ständchen; Songs for Soprano and Piano-forte: (a) Frühling, (b) Flieder, (c) Kinderlied, (d) Frühling, Sommer, Herbstzeit. 7.15, Weather for Farmers, followed by Sports Results. 7.25, Reading from the Works of Hermann Stehr. 8.0, Concert of Military Marches from Three Centuries, with Introductory Talk on the Development of Military Music. 9.0, News Bulletin. 9.10, Concert of Silesian Marches, 10.0, Time Signal, Weather Forecast, News Bulletin, Sports Results, and Programme Announcements. 10.25, Dance Music by the Station Orchestra. 12 Midnight, Close Down.

ALGIERS

363.3 metres; 13 kW.—7.0 p.m., Dance Music. 7.30 Songs from Opera. 8.0, Concert of Spanish Music. 8.50, Concert of Chamber Music. 9.45, Jazz Music.

BARCELONA

RADIO-BARCELONA, Call EAJ1; 349 metres; 8 kW.—2.0 p.m., Popular Music on Gramophone Records. 2.30, Sextet Concert: Military March No. 1 (Schubert); Violin Solo: Air from Sylvia (Delibes); Serenade (Translatour); Selection from Siegfried (Wagner). 3.0, Theatre Notes, Gramophone Records of Light Music and Film Review. 3.20, Sextet Concert (contd.): Granada (Albeniz); Selection from La casita blanca (Serrano); Concert Bolero (Roco); Andalusian Dance, Entre flores (Pacheco). 4.0, Programme for Hospitals and other Charitable Institutions, with Gramophone Records. 5.0, Interval. 6.30, Popular Music on Gramophone Records. 7.0, Concert by the Station Orchestra: March, Horse Guards (Gilson); Selection from La Picaronna (Aloanzo); Minuet (Bolzoni); Sérénade Mélanolique (Tchailkovsky). 7.30, Accordion Recital by Jean Otte; Waltz, Réveil des Roses (Demsele); American Schottische (Demsele); Melody in F (Rubinstein) Overture, Si j'étais roi (Adam). 8.0, Agricultural Talk in Catalan. 8.10, Concert by the Station Orchestra. Soloist: Pepita Paulet (Songs). 9.0, Dance Music by the Melody Boys Band, relayed from the Excelsior Dance Hall. 10.0, Programme for Women. 10.15, Request Gramophone Records. 11.45, Chess Lesson. 12 Midnight, Close Down.

BASEL.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.5 kW.—12.5 p.m., Gramophone Records of Variety Music. 12.30, Orchestral Concert. 1.30, News Bulletin. 4.0 (approx.), Programme for Workers. 5.0, Medical Talk. 5.30, Gramophone Records of Variety Music. 7.25, Time and Programme Announcements. 7.30, Duets from The Bayadere (Kálmán). 8.0, Talk on Wireless. 8.40, Cello Recital by Nikola Mandrino, followed by Sports Notes. 9.15, Gramophone Records of Light Music. 9.25, Song Recital by Ilona Lenhart: Ave Maria (Kahn); Cradle Song (Gretchaninov); Aria from Dinorah (Meyerbeer); Air des rossignols (Saint-Saëns); Villanella (Bell'Acqua). 9.55, News Bulletin. 10.0 (approx.), Orchestral Concert: Overture, Fra Diavolo (Auber); Selection from The Rose of Stamboul (Fall); Dance (Friml); Egyptian Dance (Friml); Waltz, Frohsinn (Waldteufel). 11.0, Cigány Concert, relayed from the Rudnicain Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—11.0 a.m., Talk on Rudolf Binding on his Sixty-Fifth Birthday and Reading from his Works. 11.25, Concert from Breslau. 12.55 p.m., See Schweizerischer Landessender. 1.45, See Berlin (Witzleben). 2.15, Talk: Dance Orgies in Indian Wigwams—with Gramophone Illustrations. 2.40, Talk: Garden Wonders and Wonder Gardens. 3.5, Talk: The Alemannic Peasant. 3.30, See Munich. 4.15, Sports relay from Hamburg. 4.35, See Berlin (Witzleben). 6.0, Talk: The Problem of Prophecy. 6.30 to 8.0, See Berlin (Witzleben). 8.0, See Vienna. 10.20, Weather, News and Sports Notes, followed by Dance Music from Berlin (Witzleben). 12.30 a.m. (Monday), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—11.0 a.m., See Breslau. 12.55 p.m., See Schweizerischer Landessender. 1.45, Talk for Parents. 2.15, Song Recital by Dorothea Rink (Soprano). 2.35, Piano-forte Recital by Willy Hahn. 3.0, Fairy Tales for Children. 3.30, See Munich. 4.15, Sports Relay from Hamburg. 4.35, Wind Instrument Concert. 6.10, Topical Programme. 6.30, With the Microphone through the Mark District. 6.50, Talk: Opéra Bouffe—with Gramophone Illustrations from Così fan tutte (Mozart); The Barber of Seville (Rossini); The Bartered Bride (Smetana); and other Operas. 7.45, Sports Notes. 8.0, Concert by the Berlin Wireless Orchestra, conducted by Bruno Seidler-Winkler: Overture, Norma (Bellini); Suite No. 1 from L'Arlésienne (Bizet); Dance Festival from Don Quixote (Wilhelm Kienzl); Ballet Music from Faust (Gounod); Two Hungarian Dances—Nos. 2 and 7 (Brahms); Concert Overture, Meeresselle und glückliche Fahrt (Mendelssohn); Scherzo, Caprice, Op. 11 (Dvorak); Zorahayda—Legende, Op. 11 (Svendens); Polovtsian Dances (Borodin). 9.0 (in an interval), News and Sports Notes. 10.0, Second News, followed by Dance Music with Vocal Refrains. 12.30 a.m. (Monday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

320.3 metres; 13 kW.—12 Noon, Concert relayed from Paris (Ecole Supérieure), (447.1 metres). 2.0 p.m., Relay from Paris or Relay of a Local Celebration. 6.15 (approx.), Radio Journal. 8.0, Programme for Ex-Servicemen. 8.15, Lottery Results. 8.30, Variety Music on Gramophone Records.

Concert of Light Music and Romanian Music by the Ionescu Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Concert (contd.). 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records. 7.0, L'Elisir d'amore—Opera (Donizetti). In the intervals, News and Time Signal.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on 210 metres from 6.30 to 12 Midnight.—9.0 a.m., Press Review and Beauty Culture. 10.0, Catholic Service. 11.15, Evangelical Service, followed by Time Signal and Weather Forecast, and Concert of Hungarian Opera Music by the Royal Hungarian Opera House Orchestra. Conductor: Otto Berg. 2.0 p.m., Opera Music on Gramophone Records: Melodies from Faust (Gounod). 3.0, Agricultural Talk. 3.45, Cigany Music by the Bela Kiss Orchestra. 4.45, Time Signal and Weather Forecast. 5.0, Talk: Psychotherapy. 5.30, Concert by the Hungarian Workers' Choral Society. Conductor: Josef Uji. 6.30, Concert by the Municipal Orchestra, relayed from the Stadtwaldchen. Conductor: D. Bor. Soloist: Maria Palffy (Songs). Selection from The Queen of Sheba (Goldmark); Chinese Suite (Percy); The Clock and the Dresden Figures (Kettelbey); Hungarian Songs, Melodies (Lehar). 7.45 (approx.), Sports Notes, and Racing Results. 8.0, Der Zigeunerprimas—Operetta (Kálmán). After the Programme, Dance Music by the Mandit's Jazz Orchestra from the Rheinpark. 11.0 (approx.), Cigany Music by the Emerik Parkas Orchestra from the Café Spolajich.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—8.30 a.m., Gymnastics. 10.0, Divine Service from the Cathedral, Viborg. 11.30, Weather and News. 12 Noon, Town Hall Chimes. 12.2 to 1.0 p.m., Orchestral Concert, conducted by Walther Meyer-Radon: Overture, Fidelio (Beethoven); The Brandenburg Concerto No. 3 in G (Bach); Andante molto and Allegro vivacissimo from the Roma Suite (Bizet); Hungarian Rhapsody No. 8 (Liszt); Molly on the Shore (Grainger); Shepherds Hey (Grainger); Bacchanale from Samson and Delilah (Saint-Saëns). 2.0, Divine Service Relay. 3.30, Pianoforte Recital: Romance in E Flat (Merikanto); Caprice in E (Sinding); Erotica (Grieg); Tarantella (Palmgren). 4.0, Orchestral Concert, relayed from the Faelledpark. 5.50, Gramophone Records of Popular Music. 6.20, Talk (to be announced). 6.50, Weather and News. 7.15, Time and Sports Notes. 7.30, Talk on Art. 8.0, Town Hall Chimes. 8.2, Concert of Viennese Music; conducted by Walther Meyer-Radon: Divertissement in D, No. 17 (Mozart); Ballet Music and Extracts from Rosamunde (Schubert); Pester-Walzer (Lanner); Overture, The Arabian Nights (Johann Strauss). 8.50, Two Fairy Tales (Hans Christian Andersen). 9.30, Cabaret Songs. 9.50, News Bulletin. 10.0, Concert of Slav Music: Overture, The Kiss (Smetana); Mazurka (Glazunov); Slav Rhapsody in A Flat (Dvorak); Spanish Caprice (Rinsky-Korsakov). 10.45, Dance Music from the Wivex Restaurant. 12 Midnight (in an interval), Town Hall Chimes. 12.30 a.m. (Monday), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 pm., See Warsaw. 9.50, Sports Notes. 10.0, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN; 413 metres; 1.2 kW., and CORK, 224.4 metres.—8.30 p.m., Time Signal. 8.31, Vocal and Orchestral Concert. 11.0 (approx.), Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Radio Gazette. 12.30 p.m., News Bulletin. 12.45, Variety Concert. 6.0 to 8.0 p.m., Programme in English by the I.B.C. 6.0 p.m., Programme for Children. 6.30, Military Band Concert; March, King Cotton (Souza); Melodies from San Toy (Monckton); The Whistler and his Dog (Pryor); Way Down South (Myddleton); Policeman's Holiday (Ewing); Melodies from Floradora (Stuart); March, Pomp and Circumstance (Elgar). 7.0, Dance Music by the Renis Revellers: Can't we talk it over? Just humming along; Good-night, Vienna; My sweet Virginia; Was that the human thing to do? Now that you're gone; By the Sycamore Tree; An evening in Caroline. 7.30, Concert by a Male Voice Quartet; Darkies in the farmyard; Down in the cornfield; Nellie Gray; Polka Serenade; Swing low; Good-hye brother; Home, sweet home. 8.0 to 9.0, Programme in French: Variety Concert. 9.0 to 3.0 a.m., Programme in English by the I.B.C. 9.0, Concert of Light Music: Twilight on the Waters (Squire); The Butterfly (Bendix); Cavatina (Raff); Intermezzo from Cavalleria Rusticana (Mascagni); Piccininies' Picnie (Squire); Grasshoppers' Dance (Eucalossi); Barcarolle (Offenbach). 10.0 p.m., Verdi Programme by Soloists, Chorus and Orchestra; Extracts from La Traviata, Il Trovatore and Rigoletto. 10.30, Selections from Musical Comedy: Orchestra: Melodies from Countess Maritza (Kalman); Chorus: Memories of

BRNO

342 metres; 35 kW.—7.0 p.m., See Prague. 9.0, See Moravsko-Ostrava. 10.0, See Prague. 10.20, News Bulletin. 10.25, Popular Music on Gramophone Records.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—5.30 a.m. and at hourly intervals throughout the day. Pigeon Racing Reports. 12 Noon, Concert relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Concert (contd.). 5.0, The Dansant relayed from the St. Sauveur Palais de danse. 6.15, The Clowns Miki and Polino. 6.30, Gramophone Records: Extracts from La Favorita (Donizetti); Overture, Prometheus (Beethoven). 7.15, Religious Address. 7.20, Music Review. 8.0, Concert by the Station Orchestra, conducted by M. Meulemans: Marche des Communiers: Bruegels (Dubois); Aspiration (Strens); Chanson brève (Demaret); Sonnettes (de Tave); Valse des Défilés (Lauweryns); Chanson pour berceur (Rousseau); Chapinade (Sarly); Suite Phrygienne (Bruselmans). 8.45, A Sketch (André Blandin). 9.0, Orchestral Concert relayed from the Casino, Knocke. Soloist: Mme. Clara Clairbert. Fifth Symphony in C Minor (Beethoven); Air from Dinorah (Meyerbeer); Mephistowalzer (Liszt); Violetta's Aria from La Traviata (Verdi); Poème en forme de Rapsodie (Candae). After the Concert, Le Journal Parlé, followed by Dance Music relayed from the Kursaal, Ostend.

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Tea Room Orchestra. 1.0 p.m., Le Journal Parlé. 1.10, Concert (contd.). 5.0, Orchestral Concert of Classical and Light Music, conducted by Arthur Meulemans. 6.0, Wagner Concert on Gramophone Records. 7.15, Religious Address: The Parable of the Labourers in the Vineyard. 7.30, Music Review. 8.0, Trio Concert. 8.45, Humorous Poems. 9.0, Orchestral Concert, conducted by François Rasse, relayed from the Kursaal, Ostend: Soloists, Fernand Anseau (Songs) and Hector Clokers (Violin): Coronation March (Saint-Saëns); Suite, Titania (Hüe) Ballad and Polonaise for Violin (Viouxtemps); Lohengrin's Narrative from Lohengrin (Wagner); Selection from Coppélia (Delibes); Romance from Carmen (Bizet); Hungarian Rhapsody (Liszt). After the Concert, Le Journal Parlé and Dance Music, relayed from the Kursaal, Ostend.

BUCHAREST

394 metres; 12 kW.—9.15 a.m., Programme for Children. 9.30, Religious Reading. 9.45, Choral Selections of Sacred Music. 10.0, Concert by Jean Dumitrescu's Orchestra. 11.0, Popular Music on Gramophone Records. 11.45, News Bulletin and Time Signal. 12 Noon, Popular Music on Gramophone Records (contd.). 3.0, Programme for Peasants. 4.0,

AUGUST 14th

SUNDAY

continued.

Lionel Monckton; Orchestra: Melodies from The Gipsy Princess (Kaiman); Chorus: Melodies from The Maid of the Mountains (Fraser-Simpson). 11.0, Duets with Orchestral Accompaniment; Springtime in the Rockies; My heart is where the Mohawk flows; Apple blossom time; Dance while the music is ringing; Indiana Sweetheart; Sitting on a rainbow; My heart belongs to the girl; Night time in Nevada. 11.30, Dance Music; Auf Wiedersehen, my dear; Rain on the roof; Back again to happy-go-lucky days; There's a ring around the Moon; It ain't no fault of mine; The Echo of a Song; Every day's a lucky day; Five minutes to twelve. 12 Midnight, Vocal and Orchestral Music. Orchestra: Waltz, Gold and Silver (Lehar). Songs (a) Would you like to take a walk? (Dixon), (b) I'm following you (Dryer). Orchestra: Selection from Splinters (Gibbons). Songs: (a) Roamin' through the Roses (O'Flynn), (b) Good-night, Sweetheart (Noble). Orchestra: Over the Waves (Rosas). 12.30 a.m. (Monday), Duets with Orchestral Accompaniment; All change for happiness; I'm just a dancing Sweetheart; I'm wearing out my Heart for you; Living a Life of Dreams; In the mountains of the Pine; Parking in the moonlight; Happiness Pie; Pasadena Rose. 1.0, Variety Concert; Looping the loop; Marionette; Little Dutch Girl; Mine Dutch Baby; Perdita; Tango de Piques; He's a good man to have around; I'm doing what I'm doing; Some auld Scotch Ballads; Crown and Anchor Board; She was a bonny Wee Lass. 2.0, Dance Music; At your command Time alone will tell; Sweet and Lovely; Blues in my heart; Dance Hall Doll; Guilty; Sing a little jingle; I'll putein potein in the paper; I'm all dressed up with a broken heart; I'm getting superstitious about you; The Cuckoo Waltz; Oh! it looks like rain; A little less of Moonlight; Let a little Pleasure interfere with Business; Looking in the looking-glass; Little girl. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—10.30 a.m., See Schweizerischer Landessender. 11.30, Lyrics from Silesia (Herbert Brunar). 12 Noon, See Stuttgart. 1.0 p.m., Concert from Langenberg. 2.0, Talks, arranged by the Wiesbaden Board of Agriculture. 2.10, Country Programme: Two Talks. 3.0, A Pencil and Judy Show for Children. 3.30, See Munich. 4.45, See Stuttgart. 6.0, Talk: Why do you take Photographs? 6.25, Variety Programme. 6.55, Talk: Mozart and Haydn. 7.20, Weather for Farmers, and Sports Notes. 7.30, Unfamiliar Löwe Ballads—Recital by Kurt Wichmann. 8.0, See Breslau. 9.0, Concert from Berlin (Witzleben). 10.30, Time, Weather, News, and Sports Notes. 10.45, See Langenberg. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—11.30 a.m., Concert from Breslau. 12.55 p.m., Time and Weather. 1.0 (from Kiel), Mandoline Concert. 1.45 (from Hanover), Address and Choral Music. 2.30, Der Klabaütermann—Radio Play for Children (Durre and Wollmann). 3.0 (from Kiel), Scandinavian Landscape—Orchestral Concert. 4.0, Radio Report on the Tennis Championships at the Rothenbaum. 4.30 (from Hanover), The Thousand-year-old Rose Bush in the Cathedral Cloisters, Hildesheim—Literary and Musical Programme. 6.5, Alster Concert from the Uhlenhorst Hostel. 6.30, Edvard Moritz Concert from the Uhlenhorst Hostel; Erna Kroll-Lange (Songs), Karl Grötsch (Violin), Paul Moth (Cello), with the Composer at the Piano-forte; Karussell—a Cycle of Short Piano-forte Pieces: (a) Geschichte vom Soldaten, (b) Alla Siciliana, (c) Phrygische Intermezzo, (d) Der Neger, (e) Arco celeste, (f) Kleiner Walzer, (g) Finale alla turca; Songs: (a) Gruss in die Ferne, (b) Gehst du draussen die Mauern entlang; Trio for Piano-forte, Violin and Cello, Op. 43; Songs: (a) Regenmännlein, (b) Lied zum Klarinetz; Concert Blues for Piano-forte. 7.30, Radio Report on the Boat Races of the Fleet. 7.40, Sports Notes. 7.55, Weather Forecast. 8.0, Concert from Berlin (Witzleben). 10.0, News Bulletin. 10.20, Topical Talk. 10.30, Dance Music from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—11.0 a.m. (from Ortelsburg), Address by Herr May, followed by Promenade Concert, on the occasion of Ortelsburg Aviation Week. 12.55 p.m., See Schweizerischer Landessender (Beromünster). 1.45, Talk on

Chess. 2.15, Talk for Young People: Leaves from an African Diary. 2.45, Talk on Spas. 3.10, Reading (Kurd Michaelis). 3.30, See Munich. 4.45, Concert by the Königsberg Opera House Orchestra conducted by Ludwig Leschetizky; Overture, Euryanthe (Weber); Walther's Prize Song from The Mastersingers (Wagner); Selection from Fra Diavolo (Auber); Christel-Walzer (Jarno); Selection from Mignon (Thomas); Berceuse (Godard); Symphonic Poem, Les Préludes (Liszt); Selection from La Juive (Halévy); Waltz, Les Patineurs (Waldteufel); March from The Merry Peasant (Fall); Selection from I Pagliacci (Leoncavallo). Sports Notes in the interval. 6.30, Talk: Radio in the United States. 7.0, Talk on Spanish Musical Plays, with Illustrations on Gramophone Records. 7.45, Sports Notes. 8.0, See Breslau. 9.0, Announcements. 9.10, See Breslau. After the Relay: News and Dance Music from Berlin (Witzleben). 12.30 a.m. (Monday), Close down.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—8.10 a.m., Religious Programme by the Catholic Radio Society (K.R.O.). 9.10 to 11.55, Programme of the Christian Radio Society (N.C.R.V.). 9.10, Gramophone Records of Sacred Music. 9.30, Divine Service Relay, followed by Gramophone Concert of Sacred Music. 11.55 to 4.40 p.m., K.R.O. Programme. 11.55, Sextet Concert. 1.10 p.m., Talk. 1.30, Interval. 1.50, Literary Talk. 2.10, Orchestral Concert: Soloist, Else Tholen (Soprano); Ballet Suite from Castor et Pollux (Rameau); Soprano Solo from L'Enfant prodige (Debussy); Overture, The Gipsy Baron (R. Strauss); Waltz, Estudiantina (Waldteufel); Selection from Rigoletto (Verdi); Overture to a Revue (Lincke); To a Wild Rose (MacDowell); To a Water Lily (MacDowell); International Suite (Tchaikovsky); Selection from The Dollar Princess (Fall). 4.10, Programme for Invalids. 4.40, N.C.R.V. Programme: Divine Service from Baarn, followed by Gramophone Concert of Sacred Music. 7.25 till Close Down, K.R.O. Programme. 7.25, Talk. 7.50, Football Results. 7.55, Choral Concert of Sacred Music. 8.55, Recitations. 9.15, News Bulletin. 9.30, Concert: Lolita (Buzzi-Pecchi); Waltz, Neu Wien (Strauss); Tarantelle brillante (Smith); Musical Joke (Aston-Ketelbey); Russian Waltz Potpourri (Borchert); Potpourri of National Anthems (Intrator); Je me souviens de Naples (Bonincontro). 10.20, Epilogue by the Choir. 10.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—7.55 to 11.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 7.55, Physical Culture. 8.10 to 8.40, Interval. 8.40, Pigeon Flying Report and Football Notes. 8.45, Gardening Talk. 9.10, Organ Recital by Johan Jong. 9.40, Orchestral Concert, conducted by J. v. d. Horst. 10.10, Literary Talk. 10.40, Concert (contd.). 11.10, Address. 11.40 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Orchestral Concert, conducted by Gerard Henness; Gramophone Records of Variety Music in the intervals. 1.40, Weekly Book Talk. 2.10, Harp Recital by Rahel Mengelberg-Draber. 2.40, Concert by The Hague Orchestra, conducted by Carl Schuricht, relayed from the Kurhaus, Scheveningen. Soloist, Hans Schouman (Piano-forte); Overture, Così fan tutte (Mozart); Piano-forte Concerto in C Minor (Mozart); Variety Music on Gramophone Records; In the Steppes of Central Asia (Borodin); Danse macabre (Sant-Saëns); Prelude to the Third Act of Lohengrin (Wagner). 4.10, Dance Music by Ambrose and his Blue Lyres, relayed from the Kurhaus, Scheveningen. 4.40, V.A.R.A. Programme: Mandoline Concert. 5.40 to 7.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.). 5.40, Literary Talk. 6.10, Religious Programme, with Sacred Concert by the Amsterdam Vocal Quartet. 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time Signal. 7.41, News Bulletin. 7.50, Orchestral Concert, conducted by Nico Treep: Soloist, Sam Svaap (Violin). 9.50, Recitations. 9.10, Orchestral Concert, conducted by Nico Treep: Soloist, Carl Heinz (Tenor). 10.10, Light Music on Gramophone Records. 10.40, Dance Music by Ambrose's Blue Lyres and an Argentine Orchestra, relayed from the Palais de Danse, Scheveningen. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.0 p.m., Announcements and Popular Music on Gramophone Records. 10.10, Sports Notes. 10.15, Concert of Dance Music.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and HELSINKI, 368.1 metres.—5.59 p.m., Time Signal and Weather Forecast. 6.10, Talk. 6.35, Cello Recital by Tauno Korhonen. 7.0, Talk. 7.25, Finnish Songs. 7.50, Popular Music by the Station Ensemble. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert of Light Music from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—9.5 a.m., Protestant Service. 11.0, Reading of Contemporary Literature: Ich blieb zu Hause (Walter Bauer). 11.30, Talk: Music for Workers. 12 Noon (from Düsseldorf), Dialogue on Life-Saving Practice on the Rhine. 12.30 p.m., Music of the Week. 1.0, Concert of Light Music, conducted by Eysoldt: Freiheit-Marsch (Lauken); Waltz, Samt und Seide (Ziehrer); A Wedding Day on Troldhaugen (Grieg); Melodies from Tannhäuser (Wagner); Melodies viennois (Kreisler); Csardas, Der Geist des Wojewoden (Grossmann); Wiener Augenblick (Häuser); Selection from Die Landstreicher (Ziehrer). 2.30, Talk for Beekeepers. 2.50, Talk for Farmers. 3.10, Queer Stories told in Westphalian Dialect by Elisabeth Quirnbach. 3.30 to 4.15, Concert from Munich. 4.25, Running Commentary on the Oppenheim Races, from the Cologne-Merthlim Racecourse. 4.40, Nature Talk. 5.0, Orchestral Concert conducted by Eysoldt: Overture, Mignon (Thomas); Barcarolle (Waldteufel); Liebeserwachen (Backefeld); Serenade (Tareghni); Selection from No. No, Nanette (Youmans); Hungarian March, Zigeuner-primas (Frantzen). 6.0, Talk: Town and Country. 6.30, Talk: Workers all the World Over: With the Coast Fishers of Finland. 6.55, Round the World on Gramophone Records: Latvia. 7.20, Talk: From Ether Waves to Röntgen Rays. 7.45, Sports Review. 8.0, See Vienna. 10.10, News Bulletin and Sports Notes. 10.45, Late Concert and Dance Music conducted by Eysoldt. 12 Midnight (approx.), Close down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres, 2 kW.; and DRESDEN, 319 metres.—11.30 a.m., Concert from Breslau. 12.55 to 1.45 p.m., See Schweizerischer Landessender (Beromünster). 2.0, Weather and Time. 2.5, Programme Announcements for the Coming Week. 2.25, Agricultural Notes. 2.40, Guitar and Piano-forte Recital. 3.10, Talk: Gliding on the Jungfrauoch. 3.30 to 4.45, See Munich. 5.0, Talk on Strindberg. 5.35, Concert by the Leipzig Symphony Orchestra, with Items by Gustav Jacoby. 7.45, Radio Report on the Football Match, Central Germany v. Vienna, relayed from Dessau. 8.0, See Berlin (Witzleben). 10.5, News, followed by Dance Music. 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LWOW

281 metres; 16 kW.—6.20 p.m., Popular Music on Gramophone Records. 6.35, Answers to Technical Correspondence. 6.50, Miscellaneous Announcements. 7.15, See Warsaw. 9.50, Sports Notes. 10.0 See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—12 Noon, Relay from Paris (Ecole Supérieure) (447.1 metres). 5.0 p.m., Running Commentary on the Marseilles-Lyons Cycling Race, relayed from Marseilles, followed by a Relay from Paris (Ecole Supérieure).

MADRID

UNION RADIO, Call EAJ7, 324.3 metres; 2 kW.—9.0 to 10.30 a.m., Topical Review. 3.30 p.m., Chimes, Time Signal, Weather Report, and Theatre Notes. 3.45 (approx.), Concert. 8.0, Chimes and Request Gramophone Concert. 9.30 to 11.0, Interval. 11.0, Chimes and Time Signal. 11.5 (approx.), Concert by the Cuban Orchestra, Los Siboneyes, followed by a Concert by the Municipal Band, conducted by Villa, relayed from Rosales. 1.30 a.m. (Monday), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—12.5 p.m., Orchestral Concert. 1.30, Agricultural Report from Brno. 4.0, See Bratislava. 6.0, See Prague. 9.0, Orchestral Concert of Dance Music. 10.0, See Prague. 10.20, Programme Announcements and Theatre Guide. 10.25, Popular Music on Gramophone Records.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talk in English: The Jews in Russia. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—10.0 a.m., Organ Recital. 10.45, Chimes from Our Lady's Church. 11.0, String Quartet, Op. 41, No. 1 in A Minor (Schumann) by the Riba String Quartet; Introductory Talk by Dr. Ludwig Gerheuser. 11.40, Reading (Richard Billinger). 12 Noon, See Stuttgart. 12.55 p.m., See Schweizerischer Landessender. 1.45, Time Signal, Weather Report and Programme Announcements. 1.55, The Scherzo-Gramophone Concert. 2.30, Agricultural Talk. 2.50, Chess Lesson for Beginners. 3.30 (from Siegsdorf), Folk Song Competition. Various Choirs, the Siegsdorf Students' Orchestra and Heinrich Mayer's Zither Trio, relayed from the Gymnasium. 4.45, Introductory Talk to the following Transmission. 5.5, Götterdämmerung (The Twilight of the Gods) Opera (Wagner), relayed from the Prince Regent Theatre. In the intervals at 7.8, Talk: Music and Landscape in Upper Austria; at 8.45, Wireless Notes and Sports Forecast; and at 10.45, Time Signal, Weather Report, News and Sports Notes. 11.10, Orchestral Music.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—10.20 a.m., Chimes. 10.30, Divine Service Relay. 2.0, Programme in Memory of Björnsterne Björnson, relayed from his Grave. Musical Items, Reading from his Works, and Address. 5.30, Light Music on Gramophone Records. 6.45, Talk. 7.15, Weather and News. 7.30, Recitations. 8.0, Time Signal. 8.2, Orchestral Concert, conducted by Hugo Kramm. 9.20, Theatre Talk: Sarah Bernhardt. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Recitations. 10.45, Gramophone Dance Music.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Concert of Popular Music by the Station Sextet. 6.30 to 8.0, Interval. 8.0, Announcements and Giornale Radio. 8.20, Sports Notes. 8.25, Popular Music on Gramophone Records. In the interval at 8.30, Time Signal and Announcements. 8.45, Symphony Concert conducted by A. La Rosa Parodi. In the interval, Talk on Garibaldi. After the concert, Theatre Notes. 10.0 (approx.), Variety Programme. 10.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 1.0 p.m., News Bulletin. 1.10, Weather Forecast. 1.25 to 2.30, Symphony Concert conducted by M. Flament: Italian Caprice (Tchaikovsky-Schmid); Prairial (Trémisot); Cello Solo, Selection from Die Terzina (Oscar Strauss); Violin Solo, Selection from Véronique (Messager); Waltz from the Count of Luxembourg (Lehar); Cortège oriental (Ganne). 6.45, Le Journal Paris. 7.45, Programme for Children. 8.20, Weather Forecast. 8.30, Gramophone Concert of Light Variety Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—10.0 a.m., Press Review. 10.5 to 1.0 p.m., Sponsored Concerts. 1.0, Light Music on Gramophone Records. 2.0 to 7.0, Interval. 7.0, News Bulletin and Press Review. 7.45, Popular Music on Gramophone Records. 7.55, Sports Notes. 7.55, Gramophone Concert (contd.). 8.15, Catholic Address. 8.30, Radio Journal and General News Bulletin. 8.45, Orchestral Concert. Soloists: Mme. Lucette Limozin (Songs), M. Drouet (Viola), and MM. Bellanger and Saury (Violins). Songs: (a) Air from La Criche Casée (Vasseur), (b) Air from Le Comte Obligado (Moretti), (c) Songs my Mother taught me (Dvorak), and (d) Air from Coups de roulis (Messager); Overture, The Caliph of Bagdad (Boieldieu); Waltz (Fueki); Selection from Le Comte Obligado (Moretti); Terzetto for Two Violins and Viola (Dvorak); Selection from Fortunio (Messager); Scenas poeticas (Grandos); Selection from The Merry Wives of Windsor (Nicola); Entr'acte from Les Erynnies (Maassen); Ballet Music from La Gioconda (Ponchielli); Rustle of Spring (Sinding); Slav Dance, No. 10 (Dvorak); March (Smetana). 10.45, News Bulletin. 10.50, Experimental Transmission on a Wireless Organ by M. Maurice Durufé. Choral with Variations on Veni Creator (Durufé); Andante and Finale from the Grande Pièce symphonique (Franck).

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—7.45 a.m., Light Music on Gramophone Records. 8.0, Weather and Press Review. 8.30, Physical Culture. 12 Noon, Religious Address by the Reverend Father Dieux. 12.20 p.m., Sacred Music. Three Savoy Carols (Berthier); Cantate Domino (Alain). 12.30, Bilboquet. 12.45, Press Review, News, and Weather Forecast. 1.0, Suite from Peer Gynt (Grieg) on Gramophone Records. 1.30 to 3.0, Programme in English.

AUGUST 14th **SUNDAY** continued.

by the I.B.C. 1.30, Concert of Brunswick and Panachord Records, Mr. T. St. A. Ronald announcing: Love Everlasting, by the Melotone International Orchestra; Between the Devil and the Deep Blue Sea, by the Boswell Sisters and the Dorsey Brothers' Orchestra; Happy Go Lucky You, by the Casa Loma Orchestra; The Drifter, Part 2, by the Texas Drifters; Rose Room, by Duke Ellington and his famous Orchestra; Shine, by Bing Crosby and the Mills Brothers; There I go Dreaming Again, by Victor Young and his Orchestra; Mandoline Blues, by Dave Apollon and his All-string Orchestra. 2.0, Concert of Decca Records, Mr. T. St. A. Ronald announcing: We've got the Moon and Sixpence, by Arthur and his Orchestra; Everybody's going but me, by Carson J. Robinson and his Pioneers; Lullaby of the Leaves, by Roy Fox and his Band; You can make my life a Bed of Roses, by Stuart Ross and Joe Sargent; Underneath the Arches, by Jack Hylton and his Orchestra; I want your Heart, by Alfred Picaver (Tenor); Little Anna-Gram, by Jack Hylton and his Orchestra; Dream Sweetheart, by Maurice Elwin (Baritone); When we're Alone, by Elythe Baker (Pianoforte); Gipsy Moon, by Frank Titterton (Tenor); Delicious, by Ray Ventura and his Collegians; Teddy Bear's Picnic, by Rudy Starita; Give me a Tune, by Harry Woods and his New Jersey Orchestra; Sing Brothers, by George Buck and the Crowd; Selection from Sunshine Suse, by Alex Taylor (Organ). 3.0 to 4.0, Interval. 4.0, Programme in English by the I.B.C. Gaumont-British Hour of Non-Stop Variety, Captain C. Clayton-Hutton announcing. 5.0, Gramophone Concert: Quartet in F (Haydn); Maman, dites-moi (Weckerlin); La précieuse (Couperin-Kreisler); L'isle heureuse (Chabrier); Robots (Mayerl); Margold (Mayerl); Les Cigales (Chabrier); Sarabande (Ducasse). 6.45, Programme in English by the I.B.C. Second Concert on behalf of the Gaumont-British Corporation. 8.0, Gramophone Concert, with Songs by Mlle. Huguette Gregory, M. Cambon, and Mlle. Gina Rely; Overture, Les Saltimbanques (Ganne); Romance (Gluck); Songs (Mauprey-Dallin): (a) L'Air que l'on chante, (b) Je voudrais te dire, (c) Romance, (d) L'amour c'est ça, Madame; Gnomesfest (Schmidt-Hagen). 8.30, News, Sports Results, Sports Press Review, and Weather Forecast. 8.45, Concert (continued): Gipsy Senerado (Dorganov); Sizieltta (von Blon); Songs: (a) Amous-nous (Lahn), (b) Réve de l'onneur (Flegier), (c) Ton sourire (Catherine), (d) Pensée d'Automne (Massenet); Selection from The Show of Shows. 9.15, Sports Results and News. 9.30, Concert (cont'd.): Songs: (a) Sur la mur du Jardin (Sarony-Montoux), (b) L'amour qui passe (Gérard-Richepin), (c) Bonsoir chéri (Campbell-Connelly), (d) Sountag (Brahms). 10.0, Dance Music on Gramophone Records. 11.0, Close Down.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Cathedral of Song, from New York. 9.30, High Lights of the Bible, from New York. 10.0, Shady-side Presbyterian Church Services. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Weather Report. 11.5, Teaberry Sport Review. 11.0, Press News Reeler. 11.15, Westinghouse Concert. 11.45, Rita Cavalieri (Spanish Soprano). 11.59, Time Signal. 12 Midnight, KDKA Players. 12.30 a.m. (Monday), The Commodores, from New York. 1.0, McCravy Brothers. 1.15 to 3.45, New York Relay. 1.15, S.R.O. Programme. 2.0, Emma Jettick Melodies. 2.15, Goldman's Band. 3.15, The Old Singing Master. 3.45, The Fireflies. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News. 4.20, Alexander Roy (Tenor). 4.30, Will Ryslanek and his Orchestra. 5.0, Time Signal and Good Night.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.0 p.m., Announcements and News Bulletin. 7.15, See Warsaw. 9.50, Time Signal, Sports Notes, and Police Report. 10.0, See Warsaw. 10.40, News Bulletin. 10.50, See Warsaw. 11.30 (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—11.0 a.m., Concert relayed from Podiebrady Spa. 12 Noon, Chimes. 12.5 p.m., See Moravská-Ostrava. 1.30, Agricultural Report. 4.0, See Bratislava. 5.0, German Transmission: Concert conducted by J. Brun. News in the Interval. 7.0, Programme by the Song Club. 7.30, Sextet Concert. 8.0, Brass Band Concert. 9.0, Time and News. 9.5 (approx.), See Moravská-Ostrava. 10.0, Time and News. 10.20, Miscellaneous Announcements. 10.25, Popular Music on Gramophone Records.

RADIO-SUISSE ROMANDE

(SOTTENS), 403 metres, 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—10.0 (from Lausanne), Protestant Service. 11.0 (from Lausanne), Light Music on Gramophone Records. 12.30 p.m., News Bulletin and Weather Forecast. 12.40, Or-

chestral Concert. 2.0 to 7.0, Interval. 7.0 (from Geneva), Talk: John Wesley. 8.0, Concert by the Station Orchestra. 8.45 (from Geneva), Violin Recital by Mlle. Jeanne Gauthier. 9.15, Concert by the Station Orchestra. 10.0 (approx.), Close Down.

RIGA

525 metres; 15 kW.—4.0 p.m., Orchestral Concert relayed from Dzintari. 5.0, Agricultural Talk. 6.0, Song Recital. 6.30, Agricultural Talk. 7.0, Weather Report. 7.3, Talk: The Importance of Tourism in the Education of Children. 7.30, Orchestral Concert relayed from Dzintari: Melody from The Tale of Casar Sultan (Rimsky-Korsakov); Variations on a Theme by Tchaikovsky (Arensky); Spanish Caprice (Rimsky-Korsakov); L'apprenti sorcier (Dukas); Concerto for Violin and Orchestra (Lalo); Symphonic Poem, Tasso (Liszt). In the intervals at 8.25, News, and at 9.0, Weather Report. 9.30, Dance Music, 11.0 (approx.), Close Down.

RJKUKAN.—See Oslo.

ROME

Call 1R0, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2R0, 25.4 metres.—9.40 a.m., News Bulletin. 9.45, Agricultural Report. 10.0, Religious Programme. 10.15, Sacred Music. 10.45, Sports Notes and Amusement Guide. 11.0 to 12.30 p.m., Interval. 12.30, Vocal and Instrumental Concert. In the interval at 1.30, Time and News. 2.0 to 4.15, No Transmission. 4.30 (from Naples), Programme for Children. Weather and Sports Notes. 5.0, Vocal and Instrumental Concert. In the interval, Sports Notes. 6.15 to 7.25, Interval. 7.25 (from Naples), Shipping News and Sports Notes. 7.30, Sports Notes, Announcements and News. 8.0, Time, Announcements and Sports Notes. 8.30, See Turin. After the Relay, News.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.55 metres.—7.30 p.m. till Close Down, New York Relay. 7.30, Moonshine and Honey-suckle. 8.0, Wayne King and his Orchestra. 8.30, National Sunday Forum. 9.0, Iodent Programme, with June Froman. 9.15, Wildroot Institute. 9.30, Cardinal Gibbons Memorial. 10.30, Pop Concert. 11.0, Catholic Hour. 11.30, Sweetheart Days. 12 Midnight, Balkan Mountain Men. 12.30 a.m. (Monday), Orchestral Gems. 1.0, Chase and Sanborn Programme. 2.0, Our Government, by David Lawrence. 2.15, American Album of Familiar Music. 2.45, Shaeffer Lifetime Revue. 3.0, Musings. 3.15, L'Heure Exquise. 3.45, Sunday at Seth Parker's. 4.15, Russ Colombo and his Orchestra. 4.30, Mood Orientale. 5.0, Teddy Black's Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER; 459 metres; 60 kW.; BASEL, 244.1 metres, and BERNE, 246 metres.—10.30 a.m. (from Berne), Divine Service from the Jungfrau-Joch. 11.15 (approx.), Concert of Brahms Music on Gramophone Records. 11.45, Concert by the Station Orchestra. 12.28 p.m., Time Signal and Weather Forecast. 12.30, News Bulletin. 12.40, Concert by the Station Orchestra (cont'd.). 12.55 (from Berne), Report from the Jungfrau-Joch and the Terminus of the Highest Railway Line in Europe. 1.50 (approx.) (from Berne), Yodelling Solo by Gretli Wenger. 2.5 (from Berne), Accordion Music (Burkhalter), by the Moser-Bueche Ensemble. 2.15 to 3.30, Interval. 3.30 (from Berne), Concert of Folk Music. 4.0 (from Berne), Humorous Programme. 4.30, Waltz Music on Gramophone Records. 5.0 (from Berne), Swiss Authors' Programme. Rosy von Kaenel reads from her own Works. 5.30, Concert of March Music on Gramophone Records. 6.0 (from Berne), Literary Talk. 6.30 (from Berne), Talk. 7.0, Time Signal, Weather Forecast, and Sports Notes. 7.5, National Authors of Different Countries on Gramophone Records. 7.30 (from Berne), Talk: Music which has made History. 8.0 (from Berne), Popular Programme. The Ticinese Berna Choir, Ernst Schläfli (Bartone), Boris Borisoff (Balalaika), Ruedi Burkhalter (Accordion), and the Station Orchestra. 9.30, Weather Forecast and News Bulletin. 9.45, Late Concert by the Station Orchestra. 10.15, Sports Results. 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,220.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—11.0 a.m., Divine Service. 3.30, Talk in German by Hermann Ulbrich-Hannibal: Why Germans like Sweden. 4.0, Variety Music on Gramophone Records. 5.5,

Programme for Children. 5.30, Reading. 6.0, Evensong. 7.15, Weather, News and Sports Notes. 7.30, Orchestral Concert. 8.30, A Comedy (Harwood). 9.45, Weather and News. 10.0, Concert of Light Music. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—10.45 a.m., Protestant Service. 11.30, Catholic Service. 12 Noon, Gramophone Concert of Classical and Opera Music. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.1, Concert of Popular Music on Gramophone Records. 2.0, Talk in French: The Functions of the French Chamber of Commerce. 2.15, Popular Music on Gramophone Records. 2.30 to 3.0, Interval. 3.0, Orchestral Concert, relayed from the Casino, Plombières-les-Bains. Soloist: M. Hervé (Cello). Conductor: M. Wolfert. Overture, Egmont (Beethoven); Ballet Music from Etienne Marcel (Saint-Saëns); Chants russes for Cello and Orchestra (Lalo); Andalusian Suite, Gitaneries (Razigade); Invitation to the Dance (Weber); Selections from The Toreador (Adam). 4.15, Light Music on Gramophone Records. 4.45, Talk in German: The Protection of Workers. 5.0, Dance Music by the Station Orchestra, conducted by M. Roskam. 6.0, Medical Talk in French. 6.15, Sports Talk in French. 6.30, Grieg Concert by the Station Orchestra, conducted by Maurice de Villiers: March from Sigurd-Jorsalfar; Lyric Suite; An den Frühling; Selections from Peer Gynt; Norwegian Dances. 7.30, News in French and German and Sports Notes. 7.45, Dramatic Programme: (a) The Academician, Comedy in One Act (d'Étrac), and (b) Burglary (Delamare). 9.0, Naval Band Concert, relayed from Toulouse (P.T.T.), 255 metres. 10.30, Dance Music, relayed from the Casino, Niederbronn-les-Bains. 12 Midnight (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—9.15 a.m., Choral Concert. 9.45, Concert by a Trombone Choir. 10.15, Das Tanzlegendeichen (Gottfried-Keller) for Speaker and Organ (Music by Wilhelm Locks). 10.30, See Schweizerischer Landessender. 11.15 (from Freiburg), Catholic Service. 12 Noon, Marches of the Nations by the Stuttgart Philharmonic Wind Instrument Orchestra. 12.55 p.m., See Schweizerischer Landessender. 1.45, Agricultural Talk. 2.15 (from Freiburg), Choral Concert. 3.0, See Frankfurt. 3.30, See Munich. 4.45 (from Mannheim), Concert of Wagner Music by the Philharmonic Orchestra and Hans Bahling (Baritone): Kaisermarsch; Aria from The Flying Dutchman; Good Friday Magic from Parsifal; Selection from Siegfried; Entrance of the Mastersingers and Hans Sachs' Song from The Mastersingers; Overture, Rienzi. 6.0, Recital of Songs by Anita Oberländer (Soprano); Songs (Beethoven): (a) Die Trommel gerührt, (b) Freundvoll und leidvoll, (c) Trocknet nicht, (d) Kleine Blumen, kleine Blätter; Folk Songs (Brahms): (a) Erlaube mir feins Mädchen, (b) Die Sonne scheint nicht mehr, (c) In stiller Nacht, (d) Mein Mädel hat einen Rosenmund, (e) Da unten im Tale. 6.30, Sports Notes. 7.0 (from Freiburg), Literary Programme: Wilhelm Kotzde-Kottenrodt. 7.30, See Frankfurt. 8.0, See Vienna. 10.20, Time and News. 10.45, See Langenberg. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—12.30 p.m., Catholic Service. 1.0, News Bulletin. 1.15, Orchestral Music. 1.40, Agricultural Report. 1.45, Protestant Service. 3.30 and 5.0, Transmission of Pictures. 5.15, Overture, William Tell (Rossini). 5.30, Musical Programme. 6.15, Argentine Orchestra. 6.30, Horse Racing Results. 6.45, Orchestral Selections from Madame Butterfly (Puccini) and Ramuntcho (Piénné). 7.0, Airs from (a) The Huguenots (Meyerbeer), (b) Lohengrin (Wagner), and (c) The Mastersingers (Wagner). 7.15, Accordion Solos. 7.30, News Bulletin. 7.45, Military Music. 8.0, Songs from (a) Werther (Massenet), and (b) Lakmé (Delibes). 8.15, Orchestral Music. 8.30, Airs from (a) Orpheus in the Underworld (Offenbach), and (b) Miss Decima (Audran). 8.45, Sound Film Music. 9.0, Music by a Viennese Orchestra. 9.30, Arias from (a) La Favorita (Donizetti), (b) William Tell (Rossini), (c) Don Giovanni (Mozart), and (d) The Damnation of Faust (Berlioz). 9.45, Cello Recital. 10.0, Concert. 10.30, North African News. 10.45, Dance Music. 11.15, Orchestral Music. 11.30, Concert. 12 Midnight, Weather, Announcements, and Close Down.

TRIESTE

247.7 metres; 10 kW.—9.55 a.m., Missa Cantata from the Cathedral of San Giusto. 10.45 to 11.0, See Turin. 11.0, Agricultural Report. 12 Noon, See Turin. 7.3, See Turin. 7.5, Quintet Concert. 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—9.40 a.m., Giornale Radio. 10.45, Agricultural Report. 11.0, Mass relayed from the Church of the Annunciation, Florence. 12 Noon, Religious Programme. 12.30 to 2.30 p.m., Variety Concert. In the interval at 1.0, Time and Announcements. 4.30, Dance Music from the Luna Park Lido, Milan. Sports Notes in the intervals. 6.15 to 6.25, Sports Notes. 7.0, Announcements. 7.5, Light Music on Gramophone Records. 7.30, Time and Announcements. 8.0, Giornale Radio and Sports Notes. 8.30, Opera-Comique Evening, conducted by Ugo Tansini. Part I, Livieta e tracolo (Pergolesi); Part II, Scerchi e sberlechi (Mortari); Part III, La servapadrona (Pergolesi). In the intervals, Reading and Theatre Notes.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—10.0 a.m., Organ Concerto in E Minor (Ludwig Moser). 10.30, A Peasant Festival, relayed from Gmund in Carinthia. 11.15, Symphony Concert by the Vienna Symphony Orchestra, conducted by Dr. Hans Pless, Soloist: Natalie Freundlich (Pianoforte); Symphony in E Flat No. 163 (Haydn); Rondo for Strings and Two Horns (Hans Pless); Pianoforte Concerto in B (Glazunov); Overture, The Bartered Bride (Smetana). 12.30 p.m., Concert of Light Music. 2.30, A Peasant Festival, relayed from Gmund in Carinthia. 3.15, Time and Programme Announcements. 3.20, Reading (Robert Ascher). 3.45, Wind Instrument Concert: Three Viennese Dances (Beethoven); Minuet (Beethoven); Scherzo (Schubert); Minuet (Mozart); Presto (Haydn); Humoresque (Dvorak); Solvejg's Song (Grieg); Première Aubade (Lalo); Musette (Ernst Netsch); Persian Dances (Ganne); Egyptian Dance (Ganne). 4.30, Reading (Werner Bergengren). 5.0, Water Polo Match: Vienna v. Agram-Spalato, relayed from Millstatt. 5.40, Concert of Light Music. 6.50, Cello Recital: Sonata in A (Domenico Gabrieli, arr. Ludwig Landshoff), Variations on a Rocooco Theme (Tchaikovsky); Adagio (Bach); Toccata (Frescobaldi-Cassado); La fille aux cheveux de lin (Debussy); La flûte (Dinkler). 7.30, Two Hunting Stories (Walter Marjan). 7.50, Time, Sports Notes and Programme Announcements. 8.0, Wo die Lerche singt (Where the Lark sings)—Operetta in Three Acts (Leljár). 9.45 (in an interval), News Bulletin. 10.20, Dance Music.

WARSAW

1,411 metres; 120 kW.—10.0 a.m., Programme Announcements. 10.5, Weather Report. 10.10, Interval. 10.15, Relay from the Shooting Meeting at Gdynia. Mass and Sermon, Addresses and Procession. 12.55 p.m., Talk: Polish Legislation concerning Health Conditions for Workers. 1.10, Concert by the State Police Band, conducted by A. Sielski: Overture, Nebuchadnezzar (Verdi); Waltz (Ellenberg); Selection from The Girl in the Taxi (Gilbert); Florentine March (Fueik). 2.0, Talk: Some Foreign Commentaries on the Battle of Warsaw. 2.15, Orchestral Concert, conducted by W. Wilkosz. 2.30, Agricultural Talk. 2.50, Concert (cont.). 3.5, Agricultural Talk. 3.25, Concert (cont.). 3.40, Programme for Children. 4.5, Light Music on Gramophone Records. 4.45, Useful hints. 5.0, Song and Pianoforte Recital by Mme. Jonas (Pianoforte) and Eugen Maj (Baritone); Pianoforte Solos; (a) Capriccio in F minor (Scarlatti), (b) Air (Rameau), (c) Bagatelle (Beethoven); Songs: (a) Air (Wettheim), (b) Ballad (Rubinstein), (c) Don Juan's Serenade (Napravnik), and (d) War Song (Moniuszko); Three Songs without Words for Pianoforte (Mendelssohn); Songs: (a) Air from Don Carlos (Verdi), (b) Monologue from La Gioconda (Ponchielli), (c) Drinking Song from Hamlet (Thommas); Pianoforte Solos (Casella): (a) Carrillon, (b) Bolero. 6.0, See Cracow. 6.20, Dance Music on Gramophone Records, and Announcements. 6.35, Answers to Correspondents on Technical Questions. 6.50, Miscellaneous Items. 7.10, Programme Announcements. 7.15, Religious Festival, relayed from Czestochowa. 8.15, Concert of Popular Music by the Warsaw Philharmonic Orchestra, conducted by C. Wilkomirski, Soloist: M. Mokrzycka (Soprano); Overture, Halka (Moniuszko); Melody (Paderewsky); Scherzo-Overture (Grossman). Three Songs: (a) Air (Malinowki), (b) Song (Maszynski), (c) Spanish Serenade (Leoncavallo); Canzonetta (Nicodé); Tarentella (Nicodé). 8.55, Reading of a Chinese Legend. 9.10, Concert (cont.), Songs: (a) Cradle Song from Manru (Paderewski), (b) Air from Thais (Massenet), (c) Song from Aida (Verdi); Suite from Coppélia (Delibes). 9.50, Provincial Sports Notes. 10.0, Dance Music. 10.40, Aviation Weather Report. 10.45, Sports Notes. 10.50, Dance Music. 11.30 (approx.), Close Down.

WILNO

563 metres; 16 kW.—7.10 p.m., Programme Announcements. 7.15, See Warsaw. 9.50, Sports Notes. 10.0, See Warsaw. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender,

ALGIERS

263.3 metres; 13 kW.—7.0 p.m., Financial Notes and Exchange Quotations. 7.10, Shipping Notes and Weather Bulletin. 7.15, Instrumental Solos. 7.30, Chansonnettes. 7.40, Organ Recital. 7.55, News Bulletin and Time Signal. 8.0, Concert of Popular Melodies. 8.30, Tourist Talk. 8.45, Military Music. 9.0, Variety Concert of Instrumental Music. 10.0 (approx.), Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 349 metres; 8 kW.—8.0 p.m., Trio Concert: Berceuse (Vermeire); Norwegian Dance No. 3 (Grieg); Intermezzo (Campà); Selection from Carmen (Bizet). 8.30, Exchange Quotations, Talk in Catalan. Request Gramophone Records, Sports Notes and News. 10.0, Chimes, Weather Forecast and Market Prices. 10.5, Concert by the Station Orchestra: March, Amantische Zauberer (Siede); Selection from The Dollar Princess (Fall); Persian Dance (Mussorgsky); Duet from Boris Godunov (Mussorgsky); Nocturne (d'Ambrosio); Polonaise from Boris Godunov (Mussorgsky). 11.0, Concert by an Instrumental Ensemble. Soloists: Lola Cabello and Manuel Navarro (Tenor). 11.15, Dance Music by the Cracy Boys' Orchestra, relayed from the Casino, San Sebastian. 1.0 a.m. (Tuesday), Close Down.

BASEL.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.5 kW.—8.0 p.m., Programme of Yugoslav Melodies. 8.30, Concert from Zagreb (307 metres). 10.30, News, followed by Dance Music from the Gradjevinska Kuisina Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers, followed by Gramophone Records of Favourite German Singers, and Second Weather for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Orchestral and Soloist Concert on Gramophone Records, relayed from Berlin (Witzleben). 3.0, Talk: Vehicles and Ships of Various Lands. 3.30, Weather and Exchange. 3.40, Talk for Young People. 4.0, Educational Talk. 4.30, See Berlin (Witzleben). 5.30, Talk: Catchwords. 6.0, Making Music with Invisible Partners. 6.30, Elementary Spanish Lesson. 6.55, Weather for Farmers. 7.0, Topical Talk. 7.30, Agricultural Talk, followed by Weather for Farmers. 8.0, See Hamburg. 9.0, See Langenberg. 10.25, Weather, News and Sports Notes. 10.40, See Langenberg. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.30 p.m., Orchestral Concert, conducted by Michael Taube: Concerto grosso in B flat (Geminiani); Serenade in E, Op. 22 (Dvorak); Air and Dance (Debussy); Concerto for String Orchestra, Op. 37 (Arthur Willner); 5.30, Talk for Young People. 5.50, Georg Zemke reads from his own Poems. 6.15, Light Music: Marcia (Mozart); Overture, The Nuremberg Doll (Adam); Waltz, Flattergeist (Josef Strauss). 6.45, With the Microphone through the Mark District. 6.55, The Witzleben Station informs its Listeners. 7.0, Topical Talk. 7.10, Concert of Light Music: Suite, Dance Melodies (Derksen); Nina (Pergolesi-Kreiser); Rondino (Beethoven-Kreiser); Le Désir (Kramer); Selection from Le Roi Pausole (Honegger); Wiegenlied (Mozart); Verborgtheit (Wolf); Cradle Song (Gretchaninov); Waltz, Weaner Herzen (Derksen); Suite, La Source (Delibes). 8.0, See Hamburg. 9.0, News and Sports Notes. 9.10, A Day of Love—Folk Song Sequence from Old and New Masters—for Voices and Instruments (arr. Walter Berter). Soloists: Rita Weise (Soprano), Anton Maria Topitz (Tenor), and Joachim Andersen (Tenor) 10.0, Weather, News, and Sports Notes. 10.20, See Frankfurt. 11.0 (approx.), Dance Music from the Europa Pavilion. 12.30 a.m. (Tuesday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin, Exchange Quotations, and Market Prices. 7.40, Popular Music on Gramophone Records. 8.10, Lottery Results. 8.15, Charades. 8.20, News and Weather Forecast. 8.30, Orchestral and Vocal Concert of Classical Music.

BRATISLAVA

270 metres; 14 kW.—7.0 p.m., See Prague. 8.0, See Brno. 10.0, See Prague. 10.20, Programme Announcements and News Bulletin. 10.25, Relay from the Tatra Mountains, from Kosice (293 metres).

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW.; and GLEIWITZ, 253 metres.—4.0 p.m., Concert of Light Music by the Station Orchestra. Conductor, F. Marzalek. March, Uter dem Grillenbanner

MONDAY

AUGUST THE FIFTEENTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Light classical concert. Orchestral concert. Piano-forte recital. Promenade concert from Queen's Hall. Instrumental concert. Dance music.
LONDON REGIONAL	Orchestral concert. Organ music. Orchestral programme. English light music. "As You Like it" (Shakespeare).
MIDLAND REGIONAL	Orchestral concert. Light music. Military Band programme. London Regional programme.
NORTH REGIONAL	Organ recital. Orchestral concert. Frank A. Terry presents the "Super Optimists," relayed from the Floral Pavilion, New Brighton. A recital of music for two pianofortes. Dance music.
WEST REGIONAL	National programme. Orchestral concert.
SCOTTISH REGIONAL	Organ music. Ballad concert. Dance music. National programme.
BELFAST	Light orchestral concert. Dance music. Organ music. National programme.
ABROAD	
BARCELONA	Dance music from San Sebastian Casino.
COPENHAGEN	Zither recital.
PARIS (Radio-Paris)	Concert from American Conservatoire, Fontainebleau.
ROME	Opera: "La Bohème" (Puccini), from the Teatro Eden, Viareggio.
STOCKHOLM	Classical organ recital from Concert Hall.
WARSAW	Concert by Warsaw Philharmonic Orchestra.

(Lindemann); Waltz, Die guten alten Zeiten (Jos. Strauss); Overture, Edelweiss (Kozak); Der Rose Hochzeitzug (Jessel); Blumengefüster (Blon); Overture, Morning, Noon and Night (Suppé); Paraphrase on Aus der Jugendzeit (Friedmann); Intermezzo (Eugène); Katalonisches Liebesidyll (Dreyer); Overture, La belle Hélène (Offenbach); March, Folies Bergère (Lincke); Waltz, Hupf mein Mädel (Flynn and Bose); Hochzeitsständchen (Klose); Grossmütterchen (Langer); Kinderlieder-Marsch (Zielner). 5.30, Market Prices, followed by Book Review: Biographies. 5.50, Surprise Programme. 6.10, English Lesson. 6.30, Talk: What our Bodies are made of. 7.0, Weather Forecast, followed by Evening Concert on Gramophone Records. 8.0, See Hamburg. 9.0, News Bulletin. 9.10, Humorous Programme, with Ludwig Manfred Lommel. 9.50, Josef Ponten reads from his own Works. 10.35, Time, Weather, News, Sports Results, and Programme Announcements. 11.0, Answers to Correspondents. 11.10, Close Down.

BRNO

342 metres; 35 kW.—7.0 p.m., See Prague. 8.0, Cabaret Programme. 9.0, Concert of Light Music. 10.0, See Prague. 10.15, Announcements. 10.20, Popular Music on Gramophone Records.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Orchestral Concert. In the interval at 1.0 p.m., Le Journal Parlé. 5.0 p.m., Dance Music relayed from the Kursaal, Ostend. 6.0 p.m., The Wembley Military Tattoo on Gramophone Records. 6.15, Tourist Talk: The Tyrol. 6.30, Gramophone Records. Sixth Sonata for Organ (Mendelssohn). Symphony No. 2 (Sibelius). Intermezzo from the Karelia Suite (Sibelius). 7.15, Talk on Religious Art. 7.30, Talk for Women and Theatre Review. 8.0, Concert by the Tea Room Orchestra. Soloist: Mme. Lola Martini (Songs). Overture, The Barber of Seville (Rossini). Three Songs (Jacobs). Le Pas des fleurs (Delibes). Three Songs (Jacobs). Waltz (J. Strauss). 8.45, Scenes from Polyeucte and Le Cid (Corneille) on Gramophone Records. 9.0, Concert relayed from the Kursaal, Ostend. Conductor: M. François Rasse. Soloists: Mme. Maria Nemeth (Songs), M. Bouquette (Cello), M. Verduck (Clarinet), and M. Hector Clockers (Violin). Procession from Mlada (Rimsky-Korsakov). Overture, Le Roi d'Ys (Lalo). Violin Solo: Ave Maria (Bach-Gounod). Aria from The Force of Destiny (Verdi). Ballet from Le Cid (Massenet). Overture, Tannhäuser (Wagner). After the Concert, Le Journal Parlé, followed by Dance Music, relayed from the Kursaal, Ostend.

BRUSSELS (No. 2)

N.I.R.; 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Gramophone Concert; Prayer to Our Lady (Boëllmann); Ave Maria (Gounod); Virgo Dei Genetrix; O quam glorifica; Etude de cantique (Sittard); Aria from The Messiah (Handel); Assumpta est Maria Gloria (Gevaert); Alleluia (Van Berchem); Aria from Il re pastore (Mozart); Il Pensieroso (Handel); Ave Maris Stella; Domine Deus (Rossini); Agnus dei (Bizet); Aria from The Messiah (Handel). 1.0 p.m., Le Journal Parlé. 1.10, Negro Spirituals and Classical Music on Gramophone Records. 5.0, Orchestral Concert conducted by Jean Kumps; K.V.R.O. Strijdlid (Menlemans); Rhapsody for Strings (Gilson), First Symphony (Beethoven). 5.45, Programme for Children. 6.30, Religious Programme. 7.10, Report of the Catholic Radio Society. 7.15, Talk. 7.30, Sports Review. 8.0, Orchestral Concert conducted by Jean Kumps; De Vlaamsche Leeuw (Miry); Inaugural March (Grieg); Overture, Egmont (Beethoven); Dance from Reynaert de Vos (De Boeck); Nocturne (Van Nieuwenhoven). 8.45, Programme dedicated to the Pilgrims to the Yser; Flemish Songs, Religious Address; Pilgrims' Songs. 9.15, Concert (contd.); Overture, Le Roi d'Ys (Lalo); Selection from La Bohème (Puccini); Concerto for Oboe and Orchestra (de Boeck); The Nutcracker Ballet (Tchaikovsky). 9.55, Evening Prayer. 10.10, Excerpts from Madame Butterfly—Opera (Puccini) on Gramophone Records. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra. 5.0, News and Time Signal. 5.10, Concert (contd.). 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records. 7.0, Time Signal. 7.2, Trio in D Minor (Schumann) on Gramophone Records. 7.45, Vocal Quartet Concert. 8.15, Quartet in D Minor (Schubert) on Gramophone Records. 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 210 metres from 7.15 to 12 Midnight. 6.45 p.m. (approx.), Talk by E. Wigend. 7.15, Cabaret Programme. 8.35, Concert by the Royal Hungarian Opera House Orchestra. Conductor, Friedrich Fridl. Suite (Rekai); Suite (Gajary); Blue Bird (Nador); Mosaik (Radnai); Perko szorakozasai (Siklos). 10.15, Pianoforte and Song Recital: Soloists: Ilonka Kabos and Georg Losonczy. T. Polgar at the Pianoforte: Pianoforte Solo, Sonata in C (Mozart); Songs: (a) The Wanderer (Schubert), (b) Das Rheingold (Schubert); Pianoforte Solos, (a) Berceuse (Chopin), (b) Soloist's Aria (Chopin), (c) Aria from Lakmé (Delibes). 11.0, Light Music by the Zsiga

Racz Cigany Orchestra from the Pilsen Restaurant.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—11.0 a.m., Weather Forecast. 11.10, Angling Notes. 12 Noon, Town Hall Chimes. 12.2 p.m., Weather Forecast. 12.5 to 2.0, Concert from the Bellevue Stradhotel. 2.50, Talk for the Housewife. 3.0, Instrumental Concert. Soloist, Ellen Methling (Songs). March, Standortenträger (Suppé). Légende (Friml); Waltz (Lanner); Selection from La petite Mariée (Lecocq); March, Hand in Hand (Blon); Danish Songs; Selection from Faust (Gounod); Styrian Dances (Lanner); Pepita-Polka (Lumbye); Waltz, Hofballtänze (Johann Strauss); Melody (Möller); Marche lorraine (Ganne). 5.0, Gramophone Records. Siegfried forges the Broken Sword, from Siegfried (Wagner); Melody in F (Rubinstein); Aria from the Second Act of Parsifal (Wagner); Quartet from Martha (Flotow); An evening in Caroline (Donaldson); Marching Song from Mädel aus Wien (Strecker); Song from a Sound Film (Samek-Bernauer). 5.40, Exchange Quotations and Fish Market Prices. 5.50, Talk: Archbishop Marcus Sitticus of Salzburg and his Castle at Hellbrunn. 6.20, Elementary English Lesson. 6.50, Weather and News. 7.15, Time Signal. 7.30, Information in English, German and French in connection with the Language Lessons. 8.0, Town Hall Chimes. 8.2, Concert of European Marches by the Radio Orchestra, conducted by Emil Reesen: Finnish Cavalry March of the Thirty Years' War; Radetzky March (Johann Strauss); Bernese March; March, Wilhelm of Nassau; Scandinavian Hunting March; King Christian IX March (Lumbye). 8.30, Programme of Readings and Songs. 9.20, Zither Recital: Andante quasi allegretto (Haydn); Eftersættning (Blomqvist); Air from Mignon (Thomas); Sommerfugle i Rosenhaven (Punk); Minnet in G for Violin and Zither (Beethoven); Gavotte for Violin and Zither (Gossec). 9.45, News Bulletin. 10.0, Concert of Finnish Music by the Radio Symphony Orchestra, conducted by Emil Reesen; Symphonic Poem, Korsholm (Järnefeldt); The Swan of Tuonela (Sibelius); Sinfonietta (Kajanus). 11.0 (approx.), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.55 p.m., Programme Announcements. 8.0, See Warsaw. 9.50, Sports Notes. 10.0, Concert Relay. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Stock Report, Weather Forecast and Popular Music on Gramophone Records. 6.0, Light Music on Gramophone Records. 6.15, Programme for Children. 7.0, Popular Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Talk. 8.0, Instrumental Concert of Variety Music. 8.30, Baritone Solos by M. Dunleavy. 8.40, Lecture Recital by C. MacDowell and Gerard Crofts. 9.10, Sketch by Mary O'Hea and Company. 9.40, Concert of Orchestral Music. 10.0, Gramophone Concert of Popular Music. 10.30, Time Signal, News, Weather Report and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Variety Concert. 12.30 p.m., News Bulletin. 12.45, Light Music. 7.30, Radio Gazette. 8.0, News Bulletin. 8.15, Wireless Notes. 8.30, Popular Concert. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0 p.m., Dance Music: Beside an open Fireplace; Gipsy dream rose; I love you, believe me, I love you; Kitty from Kansas City; Just a little closer; M-A-R-Y I love you; If I had a girl like you; Hanging on the garden gate; Reminiscent; My Cigarette Lady; That's when I learned to love you; Two little, blue little eyes; My Heart belongs to the Girl who belongs to somebody else; You're just a lover; I still remember. 11.0, Concert of Waltzes: The Blue Danube (Strauss); The Skaters' Waltz (Gung'l); Vienna, Vienna (Foss); Wine, Woman and Song (Strauss); Gold and Silver (Lohár); The Emperor Waltz (Strauss); A Medley of Popular Waltzes (arr. Ancilla). 11.30, Vocal and Orchestral Concert. Orchestra: A Little Kiss each Morning; Songs: (a) You're blasé, (b) My sweet tooth says I wanna. Orchestra: Love's Old Sweet Song; Consolation; Songs: (a) I don't know why, (b) To-day I feel so happy; Orchestra: Alone with my dreams. 12 Midnight, Dance Music: Cheer up and smile; The Chum Song; Here comes Emily Brown; One night alone with you; Under the Roofs of Paris; Without my Gal; I'm in the market for you; Gone; Let me sing and I'm happy; High Society Blues; Springtime in the Rockies; To my Mainmy; Sing you Sinners; Lorette; I still get a thrill; Yours sincerely. 12.57 a.m. (Tuesday), I.B.C. Goodnight Melody. 1.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—6.15 p.m., Economic Notes. 6.25, Talk: Standardising the Currency without Gold. 6.50, English Lesson. 7.15, Time, Programme Announcements, Weather and Economic Notes. 7.30, Song Recital from Leipzig. 8.0, See Hamburg. 9.0, Gramophone Records of Variety Music. 9.15, Tewes heiratet—A North German Peasant Comedy of the Seventeenth Century (Georg Michael Waldeck). 10.20, Topical Report: Germany's Standpoint with regard to Disarmaments at the Geneva Disarmament Conference. 11.0, Time, Weather, News, and Sports Notes. 11.10 (approx.), See Stuttgart. 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—6.55 p.m., Exchange Quotations. 7.0, Topical Talk. 7.15, Weather Report. 7.20, Talk: Training in the Use of Arms and Sports with Arms. 7.40 (from Bremen), Spanish Rhythms—Pianoforte Recital by Hans Neumark: Granada (Albeniz); Aragonese (Falla); Spanish Dance No. 1 (Granados); Soirée dans Grenade (Debussy). 8.0, Heligoland—the Picture of a German Island. 9.0, Concert by the Norag Orchestra, conducted by José Eibenschütz; Carnival Overture (Dvorak); Abendlied (Schumann); Waltz from Eugene Onegin (Tchaikovsky); Heiteres Spiel (Blumer); Valse Caprice (Rubenstein); Humoresque, Fasching (Weiner); Wonneträume (Meyer-Helmund); Selection from The Merry Peasant (Fall). 10.0, News Bulletin. 10.20, fortnightly Report of the Norag Sound Service.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW. and DANZIG, 453.2 metres.—11.30 a.m., Concert by the Little Orag Orchestra, conducted by Eugen Wilcken: Overture, Hamlet (E. Bach); Gipsy Idyll (Percy); Serenade, Granada (Albeniz); Fantasia on Graziella (Mattausch); Waltz, Nordseestürme (Döring); Wedding of the Dragonflies (Barrow); Magyar estek (Agghazy); Selection from Das Dorf ohne Glocke (Künneke); Overture, Paragraph 3 (Suppé); March, Flottenparade (Kreuzer). 1.5 to 2.30 p.m., Gramophone Concert: Bedouin March (Oscheit); Wine, Woman and Song (Johann Strauss); Selection from Carmen (Bizet); March, Die Ehrenwache (Lehnhardt); Tone Picture, Eine Stunde in Potsdam (Müller-Huhn); Gib nur acht, über Nacht kommt die Liebe (Kaper); Ich bin ein unverheirateter Optimist (Leopold); Ein Denkmal für Franz Liszt (Morena); The Wedding of the Painted Doll (Brown); Winterstürme (Fucik); Maiden, my Maiden, from Frederica (Lehár); Selection from Boccaccio (Suppé); Berceuse (Jännefeldt); Extase (Ganne). 4.0, Concert by the Little Orag Orchestra, conducted by Eugen Wilcken: Overture, Consalvo (Azzoni); Rocco Ballet Suite (Schütze); Flower Waltz (Hentschel); Zigeunerlied (Czernik); Moonlight in Venice (Armandola); Selection from Othello (Verdi); Serenade, Espazza (Hove); Die laumische Yvette (Schmalstich); Waltz, Sorgenbrecher (Johann Strauss); Potpourri, Wieuer Leben (Kozak). 5.45 (from Danzig), Talk: Danzig Literature of the Past. 6.15, Agricultural Market Prices. 6.25, Talk: Economics and Settlements in East Prussia. 6.50, Talk: Memorable Days of the Week. 7.0 (from Danzig), Song Recital by Edith Karin. 7.30, Talk in commemoration of Wilhelm Wundt. 7.55, Weather Forecast. 8.0, See Hamburg. 9.0, Announcements. 9.10, Josef Joachim Commemoration Programme on the Twenty-Fifth Anniversary of his Death. Talk: Josef Joachim as Violinist and Teacher. String Quartet in D, No. 35 (Haydn); String Quartet in B Flat (Mozart). 10.0, Reading of Poems by Ludwig Friedrich Barthel, Günter Eich, Walther Huer, Hermann Ludding and Fritz Woike. 10.20, Weather and News.

HILVERSUM

Announced HUIZEN; 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Christian Radio Society (N.C.R.V.). 7.40 a.m., Bible Reading. 7.55, Gramophone Records of Variety Music. 10.10, Programme for Hospitals. 10.40, Reading. 11.10, Gramophone Records of Variety Music. In an interval at 11.40, Police Notes. 12.10 p.m., Organ Recital by Jan Zwart: Fantasia on Popular Melodies (Zwart); Prelude in E minor (Buxtehude); Choral, Jesu meine Freude (Walther); Concerto in E flat for Trio (Bach); Toccata in A minor (Krebs);

AUGUST 15th

MONDAY

continued.

Three Psalms for Organ (Zwart); Sonata No. 2 (Mendelssohn); Bénédiction nuptiale (Saint-Saëns); Marche de Fête (Büsser); Andante religioso (Dreyschok); Fantasia on Popular Songs (Zwart). 1.40, Gramophone Records of Light Music. 2.55, Dressmaking Lesson. 3.10, Millinery Lesson. 3.25 to 3.40, Interval. 3.40, Programme for Hospitals. 4.40, Instrumental Concert: Overture, La dame blanche (Boieldieu); Selection from Czar and Carpenter (Lortzing); Seifenblasen (Urbach); Indian Suite (Lüling); Interlude; Overture, The Bohemian Girl (Baffe); Pusztá Legendén (Lindsay-Theimer); Selection from Coppélia (Delibes). 6.10, Answers to Correspondents. 7.10, Police Notes. 7.25, News Bulletin. 7.40, Concert by the N.C.R.V. Symphony Orchestra, conducted by M. Adam: Overture, The Thieving Magpie (Rossini); Selection from The Merry Peasant (Fall); Ballet égyptien (Luigini); Selection from The Huguenots (Meyerbeer); Song nu met zang (Valerius); Juicht vroolijk nu (Valerius). 8.40, Talk. 9.10, Concert (contd.): Overture, Sakuntala (Goldmark); Suite from Le collier de saphirs (Pierné); Suite, Jeux d'enfants (Bizet); Invitation to the Dance (Weber-Weingartner). 9.40 (in an interval), News. 10.10, Gramophone Records of Popular Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM; 1,875 metres; 8.5 kW.—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—7.40 a.m., Time Signal. 7.41, Variety Music on Gramophone Records. 9.40, Time Signal. 9.41, Divine Service. 9.55, Gramophone Records of Popular Music. 10.10, Talk. 10.40, Organ and Song Recital by Piet van Egmund and Corn. van Munster. Organ Solos: Passacaglia and Fugue (Bach); Tenor Solos: (a) Panis Angelicus (Franck); (b) Ave Maria (Franck); (c) Aria from Requiem (Verdi); Organ Solos: (a) War March of the Priests, from Athalie (Mendelssohn); (b) Passacaglia, Choral and Fugue (Wolf); Tenor Solos: (a) Aria from Elijah (Mendelssohn); (b) Aria from The Creation (Haydn); Improvisation for Organ (van Egmund). 11.40, Time Signal. 11.41, Concert by the Small Wireless Orchestra, conducted by Nico Treep. In the intervals, Variety Music on Gramophone Records. 1.55 to 2.10, Interval. 2.10, Talk by Max Tak, with Gramophone Illustrations: Paganini's Life. 3.10, Concert by Willy Honsbeek and his Orchestra, relayed from the Hotel Central, The Hague. 4.10, Programme for Children. 5.10, Concert, relayed from the Kurhaus, Scheveningen: Pierre Palla (Organ), Albery de Booi (Songs), and Boris Linsky (Violin); Organ Solo: Overture, Berlin, wie es weint und lacht (Conradi); Songs: (a) Serenade (Tosti); (b) The Bells of Love (Herpin); Violin Solos: (a) Loreley Paraphrase (Nesvadba); (b) Gli spiti Franchesi (de Leva); (c) Hungarian Dance (Eichhorn); Organ Solo, Waltz, Frühlingsstimmen (Johann Strauss); Songs: (a) The Little Pagoda (Benatzky); (b) English Waltz, Ich weiss nicht zu wem ich gehöre (Holländer); Organ Solo, Selection from Rigoletto (Verdi); Violin Solos: (a) Serenata di baci (de Micheli); (b) Wiegendorf (Brahms-Hermann); (c) Kubelick Serenade (Drdla); (d) Valse bluette (Drigo-Auer); Organ Solo: In the Mystic Land of Egypt (Ketelbey); Songs: (a) Dream, my little baby (Hajos); (b) Goodnight Vienna (Posford); Organ Solo, Dancing Fool (Chwat). 6.40, Weekly Book Talk. 7.10, Light Music on Gramophone Records. 7.40, Time Signal. 7.41, The Flower of Hawaii—Musical Comedy (Abraham). 9.40, Weather and News. 9.50, Concert by the Wireless Orchestra, conducted by Louis Schmidt: March, Neues Leben (Heineke); Overture, Morning, Noon and Night (Suppé); Waltz, Rudolfsklänge (Jos. Strauss); Studentenpolka (Millecker); Annenpolka (Joh. Strauss); Waltz from The Arabian Nights (Joh. Strauss); Parade-marsch des langen Kerls (Roland); Eine Sängerfahrt nach Wien (Silving); Cara dura (Chirlanda); Paginas Muertas (de Caro); Madrid (Speyer); Light Music on Gramophone Records; Selection from The Bayadere (Kálmán). 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.15 p.m., Announcements and Popular Music on Gramophone Records. 10.0, Concert of Dance Music. 10.45, Sports Notes. 10.50, Concert of Dance Music.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 14 kW. and HELSINKI, 368.1 metres.—6.15 p.m., Agricultural Notes. 6.25, Concert by the Radio Ensemble: Wien bleibt immer Wien (Schrammel); Air from The Merry Widow (Lehár); Hungarian Dance No. 7 (Brahms); Ay-Ay-Ay (Perez Frierie); Loreley Paraphrase (Nesvadba);

Rusticiana (Cortopassi). 7.0, Talk. 7.25, Music by a Harp Quartet; Quartet (Haydn); Suite (St. Quentin); Minuet (Mozart). 7.55, Readings (Uno Kallas). 8.20, Concert by the Radio Ensemble; Overture, Carmen (Bizet); La cygne (Saint-Saëns); Air from La Traviata (Verdi). 8.45, News in Finnish and Swedish.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert: Overture, The Crown Diamonds (Auber); Waltz from The Arabian Nights (Joh. Strauss); The Royal Hunt and the Storm from Les Troyens (Berlioz); Selection from Carmen (Bizet); Hungarian Rhapsody No. 4 in D (Liszt). 12 Noon, Concert from Stuttgart. 1.15 p.m., Weather, Announcements, Time and Report on the Olympic Games. 1.30, Concert, conducted by Eysoldt: Overture, Bacchus and Gambrius (Herling); Ballet Music from La forêt enchantée (Drigo); The Lost Chord (Sullivan); Spring Song (Mendelssohn); Melodies from Preciosa (Weber); Waltz, Lotosblumen (Ohlsen); Spanish March (Dreyer). 2.30, Meat Market Prices. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Reading for the Young. 5.0, Orchestral Concert, conducted by Eysoldt: Overture, Antigone (Buisson); Slav Dances Nos. 2 and 5 (Dvorak); Potpourri of Rubinstein's Music (Raff); Réverie du soir (Saint-Saëns); A Rickshaw Ride (Niemann); Waltz, Potpourri, Was die Douau erzählt (Morena); March, Jugend voran (Translatteur). 6.20, Talk for Women: Voluntary Work for Women and Girls. 6.45, Weather, Time, Economic Notes and Sports Review. 7.0, Talk for Parents: The Small Child's Speech. 7.20, Topical Talk. 7.30, Talk: The Economic Condition of the Rhineland and Westphalia. 7.55, Announcements. 8.0, Round the World on Gramophone Records: A Breton Festival. 9.0, Beethoven Symphony Concert by the Station Orchestra, conducted by Buschhöter; Soloist: Hans Hermann Wetzler (Pianoforte); Leonora Overture No. 2. Pianoforte Concerto in G; Symphony No. 6—the Pastoral. 10.20 (approx.), News, Announcements and Sports Notes. 10.40, Variety Concert. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 Metres, 2 kW.; and DRESDEN, 319 metres.—6.0 p.m., Review of New Books on Bavaria and Saxony. 6.30, Talk: Conrad Ferdinand Meyer. 7.0, Talk on the Centenary of the Birth of Wilhelm Wundt, the Philosopher. 7.30, Guitar Recital by Heinrich Albert: Prelude and Fugue (Bach); Sonatina, Op. 15 (Ferdinand Sor); Etude in E Minor (Mertz); Three Melodies (Heinrich Albert): (a) Old Viennese Waltz; (b) At the Fountain; (c) Spanish Song. 8.0, See Hamburg. 9.0, Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer: Soloist, Dr. Gustav Havemann (Violin); Overture, Manfred (Schumann); Concerto in D for Violin and Orchestra, Op. 77 (Brahms); Italian Serenade (Hugo Wolf, arr. Max Reger). 10.5, News Bulletin. 10.15 (approx.), Concert: March, Mein Regiment (Blankenburg); Overture, La Belle Héène (Offenbach); Waltz, Dolores (Waldeufel); Chinese Street Serenade (Siede); Potpourri, Pudding (Morena); Serenade, Il Bacio (Micheli); Overture, William Tell (Rossini); Dance of the Elves (Heykens); Selection from The Land of Smiles (Lehar); Vineta Glocken (Lindsay-Theimer); March, Gott mit uns (Schröder). 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LWOW

381 metres; 16 kW.—7.35 p.m., See Warsaw. 7.50, Popular Music on Gramophone Records. 8.0, See Warsaw. 9.50, Sports Notes. 10.0, Tenor Song Recital. 10.20, Programme to be announced.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—3.30 p.m. (approx.), Running Commentary on the Finish of the Marseilles-Lyons Cycling Race, followed by a Relay from Paris (Ecole Supérieure), (447.1 metres).

MADRID

UNION RADIO; Call EA7J; 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations and Market Prices, followed by a Request Gramophone Concert. 9.15, General News Bulletin. 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—7.0 p.m., See Prague. 8.0, See Brno. 10.0, See Prague. 10.15, Programme Announcements. 10.20, Popular Music on Gramophone Records.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Programme in English: Scenes

from the Best Plays of the Past Season. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—5.0 p.m., Orchestral Concert conducted by Erich Kloss: Overture, Der Opernball (Heuberger); Andante and Scherzo (Mendelssohn); Selection from The Valkyries (Wagner); Waltz, Sphärenklänge (Jos. Strauss); Potpourri, Was die Douau erzählt (Morena); Serenade from Les Millions d'Arlequin (Drigo); Gavotte (Gossec); March, The Gladiators' Farewell (Blankenburg). 6.15, Talk: The Bauges. 6.35, Variety Programme with Gustav Jacoby. 7.25, Weather Report and Sports Notes. 7.35, Talk. 8.0, See Hamburg. 9.0, Off for my Holidays—Farewell Celebration by the Small Station Orchestra and the Station Choir. Soloists: Maria Agathe Maelcher (Soprano), Adolf Vogel (Bass), and Fritz Horrmann. 10.20, Time Signal, Weather Report, News and Sports Notes. 11.10 (approx.), Concert from Stuttgart. 12 Midnight (approx.), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—2.0 p.m., Promenade Concert. 6.0, Variety Concert. 7.0, Announcements. 7.15, Weather and News. 7.30, Agricultural Talk. 8.0, Time Signal. 8.2, Sonata in E Flat for Pianoforte and Violin (Richard Strauss); 8.30, Song Recital by Carsten Orner. 9.10, Political Review. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Variety Music on Gramophone Records.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Popular Music on Gramophone Records. 6.30 to 8.0, Interval. 8.0, Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Popular Music on Gramophone Records; In an interval at 8.30, Time Signal and Announcements. 8.45, Concert of Chamber Music; Pianoforte Solos: (a) Etude in C Sharp Minor, (b) Improvisation in F Sharp (Chopin); Suite for Flute and Pianoforte (Longo); Soprano Solos: (a) Return (Melartini); (b) La piccola strega (Mostaci); In an interval, Book Review. 9.30, Il berretto a sonagli—Comedy in Two Acts (Luigi Pirandello). 10.30 (approx.), Chamber Music Concert (contd.); Pieces for Flute and Harp: (a) Siciliana (Bach); (b) Gigue (Handel); Soprano Solos: (a) Popular Tuscan Song (Cargianto); (b) Melody Genisadere; (c) Tarantella (Genisadere); Pianoforte Solos: (a) Dance, Op. 32 (Prokofiev); (b) Fire Dance (Falla). 10.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 6.45 p.m., Talk: Coming Films. 7.0, Le Journal Parlé. 8.20, Weather Forecast. 8.30, Variety Programme, including Two Sketches: (a) Pas de politique (de Ferrer) and (b) Moustic Hôtel (Laurent Doillet). 9.30, Dance Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—12 Noon to 2.0 p.m., News and Light Music on Gramophone Records. 7.0, News Bulletin and Press Review. 7.5, Popular Music on Gramophone Records. 8.0, Sports Notes. 8.20, Talk: Walks in and around Paris. 8.30, Radio Journal and News. 8.45, Sponsored Concert. 10.0, Dance Music from Les Ambassadeurs). 10.45, News Bulletin.

PARIS

RADIO PARIS, Call GFR, 1,725 metres; 75 kW.—7.45 a.m., Gramophone Records of Light Music. 8.0, Weather Forecast and Press Review. 8.30, Physical Culture. 12 Noon, Gramophone Concert: Suite, Caucasian Sketches (Ippolitov-Ivanov); Follets (Hasselmanns); Reading: La Mort du Pélégan (de Musset); Serenade (R. Strauss); Eglise de campagne; Le Baiser dans la Nuit (Perez); Songs of Auvergne; Arioso from Benvenuto Cellini (Berlioz); March from Sigurd Jorsalfar (Grieg); Adoration (Filipucci); Two Songs from La Danseuse de Tanagra (Hirschmann): (a) Je dansais, oui, jadis; (b) Oui, près de toi me pressant; Dionysiaques (Schmitt); Air, from The Prophet (Meyerbeer); Air, from Sigurd (Reyer); Aux Etioles (Duparc); Vous mon rêve (Bayle Chamfleury); Nocturne from Corillon (Ganne); Tes Roses (Stroeva); Le Carillon (Daniderf); Air, from Les Deux Pigeons (Messager). In the intervals, Weather Forecast and News. 4.20 p.m., Concert, relayed from the American Conservatoire, Fontainebleau. 6.30, Weather Forecast, Agricultural Report, Talk, Market Prices and Racing Results. 7.0, Gramophone Concert: La Nuit ensorcelee (Capuis-Aubert); Loreley (Liszt);

AUGUST 15th MONDAY continued.

Prelude and Dance from La Tragédie de Salomé (Schn.itt); Serenade (Gounod); Fireworks (Stravinsky). 7.45, Commercial Prices and News. 8.0, Concert of Dance Music: Foxtrot, Encore (Gibbons); Waltz, Quand l'amour meurt (Crémieux); Tango, Carinos (Arujo); Schottische (Guerrero); Tango, Consuelo (Alongi); Hawaiian Waltz; Trente minutes seulement (Raiter); Quera Dios (Esperon). 8.30, News, Sports Results and Weather Forecast. 8.45, Concert (cont.), Waltz from The Arabian Nights (Joh. Strauss); Russian Mazurka, La Czarine (Ganne); Waltz, Wine, Woman and Song (Joh. Strauss); Tango, Cancionero (Buzon); Foxtrot, Flower of Love (Axt-Mendoza); Waltz, Love Me (Morse); It's a Song of Love (Kleiner); Marche des Forgerons. 9.15, Press Review and News Bulletin. 9.30, Concert (cont.), Tango, O Donna Clara (Peterbursky); Waltz, Asleep in my Heart (Titheridge); Juju Java (Costoncelli); Tango, Garifa (Collazo); Waltz, Wiener Bonbons (Joh. Strauss); Foxtrot, Sur la cote d'amour (Raiter); Lela (Dauber); El Fandango de Candie (Duran); Foxtrot, Ninon, Ninon jolle (Rico); Foxtrot, Piccolo, Piccolo (O. Straus); Selection from A Waltz Dream (O. Straus); Künstlerleben (Joh. Strauss); Javanese Dance (Puig); March, Old Comrades (Teike); Dance Music Potpourri. 11.0 (approx.) Close Down.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by W8XK on 48.95 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, KDKA Kiddies' Klub. 10.15, Teaberry Baseball Scores. 10.20, David Lawrence Dispatch. 10.25, KDKA Artist Bulletin. 10.29, Programme Announcements. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News Today. 11.6, Teaberry Sport Review. 11.11, Pleas News Reeler. 11.14, Weather Report. 11.15, Westinghouse Parade. 11.45 to 1.30 a.m. (Tuesday), New York relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Popodent Amos 'n' Andy. 12.15 a.m., Tastyest Jesters. 12.30, Stebbins Boys. 12.45, Billy Jones and Ernie Hare. 1.0, Time Signal and Carnation Contented Programme. 1.30, Programme to be announced. 2.0 to 4.0, New York relay. 2.0, Sinclair Minstrels. 2.30, George Olsen's Orchestra. 3.0, The Country Doctor. 3.15, Absorbine, Jr., Footnotes. 3.30, Tish. 3.45, Jane Froman and her Band. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, The Music Box. 4.30, Jack Pettis and his Orchestra. 5.0, Terrace Gardens Orchestra, from New York. 5.30, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.15 p.m., Miscellaneous Items and News Bulletin. 7.35, Topical Talk. 7.58, Time Signal. 8.0, Concert by a Military Band, with Songs. In the intervals Theatre Guide and Programme Announcements. 9.50, Time Signal, Sports Notes and Police Report. 10.15 (approx.), Close Down.

PRAGUE

433.6 metres; 120 kW.—4.0 p.m., Orchestral Concert, relayed from Brno. 6.0, German Transmission: The Death of Socrates—Four Pictures (Kysler), followed by News. 7.0, Dance Music. 8.0, See Brno. 10.0, News and Sports Notes. 10.15, Miscellaneous Announcements. 10.20, Gramophone Records of Popular Music.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 1.0, Financial Notes. 1.5 (from Lausanne), Light Music on Gramophone Records. 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, Concert by a String Orchestra, conducted by M. Robert Echenard. 7.0, Weather Forecast. 7.2 (from Lausanne), Lecture Recital by M. Marcel Sénéclaud. 7.40 (from Geneva), Recitations by M. René-Louis Pineaud. 7.55, News Bulletin. 8.0 (from Lausanne), Russian Programme: Dance Melodies by the Russian Troupe Isbn. Lydia Rousskaia in her Repertoire, and Zither Solos by M. Roussanoff. 8.45 (from Geneva), Literary Programme. 9.0, Variety Concert by the Station Orchestra. 10.0, News Bulletin and Weather Forecast. 10.15 (approx.), Close Down.

RIGA

525 metres; 15 kW.—5.30 p.m., Concert by a Wind-Instrument Orchestra: Overture to Raymond (Thomas); Waltz (Kalinov); Selection from Le tribut de Zamora (Gounod); The Turkish Patrol (Michaelis); Minuet (Paderewski); Waltz, Hyacinthe (Stolz); March (Krumpholtz). 6.30, Agricultural Talk. 7.0, Weather Report. 7.3, The Labyrinth—Scenes (Pola). 8.0, News Bulletin. 8.20, Gramophone Records of Famous Singers. 9.0, Weather Forecast. 9.5, Two Comedies. 9.30

(on 198.5 metres), Late Concert. 10.15 (approx.), Close Down.

RJKUKAN.—See Oslo.

ROME

Call 1R0; 441 metres; 50 kW. Relayed by Naples, 319 metres, and 2R0, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio and Announcements. 12.30 p.m., Weather, followed by Concert of Light Music on Gramophone Records; In the intervals at 1.15, Giornale Radio, and at 1.30, Time and News. 2.15 to 5.0, Interval. 5.0, Exchange, Children's Radio Review, Giornale Radio and Announcements. 5.30, Song, Violin and Pianoforte Recital; Alearo Martinengo (Violin). Luisetta Castellazzi (Mezzo-Soprano) and Iolanda Landi (Pianoforte); Concerto, Op. 22 in D Minor for Violin and Pianoforte (Wieniawsky); Songs from (a) Così fan tutte (Mozart), (b) Jean de Paris (Boieldieu), (c) Martha (Flotow), (d) Mosé in Egitto (Rossini); Pianoforte Solos: (a) Polonaise No. 9 (Chopin), (b) Allegro from a Concerto (Granados). 6.15 to 7.10, Interval. 7.10 (from Naples), Shipping News and Sports Notes. 7.15, Agricultural Report, Announcements and Giornale Radio. 8.0, Time, News and Variety Music on Gramophone Records. 8.30, Sports Notes, Announcements, Review of Books and Talk for Tourists. 9.0, La Bohème—Opera (Puccini), relayed from the Eden Theatre, Viareggio; In the intervals, Talk and Announcements; News after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres; and by W2XAD on 19.56 metres.—9.0 p.m., Book Chat. 9.15, William Steven (Baritone). 9.30, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15, Musical Programme. 10.30, Swanee Serenaders, from New York. 10.40, A.B.C. Thumbnaill Sketches. 10.45, Swanee Serenaders, from New York. 11.0, Waldorf Astoria Orchestra from New York. 11.50, Musical Programme. 11.15, Baseball Scores. 12 Midnight, Under the Big Top. 12.15 a.m. (Tuesday), Chandu, the Magician. 12.30 to 4.0, New York Relay. 12.30, Maxwell Tune Blenders. 12.45, The Goldbergs. 1.0, Soconylaud Sketch. 1.30, Voice of the Firestone. 2.0, A. and P. Gipsies. 2.30, Parade of the States. 3.0, National Radio Forum. 3.30, Do You Remember? 4.0, Arm Chair Chats. 4.15, Johnny Albright (Crooner). 4.30, Gordie Randall's Orchestra. 5.0, Rex Koury (Organist). 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres, 60 kW.; BASEL, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Variety Concert on Gramophone Records. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 4.50, Interval. 4.30, Concert by the Small Station Orchestra. 5.0 to 5.30, Interval. 6.30 (from Zürich), Programme for Young People: Experiences on the Jungfrau. 7.0, Time Signal and Weather Forecast, followed by Light Music on Gramophone Records. 7.30 (from Zürich), Talk: Paths to Happiness (conclusion). 8.0 (from Zürich), Russian Programme: Readings by Dr. S. d. Steinberg: The Station Orchestra, conducted by H. Hoffmann. 9.5 (approx.), Sonata in A Flat Minor (Böhlmann), by Jakob Mergler (Cello) and Otto Strauss (Pianoforte). 9.30, Weather Forecast and News Bulletin. 9.45, Mozart Concert by the Station Orchestra, conducted by H. Hoffmann. 10.30, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA; 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m. (from Sundsvall), Songs to the Lute and Reading. 5.45, Light Music on Gramophone Records. 6.45 (from Sundsvall), Talk. 7.15, Weather and News. 7.30, (from Göteborg), Orchestral Concert; Overture, Maritana (Wallace); Aquarellenwäzler (Johann Strauss); Selection from Fedora (Giordano); Dance of the Waves from Loreley (Catalani); Serenade (Micheli); Selection from The Duchess of Chicago (Kálmán). 8.30, Talk: Before the Parliamentary Elections. 9.0 (from Göteborg), Song Recital by Conrad Arnesen. 9.25, Pianoforte Recital by Anita Harrison; Prelude in G Sharp Minor (Rachmaninov); The Dew Fairy (Bidge); Gopak (Bux); Etude in G Sharp Minor (Chopin); Etude in F (Chopin). 9.45, Weather and News. 10.0, Organ Recital relayed from the Concert Hall; Passacaglia in C Minor (Bach); Fugue on Bach Op. 60, No. 1 (Schumann); Concerto in A Minor (Vivaldi-Bach); After the Recital, Reading. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Catholic Service. 12 Noon, Gramophone Concert of Light Music. 12.45 p.m., News Bulletin in French and German. 1.0, Time Signal. 1.1, Concert relayed from Bordeaux-Lafayette. 1.50, Light Music on Gramophone Records. 2.0 to 4.45, Interval. 4.45, Talk in French: The History of the Jews in Alsace. 5.0, Concert by the Station Orchestra, conducted by M. Roakam; Sports March (Poppy); Waltz, La Rose bleue (Aubry); Intermezzo; In the Shadows (Finck); Overture, Morning, Noon and Night (Suppé); Gross mütterchen (Längler); Selections from Lilac Time (Schubert); Air and Serenade (Tosti); Waltz, Wine, Woman and Song (Johann Strauss); Marche des petits Pierrots (Bosc). 6.0, Literary Talk in French. 6.15, Feuilleton. 6.30, Gramophone Concert; Overture, Masques et Bergamasques (Fauré); Dichterblicke (Schumann); Scherzo in B flat minor (Chopin); Two Songs from Le Roi d'Ys (Lalo); Air from La Mascotte (Audran); Song from Les Insomnies; Two Airs from Les Cloches de Corneville (Planquette). 7.30, Time Signal. 7.31, News in French and German. 7.45, Concert of Popular Music on Gramophone Records: March, Sambre et Meuse (Rauski); Potpourri of Russian Songs; Waltz, Du und Du (Strauss); March, Carmen (Beck); March from Siegfried (Wagner); Madrid (Alex); You are my Heart's Delight, from The Land of Smiles (Lehar); Marche Iorraine (Ganne). 8.30, Rip van Winkle—Opera in Four Acts (Planquette). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—10.0 a.m., Wilhelm Kinkens Song Recital by Helene Greif; Scheel (Soprano); Sommernacht; Frieden; Süsse Ruh; Todessehnsucht; Die Wiese schäumt von Blüten; Mitgift; Liebeslied; Still, wie die Nacht. 10.20 (from Freiburg), Pianoforte Reproductions of Dead Composers playing their own music: Gavotte in F (Saint-Saëns); Butterfly—from Lyric Pieces (Grieg); Minuet from Die Heirat wider Willen (Humperdinck); Song from Des Knaben Wunderhorn (Mahler); Waltz, La plus que lente (Del-ussy); Etude in D Sharp Minor (Scriabin); Humoresque in G Minor (Reger); Scherzo in F Sharp (d'Albert). 11.0, Time, News, and Weather. 11.55, Weather. 12 Noon, Concert of Light Music: Waltz, Hofballtänze (Lanner); Paraphrase on Brahms' Cradle Song (Esterl); Waltz (Raffaelli); Tango, Solitude (Esterl); Cuban Foxtrot, Maria My Own (Lecuona); Selection from Viktoria and her Hussar (Abraham); Song and Czardas for Violin, Marischka (Lehar); Jazz Fantasia, Russian Melodies (arr. Ritter). 1.45 p.m., Time, Weather, News, and Programme Announcements. 1.30, Gramophone Records of the Berlin Philharmonic Orchestra: Hungarian March (Berlioz); Overture, Fra Diavolo (Auber); Melody from the Italian Caprice (Tchaikovsky); Dances (Janacek); Polka from Schwanda the Piper (Weinberger); Kaiserwalzer (Johann Strauss). 2.0 to 2.30, Sponsored Concert. 4.0, Talk: Women of the Mediterranean Lands. 4.30, Talk on Philately for Young People. 5.0, See Langenberg. 6.15, Time and Weather. 6.25, Talk: The Grotesque in Music. 6.50, See Frankfurt. 7.15, Time, Weather, and Agricultural Notes. 7.30, See Leipzig. 8.0, See Hamburg. 9.0, Gramophone Records of Variety Music. 9.15, See Frankfurt. 10.20, Time, Weather, News, and Programme Announcements. 10.45, Talk on Chess. 11.0, Concert by the Dance Band of the Stuttgart Philharmonic Orchestra: Selection from Das Spielzeug inner Majestät (Granichstuedten); Jazz Fantasia on the Pagan Love Song (Savino); Spanish Waltz, Flores de España (Albont); Symphonic Variations on the Slow Foxtrot Sweet and Lovely (Savino); Selection from The Flower of Hawaii (Abraham). 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI; 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Airs from The Magic Flute (Mozart), and Cavalleria Rusticana (Mascagni). 5.30, Light Music. 5.45, Dance Music. 6.0, Selections from (a) Sanson and Delilah (Saint-Saëns), (b) Faust (Gounod), and (c) La Favorita (Donizetti). 6.15, Horse Racing Results. 6.30, Variety Music on Gramophone Records. 7.30, Programme Announcements. 7.35, News Bulletin. 7.45, Orchestral Music. 8.0, Songs from (a) Les Noces de Jeanette (Massé), (b) La Mascotte (Audran), and (c) Rip van Winkle (Planquette). 8.15, Military Music. 8.30, Accordion Solos. 8.45, Chansonnettes. 9.0, Light Music. 9.15, Arias from (a) Romeo and Juliet (Gomrod), (b) The Barber of Seville (Rossini), and (c) Werther (Massenet). 9.30, Orchestral Selections from (a) Rip van Winkle (Planquette), (b) The Merry Widow (Lehar), and (c) Veronique (Messager). 9.45, Sound Film Music. 10.0, Violin Recital; Hungarian Poem (Hubay); Berceuse (Ravel); The Canary (Poljakin); La plus que lente (De-

buásy); Spanish Dance (Falla). 10.15, Recitations. 10.30, North African News. 10.45, Light Music by an Argentine Orchestra. 11.30, Selections from L'Arlesienne (Bizet). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.5 p.m., Quintet (Concert); I pingüini (Carlys); Scherzando (Tonelli); Dreams on the Ocean (Gungli); Notti arabe (Montanaro); Monna Lisa Samba (Loeser); Selection from Nina, non far la stupida (Ciacchetti); Povero cuore (Rodriguez); El Caballero (Donati). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.5 p.m., Concert: Overture, Tancredi (Rossini); Canto d'Imera (Mule); Vendetta araba (Chiri). 7.25, Tourist Talk. 7.30, Time and Announcements. 7.35, Variety Music on Gramophone Records. 8.0, Giornale Radio. Weather and Light Music on Gramophone Records. 8.20, Review of New Books. 8.30, Popular Music on Gramophone Records. 9.0, La Bohème—Opera (Puccini), relayed from the Eden Theatre, Viareggio; In the intervals, Talk, Miscellaneous Notes and Giornale Radio.

VATICAN CITY

19.84 metres (Morning), and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Italian. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—5.0 p.m., Concert by the Volkoper Orchestra, conducted by Dr. Rudolf Weirich: Overture, Alessandro Stradella (Flotow); Ballet Music from A Winter's Tale (Bittner); Dream Pantomime from Hansel and Gretel (Humperdinck); Jödlinger Tänze (Beethoven); Tarantella (Rossini); Second Polonaise (Liszt); Overture, Poet and Peasant (Suppé); Waltz, Mephistos Höllebrunne (Joh. Strauss); Ballet Music from Ritter Pasmay (Joh. Strauss). 6.30, Talk: Modern Architecture in the United States of America. 7.0, Legends of the Virgin Mary, relayed by Alma Seidler. 7.35, Review of the Olympic Games in Los Angeles. 7.50, Time Signal, Sports Notes and Programme Announcements. 8.0, Concert by the Vienna Symphony Orchestra, conducted by Max Schönherr. Soloist: Cida Lau (Soprano). Suite from Così fan tutto (Mozart-Stueber). Soprano Solos: Two Concert Arias (Mozart): (a) A se in ciel, (b) Vorrei spiegarvi o dio; Melodies from Egmont (Beethoven); (c) Entr'acte, (d) Klärchen's Death, (e) Victory Symphony; Slovak Suite (Novak); Mummer's Dance from The Bartered Bride (Smetana); Three Melodies from Polebnit (Nedbal); Selection from Frederica (Lehar); Soprano Solo: Waltz, Tales from the Vienna Woods (Joh. Strauss); Overture, A Night in Venice (Joh. Strauss). 10.0, News Bulletin and Announcements. 10.15, Dance Music by the Korngold Jazz Band, with Vocal Refrains by Hans Rotter. 12 Midnight (approx.), Close Down.

WARSAW

1,411 metres; 120 kW.—9.0 a.m., Religious Festival relayed from Czestochowa. 12.20 p.m., Programme Announcements. 12.25, Weather Report. 12.30, Concert by the Lodz Philharmonic Orchestra, relayed from Lodz. 12.55, Talk relayed from Cracow. 1.10, Concert (cont'd.). 2.0, Talk. 2.15, Zither Recital by Mme. Zielinska. 2.30, Agricultural Talk. 2.50, Recital of Polish Songs by B. Nietyksza. 3.5, Agricultural Talk. 3.25, Zither and Song Recital. 3.40, Programme for Children. 4.5, Light Music on Gramophone Records. 4.45, Talk: National Heroism. 5.0, Concert by the Station Orchestra, conducted by J. Oziminski. Soloist: August Wisniewski (Baritone); Melodies (Schubert): (a) Military March, (b) Wiegand, (c) Overture, Rosamunde; Songs: (a) Song (Schubert), (b) Air (Kenne-man), (c) Vorrei morir (Tosti), (d) The Musician (Zawadzki); Selection from Aida (Verdi); Songs: (a) Air from Casanova (Rozycki), (b) Air from Il Trovatore (Verdi). 6.0, Talk on Great Adventurers: The Prince of Demassy. 6.20, Concert of Light Music relayed from the Café Gastronomja. 7.15, Miscellaneous Items. 7.35, Talk: The Care of People struck by Lightning. 7.50, Interval. 7.55, Programme Announcements. 8.0, Concert by the Warsaw Philharmonic Orchestra, conducted by J. Oziminski. Soloist: H. Zarzyka (Violin); Rhapsody, España (Chabrier); Waltz (Tchaikovsky); Prelude in B minor (Chopin-Cielewsky); Mazurka in F (Chopin-Noskowski); Violin Solo: Ballade and Polonaise (Vieuxtemps); Cradle Song (Maszynski); Persian Dance (Guiraud).

WILNO

563 metres; 8 kW.—7.15 p.m., Sports Notes. 7.30, Programme Announcements. 7.35, See Warsaw. 7.50, Miscellaneous Announcements. 8.0, See Warsaw. 10.50, Variety Entertainment. 11.30 (approx.), Close Down.

ZÜRICH.—See Schweizerischer Landessender,

ALGIERS

363.3 metres; 13 kW.—7.0 p.m., Exchange Quotations and Market Prices. 7.10, Shipping Notes and Weather Forecast. 7.15, Instrumental Music. 7.30, Recitations. 7.55, News and Time Signal. 8.0 (approx.), Concert of Chamber Music: The Lark Quartet in D (Haydn); Quartet in A (Beethoven); Largo from Xerxes (Handel); Sarabande and Partita (Bach). 9.0, Concert of Oriental Music.

BARCELONA

RADIO-BARCELONA, Call EAJ, 349 metres; 8 kW.—8.0 p.m., Trio Concert: Tempo di Minuetto (E. Mayer); Selection from Don Quixote (Massenet); Elegy (Vallaurty); Polonaise (Chopin). 8.30, Health Talk, Exchange Quotations, and Request Gramophone Records. 9.15, Talk on Football, followed by Gramophone Records (contd.) and News. 10.0, Chimes, Weather Forecast, a Few Words dedicated to the Families of Seamen, and Market Prices. 10.10, Concert by the Station Orchestra: March (Bayer); Selection from Sangre de reyes (Luna y Balaguer); Waltz, O Frühling, wie bist du so schön (Lincke); Bolero, El mi amor (Margutti); Idilio campestre (Palau); Romance, Je me souviens du soir (C. Cui). 11.0, Radio Gazette. 11.30, Dance Music by the Cracy Boys' Orchestra, relayed from the Casino, San Sebastian. 1.0 a.m. (Wednesday), Close Down.

BASLE.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.5 kW.—5.0 p.m., Gramophone Records of Variety Music. 6.0, Accordion Recital of Yugoslav Melodies. 6.45, Time and Programme Announcements. 7.0, See Vienna. In an interval at 8.20, Talk on the Salzburg Festival of Music. 10.15, News, followed by Relay of Foreign Stations.

BERLIN

KONIGS WUSTERHAUSEN; 1,635 metres; 60 kW.—12.5 p.m., French Lesson for Schools, followed by Gramophone Records of Violin Music, and Weather for Farmers. 12.55, Nauen Time Signal. 1.35, News Bulletin. 2.0, Concert of Classical Music on Gramophone Records, relayed from Berlin (Witzleben). 3.0, Talk by Dr. Hans Bongardt. 3.30, Weather and Exchange. 3.45, Talk for Women. 4.0, Talk: Tradition and Convention. 4.30, See Leipzig. 5.30, Talk in Commemoration of Wilhelm Wundt the Philosopher. 6.0, Talk: Why has Japan rejected Christianity up to the Present Time? 6.30, Talk: Industrial Self-help in England. 6.55, Weather for Farmers. 7.0, Talk: Films and the People. 7.40, Wireless Technical Talk, followed by Weather for Farmers. 8.0, German Folk Songs. 8.30, See Berlin (Witzleben). 10.0, Weather, News and Sports Notes. 10.20, See Hamburg. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN; 419.5 metres; 1.5 kW.—5.40 p.m., Talk on the Centenary of the Birth of Wilhelm Wundt the Philosopher. 6.5 p.m., With the Microphone through the Mark—Sakrow. 6.15, Guitar Recital by Heinrich Albert: Prelude and Fugato (Bach); Impromptu (Mertz); Minuet Op. 11, No. 5 (Sor); Song Scene (Legnani); Spanish Song (Heinrich Albert). 6.35, Per Petter reads his own Sketches. 6.55, The Witzleben Station informs its Listeners. . . . 7.0, Topical Talk. 7.10, Concert of Light Music from the Traube Weinrestaurant. 7.55, Labour Market Report. 8.0, Symphony No. 5 in B Flat (Schubert) by the Berlin Wireless Orchestra, conducted by Bruno Seidler-Winkler. 8.30, Germany—A Symphony of History, Literature and Music by Friedrich Carl Westphal. 10.0, Weather, News and Sports Notes.

BERNE.—See Schweizerischer Landessender. BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—6.45 p.m., News Bulletin, Exchange Quotations, and Lottery Results. 6.55, News Bulletin and Weather Forecast. 7.0, See Paris (Eiffel Tower).

BRATISLAVA

279 metres; 14 kW.—7.0 p.m., See Prague. 8.30, See Brno. 10.0, See Prague. 10.15, Programme Announcements and News. 10.20, Light Music on Gramophone Records.

BREMEN.—See Hamburg.

BRĚSLAU

325 metres; 1.5 kW.; and GLEIWITZ, 253 metres.—4.30 p.m., Concert of Light Music on Gramophone Records. 4.55, Pianoforte Recital by Otto Heinemann: Toccata in D (Bach); Albumblatt (Reger); Burletta (Reger); Es war einmal (Reger); Capriccio (Reger); Moment musical (Reger); Fantasiebild (Heinemann); Minuet (Heinemann); Waltz (Heinemann); Scherzo (Heinemann). 5.30, Agricultural Report, followed by Talk in honour of the Centenary of Wilhelm Wundt. 5.45, Talk: Helping Youth in Distress. 6.10, Surprise Programme. 6.30, Talk: How Research into the Physiology of Work eases

TUESDAY

AUGUST THE SIXTEENTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Organ recital. Orchestral programme. Gramophone recital. "As You Like it," a play by William Shakespeare. "New Songs for Old," by Gordon McConnel and Christopher Stone. Dance music.
- LONDON REGIONAL** Orchestral concert. Ballad concert. Promenade concert from Queen's Hall. Dance music. Instrumental concert.
- MIDLAND REGIONAL** North Regional programme. Orchestral concert. Music from Light Operas and Musical Plays. London Regional programme.
- NORTH REGIONAL** Orchestral concert. Ballad concert. Orchestral programme. London Regional programme, National programme.
- WEST REGIONAL** "From the Heights"—orchestral programme. National programme.
- SCOTTISH REGIONAL** National programme. Orchestral concert. National programme.
- BELFAST** Orchestral concert. National programme.
- ABROAD**
- BERO-MUNSTER** Symphony concert by Berne Municipal Orchestra.
- BRUSSELS (No. 2)** Concert from Ostend Kursaal.
- COPENHAGEN** Modern Operetta music.
- MUNICH** Beethoven and Brahms chamber music.
- STOCKHOLM** Offenbach programme.

Life for the Worker. 7.0, Weather Forecast for Farmers, followed by Concert by the Station Orchestra. 8.0, Concert of Opera Arias: The Silesian Philharmonic Orchestra. Soloists: Frida Elstrom (Soprano), Vally Mittelstaedt (Soprano), Susanne Stein (Contralto), Richard Gross (Baritone), Wilhelm Hiller (Bass) and Ventur Singer (Tenor). Overture, The Merry Wives of Windsor (Nicolai); Air from Orpheus and Eurydice (Gluck); Two Airs from The Magic Flute (Mozart), Air from Der Freischütz (Weber); Aria from Der Wallenschmied (Lortzing); Hans Sachs' Aria and Walter's Prize Song from The Mastersingers (Wagner); Magdalena's Aria from Der Evangelinman (Kienzl). 9.0, News Bulletin. 9.10, Symphony Concert by the Silesian Philharmonic Orchestra. Conductor, Hermann Behr. Symphony No. 4 in F minor (Tchaikovsky). 10.0, Time Signal, Weather Forecast, News Bulletin, Sports Notes, and Programme Announcements. 10.25, Talk: Women and Sport. 10.40, Light Music and Dance Music from the Haus Metropol, Hindenburg. 12 Midnight, Close Down.

BRNO

342 metres; 35 kW.—7.0 p.m., See Prague. 8.30, Mozart Play in Two Acts (Fabian Slaby and Jan Racek), with Introductory Talk. 10.0, See Prague. 10.15, Theatre Notes and Programme Announcements. 10.20, Popular Music on Gramophone Records.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Fil-staff-Opera (Verdi) on Gramophone Records. In the interval at 1.0 p.m., Le Journal parlé. 5.0, Concert by the Brasserie Orchestra, conducted by M. Walpot. Overture, Le Voyage en Chine (Bazin); Selection from Lilac Time (Schubert-Berthe); Miniature Suite (Coates); Selection from Le jour et la nuit (Lecocq); Mouettes et vagues (Chillemont). 5.45, Programme for Children by the Belgian Catholic Radio Society. 6.20, Literary Review. 6.30, Gramophone Records. Recitations from the Fables of La Fontaine and Marot. Ballade des pauvres gens, and Ballade des pendus, from Gringoire (de Banville). Hawaiian Guitar Solos: (a) Honolulu (Ferrera), (b) Waltz, Hawaiian Nights (Roberts), (c) Aloha (Bowers); (d) My little Hawaiian Mother (French), (e) Siren of Waikiki; (f) Moonlight on the Danube (Byron Gay); (g) Along Miami Shore (Warren); (h) Kohala March (Ferrera). 7.15, Report of the Belgian Catholic Radio Society. 7.30, Film Review. 8.0, Lehar Concert by the Brasserie Orchestra, conducted by Charles Walpot. Selection from The Merry Widow. Waltz from Eva. Selection from The Count of Luxembourg. Melodies from Gipsy Love. Selection from The Dance of the Dragonflies. Waltz, Gold and Silver. 8.45, Talk: Credit for Small Traders. 9.0, Concert relayed from the Casino, Knocke.

Soloists: Mme. Yvette Thomas (Songs), M. Maes (Viola), M. Stoeffs (Flute), and M. Harvant (Violin). Ent'acte from Jean-Michel (Dupuis). Scherzo (Gilson). Song, Elsa's Dream from Lohengrin (Wagner). Viola Solo, Prelude (Chopin). Flute Solo, Andante (Handel). Violin Solo, Aria from Figaro (Mozart). Songs from L'Enfant prodige (Debussy). Cello Solo, Overture; Le Roi d'Ys (Lalo). 10.30, Le Journal Parlé.

BRUSSELS (No. 2)

N.I.R.; 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Concert by Sykes and his Orchestra relayed from the Scala Brasserie, Ostend. In the interval at 1.0 p.m., Le Journal Parlé. 1.30, Gramophone Concert: Les doux baisers sont oubliés (Léonie); Selection from The Maid of the Mountains (Fraser-Simpson); English Song, Johnnie Cope; Mock Morris (Grainger); Ballet Music from Samson and Delilah (Saint-Saëns); Irish National March (Brace). 5.0, Orchestral Concert, conducted by Jean Kumps: The Unfinished Symphony (Schubert); Minuet (Ravel); Golliwog's Cake Walk (Debussy); Selection from Ascanio (Saint-Saëns); Berceuse, Retour and Valse (Schmitt). 6.0, Gramophone Records: Humoresque from the Quartet in A Minor (Ivanov); The Heavens declare the Glory of God, from The Creation (Haydn); Aria from The Creation (Haydn). 6.15, Medical Talk. 6.30, Gramophone Concert: Excerpts from Psyché (Franck); Old Toulouse Air, Tan qui faren atal; Selection from Namouna (Lalo). 7.15, Talk: Alfons Jeurissen—a Limburg Author. 7.30, Le Journal Parlé. 8.0, Concert by the Station Orchestra, conducted by Jean Kumps: Overture, Ruslan and Ludmilla (Glinka); Legend, Zorahayde (Svend-sen); Suite, The Flute of Sans-Souci (Graener). 8.30, 1,000 Fr. Gevonder—Radio Sketch (Van Ryn). 9.0, Orchestral Concert, conducted by Hans Lichtenstein, relayed from the Kursaal, Ostend; Soloist, Marcel Claudel: Part I Johann Strauss Programme; Overture, Die Fledermaus; Waltz, Roses of the South; Intermezzo from The Arabian Nights; Waltz, The Blue Danube; Overture, The Gipsy Baron; Part II, Lehar Programme: Waltz from The Count of Luxembourg; Song from Paganini; Siren Waltz from The Merry Widow; Song from The Land of Smiles; Overture, The Land of Smiles. After the Concert, Le Journal Parlé and Dance Music relayed from the Casino, Knocke. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Roumanian Music by the Motoi Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Concert by the Motoi Orchestra (contd.). 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records.

7.0, Concert of Light Music by the Station Orchestra. 7.30, Talk (to be announced); 7.45, Song Recital by Mlle. Sophie Munteano. 8.15, Concert of Light Music (contd.). 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 210 metres from 7.0 p.m. to 12 Midnight.—5.30 p.m., Orchestral Concert: Conductor: Stefan Berzha: Legend (Lavotta); Operetta Music (Huszka); Das Gefüster der Rosen (Schemmel); Hungarian Piece (Losonczy); Valse d'amour (Paksy); Selection from Sibill (Jacobi). 6.30, Programme by Zsolt Harsanyi. 7.0, Concert by the Toll Cigany Orchestra. 8.15, Blue and Red—Play after a Story by Franz Hercezy (Stefan Zagon). After the Programme, Concert by the Weidinger Salon Orchestra: Romantic Overture (Kéler-Béla); Waltz (Racz); Das Veilchen von Montmartre (Kaiman); May in Granada (Nagypal); Sturm am Plattensee (Mihalyi); Valse d'amour (Weininger); Intermezzo (Pepito); March from Gipsy Love (Lehar). 10.45, Concert by the Misi Vörös Cigany Orchestra from the Emke Café.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW. and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.2 p.m., Weather Forecast. 12.5, String Ensemble Concert relayed from the Hotel d'Angleterre. 2.0 to 3.30, Interval. 3.30, Orchestral Concert conducted by Emil Reesen; Soloist, Per Blom (Songs); Crown Prince Frederic March (Borregaard); Overture, Zampa (Herold); Gavotte and Minuet from Castor et Pollux (Rameau); Selection from The Daughter of the Regiment (Donizetti); Doktrinen-Walzer (E. Strauss); Songs (Gade), (a) Knud Lavard, (b) Vaer' hisset mit gamle Faedreland, (c) Til Rosengårdens gik jeg, (d) I alle de Riger og Lande; Songs (Heise), (a) Der er en Trolddom paa din Laebe, (b) Mod Syden i Kvaeld; Overture, Maximilian Robespierre (Litolf); Selection from La Fille de Madame Angot (Lecocq); Chant sans paroles (Tchaikovsky); Serenade from Les Millions d'Arlequin (Drigo); Waltz from The Little Mermad (F. Henriques); March (Christiansen). 5.40, Exchange and Fish Market Prices. 5.50, Talk. 6.20, German Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk on Rationalisation. 8.0, Chimes from the Town Hall. 8.2, Renaissance—Melodrama (Holger Drachmann), with Music by P. E. Lange-Müller. 9.30, Trio, Op. 53 in F Minor for Pianoforte, Violin and Cello (Lange-Müller). 9.45, News Bulletin. 10.0, Orchestral Concert of Modern Operetta Music: Prelude to Eva (Lehar); Waltz from The Gipsy Princess (Kaiman); One-step from The Yellow Jacket (Lehar); Selection from The Three Bears (E. Coates); Waltz from A Waltz Dream (O. Strauß); You are my Heart's delight, from The Land of Smiles (Lehar). 10.45, Dance Music from the Bellevue Strand Hotel. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Wednesday), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.0 p.m., See Vienna. 10.15, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal. Stock Report, Weather Forecast, and Popular Music on Gramophone Records. 6.0, Light Music on Gramophone Records. 6.15, Programme for Children. 7.0, Popular Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Talk. 8.0, Concert by the Augmented Station Orchestra. 8.30, Songs and Stories by Fay Sargent. 8.45, Irish Music by the Station Orchestra. 9.0, Traditional Songs by Liam Gaynor. 9.10, A Sketch by G. Quinn and Company. 9.40, Soprano Solos by C. Manning. 9.55, Concert by the Augmented Station Orchestra. 10.30, Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Dance Music. 12.30 p.m., News Bulletin. 12.45, Variety Concert. 7.30, Radio Gazette. 8.0, News Bulletin. 8.30, Light Music on Gramophone Records. 8.50 (from Le Havre), Le Havre Chronicle and Concert. 10.0 p.m., till Close Down, Programme in English by the I.B.C. 10.0 p.m., Dance Music: Great Day; In a Japanese Garden; You were my Salvation; Viktoria and her Hussar Medley; The pick up; One night alone with you; There's a good time coming; Somewhere in old Wyoming; To-day I feel so happy; Song of Happiness; Under the Sweetheart Tree; We're all good Pals at last; Without my Gal; When it's Springtime in the Rockies; The Changing of the Guard; Around the Corner. 11.0, Songs and Orchestral Selections. Orchestra: Potpourri Overture (arr. Leggett); Songs: (a) Camille (Carlton), (b) They cut down the old Pine Tree (Raskin). Orchestra: Snacks

AUGUST 16th **TUESDAY** continued.

In Bars (Egerer); Songs: (a) There's something about you (May), (b) Wrapped in a red, red Rose (Dowling); Orchestra: Waldteufel Memories (arr. Finck). 11.30, Light Orchestral Music: Springtime reminds me of you; Souvenir d'Ukraine; Stephanie Gavotte; Roses from the South; Serenade; Murette; Moonbeams' Dance. 12, Midnight, Dance Music: Confession; They all fall in Love; Without a song; I owe you; Love is like that; Mause; My future just passed; Pretty Kitty Kelly; A Quiet Corner; Over the garden wall; Sitting at a table; When the Circus comes to Town; Pardon Madam; Try; What a Perfect Night for Love; You are my Heart's Delight. 12.57 a.m. (Wednesday), I.B.C. Goodnight Melody. 1.0, Close Down.

FLENSBURG.—See Hamburg.
FLORENCE.—See Turin.

FRANKFURT

590 metres; 1.5 kW.; and CASSEL, 246 metres.—6.15 p.m., Economic Notes. 6.25, Talk: The Middle Classes and German Economics. 6.50, Reading: Dichter-Olympiade (Gustav Hartung). 7.15, Time, Programme Announcements, Weather, and Economic Notes. 7.30 to 10.20, See Stuttgart. 10.20, Time, Weather, News, and Sports Notes. 10.45, See Stuttgart. 12 Midnight, Close Down.

FREDRIKSTAD.—See Oslo.
FREIBURG.—See Stuttgart.
GENEVA.—See Radio-Suisse Romande.
GENOA.—See Turin.
GLEIWITZ.—See Breslau.
GÖTEBORG.—See Stockholm.
GRAZ.—See Vienna.
HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hannover, 566 metres; and Kiel, 232.2 metres.—5.55 p.m. (from Kiel), Variety Programme. 6.30 (from Bremen), Talk: Navigation in the Gorges of the River Yangtze-Kiang. 6.55, Exchange Quotations. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20 (from Bremen), Military Band Concert, conducted by Georg Voigt: March, Mit Voldampf voraus (Voigt); Overture (Cooper); Jagd-Fantasia (Prager); Army March No. 118 (Hübner); Eine Frühjahrs Parade: (a) Die Fahnenkompagnie rückt herbei, (b) Die Parade beginnt, (c) Die Fahnenkompagnie bringt die Fahnen ab; Waltz, Rheinzauber (Schweichert); March, Soldatlieder (Voigt); Roland-Fanfaren (Voigt). 8.45, Die kleine Clorinde—a North German Oper Air Play (Bruno Peyn), Music by Walter Bullerdeck. 10.0, News Bulletin. 10.20, Concert by the Norag Orchestra, conducted by José Eihenschütz: Overture, Preciosa (Weber); Valse Caprice (Winterstein); Selection from La campana sommersa (Respighi); Scènes napolitaines (Massenet); Waltz from the Serenade in C (Tchaikovsky); Selection from Turandot (Puccini); Boston Internozzo (Nick); Waltz, Neuwien (Johann Strauss); Selection from The Mikado (Sullivan); March, Victoria (Blon).

HAMANOVER.—See Hamburg.

HEILSBURG

276.5 metres, 60 kW.; and DANZIG, 453.2 metres.—11.30 a.m., Concert by the Königsberg Opera House Orchestra, conducted by Ludwig Leschetizky. Overture, Peter Scimoll (Weber); Larghetto, from the Second Symphony (Beethoven); Concert Suite from Idomeneo (Mozart-Busoni); Overture, Surka (Smetana); Sonnenwäizer (Bayer); Selection from Maion Lescant (Puccini); Airs from The Count of Luxembourg (Lehar); Selection from La Traviata (Verdi); Suite, Der Venusberg (Wagner); Trot de Cavallerie (Rubinstein). 1.20 p.m., Announcements. 1.30 (from Königsberg), Gramophone Concert. Movement from the Symphonie fantastique (Berlioz); Potpourri of Melodies from Verdi's Operas; Finnish Cavalry March; Waltz Potpourri, Sehlagssahne (Kermbach); American Patrol (Meacham); Xylophone and Orchestra, The Dancer of Seville (Grunov); Es führt kein anderer Weg zur Seligkeit (Heymann); Ein Lied, ein Kuss, ein Mädel (Stolz); Es rauscht der Wald so schön (Hempel); March, Frei weg (Latann). 2.30, Sponsored Programme on behalf of the Post Office Advertising Department. 4.0, Musical Programme for Children. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilken. Overture, Giralda (Adam); Anorettenreigen (Fucik); Schwarzwälder Spieluhr (Richter); Potpourri of Meyerbeer's Music (Morena); Waltz, Abendblätter (Offenbach-Senger); Miniature Suite (Coates); Potpourri, Solianka (Wilke); Overture, Tancred (Rossini); Schritte im Dreivierteltakt (Koecker). 5.55, Book Review. 6.15, Agricultural Prices. 6.30, Talk for Workers: The Police Officer as Psychologist. 7.0, Debate on Youth Hostels in East Prussia. 7.25, Weather Forecast. 7.30, Dialogue on Danzig and Königsberg: The Classic and the Romantic. 8.5, Talk: Frederick the Great. 8.35, Concert of Music by Frederick the Great, by the Königsberg Opera House Orchestra. Conductor: Ludwig Leschetizky. Soloists: Charlotte Bonsa-Fratzky (Soprano), and

Waltzer Schulz (Flute). Third Concerto for Flute and String Orchestra, with Cembalo; Aria from Il re pastore; Second Symphony in G, for Strings and Cembalo. 9.5, Announcements. 9.15, A Literary Sequence from the Works of Goethe, Humboldt, Rathenau, Hölderlin, Bettina von Arnim, Rainer Maria Rilke, and Others (arr. Andreas Zeitler). 10.10, Weather Forecast, News, and Sports Notes.

HILVERSUM

Announced HUIZEN; 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Catholic Radio Society (K.R.O.). 7.40 a.m., Light Music on Gramophone Records. 8.55, Interval. 9.40, Concert conducted by M. Piet Lustenhouwer. 11.10, Religious Address. 11.40, Police Notes. 11.55, Concert by the K.R.O. Trio. 1.25 p.m., Light Music on Gramophone Records. 1.40, Programme for Women. 2.40, Popular Music on Gramophone Records. 3.10, Interval. 3.40, Programme arranged by the H.I.R.O. Association. 4.50, Concert by the K.R.O. Orchestra, conducted by M. J. Gerritsen: Symphonic Poem, La jennesse d'Hercule (Saint-Saens); Three Short Pieces (Frank); Minuet from the l'Arlesienne Suite (Bizet); Pastorale d'été (Honegger); Selection from Le Tribut de Zamora (Gounod); Overture, His Life for the Czar (Glinka); Andante cantabile from the String Quartet, Op. 11 (Tchaikovsky); The Nutteracker Suite (Tchaikovsky); Overture, Der Waffenschmied (Lortzing); Walter's Prize Song from The Mastersingers (Wagner); Selection from The Bartered Bride (Smetana). 6.50, Talk. 7.10, Police Notes. 7.25, Talk. 7.40, Concert by the K.R.O. Salon Orchestra, conducted by M. Van 't Woud, with M. Hein Staal (Humorist): March, Freiheij (Laukien); Overture, Martha (Flotow); Petite suite lyrique (Vohrs); Selection from Tosca (Puccini); Interlude by M. Hein Staal; Waltz, España (Waldteufel); Chinesische Strassenserenade (Siede); Melody (Rubinstein); Rusticanelle (Cortopassi); Potpourri, Musical Telegrams (arr. Urbach); Spanish Dances (Moszkowsky); Interlude by M. Hein Staal; Piazza del popolo (Frederiksen); March, Stars and Stripes (Souza). In the interval at 8.55, News, followed by Extracts from The Gondoliers—Comic Opera (Gilbert and Sullivan). 10.40, Variety Music on Gramophone Records. 11.40, Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM; 1,875 metres; 8.5 kW.—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—7.40 a.m., Time Signal. 7.41, Light Music on Gramophone Records. 8.40, Concert by the Station Chamber Orchestra conducted by Louis Schmidt. 9.40, Time Signal. 9.41, The Daily Service. 9.55, Popular Music on Gramophone Records. 10.40, Talk. 11.10, Concert by the Small Station Orchestra. 12.10 p.m., Variety Concert on Gramophone Records. 1.10, Accordion Solos. 1.55, Interval. 2.10, Programme for Children, relayed from the Kurhaus, Scheveningen. 3.10, Popular Music on Gramophone Records. 3.40, Concert by Ambrose's Blue Lyres and an Argentine Orchestra, relayed from the Kurhaus, Scheveningen. 4.40, Pianoforte Recital by Mme. Leopold-Draper: Sonata (Pasquini); Gavotte (Zipoli); Allegretto (Pescetti); Seven Variations on the Theme, Vien qua Dorina bella (Weber); Pierrette (Chaminade); Filenses (Baton). 5.10, Concert of Light Music by Kovacs Lajos and his Orchestra. Gramophone Records in the interval. 7.10, Variety Music on Gramophone Records. 7.40, Time Signal. 7.41, Concert by the Station Orchestra, conducted by Nico Treep: Overture, The Barber of Seville (Rossini); Waltz from Romeo and Juliet (Gonnod); Au moulin (Gillet); Loin du bal (Gillet); Selection from La Traviata (Verdi); Interlude by The Hawaiian Three; March, Attila (Fucik); De Fremersberg (Koenemann); Waltz, Pomona (Waldteufel); Interlude, Songs by Jan van Riemsdijk; The Clock and the Dresden Figures (Kettelhey); Leichtes Blut (Joh. Strauss). 9.40, Weather Forecast and General News Bulletin. 9.50, Concert by the Station Orchestra, conducted by Nico Treep: March, Remembrance (Winter); Angoise d'annon (Benatzky); American Cake-Walk (Lincke); Felix the Cat (Kark); Von Wien durch die Welt (Hruby); Waltz, Wiener Bürger (Zieher); March, Washington Post (Souza). 10.40, Popular Music on Gramophone Records. 11.40, Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—6.30 p.m., Announcements and Popular Music on Gramophone Records. 10.25, Concert of Dance Music.

KIEL.—See Hamburg.

LAHTI

1,796 metres; 54 kW. and HELSINKI, 368.1 metres.—6.15 p.m., Humorous Talk in

Finnish. 6.40, Concert by the Station Orchestra: Air from Il Trovatore (Verdi); Emperor Waltz (Strauss); Barcarolle (Tchaikovsky); Berceuse (Gretchaninov); Slav Dance (Dvorak). 7.20, Talk. 7.40, Talk in Finnish. 9.0, Song Recital by Antonietta Toini: Two Airs from Zanetto (Mascagni); Italian Songs (arr. G. Sadero). 8.45, News in Finnish and Swedish.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert by the Unemployed Musicians' Orchestra, conducted by Richard Keitel: Soloist, Franz Wolf (Songs); Overture, The Merry Wives of Windsor (Nicolaï); Fantasia on Themes from Cavalleria rusticana (Mascagni); Schatz-Walzer (Joh. Strauss); Songs, (a) Valentine's Prayer from Faust (Gounod), (b) An des Rheinies grünen Ufern, from Undine (Gumbert); Fortissimo—Potpourri of Kálmán. Music; Serenade (Widor); Liebesgruss (Widor); March, Germauentrene (Blankenburg). 1.15 p.m., Weather, News Bulletin and Time. 1.30, Concert by the Station Orchestra, conducted by Buschkötter; Soloist, Trobe (Cello); Overture, Heimkehr aus der Fremde (Mendelssohn); Suite for String Orchestra (Kühn); Sapphic Ode for Cello and Orchestra (Bartok); Norwegian Rhapsody (Halvorsen); Waltz, Künstlerleben (Joh. Strauss). 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Talk: Travelling in Africa. 4.40, Reading of Three Short Stories (Fritz Müller Partenkirchen). 5.0, Concert from Munich. 6.20, Review of Books by Modern German Authors. 6.45, Weather, Time, Economic and Sports Notes. 7.0, Talk: Innovations at the Berlin Radio Exhibition. 7.10, Talk on the Centenary of the Birth of Wilhelm Wundt the Philosopher. 7.30, Talk on Industrial Questions. 7.55, First General News. 8.0, Concert of Rhapsodies and Dances by the Station Orchestra conducted by Buschkötter: German Dances (Schubert); Norwegian Rhapsody (Svendsen); Symphonic Waltz (Stock); Slav Rhapsody (Dvorak); Spanish Dances, (a) Andalusian Dance (Granados), (b) Ensueño (Turina), (c) Triana (Albeniz); Romanian Rhapsody (Swedish); Valse chevaleresque (Sibelius); Swedish Rhapsody (Alfvén); Polovtjain; Dances (Borodin); Concert Waltz (Coates). 10.5, Sports Notes and Silent Night.

LEIPZIG

259 metres; 2 kW. and DRESDEN, 319 metres.—4.30 p.m., Concert by the Leipzig Symphony Orchestra conducted by Theodor Blumer: Gavotte and Passepied from Castor et Pollux (Rameau); Minuet and Anglaise from the Carnival Symphony (Ditters von Dittersdorf); German Dances (Mozart); Clog Dance from Czar and Carpenter (Lortzing); Styrian Dance (Lanner); French Polka, Schneesternenchen (Eduard Strauss); Waltz, Die Pulizisten (Johann Strauss); Valse triste (Sibelius); Gipsy Dance from Carmen (Bizet); Sturm-Galopp (Komzak); Hungarian Dances Nos. 5 and 6 (Brahms); Spanish Dances Nos. 2 and 5, Op. 12 (Moszkowsky). 5.50, Weather and Time. 6.0, Economic Notes. 6.50, Programme to be announced 7.0, Talk for Parents. 7.30, Concert of Light Music: Prince Henry March (Carl Wiggert); March, Hoch zu Ross (Carl Urnath); Overture, Fra Diavolo (Auber); Selection from Lila's Time (Schubert-Berte); Potpourri of Operetta Music (Petras); Glow Worm Idyll from Lysistrata (Lincke); Paraphrase on the Song, Ein Vöglein sang im Lindenbaum (Eberle); Waltz, Strenzanber (Waldteufel); Potpourri of Soldier Songs (Hannemann); March, Der Jäger aus Kuppfalz (Hellriegel); March, Frei weg (Latann). 9.0, Economic Notes. 9.10, Reading of Prose (Timm Kröger). 9.50, Song Recital by Richard Franz Schmidt (Baritone): Two Songs (Franciscus Nagler), (a) Sehnsucht, Op. 35, No. 1. (b) Gekommen ist der Maien, Op. 35, No. 2. Three Songs (Paul Geilsdorf), (a) Erinnerung, Op. 20, No. 3, (b) Abend, Op. 7, No. 3, (c) Beim Sonnenuntergang, Op. 7, No. 2. Four Songs (Johannes Platz), (a) Abend, (b) Glückes genug, (c) Ich kenne eine traute Weise, (d) Storchengeschäft; Four Songs (Fritz Sporn), (a) Morgengang, Op. 32, No. 2, (b) Was frag' ich mich den Menschen, Op. 32, No. 3, (c) Du warest mir ein tägliches Wanderziel, Op. 32, No. 4, (d) Golden reift der Sommer, Op. 32, No. 5. 10.30, News, followed by Concert of Hungarian Melodies by the Roy Cigany Orchestra. 12 Midnight, Close Down.

KLACENFURT.—See Vienna.

KOSICE.—See Prague.

LAUSANNE.—See Radio-Suisse Romande.

LINZ.—See Vienna.

LWOW

381 metres; 16 kW.—6.45 to 6.55 p.m., see Warsaw. 7.0, See Vienna. 10.15, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—4.30 p.m., Light Music on Gramophone Records. 5.30, Concert. 7.0, See Paris (Eiffel Tower).

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations and Market Prices, followed by Request Gramophone Concert. In an interval at 8.30, Talk by Joaquín España Cantos. 9.45, News Bulletin and Political Review. 9.50 to 11.0, Interval. 11.0, Chimes, Time Signal and Political Review. 11.15 (approx.), Extracts from Tannhäuser—Opera (Wagner) on Gramophone Records. 1.15 a.m. (Wednesday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—7.0 p.m., See Prague. 9.30, See Brno. 10.0, See Prague. 10.15, Programme Announcements.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—6.40 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talk in Dutch: The Making of a Komsomol Film in Magnitogorsk. 9.0, Programme in French: Scenes from the Best Plays of the Past Season. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—5.0 p.m. (from Nürnberg), Orchestral Concert conducted by Philipp Wiemer; March, Deutschlands Waffenehre (Blankenburg); Waltz, Samt und Seide (Zieherer); Fantasia, Lortzings Lieblingskinder (Urbach); Stephanie-Gavotte (Zibulka); Chinesische Nachtwaeh (Lincke); Potpourri, Besuch bei Millöcker (Morena). 6.15, Talk: The Masses and Leadership. 6.35, Programme for Workers. 6.55, Time Signal, Weather Report and Agricultural Talk. 7.5, The Centuries meet—Talk on Munich in the Present and Past. 7.40, Talk: The Psychology of the Nations. 8.0, Music. 9.0, Korff Holm tells the Story of his Life. 9.20, Concert of Chamber Music; Ely Ney (Pianoforte), Willy Stross (Violin), and Ludwig Hoelscher (Cello); Trio in B flat, Op. 97 (Beethoven); Trio in C, Op. 87 (Brahms). 10.20, Time Signal, Weather Report, News and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—6.0 p.m., Programme for Women. 6.45, Accordion Music. 7.0, Announcements. 7.15, Weather and News. 7.30, Theatre Review. 8.0, Time Signal. 8.1, Cello Recital by Hans Balchen. 8.30, Song and Pianoforte Recital. 9.0, Agricultural Report. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert by the Mandr Trio of Prague.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.40 to 6.30 p.m., Sextet Concert. 8.0, Announcements, Tourist Report, Agricultural Notes, and Giornale Radio. 8.20, Popular Music on Gramophone Records: In an interval at 8.30, Time Signal and Announcements. 8.45, Il Trovatore—Opera (Verdi), on Gramophone Records; In the intervals, Talk and Art Notes. 10.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Theatre Review. 7.0, Le Journal Parlé. 8.20, Weather Forecast. 8.30, Concert of Chamber Music, with Commentary by M. Delacour: Sonata in E flat for Flute and Pianoforte (Bach); Partita in E flat for Pianoforte (Bach); Quintet for Pianoforte, Oboe, Clarinet, Horn, and Bassoon (Beethoven); Romance from the Concerto No. 4 for Horn (Saint-Saens); Celtic Piece for Bassoon (Swan Hennessy); Divertissement for Flute, Oboe, Clarinet, Bassoon, Horn, and Pianoforte (A. Roussel). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—12 Noon to 2.0 p.m., News and Light Music on Gramophone Records. 7.0, News Bulletin and Press Review. 7.5, Light Music on Gramophone Records. 7.30, Sponsored Gramophone Concert. 8.30, Radio Journal and News. 8.45, Concert with M. Pierre Fouilly (Songs): Songs: (a) Air from La Mascotte (Audran), (b) Abade from Le Roi d'Ys (Lalo), (c) Serenade from L'Amant jaloux (Gretzy), and (d) Cavatina from The Barber of Seville (Rossini); Overture, The

AUGUST 16th **TUESDAY** continued.

Great Mogul (Audran); Waltz, Estudiantina (Waldteufel); Selection from Le Roi d'Ys (Lalo); Three Pieces from the Pièces de Clavecin (Rameau); Selection from The Barber of Seville (Rossini); Entr'acte Gavotte from Mignon (Thomas); Ballet Music from Ascanio (Saint-Saëns); Spanish Caprice (Granados); Selection from Zaza (Leoncavallo); Intermezzo for Strings (Lacombe); Chanson gaie (Staub); March, Piccininies (Filippucci). 10.45, News Bulletin.

PARIS

RADIO PARIS; Call CFR; 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Variety Music on Gramophone Records. 8.0, Press Review and Weather Forecast. 12 Noon, Gramophone Concert of Pierné's Music for his Sixty-ninth Birthday: Melodies from (a) Ramuntcho, (b) Cydalise et le Chèvre-Pied, (c) Sophie Arnould; March of the Little Tin Soldiers; Serenade; Bouton d'or; Les trois petits oiseaux; Canzonetta; Le petit Rentier; Sonata, Op. 48; Ils étaient trois petits chats blancs; Marionettes; followed by Pieces conducted by Pierné; Selection from Benvenuto Cellini (Berlioz); Bourrée fantasque (Chabrier); Le Sommeil de Psyché (Franck); Entr'acte from Messidor (Bruneau); Spanish Rhapsody, La Feria (Ravel). In the intervals at 1.0 p.m., Exchange, News and Weather, at 1.30, Exchange, and at 2.0, Exchange and Announcements. 3.45, Exchange and Market Prices. 6.30, Market Prices, Weather, Agricultural Report, Talk and Racing Results. 7.0, Gramophone Concert: The Unfinished Symphony (Schubert); Le Vallon (Gounod); 'Cello Solo, Apres un rêve (Faure); La Croix du chemin (Goublier); Stances (Flegier); Introduction and Two Airs from Faust, (Gounod). 7.45, Commercial Prices and News. 8.0, The Eternal Husband—Play (Nozière and Saviro), after Dostoievsky. In the interval at 8.30, News, Weather and Review by Pierre Seize. 9.15, Press Review and News. 9.30, Chamber Music Concert by the Radio Paris Quintet and Léon Kartun (Pianoforte): Pianoforte Solos: (a) Sonatina (Scarlatti), (b) Fantasia No. 3 (Mozart), (c) Soirée dans Grenade (Debussy), (d) Caprice (Dohnányi); Quintet (Franck); Fantastic Symphony (Berlioz) (on Gramophone Records).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Booking Service. 10.12, Programme Announcements. 10.15, Programme to be announced. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News Today? 11.6, Teaberry Sport Review. 11.11, Press News—Reeler. 11.14, Weather Report. 11.45, KDKA Kiddies' Klub. 11.30, Sheer Romance. 11.45, To-day's News by Lowell Thomas, from New York. 12 Midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Wednesday), Programme to be announced. 12.30, The Stebbins Boys, from New York. 12.45, Gene Austin and Orchestra, from New York. 1.0, Time Signal and Programme to be announced. 1.30, Programme to be announced. 1.45 to 3.0, New York Relay. 1.45, Rosa Low Song Recital. 2.0, Household Finance Programme. 2.30, Goldman Band. 3.0, The Country Doctor. 3.15, Westinghouse Pioneers. 3.30, Tish, from New York. 3.45, Florence Fisher Parry Drops In. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Louise Frayne (Soprano). 4.30, Jack Pettis and his Orchestra. 5.0, Dancing in Milwaukee, from New York. 5.30, Time Signal and Good-Night.

PORSGRUND—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.0 p.m., See Vienna. In the intervals, News, Theatre Notes, and Signal, Sports Notes, and Police Report. 10.35, Concert of Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—3.55 p.m., Market Prices. 5.45, Talk. 5.55, Talk. 6.5, Agricultural Report. 6.15, Topical Talk for Workers. 6.25, German Transmission: Songs by Nina Suttner. 7.0, Choral Concert. 7.30, French and Italian Song Recital by Christian Eschová. 7.50, Astronomic Talk. 8.5, Concert by the Vlnohradý Quartet. 8.30, See Brno. In the interval at 9.0, Time and News. 10.0, News and Sports Notes. 10.15, Miscellaneous Announcements. 10.20, Popular Music on Gramophone Records.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE**, 580 metres; and **GENEVA**, 760 metres. 12.30 p.m., Time Signal from Neu-

châtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Lausanne), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5 (from Lausanne), Gramophone Concert (contd.). 1.45 to 5.0, Interval. 5.0, Time Signal. 5.1 (from Lausanne), Programme for Women: Cookery Notes, followed by Talk by Mme. Muller. 5.30 (from Montreux), Concert, relayed from the Hungarian Restaurant. 6.0 (from Lausanne), Popular Music on Gramophone Records. 6.40 (from Geneva), Sponsored Talk. 7.0, Weather Forecast. 7.1 (from Lausanne), Concert of Light Music on Gramophone Records. 7.30 (from Geneva), Talk by M. Sues: Across the World. 7.55, News Bulletin. 8.0 (from Geneva), Cabaret Concert. 9.0 (from Lausanne), Dramatic Programme. 9.40 (from Lausanne), Concert of Opera Music. 10.0, News Bulletin and Weather Forecast. 10.15 (approx.), Close Down.

RIGA

525 metres; 15 kW.—6.30 p.m., Literary Programme. 7.0, Weather Forecast. 7.3, Talk on Philosophy. 7.30, Serenade Concert, conducted by Lovro Mataczic; Divertissement in D (Mozart); Serenade No. 12 for Wind Instruments (Mozart); Elegy from the Serenade for Strings (Tchaikovsky); Scherzo from and Overture to A Midsummer Night's Dream (Mendelssohn); Serenade (Mozart), Eine Kleine Nacht musik (Mozart), Minuets in D and E Flat (Mozart), Overture, Figaro (Mozart): In the interval at 8.25, News. 9.0, Weather Report. 9.30, Concert of Dance Music. 10.0 (approx.), Close Down.

RJUKAN—See Oslo.

ROME

Call **1RO**; 441 metres; 50 kW. Relayed by Naples, 319 metres and **2RO**, 25.4 metres.—8.15 to 8.30 a.m., Giornale radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Variety Music. 1.0 to 2.15, Sextet Concert: Suite, Marionettes (Poldini); Intermezzo (Siede); Monellina (Amadei); Serenata and Danza campestre (Peroni); Selection from The Cinematograph Girl (Weinberger); Ramonito (Ciociano-Chiappo); Selection from Jack and Paul Beck (Caviglia). In the intervals at 1.15, Giornale radio and at 1.30, Time and Announcements. 5.0, Exchange Quotations, Children's Radio Review, Giornale radio and Announcements. 5.30, Song Recital by Italo Iervolino (Tenor) and Ivana Cecchi (Mezzo-Soprano): Mezzo-Soprano Solo from Lucia di Lammermoor (Donizetti); Tenor and Mezzo-Soprano Duet from Samson and Delilah (Saint-Saëns); Duet from Il Trovatore (Verdi). 5.45, Variety Concert: Consuelo (Culotta); Theme with Variations from Coppélia (Delibes); Morning (Grieg); Interlude from Adrienne Lecouvreur (Cilea); Oriental Fantasia, Stamboul (Donati). 7.10 (Naples), Shipping and Sports Notes. 7.15, Atmospheric Signals, Agricultural Notes and Announcements. 8.0, Time, Announcements and Gramophone Records of Variety Music. 8.30, See Turin. In the intervals, Talk and Notes on Art. News after the Programme.

SALZBURG—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—9.0 p.m., Bridge Lesson. 9.15, Studio Ensemble. 9.35, News Items. 9.45, Stock Report and Police Notices. 10.0 to 11.0, New York Relay. 10.0, Sonata Programme. 10.15, Musical Programme. 10.30, Garden Melodies. 11.0, Joe and Eddie. 11.15, Musical Programme. 11.30, With Gray McClintock in the Canadian North-West. 11.45, Sonata Programme. 12 Midnight, General Electric Programme. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Wednesday), Chandu, the Magician. 12.30 till Close Down, New York Relay. 12.30, Ray Perkins (Barbasoloist). 12.45, The Goldbergs. 1.0, Blackstone Plantation. 1.30, Walter Smith and his Band. 2.0, National Civic Artists. 2.30, Ed Wynn and the Fire Chief Band. 3.0, Lucky Strike Dance Hour. 4.0, Russ Columbo and his Orchestra. 4.15, Opry House To-night. 4.30, Jack Denny and his Orchestra. 5.0, Ralph Kirbyer (Dream Singer). 5.5, Paul Whiteman's Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres, 60 kW.; **BASLE**, 244.1 metres; and **BERNE**, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Concert by the Station Orchestra. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Concert by the Station Orchestra. 4.0 (from Basle), Variety Concert by the Station Quartet. 5.0 to 6.30, Interval. 6.30 (from Basle), Talk: Causes of the Economic Crisis. 7.0, Time Signal and Weather Forecast. 7.5 (from Basle), Traffic

and Tourist Propaganda. 7.30 (from Basle), Programme for Women. 8.6 (from Berne), Symphony Concert by the Berne Municipal Orchestra, conducted by Hermann Henze. Soloist, Carl Rehlfuss (Bass-Baritone). 9.30, Weather Forecast and News Bulletin. 9.45 (from Berne), Operetta in One Act (Offenbach). 10.30, Close Down.

SOTTENS—See Radio-Suisse Romande.

STOCKHOLM

Call **SASA**; 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Programme for Children. 5.30 (from Göteborg), Country Programme. 6.0, Light Music on Gramophone Records. 6.45, Talk. 7.15, Weather and News. 7.30, Report on the Finals of the Swedish Water Polo Championship. 8.0, Offenbach Programme; Songs and Orchestral Music from Orpheus in the Underworld, La Belle Hélène, The Grand Duchess of Gerolstein, La Vie Parisienne, La Boulangère a des Ecus, and The Tales of Hoffmann. 9.15, Literary Review. 9.45, Weather and News. 10.0, Pianoforte Recital of French and Spanish Music; Pieces (Debussy): (a) Reflets dans l'eau, (b) La Fille aux cheveux de lin, and (c) Les Colines d'Anacapri; Pieces (Albéniz): (a) Seguidillas, and (b) Malagueña. 10.15 (from Göteborg), Military Band Concert, conducted by G. Svensson; March, Salve Imperator (Fucik); Polonaise (Chopin); Suite, Histoire d'un Pierrot (Costa); Tango (Svensson); Potpourri (Ahlberg); Marcia Sinfonica (Mignone). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Classical and Opera Music. 12.45 p.m., News Bulletin in French and German. 1.0, Time Signal. 1.1, Exchange Quotations. 1.10, Light Music on Gramophone Records. 1.30, Concert, relayed from Toulouse, 1,175 kcs., 255 metres. 2.10 to 4.45, Interval. 4.45, Talk in German: A Tour Through France. 5.0, Dance Music by the Station Orchestra, conducted by M. Roskam. 6.0, Talk in French on History. 6.15, Topical Talk in French. 6.30, Concert by the Station Orchestra, conducted by Maurice de Villers; Overture, Martha (Flotow); Suite carnavalesque (Thomé); Selection from Madame Butterfly (Puccini). 7.0, See Vienna. In the intervals, News in French and German. 9.30 (approx.), Programme to be relayed from Paris.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW., and **FREIBURG**, 570 metres.—10.0 a.m., Songs by F. W. Karl, sung by Elisa Keller (Contralto). 10.20, Sonata in B Flat for Pianoforte (Schubert). 10.40, Schumann Songs, by Rudolf Epple (Baritone): Frühlingfahrt; Auf das Trinkglas eines verstorbenen Freundes; Die beiden Grenadiere; Der Hidalgo. 11.0, Time, News, and Weather. 11.15 to 11.30, Sponsored Music. 11.45, Sponsored Music. 11.55, Weather. 12 Noon, Gramophone Concert: Liebesleid und Liebesfreud (Kreisler); Loreley (Silcher); Der Lindenbaum (Schubert); Hungarian Rhapsody (Liszt); Balalaika Music: (a) Russian Gypsy Romance, (b) Volga Song, Stenka Rasin; Wandervogellieder—for Choir, Mandoline, Guitar, and Horns; Ganz allerlieb (Waldteufel); Accelerationen (Johann Strauss); Oriental Suite (Popy); Foxtrot, In meinem kleinen Paddelboot (Katt and Marbot); English Waltz, A Summer's Night by the Sea (Handers); Potpourri of Popular Melodies, Das Beste vom Besten (Dostal). 1.15 p.m., Time, Weather, and News. 1.30, See Langenberg. 2.0 to 2.30, Sponsored Concert. 4.0, Talk on Flowers. 4.30, Talk for Women. 5.0, Concert from Munich. 6.15, Time and Weather. 6.25, Talk on the Centenary of the Birth of Wilhelm Wundt, the Philosopher. 6.50, Legal Talk. 7.15, Time, Weather, and Agricultural Notes. 7.30 (from Freiburg), Accordion Duets: Accordion March (Thöni); Tango, Rimembrance (Marengo); Tango, Paradise (Cibolla); Waltz, Echoes from the Swiss Mountains (Thöni); Cigány Song, Have Pity (Pavlovicz); Hohner-Marsch (Thöni). 7.55, Reading of Modern Swedish Lyrics. 8.15, Concert of Music by German Contemporary Composers, by the Stuttgart Philharmonic Orchestra, conducted by Emil Kahn: Suite for Wind Instruments (Arnold Mendelssohn); Kinderliedersuite—for Small Orchestra (Bernhard Sekles); Divertissement for Small Orchestra (Paul Graener); Festliche Musik for Full Orchestra (Wappenschmitt). 9.30, Elves and Sprites—Concert by Margerete Wetter (Soprano), Max von Wistinghausen (Baritone), and Otto Seyfert (Pianoforte); Three Songs (Schumann): (a) Waldesgespräch, (b) Loreley, (c) Die Meersee; Two Ballads (Loewe): (a) Der Nöck, (b) Die Heinkelmannchen; Two Songs (Schubert): (a) Geisteranz, (b) Erlkönig; Spuk (Heimann Reutter); Six Songs (Hugo Wolf): (a) Waldmädchen, (b) Geister am Mummelsee; (c) Der Feuerreiter, (d) Nixe Binsfuss, (e) Eifenlied, (f) Der Rattenfänger. 10.20, Time, Weather, News, and Programme Announcements. 10.45, Dance Music

by the Stuttgart Philharmonic Dance Orchestra. 12 Midnight (approx.), Close Down. **SUNDSVALL**—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Mascara (Lacôme). 5.45, Chansonnètes. 6.0, Airs from (a) Le Grand Mogol (Audran), (b) François les Bas-Bleus (Messenger), (c) Les Cloches de Corneville (Planquette). 6.15, Military Music. 6.30, Exchange Quotations and Horse Racing Results. 6.45, Orchestral Selections: Wedding March (Mendelssohn); March (Kaiser); Selection from Cydalise et le Chèvre-pied (Pierné). 7.0, Sound Film Announcements. 7.35, News Bulletin. 7.45, Light Music. 8.0, Airs from (a) L'Enfant prodige (Debussy), (b) Aida (Verdi), (c) Lohengrin (Wagner), and (d) Sigurd (Reyer). 8.15, Orchestral Music: Airs from (a) La Dame blanche (Boieldieu), and (b) La Bohème (Puccini). 8.30, Light Music. 8.45, Accordion Recital. 9.0, Extracts from Carmen (Bizet). In the intervals, Light Music. 10.30, North African News. 10.45, Extracts from Carmen (contd.). 11.30, The Unfinished Symphony (Schubert). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—5.0, Quintet Concert: Overture, Euryanthe (Weber); Nani (Gori); Melody (Holländer); Ballet Suite (Bayer); Mi dicesti, si! (Mariotti); Potpourri, from A to Z (Geiger); Serenata tipoverca (Graener); Melody (König); Carezze (Mascheroni); From Three to Four (Connelly). 5.50 to 7.5, Talks and News from Turin. 7.5, Quintet Concert: Ragazzacci (Bernards); Je t'aime (Waldteufel); Leggenda (Mascheroni); Russian Tango (Kaper); Signora felicità (Moletti); Selection from Fedora (Giordano); Boudoir (Lanzetta); Non baciare (Salocchi). 8.0 till Close Down, See Turin.

TRONDHEIM—See Oslo.

TURIN

273 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.5, Concert: Selection from Lilac Time (Schubert); Burlesca (Ciollotta); Suggestioni d'Oriente (Piovanio). 7.25, Tourist Talk. 7.30, Time and Announcements. 7.35, Light Music on Gramophone Records. 8.0, Giornale radio, Weather, Light Music on Gramophone Records and Announcements. 8.30, L'amante di Calandrino—Operetta in Three Acts (Bonell-Cuscina), conducted by Nicola Ricci. In the intervals, Talk and Notes on Art. Giornale radio after the Operetta.

VATICAN CITY

19.84 metres (Morning), and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—5.10 p.m., Gramophone Records of the Dajos Béla Orchestra; Overture, Orpheus in the Underworld (Offenbach); Potpourri (Lindemann); Overture, The Bohemian Girl (Balfe); Du lieber Geiger (Kaper); Leuchtkeifercheus Stelldichein (Siede); Intermezzo, Was Blumen träumen (Translatour). 5.45, Talk: Vienna's Old Castles. 6.10, Agricultural Talk. 6.35, Eurythmics. 6.50, Time Signal, Weather Forecast, and Programme Announcements. 7.0, The Magic Flute—Opera (Mozart), relayed from the Festspielhaus, Salzburg. 10.15, News Bulletin, Weather Forecast, and Announcements. 10.30, Late Concert, relayed from the Mozarteum, Salzburg.

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Press Review. 12.20 to 12.40, Interval. 12.40, Weather Report. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Light Music (contd.). 2.10, Interval. 3.0, Economic Notes. 3.10, Variety Music on Gramophone Records. 3.30, Aviation Notes. 3.35, Announcements. 3.40, Gramophone Records of Popular Music. 4.35, Announcements. 4.40, Sports Talk. 5.0 Concert by the Warsaw Philharmonic Orchestra: Overture, Faust (Wagner); Andante from the Fourth Symphony (Tchaikovsky); Symphonic Poem, Le Rouet d'Omphale (Saint-Saëns). Melody from King Christian II (Sibelius). 5.50, Talk: Ocean Monsters. 6.10, Miscellaneous Items. 6.30, Agricultural Talk. 6.40, Programme Announcements. 6.45, Talk: Mozart and his Music—The Magic Flute. 7.0, See Vienna. In the interval, Radio Journal. 10.15, Radio Journal. 10.20, Aviation Weather Report. 10.25, Dance Music. 10.40, Sports Notes. 10.50, Dance Music. 11.30 (approx.), Close Down.

WILNO

563 metres; 8 kW.—6.40 p.m., Programme Announcements. 6.45, See Warsaw. 11.30 (approx.), Close Down.

ZURICH—See Schweizerischer Landessender.

ALGIERS

363.3 metres; 13 kW.—7.0 p.m., Exchange Quotations. 7.10, Shipping Notes and Weather Forecast. 7.15, Musical Programme for Children. 7.30, Light Music. 7.55, News and Time Signal. 8.0, Les Curieuses—One Act Comedy (Henri Sans). 8.30, Relay of an Open Air Concert. In an interval at 9.30, News Bulletin. 10.30 (approx.), Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 349 metres; 8 kW.—8.0 p.m., Trio Concert: March (Heber); Serenade, Amoroso (Doulez); Romance (Saint-Saëns); Selection from Samson and Delilah (Saint-Saëns). 8.30, Exchange Quotations. 8.32, Lesson in Catalan Grammar. 9.0, Request Gramophone Records and Press Review. 10.0, Chimes, Weather Forecast, and Exchange Quotations. 10.5, Orchestral Music: March (Kostal); Intermezzo (d'Ambrosio); Songs of my Country (Palau); Mazurka brillante (Liszt). 10.30, Song Recital by Pepita Ramos. 11.0, Lope F. Martinez de Ribera reads from his own Poems. 11.15, Concert by the Vilalta Quintet, relayed from the Café de la Raubla. 1.0 a.m. (Thursday), Close Down.

BASLE.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.5 kW.—5.0 p.m., Gramophone Records of Variety Music. 5.45, Concert by the Station Orchestral Programme of Yugoslav Music. 7.15 (approx.), Time, Programme Announcements and Talk. 7.45, See Munich. 10.20 (approx.), News Bulletin.

BERLIN

KONIGS WUSTERHAUSEN; 1,635 metres; 60 kW.—12 Noon, Weather for Farmers, followed by Gramophone Records of Operatic Music by Lortzing, and Second Weather for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Lehár Concert on Gramophone Records, relayed from Berlin (Witzleben). 3.0, Talk: Puppet Plays. 3.30, Weather and Exchange. 3.45, Talk for Women. 4.0, Educational Talk. 4.30, See Hamburg. 5.30, Talk: Parliamentarism and State Leadership To-day. 6.0, Talk: The Author. 6.30, Talk on International Affairs. 6.55, Weather for Farmers. 7.0, Advanced English Lesson. 7.20, Talk for Civil Servants: The Telegraph Official. 7.40, A Memorial Address at the Tomb of Frederick the Great. 7.55 (approx.), Weather for Farmers. 8.0 till Close Down, see Berlin (Witzleben). 12.30 a.m. (Thursday), Close Down.

BERLIN

WITZLEBEN 419.5 metres; 1.5 kW.—5.55 p.m., Programme for Young People: Piano-forte Music by Walter Niemann and Arno Liebau; Poems by René Christian. 6.15 p.m., Band Concert relayed from the Zoological Gardens. 6.55, The Witzleben Station informs its Listeners. 7.0, Topical Talk. 7.10, Talk: The Goethe Year and France. 7.35, Talk: Ludwig Nüdling—the Poet and Priest from the Rhone. 8.0, See Munich. 9.15 (in an interval), News and Sports Notes. 10.30 (approx.), Second News, followed by Dance Music. 12.30 a.m. (Thursday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BRATISLAVA

279 metres; 14 kW.—7.0 p.m., See Prague. 7.50, Comedy in One Act (Turgenev). 8.20, See Prague. 10.15, Programme Announcements and News.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW; and GLEIWITZ, 253 metres.—4.30 p.m., Song Recital by Käthe Prochaska (Soprano) and Adelheide Prochaska (Contralto). Franz Kauf at the Piano-forte. Eight Songs by Jadassohn: (a) Wär ich ein Vögelchen, (b) Mein Herz tut mir gar weh, (c) Frühlingsglaube, (d) Frische Fahrt, (e) Treue Liebe, (f) Heidenröslein, (g) Im Volkston, (h) Gute Nacht. Seven Songs by Hiller: (a) Heimliche Liebe, (b) Gruss, (c) Wie treu ich es mein, (d) Sonntag, (e) Mein Schatzel, (f) Trost, (g) Wiegenlied. 5.0, Talk. 5.15, Reading. 5.30, Agricultural Market Prices. 5.35, Concert by the Hindenburg Professional Musicians' Orchestra. Conductor: Albert Ziehr. Waltz, Die ersten Gedanken (Lanner); Potpourri, Durch Webers Zauberwald (Hr. Urbach); March, Eisener Bestand (Waldchen). 6.0, Talk on the Utilisation of Over-ripe Fruit. 6.20, Talk: Joy in Work. 6.40, Alfred Hein reads from his own Works. 7.0, Weather for Farmers. 7.5, Concert of Light Music by the Hindenburg Professional Musicians' Orchestra. Conductor: Albert Ziehr. Overture, Il Guarany (Gomez); Spanish Ballet (Colin); Two Guitars (Hoflick); March, San Lorenzo (Silva). 7.45, See Munich. 9.15 (in an interval), News Bulletin. 10.30, Time, Weather

WEDNESDAY

AUGUST THE SEVENTEENTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Organ music. Gramophone records. Orchestral programme. Recital for two pianofortes. Novelty Quintet. Dance music.
LONDON REGIONAL	Light orchestral programme. Organ recital. Band programme. Promenade concert from Queen's Hall. Dance music.
MIDLAND REGIONAL	Light orchestral concert Organ recital. Band programme. London Regional programme.
NORTH REGIONAL	Orchestral concert. Brass Band concert. London Regional programme.
WEST REGIONAL	Orchestral concert. "Pig Husbandry," talk by Capt. W. T. Price. "Here Lies Matilda," a one-act Play presented by the Batr Citizen House Players. National programme.
SCOTTISH REGIONAL	Song recital. Recital of gramophone records. Scottish concert. Organ recital. National programme.
BELFAST	Orchestral programme. Novelty programme.
ABROAD	
DUBLIN	"The Grand Chain Diamond"—a dramatic sketch.
MUNICH	Opera-Comique: "Cosi fan tutte" (Mozart), by Choir and Orchestra of Bavarian State Theatre.
PARIS (Poste-Parisien)	Orchestral concert relayed from Hotel Chatham.
PARIS (Radio-Paris)	Chopin recital (gramophone records).
WARSAW	Recital of soprano and contralto duets.

Forecast, News Bulletin, Sports Notes, and Programme Announcements. 10.55, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO

342 metres; 35 kW.—7.0 p.m., See Prague. 7.50, See Moravska-Ostrava. 8.20, Reading. 8.30, See Prague. 10.15, Theatre Notes and Programme Announcements.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—5.0 p.m., Concert of French Operetta Music by the Station Orchestra; Overture, Les Saltimbanques (Ganne); Selection from Ciboulette (Hahn); Nocturne from Cocorico (Ganne); Ballet Music from Véronique (Messager); Selection from La Fille de Madame Angot (Lecocq); Selection from Mademoiselle Sourire (Lachaux); Airs from Les Cloches de Corneville (Planquette); Waltz from La Cocarde de Mimi Pinson (Goublier). 6.0, Gramophone Records; Prelude (Prokofiev); La Délaissée; Serenata amorosa (Beccia); C'est le Mal. 6.15, Talk: Working at Home. 6.30, Gramophone Concert; Selection from The Nuremberg Doll (Adam); Oh! Louise (Robin and Whiting); Polka (Ferruzzi); Charlotte (Willekens); Tarentella delle Rose (Galaverni); Hawaiian Rainbow; Air from Mam'zelle Nitouche (Hervé); Clarinet Fantasia (Marty); Scene from the Czardas (Hubay); Selection from The Desert Song (Romberg). 7.15, Talk: Henri Murger. 7.30, Medical Talk. 8.0, The Pearl—Comedy in One Act (Vierset). 8.40, Selection from The Three Musketeers (Friml) on Gramophone Records. 8.45, Answers to Correspondents. 9.0, Orchestral Concert, relayed from the Casino, Knochke. Soloist: Alexander Uninsky (Piano-forte); Occasional Overture (Handel); Concerto in E Minor for Piano-forte and Orchestra (Chopin); Tableaux grecs (Marsick); Triana (Albeniz). La Fille aux Cheveux de lin (Debussy); Jardius sous la Pluie (Debussy); Piano-forte Solo, El Vito (Infante); Moldavia from the Cycle, My Country (Smetana). After the Programme, Le Journal Parlé, followed by Concert by the Max Alexy's Orchestra, relayed from the Ancienne Belgique.

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Orchestral Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert (cont'd.). 5.0, Dance Music from the St. Sauveur Palais de Danse. 6.15, Talk: The Educational Congress at Ghent. 6.30, String Quartet (Franck) on Gramophone Records. 7.15, Talk: Gold and the Exchange. 7.30, Review of International Affairs. 8.0, Orchestral Concert of Sound Film Music, con-

ducted by M. Walpot: Melodies from Le Chemin du Paradis (Heymann). The Love Parade (Scherzinger), Sonny Boy (Kern), Rose Marie (Friml), and Les Gars de la Marine. 8.40, Reading (Felix Timmermans). 9.0, Concert conducted by M. Toussaint de Sutter, relayed from the Kursaal, Ostend. Soloist: Mlle. Lucienne Tragin (Songs). L'anneau nuptial (Armand Marsick); Overture, Easter (Rimsky-Korsakov); Poem, Eclogue (Rabaud); Aria from Il Seraglio (Mozart); Divertissement symphonique (Victor Vrelds); Waltz Song from Mirella (Gounod); Waltz from Gretina Green (Guiraud). After the Concert, Le Journal Parlé, and Concert from the Ancienne Belgique. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Light Music by the Station Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Concert (cont'd.). 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records. 7.0, Time Signal. 7.2, Tanahäuser—Opera (Wagner) on Gramophone Records. In the intervals, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 210 metres from 5.45 p.m. to 12 Midnight.—4.0 p.m.; Concert by the Station Quintet. 5.15, Reading by Attila Orbok. 5.45, Concert by the Band of the Royal Hungarian Postal Officials, relayed from the Margareteninsel. Conductor, Wilhelm Roubal, Jr. 7.0, Songs by Sidi Elek, Imre Pallo and the Nador Sovanka Cigany Orchestra. 8.15, Concert of Italian Opera Music. The Budapest Concert Orchestra, conducted by Ernst Unger. Selection from: (a) Pagliacci (Leoncavallo), (b) André Chénier (Giordano), (c) Cavalleria Rusticana (Mascagni), (d) Madame Butterfly (Puccini), (e) Turandot (Puccini), and (f) La Bohème (Puccini). 10.15, Time Signal and Weather Forecast, followed by Light Music on Gramophone Records.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW, and KALUNDBORG, 1153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., Weather Forecast. 12.7, String Ensemble Concert, relayed from the Bellevue Strand Hotel. 2.0 to 3.0, Interval. 3.0, Programme for Children. 3.30, Café Concert. 5.0, Gramophone Concert: Rosette Anday: Des Mädchen Klage (Schubert); Rudolf Bockelmann: Odins Meeresritt (Löwe); Maria Olszewska: Die Maunacht (Brahms); Mischa Elman: Serenade in G (Arensky); Georg Chambert and Knut Köhler: Duet from

Glutarne (Wennerberg); Marion Anderson: Negro Spiritual, Heav'n, Heav'n (Burlleigh); Marcel Wittrisch: Zwei dunkle Augen (Heins); The Pickens Sisters: Good-night Moon (Donaldson). 5.40, Exchange and Fish Market Prices. 5.50, Agricultural Talk. 6.20, French Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk for Workers. 8.0, Chimes from the Town Hall. 8.2, Strauss Concert by the Station Orchestra, conducted by Walther Meyer-Radon: Persian March (Joh. Strauss); Waltz, Loreley Rheinklänge (Joh. Strauss, Sen.); Melodies (Joh. Strauss); (a) Polka-Mazurka from Die Fledermaus, (b) Polka, Budapest, (c) Waltz, Liebeslieder, (d) Czardas, from Die Fledermaus; Melodies (Joh. Strauss); (a) Polka-Mazurka from Frauchherz, and (b) Waltz, Spärenklänge; Mazurka, Liebeszauber (Ed. Strauss); Gallop, from Der lustige Krieg (Joh. Strauss). 8.50, Talk. 9.20, Danish Song Recital by Vera Nielsen: Songs (Hamerik); (a) Myrthe, (b) Som Bierge, (c) Cradle Song; Songs (Nielsen); (a) Sommerrose, (b) Der floj to Sommerfugle, (c) Gul Evighedsblomst, (d) Hvid Pragtstjerne, (e) Vinterroek, (f) De dobbelte Paaskeliljer. 9.45, News Bulletin. 10.0, Modern Orchestral Music. The Station Orchestra, conducted by Walther Meyer-Radon: Prelude and Serenade from The Snow Man (Korngold); Suite, Le Bourgeois Gentilhomme (H. Strauss); Overture, Neues vom Tage (Hindemith); Serenade (Fiedler). 10.50, Dance Music from Nimb's Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Thursday), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and Programme Announcements. 7.35, Radio Journal. 7.45, Answers to Correspondents. 8.0, See Warsaw. 10.25, Light Music on Gramophone Records. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Stock Report, Weather Forecast, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, German Lesson. 8.0, Grand Ballad Concert by the Station Sextet. 8.30, Tenor Solos by V. Cole. 8.45, Baritone Solos by Marcus Ruddle. 9.0, A. Fagan's Trio. 9.30, The Grand Chain Diamond—Sketch by M. Sheridan and Company. 10.0, Selections from Operas by the Station Orchestra. 10.30, Time, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Gramophone Concert of Light Music. 12.30 p.m., News Bulletin. 12.45, Concert of Light Music. 7.30, Radio Gazette. 8.0, News Bulletin. 8.30, Popular Music on Gramophone Records. 9.0, Concert relayed from the Municipal Casino, Le Treport. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0 p.m., Dance Music: Always in all ways; Then there eyes; Every day away from you; My sweet Virginia; Dreaming of my Indiana Sweetheart; When I take my Sugar to Tea; I apologise; Lonely Troubadour; Memories of you; River stay 'way from my door; Moonlight on the Colorado; Must it end like this; Parade of the minutes; When you see the Blossom; That's Somerset; Why Shouldn't I? 11.0, Wurliizer Organ Recital: The song of the Dawn (Whiteman). If you were the Only Girl in the World (Ager); It happened in Monterey (Wayne); O Donna Clara (Peterbursky); Bouncing Ball (Wark); Somewhere a Voice is calling (Tate); A little love (Slesiu); Love's old sweet song (Molloy). 11.30, Light Orchestral Music with Chorus: Selection from (a) Cavalcade, (b) Leslie Stuart's Songs, and (c) Gus Elen's Songs; Old Songs of the Homeland. 12 Midnight, Dance Music: Beyond the Blue Horizon; Cheerful little carful; Riding on a Camel; Fire in my Heart; Hurt; Just two Hearts; You call it Madness; Just You; You're lucky to me; My Marguerite; You're the one I care for; My mystery Girl; The Wedding of the Birds; Tie a little string around your finger; Moonlight saving time; Thoughts of You. 12.57 a.m. (Thursday), I.B.C. Good-night Melody. 1.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—6.15 p.m., Economic Notes. 6.25, Talk: Everyday Life in New York. 6.50, Talk: Strolling Players—Past and Present. 7.15, Time, Programme Announcements, Weather and Economic Notes. 7.20, German Speeches—Paul Ernst speaks. 7.45, See Munich. 10.20, Time, Weather, News and Sports Notes. 10.45, Dance Music from

Berlin (Witzleben). 12 Midnight (approx.), Close Down.
FREDRIKSSTAD.—See Oslo.
FREIBURG.—See Stuttgart.
GENEVA.—See Radio-Suisse Romande.
GENOA.—See Turin.
GLEIWITZ.—See Breslau.
GÖTEBORG.—See Stockholm.
GRAZ.—See Vienna.
HAMAR.—See Oslo.

HAMBURG

Call Ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—4.30 p.m. (from Hanover), Concert from Bad Pyrmont: Overture, Sakuntala (Goldmark); Marietta's Song from Die tote Stadt (Korngold); Selection from Romeo and Juliet (Gounod); Ballet Music from La Gioconda (Ponchielli); Melodies from Die goldene Meisterin (Eysler). 5.30, Reading in North German Dialect. 5.55, Variety Programme. 6.30, Dialogue: The Provision of Work for the Unemployed—Possibilities and Limits. 6.55, Market Prices. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20, Moritz von Strachwitz, a German Ballad Writer—Talk and Recitations. 7.45, See Munich. 10.20, News Bulletin. 10.40, Report on the Military Sports Contest of the Young Stahlhelm Organisation. 11.0, Concert from the Hotel Reichshof.

HANOVER.—See Hamburg.

HEILSBERG

276.5 metres; 60 kW, and **DANZIG**, 453.2 metres.—11.30 a.m., Gramophone Concert; March, Die Fahne voran (Wadde); Potpourri, Hören Sie zu (Borchert); Selection from Madame Pompadour (Fall); Madonnanina (Ruggiero); Fiori d'amore (Matyasovich); La Lettre de Manon (Gillet); Overture, Wiener Frauen (Lehár); Intermezzo (Krützfeld); Kaiser Friedrich Marsch (Friedmann); Potpourri, Rheinfreuden (Strasser); Alle Tage ist kein Sonntag (Klewing); La Paloma (Yradier); Immer nur du (Brockmann); Oh, Don José (Grenet); Alle Zeit im neuen Kleid (Ailbott); Selection from The Flower of Hawaii (Abraham); Ein Paradies am Meeresstrand (Abraham); Tes yeux (Bonicoitro); Il Gagliardo (Marchesi); Wenn die Garde aufmarschiert (Kálmán). 1.5 p.m., Concert by the Small Station Orchestra; March, Freiheitsgeist (Bahlmann); Overture, Lachendes Leben (Rust); Intermezzo, Katze und Maus (Engelmann); Serenade (Barbizoli); Waltz, Sweet Louisiana (Kettelbey); Suite, Masquerade from The Merchant of Venice (Sullivan); Mariette-Couette (Ancliffe); Ein Abend in Aranjuez (Schmeling); Suite (Tapp); March, Gotteskämpfer (Fueik). 3.20, Talk for Housewives. 3.30, Programme for Children. 4.0, Talk for Parents. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilken; Prelude to the Third Act of Il mondo della Luna (Haydn); Potpourri of Mozart's Music (Urbach); Rhapsody No. 4 (Liszt); Nocturne No. 3 (Liszt); Finales from Ariete (E. Bach); Nocturne, Op. 148 (Schubert); Selection from Der Freischütz (Weber); Overture, Die Geschöpfe des Prometheus (Beethoven). 5.50, Reading from the Short Stories of Valerie Merck. 6.15, Agricultural Prices. 6.30, Wireless Hints. 7.0, Reading: Harvest Time (Herminia von Olfers-Batoeki). 7.30, Weather Forecast. 7.45, Programme from Munich; In the interval, News from Berlin (Witzleben). 10.20, Weather, News, Sports Notes. 10.45, Dance Music from Berlin (Witzleben). 12.30 a.m. (Thursday), Close Down.

HILVERSUM

Announced **HILVERSUM**; 296.1 metres; 20 kW (7 kW up to 4.40 p.m.).—Programme of the Christian Radio Society (N.C.R.V.). 7.40 a.m., Bible Reading. 7.55, Variety Music on Gramophone Records. 9.10 to 9.40, Interval. 9.40, Concert by the N.C.R.V. Women's Choir. 10.10, Programme for Invalids. 10.40, Harmonium Recital by M. Jurjaanz, with Songs by A. van Neerden-Oners (Soprano). 11.40, Police Notes. 11.55, Instrumental Concert. 1.40 to 2.10, Interval. 2.10, Religious Reading. 2.40, Chopin Pianoforte Recital by Jo Goudsmit; Nocturne in C Minor; Waltz in D Flat; Waltz in A Flat; Etudes, Op. 25, No. 10, and Op. 10, Nos. 3 and 5. 3.5, Song Recital by Anne-Marie Boezaardt (Soprano); A. Vermeeren at the Pianoforte; Pastorale (Haydn); Das erste Veichen (Mendelssohn); Jerusalem (Mendelssohn); Le ciel a visité la terre (Gounod); Aria from L'Enfant prodige (Debussy); Interlude; Sacred Song (Bizet); Non credo (Widor); Pastorale (Bizet); Song (Zweers); Vogelaar (v. Rennes). 4.15, Pianoforte Recital; Jeux d'eau (Ravel); Allegro Barbaro (Béla Bartók); Poissons d'or (Debussy); Lisle joyeuse (Debussy). 4.40, Programme for Children. 5.40, Sacred Songs. 6.40, Talk. 7.10, Police Notes. 7.25, News Bulletin. 7.40, Concert by the Amsterdam Orchestral Society, conducted by Frans van Diepenbeek; War March of the Priests from Athalie (Mendelssohn); Overture, Maritana (Wallace); Largo (Handel); Danse macabre

AUGUST 17th WEDNESDAY continued.

(Saint-Saëns); Une fête à Aranjuez (Demersseman); March, Viva Zeelandia (Marke). 8.40, Talk. 9.10, Concert (contd.); Torch March No. 1 (Meyerbeer); Overture, The Thieving Magpie (Rossini); Aubade printanière (Lacombe); Czardas from Der Geist des Wojewoden (Grossman); The Unfinished Symphony (Schnbert); Entry March of the Gladiators (Fueik); In the interval at 9.40, News Bulletin. 10.10, Variety Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced **HILVERSUM**; 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25 a.m., Physical Culture Lessons. 7.40, Variety Music on Gramophone Records. 9.40, Religious Programme by the Protestant Radio Society (V.P.R.O.). 9.55 till Close Down, V.A.R.A. Programme. 9.55, Variety Programme. 10.40, Talk arranged by the People's Radio University Society. 11.10, Orchestral Concert. 11.40, Septet Concert; Diegarde Marsch (Dik); Potpourri, Walzerflut (Fétras); Red Feather (Mills); Tango, Ach Annemarie (Mann); Waltz, So küsst man nur in Wien (Abraham). 12.10 p.m., Organ Recital by Johann Jong; Hungarian Comedy Overture (Kéler-Béla); Serenade (Braga); Puppenwalzer (Bayer); Parle-moi (Lenoir); Goodnight Vienna (Posford). 12.40, Septet Concert (contd.); Japanese Wedding March (Translatour); Waltz, A toi (Elliott); Bayrische Ländler und Schulplattler (Daxenberger); Tango, Mir fehlt ein Freund wie du (May); Offenbachiana (Conrad); Waltz, Dir sing ich mein Lied (Lehár); Foxtrot, Arin in Arm (Elwin); Hawaiian Memories (Armandola). 1.25, Interval. 1.55, Septet Concert (contd.); Potpourri, Wir walzen (Kermbach); Overture, Im Reine des Indra (Lincke); Waltz, Der kleine Zeisig spricht (Rust); Selection from The Propriet (Meyerbeer-Alder); Tango, Liebe war es nie (Markush); Foxtrot, Once aboard the Lugger (Sarony); Liberty Bell March (Sousa). 2.40, Programme for Children. 5.10, Septet Concert of Light Music. 6.40, Programme arranged by the People's Radio University Society. 6.40, Orchestral Concert: March, Hand in Hand (Blon); Waltz, Dolores (Waldfenfel); Ballet Suite (Popy); Der Rose Hochzeitszug (Jessel); Brise du soir (Gillet); Waltz, La Hussarde (Ganne); Selection from Les Saltimbanques (Ganne). 7.25, The Tapestry—Radio Play (Pilger). 7.40, Topical Dialogue: The Adventures of Messrs. Wakker and Tropicuit. 8.0, See Munich. 10.20, Orchestral Concert; Overture, Das Modell (Suppé); Valse bluette (Drigo); Ninon (Tosti); Serenade (Tosti); Ständchen (Heykens). 10.40, News Bulletin. 10.55, Concert (contd.); Overture, Tempelweihe (Kéler-Béla); Jungle Drums (Kettelbey); Valse poudrée (Popy); Potpourri from Bomben auf Monte Carlo (Heymann); Potpourri (Dostal). 11.35, Gramophone Records of Light Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.15 p.m., Announcements, News Bulletin, and Popular Music on Gramophone Records. 7.45, Feuilleton. 10.50, Concert of Dance Music. 11.0, Answers to Correspondents in French.

KAUNAS

1,935 metres; 7 kW.—7.30 p.m., Weather and News. 8.0, Gramophone Records of Variety Music. 8.30, Talk on Health. 8.50, Reading: Archeology. 9.10, Pianoforte Recital by Vytautas Basevicius; Piece (Schumann); Poisson d'or (Debussy); Rigaudon (Ravel); Minuet (Ravel); Two Preludes (Scriabin). 9.40, Orchestral Concert: Selection from La Traviata (Verdi); Waltz (von Blon); Monastery Bells (Derksen); Liebeswalzer (Moszkovsky); Slav Rhapsody (Frederiksen); Minuet (Grieg); Waltz from Cagliostro (Johann Strauss). 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

LAHTI

1,796 metres, 54 kW.; and **HELSINKI**, 368.1 metres.—6.15 p.m., Programme for Children. 7.0, Bass-Viol Recital. 7.15, Sports Notes. 7.35, Song Recital by Mauno Tamminen. 7.55, Talk. 8.10, Dance Music. 8.45, News in Finnish and Swedish.

LANGENBERG

473 metres; 60 kW.—12 Noon, See Stuttgart. 1.15 p.m., Weather, News, and Time. 1.30, Orchestral Concert conducted by Eysoldt: Overture, Figaro (Mozart); Fantasia, Im Rosengarten Mendelssohns (Urbach); Barcarolle from The Tales of Hoffmann (Offenbach); Bolero from the Suite, Bilder aus dem Osten (Nicodé); Der sterbende Schwan (Spies); Serenade from Lea Millions d'Arle-

quin (Drigo); A petits pas (Sudessi). 2.30, Sponsored Gramophone Concert. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.15, Reading of Poems. 4.30, Talk: A Review of the Sixth World Conference of the New Educational Fellowship in Nice. 5.0, See Stuttgart. 6.0, Radio Report on the International Tennis Match, Germany v. England, relayed from the Cologne Stadium. 6.20, Talk: German Destiny as portrayed by German Towns—Breslau. 6.45, Weather, Time, Economic and Sports Notes. 7.0, Talk on Social Politics—the Protection of Art. 7.40, First General News. 7.45, See Munich. 10.25, News and Sports Notes. 10.45, Programme from Berlin (Witzleben). 12 Midnight (approx.), Close Down.

LEIPZIG

259 metres; 2 kW.; and **DRESDEN**, 319 metres.—6.50 p.m., Talk: Building Funds. 7.20, Who—reads—What? An Entertaining Radio Sequence (Walter Schweickert). 7.45, See Munich. 10.30 (approx.), News, followed by Concert Relay. 12 Midnight (approx.), Close Down.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAUSANNE.—See Radio-Suisse Romande.

LINZ.—See Vienna.

LWOW

381 metres; 16 kW.—6.20 p.m., See Warsaw. 7.15, Miscellaneous Announcements. 7.35, See Warsaw. 7.45, Literary Talk. 8.0, See Warsaw. 10.25, Talk in German on Polish Scenery. 10.40, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA; 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert: March from Tannhäuser (Wagner); Airs from (a) Lohengrin (Wagner) and (b) Sigurd (Reyer). Reading: Monologue from Les femmes savantes (Molière); Melodies from (a) The Pearl Fishers (Bizet) and (b) La princesse jaune (Saint-Saëns). 7.30, Radio Gazette for Lyons and the South-East. 8.0, See Munich.

MADRID

UNION RADIO, Call **EAJ7**, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices, and Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal, and Political Review. 11.15 (approx.), The Mayor of Zalamea—Radio Play (Calderon de la Barca, arr. Heracilio Valiente). 1.15 a.m. (Thursday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—6.25 p.m., See Prague. 7.50, Popular Music. 8.20, See Prague. 10.15, Programme Announcements and Theatre Guide.

MOSCOW

TRADE UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talk in Czech: How Wars Arise. 9.0, Talk in Swedish: An Interview with a Soviet Student, followed by Review of the Week and Answers to Correspondents in French. In the interval at 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres and Nürnberg, 239 metres.—5.0 p.m., Concert, from Langenberg. 6.15, French Lesson. 6.35, Talk by Dr. Aloys Fischer for the Centenary of the Birth of Wilhelm Wundt. 6.55, Time, Weather, and Agricultural Notes. 7.5 (from Nürnberg), Concert by the Berghold Mandoline and Guitar Club, conducted by Wolfgang Berghold; Fantasia, Grossmütterchen erzählt (Ritter); Chrysanthemum Waltz (Sartori); Prince Frederick March (Schuppe). 7.25, Talk for Women: Review of Affairs in the Feminine World. 7.45, Talk on the following Transmission. 8.0, Così fan tutte—Opera-Comique in Two Acts (Mozart), by the Choir and Orchestra of the Bavarian State Theatre. Conductor: Richard Strauss. 10.20, Time, Weather, News, and Sports Notes. 10.45, Dance Music, from Berlin (Witzleben). 12.0 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—5.30 p.m., Popular Music on Gramophone Records. 6.30, Programme for Girls. 7.0, Announcements. 7.15, Weather, News and Agricultural Report. 7.30, Talk. 8.0, Time Signal. 8.1, Orchestral Concert conducted by Hugo Kramm. Soloists: Bergliot Havnevik (Pianoforte). 9.25, Agricultural Talk. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Legal Talk. 10.35, Variety Programme. 11.15, Gramophone Dance Music.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 to 6.30 p.m., Popular Music on Gramophone Records. 8.0, Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.30, Time Signal and Announcements. 8.45, Concert. Soloists: Bagnera (Soprano) and Gagliano (Cello); Overture, Preciosa (Weber); Cello Solos: (a) Leggenda (Gagliano), (b) Tarentella (Casella); Soprano Solos: Three Lyrics (Alalena); Largo (Handel); Minuet in A (Bocherini); Aria from Manon (Puccini); Aria from I Pagliacci (Leoncavallo); Orchestra: Peer Gynt Suite No. 1 (Grieg). After the Concert, Talk. 10.0 (approx.), Variety Concert. 10.55, News Bulletin.

PARIS

EIFFEL TOWER; Call **FLE**, 1,445.7 metres, 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Musical Programme arranged by Victor Larbey. 7.0, Le Journal Parlé. 7.50, Weather Report. 8.0, See Munich. 10.30 (approx.), Close Down.

PARIS

POSTE PARISIEN; 328.2 metres; 60 kW.—12 Noon to 2.0 p.m., News and Light Music on Gramophone Records. 7.0, News Bulletin and Press Review. 7.5, Variety Music on Gramophone Records. 8.30, Radio Journal and News Bulletin. 8.45, Concert. 10.0, Orchestral Concert, relayed from the Hôtel Chatham. 10.45, News Bulletin.

PARIS

RADIO PARIS; Call **CFR**; 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Weather and Press Review. 12 Noon, Talk: Sketching in the Holidays. 12.30 p.m., Gramophone Concert of Music from Wagner's Operas; Entry of the Gods into Valhalla from The Ringgold; Arias from (a) The Valkyries, (b) Siegfried, (c) The Twilight of the Gods; In the intervals, at 1.0, Exchange Quotations, News and Weather Forecast, and at 1.30 and 2.0, Exchange Quotations. 3.45, Exchange and Market Prices. 6.30, Market Prices, Weather, Agricultural Report, Talk and Racing Results. 7.0, Chopin Concert on Gramophone Records; Concerto in E Minor for Pianoforte and Orchestra; Tristesse; Barcarolle in F Sharp; Waltz in C Sharp. 7.45, Commercial Prices and News. 8.0, Great Poems of the Romantic School, on Gramophone Records; Le Lac (Lamartine); La Tristesse d'Olympio (Victor Hugo); Souvenir (Lamartine). 8.30, News and Weather Forecast. 8.40, Fashion Review by Mlle. José. 8.45, Così fan Tutte—Opera (Mozart); In an interval at 9.15, Press Review and News Bulletin.

PITTSBURGH

WESTINGHOUSE ELECTRIC, **KDKA**, 306 metres; 25 kW. Relayed by **W8XK** on 48.86 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, **KDKA** Artist Bulletin. 10.12, Programme Announcements. 10.15, Programme to be announced. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day. 11.6, Teaberry Sport Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, **KDKA** Kiddies' Klub. 11.30, Westinghouse Watchmen. 11.45 to 1.15 a.m. (Thursday), New York Relay. 11.45, Literary Digest Topics in Brief by Lowell Thomas. 12 Midnight, Amos n'Andy. 12.15 a.m., Royal Vagabonds. 12.30, The Stebbins' Boys. 12.45, Billy Jones and Ernie Hare. 1.0, Time Signal and American Tax Payers' League. 1.15, Programme to be announced. 1.30, Jack Frost Melodies. 2.0 to 3.30, New York Relay. 2.0, The Island Boat Dance Club. 2.30, Canada Dry—George Olsen's Orchestra with Jack Benny. 3.0, The Country Doctor. 3.15, Absorbine, Jr., Footnotes. 3.30, Tish. 3.45, Around the Cracker Barrel. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last-minute News Flashes. 4.20, The Music Box. 4.30, Jack Pettis and his Orchestra. 5.0, Orchestra from New York. 5.30, Time Signal and Good Night.

PORSGRUND.—See Oslo.

POZNAN

835 metres; 1.9 kW.—7.15 p.m., Announcements and News Bulletin. 7.35, See Warsaw. 7.45, Popular Music on Gramophone Records. 7.58, Time Signal. 8.0, Orchestral and Vocal Concert of Light Music; In the intervals, Theatre Guide and Programme Announcements. 9.50, See Warsaw. 9.55, Time Signal, Sports Notes and Police Report. 10.15, Dance Music on Gramophone Records. 12 Midnight (approx.). Close Down.

PRAGUE

488.6 metres; 120 kW.—3.55 p.m., Market Prices. 5.50, Talk: Folk Tunes, with Illustrations. 6.0, Talk: Modern Children. 6.10, Agricultural Report. 6.15, Light Music on Gramophone Records. 6.25, German Transmission: News; Talk: Bathing and Bathing Accidents; Talk: Novels for Women. 7.0, Song Recital by Richard Graeven. 7.20, Popular Songs. 7.50, See Moravská-Ostrava. 8.20, Medical Talk: Nerves. 8.30, Grieg Concert: Concert Overture, Im Herbst; Ich liebe dich: Erotika; The Swan; Einsamkeit; An den Frühling; Pianoforte Concerto in A Minor, Op. 16; Symphonic Dances, Op. 64 in G Major, A Major, G Major, and A Minor. In the interval at 9.0, Time and News. 10.0, Time and News. 10.15, Miscellaneous Announcements.

RABAT

416 metres; 6 kW.—1.50 to 3.0 p.m., Concert of Light Music. 5.0 to 6.0, Gramophone Records of Variety Music. 8.30, Gramophone Records of Light Music. 8.45, Le Journal Parlé: Weather and News Bulletin. 9.0, Concert: Overture, A Night in Venice (Johann Strauss); Miramar (Turina-Chapelier); Valse des brunes (Ganne); Song from Marouf (Ruband); Obstruction (Fontenay-Mouton); Selection from The Damnation of Faust (Berlioz); Two Arias from William Tell (Rossini); Schéhérazade (Rimsky-Korsakov); Aria from Aida (Verdi); Violin Solo, La Bohémienne (Vieuxtemps); Talk by M. Debraux; Trio for Pianoforte, Violin, and Cello (Beethoven). In the interval at 9.50 (approx.), Agricultural Market Prices. 11.0 (approx.). Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40, Concert by the Station Orchestra. 1.0, Financial Notes. 1.5, Concert (contd.). 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, Concert by a String Orchestra, conducted by M. Robert Echenard. 7.0, Weather Forecast. 7.1 (from Lausanne), Light Music on Gramophone Records. 7.30 (from Lausanne), Talk on Tobacco. 7.55, News Bulletin. 8.0, See Munich. In the interval at 9.20, Weather Forecast and News Bulletin. 10.20 (from Geneva), Dance Music on Gramophone Records. 11.0 (approx.). Close Down.

RIGA

525 metres; 15 kW.—5.30 p.m., Pianoforte and Song Recital. Songs for Soprano; Pieces (Chopin); (a) Nocturne in F, (b) Nocturne in F Sharp, (c) Waltz in D Flat, (d) Etudes in A Flat and G Flat. Songs: Le petit âne blanc (Ibert); Le concou (Daquin); Rhapsodie d'Auvergne (Saint-Saëns). 6.30, Talk on Nietzsche. 7.0, Weather Report. 7.3, Agricultural Talk. 7.30, Orchestral Concert, relayed from Bulduri. Conductor: Lovro Matkovic. Overture, The Czar's Bride (Rimsky-Korsakov); Vysehrad, from My Country (Smetana); Italian Capriccio (Tchaikovsky); Waltz, Roses from the South (Strauss); Songs from Operettas; Waltz from Gipsy Love (Lehar); Potpourri from Paganini (Lehar). In an interval at 8.25, News Bulletin. 9.0, Weather Report. 9.30, Gramophone Concert. 10.0 (approx.). Close Down.

RJKAN.—See Oslo.

ROME

Call 180, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 280, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Variety Music. 1.0 to 2.15, Instrumental Concert: March, Italia, Italia (Fragna); Leggenda marinara (Stocchetti); Mosaic of Dances and Songs: Ad alta tensione (Meniconi); Cello Solos: (a) Scherzo—Serenade (Gabriel Marie), (b) Gavotte (Popper); Selection from The Drum-Major's Daughter (Offenbach); Verso le tre (Abel); The Gold of the Stars. In the intervals, at 1.15, Giornale Radio, and at 1.30, Time and Announcements. 5.0, Exchange Report of the Royal Geographical Society, Children's Radio Review, and Announcements. 5.30, Song Recital by Maria Senes (Soprano): Aria from The Prisoner of Edinburgh (Ricci); Nina querida (Buzzi-Peccia); La paloma (Yradier); La falletta (Marchesi). 6.45, Variety Concert: Danza montanina (Crisuolo); Dance of the Waves, from Loreley (Catalani); Serenade (Cilea); Spanish Serenade for Violin (Chaminade-Kreisler); First and Second Hungarian Dances (Brahms). 7.0 (Naples), Shipping and Sports Notes. 7.5, Agricultural Report, An-

ouncements and Giornale Radio. 7.30, Time, Announcements, Gramophone Records of Variety Music, and Tourist Report. 8.0, See Munich. 10.20 (approx.), Dance Music. 10.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Song Souvenirs, from New York. 9.30, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15, Musical Programme, from New York. 10.30, Beau Balladeur, from New York. 10.40, A.B.C. Thumbnail Sketches. 10.45, Soloist, from New York. 11.0, Ma Prusier's Boarding House. 11.15, Health Talk. 11.20, Studio Ensemble. 11.30, When Day is Done. 11.55, Baseball Scores. 12 Midnight, Intermezzo d'Italia Programme. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Thursday), Chanda, the Magician. 12.30, Maxwell Tune Blenders. 12.45 to 4.15, New York Relay. 12.45, The Goldbergs. 1.0, Big Time. 1.30, Musical Programme. 2.0, Good-year Programme. 2.50, Mobiloil Concert. 3.0, The Corn Cob Eye Club of Virginia. 3.30, Echoes of the Palisades. 4.0, Nellie Revell. 4.15, Carmelo Cascio (Pianist). 4.30, Vincent Lopez and his Orchestra, from New York. 5.0, Al Stulmaker and his Orchestra, from New York. 5.30 (approx.). Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres, 60 kW.; BASEL, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Concert of Parisian Music on Gramophone Records. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Songs and Marches on Gramophone Records. 4.30 (from Basle), Programme for Children. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Bern), Two Topical Talks: (1) Swiss Foreign Trade in July; (2) Subject to be announced. 7.0, Time Signal, Weather Forecast and Market Prices, followed by Concert of New Gramophone Records. 7.30 (from Basle), Book Review. 8.0, See Munich. 10.30 (approx.), Weather Forecast, News Bulletin, and Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 522 metres.—5.5 p.m., Country Programme. 5.30, Reading. 6.0, Light Music on Gramophone Records. 7.0, Talk, relayed from Jönköping (202 metres). 7.15, Weather and News. 7.30, Talk: Dalcarnia, relayed from Falun (307 metres). 8.0, See Munich. 9.20 (in the interval), Weather and News. 10.20, Dance Music. 11.0 (approx.). Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Popular Music. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.1, Exchange Quotations. 1.10, Concert, relayed from Bordeaux-Lafayette. 1.50, Light Music on Gramophone Records. 2.0 to 4.45, Interval. 4.45, Talk in German: The Electric Fan and its Advantages. 5.0, Concert by the Station Orchestra, conducted by M. Roskam. March, Amicitia française (Rico); Waltz, Dynamiden (Josef Strauss); Canzonetta (d'Amrosio); Overture, Girofè-Girofia (Lecocq); Potpourri, Offenbachiana (Conrad); Intermezzo (Kockert); Suite orientale (Popy); A la nuit tombante (Debraux); March, El Capitan (Souza). 6.0, Talk in French: Pascoli. 6.15, Talk in German: Music and Medicine—II. 6.30, Concert by the Station Orchestra, conducted by Maurice de Villers; Overture, Der Freischütz (Weber); Scherzo Waltz (Chabrier); Selection from Carmen (Bizet); Slav Rhapsody (Volpatti); Algerian Suite (Saint-Saëns). 7.30, Time Signal. 7.31, News in French and German. 7.45, Light Music on Gramophone Records. 8.0, See Munich. 10.0, Light Music on Gramophone Records. 10.30, Dance Music by André Vallée and his Band, relayed from the Savoy Dance Hall. 12 Midnight (approx.). Close Down.

STUTTGART

MUHLACKER, 360.5 metres, 60 kW; and FREIBURG, 570 metres.—10.0 a.m., Pianoforte Recital by Ursel Roth. Prelude, from the English Suite in A minor (Bach); Sonata in G, No. 1 (Haydn); Improvisations on a Part of Goethe's Faust (Rumpf). 10.30, Organ Recital of Contemporary Music relayed from Christ Church, Karlsruhe: Partita on Jesu, meine Freude (Hermann Ernst Koch); Three Choral Improvisations: (a) Ach bleib mit deiner Gnade, (b) O Durchbrecher aller Bände, (c) Lobe den Herren, o meine

Seele; Prelude and Double Fugue in F, Op. 85 (Reger). 11.0, Time, News, and Weather. 11.15, Sponsored Concert. 11.55, Weather Forecast. 12 Noon, Concert of Light Music from Greiners Gaststätten; Hungarian March, Vivat Hungaria (Lincke); Waltz from Der Rosenkavalier (R. Strauss); Viennese Song, Alter Refrain (Kreisler); Syncopation (Kreisler); Selection from Die toten Augen (d'Albert); Bohemian Polka from Schwanda the Piper (Weinberger); Reigen (Reger); Clair de lune (Debussy); Rhapsody on a Bavarian Folk Melody (Pitzinger); Novelty Foxtrot, Dancing Shadows (Golden); Novelty Foxtrot, Lonesome Little Doll (Cowan and Boutelle); Tango, Schade, dass Liebe ein Märchen ist (Jurmund and Kaper); Slow Foxtrot, Deutschmeister; Jazz Paraphrase on the Naita Intermezzo (Lange); Strike up the Band (Gershwin). 1.15 p.m., Time, Weather, News, and Programme Announcements. 1.30, Gramophone Records of Swiss Yodelling Songs. 2.0 to 2.30, Sponsored Concert. 3.30, Talk: In Memory of Kurt Faber. 4.0, Programme for Children. 5.0, Orchestral Concert conducted by Otto Seyfert. Soloists: Hedwig Piccard (Soprano) and Karl Paul Rau (Baritone). Overture, Die beiden Schützen (Lortzing); Song for Baritone from The Golden Cross (Brüll); Aria for Soprano from The Taming of the Shrew (Goetz); Selection and Song from Martha (Flotow); Reminiscences of Offenbach (Petras); Shadow Dance from The Maid of the Black Forest (Jessel); Waltz from Der liebe Augustin (Fall); Kiss Song from Herbstmännchen (Kálmán); March from Eva (Lehar). 6.15, Time, Weather, and Agricultural Notes. 6.20, Esperanto Lesson. 6.45, Talk: Tea and its History. 7.40, Time and Weather. 7.15, Austrian Programme by Camilla Strakosch-Borel (Soprano) and Harold Strakosch (Recitations). 7.45, See Munich. 10.20, Time, Weather, News, and Programme Announcements. 10.45, Dance Music from Berlin (Witzleben). 12 Midnight (approx.). Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Light Music. 5.45, Two Overtures: (a) Egmont (Beethoven), and (b) The Thieving Magpie (Rossini). 6.0, Chansonnets. 6.15, Orchestral Music: Invitation to the Dance (Weber); Minuet in G (Beethoven); Norwegian Dance (Grieg). 6.30, Exchange Quotations and Horse Racing Results. 6.45, Light Music. 7.0, Concert: Tales from the Vienna Woods (Joh. Strauss); Moonlight on the Danube (Gay); Wiener Eraterleben (Translatour); Valse mélancolique (Darsin); Air from Les Millions d'Arlequin (Drigo); The Wedding of the Marionettes (Rathke); A Strauss Parody (MacEben). 7.30, Programme Announcements. 7.35, News Bulletin. 7.45, Accordion Solos. 8.0, Military Music. 8.15, Airs from (a) Werther (Massenet), (b) Manon (Massenet), (c) Lakmé (Delibes), (d) Carme (Bizet). 8.30, Orchestral Music: La Hussarde (Ganne); Le dernier sommeil de la Vierge (Massenet); Intermezzo from Le Cerfier (Albert). 8.45, Instrumental Music. 9.0, Airs from (a) Les Saltimbanques (Ganne), (b) Les Cloches de Corneville (Planquette), and (c) Les Dragons de Villars (Maillart). 9.15, Airs from (a) Rigoletto (Verdi), (b) Faust (Gounod), and (c) Carmen (Bizet). 9.30, Sound Film Music. 9.45, Airs from (a) Les Saltimbanques (Ganne), and (b) La Mascotte (Audran). 10.0, Light Music. 10.30, North African News. 10.45, Airs from (a) Faust (Gounod), (b) Hoffdiade (Massenet), and (c) The Tales of Hoffmann (Offenbach). 11.0, Concert: Selection from Samson and Delilah (Saint-Saëns); Song from Captain Craddock; Overture, The Barber of Seville (Rossini); Pan Pan l'Arbi (Marin); The Blue Danube (Joh. Strauss); Air from Frederica (Lehar); Selection from Paganini (Lehar); Overture, The Caliph of Bagdad (Boieldieu); Meditation from Thais (Massenet). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.5 p.m., Quintet Concert: Sava (Stajano), Polody (Noack). Pictures of the Vienna Woods (Trauner), Portofino (Billi). Io per te sapro zoder (Pereyra), Suite gioldiardica (Amadei). Piece (Winter), E' maggio (Brancucci). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.5 p.m., Concert: Selection from The Gelsa (Jones), Passeggiata degli eleganti (Ranzato), Minuet (Rimoldi). 7.25, Tourist Talk. 7.30, Time and Announcements. 7.35, Gramophone Records of Popular Music. 7.45, Giornale Radio and Weather. 8.0, See Munich. In the intervals, Talk and Miscellaneous Notes. Variety

Music on Gramophone Records after the Programme. 11.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—4.55 p.m., Vocal and Instrumental Concert. Yella Hochreiter (Songs), Anna and Piroška Goitein (Violin), Hedda Bailon and Leo Birkenfeld (Pianoforte). Serenade, Op. 92, for Two Violins and Pianoforte (Sinding); Songs from the Italian Song Book (Hugo Wolf): (a) Wir haben heute lange Zeit geschwiegen; (b) Und willst du deinen Liebsten sterben sehen, (c) Geseget sei, (d) Und stehst ihr früh am Morgen auf; From the Mörike Songs (Hugo Wolf): (a) In der Frühe, (b) Auf einer Wanderung, (c) Gesang, Weylas, (d) Heimweh; Pianoforte Solos: (a) Idyll, Op. 21 (Wellesz), (b) Studie auf weissen Tasten (Paltauf), (c) Humoresque (Paltauf), (d) Ballad Setting of Rainer Maria Rilke's Die Weisse von Liebe und Tod des Cornett Christoph Rilke (Andergassen). 6.15, Talk: The Vienna Autumn Fair. 6.25, Talk: Engineering in North Africa. 6.45, Talk: Cultural Relations between Denmark and Germany. 7.5, Talk: Our Austrian Fatherland and her Western Neighbour. 7.30, Time, Weather, and Programme Announcements. 7.40, Concert by the Vienna Symphony Orchestra, conducted by Karl Auerieth. Soloist, Almut Schönig (Songs); Prelude to Lohengrin (Wagner); Elsa's Plaint from Lohengrin (Wagner); Extrait from Die drei Pintos (Weber-Mahler); Recitative and Aria from Der Freischütz (Weber); Ballet Music from The Queen of Sheba (Goldmark); Suite, Der gläserne Berg (Braunfels); Ilarvest Festival, from Der Moloch (M. von Schillings); Salomé's Dance from Salomé (R. Strauss). 9.10, Goal! A Football Scene. 9.40, News Bulletin, Weather Forecast and Announcements. 9.55, Edmund Eysler and Charles Weinberger. The Two Composers play Improvisations from their own Works on two Pianofortes. 10.10, Concert of Dance Music by Adolf Pausler's Jazz Band. Soloist, Viktor Sternau (Songs). Six-eight; Senora Ich muss dein Törchen sein (Danberg); Slow Foxtrot, Stop (Danberg); English Waltz, noch ein Himmelsberg (Rosen); English Waltz, Ein Brief an das Glück (Goetz); Foxtrot, Toronto (Schaale); Foxtrot, heimliche Liebe (Geitner); Tango, Das erste Lied (Danberg); Ruder-Fox (Krauss-Eika); Third Waltz Potpourri (Robrecht); Slow Foxtrot, Die Familie pourri (Robrecht); Slow Foxtrot, Die Familie (Erwin Straus); Selection from The Flower of Hawaii (Abraham); Foxtrot, Deine Modist-in Pipsi (Katscher); Rumba, He (Erwin Straus); English Waltz, In einem kleinen Café in Hernalis (Leopoldi); Potpourri of Popular Songs of 1932 (Pauscher); Tango, Ist dein kleines Herzchen mir treu? (Eisele); Tango, Es ist schon sechzehn vorbei (Engelhart); Foxtrot (Maurice); Waltz, Küissen sich zwei (Flemming); Foxtrot, Wenn die Mandoline klingt (Goldberg-Gehr); Slow Foxtrot, Eine Stunde Liebe (Hell); Foxtrot, Täglich Musik (Mackeben).

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Press Review. 12.20, Interval. 12.40, Weather Report. 12.45, Gramophone Records of Light Music. 1.25, Interval. 1.35, Gramophone Records (contd.). 2.10, Interval. 3.0, Economic Notes. 3.10, Variety Music on Gramophone Records. 3.30, Talk for Scouts. 3.35, Naval and Colonial Notes. 3.40, Programme for Children. 3.53, Talk for Young People: Adventures in the Himalaya Mountains. 4.5, Gramophone Records of Light Music. 4.35, Announcements. 4.40, The Letter Box. 5.0, Orchestral Concert of Opera Music: Melodies from (a) Rigoletto (Verdi), (b) Madama Butterfly (Puccini), (c) Eugene Onegin (Tchaikovsky), and (d) Don Giovanni (Mozart). 6.0, Talk: The Battle of Warsaw. 6.20, Military Band Concert, relayed from Ciechocinek. 7.15, Miscellaneous Items. 7.35, Radio Journal. 7.45, Agricultural Correspondence. 7.55, Programme Announcements. 8.0, Orchestral Concert. 9.0, Literary Programme. 9.15, Recital of Duets by Mme H. Zboinska-Ruskowska (Soprano) and J. Paszkowska (Contralto). Ecco il petto (Marcello); Minuet from Erminia (Bononcini); Duet from The Queen of Spades (Tchaikovsky); Two Roses (Arensky); Duet (Moniuszko); Song (Zelensky); Songs (Chausson): (a) La Nuit, (b) Reveil. 9.50, Radio Journal. 9.55, Weather and Aviation Notes. 10.0, Dance Music. 10.25, See Lwów. 10.40, Sports Notes. 10.50, Dance Music. 11.30 (approx.). Close Down.

WILNO

563 metres; 16 kW.—7.15 p.m., Economic Talk in Lithuanian. 7.30, Programme Announcements. 7.35, See Warsaw. 7.45, Talk: The Civilisation of Old Poland. 8.0, See Warsaw. 10.25, Popular Music on Gramophone Records. 10.40, See Warsaw. 11.30 (approx.). Close Down.

ZURICH.—See Schweizerischer Landessender.

THURSDAY

AUGUST THE EIGHTEENTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Organ recital. Orchestral concert. Sonata recital. Evensong from Westminster Abbey. Dance music. Violin recital. Promenade concert.
LONDON REGIONAL	Orchestral programme. Organ music. "New Songs for Old," by Gordon McConnell and Christopher Stone. Orchestral concert. Dance music.
MIDLAND REGIONAL	Organ music. Orchestral concert. Organ recital. London Regional programme.
NORTH REGIONAL	Orchestral programme. Dance music. "Mounting Assets," a radio play by Elizabeth Illingworth. National programme.
WEST REGIONAL	Organ recital. Light music. National programme.
SCOTTISH REGIONAL	National programme. Organ music. Dance music. Light concert. National programme.
BELFAST	Light orchestral concert. National programme.
ABROAD	
COPENHAGEN	Festival concert from the Tivoli Concert Hall.
CRACOW	Choral concert of Jewish sacred music.
HAMBURG	"Songs of the East."
PARIS (Radio-Paris)	Gramophone records for children.
TURIN	Opera: "The Sicilian Vespers" (Verdi).

ALGIERS
363.3 metres; 13 kW.—7.0 p.m., Exchange Quotations. 7.10, Shipping Notes and Weather Forecast. 7.15, Talk: Curiosities and Pastimes. 7.30, Dance Music. 7.45, Instrumental Solos. 7.55, News and Time Signal. 8.0, Concert of Old Popular Songs. 8.45, Concert of Request Gramophone Music. 10.0 (approx.), Close Down.

BARCELONA
RADIO-BARCELONA; Call EAJ1; 349 metres; 8 kW.—8.0 p.m., Trio Concert: Gavotte (Poppy); Romance from the Concerto for Violin and Orchestra (Lalo); Arlette's Song (de Taeye); Selection from The Pearl Fishers (Bizet). 8.30, Exchange Quotations, Request Gramophone Records and News Bulletin. 10.0, Chimes, Weather Report and Market Prices. 10.5, Concert by the Station Orchestra: Pasodoble, Soy cordobesa (C. Milagros); Selection from De Getafe al Paraiso (Barbieri); Invitation to the Waltz (Weber). 10.30, Military Band Concert, conducted by Julian Palanca: Pasodoble, Claro Sol (Palanca); Alborada (Palanca); Tarantella (Gotschalt); Selection from La Bohème (Puccini); Perfumes japonaises (Arquellades); El Grall de Ripoll (Ribas). 11.30, Orchestral Concert relayed from the Café Español. 1.0 a.m. (Thursday), Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN
KONIGS WUSTERHAUSEN; 1,635 metres; 60 kW.—12 Noon, Weather for Farmers, followed by Gramophone Concert of Orchestral Music, and Second Weather for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Gramophone Records of Artists of the Milan Scala, relayed from Berlin (Witzleben). 3.0, Karl Köster reads from his own Works. 3.30, Weather and Exchange. 3.45, Talk for Women: My daily Work in the House as a Beauty Treatment. 4.0, Educational Talk: The Care of Health in Country Schools during the Present Crisis. 4.30 to 5.30, See Berlin (Witzleben). 5.30, Talk: The Nationality Question in South Eastern Europe. 6.0, Pianoforte Recital from Paul Hindemith's Marienleben, Op. 27. 6.30, Advanced Spanish Lesson. 6.55, Weather for Farmers. 7.0, Topical Talk. 7.15, Agricultural Talk. 7.30 till Close Down, Programme from Berlin (Witzleben).

BERLIN
WITZLEBEN; 419.5 metres; 1.5 kW.—4.30 p.m., Recital of Old Music for Cello. Soloist: Richard Sturzenegger; Adagio in A Minor (Bach); Piece (Couperin); Andante in B flat (Mozart); Sonata in A for Cello and Pianoforte (J. Ch. F. Bach). 5.0, Saxophone Recital by Sigurd Rascher: Sonata for Saxophone and Pianoforte (Wolfgang-Jacobi); Suite, Aus den Bergen (Hugo Kaun). 5.30, Reading: Christianity and the State (Friedrich Goegarten). 5.50, Talk: The Weekend in Brandenburg. 6.15, With the Microphone through the Mark—Paretz. 6.25, Talk: The First Systematic Transatlantic Air Service. 6.50, Labour Market Report. 6.55, The Witzleben Station informs its Listeners. . . . 7.0, Topical Talk. 7.10, Programme of Dance Music by the Gerhard Hoffmann Band, with Vocal Refrains by Paul Erdtmann. 9.0, News and Sports Notes. 9.10, Richard Wagner in Paris—Radio Sequence (Burkard); The Berlin Wireless Orchestra, conducted by Bruno Seidler-Winkler, the Maximilian Albrecht Choir, the Station Choir, Elisabeth Friedrich (Soprano), Fred Drissen (Baritone), Julius Bürger (Pianoforte), and Gerd Fricke (Speaker). 10.15, Weather, News and Sports Notes. 10.30 (approx.), Concert by the German Symphony Orchestra, conducted by Ludwig Preiss. Soloists: Erna Pitt (Soprano); Overture, Poet and Peasant (Suppe); Eva Waltz for Soprano (Lehár); Selection from The Merry Widow (Lehár); Comedy Overture (Schmalstich); Soprano Solos: (a) Knowst thou the Land, from Mignon (Thomas), (b) Liebesfeier (Weingartner); Ballet Music from La Gioconda (Ponchielli); Intermezzo and Barcarolle from The Tales of Hoffmann (Offenbach); Florentine March (Fucik).

BERNE.—See Schweizerischer Landessender.
BEROMUNSTER.—See Schweizerischer Landessender.
BODEN.—See Stockholm.
BODD.—See Oslo.

BORDEAUX-LAFAYETTE
104 metres; 13 kW.—7.30 p.m., News and Exchange Quotations. 7.40, Talk: The Unemployment Problem. 7.55, Lottery Results and Charade Competition. 8.0, Talk on Bull-Fighting. 8.15, News and Weather. 8.30, Popular Music on Gramophone Records. 9.0, The Monkey's Paw—Comedy in Three Acts (L. N. Parker and W. Jacobs).

BRATISLAVA
179 metres; 14 kW.—7.0 p.m., See Prague. 8.30, See Brno. 9.0, Orchestral Concert from Kosice (293 metres). 10.0, See Prague. 10.15, Programme Announcements and News. 10.20, See Prague.
BREMEN.—See Hamburg.

BRESLAU
325 metres; 1.5 kW. and **GLEIWITZ**, 253 metres.—6.10 p.m., Talk for Workers. 6.30, Health Talk: Diet Cures. 7.0, Loewe's Ballads on Gramophone Records: Tom der Reimer; Odins Meeresritt; Heinrich der Vogler; Der heilige Franziskus; Prinz Eugen; Archibald Douglas. 7.30, Weather for Farmers. 7.32, Silesian Border Towns; Gnhraun—a Radio Report on Gramophone Records. 8.0, Improvisations on German Folk Songs by Dr. Alf Nestmann (Pianoforte). 9.0, News Bulletin. 9.10, Pension Schöller—Farce (Carl Lanfs and W. Jacoby). 10.30, Time and News. 10.55, Talk in Esperanto: The Baroque in Silesia. 11.5, Talk: The Successes of the German Team in the Olympic Games at Los Angeles. 11.20 (approx.), Close Down.

BRNO
342 metres; 35 kW.—7.0 p.m., See Prague. 8.30, Concert by a Brass Band. 9.0, See Moravska-Ostrava. 10.0, See Prague. 10.15, Announcements. 10.20, See Prague.

BRUSSELS (No. 1)
I.N.R., 509 metres; 15 kW.—12 Noon, Gramophone Records. La Bohème—Opera (Puccini)—Concert Version. Overture, Norma (Bellini). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Records of Variety Music. 5.0, Orchestral Concert, conducted by M. Walpot. Overture, Pique Dame (Suppé); Selection from La Princesse de Trébizonde (Offenbach); Ballet of the Four Seasons (Missa); Selection from Madame Boniface (Lacôme); Waltz from The Love Parade (Scherzinger). 5.45, Programme for Children. 6.15, Culinary Talk. 6.30, Sound Film Music. 7.15, Review for Workers. 7.30, Le Journal Parlé. 8.0, Concert by the Station Symphony Orchestra, conducted by M. Jean Kumps; Overture, Gwendoline (Chabrier); Selection from Lakmé (Delibes); Ballet from Samson and Delilah (Saint-Saëns); Meditation from Thais (Massenet); Ballet Music from Les deux Pigeons (Messager). 8.45, Talk: The Agrarian Problem in Belgium. 9.0, Concert, conducted by M. François Rasse, relayed from the Kursaal, Ostend. Soloist: M. Tilkin Serrais (Songs); Rapsodie basque (Achille Philip); Suite mélodique (François Rasse); Viola Solos: (a) Ballade (Schubert); (b) Libellule (Rogister); Aria from A Masked Ball (Verdi); Violin Solo: A Fête at Aranjuez (Demersmann); Aria from La Traviata (Verdi); Overture, Phèdre (Massenet). After the Programme: Le Journal Parlé and Gramophone Records of Light Music. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)
I.N.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Orchestral Concert, relayed from the Scala Brasserie, Ostend. 1.0

p.m., Le Journal Parlé. 1.10, Concert (cont'd.). 1.30, Extracts from Les Erymanus—Opera (Massenet) on Gramophone Records. 5.0, Orchestral Concert: Overture, Le Postillon de Longjumeau (Adam); Fête à Trianon (Poppy); Melody from Phryné (Saint-Saëns); Marche funèbre d'un Hanetton (L. Du Bois); Burlesque (Poot); Selection from Il Trovatore (Verdi); Meditation from Thais (Massenet); Ballet Music from Rosamunde (Schubert). 6.0, Gramophone Concert: The Hunt (Mendelssohn); Waltz, Monte Cristo (Kotlar); Prelude (Bach); Etude in G Flat (Chopin); Melody from The Violin-Maker of Cremona (Hubay); Elégie (Vidal); Selection from La Mascotte (Audaud); Serenade (Pierné); Melody from The Last Waltz (O. Straus); Potpourri of Sound Film Music; Two Guitars (Scriabin); The Musical Box (Sauer); The Forge in the Forest (Michaëlis); Japanese Mazurka, La Mousmé (Ganne); The Lea Rig (arr. Burnet); Melody from The Merry Peasant (Fall); Willie's gone to Melville Castle (Stephen) Selection from The Dance of the Dragonflies (Lehár); Polka (Braune); March (Landenbach). 7.15, Variety Items. 7.30, Talk for Women. 8.0, Concert: Overture, The Gipsy Baron (Joh. Strauss); Music from (a) A Waltz Dream (O. Straus), (b) Die Fledermaus (Joh. Strauss), and (c) Die Teresina (O. Straus). 8.40, Recitation: Nuit d'Octobre (A. de Musset). 9.0, Concert, relayed from the Casino. Soloist: M. Huberty (Songs); Suite from The Crown of India (Elgar); Song from Don Carlos (Massenet); Suite, Les Heures (F. Goeyens); Calumny Aria from The Barber of Seville (Rossini); Overture, Cleopatra (Mancinelli). After the Programme, Le Journal Parlé and Light Music on Gramophone Records. 11.0, (approx.), Close Down.

BUCHAREST
394 metres; 12 kW.—4.0 p.m., Dance Music by the Willy Marx Jazz Band. 5.0, News and Time Signal. 5.10, Dance Music (cont'd.). 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records. 7.0, Time Signal. 7.2, Concert by the Station Orchestra; Soloist, Mlle. Nadia Chebab (Pianoforte); Overture, Fingal's Cave (Mendelssohn); Pianoforte Concerto in E Minor (Chopin). 7.30, Talk (to be announced). 7.45, Song Recital by Mlle. Gutiano. 8.15, Concert (cont'd.); Serenade (Tchaikovsky); Suite (Andric). 8.45, News Bulletin.

BUDAPEST
550 metres; 18.5 kW.—Programme also relayed on 210 metres from 6.30 p.m. to 12 Midnight. 5.0, Concert by the Band of the Royal Hungarian Police Force. 6.0, Talk. 6.30, Concert of Light Music by the Imre Magyar Cigány Orchestra. 7.45, Talk on Foreign Politics. 8.0, Liszt and Goldmark Concert by the Budapest Concert Orchestra, relayed from the Stadtwaldchen, Conductor

Johann Ferencsik, Soloist, Elizabeth Kiss. 9.15, Time Signal, Weather Forecast, and News Bulletin, followed by Cigány Music from the Café Ostend.
CASSEL.—See Frankfurt.

COPENHAGEN
281 metres 0.75 kW., and **KALUNDBORG**, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.2 p.m., Weather Forecast. 12.5, String Ensemble Concert, relayed from the Wivex Restaurant. 2.0 to 3.0, Interval. 3.0, Wind Instrument Concert, conducted by Johannes Andersen: Florentine March (Fucik); Overture, Raymond (Thomas); Waltz from Coppélia (Delibes); Selection from Die Fledermaus (Joh. Strauss); Hungarian Dances Nos. 5 and 6 (Brahms) Fantasia on Danish Airs (Lanzky); March, Hoch Habsburg (Kral); Recitations by Gabriel Krebs; Crown Prince Frederick March (Schmidt) Comedy Overture, Nordisk Bæterrejse (Gade); Waltz, Tales from the Vienna Woods (Joh. Strauss); Melody from Martha (Flotow); Selection from Elverpigen (E. Hartmann); Walter's Prize Song from The Mastersingers (Wagner); March, Old Comrades (Teike). 5.0, Programme for Boys. 5.40, Exchange and Fish Market Prices. 5.50, Talk. 6.20, English Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Festival Concert, relayed from the Tivoli Concert Hall. Part One: The Tivoli Hall Orchestra, conducted by Fr. Schmedler-Petersen. Soloists: Else Brems (Songs) Louise Jensen (Cello), and Ole Willumsen (Pianoforte): March (Bendix); Cello Solos (Granados): (a) Goyescas, (b) Spanish Dance; Songs from Carmen (Bizet): (a) Habanera, (b) Gipsy Song; Symphonic Variations for Pianoforte and Orchestra (C. Franck). 8.30, Reading (Lord Dunsany). 9.0, Festival Concert, Part Two: The Orchestra, conducted by Erik Tuxen. Soloists: Peder Moller (Violin), Birgit Engell (Songs), and Victor Schioler (Pianoforte): Two Pieces (Rameau): (a) Musette, (b) Tambourin; Cigány Rhapsody for Pianoforte and Violin (Ravel); Song: Frühlingsstimmen (Joh. Strauss); Pianoforte Solo: Rhapsody in Blue (Gershwin). 10.0, Reading in West Jutland Dialect. 10.15, News Bulletin. 10.30, Festival Concert, Part Three: The Tivoli Orchestra, conducted by Fr. Schmedler-Petersen, and the Lily Ericson Quartet. Soloists: Ida Moller (Songs), and Moritz Fromberg (Violin): Overture, Aladdin (Horneman); Elegie (Massenet); Crépuscule (Massenet); Songs (Heise): (a) Aften paa Loggiaen, (b) Ingen Blomst i Verdens Lande, (c) Den unge Laerkes Foraarsang; Violin and Pianoforte Duets: (a) Träumerei (Schumann), (b) Liebesfreud (Kreisler); The Lily Ericson Quartet: (a) Danmarks Have (Gyld, mark), (b) De kørende (Rijsd), (c) Tovejr (Larsen), (d) Jenny i Rugen (Hellnuth); Champagne Galop (Lunbye). 11.15 (approx.), Close Down.

CORK.—See Dublin.
CRACOW
312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and Programme Announcements. 7.35, Radio Journal. 7.45, Talk: Curiosities. 8.0, Choral Concert of Jewish Sacred Music; Conductor, M. Isaac Lust. 9.20, Reading from the Works of K. H. Rostworowski. 9.50, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.
DRESDEN.—See Leipzig.
DUBLIN
Call 2RN; 413 metres; 1.2 kW. and **CORK**, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Stock Report, Weather Forecast and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Popular Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, French Lesson. 8.0, Concert by the Civic Guards Band. 9.0, Soprano Solos by Nora W. Murray. 9.15, A Sketch by Elizabeth Young and Company. 9.45, Tenor Solos by Peter Lynch. 10.0, Orchestral Concert. 10.30, Time Signal, News, Weather Report and Close Down.

FECAMP
223 metres; 10 kW.—12 Noon, Gramophone Records of Popular Music. 12.30 p.m., News Bulletin. 12.45, Concert of Light Music. 7.30, Radio Gazette. 8.0, News Bulletin. 8.30, Concert relayed from the Town Hall, Rouen. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0 p.m., Dance Music: I'll be blue; A cottage for Sale; It must be you; Dream star of Araby; Dance away the night; Punch and Judy; Every now and then; In the still of the night; Girl Friend of a Boy Friend of mine; Without a song; Dancing with tears in my eyes; My love parade; Harmony Heaven; I lost my Girl again; Dream Lover; Blonde Women. 11.0, Light Orchestral Music, with Vocal Quartet Selections: Bells across the Meadow (Keteibey); Vocal Quartet: (a) Winter is gone, and (b) Sweetly blows the breath of Spring; The Mill in the Black Forest (Ellenberg); Vocal Quartet: Now is the merry month of May; At the Temple Gates (Johnson); Vocal Quartet: Ye Banks and braces; The Clock is playing (Blaauw). 11.30, Vienna in

AUGUST 18th THURSDAY continued.

Music; Vocal and Orchestral Music with Organ Solos: Orchestra, Overture, Morning, Noon and Night (Suppé); Song, You will remember Vienna (Hammerstein); Orchestra and Organ: Tales from the Vienna Woods (Strauss); Duet: Viennese Memories (arr. Cole); Orchestra: (a) Vienna, City of my dreams (arr. Reeve); (b) Wiener Praterleben (Translator); Organ Solo: Goodnight, Vienna (Posford); Orchestra: Vienna Vienna (Foss); Duet from Waltzes from Vienna (arr. Gaston); Orchestra: Wienermädln (Ziehrer). 12.15 a.m. (Friday), Dance Music: Broken Dreams; We'll build a Little World of our Own; Dancing on the Ceiling; Little by little; When the organ played at twilight; Every day away from you; That tiny teashop; Figaro; My Baby just cares for me; Great day; Wasn't it nice; Dream lover; That's all that matters. 12.57 a.m., I.B.C. Goodnight Melody. 1.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres, 1.5 kW.; and CASSEL, 246 metres.—3.0 p.m., Programme for Children. 4.0, Time and Economic Notes. 4.55, Economic Notes. 5.0, See Stuttgart. 6.15, Economic Notes. 6.25, Topical Talk. 6.50, Talk: This Year's Radio Exhibition. 7.15, Time, Programme Announcements, Weather, Agricultural Report and Economic Notes. 7.20, Topical Talk. 7.30, See Stuttgart. 8.45, Makart-Buketts—Humorous Radio Sequence (Dora May and Kees Veenig). 9.45, The Day's Sketchbook, by Paul Laven. 10.0, See Stuttgart. 10.30, Time, Weather, News and Sports Notes. 10.45, Silent Night.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres, and Kiel, 232.2 metres.—5.55 p.m., Summer in Verse and Song with Lute Accompaniment. 6.30 (from Kiel), Talk on Sports: Yachting. 6.55, Frankfurt Exchange. 7.0, Topical Talk. 7.15, Weather Report. 7.20, Songs of the East; Max Raymer (Songs), Hans Rosenlöcher (Violin), Heinrich Ritter (Cello), and Gerhard Maasz (Pianoforte); Songs (arr. Lobatchev): (a) Song from Kirghizia, Elm ai, (b) Song from Kirghizia, The Beaver Cap, (c) Song of the Ural Mountains, The Musician, (d) Basque Song, My Brother was killed at the Wars; Russian Folk Songs for Baritone, Violin, Cello and Pianoforte (arr. A. Goedicke): (a) Song, (b) The Raven, (c) Choral Song; Song of the Flea (Moussorsky); Savishna (Moussorsky); The Prisoner (Gretchaninov); Death of the Czar from Boris Godounov (Moussorsky); Air from Prince Igor (Borodin). 8.0, See Langenberg. 10.0, Time and News. 10.20, Concert of Dances by the Hamburg Philharmonic Orchestra, conducted by Fritz Gartz; Waltz, Die Pesther (Lanner); Boston, Vineta Glocken (Lindsay-Thiemer); Rocco Gavotte (Johann Strauss); Waltz, Schatzmeister (Ziehrer); Galop, Bruder lauf (Lanner); Polka, Tick Tack (Johann Strauss); Quadrille, Karneval-Spektakel (Johann Strauss); Rheinländer, Heinerle (Fall); Traumwalzer from Der Feldprediger (Müllöcker); Rocco Gavotte (Meyer-Helmund); Polka-Mazurka, Ein Herz ein Sinn (Johann Strauss); Mazurka, La Tzigane (Ganne); Galop, In Sans und Braus (Müllöcker); Washington Post March (Souza); Waltz, Herbstrosen (Jos. Strauss); Quadrille from Orpheus in the Underworld (Offenbach); Galop, Ulaentanfare (Bohm).

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—11.30 a.m., Concert by the Königsberg Opera House Orchestra: Overture, Maritana (Wallace); Waltz, Myrtenblüten (Joh. Strauss); Dolorosa (Lindemann); Offenbachiana (Conradi); Overture, Das Veilchenmädle (Hellmesberger); Waltz, Lustiges Wien (Meisel); Müllöcker Potpourri; Havanisches Ständchen (Zimmer); Banditen-Galop (Joh. Strauss). 1.5 (from Königsberg). Gramophone Concert of Operetta Music: Melodies from Der lustige Krieg (Strauss); Overture, Orpheus in the Underworld (Offenbach); Overture, Die schöne Galathee (Suppé); Melodies from The Bird Fancier (Zeller); Potpourri of Airs from Der Betselstudent (Müllöcker); Selection from The Geisha (Jones); Melodies from Der liebe Augustin (Fall); Melodies from The Gipsy Princess (Kálmán); Selection from The Merry Widow (Lehar). 3.30, Programme for Children. 4.0, Concert by the Little Station Orchestra, conducted by Eugen Wilcken: Overture, Carnival (Glazanov); Scherzo (Borodin); Nocturne (Borodin); Suite from Sleeping Beauty (Tchaikovsky); Overture His Life for the Czar (Glinka); Over-

ture, Phèdre (Massenet); Suite from L'Arlesienne (Bizet); Overture, The Hermit's Bell (Maillart). 5.45, Review of German Periodicals. 6.15, Agricultural Prices. 6.30, Talk for Farmers. 7.0, Talk: The German Radio Exhibition of 1932. 7.30, Talk on Karl Simrock, the Translator of the Old German Sagas into Modern German. 7.55, Weather Forecast. 8.0, Concert of Military Music: March on Themes from the Huguenots (Meyerbeer); Festival Overture (Lortzing); Wanderlied (Schumann); March from A Wedding Day on Troidhagen (Grieg); Selection from The Tales of Hoffmann (Offenbach); Fantasia on Four German Songs (Schmidt); Potpourri of Old Historic Marches from Many Lands (arr. Boettge); March of the Holstein Regiment (arr. Rossberg); March, Grosse Zeit, neue Zeit (Grase); Kurbrandenburg Marsch (Zimmer); Marsch zum Fest der Weissen Rose (Graf von Redern); March (Saro) Pepitmarsch (Neumann); March (Piepke); Radetzky-Marsch (Joh. Strauss). In the interval, at 9.0 (approx.), News from Berlin (Witzleben). 10.10 (approx.), Weather Forecast, News, and Sports Review.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—7.40 a.m., Variety Music on Gramophone Records, by the Catholic Radio Society (K.R.O.). 8.55 to 9.40, Interval. 9.40 to 10.40, Programme of the Christian Radio Society (N.C.R.V.). 9.40, Popular Music on Gramophone Records. 9.55, Programme for Invalids. 10.25, Light Music on Gramophone Records. 10.40 to 1.40 p.m., K.R.O. Programme. 10.40, Gramophone Records of Variety Music. 11.10, Religious Address. 11.40, Police Notes. 11.55, Orchestral Concert, conducted by Johan Gerritsen. 1.40 till Close Down, N.C.R.V. Programme. 1.40, Gramophone Records of Popular Music. 3.10 to 3.40, Interval. 3.40, Programme for Invalids. 4.40, Handicrafts Lesson. 5.25, Concert by the De Lofsten Mixed Choir of Montfoort, conducted by J. Apeldoorn. 6.25, Dressmaking Lesson. 6.40, Literary Talk. 7.10, Police Notes. 7.25, News Bulletin. 7.30, Carillon Recital by the Municipal Carillonneur, relayed from Enschede. 8.40, Talk. 9.10, Concert by the Harlem String Trio: Trio No. 1 (Haydn); Divertimento in B Flat No. 1 (Mozart); Trio in G No. 2 (Beethoven). 10.10, News Bulletin. 10.20, Light Music on Gramophone Records. 11.10 (approx.), Close down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—Programme of the Algemeene Vereniging Radio Omroep (A.V.R.O.). 7.40 a.m., Time Signal. 7.41, Light Music on Gramophone Records. 9.40, Time Signal. 9.41, The Daily Service. 9.55, Popular Music on Gramophone Records. 10.10, Recital by Mme. Greta Sijes (Songs) and Eibert Veen (Pianoforte): Sonata in F for Pianoforte (Mozart); Songs (Schubert): (a) Du bist die Ruh, (b) Erlkönig, (c) Ständchen. 10.40, Light Music on Gramophone Records. 11.10, Recital (contd.): Pianoforte Solo: Sonata in G (Beethoven); Songs (Franz): (a) Willkommen, mein Wald, (b) Die Lotusblume Songs (Wolf): (a) Vorborgenheit, (b) Er ist's. 11.40, Time Signal. 11.41, Light Concert by the Rentmeester Orchestra. Gramophone Records in the Interval. 1.55, Interval. 2.10, Talk. 2.40, Popular Music on Gramophone Records. 3.40, Programme for Hospitals. 4.40, Concert of Light Music by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte. Gramophone Records in the Interval. 6.10, Talk on Sports. 6.40, Concert of Opera Music by the Station Orchestra, conducted by Vincenzo Marini and Members of the Italian Opera: Overture, Semiramis (Rossini); Airs from Lucia di Lammermoor (Donizetti); Airs from Carmen (Bizet); Variety Music on Gramophone Records; The Third Act of Aida (Verdi); The Second Act of Rigoletto (Verdi). 8.55, Light Music on Gramophone Records. 9.10, Programme by the Comedian Harmonists. 9.55, Weather Forecast and General News Bulletin. 10.10, Concert by Ambrose's Blue Lyres and an Argentine Orchestra, relayed from the Palais de Danse, Scheveningen. 11.10, Light Music on Gramophone Records. 11.40, Close down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.15 p.m., Announcements, News Bulletin and Popular Music on Gramophone Records. 7.45, Talk. 10.5, Concert of Gramophone Music.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and HELSINKI, 368.1 metres.—6.15 p.m., Concert by the Station Orchestra: Overture, Fra Diavolo (Auber);

Frühlingstimmen (Strauss); Secret d'amour (Larento); Festpolonaise (Svendson). 6.45, Talk. 7.10, Clarinet Solos by Cosimo Sgobba. 7.30, The Bear—Farce (Tchekov). 8.5, Concert by the Station Orchestra. 8.45, News in Finnish and Swedish.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Records of Dajos Bela and his Orchestra: Overture, Poet and Peasant (Suppé); Waltz from A Waltz Dream (Oscar Strauss); Selection from Samson and Delilah (Saint-Saëns); Dance of the Hours from La Gioconda (Ponchielli); Descriptive Piece, Tee bei Maikäfers (Noack); Dance Intermezzo, Puppe und Hampelmänn (Siede); Selection from Morgen geht's uns gut (Benatzky); Potpourri, Ufaton Bomben (Borchert); Paso doble (Ricardo). 12 Noon, Concert from Frankfurt. 1.15 p.m., Weather, News and Time Signal. 1.30, Concert, conducted by Eysoldt: Overture, Der Improvisator (d'Albert); Selection from La campana sommersa (Respighi); Waltz, Marienklänge (Strauss); Intermezzo, Die launische Yvette (Schmalstich); Russian Impression, Black Eyes (Ferraris); Potpourri, Lehariana (Geiger). 2.30, Sponsored Gramophone Concert. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Reading of Unpublished Poems by Goswin Gat. 4.40, Review of Books. 5.0, Concert, conducted by Eysoldt; Slav March (Tchaikovsky); Overture, Das Nachtlager in Granada (Kreutzer); Selection from Madame Butterfly (Puccini); Intermezzo from Nalla (Delibes); Suite, Reminiscences of Cairo (Armandola); March Intermezzo, Schritte im Zweivierteltakt (Kockert). 6.20, Reading. 6.45, Weather, Time, Economic and Sports Notes. 7.0, Talk: Modern Youth. 7.20, Topical Talk. 7.30, Talk on Industrial Policy. 7.55, First General News. 8.0, Orchestral Concert, conducted by Kühn: March, Mit Vollgas voran (Caro); Waltz, Junge Mädchen tanzen gern (Eysler); Divertissement from Das Scherwengestück (Krenek); Intermezzo, Polospiele (Fetras); Waltz, Ins Zentrum (Johann Strauss); March from The Dollar Princess (Fall); Nürburgring—Oratorio (Hans Ebert); Rngly (Honegger); Overture, Neues vom Tage (Hindemith). 10.5, News and Sports Notes. 10.20, Concert from the Bayerischen Hof, Södingen. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW.; and DRESDEN, 319 metres.—6.0 p.m., Talk on Hygiene: Spas and Exercise. 6.15, Talk on Taxation. 6.30, Dialogue with Mrs. Grundy. 6.50, Programme to be announced. 7.0, Talk: The Saxon Industrial Schools during the Crisis. 7.30, Songs to the Lute, by Gretel Reinicke; Mädchenlied and Warnung (Josef Ziegler); Der Hebe Halmennann (Heinrich Albert); Folk Song, Der Postknecht; Folk Song, Minter Metz bei Paris in Chalons. Die drei Mädels vom Rhein (Weckerling-Andersen); Der schuncke Knabe (Armin Knab); Krampambilli die Reben (von Wolzogen); Philosphische Betrachtung über die Ideale (Bendix); Das braune Maidelein (Hannes Ruch); Der Sempel (Hannes Ruch). 8.15, Des Lebens Überfluss—Play in Four Scenes, adapted from Ludwig Tieck's Story by Dr. Martin Kunath. 9.10, Handel Concert by the Leipzig Symphony Orchestra, conducted by Dr. Alfred Rahwes. Soloists, Kurt Wichmann (Bass) and Johannes Piersig (Organ). Organ Concerto in D minor, Op. 4, No. 10; Aria from Semele; Concerto in F, in Two Movements; Hunting Song from Allegro e Pensieroso; Concerto Grosso in G minor, Op. 6, No. 6; Organ Concerto in A, Op. 7, No. 2. 10.5, News and Silent Night.

LINZ.—See Vienna.

LWOW

381 metres; 16 kW.—6.20 p.m., See Warsaw. 7.15, Miscellaneous Items. 9.20, See Cracow. 9.50, See Warsaw. 10.0, Song Recital by Mme. Stanisława Korwin-Szymanowska (Soprano). 10.25, Dance Music from Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert. 7.30 Radio Gazette for Lyons and the South-East. 8.35, Concert of Light Music.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices, and Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal, and Political Review. 11.15 (approx.), Song Recital by Antonio Piatoste: Aria from Don Carlos (Verdi); Aria from Salvatore Rosa (Gomez); Song from Simone Boccanegra (Verdi); Song: Carnavalada (Alvarez Garcia); Canción del gitano (Alonso); After the Recital, Municipal Band Concert, conducted by Villa, relayed from Rosales. 1.15 a.m. (Friday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—8.30 p.m., See Brno. 9.0, Concert of Dance Music. 10.0, See Prague. 10.15, Programme Announcements. 10.20, See Prague.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m.; Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Review of the Week and Answers to Correspondents in English. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—5.0 p.m., Orchestral Concert: Overture, The Naiads (Bennett); Marienwalzer (Bayer); Fest im Onomereich (Witzborn); Hymn to St. Cecilia (Gounod); Selection from A Midsummer Night's Dream (Mendelssohn); Potpourri of German Marches (Freitag). 6.15, Talk: Alpine Landscapes. 6.35 (from Nürnberg), Agricultural Talk. 6.55, Time, Weather and Agricultural Notes. 7.5, Song Recital. 7.40, Talk: The Psychology of Peoples (II). 8.0, Concert by the Station Orchestra, conducted by Karl List: Overture, Rosamunde (Schubert); Andante cantabile from the First Symphony (Beethoven); Selection from Il Trovatore (Verdi); Emperor Waltz (Joh. Strauss); Polonaise in E (Liszt); Prelude to a Puppet Play (Gal); Slav Dance (Dvorak); In the Hall of the Mountain King, from the Peer Gynt Suite (Grieg); 9.15, Midsummer Night—a Poem for Music by Anton Schnack (Music by Edmund Nick). 10.20, Time, Weather, News and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.5 metres; Hamar, 500 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—5.30 p.m., Concert by the Maudr Trio of Prague. 6.0, Talk in French. 6.30, Divine Service. 7.0, Announcements. 7.15, Weather and News. 7.30, Song Recital by Carsten Orner: Dichterihebe (Schumann). 8.0, Time Signal. 8.1, Agricultural Report. 8.30, Orchestral Concert, conducted by Hugo Kramm: Soloists, Rolf Schüttauf (Flute) and Oscar Harlem (Harp): Overture, Alceste (Gluck); Concerto for Flute, Harp, and Orchestra (Mozart); Symphony in B Flat, No. 4 (Beethoven). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Talk: On the French Roads without any Money.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Popular Music on Gramophone Records. 6.0, Programme for Children. 6.30 to 8.0, Interval. 8.0, Announcements, Agricultural Notes and Giornale Radio. 8.20, Popular Music on Gramophone Records. In an interval at 8.30, Time Signal and Announcements. 8.45, Concert of Light Music. In the interval: Theatre Notes. After the Concert: Literary Notes followed by Italian Songs and Folklore. 10.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE, 1,445.7 metres, 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)—5.45 p.m., Talk on the Theatre. 7.0, Le Journal Paris. 8.20, Weather Report. 8.30, Gramophone Concert. Part I, Wagner Programme: Overture, Tannhäuser; O Star of Eve, from Tannhäuser; Grand March, from Tannhäuser; Elsa's Dream, from Lohengrin; Duet from and Prelude to, Act III of Lohengrin. Part II, Light Music: Selection from Martha (Flotow); Song from Les Noces de Jeannette (Mussé); Serenade No. 2 (Toselli); L'Heure exquise (Hahn); Wienermädln (Ziehrer); Intermezzo (Katselberg); French Serenade (Leoncavallo); Waltz, Soirée d'été (Waldteufel); Melody (Eblinger); Jeannine (Gilbert); My melancholy baby (Burnett); Sur une boîte de bonbons (Revers). 10.0 (approx.), Close Down.

PARIS

POSTE-PARISIEN; 328.2 metres; 60 kW.—12 Noon to 2.0 p.m., News and Light Music on Gramophone Records. 7.0, News Bulletin and Press Review. 7.5, Sponsored Talk. 7.15, Popular Music on Gramophone Records. 8.30, Radio Journal and News Bulletin. 8.45, Concert. Soloist, M. Baldous (Songs): Songs, (a) Air (Gretchaninov), (b) Leporello's Aria from Don Giovanni (Mozart), (c) Le Cor (Félicier) and (d) Ronde d'amour (Chaminade); Overture, Paragraph Three (Suppé); Waltz (Rachmaninov); Gitanerita (Infante); Divertimento for Violin, Viola and Cello (Mozart); Selection from Les Mousquetaires de la Reine (Halévy); Gavotte and Minuet from Manon (Massenet); Selection from Frederica (Lehar); Ballet Music from La Plus Forte (Leroux); Selection from The Crown Diamonds (Auber); A Night in Lisbon (Saint-Saëns); Night in the Bay of Palma (Turina); Castilian Dance (Turina); March, Salut à Vienne (Ganne). 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Opera Music on Gramophone Records. 8.0, Weather and Press Review. 12 Noon, Protestant Address: The Vocation of the Deacons. 12.30 p.m., Gramophone Records for Children: Cinderella's Wedding Procession, Dialogue from Le Gora (Courtelme); Fête d'Enfants; Ma poupée chérie (de Séverac); Recitation: The Wolf and the Lamb (La Fontaine); Chez l'oiseleur (Bergeret); Le Super Siffleur (Bergeret); Reading from Les Malheurs de Sophie (de Ségur); Parade des petits Lutins; Reading, La Chèvre de M. Séguin (Daudet); Puss in Boots; French Children's Choruses: Le beau bébé (Dalcroze); Mother Goose Suite (Ravel). In the intervals, at 1.0 p.m., Exchange Quotations, News and Weather Forecast, and at 1.30 and 2.0, Exchange Quotations. 3.45, Exchange and Market Prices. 4.30, Concert relayed from the American Conservatoire, Fontainebleau. 5.30, Market Prices, Weather, Agricultural Report, Talk and Racing Results. 7.0, Rabaud Concert on Gramophone Records: Eclogue, Four Airs from Marouf, Divertissement on Russian Songs. 7.45, Commercial Prices and News. 8.0, Une petite Médaille—Comedy (Causade-Dorival). 8.30, News, Sports Results, and Weather Forecast. 8.40, Review by Dominique Bonnaud. 8.45, Concert of Chamber Music on Gramophone Records. In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by W8XK on 48.80 metres and 25.27 metres.—9.0 p.m., Teabery Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, KDKA Artist Bulletin. 9.47, Programme Announcements. 9.50, David Lawrence Dispatch. 9.55, Teabery Baseball Scores. 10.0, Silhouettes. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News Today. 11.6, Teabery Sport Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, KDKA Kiddies' Klub. 11.30, Westinghouse Musical Maids. 11.45 to 1.0 a.m. (Friday), New York Relay. 11.45, Today's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Royal Vagabonds. 12.30, The Stebbins Boys. 12.45, Gene Austin (Tenor), with Orchestra. 1.0, Time Signal and Samuel Di Priuio (Tenor). 1.15, Rin Tin Tin Thrillers. 1.30, School Room Frolics, from New York. 2.30, Thompsons Corners. 3.0 to 4.0, New York Relay. 3.0, The Country Doctor. 3.15, Absorbine, Jr., Footnotes. 3.30, Object Matrimony. 3.45, Jane Frohman and her Band. 4.0, Time Signal. 4.1, Teabery Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Sports in French Manner (Diane Laval). 4.30, Jack Pettis and his Orchestra. 5.0, Clyde Morse and his Dance Orchestra, from New York. 5.30, Time Signal and Good Night.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.0 p.m., Agricultural Talk. 7.15, Announcements and News Bulletin. 7.35, See Warsaw. 7.45, Popular Music on Gramophone Records. 7.58, Time Signal. 8.0, See Warsaw. 9.20, Programme relayed from Cracow. 9.50, See Warsaw. 9.55, Time Signal, Sports Notes, and Police Report. 10.15 (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—3.55 p.m., Market Prices. 5.50, Talk by M. Vobornik. 6.5, Agricultural Report. 6.15, Programme for Workers. 6.25, German Transmission: News and Agricultural Report. 7.0, Concert by a Military Band, relayed from Stromovka: Conductor, Pesta: Overture (Dvorak); Selection from In the Well (Blodek); Potpourri of Smetana Melodies; Melody (Maly). 8.0, Piano-forte Recital by Roderich Bass: Ballad in G Minor (Chopin); Waltz in A Flat (Chopin); Waltz in C Minor (Chopin); Dance of the Sprites, Op. 85 (Dvorak); Melody from The Bartered Bride (Smetana); Polka from Peter Simple (Nedbal); Melody (Bass); Etude de Concert (Bass); Valse de Concert in D Flat (Bass). 8.30, See Brno. 9.0, Time Signal and News Bulletin. 9.5 (approx.), See Moravska-Ostrava. 10.0, Time, News, and Sports Notes. 10.15, Miscellaneous Items, Theatre Notes, and Programme Announcements. 10.20, Organ Recital by Professor Wiedermann, relayed from the Bersek Cinema: La Cathédrale engloutie (Debussy); Procession nocturne (Debussy); Minuet (Debussy); Arabesque (Debussy); Scheherazade (Schumann); Matrosenlied (Schumann); Lullaby (Schumann); Waltz, Tales from the Vienna Woods (Johann Strauss).

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Lausanne), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5, Variety Items. 1.20 (from Lausanne), Popular Music on Gramophone Records. 1.45 to 5.0, Interval. 5.0,

AUGUST 18th

THURSDAY

continued.

Time Signal from Neuchâtel Observatory. 5.1, Concert by a String Orchestra, conducted by M. R. Echenard. 6.45 (from Lausanne), Interlude. 6.15, Concert (contd.). 6.45, Programme for Children. 7.0, Weather Forecast. 7.1, Film Review. 7.25 (from Lausanne), Report of the Swiss Peasants' Union. 7.30 (from Lausanne), Theatre Notes. 7.55, News Bulletin. 8.0 (from Geneva), Dramatic Programme. 8.30, Concert of Serenades by the Station Orchestra, conducted by Ferdinand Closset: Soloist, Mlle. Hermine Graf (Songs). 10.0, News Bulletin and Weather Forecast. 10.15 (approx.), Close Down.

RIGA

525 metres; 15 kW.—7.30 p.m., Symphony Concert. 9.0 (in an interval), Weather Forecast. 9.30, Dance Music. 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 441 metres; 50 kW. Relayed by Naples, 319 metres, and 2RO, 80 metres.—8.15 to 8.30 a.m., Giornale Radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Variety Music. 1.0 to 2.15, Instrumental Concert: March of the Tin Soldiers (Pierné); English Waltz (Ibanez-Chapellier); Selection from La danza da Milù (Cuscina); Deutsches Mädchen und Spanisch Wein (Reisfeld); Syncopated Music for Piano-forte: Festa notturna (Pietri); Serenata capricciosa (Ranzato); Selection from Le maschere (Mascagni); Czardas (Michiels). In the intervals, at 1.15, Giornale Radio; and at 1.30, Time and Announcements. 5.0, Exchange Quotations. 5.5 (Naples), Programme for Children. 5.25, Giornale Radio and Announcements. 5.30, Song Recital by Velia Capuano (Soprano): Aria from I Masnadieri (Verdi); Aria from The Huguenots (Meyerbeer); Habanera, Pepita (Fuentes); Ballad, Cavallo bianco (Billi). 5.45, Variety Concert: Anita's Dance (Grieg); Selection from The Dollar Princess (Fall); Seguidilla (Frontini); Burlesque (Culotta); Brown as Cocoa (Dauber). 7.10 (Naples), Shipping and Sports Notes. 7.15, Agricultural Notes, Announcements, and Giornale Radio. 8.0, Time, Announcements, and Gramophone Records of Variety Music. 8.30, Talk for Housewives, Sports Notes, Announcements and Tourist Report. 9.0, Manon—Opera (Massenet), relayed from Leghorn. Talk and Notes on Art in the Interval. News after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—9.0 p.m., Musical Programme, from New York. 9.30, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15, Musical Programme, from New York. 10.30, Bosco Children's Programme. 10.45, Swanee Serenaders, from New York. 11.0, Joe and Eddie. 11.15, Nimble Fingers. 11.30, New Kenmore Orchestra. 11.55, Baseball Scores. 12 Midnight, Cost of State Government Series. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Friday), Chaudi, the Magician. 12.30 to 4.15, New York Relay. 12.30, Ray Perkins (Barbasoloid). 12.45, The Goldbergs. 1.0, Fleischman Hour. 2.0, Big Six of the Air. 2.30, G. Washington Coffee Concert Orchestra. 3.0, Lucky Strike Dance Hour. 4.0, Russ Columbo and his Orchestra. 4.15, Floyd Walter (Organist). 4.45 till Close Down, New York Relay. 4.45, Paul White-man's Orchestra. 5.0, Ralph Kirberry (Dream Singer). 5.5, Hotel New Yorker Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESSENDER

BEROMUNSTER, 459 metres, 60 kW.; BASEL, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Songs by Actors and Film Stars, on Gramophone Records. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30 (from Berne), Programme for Women: Practical Hints for Preserving Fruit. 4.0, Variety Concert on Gramophone Records. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Basle), Talk: Art and Canonisation. 7.0, Time Signal, Weather Forecast, and Traffic Report. 7.15 (from Basle), Italian Lesson. 8.0 (from Basle), Franck and Arensky Concert by the Basle Trio. Edouard Henneberger (Piano-forte), Karl Schwallier (Violin), and Fritz Abel (Cello). Introductory Talk by Otto Maag. 9.15, Reading by Rita Eckenstein. 9.30, Weather Forecast and News Bulletin. 9.45, Concert by the Station Orchestra, conducted by E. Gilbert. 10.30, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres;

Hörby, 257 metres; Motala, 1,348 metres; Osterund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Divine Service. 5.30, Light Music on Gramophone Records. 6.30, Talk. 7.0, Recital of Swedish Folk Songs by Lisa Thunell. 7.15, Weather and News. 7.30, Talk on Foreign Politics. 7.50, Orchestral Concert: Overture, The Hebrides (Mendelssohn); Concerto No. 1 in G Minor for Violin and Orchestra (Briani); Suite for Chamber Orchestra, The Flute of Saissonis (Graener); Waltz from Der Rosenkavalier (Richard Strauss); L'Arlesienne, Suite No. 1 (Bizet); Rhapsody, España (Chabrier). 9.15, Talk. 9.45, Weather and News. 10.0, Concert of Light Music: Scherzo in B flat; Selection from The Magic Flute (Mozart); Ave Maria (Bach-Gounod); Waltz, Frühlingsstimmen (Joh. Strauss); Tango (Lesso-Valerio); Selection from The Flower of Hawaii (Abraham). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light Music. 12.45 p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Concert, relayed from Bordeaux-Lafayette. 1.50, Light Music on Gramophone Records. 2.0, Programme for Children. 3.0 to 4.0, Interval. 4.0, Popular Music on Gramophone Records. 4.15, Elocution Lesson in French. 4.30, Dance Music on Gramophone Records. 5.0, Concert by the Station Orchestra, conducted by M. Roskam; Soloist: M. Grégoire (Violin): Selection from Jean de Paris (Boieldieu); Waltz, Pomone (Waldteufel); Violin Solo: Czardas (Monti); Selections from Monsieur Beaucaire (Messager); Suite, Mascara (Lacôme). 6.0, Talk in German on Alsatian Literature: Y. Fischeit—1. 6.15, French Lesson in German. 6.30, Concert of Chamber Music by M. Grégoire (First Violin), Paul Kaufmann (Second Violin), M. Briquetteur (Viola), M. Roskam (Cello), and M. Pogoda (Piano-forte): Quartet for Strings, No. 64 (Haydn); Variations on a Polish Song for Piano-forte (Lidov): Quintet for String Quartet and Piano-forte (Schumann). 7.30, Time Signal. 8.32, News in French and German. 7.45, L'Étincelle—Play (Pailleron). 9.0, Orchestral Concert, relayed from Thionville: Spanish March, El Matador (Andrieu); Waltz, La Hussarde (Ganne); Overture, Dans la Bruyère (Govaert); Polka for Two Cornets, Les deux Cousins (Bouchet); Fantasia, Mécène (Jonkers); Gavotte, Charmante aventure (Vaulet); Waltz, Très Jolie (Waldteufel); March, Concorde (Rousseau); Selection from Die Puppenfee (Bayer); Overture, Minerva (Martin); Flute d'Or, for Clarinet Ensemble (Bouillon); Selection from The Drum Major's Daughter (Offenbach); Overture, Les Saltimbanques (Ganne); March, Sambre et Meuse (Rauski).—10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 300.5 metres, 60 kW.; and FREIBURG, 570 metres.—10.0 a.m., Soprano Song Recital by Lotte Münch-Krupkat. 10.20, Piano-forte Recital by Alexander Laszlo. 11.0, Time, News and Weather. 11.15, Sponsored Concert. 11.55, Weather Report. 12 Noon, Gramophone Concert of Classical Music. 1.15 p.m., Time and News. 1.30, Concert from Langenberg. 2.0, Sponsored Concert. 2.30 to 3.0, Interval. 3.0, See Frankfurt. 4.0, Concert, relayed from Wildbad: Overture, William Tell (Rossini); Meditation for Violin and Orchestra from Thaïs (Massenet); Movement from the Concerto for Cello and Orchestra (Saint-Saëns); Nocturne for French Horn, Harp and Orchestra (Oberthur); Der Leuz für Trumpet and Orchestra (Hildach); Zeugenspiele für Xylophone and Orchestra (Heinemann); Overture, Mignon (Thomas). 5.0, Concert relayed from Neuwahr: March, Adler-Orn Lille (Blankenburg); Rakoczy Overture (Kéler-Béla); Waltz, Mon rêve (Waldteufel); Selection from The Merry Widow (Lehar); Two Hungarian Dances, Nos. 5 and 6 (Brahms); Florentine March (Puccini). 6.15, Time and Weather. 6.25, Astronomical Talk. 6.50, See Frankfurt. 7.15, Time, Weather and Agricultural Report. 7.30, Concert by the Stuttgart Philharmonic Orchestra: Overture, Figaro (Mozart); Mazurka (Liszt); Caucasian Suite, Iveria (Ippolitov-Ivanov); Italian Caprice (Tchaikovsky); Invitation to the Dance (Weber); Overture, Die Fledermans (Joh. Strauss). 8.45, Monsieur Lamberthier—Play in Three Acts (Louis Verneuil, Translation by Robert Blum). 10.0, Sonata Op. 9 in A for Violin and Piano-forte (Carl Nielsen); by Otto Fessel and Artur Haagen. 10.30, Time, News and Silent Night for Distant Reception.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Picture Transmission. 5.15, Exchange Quotations. 5.30, Military Band Music. 5.45, Concert of Classical Music: Marche aux flambeaux (Meyerbeer); Allegretto from the Eighth Symphony (Beethoven); Jubelouverture (Weber); Selection from Mirella (Gounod); Selection from Fortunio (Messager); Selection from Madame Butterfly (Puccini). 6.15, Accordion Solos. 6.30, Exchange Quotations and Racing Re-

sults. 6.45, Dance Music. 7.0, Recital of Songs. 7.15, Music by an Argentine Orchestra. 7.30, Programme Announcements. 7.35, News Bulletin. 7.45, Concert by a Viennese Orchestra. 8.15, Operetta Music: Airs from Le Roi Pausole (Honegger) and Mariska (Cazes). 8.30, Military Music. 8.45, Light Orchestral Music. 9.0, Extracts from Manon—Opera (Massenet); 10.0, Light Orchestral Music, followed by Sound Film Music. 10.30, North African News. 10.45, Operetta Music: Airs from Les Mousquetaires au Convent (Varney) and The Drum Major's Daughter (Offenbach). 11.0, Instrumental Music. 11.15, Spanish Songs. 11.30, Orchestral Music: Spanish Caprice (Rimsky-Korsakov); Nocturnes (Debussy). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.5, Quintet Concert: San Remo (Moletti); Maipo (Arolas); Puppe and Hampelmann (Siede); Très jolie (Waldteufel); Spring Song (Mendelssohn); Potpourri of Mozart Music (Urbach); Fantasia interrotta (De Micheli); Melody (Fall). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.5 p.m., Concert: Overture, Masaniello (Auber); Popular Viennese Songs (Lehar); Minuet (Rinaldi). 7.30, Time and Announcements. 7.35, Variety Music on Gramophone Records. 8.0, Giornale Radio and Weather. 8.20, Sponsored Talk for Housewives.—8.30, I Vespri siciliani (Sicilian Vespers)—Opera in Five Acts (Verdi). In the intervals, Talk and Theatre Notes. Giornale Radio after the Opera.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in French. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—5.0 p.m., Tannhäuser—Opera in Three Acts (Wagner), relayed from the Prince Regent Theatre, Munich—First Act. 6.10, Talk: Wagner at the Tannhäuser Period. 6.40, Second Act of Tannhäuser, relayed from Munich. 7.55, Time, Weather, and Programme Announcements. 8.5, Talk: Richard Wagner in Paris. 8.35, Third Act of Tannhäuser, relayed from Munich. 9.30, News Bulletin. 9.45, Concert of Light Orchestral Music.

WARSAW

1.411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Press Review. 12.20 to 12.40, Interval. 12.40, Weather Report. 12.45, Gramophone Records of Light Music. 1.25 to 1.35, Interval. 1.35, Gramophone Records (contd.). 2.10 to 3.0, Interval. 3.0, Economic Report. 3.10, Light Music on Gramophone Records. 3.30, News Bulletin. 3.35, Popular Gramophone Music. 4.35, News Bulletin. 4.40, Review of New Books. 5.0, Concert: "R. Mieski (Piano-forte), Eugen Narozny (Baritone), and L. Urstein (Piano-forte). Piano-forte Solos: (a) Prelude (Labunski), (b) Impromptu (Labunski), (c) Mazurka (Szymonovsky), (d) Moment musical (Mieczki); Baritone Solos: (a) O Star of Eve, from Tannhäuser (Wagner), (b) Toreador's Song from Carmen (Bizet); Piano-forte Solos: (a) Allegro barbaro (Béla-Bartok), (b) Tango (Albeniz-Godovsky), (c) Navarra (Albeniz); March from The Love for the Three Oranges (Prokofiev); Baritone Solos (Monizko): (a) Aria from The Haunted Castle, (b) Song; Piano-forte Solos from the Suites in A minor Op. 10, and in C minor Op. 25 (Chopin). 6.0, Talk, relayed from Wilno. 6.20, Dance Music from the Cristal Restaurant. 7.15, Miscellaneous Items. 7.35, Radio Journal. 7.45, Agricultural Report. 7.55, Programme Announcements. 8.0, Concert by the Warsaw Philharmonic Orchestra, conducted by S. Nawrot. Soloist: Iga Gardia (Songs). L. Urstein at the Piano-forte. Mazurka No. 1, Op. 38 (Noskowski); Overture, Felsenmühle (Reissiger); Waltz Fantasia (Grossman); Songs: (a) Tango (May-Krystjan); (b) Pasodoble (Salter-Krystjan); Romantic Suite (Armandola); Waltz, Eliotonia (Swenson); Two Songs (Krupinski); Polka from Frauenfresser (Eysler); Gavotte, Der Weg zum Herzen (Lincke); Minuet (von Blon); Czardas from Der Geist des Wojewoden (Grossman); March of the Gladiators (Puccini). 9.20, See Cracow. 9.50, Radio Journal. 9.55, Weather Report. 10.0, Dance Music. 10.40, Sports Notes. 10.50, Dance Music (contd.).

WILNO

563 metres; 16 kW.—7.15 p.m., Talk: Before the Footlights. 7.35, See Warsaw. 7.45, Programme Notes and Miscellaneous Announcements. 8.0, See Warsaw. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

FRIDAY

AUGUST THE NINETEENTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** —Orchestral concert. Organ recital. Gramophone recital. Orchestral programme. Vaudeville concert. Dance music.
 - LONDON REGIONAL** —Organ recital. Orchestral programme. Promenade concert from Queen's Hall. Dance music.
 - MIDLAND REGIONAL** —Organ music. Orchestral programme. "Concord Follies," presented by Charles Wade, from the Pavilion, Jephson Gardens, Leamington Spa. Song recital.
 - NORTH REGIONAL** —Orchestral concert. Organ music. A Musical Comedy programme. London Regional programme.
 - WEST REGIONAL** —National programme. "Ghouls," a queer Bristol traffic of a Century Ago," talk by Mr. F. C. Jones. Programme of Musical Gems for the Old Folks. Recital of gramophone records.
 - SCOTTISH REGIONAL** —Organ recital. "Frae a' the Airts," a relay from the Salkirk Arms, Kirkcubright. National programme.
 - BELFAST** —Organ recital—International programme No. 5. Light music. Orchestral concert. Instrumental concert.
- ### ABROAD
- BERO-MUNSTER BRUSSELS (No. 2)** —Yodelling recital, with Zither and Accordion music. Operetta: "The Dollar Princess" (Fall).
 - BUCHAREST COPENHAGEN PARIS (Eiffel Tower)** —Recital on two pianofortes. Relay of opening celebrations of Catholic Congress. Opera: "Marouf" (Rabaud), relayed from the Opéra, Paris.

ALGIERS
863.3 metres; 13 kW.—7.0 p.m., Exchange Quotations. 7.10, Shipping Notes and Weather Forecast. 7.15, Agricultural Talk. 7.30, Songs from Operettas. 7.55, News and Time Signal. 8.0, Recitations from Marius (Pagnot). 8.15, Massenet Concert.

BARCELONA
RADIO-BARCELONA, Call EAJI, 349 metres; 8 kW.—8.0 p.m., Trio Concert: Selection from The Barber of Seville (Rossini); Berceuse (Delmas); Entr'acte (Chillemont); Schmetterlingspiele (Leopold). 8.30, Exchange Quotations, Request Gramophone Records and Press Review. 10.0, Chimes and Weather Forecast, followed by a Few Words dedicated to the Families of Seamen, and Market Prices. 10.10, Concert of Sardanas. 11.0, Readings from the Novels of José Maria de Pereda. 11.15, Orchestral Music: Selection from The Last Waltz (O. Strauss); Escena española (Diez Cepeda). 11.30, Dance Music. 12.30 a.m. (Saturday), Popular Music on Gramophone Records. 1.0 (approx.), Close Down.

BASLE.—See Schweizerischer Landessender.
BELGRADE
430.4 metres; 2.5 kW.—8.0 p.m., Dance Music from the Gradjevinska Kasina Restaurant. 8.30, Violin Recital. 9.15, Song Recital by Zdenka Ditetova; Songs by Dvorak, Krieka, Stepan and Kovarovic. 9.45, Orchestral Concert. 10.30, News, and Cigány Music from the Potrosacka Zadruga Restaurant.

BERLIN
KONIGS WUSTERHAUSEN; 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.2 p.m., Gramophone Concert; Symphony No. 4 in D (Haydn); Duet in A for Piano-forte and Violin (Schubert), followed by Weather for Farmers. 12.55, Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of New Dance Music relayed from Berlin (Witzleben). 3.0, Talk for Girls. 3.30, Weather and Exchange. 3.40, Programme for Children. 4.0, Educational Talk. 4.30, Concert from Leipzig. 5.30, Talk: Difficulties in the English Language, with Illustrations. 6.0, Talk: The Harpsichord. 6.30, Talk: The Gold Standard. 6.55, Weather for Farmers. 7.0, Talk: The Ninth Radio Exhibition. 7.15, Talk for Doctors. 7.35, Talk on the Introduction of Machines into Banks, followed by Weather for Farmers. 8.0, See Hamburg. 8.45, News and Sports Notes. 9.0, See Langenberg. 10.10, Weather, News and Sports Notes. 10.15 (approx.), Dance Music from Berlin (Witzleben). 12.30 a.m. (Saturday), Close Down.

BERLIN
WITZLEBEN, 419.5 metres; 1.5 kW.—4.30 p.m., Orchestral Concert from the Radio Exhibition; March, Under the Star-spangled Banner (Souza); Overture, Euryanthe (Weber); Waltz, The Blue Danube (Joh. Strauss); In a Monastery Garden (Ketelbey); 5.0, Programme for Children. 5.20, Review of New Books. 5.30, Concert (contd.); Overture, The Merry Wives of Windsor (Nicolaï); Valse romantique (Heinecke); Viennese Folk Music (Kornzak); Heilenmarsch (Lübbert); Erzherzog-Albrecht-Marsch (Kornzak). 6.30, With the Microphone through the Mark-Nauen. 6.50, Hints for the Week-end. 6.55, The Witzleben Station informs its Listeners. 7.0, Topical Talk. 7.10, Talk on the German Language. 7.35, Talk on Economics. 8.0, Concert by the Berlin Symphony Orchestra, relayed from the Radio Exhibition; Overture, The Departure (E. d'Albert); Ballet Music from Carmen (Bizet); Scherzo and Wedding March from A Midsummer Night's Dream (Mendelssohn); Spanish Caprice (Rimsky-Korsakov); Two Norwegian Dances (Grieg); Three Pieces from The Damnation of Faust (Berlioz); (a) Firefly Dance, (b) Sylph Dance, (c) Hungarian March; Overture, The Land of Smiles (Lehar); Ballet Suite from Sylvia (Delibes); Selection from La Traviata (Verdi); Valse caprice (Rubinstein); Trot de Cavalerie (Rubinstein); Waltz, Roses from the South (Joh. Strauss). In the interval at 9.0, News and Sports Notes. 10.15 (approx.), Dance Music. 12.30 a.m. (Saturday), Close Down.

BERNE.—See Schweizerischer Landessender.
BEROMUNSTER.—See Schweizerischer Landessender.
BODEN.—See Stockholm.
BODO.—See Oslo.

BORDEAUX-LAFAYETTE
304 metres; 13 kW.—7.30 p.m., News Bulletin. 7.40, Popular Music on Gramophone Records. 8.10, Lottery Results. 8.15, News Bulletin and Weather Forecast. 8.30, See Paris (Eiffel Tower). After the Programme, Amusement Guide and Time Signal.

BRATISLAVA
279 metres; 14 kW.—7.0 p.m., See Prague. 10.15, Programme Announcements and News. 10.20, Relay from the Café Elizabeth.
BREMEN.—See Hamburg.

BRESLAU
325 metres; 1.5 kW., and GLEIWITZ, 253 metres.—6.0 p.m., Walthor von Hollander reads from his own Works. 6.30, Medical

Talk: The Construction and Activity of the Brain. 7.0, Weather for Farmers. 7.2, Orchestral Concert, conducted by Franz Marszalek; Fantasia, Der unsterbliche Verdi (Rhode); Gavotte for Strings (A. Bird); Waltz from Der Freudenführer (Ziehrer); Potpourri, Ukrainisches Echo (Leopold); Two Marches for Wind Instruments (Trojan). 8.0, See Berlin (Witzleben). 10.0, Time and News. 10.25, Talk: Breslau as seen by a West German. 10.45, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO
342 metres; 35 kW.—7.0 p.m., See Prague. 10.15, News Bulletin and Popular Music on Gramophone Records.

BRUSSELS (No. 1)
1,181, 509 metres; 15 kW.—12 Noon, Gramophone Concert of Light Music. 1.0 p.m., Le Journal Parlé. 1.10, Concert (contd.). 5.0, Orchestral Concert conducted by M. Walpot: Marche de l'Industrie (Van Oost); Selection from Phi-Phi (Christiné); Waltz, Donausagen (Ziehrer); Ballet, La Féria (Lacôme); Selection from Les Bavards (Offenbach); Suite printanière (Popy); Valse des fleurs (Ganne). 6.0, Gramophone Records: Air from Hansel and Gretel (Humperdinck); Tarantella, Dance and Finale from La giara (Casella). 6.15, Talk on Talking Pictures. 6.30, Gramophone Concert; Pictures from an Exhibition (Musorgsky-Traavel); Selection from Marina (Arrieta); Viennese Rhapsody (Florent Schmitt). 7.15, Talk on Concision. 7.30, Literary Review. 8.0, Concert by the Station Symphony Orchestra, conducted by M. Kumps: Overture burlesque (Méhul); German Dances (Schubert); Esquisses provençales (Popy); Selection from Le Chemineau (Leroux); Selection from Les trois sultanes (Büsser); Le Pas des Fleurs, from Naïla (Delibes). 8.45, Wireless Talk: Obtaining Good Reception. 9.0, Concert conducted by M. Toussaint de Sutter, relayed from the Kursaal, Ostend. Soloist: Mme. Jeanne Manceau (Songs). Cortège from Déjanire (Saint-Saëns); Overture, Fugul's Cave (Mendelssohn); Andante religioso (Moreaux); Song, Le Solitaire (Saint-Saëns); Selection from Lakkmé (Delibes); Song, The Field-Marshal (Musorgsky); Voix de Printemps (Waldteufel). 10.0 (approx.), International Relay: Last Act of Marouf—Opera (Rabaud), relayed from the Opéra, Paris. Journal Parlé in the interval.

BRUSSELS (No. 2)
N.I.R., 338.2 metres; 15 kW.—Programmes in Flemish.—12 Noon, Orchestral Concert: Soloists: M. Khuner ('Cello) and M. Borgets (Songs); Italian Caprice (Tchaikovsky); Interlude in Old Style (Glazounov); Concerto in D for 'Cello and Orchestra (Haydn); Malborough (Auric); Bourrée fantasque (Chabrier). 1.0, Le Journal Parlé. 1.10, Concert (continued).

Invitation to the Waltz (Weber); Orientale (Cui); Kamarinskaya (Glinka); Songs; Serenade (Elgar); Songs; Ballet (Luigini). 3.0, Orchestral Concert, relayed from the Kursaal, Ostend: Conductor, François Rasse; Soloist: Gabriel Bouillon (Violin); Two Symphonic Movements (De Teye); Spanish Symphony for Violin and Orchestra (Lalo); Symphony No. 2 in D (Beethoven). 5.0, Dance Music from the Kursaal, Ostend. 6.0, Gramophone Records of Religious Music. 6.15, Talk on Felix Timmermans. 6.30, Recital by M. Pitsch ('Cello), and M. Scharrés (Pianoforte); Concertino (Boccherini); Piece (Chausson); Habanera (Jonge); Waltz (Jonge); Sonata (Hellendael); Largo (Bach-Pitsch); Gavotte (Bach); Walter's Prize Song (Wagner); Minnet (Debussy). 7.15, Talk: How to solve the Sand Dune Problem. 7.30, Wireless Review. 8.0, The Dollar Princess—Operetta (Fall)—Concert Version. In the interval, Recitation. After the Programme, Le Journal Parlé and Orchestral Concert from the Ancienne Belgique. 11.0 (approx.), Close Down.

BUCHAREST
394 metres; 12 kW.—4.0 p.m., Concert of Military Music. 5.0, News and Time Signal. 5.10, Concert (contd.). 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records. 7.0, Time Signal. 7.2, Violin Solos by I. Koganov. 7.30, Talk (to be announced). 7.45, Recital on Two Pianofortes by Mmes. Philippide and Czernesky. 8.15, Concert of Dance Music, relayed from Basin Lido. 9.0, News Bulletin.

BUDAPEST
550 metres; 18.5 kW. Programme also relayed on 210 metres from 7.30 p.m. to 12 Midnight.—5.0, Concert by the Simi Kurina Cigány Orchestra. 6.30, Concert by the Berend Orchestra. 7.30, Talk. 8.0, Programme by the Rakoczi Society; Conductor: Denes Sziji; Soloist: Peter Sanek. 9.0, Time Signal, Weather Forecast, Sports Notes, and Racing Results. 9.15, Concert of Hungarian Music by the Royal Hungarian Opera House Orchestra; Conductor: Ernst Dohnanyi; Soloist: Wilhelm Palotai ('Cello); Overture, Csobancz (Erkel); 'Cello Concerto (Dohnanyi); Suite No. 1 (Bartok). 10.30, Light Music by the Toll Cigány Orchestra from the Kovacevics Restaurant.
CASSEL.—See Frankfurt.

COPENHAGEN
281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.2 p.m., Weather Forecast. 12.5, String Ensemble Concert, conducted by Max Skalka, relayed from the Hotel d'Angleterre. 2.0 to 3.0, Interval. 3.0, Orchestral Concert conducted by Walthor Meyer-Radon. Soloist: Ejner Jensen (Songs). Overture, A Midsummer Night's Dream (Mendelssohn); Andante con

moto from Symphony No. 4 in B flat (Gade); Selection from Rigoletto (Verdi); Aragonese (Fallá); Dance from Acuairelas Valencianas (Chavarrí); Polonaise from His Life for the Czar (Glinka); Danish Folk Songs and Melodies; Overture, Phèdre (Massenet); Liebesleid (Kreisler); Alt Wiener Reigen for Strings (O. Strauss); Ballet Music from William Tell (Rossini); Nocturne (Murtucci); Czardas from The Swan Lake (Tchaikovsky); November from The Seasons (Tchaikovsky). 5.0, Programme for Children. 5.40, Exchange and Fish Market Prices. 5.50, Talk in English: The Flying Scotsman. 6.20, German Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.20, Talk on Politics. 7.50, Programme by Per Knutzon. 8.0, Chimes from the Town Hall. 8.2, Relay of the Opening Celebrations in connection with the Catholic Congress. Band Music, with the Copenhagen Catholic Church Choir: Festpolonaise (Svendsen); Choral Selection, O Jesus i dit Sakrament (Husson); Message of Loyalty to the Pope, read by Bishop Brems; Hymn, Tu es Petrus (Haller), with Choir and Orchestra; Address by Bishop: The King; The Choir: Kong Kristian stod ved højen Mast (Johan Hartmann); Address by Bishop Brems; Jubilate Deo—for Five Part A Capella Choir (Ablinger); Addresses by Cardinals van Rossum and Hlond, and other Prelates; Choir: (a) Højtidsdag i Kristi Kirke, (b) Gregorian Choral, Credo. 10.0, News Bulletin. 10.15, Orchestral Concert of Opera Music. Conductor: Walter Mayer-Radon. Overture, Il Seraglio (Mozart); Ballet Music from Figaro (Mozart); Overture, Der Freischütz (Weber); Introduction to Act Three and Bridal Chorus from Lohengrin (Wagner); Intermezzo from I Pagliacci (Leoncavallo); Melody from La Bohème (Puccini); Polonaise from Eugene Onegin (Tchaikovsky). 11.0, Dance Music from the Industri Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Saturday), Close Down.

CORK.—See Dublin.

CRACOV
312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and Radio Journal. 7.45, Talk: Jack London's Heroes. 8.0, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsherg.
DRESDEN.—See Leipzig.

DUBLIN
Call 2RN, 413 metres; 1.2 kW.; and GORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Stock Report, Weather Forecast, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gardening Talk. 7.45, Talk. 8.0, Handel Music by the Station Orchestra. 8.20, Sonata (Strauss) by Mme. K. Polak (Cello) and Mrs. Buckley (Pianoforte). 8.40, Cello Solos by Jos. Schofield. 8.55, Scottish Songs by L. Grey (Baritone). 9.5, Orchestral Selections. 9.35, Contralto Solos by Mabel Home. 9.50, Variety Items by T. Reddin and Company. 10.30, Time, News, Weather Report and Close Down.

FECAMP
223 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Popular Concert. 7.30, Radio Gazette. 8.0, News Bulletin. 8.30, Agricultural Report. 8.45, Light Music on Gramophone Records. 9.0, Concert, relayed from Le Havre. 10.0 p.m., Call Close Down, Programme in English by the I.B.C. 10.0 p.m., Dance Music: The Alpine Milkman; Singing in the Bath tub; Livin' in the Sunlight; Miss Wonderful; What Good am I Without You? Song of the Flame; Lady Divine; Yet you Forget; Piccolo Pete; With You; The Woman in the Shoe; Reaching for the Moon; Steppin' Along; You're driving me Crazy; Telling it to the Daisies. 11.0, Songs and Light Orchestral Music. Orchestra: In the Sudan, (Sebek); Songs: (a) Gipsy Melody (Nicholls); (b) Wash Moon (Dreyer); Orchestra: Suite Americana (Thurban); Songs: (a) Say a Little Prayer for Me (Nicholls); (b) Little Old Church in the Valley (Kahn); Orchestra: Bacl al buio (de Micheli). 11.30, Light Orchestral and Vocal Concert: Der Rosehochzeitszug (Jessel); Songs: (a) Just Once for All Time (Heymann); and (b) Live, Love, and Laugh (Heymann); My Sunshine is You (Stolz); Songs: (a) The Leader of the Town Brass Band (Longstaffe); (b) The Driver of the 8.15 (Longstaffe); and (c) I Travel the Road (Parsons); The Musical Comedy Switch (arr. Hall); Duets: (a) Marigold (Besley); (b) A Night in Venice (Lucentoni); The Grass-hoppers' Dance (Bucalossi); Songs: (a) I feel you near me (McCormack); (b) A Wayside Rose (Lehar); and (c) A Pair of Blue Eyes (McCormack); Goodnight, Sweetheart (Noble). 12.30 a.m. (Saturday), Dance Music: All Hands on Deck; Sleep, Baby, Sleep; We're Uncomfortable; A Man, a Maid; Sweetheart, we need Each Other; Cuckoo in the Clock; You're Always in my Arms; Peasant Love Song. 12.57, I.B.C. Goodnight Melody. 1.0, Close Down.
FLENSBURG.—See Hamburg.
FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—6.15 p.m., Economic Notes. 6.25, Political Dialogue. 6.50 to 12 Midnight, See Stuttgart. In the intervals, at 7.15, Time, Programme Announcements, Weather, and Economic Notes; and at 10.30, Time and News. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—6.0 p.m., Review of New Books. 6.30, Talk for Workers. 6.55, Frankfurt Exchange and Hamburg Egg Market Prices. 7.0, Topical Talk. 7.15, Weather Report. 7.20, Two Humorous Scenes from Old Hamburg (A. Müller-Pörster): (a) Hofrat Pollini discovers a Tenor, (b) Fief Mark veertien. 8.0, Rudolf Philipp Concert. The Norag Orchestra and Male Voice Choir, conducted by Gerhard Maasz. Soloists: Gertrud Schnitzer (Songs), Jan Gesterkamp (Violin), Wolfgang Inattbach (Pianoforte), H. E. Groh, and B. Jaksch (Songs), and the Composer (Accompanist). Introduction and March from Elvira. Songs: (a) Ueber den Bergen, (b) Wunsch. Pianoforte Solos: (a) Humoresque, (b) Valse brillante. Male Voice Choir: (a) Reiters Abschied, (b) Volklied. Violin Solos: (a) Schir hamaloth, (b) Schir zijon, (c) Aus der Hagada. Songs: (a) Vale carissima, (b) O Welt du bist so wunderschön. Pianoforte Solos: (a) Scherzo capriccioso, (b) Melancholie. Songs: (a) Was ist die Liebe, (b) Tannhäuserlied. Male Voice Choir: (a) Probuslied, (b) Trinklied. Intermezzo from Elvira. Songs: (a) Liebe, (b) Nachtwandler. Songs: (a) Auf dem Maskenball, (b) Herzsallerliebster Schatz. Male Voice Choir: Lob der Sparsamkeit. Songs: (a) Gretelein, (b) Erster Kuss. 9.0, Creative Environment—Christian Dietrich Grabbe, by Dr. Günther Bobrik, Ferdinand Krantz, Karl Pindler, and the Small Norag Orchestra, conducted by Fritz Gartz. 10.0, Time and News. 10.15, Concert from the Alster Pavilion.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW, and DANZIG, 453.2 metres.—11.30 a.m., Concert from Hamburg. 1.15 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken: March, Deutschlands Ruhm (Schroder); Festival Overture, Vivat Academia! (Zimmer); Die goldene Spieluhr (Krome); Spatzenparade (Rathke); Waltz, Pusztalegenden (Lindsay-Theimer); Carnival Suite (Siede); Potpourri, Mosaics (Zimmer); Intermezzo (Murzilli); Die Glocken von Prag (Fueck); Waltz, Souvenir de Budapest (Yvon); Gay Prelude (Kark); March, Der Gott, der Eisen wachsen liess (Alhout). 2.30, Sponsored Programme on behalf of the Post Office Advertising Department, with Gramophone Records. 4.0, Dialogue for Women. 4.30, Concert by the Small Station Orchestra, conducted by Eugen Wilcken. Overture, Hans Heiling (Marschner); Selection from Oberon (Weber); Songs (Schumann): (a) Widmung, (b) Abendlied; Selection from Das Christlein (Pfitzner); Songs (R. Strauss): (a) Muttertändelei, (b) Morgen; Symphonic Prelude to Oedipus Rex (Max von Schillings). 5.45, Book Review. 6.15, Agricultural Prices. 6.30, Franz Abt Song Recital by Fritz Schmiedke (Tenor); Mein ewiges Lied bist du, Schifferstädchen; Mit dir; Weiche nicht, o süsßer Traum; Unersesslich; Ins Herz hinein; Wiesenlied; Du weisst ja, wo; Dich grüsst ich durch den Morgenwind. 7.0 (from Danzig), Reading from the Works of the Danzig Poet, Johannes Trojan, on the Ninety-fifth Anniversary of his Birth. 7.30, Talk: The Twentieth East German Fair in Königsberg. 7.55, Weather Forecast. 8.0, Concert by the Police Band, conducted by Ernst Stieberitz, relayed from the Kurgarten, Zoppot: March, Hoch Thüringen (Stieberitz); Overture, Die Fledermaus (Joh. Strauss); Turkish Evening Benediction (Faust); March (Faust); Valse triste (Sibelius); Fantasia on the Song, Ich hatte einst ein schönes Vaterland (Heyer-Putzenhardt); Potpourri of Waldteufel's Music (Kling). 9.0, Announcements. 9.10 (from Danzig), The Maid of Orleans—Play (Friedrich Burschell). 10.10, Weather, Announcements and Sports Notes.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Christian Radio Society (N.C.R.V.). 7.40 a.m., Reading from the Bible. 7.55, Light Music on Gramophone Records. 9.10, Interval. 10.10, Programme for Hospitals. 10.40, Variety Music on Gramophone Records. 11.46, Police Notes. 11.55, Concert: H. Hermann (Violin), J. Meyer (Songs), H. v. d. Horst (Cello), and Mmc. v. d. Horst-Bleekrode (Pianoforte): Overture, Norma (Bellini); Three Songs: Serenade (Bece); Melodien-

AUGUST 19th

FRIDAY

continued.

traum (Urbach); Three Songs; Waltz, Künstlerleben (Strauss); Hungarian Dances (Brahms); Three Songs; Overture, Raymond (Thomas). 1.40, Interval. 2.10, Concert: Kees Hartvelt (Violin), Piet Lentj ('Cello), and Gius Seyler (Pianoforte): Trio in B minor (Loeillet); Fifth Concerto in A (Rameau); First Concerto in G (Couperin); Three Pieces for Violin and Pianoforte; Trio in C (Mozart); Trio in A. No. 15 (Haydn); Sonata in A (Mozart); Trio in C (Beethoven). 4.10, Light Music on Gramophone Records. 4.40, Talk for Young People. 5.10, Talk on Photography. 5.40, Talk by M. H. J. Steenvoort. 6.10, Wireless Technical Talk. 6.40, Talk by M. A. Herwig. 7.10, Police Notes. 7.25, Talk by M. C. Deul. 7.55, Concert by the N.C.R.V. Orchestra, conducted by Schuurmann, and the N.C.R.V. Women's Choir, conducted by Mlle. Lauenroth: Four Songs: Psalm 130. Was mein Gott will, das gescheh' allzeit (Bach); Three Songs; Sarabande (Saint-Saëns). 8.40, Talk by M. G. van Agtmaal. 9.10, Concert (contd.): Scènes alsaciennes (Massenet); Selection from A Midsummer Night's Dream (Mendelssohn). In the interval at 9.40 (approx.), News Bulletin. 10.10, Light Music on Gramophone Records. 11.10, Close Down.

HOBBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25, Physical Culture. 7.40, Variety Music on Gramophone Records. 8.40, Septet Concert. 9.40, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55 to 11.40, V.A.R.A. Programme. 9.55, Recitations. 10.10, Septet Concert (contd.). 10.40, Programme for Women Socialists. 10.55, Septet Concert (contd.). 11.40 to 3.40, Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Orchestral Concert, conducted by Nico Treep. In the intervals, Light Music on Gramophone Records. 1.40, Popular Music on Gramophone Records. 2.10, Orchestral Concert, conducted by Louis Schmidt. In the interval, Popular Music on Gramophone Records. 3.40 to 7.40, V.A.R.A. Programme. 3.40, Light Music on Gramophone Records. 4.10, Programme for Children. 4.40, Orchestral Concert, conducted by Harry Wigelaar: Overture, Djimleh (Bizet); Waltz, Tales from the Vienna Woods (Johann Strauss); Irish Tune from County Derry (Grainger); Im Hühnerhof (Bortkiewicz); Dance of the Chickens coming out of their Eggs (Musorgsky); Selection from Romeo and Juliet (Gounod). 5.30, Variety Music on Gramophone Records. 5.40, Organ Recital by Johan Jong: Ballet Music from Faust (Gounod); A Perfect Day (Bond); Aubade printanière (Lacombe). 6.10, Talk for Teetotalers. 6.25, Organ Recital (contd.): Selection from Rigoletto (Verdi); Just wonderful you (Manrice-Gilbert). 6.45, Talk. 7.0, Orchestral Concert (contd.): Spanish March, Cordoba (Lozano); Overture, Le petit duc (Leococ); Selection from Lakmé (Delibes); Suite, Four Ways (Coates). 7.40 to 7.55, V.P.R.O. Programme. 7.40, Religious Report. 7.45, News Bulletin. 7.55 to 9.55, A.V.R.O. Programme. 7.55, Concert by The Hague Orchestra, conducted by Carl Schuricht, relayed from the Kurhaus, Scheveningen: Symphony No. 4 (Bruckner). In the interval at 9.40, Reading. 9.55 to 10.40, V.P.R.O. Programme: Religious Address. 10.40 till Close Down, Gramophone Records of Variety Music (by the V.A.R.A.). 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.15 p.m., Announcements, News Bulletin and Popular Music on Gramophone Records. 7.45, Talk. 10.5, Gramophone Concert. 11.0, Answers to Correspondents in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW, and HELSINKI, 368.1 metres.—Programme in Swedish.—6.15 p.m., Programme for Children. 6.40, Violin Recital by Arno Granroth. 7.5, Talk. 7.30, Song Recital by Dagmar Parmes. 7.55, (from Helsinki), Concert by the Station Orchestra. 8.45, News in Finnish and Swedish and Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert. Overture, Alessandro Stradella (Plotow); Potpourri of Favourite Waltzes (Clere); Soprano and Tenor Duet from The Bird Fancier (Zeller); Soprano Solo from Gasparone (Müllöcker); Spring Serenade (Lacombe); Salut d'amour (Elgar); March, El Capitán (Souza). 11.45, Sponsored Talk. 12 Noon, Concert from Munich. 1.15 p.m., Weather, News, Time, and Announcements. 1.30, See Stuttgart. 2.30, Sponsored Gramophone Concert. 2.45, Advertising Talk. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Programme for Young People: Music and Songs by Mendelssohn on Gramophone Records. 5.0,

Concert. 6.20, Talk: New Excavations in the Rhineland. 6.45, Weather, Time, Economic and Sports Notes. 7.0, Talk on International Politics. 7.20, Topical Talk. 7.30, Review of Books dealing with Industry and Society. 7.55, First General News. 8.0, Wagner Concert by the Station Orchestra, conducted by Buschkötter. Soloist: Strienz (Bass). Introduction to Lohengrin; Introduction to the Third Act of Tannhäuser. Bass Solos: Two Monologues from The Mastersingers; The Ride of the Valkyries; Wotan's Farewell and Fire Magic, from The Valkyries. 9.0, Two Humorous Radio Plays (Adolf Uzarski): (a) The Fog-horn, (b) Neighbours. 10.10, News and Sports Notes. 10.30, Mass in E flat (Schubert) by the Station Choir and Orchestra, conducted by Zimmermann, with Hansen (Soprano), Guermanova (Contralto), Legrand (Tenor), Schömmmer (Tenor), and Strienz (Bass). 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres, 2 kW.; and DRESDEN, 319 metres.—4.30 p.m., Concert by the Dresden Philharmonic Orchestra, conducted by Herbert Nerlich. Overture, Jean de Paris (Boieldieu); Melodies from Figaro (Mozart); Soirées de Vienne (Schubert-Liszt); Serenade (Beischnidit); Tanzspuk (Schroeder); Wiener Hallo Marsch (Recktenwald); Waltz, Abendblätter (Olfenbach); Waldmären in E (Mello). 5.50, Economic Notes, Weather, and Time. 6.0, Book Review. 6.20, Report from a Young People's Hostel at Ottendorf. 6.50, Talk on the Centenary of the Painter, Ernst Gustav Doerell. 7.0, Talk: E. M. Arndt as a Philosopher. 7.30, Pianoforte Recital of Op. 171 (Schubert); Selection from Ländler aus Berchtesgaden (Jensen); Ländler from Bavaria, Op. 3 (Schmid). 8.15, Concert by the Dresden Schrammel Quartet: Juchhei, Tiroler Bub' (Petras); Schöpfung mein Paradies (Kutschera); Potpourri of Viennese Folk Music (Kozmak); Da draussen in der Wachau (Arnold); Waltz, Die Schönbrunner (Lanner); March, Jetzt trink'n mer noch a Flascherl Wein (Lang). 8.45, The Double Suicide—Play (Anzengruber, with Music by Bruno Brenner). 10.5, News Bulletin. 10.15 (approx.), Concert by the Emde Orchestra. Overture, The Bohemian Girl (Balfe); Waltz, Dynamiden (Jos. Strauss); Indische Gaukler (Siede); Melody from The Gipsy Baron (Joh. Strauss); Humoresque (Dvorak); Melody (Rubinstein); Oriental Suite (Popy); Ich sende diese Blume dir (Franz Wagner); Waltz, Winterstürme (Fueck); Potpourri, Wir stellen uns vor (Golwyn); March, Deutschlands Ruhm (Schroder). 11.30 (approx.), Close Down.

LINZ.—See Vienna.

LWOW

381 metres; 16 kW.—6.20 p.m., See Warsaw. 7.15, Miscellaneous Items. 7.35, See Warsaw. 7.45, Talk: Long-Distance Conversations. 8.0, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert. 7.30, Radio Gazette for Lyons and the South East. 8.30, Marouf—Opera, relayed from the Opera, Paris.

MADRID

UNION RADIO, Call EAJZ, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices and Request Music on Gramophone Records. In an interval at 8.30, Educational Talk. 9.15, News Bulletin and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal and Political Review. 11.15 (approx.), Symphony Concert on Gramophone Records: Overture, Anacreon (Cherubini); Le rouet d'Omphale (Saint-Saëns); Military March (Schubert); Concerto in D for Violin and Orchestra (Brahms); Three Dances (Turina); Overture, Tannhäuser (Wagner). 1.15 a.m. (Saturday), News Bulletin and Programme Announcements. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—7.0 p.m., See Prague. 10.15, News Bulletin. 10.20, Popular Music on Gramophone Records.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0 and 9.0, Talks in Swedish and in French: A Day in the Children's Settlement of the People's Park. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—5.0 p.m., Concert by the Orchestral Society of Munich Professional Musicians: Conductor, Ernst Hagel; Overture, Die Matrosen (Plotow); Variations on the Carnival in Venice (Joh. Strauss); Berceuse and Serenade (Schroder); Romanzetta (Cui); Waltz, Blättlein im Winde (Faust); Potpourri, Geistererscheinungen (Ziehrer). 6.15, Talk: Alpine Scenery. 6.35, Talk on Science. 6.55, Time Signal, Weather Forecast, and Agricultural Notes. 7.5, Variety Programme with Guido Gialdini (Whistling Solos), Liame Kopf, Thesdar Anziger, Hans Kopffiner, and the Hugo Weiss Orchestra. 8.0, Pictorial Art—A Report by Dr. Emil Prefortorius. 8.20, Symphony Concert—The Music of Mozart, conducted by Karl List. 9.25, Dialogue. 9.45, The Song of the City—A Play for Speaking Choir (Karl Siebold). 10.0, Time Signal, Weather Forecast, News Bulletin, Sports Notes, and Traffic Report.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hanar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—6.0 p.m., Variety Concert. 6.30, Talk: England, the Pioneer of Folk Music. 7.0, Announcements. 7.15, Weather, News and Agricultural Report. 7.30, Soloist Concert. 8.0, Time Signal. 8.1, Dramatic Programme.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Popular Music on Gramophone Records. 6.30 to 8.0, Interval. 8.0, Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Popular Music on Gramophone Records. In an interval at 8.30, Time Signal and Announcements. 8.45, Rigoletto—Opera in Three Acts (Verdi) on Gramophone Records. In the intervals, Talk and Announcements. After the Opera, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk on the Theatre. Casino Cabarets. 7.0, Le Journal Parlé. 8.20, Weather Report. 8.30, Marouf—Opera (Roubaud), relayed from the Opéra, Paris. 11.30 (approx.), Close Down.

PARIS

POSTE PARISIEN; 328.2 metres; 60 kW.—12 Noon to 2.0 p.m., News and Light Music on Gramophone Records. 7.0, News Bulletin and Press Review. 7.5, Popular Music on Gramophone Records. 8.0, Topical Talk. 8.20, Theatre Notes. 8.30, Radio Journal and News Bulletin. 8.45, Concert by the Station Orchestra, with Mlle. Yvonne Farcelle (Songs); Songs (a) Gavotte from Chansons à Danser (Brunaud); (b) Aria from La Bohème (Puccini); (c) L'Oubli (Lazzari), and (d) Solveig's Song from Peer Gynt (Grieg); Overture, (Lachmaue); Mazurka-bourrée, L'auvergnate (Ganne); Selection from Flossie (Szulc); Divertissement and Musette for Strings and Woodwind Instruments (Samazeuilh); Petite suite espagnole (Vidal); Chanson du moulin (Lazzari); Lyric Suite (Grieg); Waltz from Namouna (Lalo); Petites musiques (Schmitt); Orgie from the Danses fantastiques (de Joncières); Danse bressanne (Casadesus). 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather Forecast and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather Forecast. 12 Noon, Offenbach Concert on Gramophone Records: Invocation to Venus from La Belle Hélène; Two Songs from La Boulangère a des Ecus; Duet from Les Bouconniers; Three Songs from Les Brigands; Three Songs from The Drum-Major's Daughter; Two Airs from Madame l'Archiduc; Ronde des Vignes from Madame Favart; Airs from La Péricole; Melodies from La Vie Parisienne. In the intervals, at 1.0 p.m., Exchange Quotations, News, and Weather Forecast. at 1.30, Exchange Quotations, and at 2.0, Exchange Quotations, News and Welfare Notes. 3.45, Exchange and Market Prices. 6.30, Market Prices, Weather, Agricultural Report, Talk, and Racing Results. 7.0, Gramophone Concert: Symphony No. 40 in G minor (Mozart); Aria from Aida (Verdi); Prelude (Rachmaninov); Polichinelle (Rachmaninov); Romance (Beethoven); Chanson hébraïque (Kavel). 7.45, Commercial Prices and News. 8.0, Talk, with Gramophone Illustrations; Josef Haydn, for the Second Centenary of his Birth. 8.30, News and Weather Forecast. 8.40, Review, by Paul Rehoux. 8.45, Concert: Violin Solos: (a) Berceuse (Faure), (b) Canzoneta (d'Ambrosio), (c) Zephyr (Hubay); Gramophone Records: (a) Three Songs from Lohengrin (Wagner), and (b) The Death of

AUGUST 19th

FRIDAY

continued.

Isolde, from Tristan and Isolde (Wagner). 9.15, Press Review and News. 9.30, Concert (contd.): Fourth String Quartet (Beethoven); Three Songs from Orpheus and Eurydice (Gluck) (on Gramophone Records); Quintet in F minor (Brahms). 10.30, Popular Music on Gramophone Records.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.33, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Bulletin. 10.12, Programme Announcements. 10.15, Programme to be announced. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day. 11.6, Teaberry Sport Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, KDKA Kiddies' Klub. 11.30, KDKA Orchestra. 11.45 to 4.0 a.m. (Saturday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Pepesodent Amos 'n' Andy. 12.15 a.m., Royal Vagabonds. 12.30, Stebbins Boys. 12.45, Billy Jones and Ernie Hare. 1.0, Time Signal and Nestle's Programme. 1.30, Candle Lighting Time. 1.45, Sisters of the Skillet. 2.0, Friendship Town. 2.30, Armour Programme. 3.0, The Country Doctor. 3.15, Song Fellows. 3.30, Object Matrimony. 3.45, Jane Frohman and her Band. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last minute News Flashes. 4.20, The Music Box. 4.30, Jack Pettis and his Orchestra. 5.0, Cotton Club Orchestra, from New York. 5.15, Time Signal and Good Night.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.0 p.m., Popular Music on Gramophone Records. 7.15, Miscellaneous Items and News Bulletin. 7.35, See Warsaw. 7.45, Popular Music on Gramophone Records. 7.58, Time Signal. 8.0, See Warsaw. 9.55, Talk. 10.10, Sports Notes and Police Report. 10.30, Concert of Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—3.55 p.m., Market Prices. 5.45, Talk. 5.55, Popular Music on Gramophone Records. 6.5, Agricultural Report. 6.15, Light Music on Gramophone Records. 6.25, German Transmission: (a) News. (b) Talk on the History of Music. 7.0, Theatre Reminiscences. 7.20, Song Recital by Theobald Held. 7.45, The Emigrant—Play (Alois Jirasek). In the interval at 9.0, Time Signal, News Bulletin and Sports Notes. 10.15, News, Theatre Notes and Programme Announcements. 10.20, Light Music on Gramophone Records.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW; LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Lausanne), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5, Gramophone Concert (contd.). 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1 to 5.45 (from Geneva), Programme for Women: (a) Fashion Notes, (b) Talk on Knitting, (c) Household Hints. 5.45, Concert by a String Orchestra, conducted by Robert Eilenard. 7.0, Weather Forecast. 7.1 (from Lausanne), Talk: Water Sports and the Crossing of the 21st August. 7.20 (from Lausanne), Report of the Swiss Automobile Club. 7.30 (from Geneva), Topical Talk: Across the World. 8.0 (from Lausanne), Talk on Dried Fruits. 8.15 (from Geneva), Violin Recital by M. Bagarotti. 8.45 (from Porrentruy), Part Relay of La Ruche bourdonne (Emile Lauber); Text by Mlle. de Rougemont. 10.0, News Bulletin and Weather Forecast. 10.15 (approx.), Close Down.

RIGA

525 metres; 15 kW.—7.0 p.m., Weather Forecast. 7.3, Orchestral Concert of Opera and Operetta Music, relayed from Melluzi. 9.0, Weather Forecast. 9.10, Fourth and Fifth Acts of Faust—Opera (Gounod). 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2RO, 80 metres.—8.15 to 8.30 a.m., Giornale Radio and News. 12.30 p.m., Weather and Light Music on Gramophone Records. 1.0 to 2.15, Sextet Concert: Three Pieces from Un bal costumé (Rubinstein); Selection from The Bif Pancier (Zeller); Guitar Solo: Piece (Pant); Dillo tu (Valente); Lehár Potpourri (Hrubý); In the intervals at 1.15, Giornale Radio and at 1.30, Time and Announcements. 4.45, (from Naples), Talk for

Women. 5.0, Exchange, Children's Radio Review, Giornale Radio and Announcements. 5.30, Song Recital by Orelia Parisini (Soprano); and Vincenzo Tanlongo (Tenor); Soprano Solo: Arioso from La notte di Zoraima (Montemezzi); Tenor Solo: Aria from Marcello (Giordano); Soprano and Tenor Duet from Faust (Gounod). 5.45 to 6.15, Concert: Arab March (Ganne); Festa al villaggio (Billi); Nocturne and Waltz from Coppélia (Delibes); Aurora pallida (Cuscina); Dance of the Hours from La Gioconda (Ponchielli). 7.10, (from Naples), Shipping Report and Sports Notes. 7.15, Agricultural Report, Announcements, Giornale Radio and Variety Music on Gramophone Records. 8.0, Time and Announcements. 8.5, Report of the International Institute of Agriculture (in Italian, French, English, German and Spanish). 8.30, Sports Notes, Miscellaneous Announcements and Tourist Talk. 8.45, See Turin. Talk in the interval. 10.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—9.0 p.m., Musical Programme (from New York). 9.15, Business and Professional Women's Club. 9.30, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15, Musical Programme. 10.30, Echoes of Erin (from New York). 11.0, Ma Frasier's Boarding House. 11.15, Waldorf Astoria Orchestra (from New York). 11.25, Baseball Scores. 11.30, Gray McClintock in the Canadian North-west. 11.45, Song and Story Man. 12 Midnight, General Electric Programme. 12.15 a.m. (Saturday), Chant, the Magician. 12.30, Maxwell Tone Blenders (from New York). 12.45, The Goldbergs (from New York). 1.0, Cities Service Concert. 1.30, WGY Farm Programme. 2.0 to 4.0, New York Relay. 2.0, Clicquot Club Eskimos. 2.30, Pond's Programme. 3.0, Paul Whitman's Orchestra. 3.30, Erno Rapee's Orchestra. 4.0, Al Stulmacker and his Orchestra. 4.30 till Close Down, New York Relay. 4.30, Vincent Lopez and his Orchestra. 5.0, Ralph Kirbery (Dream Singer). 5.5, Joe Moss and his Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW; BASEL, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Concert by the Station Orchestra. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Concert by the Small Station Orchestra. 4.30 (from Zürich), Programme for Children. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Zürich), Talk on Astronomy. 7.0, Time Signal, Weather Forecast, Market Prices, Tourist Report and Sports Notes. 7.30 (from Zürich), Talk: Stores in Modern Industrial Life. 7.45, Concert of Popular Music on Gramophone Records. 8.0 (from Berne), Swiss Programme—Yodelling, Zither and Accordion Music. 9.30, Weather and News Bulletin. 9.45, Late Concert by the Station Orchestra. 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres, 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Concert of Light Music. 5.40, Programme for Children. 6.0, Light Music on Gramophone Records. 7.0, Talk. 7.15, Weather and News. 7.30, Cabaret Concert, relayed from Östersund. 8.15, Talk. 8.45, Military Band Concert, relayed from Jönköping, 202 metres: Selection from I promessi sposi (Ponchielli); Waltz, Hofballtänze (Lanner); Potpourri of Swedish Folk Music (Löfgren); Selection from The White Horse Inn (Benatzky-Stolz); Intermezzo, Japanese Wedding Dance (Yoshitomo); Nocturne, Dance, and Wedding March from A Midsummer Night's Dream (Mendelssohn). 9.45, Weather and News. 10.0, Orchestral Concert of Light Music: Festpolonaise (Svendsen); Valse chevaleresque (Sibelius); Suite, In modo barocco (Rangström); Margaretæ Wiegenlied (Grieg); Spanish Tango (Hylbom); Waltz, Kröjls Ballklänge (Lumbye); Potpourri, From Far and Near (Löfgren). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Classical Music. 12.45

p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Light Music on Gramophone Records. 1.30 to 2.10, Orchestral Concert, relayed from Toulouse (P.T.T.) (255 metres). 4.30, Trio Concert, relayed from Lille (265.4 metres). 5.30, Literary Talk in French. 5.45, Popular Music on Gramophone Records. 6.0, Talk in German: Problems of the Day. 6.15, Legal Talk and Answers to Legal Queries, in German. 6.30, Concert by the Station Orchestra, conducted by Roskam: Overture, A Midsummer Night's Dream (Mendelssohn); Ballet Music from Hamlet (Thomas); Selections from Lohengrin (Wagner); Marche bohémienne (Filippucci). 7.30, Time Signal. 7.32, News in French and German. 7.45, Concert of Jazz Music by the Station Orchestra, conducted by M. Roskam: Foxtrot, Yes, Yes (Conrad and Friend); Foxtrot, Bend down, Sister (Conrad); Tango, Die alte Spieluhr (Reisfeld and Marbot); Foxtrot, Rain (Rich and Hoffmann); Crazy Stomp (Allouche); Wedding Waltz (Lincke); Foxtrot, My Doggie barks (Marbot); Reisfeld (Broek); Slow Foxtrot, The Melody of my Heart (Faustin and Jean-Jean); Tango, Little Elizabeth (Rosen); Slow Foxtrot, All of Me (Simons and Marks); Foxtrot, Long and Short (Uergolta); White Tulips (Burke); March, Dans tous les ports du monde (van Parys). 8.30, National Concert, relayed from Paris (Ecole Supérieure) (447.1 metres). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—10.0 a.m., Song Recital by Toni Schuch (Contralto). 10.30, Educational Talk from Mannheim. 11.0, Time, News, and Weather. 11.15, Sponsored Programme. 11.55, Weather Report. 12 Noon, Concert from Munich. 1.15, Time and News. 1.30, Old Dances and Popular Melodies—Concert by the Mannheim Philharmonic Orchestra, relayed from Mannheim: Contredanse (Cannabich); Minuet (Fraenzl); Minuet (Stumpf); Two Allemandes (Cherubini); Rondo (Pleyel); Anglaise (Fraenzl); Allemande (Stumpf); Polonaise (Stumpf); March, Mein Herz, das ist ein Bienchenhaus (Rosenstengel); Brucker Lagermarsch (Kral); Overture, Deutsche Volkslust (Herold); Selection from Der Betelstudent (Müllacker); Das Lied an der Weser (Pressel); Es war einmal from Schösser die Im Lande (Lincke); Polka, Liebesbrief (Zietler); Maier Polka (Schirbel). 2.30, Sponsored Concert. 3.0 to 4.0, Interval. 4.0, Orchestral Concert, relayed from Freudenstadt: Overture, Orpheus in the Underworld (Offenbach); Waltz from The Gipsy Baron (Joh. Strauss); Hungarian Rhapsody No. 14 (Liszt); Selection from Iolanthe (Tchaikovsky); Extase (Ganne). 5.0, Concert, relayed from Bad Wülfingen. 6.15, Time and News. 6.25, Talk: The Earth throughout the Ages. 6.50, Medical Talk. 7.15, Time, Weather, and Programme Announcements in Esperanto. 7.30, Humorous Programme by Franz Günther, with Gramophone Records. 8.15, Swedish and Finnish Programme; Soloists: Fritz Wallenborn (Talk and Reading), Georg Beerwald, Fritz Künstler, Robert Waldmann (Violin), Karl Hess (Viola), Louis Schuyer (Cello), Otto Wachsmuth (Double Bass), Heinrich Bitsch (Clarinet), and Eric Alruni Wilkman (Tenor); Talk on Sweden and Finland; Septet on Old Melodies and Dances from Dalarna for Three Violins, Viola, Cello, and Double Bass: Vid Alvom på Berg och i Dalom (Sven Sköld); Talk: Modern Art in Sweden, with Reading. Songs: (a) Skärgårdsö (Häquinius), (b) Pan (Rangström), (c) Melody (Rangström), (d) Mot Hösten (Sköld), (e) Drick (Sköld). Talk: Modern Finnish Composers. Songs: (a) En Drömans sang till livet (Järnefelt), (b) Titania (Järnefelt), (c) Two Songs (Kilpinen), (d) Three Finnish Folk Songs (Hannikainen). 9.15, Concert by the Stuttgart Philharmonic Orchestra: Selection from Das Nachtlager in Granada (Kreutzer); Suite from The Swan Lake (Tchaikovsky); March from The Queen of Sheba (Goldmark); Kammerstück (Wiener); Selection from the Ballet, Autumn Leaves (Chopin-Roters); Overture, Der Opernball (Heuberger). 10.30, Time and News. 10.55, Dance Music. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Picture Transmission. 5.15, Exchange Quotations. 5.30, Orchestral Music: Airs from Siegfried (Wagner) and Semiramis (Rossini). 5.45, Instrumental Music. 6.0, Songs. 6.15, Music by an Argentine Orchestra. 6.30, Exchange Quotations and Racing Results. 6.45, Comic Opera Music: Melodies from Manon (Massenet), La Bohème (Puccini), and Tosca (Puccini). 7.0, Military Music. 7.15, Accordion Music. 7.30, Programme Announcements. 7.35 (approx.), News. 7.45, Popular Songs. 8.0, Operatic Music: Overture, La Belle Hélène (Offenbach) and Selections from La Traviata (Verdi) and Mignon (Thomas).

8.15, Operetta Music: Airs from La Mascotte (Audran), Miss Decima (Audran) and Véro-nique (Messager). 8.30, Orchestral Music. 8.45, Sound Film Music. 9.0, Music by a Viennese Orchestra. 9.30, Operatic Music: Waltz and Aria, I drink to thee, from Faust (Gounod); Aria from Hérodiade (Massenet); Barcarolle from The Tales of Hoffmann (Offenbach). 9.45, Accordion Music. 10.0, Military Music. 10.15, Recitations (Rostand and de Lisle). 10.30, North African News. 10.45, Instrumental Music. 11.0, 'Cello Recital: Prelude (Corelli); Serenade from I Pagliacci (Leoncavallo); Adagio (Tartini). 11.15, Songs. 11.30, Orchestral Music: Spanish Rhapsody (Ravel); La boîte à joujou (Debussy). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.5 p.m., Quintet Concert: La rumba (Lombardo); Elegy (Tincani); Tiralala (O. Strauss); Rustic Dance (Mendelssohn); Alla sorgente (Scassola); Selection from The Mikado (Sullivan); Melody (Buder); Scettico Pierrot (Mazzanti). 8.0 till Close Down, see Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.5 p.m., Concert: Overture, Frau Luna (Lincke); Il voto (Giordano); Military March (Schubert). 7.25, Tourist Talk. 7.30, Time and Announcements. 7.35, Variety Music on Gramophone Records. 8.30, Giornale Radio, Weather and Light Music on Gramophone Records. 8.40, Wireless Notes. 8.45, Symphony Concert, conducted by Arrigo Pedrollo: Symphony, From the New World (Dvorák); Variations for Two Pianofortes (Martucci); Suite, Chiroscuri (Rocca); Autumn from The Seasons (German); Overture, Rienzi (Wagner). 11.0, News Bulletin.

VATICAN CITY

19.84 metres (Mornhug) and 50.26 metres (Evening); 10 kW.—11.0 to 11.45 a.m., Religious Information in German. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—5.0 p.m., Orchestral Concert; Overture, Undine (Lortzing); Waltz, Lotoblu-men (von Blon); Indian Suite (Lüling); Viennese Waltz Song (Adolf Maray); Tango, Liebe war es nie (Markusch); Potpourri, Boccaccio Galanterien (Wenger); Ein Lied aus meiner Heimat (Kaper-Jurmann); Delibes Potpourri (Urbach). 5.55, Tourist and Traffic Report. 6.10, Talk on Sport. 6.25, Weekly Gymnastic Report. 6.40, Talk: The International Radio Exhibition at the Vienna Autumn Fair. 6.50, Talk on Politics. 7.15, Time, Weather, and Programme Announcements. 7.25, Songs from Many Lands—a Potpourri (arr. Josef Hochmuth). Singer: Dario Medina. 8.0, See Berlin (Witzleben). 10.0, News Bulletin. 10.20, Dance Music from Berlin (Witzleben).

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20 to 12.40, Interval. 12.40, Weather Report. 12.45, Variety Music on Gramophone Records. 1.25 to 1.35, Interval. 1.35, Popular Music on Gramophone Records (contd.). 2.10 to 3.0, Interval. 3.0, Economic Report. 3.10, Light Music on Gramophone Records. 4.35, Hydrographic Report. 4.40, Talk on Georgia. 5.0, Orchestral Concert: Overture, Orpheus in the Underworld (Offenbach); Waltz, Wine, Woman, and Song (Johann Strauss); Polish Dance (Scharwenka); Selection from Paganini (Lehár); Tango (Fogelman); Czardas for Violin (Monti); Piece (Lindeman); Spanish Intermezzo, Tintoretto (Kockert); Mazurka (Osmanski). 6.0, Talk relayed from Lwów. 6.20, Light Music relayed from the Hotel d'Europe. 7.15, Miscellaneous Items. 7.35, Radio Journal. 7.45, Foreign Agricultural Press Review relayed from Wino, 563 metres. 7.55, Programme Announcements. 8.0, Concert by the Warsaw Philharmonic Orchestra, conducted by Georg Fitelberg. Soloist: Eugénie Umínska (Violin); Variations on Popular Hungarian Themes (Zador); Concerto for Violin and Orchestra (Brahms). 9.0, Talk by Irène Dehnel. 9.15, Radio Journal. 9.55, Concert (contd.): Introduction and Death of Isolde from Tristan and Isolde (Wagner); Spinning Chocous from The Flying Dutchman (Wagner); Overture, Polonia (Wagner). 9.50, Radio Journal. 9.55, Weather Report. 10.0, Dance Music. 10.40, Sports Notes. 10.50, Dance Music.

WILNO

563 metres; 16 kW.—7.15 p.m., Lithuanian Press Review. 7.30, Programme Announcements. 7.35, Agricultural Press Review. 11.30 (approx.), Close Down.

ZÜRICH.—See Schweizerischer Landessender.

ALGIERS

363.3 metres; 13 kW.—7.10 p.m., Shipping Notes and Weather Forecast. 7.15, Dance Music. 7.45, Songs from Opera. 7.55, News and Time Signal. 8.0, Concert of Request Gramophone Records. 8.30, Relay of an Open-Air Concert. In an interval at 9.30, News Bulletin. 10.30 (approx.), Close Down.

BARCELONA

RADIO-BARCELONA; Call EAJ1; 349 metres; 8 kW.—8.0 p.m., Trio Concert. 8.30, Exchange Quotations, Request Gramophone Records and News. 10.0, Chimes, Weather Forecast and Market Prices. 10.15, Concert by the Station Orchestra. 11.0, El Neguit de les Ombres—Catalan Play in Three Acts (Enrique Lluellas). 1.0 a.m. (Sunday), Close Down.

BASEL.—See Schweizerischer Landessender.

BELGRADE

436.4 metres; 2.5 kW.—5.0 p.m., Request Concert on Gramophone Records. 6.0, Song Recital by Bozana Adamovic-Dubski. 7.25, Time and Programme Announcements. 7.30 (approx.), Orchestral Concert: Overture, Le printemps de la vie (Mouton); Suite, Les beaux dimanches (Fanchey); Ballet Music from The Queen of Sheba (Gounod); Gipsy Dance (Saint-Saëns). 8.20, A Comedy. 9.0, Variety Programme. 11.0 (approx.), News, followed by Concert from the Teplice Restaurant.

BERLIN

KONIGS WUSTERHAUSEN; 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.2 p.m., Gramophone Concert of Variety Music, followed by Weather for Farmers. 12.55, Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of German Opera Music, relayed from Berlin (Witzleben). 3.0, Handwork for Children. 3.30, Weather and Exchange Quotations. 3.45, Talk for Women. 4.0, Talk: Illusions about Careers. 4.30, See Hamburg. 5.30, Health Talk: Plants injurious to Health. 5.50, Talk: Tourists and Tourist Propaganda. 6.5, Music Talk with Gramophone Illustrations. Training the Ear. 6.30, Talk with Illustrations: The Eternal Harlequin. 6.55, Weather for Farmers. 7.0, English Lesson. 7.30, Talk: The Church and Education, followed by Weather for Farmers. 8.0, See Berlin (Witzleben). 10.35, Concert from Langenberg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.5 p.m., Orchestral Concert, relayed from the Radio Exhibition: Overture, Oberon (Weber); Selection from I Pagliacci (Leoncavallo); Two Slav Dances (Dvorak); Andante con moto from the Symphony in B Minor (the Unfinished) (Schubert); Italian Caprice (Tchaikovsky); Interlude: The Cinema; Overture, Tannhäuser (Wagner); Symphonic Poem, Finlandia (Sibelius); Waltz, Mein Lebenslauf ist Lieb' und Lust (Jos. Strauss); Festival Prelude in D Flat (Schmalstieg); Hungarian Rhapsody No. 1 (Liszt). 6.30, The Narrative of the Week. 6.50, The Witzleben Station informs its Listeners. 6.55, Topical Talk. 7.5, Sonata in A Minor, Op. 42, for Pianoforte (Schubert). 7.30, Talk on Gardening. 7.40, Talk on Peddling. 8.0, Hallo, Radio Exhibition, 1932—A Wireless Potpourri for Soloists, Choir and Orchestra (arr. Eduard Künneke), relayed from the Radio Exhibition. After the Relay, Weather, News and Sports Notes. 10.30, Dance Music from the Eden Hotel. 12.30 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—6.30 p.m., Radio Journal. 8.0, News, Exchange Quotations and Lottery Results. 8.5, Sports Notes. 8.10, Popular Music on Gramophone Records. 8.25, News and Weather. 8.30, Popular Music on Gramophone Records. 9.0, Orchestral Concert, conducted by A. Guitraud, with Gramophone Interludes; After the Concert, Amusement Guide and Time Signal.

BRATISLAVA

279 metres; 14 kW.—7.0 p.m., See Prague. 10.15, Programme Announcements and News. 10.20, See Moravska-Ostrava.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW.; and GLEIWITZ, 253 metres.—5.55 p.m., Report from the Kaiser Wilhelm Children's Hospital in Landeshut. 6.30, Richard Wagner Concert on Gramophone Records: The London Symphony Orchestra, conducted by Siegfried Wagner; Huldigungs-marsch; The Berlin Philharmonic Orchestra, conducted by Leo Blech; Entry of the Guests into the Wartburg, from Tannhäuser; The New Queen's Hall Orchestra, conducted by Sir Henry Wood: The Ride of the Valkyries, from The Valkyries. 6.50, Topical Talk. 7.15, Weather for Farmers. 7.17 (from Gleiwitz), A Gay Potpourri by the Upper Silesian Wireless Quartet; Elektrische Funken (Malek);

SATURDAY

AUGUST THE TWENTIETH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Orchestral concert. Organ music. Running Commentary on the Royal Automobile Club International Tourist Trophy Motor Race. Welsh interlude from West Regional. Students' Songs. Promenade concert from Queen's Hall. Dance music.
LONDON REGIONAL	National programme. Organ music. Instrumental concert. Vaudeville programme. Orchestral concert. Dance music.
MIDLAND REGIONAL	Dance music. Gramophone recital. Military Band concert. Orchestral Ballad concert. London Regional programme.
NORTH REGIONAL	National programme. Orchestral concert. Eye-witness account of the Scarborough lawn tennis tournament.
WEST REGIONAL	Orchestral concert. A Welsh Interlude. National programme.
SCOTTISH REGIONAL	National programme. Dance music.
BELFAST	Running Commentary on the R.A.C. International Tourist Trophy Motor Race. Operatic programme. National programme.
PALERMO	Operetta: "A Walth Dream" (O. Straus).
PARIS (Post-Parisien)	French songs by music hall artistes.
STOCKHOLM	Folk music on the Balalaika and Domra, by Boris Borisoff.
STRASBOURG	A Mandoline and Guitar Orchestra.
WARSAW	Chopin recital.

ABROAD

Plakate Rundschau (Hlinak); Das Reisebüro (Sompek). 8.0, See Berlin (Witzleben). 10.0, Time and News. 10.30, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO

342 metres; 35 kW.—7.0 p.m., See Prague. 10.15, Announcements. 10.20, See Moravska-Ostrava.

BRUSSELS (No. 1)

I.N.R.; 509 metres; 15 kW.—12 Noon, Extracts from André Chénier—Opera (Giordano) on Gramophone Records. 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Records (contd.); Extracts from André Chénier (Giordano); Suite, Roma (Bizet). 5.0, Orchestral Concert, conducted by M. Kumps; Selection from The Italian Girl in Algiers (Rossini); Selection from La Traviata (Verdi); Réverie (Luigini); Tarentelle (Mawet); Scandinavian Suite (Frederiksen); Selection from Le Roi Pausole (Honegger); Valse triste (Sibelius); Military March (Schubert). 6.0, Gramophone Records of Ravel's Music; Popular French Songs; Pavane pour une Infante défunte; Popular Spanish Song; Five O'Clock from L'Enfant et les Sortilèges (Ravel-Branza). 6.15, Talk: The History of a Grape. 6.30, Gramophone Concert; Ahol en Elmenyck (Kodaly); Narcissus (Nevin); Kit Kene Elvenni (Kodaly); Serenade (Moszkovsky); Gnomensparade (Noack); Selection from Polenblut (Nedbal); A Hunt in the Black Forest (Voelker); Le Canari (Poliakyn); Selection from Werther (Massenet); By the Swanee River (Myddleton); Le marchand de masques (Wolf); Mal d'amore (Buzzi-Peccia). 7.15, Talk: Do insects think or reason? 7.30, Le Journal Parlé. 8.0, Gramophone Records of Light Music. 8.15, The Beauty Specialist—Comedy in One Act (Charles Foley). 8.25, Gramophone Records of Light Music. 8.35, The Obstacle—Comedy in One Act (Berr de Turque). 9.0, Concert relayed from the Memline Hall, Antwerp. 10.0 (in an interval), Journal Parlé. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Orchestral Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert (contd.). 5.0, Orchestral Concert. Part One, Eilenberg Programme: The Arrival of the Post; The Mill in the Black Forest; Dance of the Elves; The Raid of the Cossacks; The Forge in the Forest; A Day in the Tyrol. Part Two: Ketehey Programme: Chal Romano; The Sacred Hour; Piece; The Phantom Melody; In a Fairy Realm. 6.0, Gramophone Concert: Interlude (Chausson); The Dionysiaques (Fl. Schmitt); The Swan of Tuonela (Sibelius); Lentelust (Lebrun); Melody from The Fire Bird (Stravinsky). In the interval at 6.15, Talk. 7.15, Talk on Denmark. 7.30, Film Review. 8.0, Trio Concert: Overture,

The Secret Marriage (Cimarosa); Minnet (Schubert); La Pille aux Cheveux de Lin (Debussy); Selection from L'Arlesienne (Bizet); Violin Solo: Tambourin chinois (Kreisler); Cello Solo: Die Quelle (Schumann); Piano Solo: Humoresque (Rachmaninov); Ma poupée chérie (De Séverac); Scènes rustiques (Razigade). 8.45, Readings from the Works of Paul de Mont. 9.0, Concert, relayed from the Kursaal, Ostend: Soloists, Tomaz Alcaide (Songs) and Hector Clokers (Violin); First Suite from L'Arlesienne (Bizet); Valse triste (Sibelius); Julex (Gounod); Havanaise for Violin; (Saint-Saëns); Song from Romeo and Juliet (Gounod); Prelude, Cortège, Orage and Finale from Dinorah (Meyerbeer); Song from The Pearl Fishers (Bizet); The Ride of the Valkyries (Wagner). After the Programme, Le Journal Parlé and Dance Music from the Kursaal, Ostend.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Romanian Music by the Sibiceano Orchestra. 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records. 7.0, Time Signal. 8.0, A Sketch. 8.20, Concert by the Kantorei Choir of Leipzig, conducted by Kurt Thomas. 8.50, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—8.0 a.m., St. Stephen's Procession from the Coronation Church, followed by a Concert by the Royal Hungarian Opera House Orchestra. Conductor: Anton Fleischer; Overture (Erkel); Les Préludes (Liszt); Rurality Hungaria (Dolnanyi); Summer Evening, No. 5 (Kodaly); Variations and Fugue; In the Interval, Programme Announcements. 2.0 p.m., Concert of Hungarian Music on Gramophone Records. 3.30, Programme for Children. 4.15, Concert by the Mandits Orchestra. 5.15, Reading. 5.45, Hungarian Folk Song Recital by Isabella Nagy, to Accompaniment by the Eugen Farkas Cigany Band. 7.0, Talk. 7.45, Dramatic Programme. 9.40, Time Signal and Weather Forecast. 9.45 (approx.), Concert of Light Music by the Budapest Salon Orchestra; Hungaria (Nagy); Waltz (Nagy); Potpourri (Jacobi); Weinlese in Tokai (Por); Two Songs; Neapolitan Serenade (Polgar); Hunyadi March (Erkel). 11.0, Concert of Popular Music by the Imre Magyar Cigany Orchestra.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.2 p.m., Weather Forecast. 12.5, String Ensemble Concert, relayed from the Wivex Restaurant. 2.0 to 2.30, Interval. 2.30, Gramophone Concert: Aria from The Magic Flute (Mozart); Chanson villageoise (Popper); Finale from the Second Act of The Gipsy Baron (Joh.

Strauss); Aria from The Gipsy Princess (Kafman); Aria from Liselotte (Künneke); Melody from Meine Schwester und ich (Benatzky); Melody from Der Sieger (Heymann). 3.0, Programme for Children. 3.30, Orchestral Concert, conducted by Emil Reesen; Overture, Semiramis (Rossini); Selection from Si j'étais Roi (Adam); Waltz, Tout Paris (Waldteufel); Ballet Music from La Gioconda (Ponchielli); Contredanse for Strings (Mozart); March from The Queen of Sheba (Gounod); Reading; Overture, La Princesse jaune (Saint-Saëns); Selection from The Merry Wives of Windsor (Nicolaï); Melodies from the Serenade in F for Strings (V. Herbert); Waltz, Abendblätter (Offenbach-Saenger); American Patrol March (Menckham). 5.30, Interval. 5.40, Exchange and Fish Market Prices. 5.50, Reading. 6.20, French Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk: Detective Novels. 8.0, Chimes from the Town Hall. 8.2, Concert of Czechoslovakian Folk Music. 9.0, The Ill-advised Murder—Play in One Act (Leck-Fischer). 9.20, Orchestral Concert of Popular Danish Music: Overture, Svederiken (Weyse); Dances from Elverhøj (Kuhlau); En Karnevalsfest (Hartmann); Peasant Dance from Little Christie (Hurtmann); Music (Lumbye): (a) Waltz, Nordlys. (b) Polka, Hostblomsten. (c) Gallop, August Bournonville. 10.20, News Bulletin. 10.35, Gramophone Records of Variety Items. 10.50, Dance Music from the Ritz Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.15 a.m. (Sunday) Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and Programme Announcements. 7.35, Radio Journal. 7.45, Review of Foreign Affairs for the Past Week. 8.0, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN; 413 metres; 1.2 kW. and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Stock Report, Weather Forecast and Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Talk. 7.45, Gaelic Talk. 8.0, Concert by the Augmented Station Orchestra. 8.30, Mezzo-Soprano Solos by Mary Crowley. 8.45, A Play by D. Day and Company. 9.0, Sextet Music. 9.15, A Sketch. 9.30, Concert by the Augmented Station Orchestra. 10.0, Popular Music on Gramophone Records. 10.30, Time Signal, News, Weather Report and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Popular Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Concert of Light Music. 7.30, Radio Gazette. 8.0, Tour de Garde Programme. 8.45, News Bulletin. 9.0, Concert, relayed from Caen. 11.0 p.m., till Close Down, Programme in English by the I.B.C. 11.0 p.m., Songs from Shows—Orchestral Concert: Selections from On With the Show (Nicholls); Say it with Songs (Brown-Henderson); The Gipsy Princess (Kálmán); Frederica (Lehar); La Belle Hélène (Offenbach); and The Land of Smiles (Lehar). 11.30, Scottish Ballads: March of the Cameron Men; Loch Lomond; Johnny Cope; Kirkgonnell Lea; Ae Fond Kiss; The De'il's Awa'; Green crow the Rashies O; When the Kye comes Hame. 12 Midnight, Concert: I idolise my Baby's Eyes; One Little Quarrel; Flame of Desire; This is the Missus; Three Little Times; I'm for you a Hundred Per Cent; Goopy Geer; Got a Date with an Angel; Mause; Home; Ho Hum; Honest, Really, Truly; The Queen was in the Parlour; The Waltz you saved for Me. 1.0 a.m. (Sunday), Variety Concert: Genial Gerry; Xylophonia; Skin-a-link the Sergeant; Was Nero a Hero; Musical March; Mulberries; Don't Look at Me that Way; I wonder what is really on his Mind; La Paloma; Serenata; The Dutchman's Return. 2.0, Dance Music: I'll be Reminded of You; I'm Sailing on a Sun-beam; I'm in Love with you; She's my Secret Passion; I've got a Feeling I'm Falling; Hush-a-bye Baby; Oh, What a Night; In a Quiet Corner; A Little Kiss Each Morning; I'm Following You; The Web of Love; I'm still at your Beck and Call; Parisienne Doll; Just an Hour of Adoration; It's Unanimous Now; If I Didn't Have You. 2.57, I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—6.15 p.m., Economic Notes. 6.25, Talk: Extracts from Goethe's Diary. 6.50, Talk: The Value of the Open Hand in Business. 7.15, Time, Programme Announcements, Weather, and Economic Notes. 7.30, Talk by Annette Kolb: From my Complaint Book. 8.0, See Berlin (Witzleben). 10.20,

Time and News. 10.45, Concert from Langenberg. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call Ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hannover, 566 metres; and Kiel, 232.2 metres.—4.50 p.m., Concert, relayed from the Lina Albert Ballin: Selection from Der Obersteiger (Zeller); Waltz, Moonlight on the Alster (Fetras); Berceuse (Godard); Paraphrase on Ein Vogeln sing im Lindenbaum (Eberle); Melodies from Countess Maritza (Kalmán); Ufa-Ton-Bohnen (Heymann). 5.30, Talk: Techniques as the Foundation and Manifestation of German Civilization. 5.55, Variety Programme. 6.35, Talk: The State and the Family in China. 7.0, Topical Talk. 7.15, Weather Report. 7.20, Julius Stinde Programme for his Ninetieth Birthday; Introductory Talk; Aunt Lotte—One-Act Comedy in Dialect. 8.0, See Berlin (Witzleben). 10.0, Time and News. 10.20, Dance Music from Berlin (Witzleben). **HANOVER.**—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and **DANZIG**, 453.2 metres.—11.30 a.m., Concert by the Small Orag Orchestra, conducted by Eugen Wilcken: Overture, Gri-Gri (Lincke); Ballet Suite, Les Millions d'Arlequin (Drigo); Waltz, Strandbilder (Waldteufel); Puppel-Intermezzo (Siede); In the Transylvanian Alps (Dreyer); Selection from Das Fürstentum (Lehar); Der Spottvogel (Manfred); Waltz, Ein Frühlingssorgen (Naeff); March, In Treue fest (Teike). 1.20 p.m., News Bulletin. 1.50, Gramophone Concert of Light Music. 2.30 to 3.30, Interval. 3.30, Programme for Children. 4.0, Concert by the Small Orag Orchestra conducted by Eugen Wilcken: Overture, Albin (Flotow); Potpourri of Eysler's Music (Hrubý); Suite from Nell Gwynn (German); Waltz, Klänge aus Wien (Döring); Overture, Die Irrfahrt ins Glück (Suppe); Serenade (Toselli); Liebeszene (Lubbe); Selection from La Dame blanche (Boieldieu); March (Teike). In the interval at 5.0 (approx.) (from Danzig), Talk on Films. 6.0, Programme Announcements. 6.10, Programme Announcements in Esperanto. 6.15, Agricultural Market Prices. 6.20, World Market Report. 6.35, Talk: The East Prussian Artisans' Meeting in Cranz. 6.45, Talk. 7.15, Old and New Pianoforte Music by Willi Niggeling: Hymn (Glück-Rüdtl); Toccata (Kirnberger); Gavotte (Martini-Niggeling); Choral and Fantasia (Gmund); Prelude (Bolinke); Wintermärchen (Möser); Variations on Es ist ein Schnitter, heisst der Tod (Rüdtl). 7.50, Weather Report. 8.0, Concert by the Königsberg Opera House Orchestra to celebrate the Meeting of the East Prussian Artisans in Cranz: Overture, Le Maçon (Auber); Eighteenth Century Folk Song, Des Handwerksmenschchen Abchied; Meister und Gesell; Jonnneymen's March from Die goldne Meisterin (Eysler); Folk Song, Zu Rezensburg auf der Kirchturnspitz; Der Schneider in der Hölle; Folk Song of Oberhausen and the Rhine, Die Leinsweber haben eine subere Zunft; March dedicated to the East Prussian Artisans, Ehret das Handwerk! (Hrubetz); Was machen die Mutter?; Was machen denn die Tielher?; Kommt der fremde Schleifer her; In der Waldschmiede (Eilenberg); Folk Melody, Ja so wickeln wir; Fassbinder-Marsch (Suppe); Silesian Folk Melody, Ich bin der Herr Böttcher; Folk Song of Tübingen, Müllerlied; Die Mühle im Tale; Folk Song of Pomerania, Am Sonntag isst der Meister Bohnen; Treue um Treue (Teike). 9.30, News Bulletin. 9.35, Concert by the Königsberg Opera House Orchestra. 10.10, Weather, News and Sports Notes. 10.30, Dance Music from Berlin (Witzleben). 12.30 a.m. (Sunday), Close down.

HILVERSUM

Announced **HUIZEN**, 296.1 metres; 20 kW. (7 kW up to 4.40 p.m.).—7.40 a.m. till Close Down, Programme of the Catholic Radio Society (K.R.O.). 7.40, Variety Music on Gramophone Records. 8.55 to 9.40, Trio Concert. 11.10, Religious Address. 11.40, Police Notes. 11.55, Sextet Concert. 1.25 to 1.40 p.m., Interval. 1.40, Variety Music on Gramophone Records. 2.10, Programme for Children. 3.40, Variety Concert. 4.40, Sports Talk. 4.55, Variety Concert. 5.40, Light Music on Gramophone Records. 6.0, Press Review. 6.20, Popular Music on Gramophone Records. 6.50, Talk: China. 7.10, Police Notes. 7.25, Talk. 7.40, Variety Concert: March, The Gladiators' Farwell (Blankenburg); Der alte Brummbär (Fueick); Heisselaten (Kockert); Potpourri, Achtung, Achtung, wir senden Tanzmusik! (Dostal); Variety Items by Jean Janssens; Zwei Mädchenaugen, from The Gipsy Princess (Kalmán); Ich bin nur ein armer Wander-gesell (Künneke); Ich liebe dich (Grieg);

AUGUST 20th

SATURDAY

continued.

Canto napolitano (Tosti); Romance, from Les Dragons de Villars (Maillart); Recitations, The Forge in the Forest (Eilenberg); Waltz, Vogelstimmen (Waldteufel); Lincke Potpourri, March of the Little Soldiers (Rebattu); Comedy Overture (Kéler-Béla); Waltz, Wiener Bonbons (Johann Strauss); Recitations; Variety Items by Jean Janssens; Volga Song from The Czarevitch (Lehar); Musikant, Musikant, wo ist deine Heimat? from Ein Tango für dich (Lehar); Song from Schön ist die Welt (Lehar); Fantasia on Beethoven's Adagio (van Dijk); Song from De Prikplank (Mulder); Bell Foxtrot (Lindsay-Theimer); Dein Mund, sagt Nein, doch deine Augen sagen Ja (Rosen); Paso doble, Cordoba (Lauzano); In a Chinese Temple Garden (Kettelbey); K.R.O. March (Lustenhower). In the interval at 8.55, News. 10.40, Variety Music on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced **HILVERSUM**, 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Worker's Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25, Physical Culture. 7.40, Light Music on Gramophone Records. 9.40, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55 till Close Down, V.A.R.A. Programme. 9.55, Variety Programme: J. Jong (Organ); L. Cohen (Violin); F. Feltkamp-Belinfauter (Cello); L. Fuld (Songs) and a Dramatic Ensemble. 11.40, Septet Concert. 1.25 p.m., Interval. 1.55, Talk by M. S. de la Bella. 2.10, Concert by the Schrammel Quintet, conducted by M. Drukker: March, Wein bleibt Wien (Schrammel); Waltz, Flattergeister (Jos. Strauss); Gavotte, Rendez-vous (Aletter); Waltz, Was Blumen träumen (Translatur); Potpourri, Wien bei Nacht (Kozzak). 2.40, Talk on Sports. 2.55, Concert (cont.). Heinzelmännchens Wacht-parade (Noack); Waltz, Ein Garten mit blühenden Weine (Stolz); Draussen in Schön-brunn (Benatzky); Les fleurs que nous aimons (Crémieux); Blumengefüster (Blon); Piano, Pianissimo (Benatzky); Selection from Countess Maritza (Kalmán). 3.40, Topical Talk. 4.0, Concert (cont.). So küsst man nur in Barcelona (Güttmann); Ich hab' ein Mädel gern (Stolz); Im Casino da steht ein Pianino (Stolz); Musikant, wo ist deine Heimat (Stolz); Tango Zigeunerin, tanze (Vacek); Parle-moi d'amour (Lenoir); Tango, Plegario (Bianco); Potpourri, Lass Schlager sprechen (Dostal). 4.40, Frisian Programme for Children. 5.40, Concert by the V.A.R.A. Orchestra: Marche des gamins de Paris (Berger); Overture, Orpheus in the Underworld (Offenbach); Selection from Carmen (Bizet). 6.10, Talk for Socialists. 6.25, Concert (cont.). Salve Imperator (Fueick); Waltz, Tout Paris (Waldteufel); Selection from Paganini (Lehar). 6.55, Address by M. A. de Vries. 7.40, Programme in Honour of the International Demonstrations in the Cause of Peace, relayed from Maastricht. 8.55, Miscellaneous Items, Football Results and Light Music on Gramophone Records. 9.15, Programme from Maastricht (cont.). 10.10, Concert by the V.A.R.A. Orchestra, conducted by M. H. Wiggelaar. 10.40, News Bulletin. 10.50, Concert (cont.). 11.25, Light Music on Gramophone Records. 11.40, Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.15 p.m., Announcements, News Bulletin and Popular Music on Gramophone Records. 7.45, Sports Talk. 10.5, Gramophone Concert.

KIEL.—See Hamburg.

KLACENFURT.—See Vienna.

KOSIDE.—See Prague.

LAHTI

1,796 metres, 54 kW., and **HELSINKI**, 368.1 metres.—6.35 p.m., Concert by the Station Orchestra. 7.10, Song Recital. 7.30, Talk. 7.55, Organ and Song Recital, relayed from Vupuri, 291 metres: Sololats, Venni Kuosma (Organ). Emil Svartström (Songs). 8.45, News in Finnish and Swedish.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert: Classical Symphony in D, Op. 25 (Prokofiev); Chaconne for Pianoforte (Raudel); Saltarello from the Italian Symphony (Mendelssohn); Violin Solo, Minuet in G, No. 2 (Beethoven); Slav Dance, Op. 46, No. 4 (Dvorak); Cello Solo, Intermezzo, Goyescas (Granados); Chinese March from The Song of the Nightingale (Stravinsky). 12 Noon, Concert conducted by Eysoldt. 1.15 p.m., Weather, News and Time Signal. 1.30, See Stuttgart. 2.35, Week-end Concert on Gramophone Records. 3.30, Economic Notes and Time Signal. 4.20, Talk: Through the Rhineland and Westphalia. 4.40, Talk: The Garden in August. 5.0, Choral Concert: Mein Mädel (Lendvai); Es wollt' ein Jägerlein jagen (Rein); Das

Lieben bringt gross' Freud (Erdlen); Ein guter Wein (Rein); Chamber Music, (a) Sonata, Il Trillo del Diavolo (Tartini), (b) Chaconne in D Minor for Violin (Bach), (c) Aria from the Suite in A Minor, Op. 103a (Bach); Einkehr (Zöllner); Der rheinische Wein (Lendvai); Jutland Dance Song (Lendvai); Muss i denn zum Städtle hinaus (Rein). 6.20, Talk for Women: Voluntary Work for Women and Girls. 6.45, Weather, Time, Economic Report and Sports Notes. 7.0, Talk: Insurance and Agriculture. 7.20, Wireless Notes. 7.30, Talk: Race and Culture. 7.55, First General News. 8.0, See Berlin (Witzleben). 10.15, News and Sports Notes. 10.35, Concert and Dance Music conducted by Eysoldt. 12 Midnight, Masters of Jazz. 1.0 a.m. (Sunday), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW. and **DRESDEN**, 319 metres.—5.0 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber: Overture, Ruy Blas (Mendelssohn); Melodies from Oberon (Weber); Suite, Hersilia (d'Ambrosio); Scherzo Caprice No. 5 (Nedbal); Waltz, Wo die Zitronen blühen (Joh. Strauss); Melodies from Der Obersteiger (Zeller). 6.30, Talk on Waldemar von Bausnern. 6.50, Topical Talk. 7.0, Talk on the occasion of the Bi-Centenary of the Founding of the Herrnhuter, a Branch of the Moravian Brethren. 7.30, Songs of the Sudetic Mountains—Recital by Alfred Leubner: Schmeck dein schönes Haar (Brunetti-Pisano); Schwanengesang (R. von Prohaska); Trennung (Reifner); Songs (Horn), (a) Märcin, (b) Kanist du's verstehen? (c) Sommertag, (d) Greift zum Becher, (e) Widmung, (f) So früh schon der Herbstwind, (g) Der schwere Abend, (h) Spruch. 10.0, See Berlin (Witzleben). 10.15, News Bulletin, followed by Concert from Langenberg. 12 Midnight, Close Down.

LINZ.—See Vienna.

LWOW

381 metres; 16 kW.—6.0 p.m., See Warsaw. 7.15, Miscellaneous Items. 7.35, See Warsaw. 7.45, Answers to Correspondents. 8.0, See Warsaw. 10.50, Dance Music by the Typografja Mandoline Orchestra. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert. 7.50, Radio Gazette for Lyons and the South-East. 8.30, Relay from Paris (Ecole Supérieure, 447.1 metres), or Relay of a Concert from the Casino, Aix-les-Bains.

MADRID

UNION RADIO, CALL EAJ7, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices, and Request Music on Gramophone Records. 9.15, News Bulletin. 9.30 to 11.0, Interval. 11.0, Chimes and Time Signal. 11.5 (approx.), Excerpts from (a) Gigantes y Cabezudos—Musical Play (Caballero) and (b) Los Gavilanes—Musical Play (Guerrero). 1.15 a.m. (Sunday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—7.0 p.m., See Prague. 10.15, Programme Announcements. 10.20, Variety Programme: One-Act Radio Play, followed by Songs and Instrumental Solos.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communist's Radio Journal. 7.10, Popular Music. 8.0, Talk in Spanish: The Agricultural Worker in the Soviet Union. 9.0, Talk in English: An Interview with a Printer. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 230 metres.—5.0 p.m., Concert by the Station Orchestra, conducted by Karl List: Overture, The Gipsy Baron (Joh. Strauss); Nocturne (Debussy); Waltz, Nachtschwärmer (Zeller); Suite, Jeux d'enfants (Bizet); Suite from Sleeping Beauty (Tchaikovsky); Polka (Frauenherz (Jos. Strauss); Potpourri of Marches (Kozzak). 6.15, Two Talks for Girls: (a) The Woman Film Photographer, (b) My Little Room. 6.45, Wireless Notes. 7.0, A Literary and Musical Sequence for Harvest Time. 7.40, Talk: Wanderling with the Gipsies. 8.0, Der Geldteufel (The Money Fiend)—Village Comedy in Three Acts (Julius Pohl). 9.30, Variety Concert on Gramophone Records. 10.20, Time Signal. Weather Forecast, News Bulletin and Sports Notes. 10.45, Concert from Langenberg. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—5.0 p.m., Variety Music on Gramophone Records. 5.45, Programme for Children. 6.15, Folk Music. 6.45, Economic Talk. 7.0, Announcements. 7.15, Weather, News and Agricultural Talk. 7.30, Song Recital by Johanne Steinraun: Three Popular Songs; Two Songs (Torjussen); Songs (Brahms), (a) Vergebliches Ständchen, (b) Der Tod, das ist die kühle Nacht, (c) Ständchen; Verborgenheit (Wolf); Aria from The Prophet (Meyerbeer). 8.0, Time Signal. 8.1, Talk. 8.30, Orchestral Concert, conducted by Hugo Kramm. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Sports Notes. 10.25, Programme to be announced.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Popular Music on Gramophone Records. 6.0, Programme for Children. 6.30 to 8.0, Interval. 8.0, Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Popular Music on Gramophone Records. In the intervals at 8.25, Sports Notes, and at 8.30, Time and Announcements. 8.45, A Waltz Dream—Operetta in Three Acts (O. Strauss). In the intervals, Talk and Miscellaneous Items. 10.55, News Bulletin.

PARIS

EIFFEL TOWER; Call **FLE**; 1,445.7 metres; 13 kW. Time Signals, on 2,650 metres, at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Talk: Music and Musicians. 7.0, Le Journal Paris. 8.20, Weather Forecast. 8.30, Two Plays: (a) Déjanire—Tragedy (Pierre Freyssinet), and (b) Dupuis six mois—Comedy in One Act (Max Maury). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—12 Noon to 2.0 p.m., News and Light Music on Gramophone Records. 7.0, News Bulletin and Press Review. 7.5, Variety Concert on Gramophone Records. 7.45, Review of the Events of the Week. 8.0, Gramophone Concert (contd.). 8.15, Un client sérieux—Sketch (Georges Courteline). 9.0, Concert of French Songs by Music Hall Artistes. 10.0, Dance Music on Gramophone Records. 12 Midnight, Close Down.

PARIS

RADIO PARIS, CALL CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather Forecast and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and Weather Forecast. 12 Noon, Gramophone Concert: La Fête au Harem (Pichyast); J'ai trouvé trois filles (Goublier); En relisant vos lettres (Masson-Riek); Dawn in the Country (Songs of Birds and Cries of Animals); Sous les toits de Paris (Moretti); Ne m'écriez plus (Lenoir); Souvenir de Rouen (Blondau); Roses of Picardy (Haydn-Wood); Effacement (Ganne); Paradise (Brown); Selection from The Geisha (Jones); March of the Grenadiers (Schertzinger); The Phantom Brigade (Mylderton); Le pauvre labourer (Tiersot); Le retour du marin (Tiersot); Love Song (Bixio); Song (Burke); Mandoline (May); Chanson du Facteur (Chantrier); Trumpet Schottische (Brun); March, Paris-Belfort (Farrizoul). In the intervals, News and Weather Forecast. 6.30, Market Prices, Weather, Agricultural Report, Talk, and Racing Results. 7.0, Talk. 7.10, Gramophone Concert: Gavotte de Guéméné; Bal à deux; Innonnata (Garetti); Air (Tchesnokov); Requiem (Lvovskiy); Cara Plectina (Lama); Mama mia (Nutilé); El Carrerito (Vachnyza); Araca Corazon (Vachnyza); Uhrweihl O Kaafa (Kanelhomaend). 7.45, Commercial Prices and News. 8.0, Reading of Plaubert's Letters. 8.30, News and Sports Results. 8.40, Review by Jean Rieux. 8.45, La Vie drôle—Variety Programme. 9.15, Press Review and News. 9.30, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by WBXX on 48.86 metres and 25.27 metres.—9.0 p.m., Saturday Matinée, from New York. 9.30, Behind the Law—Tales of the Pennsylvania State Police. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Bulletin. 10.12, Programme Announcements. 10.15, Talk: Health through Recreation. 10.30, Stories for Children by Louise Guiraud. 10.45, Little Orphan Annie. 10.50, Temperature Report. 10.51, Weather Report. 11.0, Little German Band. 11.30, Time Signal. 11.32, Teaberry Sport Review. 11.37, Press News-Reeler. 11.44, Weather Report. 11.45, Programme to be announced. 11.59, Time Signal. 12 Midnight, Peppodent Amos 'n' Andy, from New York. 12.15 a.m. (Sunday), Terrace Gardens Orchestra, from New York. 12.30, Sacred Songs. 1.0 to 3.0, New York Relay. 1.0, The Play's the Thing. 1.30, Dance with Countess D'Orsay. 2.0, Portorican American Coffee—Eltoro Week-End

AUGUST 20th **SATURDAY** continued.

Review with Gus Van, the Pickens Sisters, and Vic Arden's Orchestra. 2.30, The First-Nighter. 3.0, Homey and Old-fashioned. 3.30, Object Matrimony, from New York. 3.45, Twenty Fingers of Harmony, from New York. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Messages to the Far North. 5.0, Jack Pettis and his Orchestra. 5.30, Time Signal and Good Night.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.15 p.m., Announcements and News Bulletin. 7.35, See Warsaw. 7.45, Popular Music on Gramophone Records. 7.58, Time Signal. 8.0, See Warsaw. 9.55, Time Signal, Sports Notes, and Police Report. 10.5, See Warsaw. 10.40, News Bulletin. 10.50, Concert of Dance Music on Gramophone Records. 12 Midnight (approx.), Close Down.

PRAGUE

488.6 metres; 120 kW.—2.30 p.m., Orchestral Concert of Ballet Music: Dance Intermezzo (Sebor); Ballet Music (Kovarovic); Ballet Music from The Two Widows (Smetana); Ballet Music from Peter Simple (Nedbal); Polka and Fariant from Selwanda the Piper (Weinberger). 5.50, Talk: The Care of Invalids in the Home. 6.0, Popular Music on Gramophone Records. 6.10, Agricultural Report. 6.15, Talk for Workers. 6.25, German Transmission: News. 6.30, Talk in German: Arab Music in Morocco. 7.0, Popular Songs. 7.20, Sketch. 7.50, Popular Songs. 8.15, Slavonic Dances, Op. 46 and 72 (Dvorak), by the Station Orchestra, conducted by Jeremias. In the interval at 9.0, Time Signal. 10.0, Time, News, and Sports Notes. 10.15, Miscellaneous Announcements. 10.20, See Moravska-Ostrava.

RABAT

416 metres; 6 kW.—1.38 p.m. to 3.0, Concert of Light Music. 5.0 to 6.0, Gramophone Records of Variety Music. 8.0 to 8.45, Arab Programme. 8.45, Le Journal Parle. Weather Forecast, and News Bulletin. 9.0 to 10.0, Concert: Selection from Les p'tites Michu (Messenger, arr. Labis); Song from Les Cent Vierges (Lecocq); Melody from Son Altesse Royale (Caryl); Song from Phi-Phi (Scrinie); Selection from La Vie Parisienne (Offenbach-Tavan); Song from Les Saltimbanques (Ganne); Selection from Tip-toes (Gerschwin, arr. Salabert). 10.0, Popular Music on Gramophone Records.

RADIO-SUISSE ROMANDE

SAUTENS, 403 metres; 25 kW.; **LOUSANNE**, 680 metres; and **GENEVA**, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Lausanne), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5, Gramophone Concert (contd.). 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel. 5.1, Concert by a String Orchestra. 6.30 (from Lausanne), Dance Music on Gramophone Records. 7.0 (from Geneva), Chimes from St. Peter's Cathedral, followed by Weather Forecast. 7.10 (from Lausanne), Dance Music (contd.). 7.30 (from Lausanne), Talk: The Week in International Affairs. 8.0 (from Lausanne), Popular Concert of Accordion and Zither Solos. 8.45 (from Geneva), Monologues by M. Mosse. 9.0, Concert by the Station Orchestra. 10.0, News Bulletin and Weather Forecast. 10.15 (from Geneva), Dance Music on Gramophone Records. 11.0, Close Down.

RIGA

525 metres; 15 kW.—7.30 p.m., Concert of Contemporary Music, followed by Operetta and Sound Film Melodies. 8.25 (in an interval), News. 9.0 (in an interval), Weather. 9.30, Dance Music. 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 190, 441 metres; 50 kW. Relayed by Naples, 319 metres, and 280, 254 metres.—8.15 to 8.30 a.m., Giornale Radio and Announcements. 12.30 p.m., Weather and Light Music on Gramophone Records. 1.0 to 2.15, Sextet Concert: Overture, Die Fledermaus (Johann Strauss); Fantasia, Marmama (Albeniz); Melody (Jarmann); Italian Solos (Albeniz): (a) Granada, (b) Malagueña; Oriana (Ginanni); Selection from Acqua cheta (Pietro); Rustic Dance (Krome). In the interval at 1.15, Giornale Radio, and at 1.30, Time and Announcements. 5.0, Exchange, Report of the Royal Geographical Society, Giornale Radio and Announcements. 5.15, Reading. 5.30, Soprano Song Recital by Maria Serra Massara: Oblio (Sgambati); Crepuscolo triste (Giordano); Poesia persiana (Santolinguoto); Venitelo a vedere il mio piccino (Respighi). 5.45 to 6.15, Concert: Festa di maggio (Cullotta); Cinghietto di passeri (Amadei); Intermezzo from L'amico Fritz (Mascagni); Song (Hamud); African Fantasia (Donati); Piccola Overture (Bece). 7.10 (from Naples), Shipping Report and Sports Notes. 7.15, Atmospheric Signals, Agricultural Report, and Giornale Radio. 8.0, Time, Announcements, and Variety Music on Gramophone Records. 8.30, Sports Notes, Announcements, and Tourist Talk. 8.45, Concert by the Police Band, conducted by Andrea Marchesini. In the interval, Review of New Books. 9.30, La partenza per l'Asia—Que-Act Comedy (D'Ambr). 10.0, Concert by the Police Band (contd.). 10.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—7.0 to 9.45 p.m., New York Relay. 7.0, Rice String Quartet. 7.30, Symphonic Matinee. 8.0, Merry Madcaps. 8.30, Soloists. 8.45, Matinee Gems. 9.30, Soloist. 9.45, Studio Ensemble. 10.15, Musical Programme. 10.30, Old Favourites, from New York. 11.0, Joe and Eddie. 11.15, Waldorf-Astoria Orchestra, from New York. 11.30, American Trio. 12 Midnight, Swimming Lessons. 12 Midnight (W2XAF only), Stock Reports. 12.15 to 1.0 a.m. (Sunday), New York Relay. 12.15, Intermezzo. 12.30, Musical Programme. 12.45, The Goldbergs. 1.0, Lady Fingers (Pianist). 1.10, Bernard Silberg (Cellist). 1.30 till Close Down, New York Relay. 1.30, K-7, Secret Service Spy Story. 2.0, Goldman Band Concert. 3.0, Lucky Strike Dance Hour. 4.0, Russ Columbo and his Orchestra. 4.15, Talk by Merle Thorpe. 4.30, Paul Whiteman's Orchestra. 5.0, Ralph Kirbery (Dream Singer). 5.5, Buddy Rogers and his California Cavaliers. 5.30 (approx.), Close Down.

SCHWEIZERISCHER**LANDESENDER**

BEROMUNSTER, 459 metres; 60 kW.; **BASLE**, 244.1 metres; and **BERNE**, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Variety Programme on Gramophone Records. 1.50, Weather Forecast and Exchange Quotations. 2.0 to 3.30, Interval. 3.30, Dance Music on Gramophone Records. 4.0 (from Berne), Programme for Workers. 4.30 (from Berne), Concert by the Berne Accordion Club; Conductor: Otto Sigrist. 5.0 (from Berne), Talk: The Coming Football Season. 5.30, Weather Forecast. 5.32 to 6.30, Interval. 6.30 (from Zürich), Talk. 7.0 (from Zürich), Chimes from Zürich Churches. 7.15 (from Berne), Wireless Notes. 7.30, Choral Concert on Gramophone Records. 8.0 (from Basle), Variety Concert relayed from Das Volkshaus. 9.10, Radio Sketch (Moritz Ruckhäberle). 9.30, Weather Forecast and News Bulletin. 9.45, Light Music on Gramophone Records. 10.15, Dance Music on Gramophone Records; In the Interval, Songs by Paul O'Mantis. 11.0, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.0 p.m., Concert of Light Music by Wertheimer's Viennese String Orchestra: Overture, Carmen (Bizet); Waltz, Dorf-schwalben aus Oesterreich (Jos. Strauss); Waltz (Sylvain); Foxtrot (Sylvain); Potpourri of Verdi's Music (Weninger); 'Cello Solo: Adelaide (Beethoven); Potpourri of Popular Songs (Golwyn). 5.5, Reading. 5.30, Light Music on Gramophone Records. 6.30, Talk on Fishing. 6.45, Vocal and Instrumental Concert of Light Music relayed from Falun, 307 metres. 7.15, Weather and News. 7.30, Talk from Uppsala, 453.2 metres. 8.0 (from Göteborg), Recital of Folk Music on the Balalaika and Domra, by Boris Borisoff. 8.30, The Four Feathers—Play (A. E. W. Mason). 9.45, Weather and News. 10.0, Modern Dance Music by the Servais Orchestra, relayed from Nöjösfalltet. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light and Operatic Music. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.2, Concert, relayed from Bordeaux-Lafayette. 1.15, Light Music on Gramophone Records. 2.0, Talk for Workers, in French. 2.15, Talk in French: An Artistic Movement in the Munster Valley. 2.30, Concert of Dance Music on Gramophone Records. 3.45, Talk in French: Robert Schumann. 4.0, Gramophone Concert of Dance Music (contd.). 4.45, Legal Talk in French. 5.0, Jazz Concert by the Station Orchestra: One-step, You're the One; Foxtrot, Hummin' to Myself; Foxtrot, Green Song; Waltz, Mieux que les fleurs; Foxtrot, Joey the Clown; Foxtrot, Close your Eyes; Tango, Les femmes sont perfides; Foxtrot, En parlant un peu de Paris; Waltz, Künstlerleben (Joh. Strauss); Foxtrot, Keep Smiling; Rumba, Cuban Holiday; Foxtrot, Um ein bisschen Liebe (Abraham); Tango, Come with me to Abbazia; Foxtrot, Auf Wieder-

schen, my Dear; Slow Foxtrot; Foxtrot, Hot Ice; Aimer, Boire (Geitner). 6.0, Tourist Talk. 6.15, Agricultural Talk in French. 6.30, Gramophone Records of Light Music; Overture, Die Fledermaus (Johann Strauss); Selections from Die Fledermaus (Joh. Strauss); Second Waltz Potpourri (Robrecht). 7.45, Joséphine vendue par ses sœurs—Operetta (Roger). 9.45, Concert by a Mandoline and Guitar Orchestra, relayed from Niederbronn-les-Bains. 11.0, Quintet Concert of Chamber Music, relayed from Radio Colonial (Paris) (25.63 metres). 12 Midnight, Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG**, 570 metres.—10.0 a.m., Recital by H. Kefer-Bluthardt (Soprano) and Hermann Conzelmann (Baritone): Airs and Duets from Templer und Jüdin (Marschner). 10.30 (from Mannheim), Trio Concert: Trio Op. 7 (Wolf-Ferrari); Variations on a Modern Viennese Melody, Op. 9 (Gal). 11.0, Time, News, and Weather. 11.15 to 11.30, Sponsored Music. 11.45, Sponsored Music (contd.). 12 Noon, Weather Report. 12.5 p.m., Sponsored Music. 12.20, Concert of Viennese Music by Heinz Mönch's Schrammel Trio; Heimkehrer Marsch (Münzberg); Waltz, Künstlerleben (Joh. Strauss); So war's auch in Wean (Förderl); Echt Wienerisch (Ziehrer); Wäscherädellied (Reimann); March, Wiener Künstler (Schrammel). 12.50, German Songs by Eberhard Schrepff (Baritone); Mein Heimatland, o du herrlicher Rhein (Obermeyer); Song from Der Waffenschmied (Lortzing); Der Gott der Eisen wachsen liess (Methfessel); Heinrich der Vögler (Löwe); Prinz Eugen (Löwe); Heimweh (H. Wolf); Mahnung (Hermann). 1.15, Time and News. 1.30, Orchestral Concert, conducted by Gustav Gölich: Overture, Der Haideschacht (Holstein); Verdis Triumph (Weninger); Lyric Suite (Grieg); International Waltz Potpourri (Robrecht); March, Kunst und Natur (Schrammel). 2.30, Mouth Organ Concert: Selection from Light Cavalry (Suppé); Melody from Das Nachtlager von Granada (Kreutzer); Melody from Der Trompeter von Säckingen (Nesster); March, Fredericus Rex. 2.50, Mandoline and Guitar Concert: Farewell of the Gladiators (Blankenburg); Maiwälder (Becher); Japanese Lantern Dance (Yoshitomo); Minuet (Bocherini); Intermezzo, Erste Liebe (Becher); Song of the Boatmen (Berlika-Becher); Frühlingmarsch (Becher). 3.30, Handwork for Children. 4.30, German Folk Songs of Two Centuries. Concert by the Heidelberg Male Voice Choral Society, relayed from Mannheim: Zu Strassburg auf der langen Brück (Hirsch); Kapitän und Leutnant (Hegar); Mein Eigen soll sie sein (Othegraven); Heimliche Liebe (Rudolf); Ade zur guten Nacht (Poppen); Zwei dreimal geh ich (Wolfrum); Müllers Abschied (Jungst); O Diandele tuf drunt im Tal (Herbeek); Die bayrischen Maide (Forstler); Matzelbach (Kremer); Der Jäger aus Kurpfalz (Othegraven); Wanderlied (Volbach). 5.0, See Munich. 6.15, Time and News. 6.25, Wireless Technical Talk. 6.50, Talk. 7.15, Time and Weather. 7.30, Sonata in A for Violin and Piano forte (the Kreuzer) (Beethoven), by Georg Beerwald and Otto Seyfert. 8.0, See Berlin (Witzleben). 10.20, Time and News. 10.45, Concert from Langenberg. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Picture Transmission. 5.15, Popular Songs. 5.30, Operatic Music: Two Melodies from Petruska (Stravinsky); Overture, Fra Diavolo (Auber); Selection from Parsifal (Wagner). 6.0, Operatic Music: Duet from Manon (Massenet); Two Airs from Thaïs (Massenet). 6.15, Instrumental Solos. 6.30, Exchange Quotations. 6.45, Instrumental Music: Minuet (Bocherini); Minuet from the Quartet in D Minor (Mozart); Evensong (Easthope Martin); Chanson triste (Tchaikovsky); Nareissus (Neviu). 7.15, News. 7.30, Programme Announcements. 7.35, News Bulletin. 7.45, Dance Music. 8.0, Music by a Viennese Orchestra. 8.30, Sound Film Music. 8.45, Operetta Music: Airs from Pas sur la Bouche (Yvain) and Les Vingt-huit Jours de Clairette (Tenaro). 9.0, Extracts from The Barber of Seville—Opera (Rossini). 10.0, Operatic Music: Overture, The Marriage of Figaro (Mozart); Ride of the Valkyries, from The Valkyries (Wagner); Introduction and Entr'acte from The Tales of Hoffmann (Offenbach); Air from Der Freischütz (Weber). 10.15, Humorous Items. 10.30, North African News. 10.45, Orchestral Music. 11.0, Programme of Light Music. 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.5 p.m., Quintet Concert: Eleonora (Guerrini); Melody (Theimer); Miniature (Del Prete); In the Gardens of Ceylon (Yoshitomo); Entry of the Queen

of the Roses (Rhode); Selection from Gita in Danciglandia (Grey); Katin (Gragnani); Tonbrillon (Tincani). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.5 p.m., Concert: Overture, Les Cloches de Corneville (Planquette); In the Mystic Land of Egypt (Ketelbey); Melody (Siede). 7.25, Tourist Talk. 7.30, Time and Announcements. 7.35, Variety Music on Gramophone Records. 8.30, Talk: Events and Problems. 8.45, See Rome. 10.0, Dance Music relayed from the Luna Park Lido, Milan. 11.55, News Bulletin.

VATICAN CITY

19.84 metres (Morning), and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—3.15 p.m., Gramophone Records of Famous American Orchestras: The Cleveland Orchestra, conducted by Nikolai Sokolov; 1812 Overture (Tchaikovsky); The New York Symphony Orchestra, conducted by Walter Damrosch; Mother Goose (Ravel); The New York Philharmonic Orchestra, conducted by Arturo Toscanini; L'Apprenti Sorcier (Dukas); The Philadelphia Symphony Orchestra, conducted by Leopold Stokowski; Easter Overture (Rimsky-Korsakov); The New York Metropolitan Opera House Orchestra, conducted by Genaro Papi; Intermezzo from Cavalleria rusticana (Mascagni); The San Francisco Symphony Orchestra, conducted by Alfred Hertz; Scherzo from A Midsummer Night's Dream (Mendelssohn); The New York Philharmonic Orchestra, conducted by Willem Mengelberg; Slav March (Tchaikovsky); The Chicago Symphony Orchestra, conducted by Frederik Stock; Waltz, Roses from the South (Johann Strauss). 4.30, Recitation: Joseph Conrad—Sailor, Captain and Author. 5.0, Radio Report on the International Tennis Championships from Pörschach. In the interval: Dance Music from the Werzer Strandcafé, Pörschach. 7.0, Topical Talk. 7.30, Time, Weather and Programme Announcements. 7.45, Weekly Microphone Feuilleton. 8.5, Vienna in the Summer Time—Programme of Songs and Instrumental Music (arr. Edmund Skurawy). 9.30, News Bulletin. 9.45, Dance Music with Vocal Refrains from Hübners Parkhotel.

WARSAW

1,411 metres, 120 kW.—11.58 a.m., Time Signal and Bugle Call, relayed from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, to 12.40, Interval. 12.40, Weather Report. 12.45, Variety Music on Gramophone Records. 1.25 to 1.35, Interval. 1.35, Light Music on Gramophone Records. 2.10 to 3.0, Interval. 3.0, Economic Report. 3.10, Popular Gramophone Music. 3.30, Military Report. 3.40, Programme for Children. 4.5, Variety Music on Gramophone Records. 4.35, Hydrographic Report. 4.40, Review of Periodicals. 5.0, Orchestral Concert, conducted by Oziminski: Suite, Jeux d'enfants (Bizet); Neapolitan Serenade (Sgambati); Scandinavian Suite (Juel-Fredriksen); Scandinavian Intermezzo (Söderman); Ballet Suite, The Awakening of Flora (Drigo). 6.0, Talk. 6.20, Light Music, relayed from the Cristal Restaurant. 7.15, Miscellaneous Items. 7.35, Radio Journal. 7.45, Gardening Talk. 7.55, Programme Announcements. 8.0, Concert by the Warsaw Philharmonic Orchestra, conducted by S. Nawrot: Soloists, H. Dudiczewa (Songs); and L. Urstein (Pianoforte); Overture, Banditenstrieche (Suppé); Asiatic Suite (Yoshitomo); Waltz from Venus am Erden (Lincke); Three Songs; Selection from The Bird Fancier (Zeller); Türkisches Märchen (Lincke); Waltz from The Christmas Tree (Rehikov); Songs: (a) Gavotte from Manon (Massenet); (b) Spanish Song (Delibes); (c) The Blue Danube (Johann Strauss); Waltz, Plus que tout (Waldeufel); Pizzicato (Gillet); Gallop (Czibulka); Popular Dance (Wieniawski). Reading in the interval. 9.50, Radio Journal. 9.55, Weather Report. 10.0 to 10.5, Interval. 10.5, Chopin Pianoforte Recital by B. Kon. Polonaise in C Minor; Three Etudes, Op. 10, in F Minor, A Flat and E Flat; Two Mazurkas in B Flat Minor, Op. 24 and in A Minor, Op. 50; Nocturne in E Sharp Minor, Op. 27; Tarantella. 10.40, Sports Notes. 10.50, Dance Music.

WILNO

563 metres; 16 kW.—7.15 p.m., Lithuanian Radio Journal. 7.30, Programme Announcements. 7.35, See Warsaw. 7.45, Talk on Music. 8.0 till Close Down, See Warsaw.

ZÜRICH.—See Schweizerischer Landessender.



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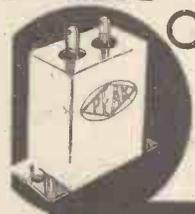
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35/-—B.T.H. R.K. moving coil speakers, 6in. ribbed cone, new and unused, guaranteed; these speakers are the type as used in cinema sound equipment, weigh 30lb., and are vastly superior to the cheap speakers now on the market; 100 volts, 150 volts, and 200 volts D.C., 6 volts D.C., 200-250 volts A.C. type, £2/15; carriage paid.—Ward, 12, Tredegar Rd., Bow, E.3. [9131]

BAKER'S SELHURST RADIO 36-page Booklet, "Sound Advice is Yours for the Asking"; write now for new edition. See displayed advertisement on page 14. [0231]

BROWN'S Public Address Power Horn Speakers and Amplifiers, etc., at sacrifice prices; write for lists.—Spratleys Radio, Hayes, Middlesex. [9097]

EPOCH Super Cinema, 230 volts A.C., used for occasional demonstration work; £10, cost £20.—Brindle, Heysham Rd., Morecambe. [9104]

1932 Baker Super Power P.M. M.C. Speaker; cost £6/6, accept £4/4.—Wayne, 30, Lovelace Rd., Surbiton. [9120]

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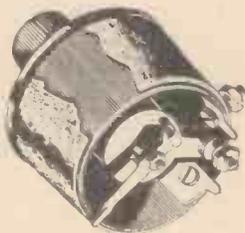
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MULLARD 354v., 244v., A.C.044, P.M.4D.X., Philips 1821, Philco pentode, all new; hali price.—Macfarlane, 365, Bilsland Drive, Glasgow. [9132]

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450-0-450 and 500-0-500, 120 m.a., 4v. 3a., 4v. 3a., 4v. 2a.; 15/-

50h. 30 m.a. Chokes, 5/6; W.W. Straight Five chokes, specified, 8/6; 20h. 250 m.a. stranded chokes, 9/6.

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AMPLION 4-gang Condensers, split-end vanes and C trimmers, unused, 9/6; Ampilion D.C. speakers, 2,500-ohm, tapped transformers, complete at 17/6; ditto, brand new, 23/6; Polymet 8 mid. 425v. working, 3/-; Pye 110h. chokes, 3/6; Brown vee L.S. units, new, 9/6.

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CYLDON 0.0001 Series Gap, 6/-; Colvern S.W. oscillator, 2 intermediates, 15/- 3; Lewcos 6-pin coils, 2/-; Lewcos screen, with base, 1/6; Colvern dual coils, T.G.B., etc., oddments, 2/-; T.G.S.C., 5/-; pairs Orgola, 9/-; Mullard fixed condensers, 3/- dozen only; Wearite lever and rotary, 4/5 pole, new, 2/6 each, 10/6 dozen; Gambrell Novotone 31/6.

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R. [9093]

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MARCONI Ideal Transformers, 6-1 ratio, 5/-, worth 25/-; Pye 110-henry chokes, 3/-.—Below.

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VARIABLE Condensers, Utility two-gang, rocking stator, drum-drive, 12/6; Polar Tub three-gang, with disc, 17/6; Polar single-drum, 0.0005, 4/11; J.B. ditto, 4/11; Cydon three-gang extender with disc, £1/7/6; J.B. chassimoants, with drum-drives, two-gang 8/11, three-gang 11/6; four-gang, 15/6; R.I., with disc, 6/6; Ormond screened, with disc, 4/11; Ormond four-gang screened, 13/6; J.P. Tiny, 4/11; Ormond 0.0005 S.M., 3/11; various J.B., Polar, Lissen, etc., 0.0005, etc., 2/11.

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VALVES.—All the following have been used for test purposes only, all are tested and guaranteed; callers only, P.625, P.M.14, 41M.R.C., P.M.8D.X., L.S.5, 5/- each; B.12, 6/-; 84V, P.M.22, P.M.24, 7/6; A.C.064, P.P. 3/425, 8/6.

KOLSTER-BRANDES Auditorium Moving Coil Speakers, with output transformer, 6-volt fields 25/-.

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EDISON Bell Mains Transformers, 200-250v. input, 160-0-160v. 40 m.a., 4v. 1a., 4v. 4a.; 10/6.

WESTINGHOUSE H.T.8, with transformer, for 200-250v. mains, with 4v. 2amp. C.T., L.T.; 27/6.

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AMPLION Transformers, 350+350v., 120 m.a., 4v. 5a., 4v. 2a., 6v. 1a., input 100-250v.; 17/6.

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AMPLION Pick-up Leads, consisting of 12ft. length of flexible metal shielded wire, jack plugs, and special jack incorporating double break switch; 3/6.

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AMPLION Block Condensers, 250v. working, 9x0.5 mfd. (4.5 mfd.), 2/6; 6x0.5 mfd. (3 mfd.), 2/-.

T.C.C., 3 mfd., 250v. D.C. working, 1/9; T.C.C. blocks, 375v. working, 6+4+2+2+2, 10/- each.

EDISON Bell Wire Wound Clip-in Resistances, with bases, 60,000, 70,000, 80,000, 90,000, 150,000 ohms; 1/9 each.

EDISON Bell H.T. Eliminators, 150 volts 30 m.a., 4 taps, 1 variable, 4v. 4 amps.; 30/-, with rectifier.

6-WATT Semi Variable Resistances, all values, from 40 to 40,000 ohms; 1/6 each.

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ALL the Following Lines 6d. each or 5/- doz., assorted; Columbia trimming condensers; Mullard 0.5-watt resistances, 25,000 ohms and 60,000 ohms; Mullard 1-watt resistances, 16,000 ohms and 50,000 ohms; Met-Vick resistances, 25,000 ohms and 12,000 ohms; shielded S.G. or Pentode leads; Varied resistance clips; Edison Bell grid leaks, all sizes, and condensers all sizes; T.C.C. 0.05 condensers, T.C.C. 0.1 condensers; Thurla 0.01 condensers; Thurla 0.005 condensers.

MURPHY Condenser Blocks, 4+2+2+2+1+0.09 mfd., 400 volts working; 6/-.

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EDISON Bell Double Pole Double Throw Push Pull Switches, 2/-; make and break 1770, 6d.

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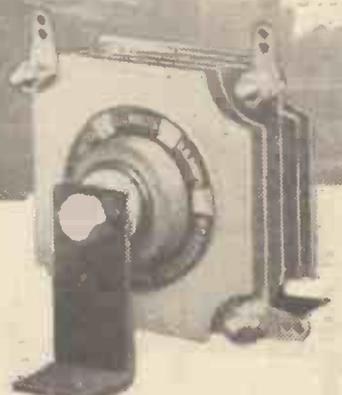
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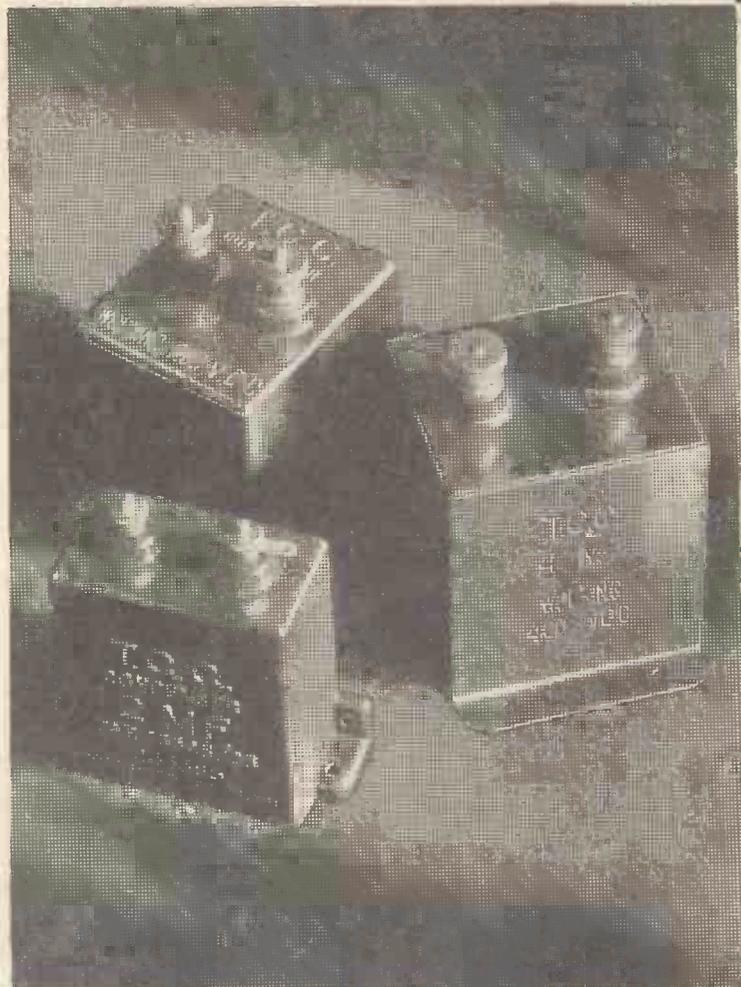
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OLYMPIA, 1932, is an extraordinarily comprehensive Show; there is something for everyone, and no single field of wireless interest has been neglected (p. 156).

The listener without a mains supply had a real grievance last year, but this year he is to have a wide choice of up-to-date battery sets with modern features (p. 156).

The variable- μ valve appears to have entirely superseded the screen-grid valve (p. 168).

Any one of twelve pre-determined stations can be selected at will by the operation of a single knob. The name of the station selected is shown on an illuminated indicator (p. 160).

A set operated by a push-button system, pretuned to the wavelengths of nine stations. This receiver embodies automatic volume control (p. 160).

There is good news for the D.C. user, who can now take his choice from a number of H.F. detector and small output valves, equal in efficiency to the A.C. types (p. 168).

In the D.C. range of valves there is a new H.F. variable- μ type (p. 168).

Totally screened and semi-screened ganged condensers will dominate the stands of those firms specialising in components of this class (p. 163).

Amongst coils, the outstanding feature this year will be the many varieties of special superheterodyne coils (p. 164).

Formo will show coils with the novel and useful feature of including at the top of each coil former a circuit diagram giving connections for each winding (p. 164).

The superheterodyne principle has gained ground, as it was bound to do, and in many cases is combined with tone correction (p. 156).

Speaking generally, a set without a built-in loud speaker is now a rarity, as is also one of the multi-circuit type without ganged tuning (p. 156).

The unusual centring spider in the new mains and permanent magnet loud speaker models of Sonochorde Reproducers, Ltd., will repay examination (p. 162).

A loud speaker with no resonance in the region of 2,500-3,500 cycles, which is a frequent source of strident high-note response, and with an output stated to be well maintained up to 10,000 cycles (p. 162).

Large loud speakers for public address and cinema work will be seen on the stands of Partridge and Mee, Baker's "Selhurst" Radio, Tannoy Products, and Epoch (p. 162).

From the technical aspect, the new Pye Model G is likely to prove one of the most interesting three-valve sets for A.C. mains operation (p. 158).

Some of the new two-valve receivers are fitted with high-power output valves; the Cossor Model 222, for instance, supplies two watts of energy to a built-in moving coil loud speaker (p. 159).

Interest in portable sets will inevitably centre round the new portable superheterodynes, of which there are several examples (p. 159).

One of the most interesting moving iron movements will be shown by Shapland and Petter (p. 162).

Dual-unit moving-coil loud speakers will probably make a last-minute appearance on many stands, and they will be the principal exhibit by Magnavox (G. B.), Ltd. (p. 162).

The superheterodyne forms one of the most interesting classes of receiver this year, and its rise to popularity has been so rapid that there are now few firms who are not showing at least one model (p. 156).

A G.F.C. mains superheterodyne has seven tuned circuits, and a band-pass principle is employed in both the signal frequency and the intermediate circuits (p. 157).

Nine valves, including the rectifier, are used in the Murphy Radio superheterodyne. Three tuned circuits operate at signal frequency. Two I.F. stages are followed by a duo-diode second detector, from which automatic volume control is obtained (p. 157).

An A.C. mains set with two H.F. stages, with the unusual feature of four tuned circuits arranged as two band-pass filters.

Progress has been made in the development of the electrolytic type of condenser, of which examples will be found on the stands of both Dubilier and T.C.C. (p. 164).

A rapid and accurate method of obtaining pick-up characteristics will be shown by H.M.V. (p. 167).

The news that the Garrard Engineering Co. have produced a record changer of simple and original design should ensure a good attendance at their stand (p. 167).



The Wireless World

Baby Superhet.

Part I.

Circuit Details of a 4-Valve Receiver of Exceptional Performance.

By W. T. COCKING.

THE rapid rise to popularity of the superheterodyne is to be accounted for by the ever-increasing congestion of the broadcasting ether, and there can be but few who doubt that it is the ideal type of receiver when something more than local reception is required. In the past, however, superheterodynes have usually been rather high in their total cost because of the large number of valves which have been necessary for satisfactory results. The development of an efficient single-valve frequency changer, however, has changed all this, and has permitted the design of a superheterodyne employing a total of no more than four valves.

The performance of such a receiver, of course, is not equal to that given by seven- and eight-valve superheterodynes of first-class design, just in the same way as a straight three-valve set gives poorer results than the straight four- or five-valve receiver. The four-valve superheterodyne, however, will give a sensitivity rather better than that of the best three-valve straight set, quality of reproduction of a similar order, a degree of selectivity which is infinitely superior, and be of a strictly comparable total cost. Its superiority to the straight three-valve set is thus chiefly in the matter of selectivity.

The Pentode Voltages.

The principles of the new single-valve frequency changer which have permitted the development of such a receiver have been fully described in two recent issues of this journal, and it is consequently unnecessary to go into them here, and we can pass on to a consideration of the receiver as a whole. The complete circuit diagram is shown in Fig. 1, and it will be seen that the frequency changer is preceded by the usual inductively coupled two-stage band-pass filter, the inductive coupling being provided by means of a link circuit. The aerial is connected on to the primary of this filter through the 0.0001 mfd. compression-type condenser C_1 , which is used also for the adjustment of the ganging. The coils are individually and completely screened to

avoid the direct pick-up of signals, and the waveband switches are built into their bases.

The first valve is a pentode of the AC/Pen type, and its control grid is connected to the secondary of the input filter, so that the incoming signal is applied to it. Grid bias is obtained by the usual method of inserting a resistance in the cathode lead; optimum signal strength results when this resistance R_2 has a value of 500 ohms and is shunted by a 0.1 mfd. condenser C_5 . Oscillation takes place between the anode and space charge grid circuits, and it will be seen that the reaction coil is connected in the latter circuit with the tuned oscillator winding in the anode. The space charge grid requires a potential of about 30 volts only, and as

as the normal trimmer on the I.F. transformer, and is adjusted as such, its other function of feeding the oscillator circuit having no effect upon it.

The Tuning System.

The two pre-selector circuits are tuned by two similar sections C_2 and C_3 of the special three-gang condenser, the third C_4 of which has vanes so shaped that correct ganging is automatically obtained on the medium waveband without the necessity for using padding condensers. On the long waveband, however, a padding condenser is still necessary, and this takes the form of a compression-type condenser C_7 with a maximum capacity of 0.002 mfd. As there is no direct-current flow through the tuned-oscillator circuit, this condenser can be connected directly in series with the long-wave oscillator coil, and a single switch used for the waveband change.

The secondary of the first I.F. transformer, which is, of course, tuned to 110 kc., is of normal type and feeds the variable- μ I.F. valve. This valve is coupled to the grid detector by another similar transformer, so that a total of four tuned circuits is employed in the intermediate-frequency amplifier. Being used in two pairs of coupled coils, these circuits naturally form two band-pass filters with adjustable coupling, so that the optimum compromise between the conflicting factors of selectivity and quality is readily reached.

The anode of the I.F. valve is fed from the 200 volts line, while the screen grid is fed from the potentiometer comprising R_6 and R_5 of 20,000 ohms and 15,000 ohms respectively, and is maintained at earth potential to I.F. currents by the 0.1 mfd. condenser C_{11} . The fixed minimum bias is provided by the 250 ohms resistance R_{11} , which is by-passed to earth by another 0.1 mfd. condenser C_{10} . Volume control with a variable- μ valve is naturally by the variation of its grid bias, and a 15,000 ohms potentiometer R_1 is so connected that it acts as a variable resistance in the cathode circuit. The free end of the resistance element, however, is connected to the aerial, so that it also acts as a resistance shunt across the aerial and earth, and so reduces the aerial input to the set at low volume settings and prevents overloading of the first detector.

FEATURES.

Four-valve self-contained A.C. superheterodyne with new self-neutralising single-valve pentode frequency changer. Band-pass pre-selector and single-dial tuning with completely screened coils. Variable condenser with shaped plates to maintain correct oscillator tracking. Four tuned circuits are used in the I.F. circuits and form two narrow-width band-pass filters.

The second detector (grid rectification) is transformer-coupled to a pentode output valve which delivers some 1,500 milliwatts to the moving-coil loud speaker, the field winding of which acts as a smoothing choke for the H.T. current.

Automatic tone correction is derived from the pentode and permits high-quality reproduction being obtained in a simple manner with a maximum of selectivity. The controls are four in number, namely: tuning control, radio-gramophone switch, wave-range switch, and combined volume control and mains on-off switch.

it then passes a current of 0.68 mA. this is provided through the voltage-dropping resistance R_3 of 250,000 ohms. A by-pass condenser C_6 of 0.1 mfd. is provided to give a free path for the oscillations between the space charge grid and the cathode.

The anode circuit of the frequency changer appears more complex than it really is, for the intermediate-frequency transformer and oscillator circuit seem inseparable. Actually, the tuned-oscillator circuit is shunt fed from the pentode anode, with the primary of the I.F. transformer acting as an H.F. choke, and the primary trimming condenser acting as the oscillator feed condenser. The condenser C_8 , therefore, is, in practice, treated

Wireless World Baby Superhet.—

The mains on-off switch S_2 is ganged to this volume control, so that complete rotation of the knob in an anti-clockwise direction switches off the set.

The Detector and L.F. Circuits.

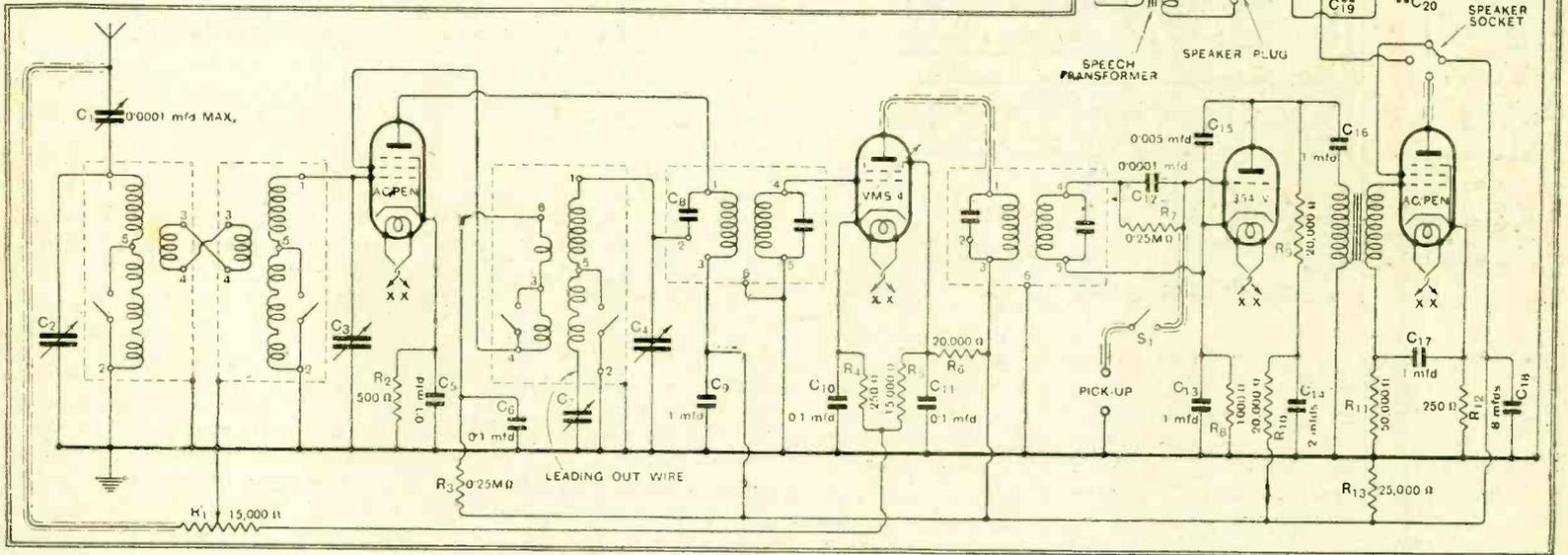
When acting as a detector, the third valve is fed from the I.F. stage, and rectification

amplifier, and bias is then needed. The pick-up, therefore, is connected between the grid of the valve, by means of the switch S_1 , and negative H.T., and the 1,000 ohms resistance R_8 shunted by the 1 mfd. condenser C_{13} , then automatically applies the correct voltage to the grid.

The coupling between the detector and the output valve is by means of a 5-1 ratio transformer, resistance-capacity fed by the

effectively serves its purpose and causes no audible reduction in the high-frequency response. Detector decoupling is obtained by means of the 20,000 ohms resistance R_{10} and the 2 mfd. condenser C_{14} . The standing no-signal current is about 2.5 mA., a

Fig. 1.—The complete circuit diagram. C_{19} and C_{20} are of the 400 volts working type, while C_{18} is an electrolytic condenser for working at 440 volts. Excepting R_{13} , which is of the 3 watts type, the resistances are all rated for 1 watt. The mains switch and the volume control are linked together, and operated by a single control knob.

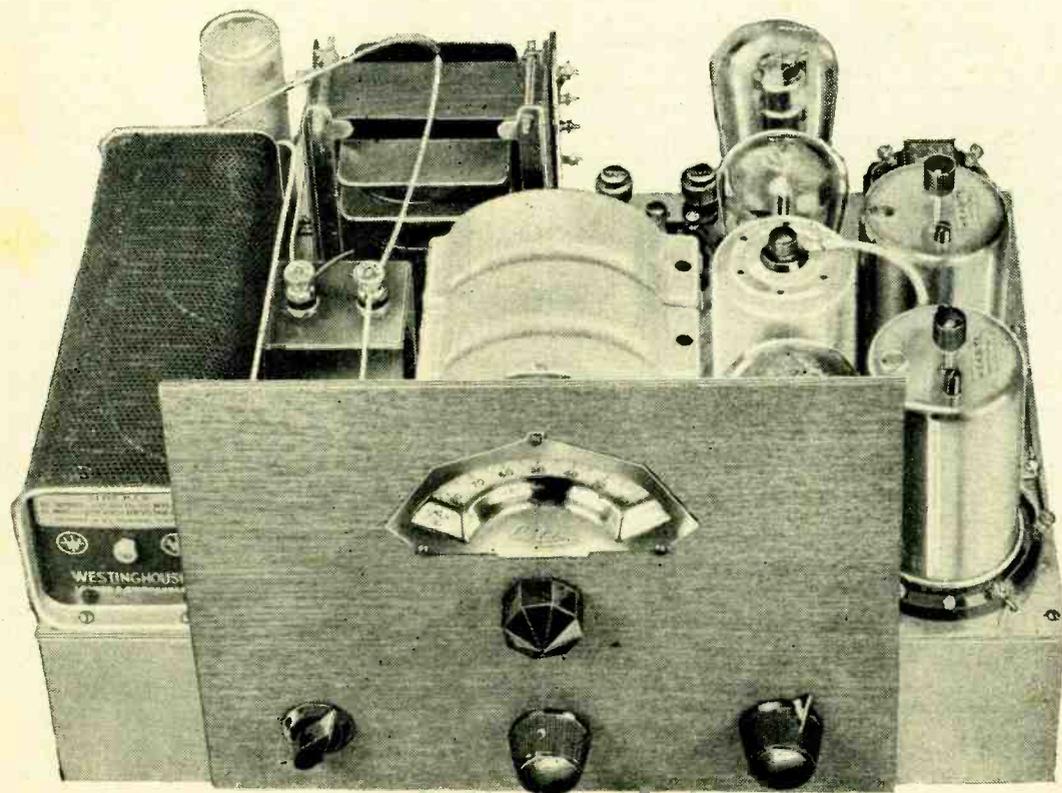


takes place with the aid of the 0.0001 mfd. grid condenser C_{12} and the 250,000 ohms grid leak R_7 . As no bias is then required, the lower end of the I.F.-transformer secondary is returned directly to the detector cathode. When using a gramophone pick-up, however, this valve must act as an

20,000 ohms resistance R_9 , and the 1 mfd. condenser C_{16} , while the 0.005 mfd. condenser C_{15} serves to prevent the leakage of I.F. currents into the L.F. circuits. This capacity may seem rather high, but is necessary in the absence of any H.F. choke; with the other circuit values chosen, it

figure which is ample to allow of sufficient L.F. output being obtained from the detector for the complete loading of the output valve, but is not so high that this stage can easily be overloaded.

For the convenience of readers constructing this set, blue prints are available from the publishers at 1/6, post free.



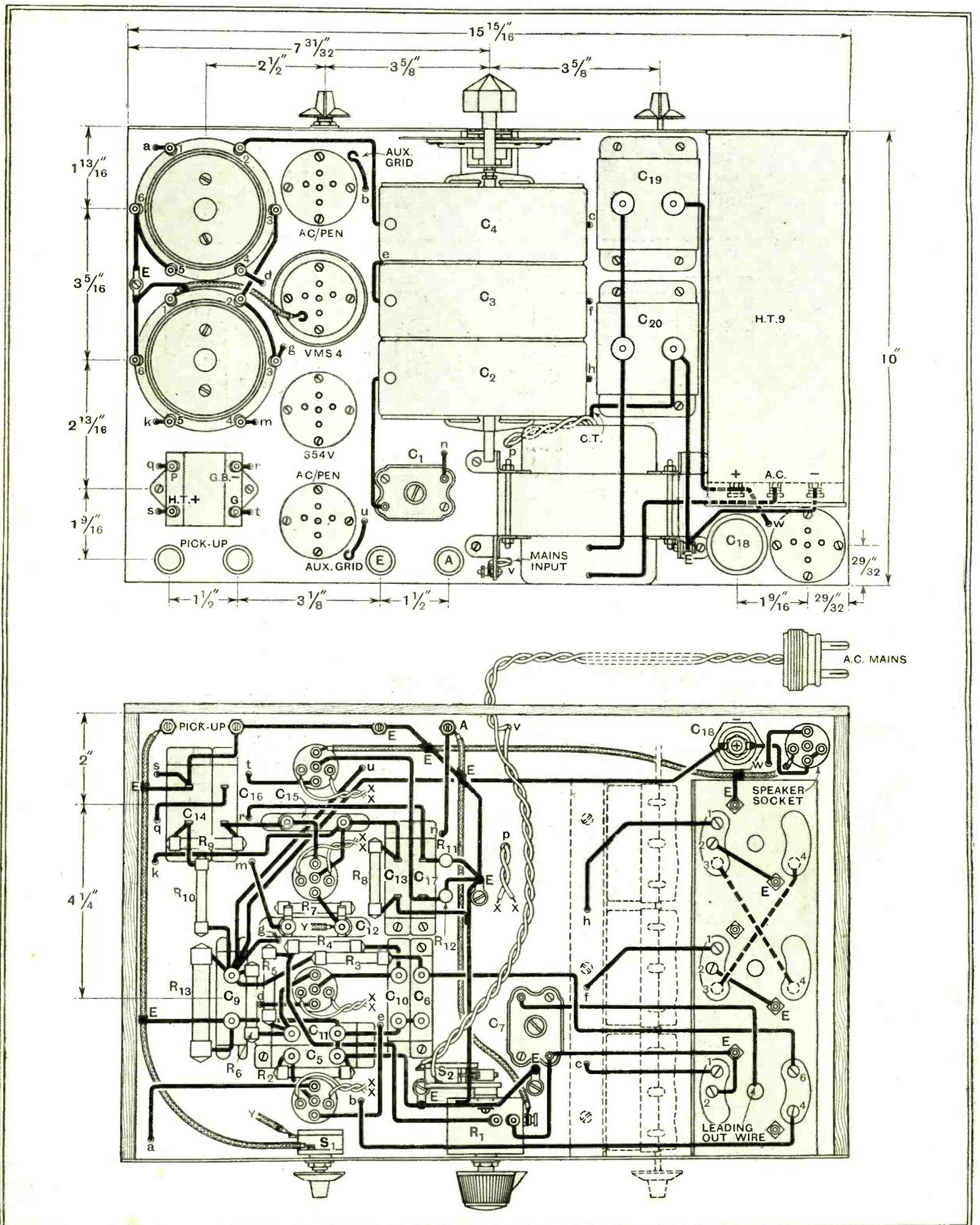
The front of the receiver showing the four controls comprising tuning control, radio-gramophone switch, wave-change switch, and combined volume control and mains on-off switch.

The output valve is a pentode capable of delivering 1,500 and 2,000 milliwatts to the moving-coil loud speaker, to which it is transformer coupled. Its control grid is negatively biased by the 250 ohms resistance R_{12} in the cathode lead, and grid decoupling is provided by the 50,000 ohms resistance R_{11} in conjunction with the 1 mfd. condenser C_{17} . Both the screen grid and the anode are fed directly from the common 200-volts line, from which a 25,000 ohms 3-watts resistance R_{13} is shunted to earth in order to maintain a load on the mains rectifier and prevent a voltage rise during that period after switching on in which the valves are warming up.

Speaker Field Smoothing.

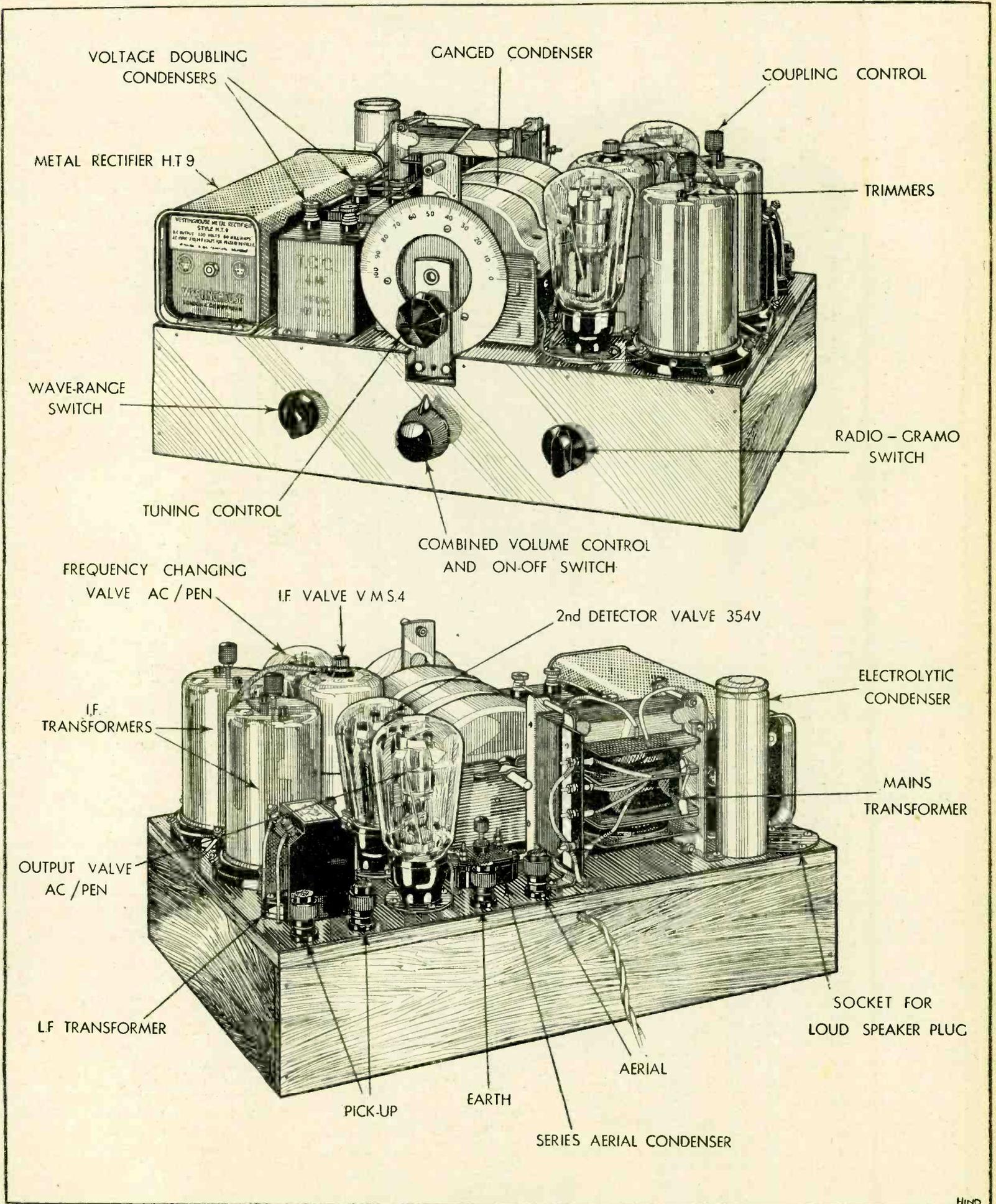
The mains transformer has one secondary providing 4 volts at 4 amperes for the valve heaters, and another rated at 230 volts 180 mA. for the H.T. supply. This secondary is connected to the H.T. metal rectifier in a voltage-doubling circuit provided by the two 4 mfd. condensers C_{19} and C_{20} , and gives a total output of some 360 volts. The current then flows through the 2,500 ohms field winding of the moving-

WIRING PLAN AND GENERAL LAYOUT OF COMPONENTS.



The clean layout ensures ease of wiring and the metal-covered baseboard assists in screening.

EFFICIENT FREQUENCY CHANGING WITH SINGLE VALVE.



Two views of the receiver chassis. The signal frequency and oscillator coils are mounted beneath the baseboard.

HIND

Wireless World Baby Superhet.—

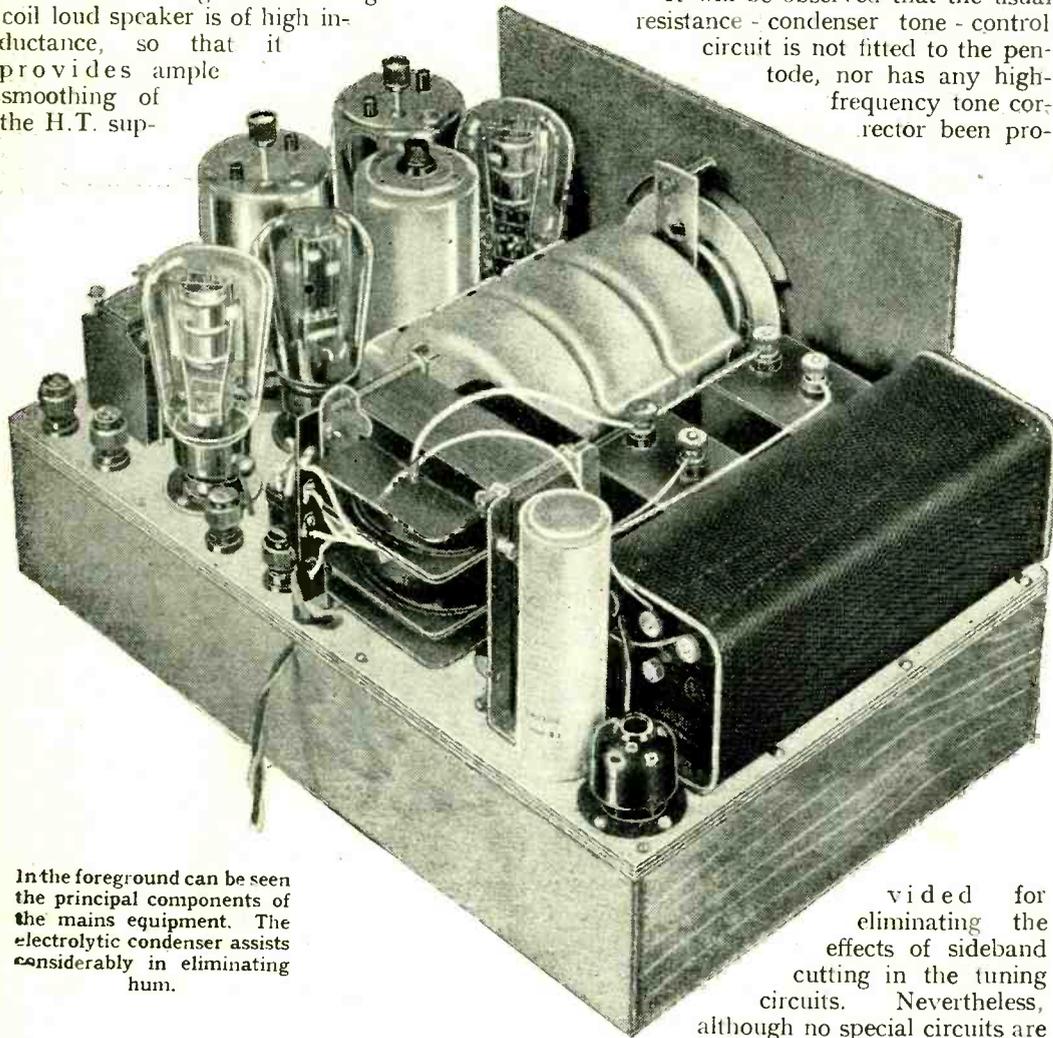
coil speaker, which provides the sole smoothing in conjunction with the 8 mfd. electrolytic condenser C₁₈. The voltage drop along the speaker field is about 125 volts, so that over 6 watts are available for its energisation. The field winding of a moving-coil loud speaker is of high inductance, so that it provides ample smoothing of the H.T. sup-

ply. There is, however, a serious possibility that if much ripple be present on the current fed to the field, hum will be introduced directly into the speech coil. To obviate this possibility, therefore, the speaker is fitted with a hum-bucking coil, which consists of a winding around the field coil which is connected in series with the speech coil, and in such a way that the currents induced

in them from the field are in opposite phase. Provided that this precaution be taken in the speaker, it is a perfectly practical proposition to utilise the speaker field for the sole smoothing equipment of a receiver, and considerable economy results. It will be observed that the usual resistance-condenser tone-control circuit is not fitted to the pentode, nor has any high-frequency tone corrector been pro-

vided for eliminating the effects of sideband cutting in the tuning circuits. Nevertheless, although no special circuits are included, such tone correction is, in fact, employed. A pentode used with any ordinary loud speaker accentuates very considerably the upper audible frequencies, and the purpose of the usual tone-control circuit is to prevent this by reducing the high notes. In this receiver, however, the high notes are already reduced prior to the pentode by sideband cutting, so that any further reduction would result in excessive bass. Looking at the matter from another angle, it can be said that the normal accentuation of the high notes with an uncorrected pentode is just sufficient to correct for the sideband cutting, and so a special tone-correction circuit is unnecessary. True automatic tone correction is thus secured, and with a saving in apparatus, for it is necessary to use neither a special tone corrector nor the usual pentode-compensating circuit.

Notes on constructing and adjusting the receiver will be given in the concluding instalment, appearing on September 2nd.



In the foreground can be seen the principal components of the mains equipment. The electrolytic condenser assists considerably in eliminating hum.

vided for eliminating the effects of sideband cutting in the tuning circuits. Nevertheless,

THE POST OFFICE AT OLYMPIA.

NOT the least fascinating stand at Olympia is that of the General Post Office, which is mainly devoted to showing methods of overcoming electrical interference with broadcast reception. On the principle that an ounce of practice is worth a ton of theory, at least where the general public are concerned, experts from the Dollis Hill Research Station are giving working demonstrations showing how noises can be eliminated by the use of suitable chokes. For example, a vacuum cleaner, a street-traffic signal, and various types of medical high-frequency apparatus are set in operation on the stand and their effects noted on a standard radio receiver. An eliminator of a type approved by the Post Office is then switched into circuit, demonstrating that local interference of the most virulent type can be effectively overcome.

Of special interest in the light of recent developments are the ultra-short-wave transmitters and receivers developed at the Post Office Research Station. These sets are being demonstrated on the stand.

Broadcast listeners will be interested in an exhibit showing typical Post Office telephone circuits used for musical transmissions in which the best possible quality is required.

A special Post Office is established at Olympia to enable purchasers of wireless sets to take out their licences forthwith.

THE B.B.C. EXHIBIT.

AT the B.B.C. stand attention will be focused on the scale model of Broadcasting House. The model is on a scale of 1/4 in. to a foot, and is approximately 5ft. long and 3ft. wide. The exterior of the front and the west side are shown, while from the east side visitors can see a cross-section down the centre of the interior.

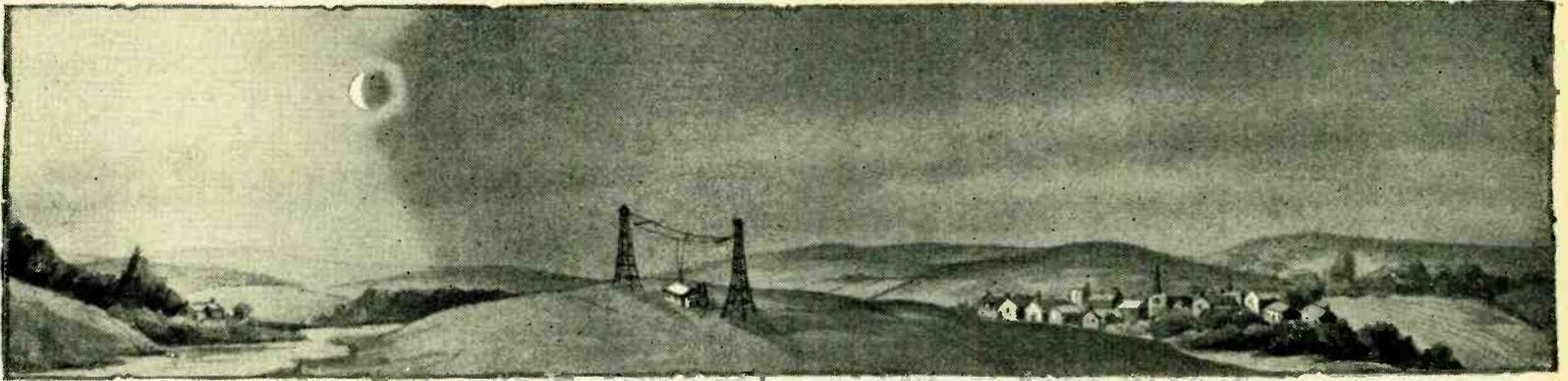
The 1 1/2-kilowatt amplifier supplying speech and music to the exhibition stands is also on view. On the left of the main amplifier unit will be seen a rack on which is mounted the input equipment, comprising five stages of R.C.C. amplification. The output from this rack is fed to the power amplifier, which consists of two stages of push-pull R.C.C. amplification, the high- and low-tension current for which is obtained from a motor-generator set.

LIST OF PARTS.

After the particular make of component used in the original model, suitable alternative products are given in some instances.

- 1 Three-gang superhet condenser (Polar "Star")
- 1 Dial (Cydon "Sector Vision" type V.D.)
- 1 Set of Coils (Colvern Type K.B.L.C. ganged, for under baseboard mounting, with 1 Type K.53.)
- 2 I.F. Transformers, 110 kc. (Wearite Type W.W.I.F.)
- 1 Wire-wound volume control, 15,000 ohms and mains switch (Wearite Type Q.V.C. and G.40)
- 1 Switch (Wearite G.40)
- 1 Mains transformer for H.T.9 rectifier with 4 volts 4 amps. C.T. secondary, and primary 200-250 volts (Junit Type W.H.T.9S)
- 1 H.T.9 rectifier (Westinghouse)
- 5 5-pin valve holders, sub-base type with terminals (Clix) (Eddystone.)
- 1 Electrolytic condenser, 8 mfd. (T.C.C. Type 802)
- 2 Fixed condensers, 4 mfd., 800-volt D.C. test (T.C.C. Type 80)
- 3 Fixed condensers, 1 mfd., 500-volt D.C. test (T.C.C. Type 65)
- 1 Fixed condenser, 2 mfd., 500-volt D.C. test (T.C.C. Type 65)
- 1 Fixed condenser, 1 mfd., 400-volt D.C. test (T.C.C. Type 50)
- 4 Fixed condensers, 0.1 mfd., 400-volt D.C. test (T.C.C. Type 50)
- 1 Fixed condenser, 0.0001 mfd., mica (T.C.C. Type 34)
- 1 Fixed condenser, 0.005 mfd., mica (T.C.C. Type 34)
- 1 Semi-fixed condenser, 0.0001/0.00001 mfd. (R.I. "Varicap No. 2")

- 1 Semi-fixed condenser, 0.002/0.0005 mfd. (R.I. "Varicap No. 8")
- 4 Ebonite Shrouded terminals, Aerial, Earth, and two Pick-up (Belling-Lee Type "B")
- 2 Metallised resistances, 1 watt, 250,000 ohms (Dubilier)
- 1 Metallised resistance, 1 watt, 50,000 ohms (Dubilier)
- 3 Metallised resistances, 1 watt, 20,000 ohms (Dubilier)
- 1 Metallised resistance, 1 watt, 15,000 ohms (Dubilier)
- 1 Metallised resistance, 1 watt, 1,000 ohms (Dubilier)
- 1 Metallised resistance, 1 watt, 500 ohms (Dubilier)
- 2 Metallised resistances, 1 watt, 250 ohms (Dubilier)
- 1 Metallised resistance, 3 watts, 25,000 ohms (Dubilier) (Claude Lyons, Ltd.)
- 1 L.F. transformer, 5:1 ratio (Varley "Nictet" D.P.22)
- 1 Valve screen, open top type (Colvern)
- 1 5-pin plug (Bulgin P.3)
- Screened sleeving (Goltone)
- (Lewcos, Harbros.)
- 1 Loud speaker, 2,500-ohm field, Pentode transformer and hum-bucking coil (Rola F.P. 2,500) (Magnavox Model 142.)
- 1 Cabinet (Camco "Empire")
- 1 Plymax base, 15 1/4 in. x 10 in. x 3/4 in.; 2 Pieces 3 in. ply wood, 9 1/4 in. x 3 in.; 1 Piece 3 in. ply wood 15 1/4 in. x 3 in.; 1 Piece 16 gauge aluminium 15 1/4 in. x 3 in. (Peto-Scott)
- Flex, tinned copper wire, screws, systolox, etc.
- Valves
- 2 Mazda AC/Pen, 1 Marconi VMS4, 1 Mullard 354V. (2 Marconi MPT4 or Osram MPT4, Osram VMS4 or Mazda AC/S1VM, Mazda AC/HL or Marconi MH4 or Osram MH4.)



The Wireless Eclipse.

When and Why it Occurs.

THE complete art of wireless—or is it now a science?—borders on and, indeed, overlaps many other branches of knowledge. This is readily seen from mere consideration of the number of other sciences that are concerned with the day-to-day operations of wireless, and even more particularly with the developments that are continually proceeding. The “heavy” electrical engineer comes into his own at the “kilowatts” transmitter; the civil engineer designs its essential masts. The modern valve is the product of engineer, physicist, and chemist alike. The theoretician analyses circuits and circuit-properties, and the mathematician is called in to help him when the calculations become—as they often do—too much for the technician. The stimulus of audio-frequency technique due to the expansion of broadcasting has led to great advances in acoustical knowledge, which, in turn, are used to improve our conditions of reproduction.

The world-wide broadcast nature of wireless propagation has brought it prominently into focus in connection with large-scale cosmic physics. Here, however, it looks as if wireless had almost more to give to the other science than to receive from it.

The Ionised Layers.

Incidentally, it is interesting to recall that a year before Marconi used an elevated aerial to provide an effective radiator for his early transmissions, the very first elevated aerial was erected by Popoff. But Popoff used his aerial for the purpose of receiving at a distance *the effect of thunderstorms*. The first wireless aerial—to say nothing of Benjamin Franklin’s still earlier attempts—was thus one for atmospherics; so that we cannot really complain if these still exercise their priority and give us trouble at times. Since then it has been shown that there is a strong correlation between meteorological conditions and atmospheric sources, and methods have been developed by the Radio Research Board to locate the sources of individual atmospherics. How far this may ultimately be of advantage to routine meteorology and weather forecasting is still a matter for investigation. Possibly it may prove a useful adjunct to the inferences that

JUST as the passage from daylight to night conditions and vice versa have a marked effect on the intensity of received wireless signals, so an eclipse of the sun produces similar results. It is now believed that when corpuscular, as distinct from light, radiations from the sun are intercepted by the moon, the intensity of wireless signals is also affected. The corpuscular and light eclipses will not occur at the same time but will follow one another, due to the difference in their rate of travel from the sun. The present article discusses these effects in connection with an eclipse of the sun, due to take place on August 31st.

are to be drawn from the movement of depressions and anti-cyclones, so that the toad may have “yet a precious jewel in his head.”

The latest application of wireless propagation is to use it for new determinations of the nature of solar radiations.

It is now many years since Heaviside and Kennelly suggested that an ionised layer of the atmosphere—deriving its ionisation from solar activity—was responsible for wireless signals travelling to distances that on previous theory they ought not to have been able to reach. Even now it is quite a few years since classical experiments by Prof. E. V. Appleton proved beyond doubt the existence of such a layer. A little later—somewhere about 1927—he suggested that there were actually two layers; or, perhaps, “regions” should now be regarded as a better description. Since then additional evidence appears to put it beyond dispute that there are two such regions, one about 80 to 100 kilometres high, and the other at about 230 kilometres or more.

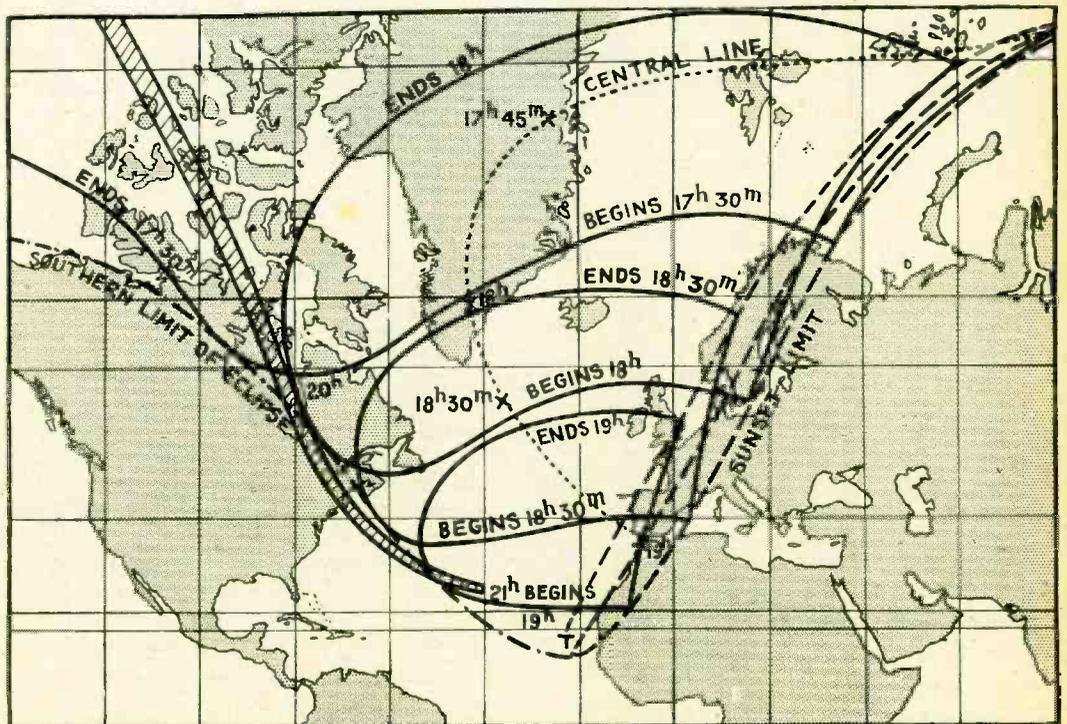


Fig. 1.—The optical shadow (shaded band) and the corpuscular shadows calculated for the solar eclipse of August 31st.

The Wireless Eclipse.—

The question now arises, "What particular types of solar agency are responsible for these two regions?" It appears that wireless signals are likely to be, once again, the method of solution. It is suggested by Prof. S. Chapman, the well-known authority on aurora and terrestrial magnetism, that the upper of these regions derives its ionisation from ultra-violet light, and the lower from corpuscles or particles shot off by the sun.

Corpuscular Eclipse.

Now, it is extremely difficult to devise experiments which in ordinary day-to-day conditions would give measurements that could cast light on this point. But an eclipse of the sun gives a particular type of cut-off of the sun's influence. Light, we know, travels at the rate of 300,000 kilometres per second, whereas the corpuscular particles of the nature suggested by Prof. Chapman are estimated to have a rate more of the order of 1,000 kilometres per second. This means that, to an observer on the earth, the corpuscular supply will be interrupted before the visible and ultra-visible light shadow is cast by the moon's intervention. It is not very difficult to see that a difference in time may be expected between the eclipsing effect of the moon on the two different types of solar emission. The moon is about 240,000 miles from the earth, so that the effect on light, travelling at the rate of 186,000 miles per second, will be experienced at the earth's surface in just over a second, that is, relatively instantaneously. On the other hand, particles travelling at the slower rate already suggested, viz., 1,000 miles per second, will not be cut off at this time. It is not, however, so easy to see why the corpuscular eclipse should actually take place at the earth's surface before the optical eclipse.

An Explanation.

The explanation given by Prof. Chapman is as follows:—

Light is emitted effectively from all the visible disc of the sun, and the eclipsing effect, as seen at the earth's surface, consists of a large *penumbra* or region of partial shielding, and only a relatively small region of *umbra*, or total eclipse, as shown approximately in Fig. 2 (b). The theory of corpuscular emission—which need not be considered here in detail—appears to indicate that this emission only proceeds from a relatively limited and central part of the disc. At great distances from the sun, as, for example, near the earth's surface, the particles form a nearly parallel beam. The particles thus cross the earth's orbit in a direction nearly radial from the sun, so that the moon creates something closely approaching a shadow-cylinder, as shown in Fig. 2 (a), having a cross-section which is, at the earth's surface, nearly equal to the diameter of the moon itself.

Now, when the moon is on that side of the earth nearest to the sun it has a velocity of about 1,075 miles per minute in the direction of the orbital motion of the earth. The particles have an equal and opposite transverse velocity relative to the moon, while their velocity in the radial path from sun

to earth is, as stated, 1,000 miles per second, or 60,000 miles per minute. As a result, the shadow-cylinder carved out by the moon (treating the corpuscles as moving completely parallel to each other) has a backward slope of approximately 1 degree. During the four minutes taken for the particles to travel from the moon to the earth the transverse lag of the particles or of the shadow-cylinder will be $1,075 \times 4 = 4,300$ miles behind the moon. About the time of a solar eclipse the moon is moving with a velocity nearly parallel to that of the earth but less than it by about thirty-five miles per minute, so that the corpuscular shadow-cylinder will strike the earth 4,300/35 or 123 minutes before the axis of the optical shadow-cone reaches the earth.

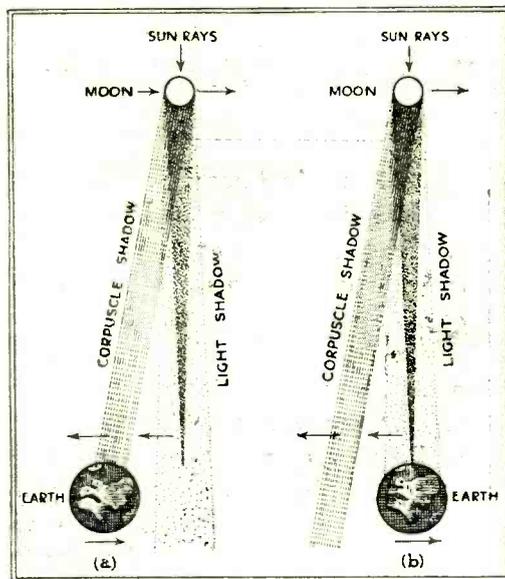


Fig. 2.—Showing the difference between the incidence of corpuscular and optical shadows. (a) The corpuscular eclipse in progress before the light eclipse begins; (b) the light eclipse in progress, the corpuscular eclipse being over.

These successions of shadow regions are shown in Fig. 2, which is not, of course, drawn to scale, the angles and dimensions being altered to emphasise the points mentioned above.

Previous wireless observations during eclipses have certainly revealed that the passage of the moon produced effects comparable to those of sunset, darkness, and sunrise. But experiments have not previously been oriented towards looking for effects so remote from the band of optical totality or even partial optical eclipse, as would appear necessary. This is well illustrated by the map of Fig. 1.

Are you in the Corpuscular Shadow?

On August 31st there will be an eclipse whose band of optical totality will fall chiefly in Canada and Eastern U.S.A., as shown by the shaded area. But, assuming the rate of corpuscular travel already mentioned, the various eclipsed regions in the "corpuscular shadow" have been worked out by the Royal Astronomical Society to be as shown at the other parts of Fig. 1. A considerable part of Northern England and South and Mid Scotland thus fall into a region of pronounced corpuscular eclipse, while the general distribution illustrated in the map shows the wide separation in time and in space that may occur between the

two types of wireless shadow that have already been mentioned. It is a pity that so much uninhabited Atlantic Ocean falls within the "corpuscular shadow"; but, unfortunately, we are not yet able to place eclipses where our wireless scientists would like them.

The August 31st eclipse should, however, even with these limitations, provide opportunity for observing the effect of the two types of shadow on wireless signals. The Canadian Government is arranging for wireless observations on a site in the track of the optical shadow. Other expeditions being made in connection with the Second International Polar Year should be in a position to make observations at places within the corpuscular eclipse, but a wide network of observers within or near this region would be a very welcome addition. Prof. Appleton has pointed out that, in the case of the 1927 eclipse, wireless observations of great scientific value were obtained with apparatus of a modest type, such as a simple galvanometer-record of signal-intensity. Amateurs will be able to devise apparatus for themselves.

Wireless amateurs participating in these observations should communicate with Prof. Appleton at King's College, Strand, London, W.C.2.

The Wireless World INFORMATION BUREAU.

Conditions of the Service.

(1) THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

(2) Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Tudor Street, E.C.4, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

(3) The fee of 5s. covers the reply to any wireless technical difficulty, but in special cases, where the enquiry may involve a considerable amount of investigation, an increased fee may be necessary. In such cases a special quotation will be made.

(4) Questions should be clearly written and concisely worded in order to avoid delay. Where enquiries relate to trouble experienced in receivers built to specifications in *The Wireless World* a complete account should be given of the trouble, and especially the symptoms.

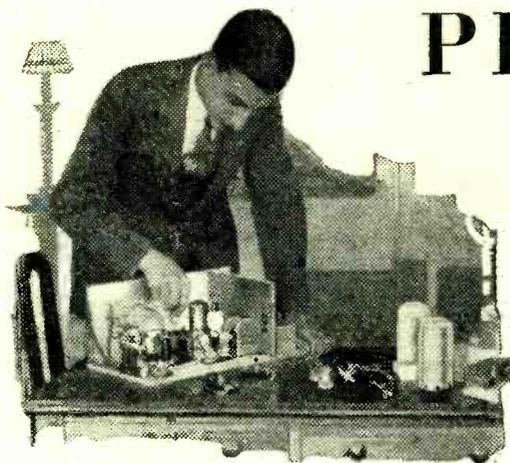
(5) Where reference is made to published articles or descriptions of apparatus, the title of the article, the date of publication in *The Wireless World*, and the page reference number should be given, in order to facilitate reply.

(6) Full circuit diagrams, constructional details of apparatus, or values of components for home-designed receivers cannot normally be supplied, but circuit diagrams sent in with queries will be checked and criticised.

(7) Particular makes of components cannot, in general, be recommended, but advice will be given as to the suitability of an individual component for a particular purpose specified by the enquirer.

PRACTICAL HINTS AND TIPS.

AIDS TO BETTER RECEPTION.



ALTHOUGH H.F. chokes are generally trouble-free components, they are sometimes responsible for an inexplicable falling-off in sensitivity at certain wavelengths or over certain narrow bands of frequencies. Effects of this nature may be due to what are known as "flat spots" in the choke, which may offer an opposition to currents of these frequencies that is very much below the average value.

It is useful to know that by the simple expedient of connecting the choke across any one of the tuned oscillatory circuits of a receiver we have a method of testing its efficiency that is adequate for most purposes, if not entirely beyond criticism.

The connection of a choke in this manner (see Fig. 1) is bound to introduce some loss in signal strength, although with modern circuits the falling-off due to a good choke is likely to be so small that it will not be aurally detectable. There will, however, be some alteration in tuning, due to the addition of the choke self-capacity, and when making a comparison the circuit must always be retuned.

To be effective, the test must be made at a great number of different wavelengths; it is, of course, carried out by observing the difference in signal strength with and without the parallel-connected chokes.

This method of testing is particularly applicable to chokes used in parallel-fed H.F. amplifiers. When it is suspected that poor reception of a certain station, of a band of

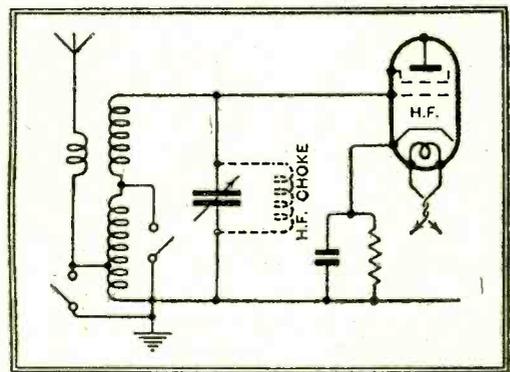


Fig. 1.—An H.F. choke may be tested by observing the effect of shunting it across a tuned circuit.

frequencies, is due to the choke, the lengthy procedure of testing at all frequencies within the broadcast band may be avoided by concentrating on the particular frequencies where the receiver seems to be insensitive.

The test suggested is obviously applicable

when comparing the merits of different chokes. Its utility, accuracy, and general convenience are greatly enhanced by the use of some method of making relative measurements, such as a detector anode current meter. Further, a local oscillator is clearly desirable as a source of steady signals.

ALTHOUGH the practice of detuning a receiver in order to reduce an over-strong signal to a suitable volume level is generally deprecated, this crude method of volume control has its uses. But it should be emphasised that unless the receiver be detuned to a considerable extent—by more than, say, 5 per cent.—a peculiar form of distortion is likely to be introduced as a result of mis-tuning.

Detuning and Quality.

The rule then emerges that the set must either be detuned very considerably from the wavelength of the transmitting station, or that it must be exactly in tune. The latter point is perhaps not sufficiently appreciated, especially when receiving a near-by station from which there is no difficulty in obtaining signals of more than sufficient loudness. With many modern sets, and particularly with superheterodynes, it pays to take meticulous care to see that the circuits are exactly in resonance. From this it logically follows that a satisfactory form of volume control is an essential part of almost every modern set.

AS a considerable amount of energy has to be dissipated in the form of heat in the mains resistance of a set operated from a D.C. supply, it follows that these receivers are somewhat more costly to operate than those designed for A.C. systems. Fortunately the matter is not serious; as has been pointed out from time to time in these pages, a set with, say, $\frac{1}{4}$ -amp. indirectly heated valves consumes practically the same current as the type of lamp in most general use for illuminating purposes.

Extravagance of D.C. Valves.

As D.C. sets have this not altogether merited reputation for extravagance, it is not surprising to find that certain misconceptions have arisen with regard to cost; buyers of sets—and even builders of them—sometimes seem to be under the impression that, as the current consumed will be considerable, it follows that a special effort should be made to restrict the total number of valves in a receiver. This is totally wrong; practically speaking, it costs the same to run a single-valve D.C. set as one with eight valves.

This is because the valves are invariably connected in series, and so the amount of heating current drawn from the mains is exactly the same for any number of valves. Of course, the multivalve set will consume rather more anode current, but this will be quite negligible in comparison with that required for feeding the heater circuits.

when comparing the merits of different chokes. Its utility, accuracy, and general convenience are greatly enhanced by the use of some method of making relative measurements, such as a detector anode current meter. Further, a local oscillator is clearly desirable as a source of steady signals.

IT is extremely difficult—indeed, almost impossible—to connect simultaneously a moving-coil and a moving-iron loud speaker to the same output valve in a manner that is technically beyond criticism. Undesirable interaction is the most serious trouble to be anticipated, and, however careful one is, the reproduction, particularly of the moving-coil instrument, is almost certain to be impaired to a noticeable extent.

A Valve for each Loud Speaker.

Occasions often arise where it is desired to connect a second loud speaker, often of the moving-iron type, to a "quality" set, and it is suggested that the apparently bold expedient of fitting its own output valve for this instrument will almost always afford the simplest solution of the problem. An additional 10 or 12 milliamps.—all that the valve is likely to need—will not greatly affect the anode voltage distribution of a modern high-power amplifier.

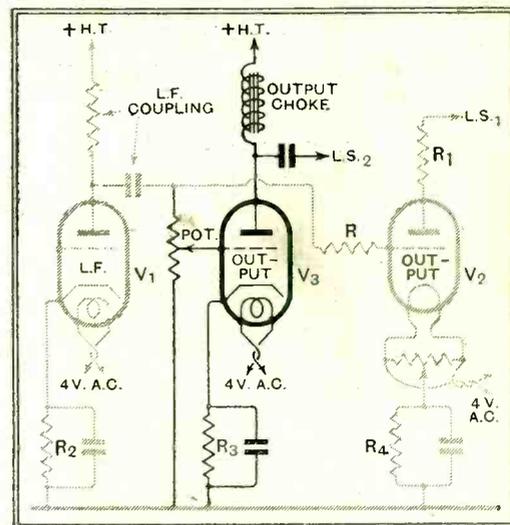


Fig. 2.—Connections of an extra output valve of low-power.—R, R₁ anti-parasitic resistances; R₂, R₃, R₄, bias resistors; V₁, V₂, original valves; V₃, extra output valve.

The only likely pitfall is with regard to overloading of the additional output valve, which will, as compared with the original, be of considerably lower voltage-accepting capabilities. Clearly, some means must be found of restricting the signal voltage applied to its grid. With resistance coupling this may easily be done by replacing the grid leak by a potentiometer of the same total resistance; the additional valve is fed from the slider contact, and so any desired proportion of the total signal amplitude may be applied. This method of connection is shown in Fig. 2.

Where transformer coupling is employed it is generally satisfactory to arrange matters so that the primary winding acts as a coupling choke for the extra valve. Voltages applied to its grid will then be reduced, as compared with those impressed on the main output valve, to an extent depending on the step-up ratio. This means that they will generally be reduced to one-third.



The Wavelength Problem

Part I.—Frequency Separation and Interference.

DURING the last year and a half there has been an unusual amount of discussion amongst those interested in wireless, not only concerning the wavelengths which are used for broadcasting, but also the whole problem of the necessary channel width for the different types of wireless communication. Many opinions have been expressed and certain suggestions have been made as to the methods of overcoming the difficulties. When viewed from the practical point of view some of these have been perhaps a little wild, to say the least of it, many others have been quite sound technically but never likely to be agreed internationally, while a few have been helpful. However, if we face the true facts it is fairly obvious that there can be no definite and lasting cure to a state of congestion amongst wireless stations which re-establishes itself almost immediately after steps have been taken to remedy the conditions existing for the time being. What happens in practice is that immediately receiving technique is improved more stations are crowded into a given band, with the result that the same state of interference exists after a few months as existed before the new technique was introduced, the only difference being that there are more stations involved.

The Madrid Conference.

This statement does not mean that very great improvements could not be made or that the present system of distribution of the wavebands available for the various services has reached finality; this, in fact, is very far from true, and everyone is looking forward to the Conference in Madrid next September, with the hope that at least some of the more useful suggestions will be in-

By NOEL ASHBRIDGE, B.Sc.,
Chief Engineer, B.B.C.

corporated in future agreements. Again, recently some rather misleading statements have been published concerning discussions which are alleged to have taken place at meetings of the U.I.R. (Union Internationale de Radiodiffusion), which would seem to have arisen from inaccurate infor-

***T**HE Chief Engineer of the B.B.C. here discusses the problem of frequency separation and interference. The curves giving the sideband energy transmitted across the low-frequency spectrum should prove of great interest as they provide an explanation of certain phenomena of sideband heterodyning so often experienced. With a 9-kilocycle separation between stations, it is pointed out that reproduction without interference above some 4,000 cycles cannot be obtained at the limit of the service area.*

mation. It is for all these reasons that I am proposing to set forth the position as I see it to-day, while there is, so to speak, a lull in the storm pending the opening of the Madrid Conference in the autumn.

In this article we must confine ourselves to the question of broadcasting only. I do not wish to trouble readers with a long history of the early agreements which were made in connection with the distribution of the avail-

able wavelengths amongst the various countries. Suffice it to say that the existing agreement known as the Prague Plan was put into force by a large majority of the signatories, but unfortunately not quite all, on June 30th, 1929. So far as the medium wavelengths are concerned, that is to say, the waveband of 200 to 545 metres, there is a general separation between stations of 9 kc/s, except for some of the shorter wave channels between 200 and 214 metres, where there is a separation of 10 kc/s. The first question which naturally arises is, On what grounds was the separation of 9 kc/s chosen, particularly having regard to the fact that the Geneva Plan (which incidentally was not universally applied) was worked out on a basis of 10 kc/s? Again, a separation of 10 kc/s was standard in the United States. Technicians might ask, On what basis had the 9 kc/s been calculated?

Compromise or Chaos?

Unfortunately it has to be admitted that it was not calculated on a technical basis at all, but was merely adopted as the only hope of getting an agreement of any kind; that is to say, the extra number of stations which the smaller separation allowed just gave a chance of getting a measure of agreement which otherwise would have been impossible. Therefore it cannot be said that those responsible for the Prague Plan made a mistake in adopting this separation, because even if it has to be admitted that 9 kc/s separation is perhaps questionable policy on technical grounds, undoubtedly it is better to have something not quite sound technically than something which is obvious chaos.

The next question is whether the separation of 9 kc/s is in fact technically unsound,

The Wavelength Problem.—

and, if not, can it be made sound by the general use of more selective receivers and/or by reducing the band of frequencies emitted by the transmitters. However, before embarking on technical arguments concerning the highly controversial question of the frequency band necessary for a broadcasting station, it might be as well to consider how the plan has worked in practice from the point of view of separation between stations. For the first year it worked very well, apart, of course, from cases of interference which arose from the fact that a few people signed the Plan, or, as it should be called, the Protocol, and did not observe it in practice. Fortunately such people were very much in the minority. It must be remembered, of course, that during the first year there were very few stations in Europe working in the medium waveband with a power of more than about 15 kW. Figures 1 and 2 show at a glance how the European network has developed in the past 12 years. However, so far as Great Britain is concerned trouble started with a vengeance in November, 1930, when for the first time we had a really high-power station next door to one of our medium wavelength channels. The result was immediate and severe jamming after dark on the London Regional programme. This was not unforeseen.

separation of 9 kc/s. The situation was made worse because at the time, nearly two years ago now, receivers were by no means so selective as they are now. Perhaps also the mean level of modulation used at Mühlacker when the station was opened was a little higher than it is now. In the November following my visit we knew the worst, and the worst was pretty bad. Naturally we tried to do everything we could to get rid of the trouble, and so did the German engineers, two of whom came over here early in 1931 and carried out some tests with one of their own receivers. They succeeded in cutting out the interference altogether, but the quality given by the receiver after they had done so was not, in my opinion, acceptable. As is well known, eventually a solution of the difficulty was found by increasing the separation between Mühlacker and London to 11 kc/s. This was fol-

ing that the normal sideband theory, whatever faults some people may consider it has, at least provides a means of visualising what is happening, we can say straight away that a broadcasting station transmits a carrier wave with two families of sideband frequencies which may extend up to, say, 10 kc/s or more on either side of the carrier. But the amplitude of the carrier and most of the sideband frequencies are not, in general, by

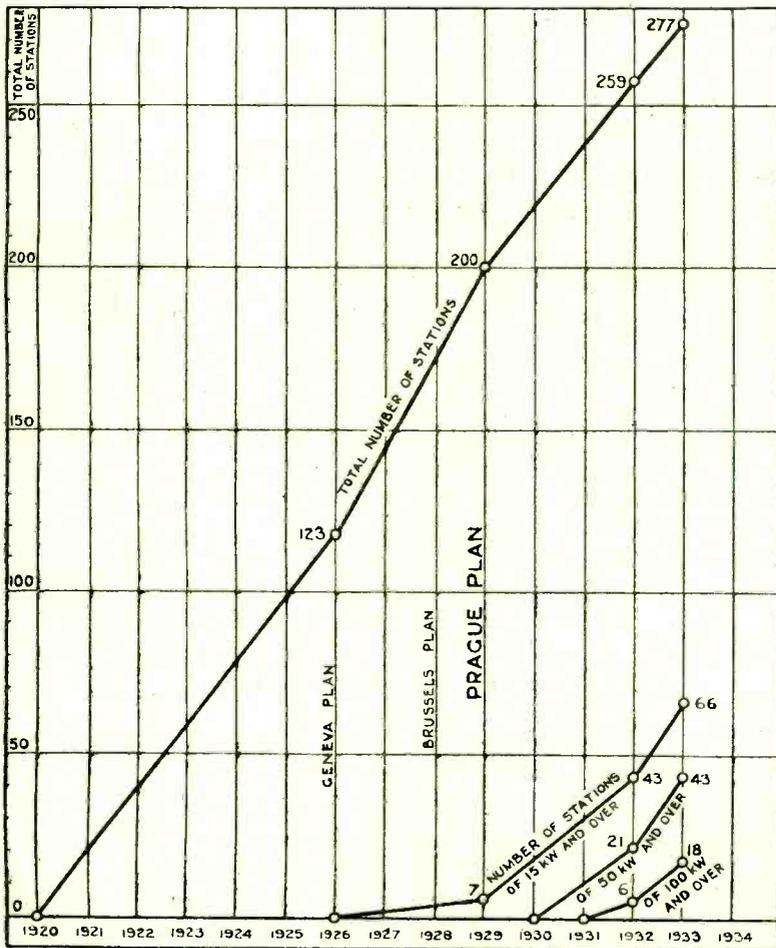


Fig. 1.—How the European network has developed in the past 12 years. The rapid increase in the number of high-power stations since 1930 can clearly be seen.

I had seen Mühlacker in course of construction in the previous August, and on that occasion we discussed with considerable misgiving what would happen when two stations having about 50 kW or more in their aerials were working side by side with a

Returning to the question of whether 9 kc/s can be looked upon as a sufficient separation between broadcasting stations, it is necessary to reconsider one or two well-known theoretical facts concerning the transmission of telephony. If we start by assum-

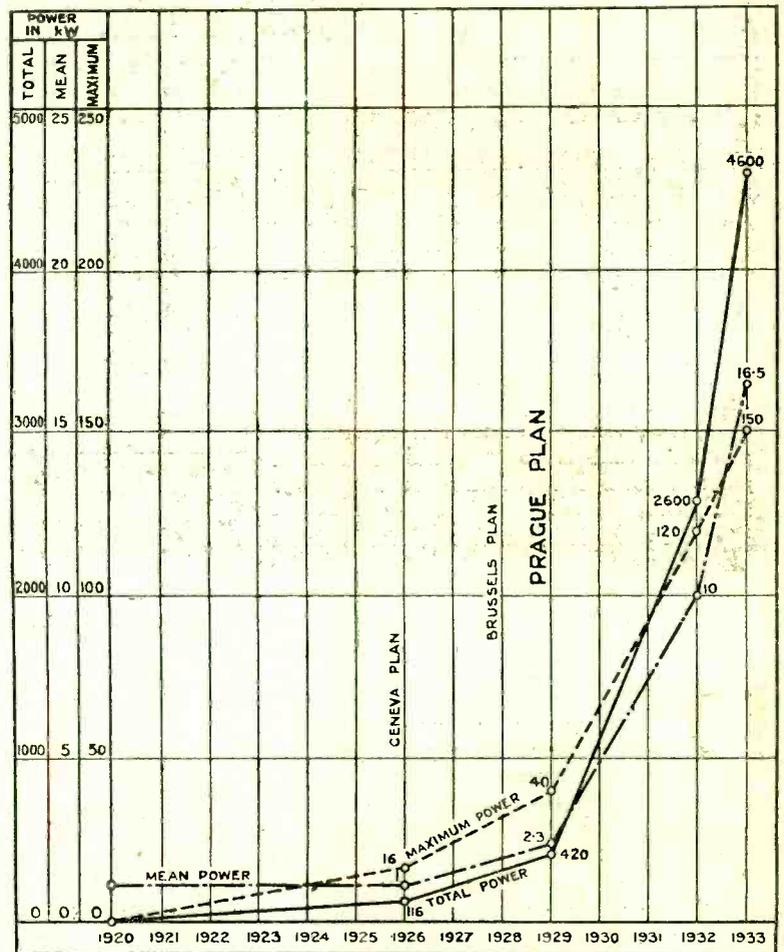


Fig. 2.—Curves showing the increase in power of individual stations and the total power of all European stations from 1920 onwards.

lowed by increasing the separation in several other cases, such as, for example, between Prague, North Regional and Langenberg.

Very briefly, this is how the controversy concerning the need for greater separation between broadcasting channels started, at least for stations in the medium waveband. Later I shall have something to say about the discussions which we have had abroad on this subject and the various different points of view which gradually emerged.

any means equal. As an example, consider a broadcasting station where the modulation is limited strictly to 80 per cent., which incidentally is not by any means always the case. This means that the peak value of any of the modulation frequencies is never greater than 80 per cent. of the peak value of the carrier, but it does not mean that all such frequencies up to, say, 10,000 p.p.s. ever reach a peak value even approaching this value.

Speech and Music Modulation.

Without going closely into an analysis of the average sideband produced by speech, music, etc., one can say as a rough approximation that frequencies from 150 to about 3,000 cycles would probably at times reach the maximum figure, but above 3,000 cycles the amount of modulation falls off very rapidly. Figures 3 and 4 give curves showing approximately how the energy in the sidebands varies with frequency, both for music and speech. These two curves, which are based on the work of Harvey Fletcher, have both been plotted to show the same maximum modulation in order to give an immediate comparison between the energy spectra of speech and music. The sound energy in the studio is, of course, far greater

The Wavelength Problem.—

in the case of most forms of music, moreover, a transmitter is not normally modulated to the maximum for speech. Of course, it will be obvious that if we wish to limit the maximum peak modulation to 80 per cent. of the carrier, the limitation will only apply to the sideband frequencies which are produced at the greatest strength and other frequencies will reach a lower degree of modulation, corresponding, but not strictly proportional, to the strength at which they are produced in the studio.

The Causes of Interference.

What, then, are the causes of interference? When several high-power broadcasting stations are working at 9 kc/s separation and the strength given by each is of the same order, there are four possible causes of interference likely to occur in practice, and these are as follow:—

- (1) An audible heterodyne between the carrier wave of the wanted station and those of its two neighbours.
- (2) The hearing of an intelligible programme, that is to say, the modulated carrier, from each of the two neighbour stations.
- (3) A possible heterodyne effect between one unwanted sideband of each of the neighbour stations and the two sidebands of the wanted station.
- (4) The heterodyne between one sideband of each neighbour station and the wanted carrier.

To explain the above, let us assume that we have two broadcasting stations, each of 50 kW with their carrier waves separated by 9 kc/s, and for the sake of simplicity let us consider that only these two stations are concerned in the problem. Imagine also that we are using a receiver where the selectivity can be easily varied without appreciably affecting the mean volume of the loud speaker output. Let us assume also that the receiver is capable of a considerable measure of response up to 9,000 cycles per second, so far as its low-frequency circuits are concerned, and that we are receiving at a point where the field strength of the wanted

and in this case we may assume that the mean field strength of the unwanted station was half of that of the wanted station.) In these circumstances, if we adjust the receiver to be definitely unselective, that is to say, so that it covers about 18 kc/s on either side of the wanted carrier without much cut down, then we shall, of course, hear most strongly the wanted station, but we shall also hear a heterodyne between the two

extremely selective, then even the sideband heterodyning will disappear, but by the time we have obtained this effect *completely* we shall find that the quality of the transmission from the wanted station is very much lacking in the higher frequencies. We must consider to what extent they are likely to be missing. Some experiments which have been carried out recently have shown that most of this twittering or grasshopper noises,

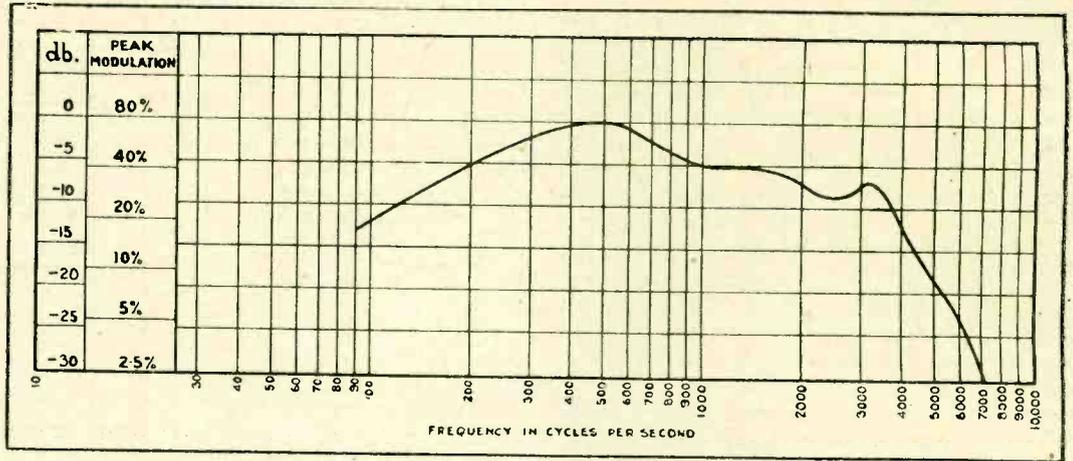


Fig. 4.—With male speech the sideband energy transmitted at the high frequencies is considerably reduced.

carriers, together with the complete programme, that is to say, the modulated carrier, of the unwanted station. Again, we should also hear the heterodyne of one set of unwanted sidebands with the wanted carrier, and would also, theoretically at any rate, hear the heterodyne of one set of unwanted sideband frequencies with one set of wanted sideband frequencies. However, in practice, this last form of jamming does not seem to be troublesome, presumably because the heterodyne effect is weak owing to the fact that the carrier of the wanted station is not involved.

If now we gradually increase the selectivity of the receiver, the strength of the heterodyne between the two carriers and the intelligible type of interference will both decrease noticeably, and in fact both can be made to disappear with a well-designed receiver. However, we shall find that we

as sideband heterodyning is sometimes called, is caused not so much by the upper sideband frequencies of the unwanted station as by the modulation frequencies which contain the most energy, namely, those extending up to, say, 3,000 cycles per second.

Effect of Sideband Energy.

An unwanted sideband with a frequency of 3,000 cycles per second will produce a note with the wanted carrier of 6,000 cycles per second. Therefore, in order to get rid of this effect, we must have practically no response in our receiver at 6,000 cycles per second, which in turn means that we shall not be able to reproduce any audio-frequencies from the wanted station above about 4,500 to 5,000 cycles per second. The higher unwanted sideband frequencies, say those between 6,000 and 7,000 cycles, will make a jamming note of from 3,000 to 2,000 cycles per second, but, as I have already said, the energy normally radiated on such frequencies is small, and in practical cases the heterodyne effect is much less noticeable as compared with interference caused by the lower unwanted sideband frequencies. All this, of course, is not in any way new, but an explanation has been given in order to emphasise two important points which concern respectively transmission and reception:

(a) Comparatively little good would be done by cutting off the upper modulation frequencies above, say, 5,000 cycles per second in every transmitter with a view to preventing interference.

(b) With a 9-kc/s separation one cannot hope for reproduction of frequencies above, roughly, 4,000 cycles per second at the limit of what is usually called the service area, unless one happens to be so placed that the neighbouring stations likely to cause interference are very weak compared with the wanted station.

(To be concluded.)

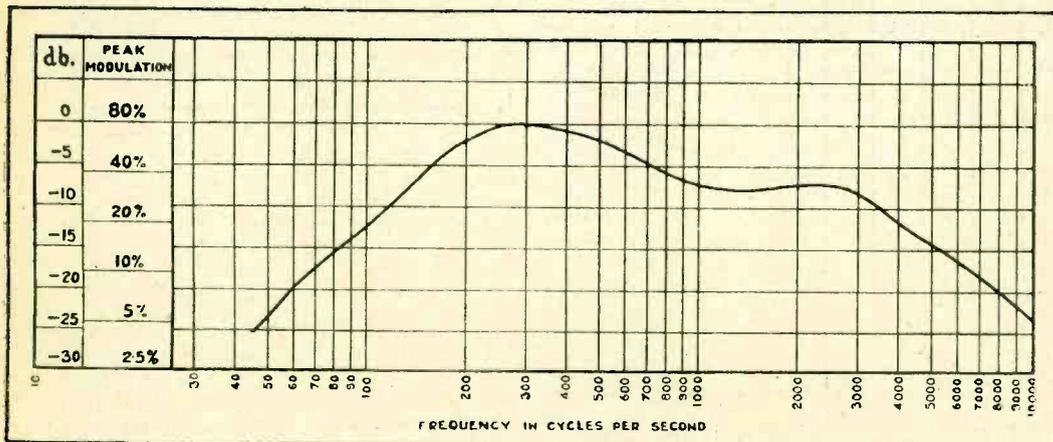


Fig. 3.—The energy in the sidebands plotted against the average frequency spectrum of a symphony orchestra. With the maximum peak modulation at 80 per cent. it will be seen that the energy at the higher frequencies falls away rapidly.

station is about twice or less than twice that of the unwanted station.

(Note.— In practical cases the most troublesome interference occurs at night between stations at considerable distances,

are left with the now familiar noises known as sideband heterodyning, i.e., a heterodyne between the one set of unwanted sidebands and the wanted carrier. If we continue this process still farther and make the receiver

News of the Week.

Current Events in Brief Review.

Here and There.

EXHIBITION fever at the present moment is not confined to Great Britain. The opening of the National Radio Exhibition at Olympia to-day coincides with the start of the Berlin Radio Show, which will remain open until Sunday, August 28th.

Bristol's Radio Train.

BRISTOL, which has always been a centre of wireless enthusiasm, will send a special radio train to London for the Olympia Exhibition on Wednesday next, August 24th. The train, which has been chartered by the Bristol "Evening World," will leave Temple Meads station at 1 p.m., arrive at Paddington at 3.55 p.m., and return at 11.50 p.m.

"Orders are Orders."

THIS is not a slogan intended to brighten the lives of exhibitors at Olympia. It is the title of the play now running at the Shaftesbury Theatre, London, in which extremely realistic stage effects are obtained from an H.M.V. gramophone amplifier. A special record was made at the Wellington Barracks by the London Scottish, and audiences in the theatre are able to hear, as part of the performance, the authentic sounds of troops drilling on parade, special bugle calls, and the ordinary noises of a barracks square during recreation time. The standard double turntable unit includes specially constructed pickups having engraved scales in order that any single groove on a record can be easily located. In addition to the stage effects the installation provides interval music from the orchestra pit and announcements from a number of loud speakers installed in the entrance foyer and bars.

A French Radio "War."

WHAT is regarded as "open warfare" between the State and private broadcasting organisation in France, seems to have broken out with the refusal by the Ministry of Fine Arts to permit *Radio Paris* to broadcast from the *Paris Opéra*.

We understand that the authorities at *Radio Paris* had definitely come to an arrangement with the management of the Opera, but that when the agreement was submitted to the Ministry the name *Radio Paris* was struck out and replaced by that of the State Broadcasting System. A preliminary sequel will be the broadcasting of "Marouf" by *Eiffel Tower* and other P.T.T. stations this evening (Friday). Other operas will follow during the autumn.

Radio Paris and the other private stations are known to have many energetic defenders in the French Parliament, and an interesting situation is developing.

The Amateurs' Union.

THE admission of the Suomen Radio Amatooriliito r.y. of Finland, to membership of the International Radio Union during July, has brought the Union's total membership to twenty countries. This International federation, which was organised at Easter Congress in Paris in 1925, now represents nearly 50,000 amateur stations and is thus by far the largest radio organisation. The latest applications for membership have come from Mexico and the Dutch East Indies.

Twenty Years of Amateur Radio.

ON Saturday last, August 13th, amateur radio in the United States was officially 20 years old. It was the Radio Act of August 13th, 1912, that first recognised amateur radio stations in the United States. Since that time the number of American amateurs has grown from a few hundred to well over 30,000.

The American Radio Relay League, which is now the central organisation of the U.S. amateurs, was founded by Hiram Percy Maxim in 1914.

The Wireless Society of London, forerunner of the Incorporated Radio Society of Great Britain, was founded two years earlier.

The French Regional Scheme.

AT Rennes, Normandy, one of the first of the 60-kilowatt stations of the Ferrié broadcasting scheme may be in operation in a few months' time. Thanks to the promptness shown by the new French Postmaster-General, M. Queuille, the French Council of State has been moved to order the commandeering of certain territory at Thourie, near Rennes, for the construction of the station.

Our Paris correspondent indicates that France seems to have entered upon her national broadcasting scheme with the serious intention of carrying it through as quickly as possible. Sites are being chosen for the stations in the other zones, and the first to be in action will probably be the 60-kilowatt transmitter at Nice.

Broadcasting and the German Crisis.

UNEMPLOYMENT in the German broadcasting industry is threatened as a result of the reorganisation of the whole system under Government control. Our Berlin correspondent reports that the Ministry of Posts has informed all the German broadcasting companies that their concessions for broadcasting will cease on September 30th next instead of December 31st, 1937, as provided in the contracts. The Ministry takes advantage of a clause in the contracts permitting the termination of concessions at short notice in case of emergency.

New companies will have to be formed by October 1st, and although the present staff will probably be taken over as a whole, economy "cuts" and dismissals seem inevitable.

In the meantime, as a glance at the programmes printed in *The Wireless World* will show, the German programmes continue with military band concerts, dance music, and other items which amply disguise any suggestion of the current depression.

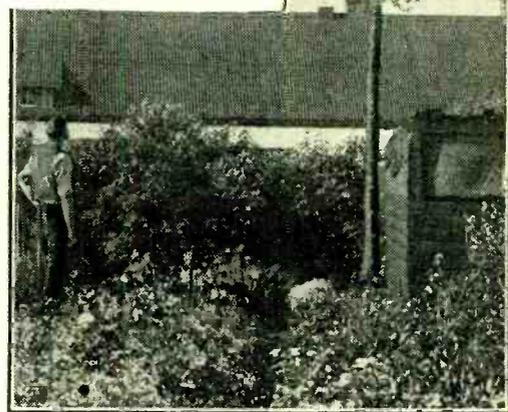
NEXT WEEK'S ISSUE

Will include a detailed, fully illustrated stand-to-stand record of the Show, entirely compiled at Olympia by the technical staff of THE WIRELESS WORLD from first-hand information.

Line Tests.

A RAILWAY freight wagon is being used by the Roumanian broadcasting authorities in their search for a suitable site for the new 150 kW. station. A temporary transmitter mounted on the wagon is roaming the railway system, sending out test signals at spots which are considered favourable and signal strength measurements are taken by specially appointed listeners.

The completed station is expected to be operating early in 1933.



A PLEASANT SURPRISE? Two years ago Mr. E. Symons, of Speke, Liverpool, purchased a bare pole to support his wireless aerial. The picture tells its own story.

120 Kilowatts from Spain.

THE new broadcasting station to be erected in Madrid in accordance with the Spanish Regional scheme will have a power of 120 kilowatts and will operate on the long waveband.

Radio Labour of Love.

HUNDREDS of thousands of words have been sent out from W6USA, the amateur station at Los Angeles, operated by W. A. Lippman, who, at his own cost, transmits messages on behalf of the international competitors in the Olympia games. Mr. Lippman is acting in conjunction with amateurs all over the world, who relay whatever messages are received until they reach their destination. Sometimes the messages cannot be relayed over the last stretch, in which case they are delivered either personally by the receiving amateur or by letter postcard.

In France, Too.

MR. LIPPMAN and his friends are not the only people in radio circles who labour for love. Our Paris correspondent tells of two young ladies who make it their hobby to take down in shorthand all the talks and commentaries given from the Paris P.T.T. station. A few hours afterwards the text, neatly typewritten, is sent to the respective authors.

There is, too, the case of a boy of fifteen years in the Landes Department who has filled 200 copybook pages with records of what he has picked up on his receiver. This reveals another revolution brought about by radio. Ten years ago the copying out of 100 or even 50 lines was considered punishment.

The Attraction of Foreign Listening.

The Capabilities of a Modern Receiver.

By
R. W. HALLOWS,
M.A.



IN the postbag of a writer upon wireless subjects the letter which appears more frequently than any other is that which asks how a valve can be added to an existing receiving set. The reason for this yearning for additional valves is that the listener insists nowadays upon being able to hear something of Continental broadcasting. Any manufacturer who put on to the market a receiving set designed purely for high-quality reproduction of the local station's programmes would inevitably lose a considerable amount of money, for there is nothing that annoys the man in the street to-day so much as being "tied to the local station." The position, in fact, is precisely the opposite of that foreseen two or three years ago by some of the Very Great in the world of wireless. These did not hesitate to proclaim that the passion for long-distance reception, which had then just begun to manifest itself, would soon die what they were pleased to term a natural death. They contended that improvements in the technique of both transmitting and receiving would force the listener to realise the truth of the old proverb "East, West, Home's best"; he would tune in nothing but his local station, and would come to regard the reception of broadcasts from abroad as a mere childish craze.

They Were Sadly Disillusioned.

Those who hold such opinions failed to see that the very improvements in transmission of which they spoke would work a revolution of a completely different kind. Many European countries have installed high-power transmitting plants of the most modern kind, with the result that most parts of this country are now, to all intents and purposes, within the service areas of a considerable number of Continental stations.

Actual measurements made in the neighbourhood of London last winter showed that the field strength of a good many Continental stations was well above what is regarded as

the service area minimum; whilst practical experiments have proved to the hilt that, except under the most adverse conditions, admirable reception is obtainable from stations hundreds of miles away. And the erection of numerous high-power stations abroad has had another far-reaching result. The months between October and March are admittedly the best for long-distance reception. Indeed, until comparatively recently very little that was genuinely worth hearing could be brought in by the wireless set during the remainder of the year. During the summer of 1932, even on unambitious sets, long-wave stations such as Huizen (1,875 m.), Radio-Paris (1,725 m.), and Zeesen (1,635 m.) have been well received in the south of this country at any time when they were working, whilst in the north Kalunborg and Motala have furnished excellent service. Even on the medium waveband Brussels No. 1 (509 m.), Lagenberg (473 m.), and Hilversum (296.1 m.) have nearly always been receivable in daylight.

From about 7 p.m. onwards the number of medium-wave Continental stations that could be well received during the months between May and August was extraordinarily large. The list includes, in addition to those already mentioned, Florence, Prague, Rome, Stockholm, Beromunster, Toulouse, Strasbourg, Brussels No. 2, Milan, the Poste Parisien, Heilsberg, Turin, Trieste, and, in many localities, Fécamp and Nuremberg.

From now onwards conditions for long-distance work will become rapidly more and more favourable until they reach their best in the autumn and winter. A very wonderful season it should be for the foreign listener owing to the number of powerful stations already in operation or to be opened within the next few months. Those who fail to take full advantage of the coming season's wonderful opportunities will be missing no small part of the entertainment that the wireless receiving set has to offer. A set used purely for local reception is rather like

a car employed merely as a town runabout. Long-distance reception gives one all the pleasures of touring.

I have indulged in long-distance listening since long before the days of organised broadcasting, and I do not find that my "childish craze" shows any signs of abating! On the contrary, it seems to me that every year the reception of foreign stations becomes more and more interesting. If it was a great thrill ten or twelve years ago to be able to receive barely intelligible speech and music that was just queer noise from the Eiffel Tower, it is a far greater one to-day to select an item from the programmes of Rome or Kalunborg or Budapest or Heilsberg and to bring it in with such perfection that musical friends are completely deceived when told (a lie committed in the sacred name of science) that it is coming from the London Regional fifteen miles away. I have gone farther, and fared yet more joyously by tuning in Langenberg and calling it London and then tuning in London and calling it Langenberg.

Importance of Tone Correction.

Quite often a critical friend has pointed out, whilst listening to what was really London, certain imperfections that inevitably accompany the reception of a station at a great distance, and has shown me, by comparison with what was really Langenberg, how much better in certain respects the nearer station must always be.

The reception of foreign stations is more worth while nowadays than it has ever been, partly because of the great number of first-rate transmissions available, and partly because the modern receiving set is capable of reproducing their broadcasts with the same volume and the same quality as those of the local station. This year one enormous advance has been made, the importance of which is not yet fully realised. This is the introduction of a tone-corrector. The rapidly increasing number of high-power transmitting stations using wavelengths within the limits of the medium waveband has made selectivity a more and more desirable quality in the receiving set. Even if the receiving set possesses selectivity of a high order the local station can more or less take care of its own quality owing to its spread; but the quality of more-distant stations is liable to suffer through the over-emphasis of low frequencies. Tone correction enables a proper balance to be struck even in sets that rely upon reaction.

The best planned of programmes from the home stations cannot please all listeners all the time. With the long-distance set all Europe is one's oyster, and its owner must indeed be hard to please if he cannot find something to his liking amongst the dozens of programmes from which he may take his choice.

UNBIASED

By FREE GRID.

Olympic Glimpses.

ALTHOUGH the exhibition does not open until the morning when you get this copy of "W.W.," I have already spent two strenuous days in Olympia endeavouring to get an advance look at the exhibits, but it has been uphill work, and I fear that, after all, I have not got much information in return for my pains. I use the word "pains" advisedly, as I feel stiff and sore all over as the result of being battered about by heavy packing cases borne on the backs of abusive individuals who, judging by their language, were evidently imported for the occasion from Billingsgate. In addition, I feel exceedingly tired, as, apart from my efforts to prise up the lids of sundry packing cases and peer into them, I was for a long time chivied about from pillar to post by the horde of Admirals of the Fleet who always infest Olympia.

Fortunately, I was able to satisfy them that I had a right to be present, and had no felonious intent. Quite early in the day I had had the good fortune to pick up a pocket wallet dropped by a plutocratic-looking person whom I recognised as the general manager of a firm of radio manufacturers of almost international repute. In this wallet I discovered an exhibitor's "pass" coyly nestling amid a miscellaneous collection of pawn tickets and *billets-doux*. I subsequently returned the wallet through the post with the contents intact, except for the pass, and salved my conscience by reflecting that had it fallen into the hands of any unscrupulous person its owner would have had to pay heavily in hush-money in respect of the letters.

The chief item of news which I was able to glean was that this year the exhibitors have decided to sell their sets by appealing to the women instead of to the men; consequently, all the young ladies from Paris have been sent packing, and in their place a theatrical agency is, I understand, supplying a chorus of matinée idols, whilst special lighting arrangements have been made so that due justice is done to synthetic complexions.

In the course of my explorations I was pleasantly surprised to find that quite a number of firms which were excluded last year have gained lawful entry this year by taking out British naturalisation papers in the form of factories built in this country. One or two, however, had, to my mind, a rather too garlicky atmosphere about them. I was glad to see that the good old Anglo-Saxon firm of A. Gesellschaft, Ltd., which I mentioned in my notes last year as being so prominent in Manchester, had weathered the financial storm, and was still carrying

on. I was rather sorry to see the tendency to adopt American expressions in the nomenclature of sets. The "Lowboy 7" by H.M.V., and the "Attoboy 8" by a firm of equal repute could, in my opinion, be more happily named.

I notice that the B.B.C. amplifier is to feed the loud speakers at the various stands, as was the case at both Olympia and Manchester last year. There can be no doubt that music forms a very pleasing audible background, provided that it is not so loud that one has to use a megaphone in order to make oneself heard when making an enquiry at a stand. I, for one, would be sorry to see it stopped, but I do hope that the powers-that-be will see that we get a little more music and a little less cackle than was the case last year.

Let us hope that some kindly disposed person has presented some new records, so that visitors will be spared the constant reiteration of "Good Night, Sweetheart" and other West African swamp songs which saturated the pick-up in 1931.

Stop!

THERE is one great self-imposed task which I intend to carry out during the exhibition. I shall arm myself with half a dozen test-records from my collection, and go round all the stands on which radio-gramo-

phones or gramophone motors are in evidence. Thus I shall be able to test some of the wild claims which have reached me during the past week or two from various manufacturers to the effect that their particular brand of automatic stop will function equally well on any old record. It may be remembered, but probably won't, that three weeks ago I raised a moan about the erratic behaviour of these arrangements, which function sometimes before the record has finished, and sometimes never at all. Although I absolved the makers of motors and stops from all blame, which I said was due to the fact that the gramophone-recording companies all seemed to have different ideas on the question of run-off tracks (just as thirty years ago they all had different ideas about the speed of recordings), yet several makers of these devices sent me letters claiming that their particular device would do the trick. One even claimed that his device required no run-off track at all!

It was significant, however, that not one responded to my invitation to send in a specimen for test purposes.



Appealing to the women.

I should like to take this opportunity of thanking all readers who wrote to me on this subject, and suggest that those who intend visiting the exhibition should take an odd record or two. And then, please send me in your experiences so that I may publish a full report in due course.

"F. G."—His Mark.

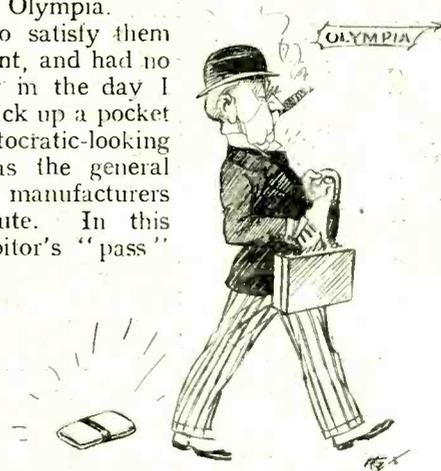
I HAVE been smitten by an idea which is really the outcome of a rather insulting letter from a reader. All of you who have written to me will, I feel sure, bear me out when I say that it is my invariable rule to give a reply to all letters received and to append my initials thereto. The reader in question rather unkindly suggests that these letters are never attended to by me in person, but that replies are sent and my initials forged by hiring varlets in the "W.W." offices. As an earnest of my good faith, I have determined that, in future, all my letters will be signed by my right-hand thumb-print only, a facsimile of which is reproduced just below. This will definitely prevent any unkind suspicions. When any of you receive a letter purporting to come from me, you will only have to compare the "signature" on it with the facsimile thumb-print.

In case you are still in doubt, it will only be necessary for you to send the two prints to Scotland Yard for comparison; in fact,



Free Grid, his mark.

you need only send the letter, and ask the officials if it tallies with any on record in their files.



Dropped by a plutocratic-looking person.

Exhibitors at OLYMPIA.

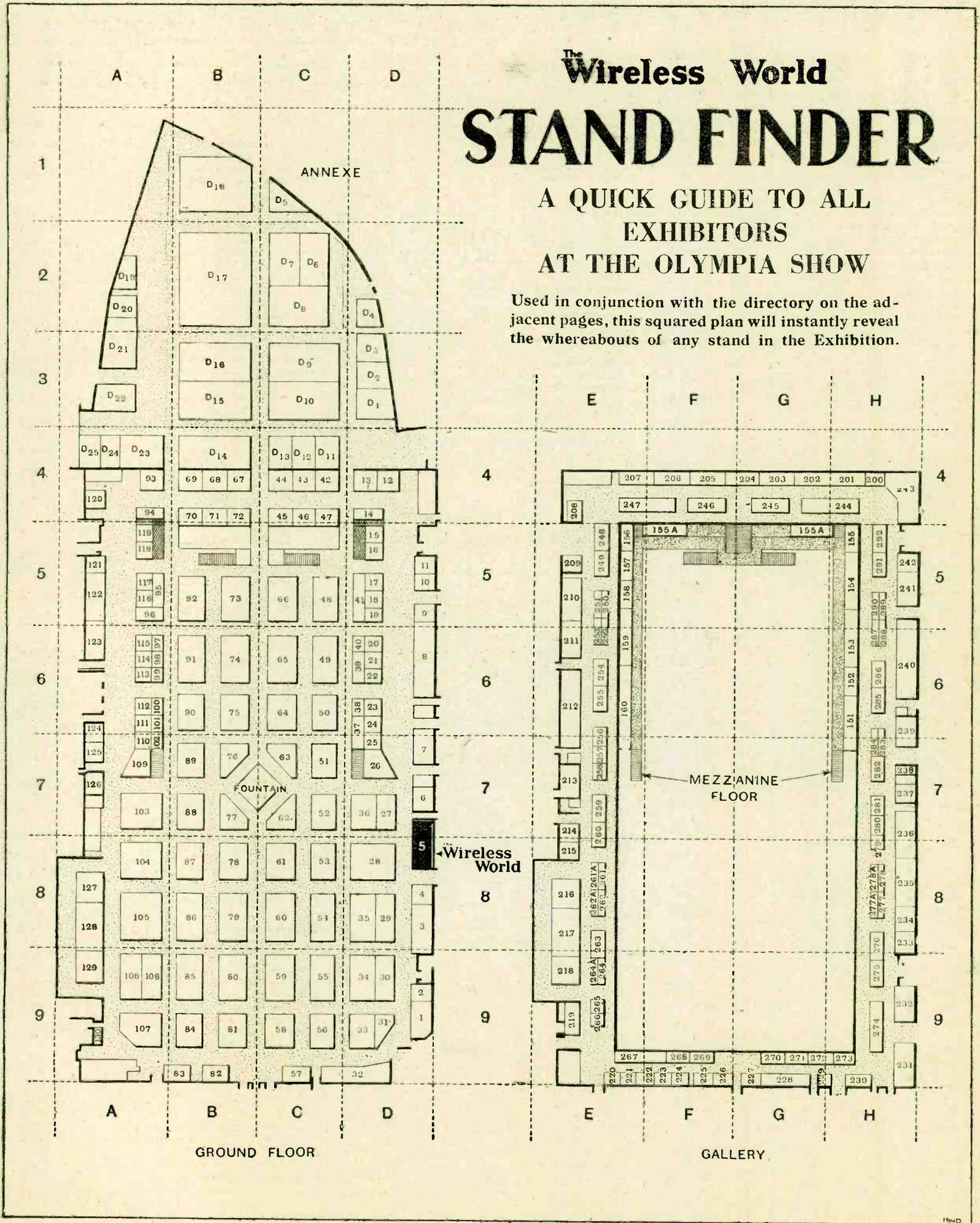
In the following list we give the names and addresses of the exhibitors, with stand numbers and (in heavy type) a reference to be used in conjunction with the plan on the next page for locating individual stands.

AD-A-GRAMS 116	A 5	CADISCH & Sons, R. 218	E 9	Dyson & Co. (Works), Ltd., J. 57	C 9
Carlton House, Regent St., S.W.1.		5-6, Red Lion Sq., W.C.1.		5, Godwin St., Bradford.	
Adey Portable Radio 259	E 7	Carrington Manufacturing Co., Ltd. 123	A 6	Dept. of Overseas Trade 264	E 9
99, Mortimer St., W.1.		24, Hatton Garden, E.C.1.		Gt. Queen St., S.W.1.	
Alliance Radio, Ltd. 19	D 5	Celestion, Ltd. 127	A 8	EAGLE Engineering Co., Ltd. 38	D 6
Burleigh Parade, London Rd., Sutton, Surrey.		London Rd., Kingston-on-Thames.		Eagle Works, Warwick.	
Amalgamated Press, Ltd. 8	D 6	Cellgrave Co. 290	H 5	Eastick & Sons, J. J. 239	H 6
Fleetway House, Farringdon St., E.C.4.		6-8, Kent House Lane, S.E.26.		118, Bunhill Row, E.C.1.	
Amplion (1932), Ltd. 68	B 4	Chloride Electrical Storage Co., Ltd. 61	C 3	East London Rubber Co. 211	E 6
82-84, Rosoman St., E.C.1.		Clifton Junction, Nr. Manchester.		29-33, Gt. Eastern St., E.C.2.	
Apollo Gramophone Co., Ltd. 214	E 7	Churchmans, Ltd. 288	H 6	"Econasign" Co., Ltd. 269	F 9
4, Bunhill Row, E.C.1.		79, Maidenburgh St., Colchester.		137, Victoria St., S.W.1.	
Automatic Coil Winder & Electrical Equipment Co., Ltd. 206	F 4	Citel Products, Ltd. 285	H 6	Edison Bell, Ltd. 27	D 7
Winder House, Douglas St., S.W.1.		134, Pentonville Rd., N.1.		Glengall Rd., S.E.15.	
BAKER'S Selhurst Radio 83	B 9	City Accumulator Co. 249	E 5	Edison Swan Electric Co., Ltd. 75	B 6
89 Selhurst Rd., S.E.25.		7, Angel Court, Strand, W.C.2.		123-125, Queen Victoria St., E.C.4.	(230) H 9
Balcombe, Ltd., A. J. 128	A 8	Clarion Radio Valve Co. 120	A 4	Electrical Devices Co. 47	C 4
52, Tabernaacle St., E.C.2.		7, Duke St., Adelphi, W.C.2.		62, Conduit St., W.1.	
Bell Piano Co., Ltd. 3	D 8	Clarke & Co. (M/C), Ltd., H. 91	B 6	Electrical & General Distributors, Ltd. 278A	H 8
The Hyde, Hendon, N.W.9.		Eastnor St., Old Trafford, Manchester.		154, King's Cross Rd., W.C.	
Belling & Lee, Ltd. 154	H 5	Climax Radio Electric, Ltd. 81	B 9	Electrical & Radio Products, Ltd. 33	D 9
Cambridge Arterial Rd., Enfield, Middlesex.		Haverstock Works, Parkhill Rd., Hampstead, N.W.3.		90, Regent St., W.1.	
Benjamin Electric, Ltd. 40	D 6	Cole, Ltd., E. K. 25	D 7	Electro-Dynamic Construction Co., Ltd. 157	E 5
Brantwood Works, Tariff Rd., N.17.		Ekeo Works, Southend-on-Sea.	65 C 6	Devonshire Grove, S.E.15.	
Benn Brothers, Ltd. 281	H 7	Columbia Graphophone Co., Ltd. 92	B 8	Ensign, Ltd. 212	E 6
154, Fleet St., E.C.4.		92, Clerkenwell Rd., E.C.1.		88, High Holborn, W.C.1.	
Bernard Jones Publications, Ltd. 7	D 7	DEMONSTRATION ROOMS.			
58, Fetter Lane, E.C.4.		British Blue Spot Co., Ltd. D13	C 4	Epoch Radio Mfg. Co., Ltd. 41	D 5
Bird & Sons, Ltd., Sydney S. 158	E 5	British Rola Co., Ltd. D2	D 3	Exmouth House, Exmouth St., E.C.1.	
Sarnesfield Rd., Enfield, Middx.		Celestion, Ltd. D9	C 3	Erie Resistor, Ltd. 4	D 8
Bowyer-Lowe & A.E.D., Ltd. 156	E 5	Cole, Ltd., E. K. D16	B 3	Waterloo Rd., Cricklewood, N.W.2.	
Coombe Rd., Brighton, Sussex.		Columbia Graphophone Co., Ltd. D15, D22	B 3, A 3	Ever Ready Co. (G.B.), Ltd. 63	C 7
Bridger & Co., R. O. 280	H 7	Cossor, Ltd., A. C. D12	C 4	Hereules Pl., Holloway, N.7.	
334, Goswell Rd., E.C.1.		Edison Swan Electric Co., Ltd. D4	D 2	FAUDELS, Ltd. 234	H 8
Britannia Batteries, Ltd. 126	A 7	Fay Home Recorders, Ltd. D5	C 1	36-40, Newgate St., E.C.1.	
233, Shaftesbury Ave., W.C.2.		General Electric Co., Ltd. D21	A 3	Fay Home Recorders, Ltd. 255	E 6
British Blue Spot Co., Ltd. 35	D 8	Gramophone Co., Ltd. D3, D18	D 3, B 1	121, Victoria St., S.W.1.	
94-96, Rosoman St., E.C.1.		Johnson Talking Machine Co., Ltd. D20	A 2	Ferranti, Ltd. 78	B 8
British Broadcasting Corporation, Ltd. 155A	G 5	Kolster-Brandes, Ltd. D8	C 2	Hollinwood, Lancs.	
Broadcasting House, W.1.		Lamplugh, Ltd., S. A. D24	A 4	Film Industries, Ltd. 261	E 8
British Ebonite Co., Ltd. 2	D 9	Lissen, Ltd. D1	D 3	60, Paddington St., W.1.	
Nightingale Rd., Hanwell, W.7.		Lotus Radio, Ltd. D7	C 2	Five Point Products. 252	E 6
British G.W.Z. Co., Ltd. 282	H 7	McMichael, Ltd., L. D19	A 2	8A, Cross St., Islington, N.1.	
205, Bedford Ave., Trading Estate, Slough, Bucks.		Marconiphone Co., Ltd. D6, D17	C 2, B 2	Flinders (Wholesale), Ltd. 241	H 5
British General Mfg. Co., Ltd. 29	D 8	Radio Gramophone Development Co., Ltd. D23	A 4	East Stockwell St., Colchester.	
Brockley Works, Brockley, S.E.4.		Smurthwaite, F. W. D25	A 4	Formo Co. 100	A 6
British Goldring Products, Ltd. 20	D 6	Telsen Electric Co., Ltd. D10	C 3	Crown Works, Southmill Rd., Shirley, Southampton.	
119, Finsbury Pavement, E.C.2.		Ultra Electric, Ltd. D14	B 4	Fox Publications, Ltd. 278	H 8
British Hard Rubber Co., Ltd. 220	E 9	Varley (Oliver Pell Control, Ltd.) D11	C 4	14, Britannia St., W.C.1.	
Wharf Rd. Works, Ponders End, Middx.		Colvern, Ltd. 245	G 4	Fraser Radio, Ltd. 253	E 6
British Ideal Patents, Ltd. 72	B 4	Mawneys Rd., Romford, Essex.		38, Crawley Rd., N.22.	
Green St., Brimsdown, Middlesex.		Concordia Electric Wire Co., Ltd. 208	E 4	Fuller Accumulator Co. (1926), Ltd. 76	B 7
British N.S.F. Co., Ltd. 18	D 5	New Sawley, Nr. Nottingham.		Woodland Works, Chadwell Heath, Essex.	
Waddon Factory Estate, Waddon, Surrey.		Consolidated Radio Co., Ltd. 34	D 9	Fulotone, Ltd. 203	G 4
British Pix Co., Ltd. 43	C 4	75, Kilburn Lane, W.10.		73, Camden Rd., N.W.1.	
118, Southwark St., S.E.1.		Cossor, Ltd., A. C. 60	C 8	GAMBRELL Radio, Ltd. 21	D 6
British Radiophone, Ltd. 93	A 4	Cossor House, Highbury Grove, N.5.		Merton Rd., Southfields, S.W.13.	
Aldwych House, Aldwych, W.C.2.		DALLAS & Sons, Ltd., J. 202	G 4	Garrard Engineering & Mfg. Co., Ltd. 122	A 5
British Rola Co., Ltd. 45	C 4	6-10, Betterton St., W.C.2.		Newcastle St., Swindon.	
179, High Rd., Kilburn, N.W.6.		Danipad Rubber Co., Ltd. 113	A 6	General Electric Co., Ltd. 105	A 8
British Thomson-Houston Co., Ltd. 119	A 5	5-7, Market St., Finsbury, E.C.2.		Magnet House, Kingsway, W.C.2.	109 A 7
Rugby.		Darwins, Ltd. 70	B 4	Gilbert & Co., Ltd., C. 232	H 9
"Broadcaster" 6	D 7	Fitzwilliam Works, Sheffield.		Arundel St., Sheffield.	
68, Long Acre, W.C.2.		Dayzite, Ltd. 209	E 5	Gothic Electrical Supplies, Ltd. 201	H 4
Brown Brothers, Ltd. 240	H 6	17, Lisle St., W.C.2.		Severn St., Birmingham.	
26, Gt. Eastern St., E.C.2.		De La Rue & Co., Ltd., Thos. 227	G 9	Graham Farish, Ltd. 50	C 6
Brownie Wireless Co. of Gt. Britain, Ltd. 62	C 7	90, Shernhall St., E.17.		Masons Hill, Bromley, Kent.	
Nelson St. Works, Mornington Cres., N.W.1.		Dew & Co., Ltd., A. J. 217	E 8	Gramophone Co., Ltd. 55	C 9
Bulgin & Co., Ltd., A. F. 151	H 6	32-34, Rathbone Pl., W.1.		363-367, Oxford St., W.1.	
Abbey Rd., Barking, Essex.		Dibben & Sons, Ltd., Wm. 77	B 7	Gripso Co. 226	F 9
Burgoyne Wireless (1930), Ltd. 98	A 6	Antelope Bldgs., St. Mary's Rd., Southampton.		32, Victoria St., S.W.1.	
34A, York Rd., King's Cross, N.1.		Dubilier Condenser Co. (1925), Ltd. 84	B 9	Grosvenor Electric Batteries, Ltd. 42	C 4
Burdept, Ltd. 46	C 4	Ducon Works, Victoria Rd., N. Acton, W.3.		2+3, White St., E.C.2.	
51-53, Church St., S.E.10.		Dulcetto-Polyphon, Ltd. 235	H 8	Gutta Percha Co. (Telegraph Construction & Maintenance Co., Ltd.) 257	E 7
Burton, C. F. & H. 1	D 9	2-3, Newman St., W.1.		18, Wharf Rd., City Rd., N.1.	
Bernard St., Walsall.		Edison Swan Electric Co., Ltd. 218	E 9	HACKER & Sons, H. 37	D 6
Bush Radio Ltd. 110	A 7	5, Godwin St., Bradford.		Perfecta Works, Ray Lea Rd., Maidenhead.	
Film House, Wardour St., W.1.		Dept. of Overseas Trade		117	A 5

The Wireless World STAND FINDER

A QUICK GUIDE TO ALL EXHIBITORS AT THE OLYMPIA SHOW

Used in conjunction with the directory on the adjacent pages, this squared plan will instantly reveal the whereabouts of any stand in the Exhibition.



The latest *Wireless World* receivers can be seen on Stand No. 5, including the "Monodial A.C. Super," the "Modern Straight Five," the "Autotone Portable," and the "Wireless World Baby Superhet."

Exhibitors at Olympia—(continued).

Hambing, Ltd., A. W. 224	F 9	Mullard Wireless Service Co., Ltd. 79	B 8	Smith & Sons (Motor Accessories), Ltd., S. 130	A 9
15-16, Alfred Place, W.C.1.		Mullard House, Charing Cross Rd., W.C.2.	248	Cricklewood Works, N.W.2.	
Hampton Radio, Ltd. 12	D 4	Murphy Radio, Ltd. 28	D 8	Smurthwaite, F. W. 22	D 6
1-3, Vicarage Rd., Hampton Wick.		Broadwater Rd., Welwyn Garden City, Herts.		15A, Onslow Gdns., Wallington, Surrey.	
Harlic, Ltd. 31	D 9	NATIONAL Accumulator Co., Ltd. 244	H 4	Sonochorde Reproducers, Ltd. 262	E 8
Cambridge Arterial Rd., Enfield.		50, Grosvenor Gardens, S.W.1.		1, Willesden Lane, N.W.10.	
Harwell, Ltd. 261A	E 8	National Radio Service Co. 200	H 4	Sovereign Products, Ltd. 152	H 6
Sessions House, Clerkenwell Green, E.C.1.		15-16, Alfred Place, W.C.1.		52-54, Rosebery Ave., E.C.1.	
Haynes Radio 17	D 5	Newnes, Ltd., George 114	A 6	Spencer Radio, Ltd. 14	D 4
57, Hatton Garden, E.C.1.		8-11, Southampton St., W.C.2.		136 Clerkenwell Rd., E.C.1.	
Heayberd & Co., F. C. 13	D 4	New London Electron Works, Ltd. 48	C 5	Standard Battery Co. 26	D 7
10, Finsbury St., E.C.2.		East Ham, E.6.		184-188, Shaftesbury Ave., W.C.2.	
Hellesens, Ltd. 221	E 9	OLDHAM & SON, Ltd. 85	B 9	Standard Telephones & Cables, Ltd. 107	A 9
Morder Rd., S. Wimbledon, S.W.19.		Denton, Manchester.		St. Chad's Place, 364, Gray's Inn Rd., W.C.1.	
Henderson Wireless & Electrical Service... 215	E 8	Ormond Eng. Co., Ltd. 87	B 8	Stenibac, Ltd. 256	E 6
54, Queen's Rd., Brighton.		Ormond House, Rosebery Ave., E.C.1.		303, Essex Rd., Islington, N.1.	
Henley's Telegraph Works Co., Ltd., W. T. 16	D 5	Osborn, Chas. A. 32	D 9	Stratton & Co., Ltd. 23	D 6
Holborn Viaduct, E.C.1.		The Regent Works, Arlington St., N.1.		Balmoral Works, Bromsgrove St., Birmingham.	
Hillman Brothers 210	E 5	Overseas Trading Corporation 291	H 5	Sun Electrical Co., Ltd. 231	H 9
123, Albion St., Leeds.		18, Ganton St., W.1.		118-120, Charing Cross Rd., W.C.2.	
Hobday Brothers, Ltd. 243	H 4	PAROUSSI, E. 238	H 7	Swift-Lovick & Sons, Ltd. 112	A 6
21-27, Gt. Eastern St., E.C.2.		10, Featherstone Bldgs., W.C.1.		Clarence Steel Works, Sheffield.	
Hunton, Ltd. 271	G 9	Partridge & Mee, Ltd. 67	B 4	Sylves, Ltd. 260	E 7
114, Euston Rd., N.W.1.		Partridge, Wilson & Co. 159	E 6	144, Theobalds Rd., W.C.1.	
Hustler, Simpson & Webb, Ltd. 30	D 9	Davenset Works, Evington Valley Rd., Leicester.		TANNOY Products 44	C 4
317, Hoe St., Walthamstow, E.17.		Pegasus, Ltd. 94	A 4	1-7, Dalton St., S.E.27.	
IGRANIC Electric Co., Ltd. 36	D 7	Low Mills, Lower Wortley, Leeds.		Telegraph Condenser Co., Ltd. 53	C 8
147, Queen Victoria St., E.C.4.		Peto-Scott Co., Ltd. 247	E 4	Wales Farm Rd., N. Acton, W.3.	
Hiffe & Sons, Ltd. 5	D 8	77, City Rd., E.C.1.		Telsen Electric Co., Ltd. 66	C 5
Dorset House, Tudor St., E.C.4.		Philips Lamps, Ltd. 104	A 8	Aston, Birmingham.	
Itonia, Ltd. 216	E 8	Philomel Radio Equipment... 273	H 8	Terrytone Radio Products Co., Ltd. 268	F 9
58, City Rd., E.C.1.		Pickering St., Loose, Maidstone.		33, Crouch Hill, N.4.	
JACKSON -Bell Distributors, Ltd. 11	D 5	Portadyne Radio, Ltd. 56	C 9	Thompson Diamond & Butcher 207	E 4
68, Victoria St., S.W.1.		Forst Rd., North Acton, N.W.10.		34, Farringdon Rd., E.C.1.	
Jackson Brothers 204	G 4	Powertone Products 229	G 9	Trade Chronicles, Ltd. 10	D 5
72, St. Thomas St., S.E.1.		88, Cromer St., W.C.1.		6, Carmelite St., E.C.4.	
Jewel Pen Co., Ltd. 97	A 6	Practical Radio Publishing Co. 254	E 6	Tunewell Radio, Ltd. 96	A 5
21-22, Gt. Sutton St., E.C.1.		30, Kirby St., E.C.1.		54, Station Rd., New Southgate, N.11.	
Johnson Talking Machine Co., Ltd. 228	G 9	Priestly & Ford 213	E 7	Tyrola Electric, Ltd. 283	H 7
96, Clerkenwell Rd., E.C.1.		3-11, Carrs Lane, Birmingham.		21, East Road, N.1.	
Junit Mfg. Co., Ltd. 39	D 6	Primus Manufacturing Co. 15	D 5	ULTRA Electric, Ltd. 73	B 5
Junit Works, Steele Rd., W.3.		Primus House, Willow St., E.C.2.		Erskine Rd., Chalk Farm, N.W.3.	
KALISKY (Aldgate), Ltd., S. 236	H 7	Pye Radio, Ltd. 80	B 9	Umello, Ltd. 125	A 7
146, Theobalds Rd., W.C.1.		Paris House, Oxford Circus, W.1.		55, Gt. Marlborough St., W.1.	
Kenwell Radio, Ltd. 121	A 5	R.G. Radio-Electric, Ltd. 222	F 9	Unicofon, Ltd. 250	E 5
200, City Rd., E.C.1.		51, Whitecombe St., W.C.2.		23, City Rd., E.C.1.	
Keith Prowse & Co., Ltd. 292	H 5	Radialaddin, Ltd. 277	H 8	United Radio Mfrs., Ltd. 155	H 5
159, New Bond St., W.1.		47, Berners Street, W.1.		63, Lincoln's Inn Fields, W.C.1.	
Kolster-Braudes, Ltd. 54	C 8	Radio Gramophone Development Co., Ltd. 92	B 5	Univolt Electric, Ltd. 115	A 6
Cray Works, Sidecup, Kent.		18-20, Frederick St., Birmingham.		119, Finsbury Pavement, E.C.2.	
L.E.S. Distributors, Ltd. 233	H 8	Radio Instruments, Ltd. 90	B 6	VANDERVELL, Ltd., C. A. 246	F 4
15-16, Alfred Place, W.C.1.		Purley Way, Croydon.		Well St., Birmingham.	
Lanplugh, Ltd., S. A. 99	A 6	Radio Society of Gt. Britain 242	H 5	Varley (Oliver Pell Control, Ltd.) 160	E 6
89, Little Park St., Coventry.		53, Victoria St., S.W.1.		103, Kingsway, W.C.2.	
Lancashire Dynamo & Crypto, Ltd. 111	A 6	Ratcliff (Metals), Ltd., J. F. 258	E 7	WATMEL Wireless Co., Ltd. 273	H 9
94, Petty France, S.W.1.		21-31, New Summer St., Birmingham.		Imperial Works, High St., Edgware.	
Lawson & Raphael 270	G 9	Ready Radio, Ltd. 106	A 9	Wego Condenser Co., Ltd. 284	H 7
137, Regent St., W.1.		Eastnor House, Blackheath, S.E.3.		Spencer House, South Place, E.C.1.	
Lectro Linx, Ltd. 225	F 9	Redfern's Rubber Works, Ltd. 124	A 6	Westinghouse Brake & Saxby Signal Co., Ltd. 89	B 7
254, Vauxhall Bridge Rd., S.W.1.		Hyde, Cheshire.		82, York Rd., King's Cross, N.1.	
Lever (Trix), Ltd., Eric J. 262A	E 8	Regentone, Ltd. 51	C 7	Whiteley Electrical Radio Co., Ltd. 108	A 9
8-9, Clerkenwell Green, E.C.1.		Regentone Works, Worton Rd., Isleworth, Middlesex.		Nottingham Rd., Mansfield.	
Lissen, Ltd. 59	C 9	Reproducers & Amplifiers, Ltd. 69	B 4	Whiteley, Ltd., Wm. 267	E 9
Worple Rd., Isleworth, Middlesex.		Frederick St., Wolverhampton.		Westbourne Grove, W.2.	
Lock, Ltd., W. & T. 101	A 6	Roberts, John 272	G 9	Wilkins & Wright, Ltd. 118	A 5
St. Peter's Works, Bath.		1-3, Bridgwater Viaduct, Knott Mill, Manchester.		Utility Works, Holyhead Rd., Birmingham.	
Loewe Radio Co., Ltd. 223	F 9	SELECTA Gramophones, Ltd. 219	E 9	Wingrove & Rogers, Ltd. 129	A 9
4, Fountayne Rd., Tottenham, N.15.		81, Southwark St., S.E.1.		Mill Lane, Old Swan, Liverpool.	
London Electric Wire Co. & Smiths, Ltd. 153	H 6	Selfridge & Co., Ltd. 274	H 9	Wireless for the Blind 264A	E 9
Church Rd., Leyton, E.10.		Oxford St., W.1.		224, Gt. Portland St., W.1.	
Lotus Radio, Ltd. 64	C 6	Shapland & Petter, Ltd. 287	H 6	Wireless League 265	E 9
Mill Lane, Old Swan, Liverpool.		Raleigh Works, Barnstaple.		12, Grosvenor Cres., S.W.1.	
M.P.A. Wireless (1930), Ltd. 95	A 5	Siemens Electric Lamps & Supplies, Ltd. 88	B 7	Wireless Retailers Association of G.B. 266	E 9
62, Conduit St., W.1.		38-39, Upper Thames St., E.C.4.		1, Mitre Court, E.C.4.	
McMichael, Ltd., L. 58	C 9	Sifam Electrical Instrument Co., Ltd. 289	H 5	"Wireless Trader" 9	D 5
Wexham Rd., Slough, Bucks.		York Works, Browning St., S.E.17.		St. Bride's House, Salisbury Square, E.C.4.	
Magnavox (G.B.), Ltd. 21	D 6	Simpson's Electrical 71	B 4	"Wireless World" 5	D 8
89, Kingsway, W.C.2.		Grange Rd., Leyton, E.10.		Dorset House, Tudor St., E.C.4.	
Mains Radio Gramophones, Ltd. 102	A 7	Sinclair Stafford 277A	H 8	Wright & Weaire, Ltd. 82	B 9
Vaughan St., Bradford.		21, Kenwyn Drive, N.W.2.		740, High Rd., Tottenham, N.17.	
Manufacturers Accessories Co. (1928), Ltd. 237	H 7	Six-Sixty Radio Co., Ltd. 52	C 7	YAGERPHONE, Ltd. 286	H 6
85, Gt. Eastern St., E.C.2.		17-18, Rathbone Place, W.1.		Charlotte Cabinet Works, Ponders End, Middlesex.	
Marconiphone Co., Ltd. 74	B 6	Smith (Radio), Ltd., Arthur 251	E 5	ZETAVOX Radio & Television, Ltd. 103	A 7
210-212, Tottenham Court Rd., W.1.		56, Hazel Rd., Kensal Rise, N.W.10.		Zetavox Works, Coles Green Rd., Cricklewood, N.W.2.	
Montague Radio Inventions & Development Co., Ltd. 49	C 6				
Beethoven Works, 24, Gt. College St., N.W.1.					
Moore, Walter 276	H 8				
6, Burnley Rd., Pudiham, Burnley, Lancs.					

BROADCAST BREVITIES

By Our Special Correspondent.

New Opera Scheme.

A GREAT scheme to make Britain "opera conscious" is the latest idea of the B.B.C. I am able to reveal that the Governors, largely through the advocacy of that very active member of the board, Lady Snowden, have decided that broadcasting can fulfil such a mission in a unique manner, not only by the frequent repetition of studio versions of the great operas, but by the systematic training of artists specially for the work.

Studio Presentation.

It is realised that there are several methods of presentation. One may be tried during the broadcasting of the Covent Garden Opera in the autumn, when a commentator in the studio will introduce the performance with explanations likely to render it intelligible to the ordinary listener. This is one form of "studio presentation," though by this term is generally meant the form of operatic broadcast now popular in Germany where specially prepared versions are carried out at the broadcasting station itself.

It is these condensed versions which, as I mentioned last week, the German authorities will generously place at the disposal of the B.B.C. Their preparation has taken seven years.

The B.B.C. Vintage.

The Corporation is now about to begin the preparation of its own "potted" operas—a job which will keep the Productions Department busy for a long time.

It is hoped that in a few years broadcast opera, if not such a preponderating feature in the British programmes as it is in Italy and Germany, will at least be as popular as the ordinary symphony concerts. I wonder?

B.B.C.'s Great Birthday Effort.

OVER-MODESTY has not always been a failing of the B.B.C., but in recent years the Corporation has certainly made little fuss over its birthdays. I learn that things may be different with the celebration of the tenth anniversary of broadcasting in November next.

Plans are still in the wild and woolly stage, but an attempt will probably be made to give listeners a round-the-world relay on a far grander scale than the contemplated effort last Christmas, which failed so dismally on account of imperfect co-operation among the different broadcasting authorities.

Expensive Jollity.

The chief obstacle likely to be encountered is the question of cost. "Surely," I said, when discussing the event with a B.B.C. man, "Surely the Post Office and other wireless concerns would make financial concessions on such an important occasion?"

He laughed sardonically. "Not a bit of it!" he declared. "No one gives us any concessions. If the B.B.C. stages a round-the-world relay, the B.B.C. must pay."

So let us remain calm and fully prepared for the news that the relay has been abandoned.

Misapprehension.

While talking of world broadcasting, I am glad to be able to qualify my recent statement to the effect that the B.B.C.'s new programme recordings for overseas use will be sold in whatever market they will fetch a price. Apparently this has been interpreted as meaning that any old cow puncher or bootlegger who strolls down "Petticoat Lane" in South Africa or Australia or Canada, may run up against a few slabs of B.B.C. programme and buy them for the price of a drink.

Explanations.

I am sorry that this impression has got around, as the necessary correction may cause disappointment among my Dominion and



THE MAN ON THE BRIDGE. A photograph taken from the centre of the moving wall in the Hamburg studio. By advancing or withdrawing the wall it is possible to alter the studio acoustics to suit different types of programme.

Colonial friends. I am assured by the B.B.C. that the recordings, which will not compete with local talent, will be available only to broadcasting organisations, and that there will be strict rules regarding the number of occasions on which they may be performed.

Come to Britain.

One important service which the records may render will be in connection with the "Come to Britain" movement. Commentaries on national events, such as the Welsh Eisteddfodau, the Highland Games, and the Changing of the Guard at Buckingham Palace, should fire the blood of our overseas cousins, not to mention those Americans who can still claim Anglo-Saxon ties. Other recorded programme material will include talks and vaudeville.

A Happier Newcastle.

NEWCASTLE listeners, after a period of inadequate signal strength which seems to have tried their patience, are much happier with the opening of the rebuilt 1½kW. transmitter working on the new wavelength of 211.3 metres. The latest tests reveal an immense improvement in radiation and quality.

Publishing Triumph.

Incidentally the B.B.C. must be the only publishers in London who are actually pleased when their products have a smaller circulation than that anticipated. With characteristic care the Corporation prepared a booklet showing Novocastrians how to tune in the low wavelength; the demand for the booklet was small at the outset, and since the power increased it has dropped to practically zero. The B.B.C. are delighted, assuming from this that no one needs any help.

The Case is Altered.

I had better forestall trouble by stating that the B.B.C. adopts a less carefree attitude towards its other publications.

Broadcasting Semi-private Talks.

CONGRATULATIONS to the B.B.C. on hitting on the very best method of securing listeners to the talks. In future certain talks are to be announced as "Semi-private," and will thus be assured of a very large audience.

The series will be called "To an Unnamed Listener," and the speaker will choose each time an intimate problem which it will be assumed faces some person or other at some period in his life. For example, if the subject should be "To a Young Man or Woman about to Start a Career," or "The Danger of Living Extravagantly," or "To a Young Man about to Marry," all those listeners who are not starting a career, or living extravagantly, or thinking of marrying, will regard themselves as merely overhearing a semi-private and very frank piece of advice which is being addressed particularly to one of their fellows who may need and, it is hoped, will profit by it. The actual subjects for the series have not yet been chosen.

All kinds of titles will suggest themselves, such as "The Danger of Accepting Gratuitous Advice," "To a Young Listener Who Has Not Paid His Licence Fee," "To a Young Man Who Cannot Get His Set to Work," and many similar.

The Organ in the Concert Hall.

ALL readers interested in the acoustic side of broadcasting will be eager to hear the first notes from the £8,000 organ which the John Compton Organ Company are to install in the concert hall of Broadcasting House under the supervision of Dr. W. G. Alcock, the organist of Salisbury Cathedral.

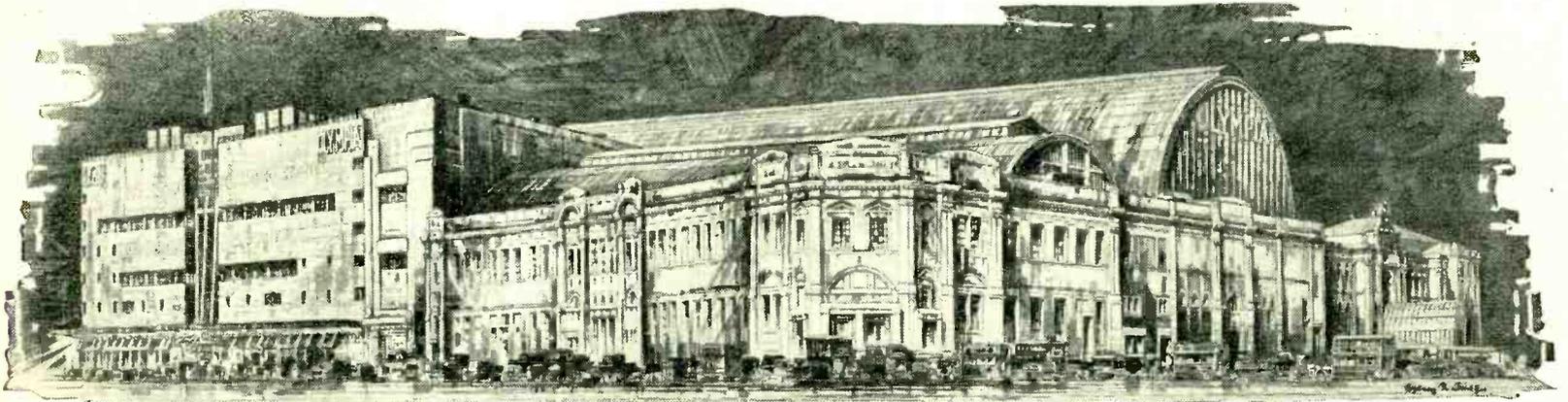
I understand that it will be an all-electric four-manual instrument, totally enclosed within a "swell" box, and played from a separate console on the stage.

The organ will be on "cathedral" lines, and quite unlike the average cinema organ; for this relief much thanks from at least one listener!

What to See At The Show.

AUG. 19th—27th.

11 a.m.—10 p.m.



A General Guide to Every Class of Exhibit.

AS this issue of *The Wireless World* appears on the opening day of the Olympia Show, it follows that our description of the new season's sets and components is in many cases prepared from advance information supplied by the manufacturers. Although we have had an opportunity of examining—and in some cases of testing—much of the apparatus that will be shown, we must wait until next week before we can present an entirely complete technical review of the individual efforts of every firm.

It is already abundantly clear that the present show is extraordinarily comprehensive: there is something for everyone, and no single field of wireless interest has been neglected. Take the battery set: last year, if we exclude portables, there were not more than two or three examples which were representative of advanced technique. The listener without a mains supply had a real grievance, but this year he is to have a wide choice of up-to-date battery sets with modern features, such as band-pass tuning. Further, painstaking efforts have been made to conserve anode current, and, at the same time, to provide a reasonable volume.

The general adoption of variable- μ H.F. valves has had a bearing on design; the freedom from cross-modulation and other interference troubles which is conferred by this valve has enabled designers in some cases to dispense with a two-circuit input filter. Indeed, band-pass tuning has suffered a slight—but a very slight—setback; it will still be found in most H.F. sets, except those of the less-expensive kind.

The superheterodyne principle has gained ground, as it was bound to do, and in many cases is combined with tone correction to a greater or lesser extent.

Speaking generally, a set without a built-in loud speaker is now a rarity, as also is one of the multi-circuit type without ganged tuning. Tuning dials of the new receivers are almost invariably calibrated in wavelength, or in station settings, or both.

In order that the following description of the new season's receivers may be of the

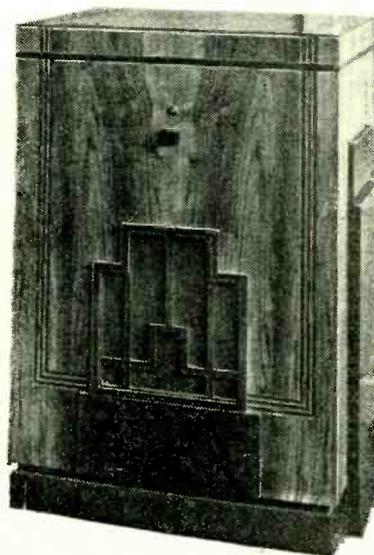
greatest possible assistance to those who are choosing sets for various purposes, and for use under different receiving conditions, they have been grouped in categories, under a more or less arbitrary system of classification.



SUPERHETERODYNES.

The superheterodyne forms one of the most interesting classes of receiver this year, and its rise to popularity has been so rapid that there are now few firms who are not showing at least one model; a number have abandoned the straight receiver almost entirely in its favour.

The Gramophone Co. is a noteworthy example



An H.M.V. ten-valve superheterodyne, with push-pull output and automatic record changer.

of this tendency. The most luxurious H.M.V. set is undoubtedly the Model 532 at 80 guineas. Ten valves are used, and the output stage consists of two push-pull P.X.4 valves rated to deliver 4,500 milliwatts to the loud speaker. The H.F. and both the I.F. stages have variable- μ valves, and three tuned circuits compose the pre-selector. The Model 470, at 32 guineas, is somewhat less ambitious, but again we find three pre-selector circuits and variable- μ valves both in the H.F. and the single I.F. amplifier.

From some points of view, however, the most interesting H.M.V. set is a six-valve battery portable superheterodyne with ganged tuning, and a signal-frequency H.F. stage. The total anode current consumption is stated to be only 10 mA., and the price is 17 guineas.

Not the least of the interest in the superheterodyne lies in the wide variety of design which it permits, and as a contrast to the foregoing we have the six-valve Eldeco portable. This is of the suit-case type, and again ganged tuning is employed, but the valves are arranged so that two stages of I.F. amplification are obtained. A similar receiver is available for operation from the mains, and in this are included a pentode output stage, and variable- μ valves.

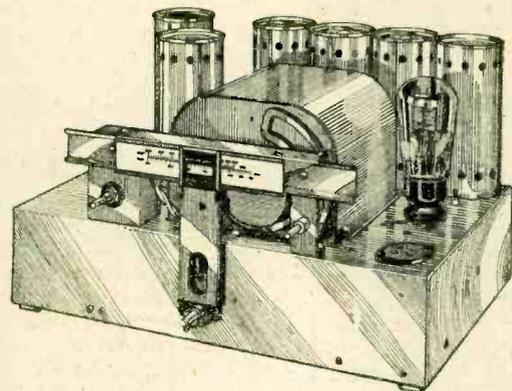
Arthur Smith has an example of the Stenode form of the superheterodyne; it is a radio-gramophone with an output stage rated at 5,500 milliwatts, and it is fitted with dual loud speakers. Eight tuned circuits are employed, variable- μ valves, a separate oscillator, and, since it is a Stenode, a tone-corrector stage. Another receiver of more modest nature is a five-valve superheterodyne in which the bi-grid type of detector-oscillator is used. A preliminary stage of variable- μ H.F. amplification is included, with power grid second detection and a pentode output stage.

The Gambrell-Halford receiver, the A.C. model of which was recently reviewed in the pages of this journal, is now available for D.C. mains supplies. Preliminary H.F. amplification is not used, but two stages of I.F. amplification are fitted.

The well-known firms of E. K. Cole and

What to see at Olympia.—

Varley are newcomers to the field of the superheterodyne, and both are showing five-valve models. The Ekco sets are available in a number of different cabinet styles ranging from a consolette to a radio-gramophone. Band-pass tuning is employed with variable-mu valves,



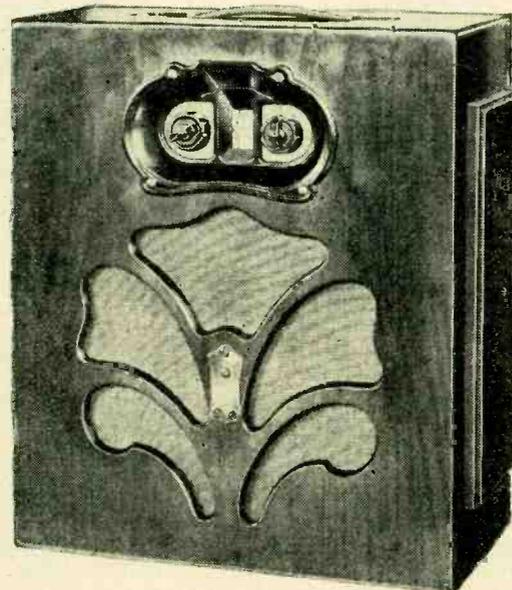
Chassis of the compact Ferranti superheterodyne.

and a metal rectifier for the H.T. supply. The Varley sets are also to be had with many different cabinet types, and at prices varying between 26 guineas and 48 guineas. The latter is, of course, a radio-gramophone, while the cheaper model is of the compact self-contained type.

Ferranti are showing a seven-valve superheterodyne of very modest dimensions, and this was recently reviewed in this journal. A moving-coil loud speaker is used, and variable-mu valves are fitted not only in the H.F. and I.F. stages, but also for the first detector, while band-pass tuning is naturally adopted.

The majority of superheterodynes are mains driven, as one would expect, in view of the high current demands of a large number of valves. Many battery models are shown, however, and the fact that H.T. current has often been kept down to a figure comparable with that of a more modest straight set speaks well for the skill of the designers.

A six-valve battery portable is exhibited by the Marconiphone Co.; it is priced at 17 guineas, and its low anode current consumption of 10 mA. is attained largely by the use of a high-efficiency pentode output valve. The Consolidated Radio superheterodyne is somewhat unusual for a battery receiver, in that it includes automatic grid bias; it is known as



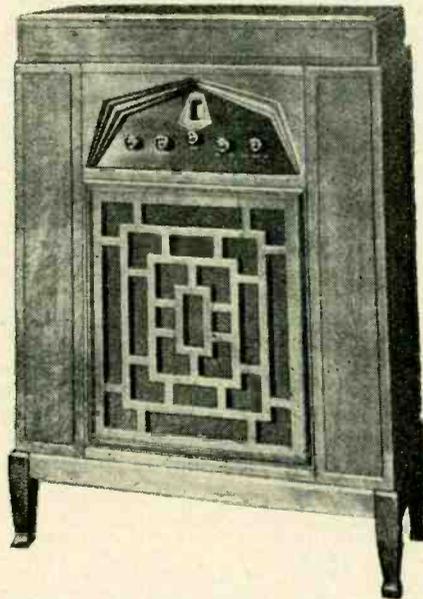
Illustrative of present tendencies: the Marconiphone superheterodyne portable, designed for long range and economical upkeep.

the Cam Superhet, and is priced at 15 guineas. Edison Bell has a five-valve battery superheterodyne in which the anode current consumption has been kept down to 9 mA., and on this score alone is worth attention.

Reverting to mains-driven sets, the G.E.C. model should not be passed by without examination. This has seven tuned circuits, and the band-pass principle is employed in both the signal frequency and the intermediate frequency circuits. Variable-mu valves are again standard, an output of 2,500 milliwatts is obtained from a pentode, and a heterodyne whistle filter is fitted. At the price of 26 guineas this receiver is distinctly attractive.

The Marconiphone Co. is another firm which has adopted the superheterodyne most wholeheartedly; a seven-valve set, the Model 258, is shown in radio-gramophone form, and is priced at 55 guineas. Eight tuned circuits are fitted, and are naturally in the form of band-pass filters; a preliminary stage of H.F. is employed. An output of 2,000 milliwatts is claimed, and a brilliancy control is included in the specification, while on the gramophone side an automatic record changer is an undoubted convenience. A similar receiver, the Model 256, is available, with less ambitious equipment and cabinet, at the price of 24 guineas.

A further example of the Stenode is to be found on the Selfridge stand; this is a radio-gramophone employing a large output stage. Three signal-frequency circuits are used, and, as the I.F. circuits are sharply tuned and



One of the most ambitious of the R.G.D. radio-gramophones. A ten-watt output is provided.

operate upon a low frequency, two tone-correction circuits are fitted in the L.F. stages to obtain the correct overall frequency characteristics. Exceptionally high selectivity is claimed.

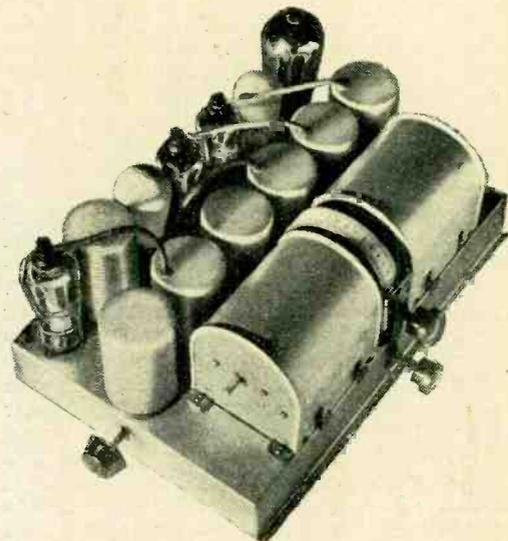
The Tannoy superheterodyne, again, is of the radio-gramophone type, with a band-pass pre-selector and aperiodic coupling to the first detector. Power grid second detection is used, and a triode output valve feeds the moving-coil loud speaker.

The R.G.D. receivers have for some years included at least one superheterodyne, and so it is not surprising to find that they are now concentrating their energies on this type. Their most ambitious radio-gramophone is the Model 901, at 80 guineas, which is available for A.C. or D.C. mains. It is a nine-valve instrument with a 10-watt, push-pull output stage. A band-pass pre-selector is employed, and there are two stages of variable-mu I.F. amplification.

A smaller radio gramophone, Model 701, is also available at 48 guineas; seven valves are

used, with one H.F. and one I.F. stage, and an anode-bend second detector.

Another firm to adopt the superheterodyne is Murphy Radio. Nine valves, including the rectifier, are used, and three tuned circuits



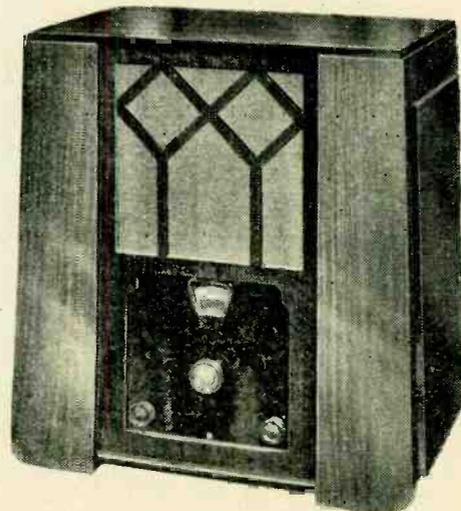
Burgoyne seven-valve superheterodyne chassis.

operate at signal frequency. Two I.F. stages are followed by a duo-diode second detector, from which automatic volume control is obtained. A scheme of this nature is distinctly interesting, and it is hoped to include further details in a later issue. The set is completed by an L.F. stage feeding the pentode output valve.

MULTI-STAGE H.F. SETS.

Perhaps the most noteworthy development in long-range receivers of the "straight" type is the almost universal adoption of the variable-mu valve. This development is well instanced by the Cossor Model 533 four-valve mains set, which has two H.F. stages with three tuned circuits, and a triode output stage rated to deliver 2,000 milliwatts to the moving-coil loud speaker. A similar type of receiver is available for battery operation, and, although the price is only £14, a moving-coil speaker is fitted.

The mains-operated G.E.C. Viking receiver falls into the same class, in so much as two H.F. stages are fitted; an output of 2,500 milli-



R.I. five-valve superheterodyne.

watts is obtained from a pentode. The most interesting feature of this set is the use of a screen-grid valve as a detector, and it is claimed that this results in a considerably improved performance.

What to see at Olympia.—

Push-pull pentodes are used to obtain a large output in the radio-gramophone shown by Hampton Radio, where, again, two H.F. stages are included. The apparatus is available for A.C. mains operation at 38 guineas, or for working from D.C. supplies at 41 guineas. Dynatron receivers are shown by Messrs. Hacker and Sons, but details are not yet available. The Lotus four-valve set has again two variable- μ H.F. stages and the usual pentode output valve, while the Burgoyne five-valve portable is notable for its remarkably low price of £5 19s. 6d.

The well-known firm of Philips is exhibiting receivers at Olympia, and the Model 630A is interesting as an example of progressive design. It is an A.C. mains set with two H.F. stages, and an unusual feature is that the four tuned circuits are arranged as two band-pass filters. It is claimed that the coils are exceptionally efficient, since they are wound with stranded wire on glass formers. A further point not without merit is that the tuning dial is fitted with a micrometer scale; the dial proper is normally graduated, but beneath it is fitted another small dial geared to make one complete revolution for each movement of one degree of the main dial. The small dial



New-type coils in the latest Murphy three-valve set.

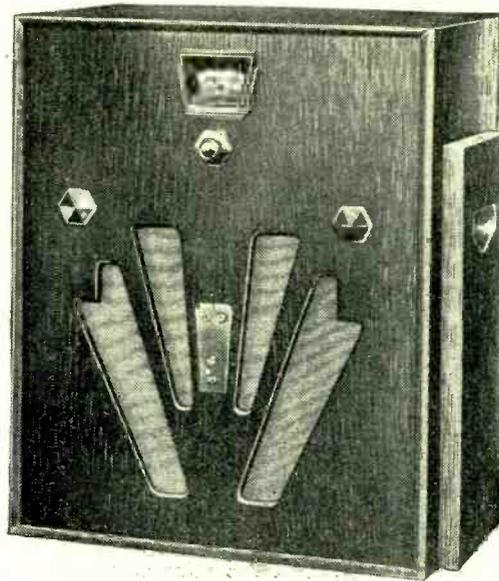
has ten divisions, so that it is possible to read the main dial accurately to one-tenth of one division. This receiver is priced at 23 guineas.

The battery, Model 830B, is even more unusual, for, although the circuit follows normal practice with two H.F. stages and a pentode output valve, a fifth valve is included to keep the total anode current consumption at a minimum. This "voltage regulator" valve is apparently connected in such a way that it varies the operating conditions of the pentode according to the signal voltage which it is called upon to handle. The total current consumption in the absence of a signal is only 5 mA., but when reproducing a deeply modulated programme it rises to 15 mA., so that the average current is considerably below normal. This would appear to represent a distinct advance in economical receiver design, and further details will be awaited with interest.

GENERAL-PURPOSE RECEIVERS.

Two years ago, the self-contained open-aerial set with built-in moving-coil loud speaker was hardly known, but last year it was fairly well established in favour. Now, the standard British set is of this type; without risk of inaccuracy, it may be stated that its general

specification includes an H.F.-det.-output three-valve circuit, as a rule with a pentode. In mains sets, the loud speaker is of the



Marconiphone band-pass battery set.

energised moving-coil type, and the containing cabinet measures very roughly 18in. high, 15in. wide, and 9in. deep. To avoid needless repetition, it may be assumed that the great majority of the following sets are built to this general specification.

In the general-purpose class, the Murphy A.C. Three, which originally appeared last year, may be taken as a first example. The earlier receiver is still available; but a "de luxe" model, improved in detail, now tends to replace it. This new set embodies cylindrical coils instead of basket windings, is fitted in a wider cabinet, and the smoothing system has been improved.

Practically all the G.E.C. sets are new, and it is evident that this great firm, with its exceptional facilities for design and manufacture, will in future occupy an even more prominent position in the world of wireless. Screen grid detector valves are fitted in all the sets, and a large undistorted output is provided even by the simplest and cheapest. The model in the present category is the "Gala," which embodies two tuned circuits and a heterodyne filter; an output of 2½ watts is provided by a pentode.

Band-pass tuning, power grid detection, and a volume control which is operative for both

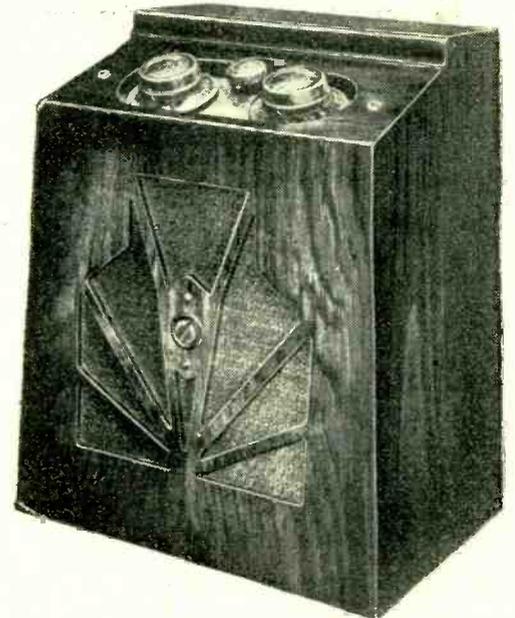


New Pye Model "G" receiver.

radio or gramophone reproduction are features of the Marconiphone Model 253, which is fitted with pick-up terminals. Models for A.C. and D.C. supplies are available.

As an example of present tendencies in battery set design, the Marconiphone Company are to show an H.F.-det.-L.F. set on modern lines, with band-pass tuning, a balanced-armature loud speaker, local-distance switch, and a high-efficiency pentode output valve. Total anode consumption is given as 8 milliamps.

From the technical aspect, the new Pye Model G is likely to prove one of the most interesting three-valve sets for A.C. mains operation. It is stated that the band-pass input filter is of a new type, while the L.F. interval coupling is claimed to provide the tone compensation which is necessary for a pentode output valve working with a moving-coil loud speaker. Apart from introducing compensation (which is usually done in the output anode circuit), this coupling is arranged to give a falling amplification characteristic above some 4,000 cycles, with a definite cut-off at 5,000 cycles. Other new productions of the Pye firm include the Model "K" two-valve A.C. set, with band-pass tuning,



An inexpensive Sovereign two-valve battery set.

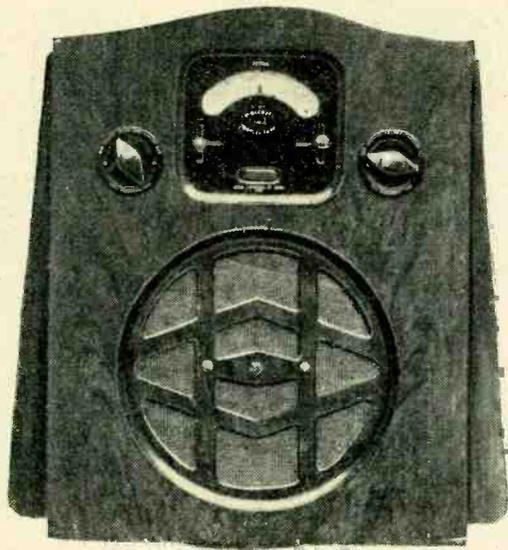
Among the selective battery sets to be shown is the new "Six-Sixty" receiver, with such features as band-pass input, combined reaction and volume control, and a high-efficiency output pentode. The Lotus "de Luxe" battery set, with a similar specification, is fitted with a permanent-magnet moving-coil loud speaker, and has automatic bias. Equally illustrative of the new tendency in battery-set design is the new Sovereign "Doric" set, with a similar type of loud speaker.

All of the entirely new H.M.V. sets are of the superheterodyne type, and so have already been described, but they are showing a fairly conventional self-contained general-purpose set, with all the desirable modern features. This, indeed, is an old friend, but it has been improved in detail. The "Transportable Radio-Gram," a self-contained table instrument, has been reduced in price to 25 guineas.

Westinghouse metal rectifiers are to be included in all the new Ekco sets. The model with which we are here concerned is the "Consolette," which is of fairly conventional design, and is housed in a moulded bakelite cabinet. The tuning dial is calibrated directly in wavelengths; the large station-indicating dial, one of the first of its kind, has now been improved, and is still included in the larger Ekco sets.

What to see at Olympia.—

Built-in frame aerials are perhaps not quite so much in evidence for mains-operated sets as one might expect, but this form of collector is employed in the McMichael "Duplex Mains Four," a self-contained set of the modern type, with an energised moving-coil loud speaker.



McMichael self-contained A.C. receiver.

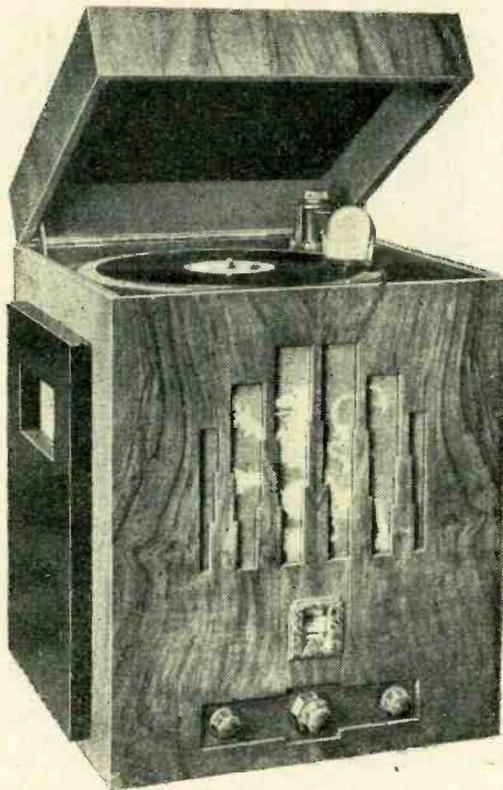
In addition to the three-valve set introduced in the spring, the Regentone firm are showing a cheaper mains-operated model of similar specification, which is to be sold at the low price of 12 guineas complete. The neat little two-valve A.C. set produced by this firm has apparently been extremely successful, as it is retained for the present season. It is an interesting sidelight on present tendencies that this will be one of the very few sets without a built-in loud speaker.

There must exist a real demand for chassis sets suitable for fitting an existing cabinet or other pieces of furniture. This demand should be met by the "Loradsa" chassis set shown by Arthur Smith. The Telsen H.F.-det.-pentode set, in its cheaper form, fills the same niche, as it is supplied at the price of 12 guineas in a plain box of unpolished wood. There are two tuned circuits, and 2 watts is fed to the moving-coil loud speaker.

So far as we can judge at present, there are no striking departures from accepted practice in the arrangement of band-pass filters, but it is interesting to see that the Varley firm, in

their "Square Peak Three," have gone over to the double-capacity system of coupling. There is no need to describe this set, as it was reviewed last week in these pages.

When practically every firm is showing a general-purpose set, it is almost invidious to pick out models for special mention. Among the many examples which embody interesting points of detail design is the "Climax" radio-gramophone, costing only 24 guineas, which, in addition to wavelength calibration, has a tuning dial with apertures through which the printed names of the principal stations are visible. The coils of most present-day sets are individually screened, but in the Alba chassis the filter coils are so disposed that this method of screening is rendered unnecessary. The same firm are also producing some interesting battery sets. On the British Acoustic Film Company's stand there is to be shown the new Bush Radio three-valve set, with several interesting features.



The compact Climax radio-gramophone.

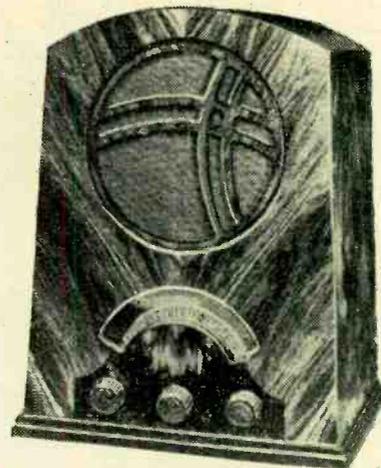
Before passing on to the next classification, we must not forget the R.I. Madrigal, a pioneer of its class, which has now been redesigned. It embodies a permanent-magnet loud speaker, and a small internal aerial for local-station reception. The E.R.P. concern, who were also early in this field, use a screen grid detector, resistance-coupled to a pentode; their new set costs only 14 guineas.

SHORT-RANGE SETS.

Relatively simple detector-L.F. two-valve receivers are obviously very popular; some of the new models are fitted with high-power output valves, and thus, for short-distance work, should be capable of meeting all requirements, except those of long range. As an instance we may take the Cossor Model 222, which supplies 2 watts of energy to a built-in moving-coil loud speaker. The same firm have a cheaper set fitted with a cone loud speaker.

The practice of building set and loud speaker as a single unit is just as well marked in the present category, and we are to find sets with this arrangement on the Brownie stand, where inexpensive models for both battery and mains feed are to be exhibited. Incidentally, the same company will show an H.F.-det.-L.F. battery set with an exceptionally large output.

Up to the present, the Clarke-Atlas firm have been best known as manufacturers of eliminators and mains equipment generally. They have now produced some interesting two-

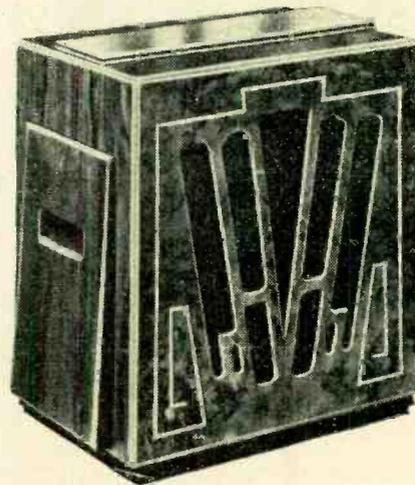


New Atlas two-valve set: A.C., D.C. and battery models are being shown.

valve sets for A.C., D.C., and battery operation. The mains models include provision for outside, inside, or mains aerial, and are fitted with a three-electrode output valve, feeding into an energised moving-coil loud speaker. The battery set has a pentode output valve, and includes a permanent-magnet loud speaker.

PORTABLE SETS.

Interest in portable sets will inevitably centre round the new superheterodynes, which have already been described. But the old favourites, with "straight" circuits, are still to the fore, in many cases having been improved in detail. The McMichael "Duplex," available either as a suitcase or cabinet model, has a 1-v-2 circuit, and is now fitted with automatic grid bias. It embodies the new McMichael tuning scale, in which the pointer is automatically transferred by operation of the wave-range switch to the appropriate wavelength scale. The Portadyne "Challenger" and the new Lotus portable are also examples of the same circuit arrangement, as are the Murphy and Pye "Q" sets. The Beethoven



Portadyne battery transportable set, with an H.F.-det.-2 L.F. circuit.

S.G.4 Portable has been improved in various details, particularly in regard to its circuit design, and is now sold at the extremely low price of 10 guineas.

SPECIAL SETS.

It is sometimes maintained that the set of the future will be tuned by what may be described as a push-button arrangement;



Bush Radio three-valve receiver.

What to See at Olympia.—

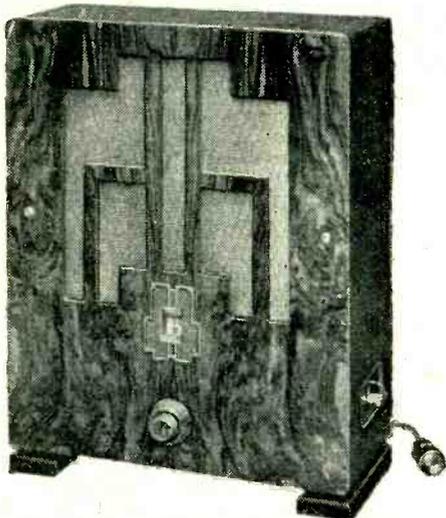
there will be no need for critical adjustments. Such sets have obvious attractions for those who do not concern themselves with technicalities. The principle of pre-selected tuning



A Tannoy high-power amplifier.

is embodied in a new M.P.A. set called the Multi-programme Automatic Ethatrope. Any one of twelve pre-selected stations, for which the tuning adjustment is presumably done internally, either at the works or by a service agent, can be selected at will by operation of a single knob; the name of the station selected is shown on the illuminated indicator. Basically, the set embodies a 1-v-2 circuit, and is for A.C. operation.

Even if the tuning system of the "Zetavox" (shown by Kenneth Brooks) is not the same, the result arrived at is similar. This set is



The Standard Telephones "All-wave" set.

operated by a push-button system, and is pre-tuned to the wavelengths of nine stations. It embodies automatic volume control, which we rather expected to see more widely used this year. One of the models is fitted with dual loud speakers, which, incidentally, are also employed in the Sinclair set.

In view of the imminent opening of the new B.B.C. short-wave service, one might reasonably have expected to see even more "all-wave" sets. Mention must be made of the Standard Telephones two-valve A.C. set, in which the wave-band (25-70 metres) is covered by a special plug-in coil unit. This set is fitted with a moving-coil loud speaker, and, as it marks the re-entry of Standard Telephones into the sphere of receiver construction, it will be studied with extra interest. A battery version of the same set is to be shown.

In the "Empire" class there is also the

McMichael Colonial Supersonic set, which covers medium and short wavebands. Stratton and Company (Eddystone) are, as usual, concentrating on short-wave apparatus, and are to show new sets and components.

The G.E.C. are showing an all-wave superheterodyne, with a tuning range of from 13 to 720 metres. Seven circuits are included, with band-pass filters. Particular stress is laid upon its construction, which is suitable for tropical countries.

The Kolster-Brandes superheterodyne is unusual in that three wave ranges are provided; these are 16/70 metres, 190/575 metres, and 800/2,100 metres. The valves are arranged conventionally, the first being a signal-frequency amplifier.

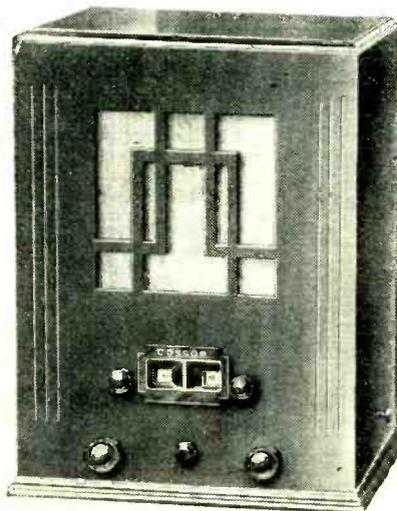
KIT SETS.

We have now come to look upon the introduction of a new Osram Music Magnet as a regular annual event. This year's model is a



Kolster-Brandes Model 321: short waves are receivable by the use of a special coil unit.

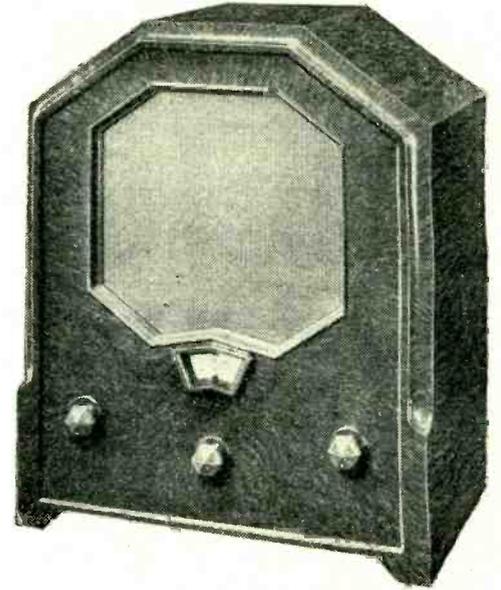
self-contained cabinet set, complete with a moving-iron loud speaker. Three battery-fed valves are used in an H.F.-det.-L.F. circuit, with a screened grid detector. There is a combined reaction and volume control, giving continuous regulation by means of a single knob. The valve panel is assembled, wired, and tested by the makers.



The latest Cossor Melody Maker, in self-contained form.

Another famous kit set, of which a new version has made its appearance, is the Cossor Melody Maker, also with a 1-v-1 circuit. One of the models is housed in an upright cabinet, complete with loud speaker.

Most firms seem to prefer this circuit arrangement for a kit set, and examples of it will also be shown by Lissen and several others. However, alternative valve combinations have



The New Osram Music Magnet.

their advocates, and Ready Radio and Lotus are sponsoring 0-v-2 kits.

A kit of parts for an unusually ambitious "Quality" set will be shown by Haynes Radio. With an undistorted output of 6 watts, this interesting chassis-built receiver embodies a link filter, one H.F. stage, power-grid detection, and a resistance-coupled L.F. amplifier. Two-unit construction has been adopted, and the set is also available in finished form.

While most of the kit-set designers have remained faithful to the straight set, Haynes Radio have also an A.C. receiver known as the Single Dial Superheterodyne. Band-pass filters are used for the signal frequency tuning, and also in the I.F. circuits; the second detector is a screen-grid valve, and the output



Haynes Radio kit set chassis.

valve is a pentode. For a small extra charge a modified kit is obtainable, in which an extra screen-grid valve is employed as a signal-frequency H.F. amplifier.

The firm of Ferranti produce a variety of kits, including types for specialised receivers and amplifiers. It would be impossible to enumerate them all here, and, indeed, it is unnecessary to do so, as the firm make a point of having technicians on their stand to help those whose requirements are of an unusual nature.

Sets of parts for sets described in the technical Press will be a leading feature of the Peto Scott exhibit, while the City Accumulator Co. are to show kits for radio-gramophones and for converting existing sets for gramophone reproduction.

What to see at Olympia.—

THE potential purchaser of a loud speaker at Olympia this year will not have an easy task. That is not to say that he will have any difficulty in finding the right type at the price he is prepared to pay; his embarrassment will arise rather from the extraordinarily wide range of makes offering apparently equal value as regards performance and price.

The past few months have produced an enormous increase in the number of small permanent-magnet moving coils, and this will undoubtedly be the predominant type at the Show. Small energised moving coils have also experienced a minor revival, but the majority

LOUD SPEAKERS

ing at 27s. 6d., complete with 3-ratio output transformer, and the "Challenger" and type 100 chassis are being continued.

The Epoch model A2 has been considerably increased in sensitivity, and the revised edition of the 20C model will also be shown at a reduced price.

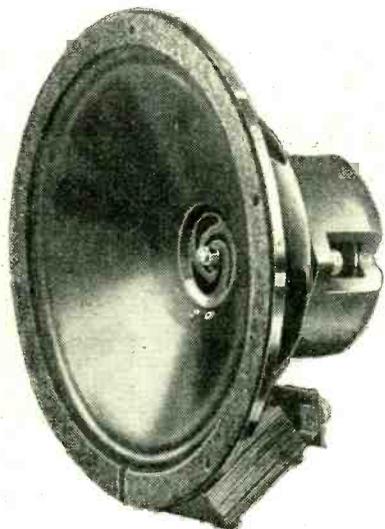
The Igranic permanent-magnet moving-coil chassis is now fitted with the latest type of two-claw magnet, and, together with 2-ratio output transformer, will be available at 32s. 6d.

A very neat and efficient loud speaker in cabinet form known as the "Permag" will be one of the principal exhibits in the stand of Baker-Selhurst Radio. This model is fitted with an output transformer of unusually generous proportions; and is capable of handling inputs up to 3.5 watts without distress.

The British-made "Motor" loud speakers are being shown on the stand of Electrical and General Distributors, Ltd., and the standard

nated the LS7 will be shown in redesigned form, and will be known in future as the "Universal" model.

The model 99PM, to be shown by the British Blue Spot Co., Ltd., is a robust instrument



Celestion PPM "Soundex"

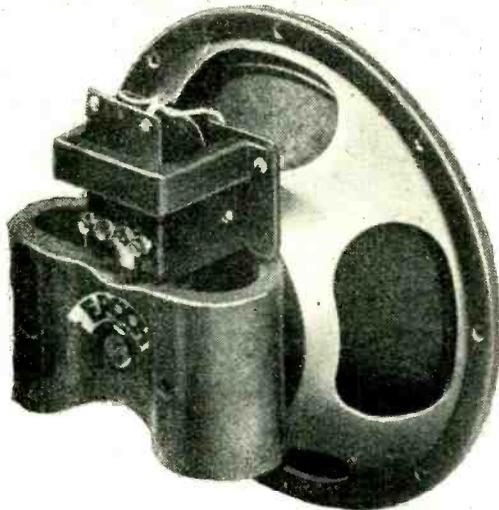
of the new season's models have been designed for use in sets where the field coil forms part of the smoothing circuit.

Comparatively speaking, the balanced-armature moving-iron loud speaker and the high-grade moving coil have been neglected, but it is gratifying to note that the few new examples which have appeared are of more than usual merit.

SMALL P.M. MOVING COILS.

The Celestion range of permanent-magnet moving-coil loud speakers for the coming season is unusually comprehensive. It is known as the PPM series, and the standard PPM model is being continued at 47s. 6d. A less expensive version of this model, known as the PPM9, will be shown, and the smallest of the series is the PPM "Soundex," which costs 27s. 6d. All these models are supplied with the new Celestion "Hylflex" diagram, and are fitted with a tapped output transformer.

Reproducers and Amplifiers, Ltd., will be showing an entirely new "Midget" model, sell-

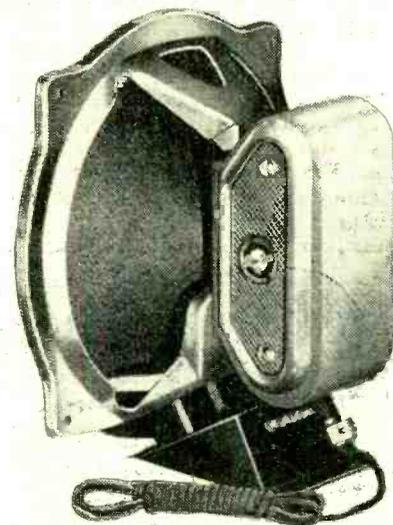


Epoch type 20C permanent magnet unit.

permanent-magnet model will be fitted with a 9 per cent. cobalt-steel two-claw magnet and a 7in. moulded cone. There is also a "Minor" model which will be supplied in a leatherette-covered baffle box.

H. Clarke and Co. (M/c.), Ltd., who are well known as manufacturers of eliminators and mains equipment, have entered the market with a permanent-magnet moving-coil unit which will be available both in chassis and cabinet form.

On the H.M.V. stand the efficient small permanent-magnet loud speaker previously design-



Blue Spot model 99PM.

fitted with a 1-ohm moving coil and is capable of handling 3.5 watts. A two-claw magnet with cadmium-plated poles is employed, and dust is excluded by end cheeks of "Milam" moulded material. An output transformer suitable for triode or pentode valves is included.

Ferranti, Ltd., are producing a new model M4. It will be fitted with a built-in output transformer, and it is anticipated that the price will be about £2 10s. The existing M1 and M2 loud speakers are being continued, and the latter will be available with an output transformer.

SMALL ENERGISED MOVING COILS.

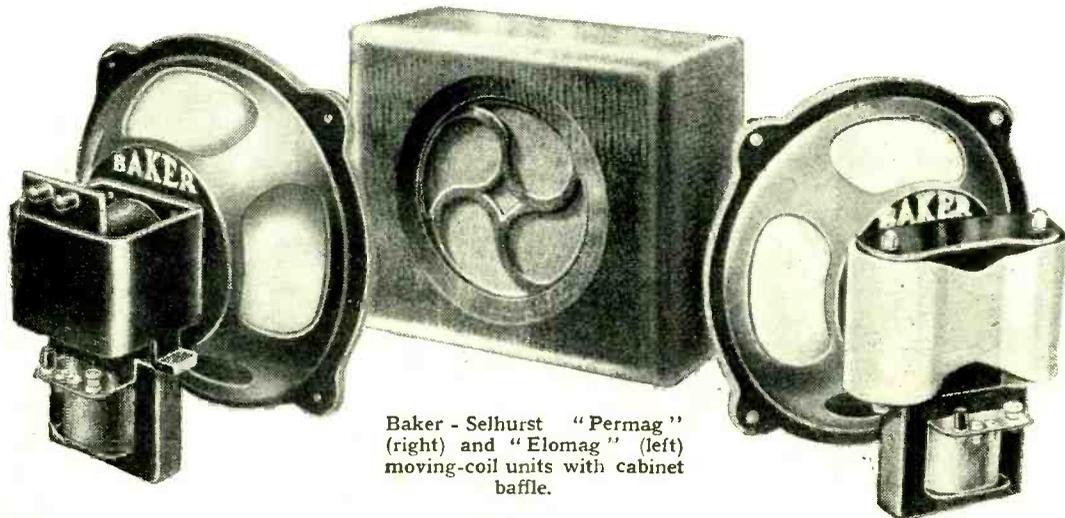
The majority of loud speakers in this category have been designed primarily for use in A.C. sets where the field winding forms part of the smoothing circuit, and in many cases a special balancing winding known as a "hum-bucking" coil is coupled to the field winding and connected in series with the moving coil to cancel out residual mains hum.



Clarke "Atlas" P.M.M.C.

The British Rola Co., Ltd., will be showing a very comprehensive range of loud speakers of this type. They will be divided into three main groups: Type F5, with 6in. diaphragms, Type F6, with 7½in., and Type F7, with 9in. diaphragms. All will be fitted with universal output transformers, and field windings of the following resistances will be available: 8, 2,000, 4,700, and 6,500 ohms. A permanent-magnet version of each type will also be shown.

Whitely Electrical Radio Co., Ltd., who have hitherto concentrated on small permanent-magnet moving coils will be showing for the



Baker - Selhurst "Permag" (right) and "Elomag" (left) moving-coil units with cabinet baffle.

What to See at Olympia.—

first time an energised model with alternative field resistances of 8 and 6,850 ohms. Resistances of 2,500 ohms and 4,700 ohms will be available to special order.

The mains-energised version of the Baker's-Selhurst "Permag" already mentioned is known as the "Elomag," and is priced at 34s., complete with transformer, and enclosed in the same type of cabinet. A special metal rectifier unit for supplying the field current from A.C. mains will also be shown.

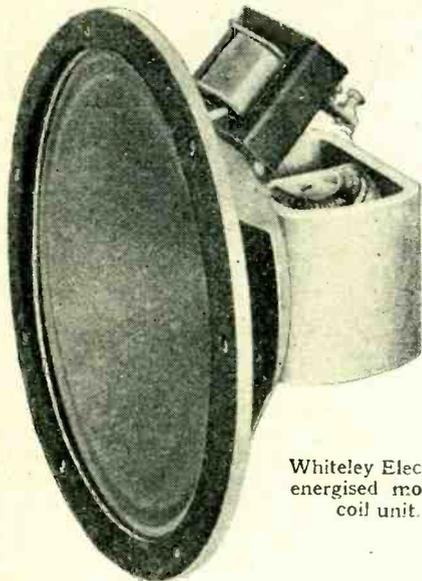
From the constructional point of view the new mains and permanent-magnet models of Sonochorde Reproducers, Ltd., will repay examination. Instead of the usual centring

outstanding merit, and one of the most important is the special shape of the pole pieces to equalise the leakage flux on both sides of the gap. Large amplitudes can therefore be

two frames are staggered. A 6-ratio transformer is fitted and the price will be 70s.

Amplion (1932), Ltd., will be showing an entirely new model known as the MC22. This has a 6½lb. chrome-steel magnet, and is fitted with a non-hygroscopic ribbed diaphragm. The power-handling capacity is between 5 and 6 watts. The Celestion PPM range also includes a large model (the PPM29), capable of handling 5 watts, and the Loewe Radio Co., Ltd., will be showing a permanent-magnet model with a 6½in. diaphragm and 3-ratio transformer giving a frequency range of 25 to 10,000 cycles.

Large loud speakers for public address and cinema work will be seen on the stands of



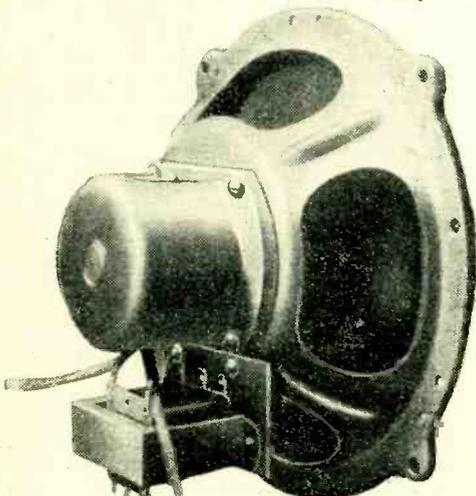
Whiteley Electrical energised moving-coil unit.

spider a small corrugated sub-diaphragm is used. This gives much greater lateral rigidity without restricting the axial movement of the coil and diaphragm.

Other notable additions to the small mains-energised class will be found on the stands of Electrical and General Distributors (British "Motor"), Ferranti (the new model D3), Epoch (redesigned E8 with "humbucking" coils), Ormond, and Stafford Sinclair. The latter make is equipped with a built-in fuse and will also be available with a tapped field winding.

LARGE MOVING COILS.

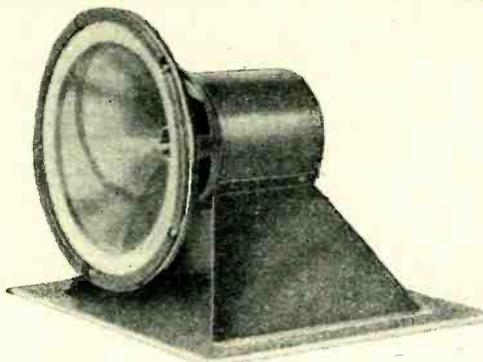
While the principal demand is for small-sized moving coils, there will always be a



Epoch E8, which is available with "humbucking" coil.

market for reproducers specially produced to satisfy the needs of the connoisseur.

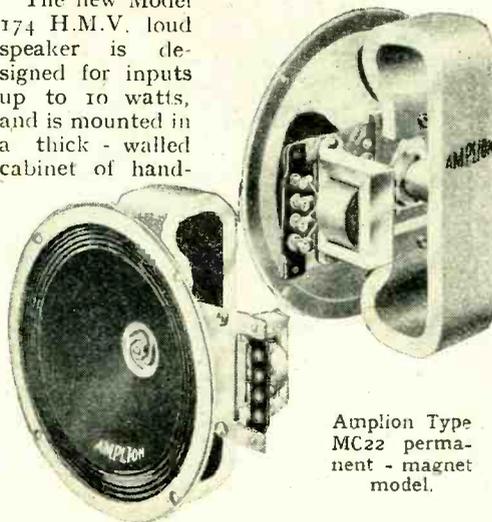
The Hartley-Turner loud speaker shown by the Automatic Coil Winder and Electrical Equipment Co., Ltd., is a good example of this class. The design shows many features of



Hartley-Turner moving-coil chassis (Automatic Coil Winder Co.).

developed without distortion, and frequencies as low as 32 cycles can be reproduced at their correct proportional amplitude. The principal diaphragm resonance is well below the audible limit, and the reproduction should therefore be free from "boom." There is no resonance in the region of 2,500-3,500 cycles, which is a frequent source of strident high-note response, but the output is stated to be well maintained up to 10,000 cycles. The diaphragm is of translucent bakelite and is centred by a flexible rear spider of special design.

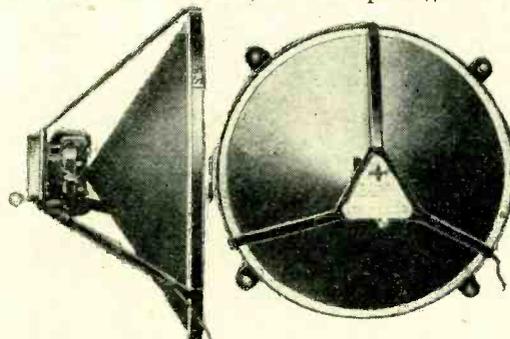
The new Model 174 H.M.V. loud speaker is designed for inputs up to 10 watts, and is mounted in a thick-walled cabinet of hand-



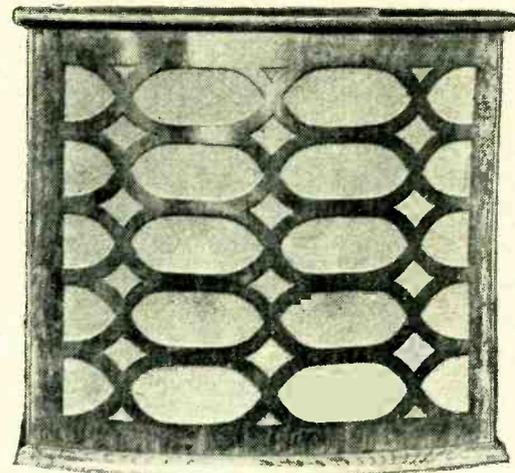
Amplion Type MC22 permanent-magnet model.

some appearance. The diaphragm is of duplex linen, starch-fixed and treated to resist moisture; special attention has been given to the fixing of the coil leads. A universal output transformer is included. The Marconiphone model 93 chassis is another unit of similar power-handling capacity.

Reproducers and Amplifiers will be showing a moving-coil unit of unusual ruggedness and strength. This model, known as the "Victory," is provided with an inner cone assembly mounted in a cadmium-plated steel frame. This assembly is in turn enclosed by an outer black-enamelled frame, and the openings in the



"Aylesbury-Trouton" moving-iron chassis (Shapland and Petter).



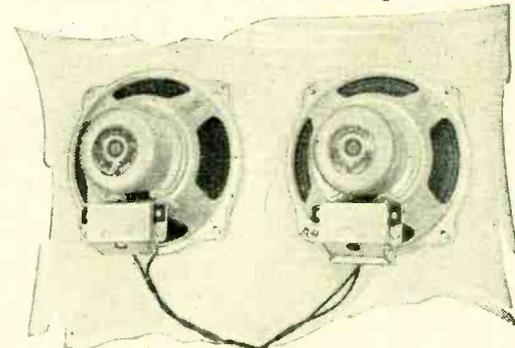
"Primustatic" loud speaker operating on the electrostatic principle.

Partridge and Mee, Baker's-Selhurst, Tannoy Products, and Epoch.

MISCELLANEOUS.

At the moment of going to press the Primustatic loud speaker would appear to be the sole example of the electrostatic principle to be found in the Show. In addition to the standard model a "Super" model will be shown and there will be an interesting combination of the electrostatic and moving-coil principles known as the "Dynamostatic" loud speaker.

One of the most interesting moving-iron movements will be found in the Aylesbury-Trouton loud speaker shown by Shapland and Petter. The main features are those covered by the patents under which the "Amplion Lion" was made, but several important improvements have been incorporated. Correct angular displacement of the armature is maintained for both close and wide adjustments, "belling" of the diaphragm at the periphery has been overcome, and the cone is attached directly to the armature, thus obviating the "whip" associated with a driving rod.



Magnavox dual compensated moving-coil units.

Dual-unit moving-coil loud speakers will probably make a last-minute appearance on many stands, and they will be the principal exhibit of Magnavox (G.B.), Ltd., who have been working on this principle now for some considerable time.

What to see at Olympia.—

SINCE components set the standard that can be attained in the home-constructed receiver, the announcements by the leading manufacturers of their programme for the forthcoming season is always awaited with keen interest by the amateur and the designer alike. For in this field use can be made only



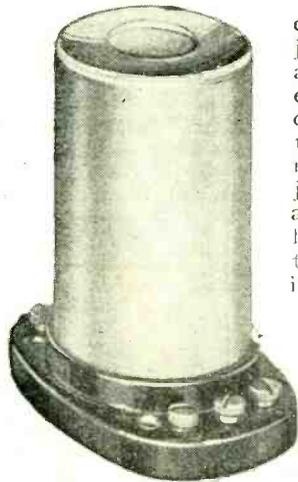
Bulgin Transcoupler; a parallel-feed L.F. transformer unit.

of the available components as a general rule, although there are occasions where some particular requirement can be met by a combination of small individual parts. Fortunately for those interested in this aspect of radio we are favoured with an enterprising industry, which realises that if a certain collection of small parts are often employed to serve a definite function they will have an added attraction if embodied in one single compact unit.

PARALLEL-FEED TRANSFORMER UNITS.

No better example of this could be found than the new parallel-feed transformer coupling units which is a development of the system of L.F. coupling introduced about a year ago and for which special miniature L.F. intervalve transformers were designed at the time.

The Bulgin Transcoupler and the Benjamin Transfeeda are two noteworthy examples of this new development, and although these models made their debut just over a month ago the early release detracts nothing from their interest, for, while



A cylindrical metal container is used to enclose the Benjamin Transfeeda, the terminals being mounted on a moulded base.

many readers may be familiar with the general principles, few would have had the opportunity to examine them at first hand. This desire can now be gratified, for both firms in question will be showing models of their respective coupling units. The new unit consists of a tapped anode resistance, a coupling condenser and a miniature L.F. transformer having a very high primary inductance.

Radio Instruments, Ltd., have now embodied their Parafeed model in a complete unit including the anode resistance and the coupling condenser. It has been arranged, however, that the transformer can be entirely isolated if necessary, thus enabling it to be used as a normal Parafeed in conjunction with a separate

COMPONENTS

resistance, or a choke. Further examples of these coupling units will be found on the stands of Bowyer-Lowe & A.E.D., Ltd., and the Formo Co., the latter firm's model being described as the Multi-Coupler.

TONE COMPENSATORS.

In certain quarters the use of highly selective circuits is advocated to combat the heterodyne nuisance, and this has given rise to a demand for special tone-correcting devices to compensate for the inevitable attenuation of the higher frequencies. An interesting development in this field is the Varley Rectatone L.F. transformer.

It enables correction to be made in the L.F.



R.I. Parafeed L.F. coupling unit.

amplifier, the degree of compensation being effected by the use of an external resistance. If this resistance is omitted the transformer functions as a normal component giving an even amplification over a very wide band of frequencies.

Lissen, Ltd., will be showing a tone compensator designed to fit into the base of their Hypernik L.F. transformer while an attractive panel mounting device for tone correction will be found on the Harlie stand.

GANG CONDENSERS.

Totally screened and semi-screened gang condensers will dominate the stands of those

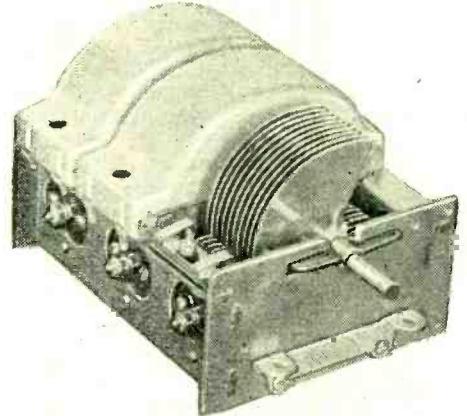


For tone correction an external resistance is used with the Varley Rectatone L.F. transformer.

firms specialising in the manufacture of this class of component; the new models show a great improvement over last season's types. The latest development is the new superheterodyne type in which one section is provided with specially shaped vanes to afford accurate tracking of the oscillator

without the aid of external padding condensers. The British Radiophone, Ltd., were the first to introduce a condenser of this type, and their now well-known models will be available for inspection during the following week.

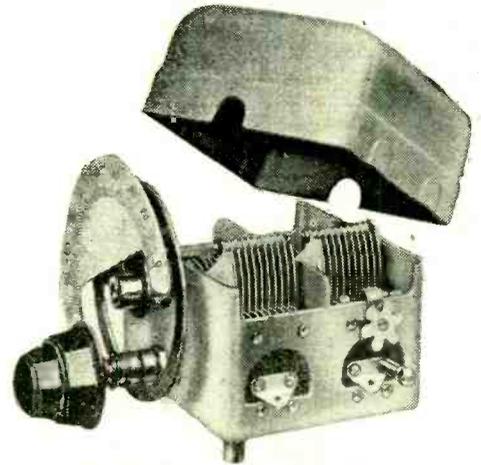
Wingrove and Rogers, Ltd., will have a new range of screened condensers styled the Polar "Star" series. They are built in



Polar "Star" three-gang superheterodyne condenser.

cadmium-plated steel frames fitted with aluminium vanes, and are provided with rigid end bearings. The trimmers are mounted so that they can be adjusted from the top, a convenience that most home constructors will appreciate fully. The "Star" series includes a number of superheterodyne condensers in which the oscillator section is fitted with specially shaped vanes.

Screened models of this type will figure also among the range of Utility condensers to be shown by Wilkins and Wright, Ltd. (Utility). The trimmers are controlled from the top and the range includes a number of superheterodyne types.



J. B. Unitune two-gang condenser.

Further examples of screened condensers will be shown by Jackson Bros., while both Lotus and Formo will have many interesting models, all new, for examination. Although Ferranti, Ltd., has for some time now made variable condensers, these have not been available as separate units, but were produced solely for use in their receivers. It has been decided this year to market the three-gang screened model separately, and it will undoubtedly attract considerable interest.

Some details have just come to hand relating to a series of new screened condensers that will be shown by the Igranic Electric Co. These will be of the mid-log law type and shown in two- and three-gang models.

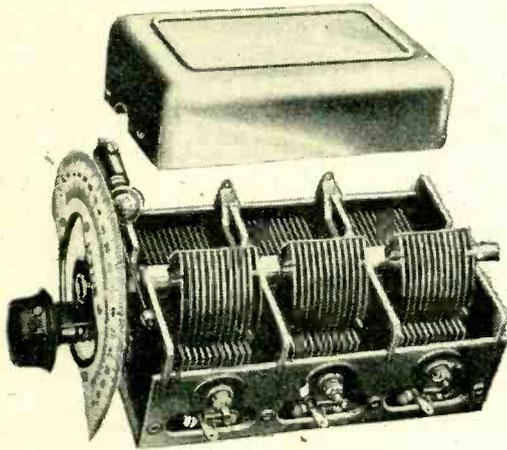
SCREENED COILS.

There have been no marked changes in the design of screened coils during the past twelve months, the small-diameter type has now

definitely established its superiority by virtue of compactness and general convenience. The outstanding feature this year, however, will be the many varieties of special superheterodyne coils consisting of screened oscillator units and compact band-pass I.F. transformers.

Colvern, Ltd., will have a fine display of coils, many of which will be familiar to the reader. The Colverdine band-pass superheterodyne I.F. transformer will be a prominent feature on this stand.

The new Formo coils should prove interesting as this firm have introduced a very novel, but exceedingly useful, feature in the form of coloured containers to identify the various types of coils. On the top of each coil former is a coloured disc corresponding to its screen, and a small circuit diagram has been included showing the terminals to which each winding is joined.

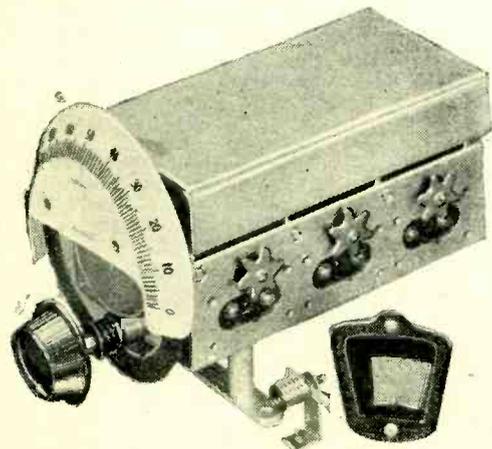


Lotus three-gang condenser and disc drive.

Varley will show a new range of screened coils, also a band-pass I.F. transformer, and other superheterodyne models housed in neat aluminium screens, and, of course, embodying waveband switching; while Wearite have a complete range of new coils. The band-pass I.F. transformer is housed in a copper container with the adjustments for the two small trimming condensers and the coupling protruding through the top of the screen.

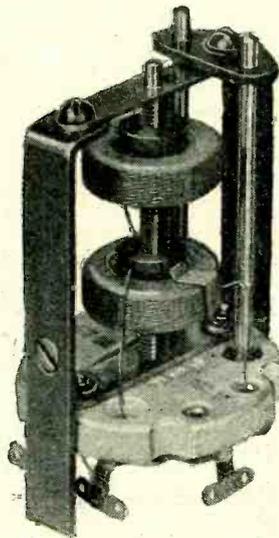
The new Cyldon superheterodyne band-pass I.F. unit is another example of accessibility to all controls, as the coupling as well as the condensers can be adjusted without removing the screening case.

A set of coils in somewhat larger containers than it is customary to use to-day will be on view at the stand of Turner and Co. (Tunewell). Lissen also have a range of coils, while other examples of present-day practice will be found on the stands of Lotus, Watmel, British General, and Igranica.



A feature of the new Formo condenser is the inclined scale.

We understand that the British Radiophone Co. will include in their exhibit a complete tuner unit consisting of an aerial coil and a band-pass H.F. intervalve coupling. It embodies a three-gang condenser, waveband switching, volume control, and on-off switch, the whole being mounted on a neat metal chassis, and the price is £3.

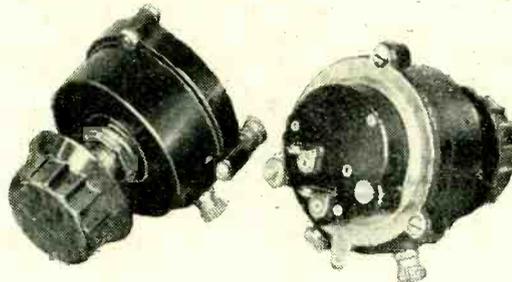


Cyldon superheterodyne I.F. band-pass unit removed from its case.

VOLUME CONTROLS.

Since a volume control is an essential adjunct to every modern receiver, all the leading component makers will have various models for examination. Considerable ingenuity is shown in many of the new designs to ensure silent operation, freedom from mechanical troubles, and smooth control. The various methods adopted, therefore, to achieve this will be found most interesting.

The Wearite Q.V.C. models are fitted with a small roller on the tip of the moving contact. This gives silent operation, relieves the fine wire element of mechanical stresses, and so minimises the likelihood of breakages. In the British Radiophone models a light, hair-pin-shaped spring, mounted on an insulated disc, makes contact between the wire element and a metal back-plate, by which simple but ingenious arrangement a perfectly smooth



British Radiophone volume controls with and without mains switch.

action is obtained, and the spindle is entirely insulated from the resistance. There will be a model embodying a mains switch, which is contained in a small housing attached to the back-plate of the moulded container.

A new model that will be found on the Lewcos stand should not be missed, as it embodies a most ingenious rocking-disc-type of contact. The action is delightfully smooth, and imposes no appreciable mechanical stress on the fine resistance wire.

Varley will show a range of improved volume controls, and, since Rotorohms are now being made in this country, there will be an opportunity to examine their many interesting models. Colvern, R.I., and Gambrell will each have some interesting specimens for examination, while Watmel have developed various new types, including provision for ganging, also some complete composite units embodying volume controls and switches.

New models fitted with dust covers and fully protected resistances will be seen on the Igranica stand, and many interesting models

are to be shown by the British N.S.F. Co., as well as by Bulgin and Bowyer-Lowe & A.E.D. Ltd.

FIXED CONDENSERS.

Considerable progress has been made during the past year in the development of the electrolytic type of condenser, and interest will naturally centre on those firms exhibiting these types. The T.C.C. recently introduced a series of aqueous-type electrolytic condensers for use in mains sets, and the various models will be available for examination at their stand. Some of the models are rated at 440 volts D.C. working, and are made in 8- and 4-mfd. sizes. There will be, in addition, a 7-mfd. type rated at 460 volts D.C. working. Various additions have been made to the paper-type smoothing condensers, and a special feature is to be made of block condensers consisting of various units embodied in a single case.

Tubular electrolytic condensers for chassis mounting, but in



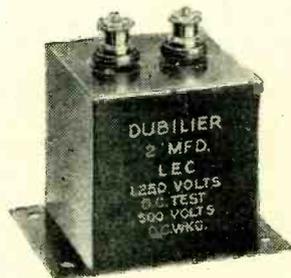
T.C.C. aqueous-type high-voltage electrolytic condenser.

this case of the "dry" variety, will be found among the very extensive range of Dubilier condensers. These models are rated at 450 volts D.C. working, and will be seen in 4-, 6-, and 8-mfd. sizes. For condensers of such high capacity and high working voltage the prices are exceptionally low, and these new Dubilier models should prove very popular indeed. The 8-mfd. size, for example, costs but 5s. 6d.

A range of paper dielectric condensers rated at 500 volts D.C. working, and listed at 1,250 volts D.C., styled the L.E.C. type, will be shown for the first time, while another new series is the type B.S. for use in battery sets, and rated at 250 volts D.C. working.

The British N.S.F. Co. will have some interesting condensers, including a range of "dry" electrolytic models rated at 450

Dubilier type L.E.C. and new "dry" electrolytic condenser in aluminium container.



D.C. working. These are tubular in shape, and designed for chassis mounting. Heayberd will have a very extensive range of condensers suitable for battery and mains sets, and available in all the usual sizes; while the Formo

What to See at Olympia.—

400-volt D.C. working type should not be missed, as the prices are most reasonable.

Then, of course, there will be the Ferranti Stand to visit, where a fine display of fixed condensers is to be made.

H.F. CHOKES.

Since it is of equal importance to stop H.F. currents getting into the L.F. amplifier as it is necessary to entice them into the earlier stages of a receiver H.F., chokes attain a certain prominence, for they serve for both functions. Mention here must, from necessity, be restricted to new and interesting types, of which the shielded variety is, perhaps, of greatest importance, since it definitely possesses no external field and cannot cause undesirable coupling.

Two firms will be showing models of this type. Wright and Weaire, Ltd. (Wearite), will have two styles for examination. One is a plain model, small in size, and housed in an aluminium case; while the other is similar but with the addition of a screened lead for connecting to the anode terminal on the H.F. valve. Bulgin will show three models: a midget variety, a special superheterodyne type with an inductance of 0.5 henry, and a standard model for normal use. Each is enclosed in a screened case finished in frosted aluminium.

SHORT-WAVE COMPONENTS.

Stratton and Co., Ltd., have for long specialised in the manufacture of short-wave equipment, so that the special components they will show this year will be awaited with interest. One new item is a small variable



Wearite screened H.F. choke fitted with shielded connecting lead for use with S-G valves.

condenser, designated the Eddystone Micro-condenser, and developed especially for ultra-short wave, i.e., 7-metre, receivers. It is provided with an extra terminal so that the miniature coil can be mounted on the condenser. This model is made in two capacities, viz., 16 mmfd. and 50 mmfd. maximum, respectively, and should prove ideal for the purpose it is intended.

Special condensers for use on the recognised short-wave broadcast band will be shown by Wingrove and Rogers (Polar), while Ormond, Lissen and Jackson Bros. will have many fine examples on view.

Coils will be found on the stands of Colvern, Ltd., Stratton and Co., Telsen, Ltd., and Lissen, Ltd., while the R.I. Antinodal short-wave coil will be featured together with the superheterodyne adaptor embodying this unit.

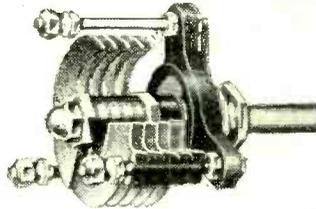
MAINS EQUIPMENT.

Although minor improvements have been made by the various firms specialising in battery eliminators, in general the design follows

much the same form as heretofore. Heyberd are employing a new style of container which will be found very attractive. A new feature is the provision of a safety fuse. Mains transformers for use with valve and Westinghouse rectifiers will be shown, together with a comprehensive range of smoothing chokes.

A. H. Clark and Co. (M/ch), Ltd. (Atlas), will have one new model, the A.C.300. It has two variable H.T. tappings, one fixed voltage for the power stage, and provides four different grid bias voltages. A trickle charger is embodied for 2-, 4-, and 6-volt. accumulators.

A new type of container has been adopted for housing the Regentone models, and this has been standardised throughout their range. It is a solid drawer steel case, having an attractive Florentine bronze finish, and each model now has seven output tappings. The majority



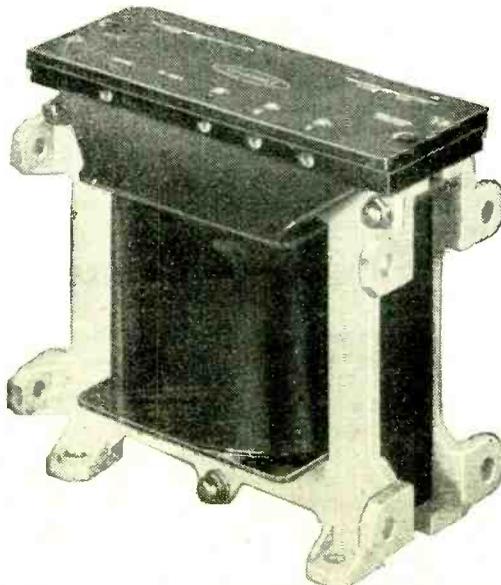
Eddystone special short-wave condenser for use on ultra-short wavelengths.

of Ekco units are housed in the same style of case, the dimensions of which are such that it fits comfortably in the battery compartment of portable sets. These models will be shown with and without trickle chargers.

In addition to a comprehensive range of complete units for D.C. and A.C. supplies, Ferranti will be catering for the home constructor, having prepared a number of designs suitable for building at home, and for which constructional broadsheets will be available. In addition to their existing range of mains transformers and L.F. chokes there will be a new model styled the B.10 choke.

Partridge Wilson and Co. are introducing a new range of Davenset mains transformers and smoothing chokes. Bakelite is employed throughout for insulating purposes, and a distinctive feature of the design is that they can be mounted in any one of three positions. Mains transformers will be shown for use with valve and Westinghouse rectifiers.

A particularly comprehensive range of mains transformers and chokes will be a feature of the Varley exhibit, while further examples will be shown by Radio Instruments, Ltd., Partridge and Mee, Ltd. (Parmeko), who, in addition, will have a long range of power amplifiers, including a 25-watt model, in Kit form, for home construction. J. Dyson and Co. (Works), Ltd. (Godwinex), also Turner



Davenset mains transformer. Note the special terminal board fitted with insulated connectors.

and Co., Ltd. (Tunewell), are two other firms who are specialising in mains equipment.

Rotary transformers for obtaining A.C. from the D.C. mains will be the outstanding feature of the Electro Dynamic Construction Co.'s exhibit, and with the most recent additions they will have ten different types

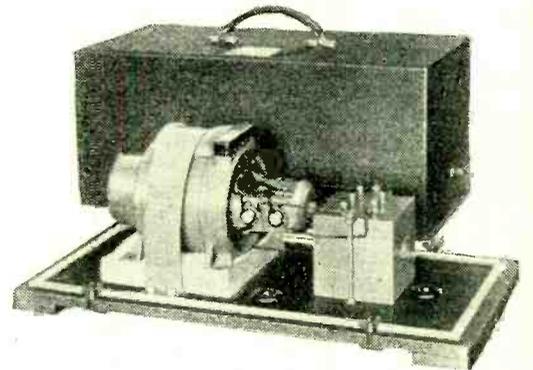


Complete range of new Westinghouse metal rectifiers.

ranging from 50 watts output to 600 watts output. A special alternator has been developed for driving from a motor car engine, giving an A.C. output for operating public address amplifiers and similar apparatus.

Another interesting development is a small rotary transformer operated from a two-volt accumulator, and giving about 150 volts D.C. at 15 mA.; it is intended for use with battery-type sets.

Although the principal features on the Crypto stand will be the special battery charging equipment for Service Stations, this firm will show, also, many interesting types of machines for operating A.C. receivers, amplifiers and radio-gramophones from the D.C. supply mains.



M.L. Rotary transformer, smoothing unit and silence cabinet.

On the stand of C. A. Vandervell (Rotax) will be a complete range of M-L machines, including small anode Converters for voltage raising. Another M-L type is the D.C. rotary transformer, of which various sizes up to 200 watts output and giving voltages up to 1,200 will be seen. For those who require an A.C. supply for operating receivers, etc., from the D.C. mains, they will find their requirements met by the M-L D.C. to A.C. Rotary transformer, of which various types will be available for inspection.

The Standard Battery Co., Ltd., will have two models of Rotary Converters; the type A gives 80 watts output, and the type B 180 watts output.

The Westinghouse programme for the coming season includes seven new metal rectifiers; four of these are low-voltage models suitable for battery charging, and three are high tension rectifiers styled the H.T.9, H.T.10, and H.T.11, respectively. The H.T.9 gives 300 volts of smoothed D.C. at 60 mA. when used in a voltage doubling circuit. The H.T.10 gives 200 volts D.C. at 100 mA., while the H.T.11 is a high-voltage model from which 500 volts of pure D.C. can be obtained at between 120 and 150 mA.

Eric J. Lever (Trix), Ltd., will make a

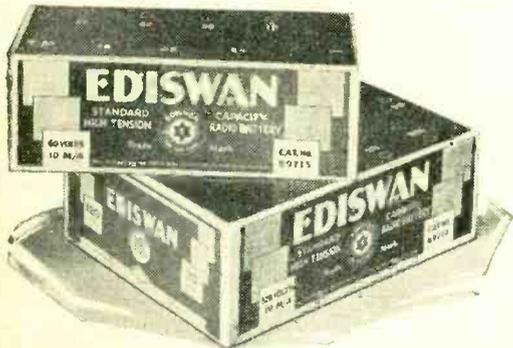
What to see at Olympia.—

special feature of mains-operated power amplifiers ranging from 2.5 watts output to 16 watts output, and there will be eight different types in all. A new range of mains transformers for use with the latest Westinghouse rectifiers, H.T.9, H.T.10 and H.T.11, as well as new models of their step-up and step-down transformers, will complete a very interesting display.

H.T. AND L.T. BATTERIES.

Since the dry-cell type of battery provides one of the most convenient sources of high tension it is not surprising to find many new types appearing this year. The Drydex range has been augmented by the addition of a new series styled the Brown Triangle models. These are for use with sets fitted with medium power output valves as they can be discharged economically at some 30 mA. The usual sizes will be shown by the Chloride Storage Battery Co., Ltd., who will include, also, improved designs of Exide H.T. and L.T. accumulators.

The principal feature of the Ever-Ready exhibit this year will be the very comprehensive range of special portable H.T. batteries, many



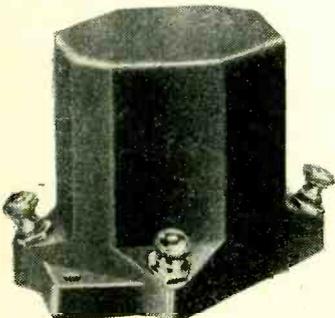
New series Ediswan H.T. batteries.

new types having been added recently. A new feature introduced by Oldham and Sons, Ltd., is the provision of a new style of moulded top for their L.T. cells. A small panel is provided in which a card, bearing the owner's name, can be inserted, and there will be a full range of "Lively O" H.T. batteries.

Some entirely new dry-cell H.T. batteries will be shown by the Edison Swan Electric Co., Ltd. Two types are now available, viz., a standard capacity and a super-capacity, the former for discharge up to 10 mA., while the super series can be discharged economically up to 20 mA.

Full O'Power batteries have been extended and a new series styled the Cadet models added. The prices will be found most reasonable. A new model styled the Ultra size is a recent addition to the Pertrix range made by the Britannia Batteries, Ltd. This class is fitted with slightly larger cells than were used hitherto, but the prices remain unchanged.

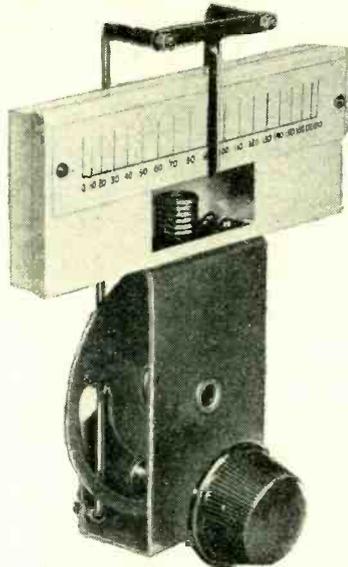
S. Smith and Sons (Motor Accessories), Ltd., make their debut in the radio field with a long range of L.T. and H.T. accumulator batteries.



Clarke's Atlas P.F.1 L.F. transformer for parallel-feed circuits.

Models will be shown for heavy discharge and also for slow discharge, as well as jelly acid cells and unspillable types for use in portable sets.

The Marconiphone Co., Ltd., have an improved range of H.T. batteries at very low prices, and further models of both H.T. and

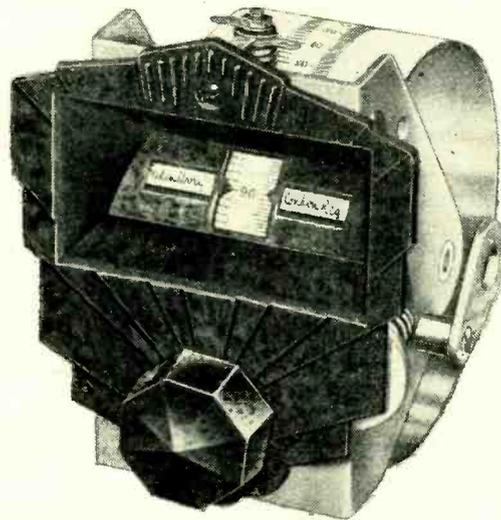


Straight Line Full Aperture Dial; a new Utility product.

L.T. batteries will be found on the stands of C.A.V. and Fuller. Primary batteries of the Leclanché type will be a feature of the exhibit of the Standard Battery Co. (Wates).

L.F. TRANSFORMERS.

A. H. Clark and Co. (M/c.), Ltd., will show a new Atlas L.F. transformer for parallel-feed circuits and known as the P.F.1. This model has a primary inductance of over 80 henrys and a step-up ratio of 1:4. The Formo "Nigen" is a new type also, having a nickel-iron alloy core and a screened winding. The outer case, however, is finished in aluminium. Another new model is the Bulgin "Connoisseur," also



Ormond Logging Drum Drive.

for parallel feed. It has a very high primary inductance—over 100 henrys—and the price is 6s. 3d.

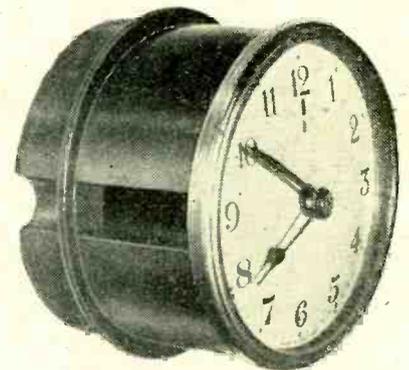
MISCELLANEOUS COMPONENTS AND ACCESSORIES.

The Lectro-Linx range of Clix specialities has been augmented from time to time during the past year by the addition of new terminals, insulated sockets, improved wander plugs, and a new version of their panel-type valve holder. The complete range will be seen on their stand. Belling and Lee, Ltd., have introduced a neat mains input connector comprising a two-pin plug mounted on a vertical bracket and an insulated socket portion for the supply leads. They will be showing also various types of connectors, fuse holders, terminals, and a range of battery cords.

Bulgin has an ingenious lightning arrester-cum-aerial switch, and Graham Farish will be showing, in addition to many other useful components, a novel earthing device styled the Filt Percolating Earth.

A unique tuning scale quite unorthodox in design will be found on the Utility stand. Described as a Straight Line Full Aperture Dial, it is fitted with a moving pointer, the scale remaining stationary and visible for the whole of its length. The scale is detachable, and can be calibrated to suit individual sets. Another example of a scale in which provision is made for home calibration is the Logging Drum Drive to be shown by Ormond.

Attention is directed to the new range of universal A.C. and D.C. measuring instruments introduced some little time back by Ferranti. These are of the moving-iron type, and the prices are quite reasonable. Sifam will be showing a most useful range of meters for A.C. and D.C. measurements, while further examples will be found on the stands of Bulgin and the Standard Battery Co. Those who are looking for an accessory somewhat out of the ordinary



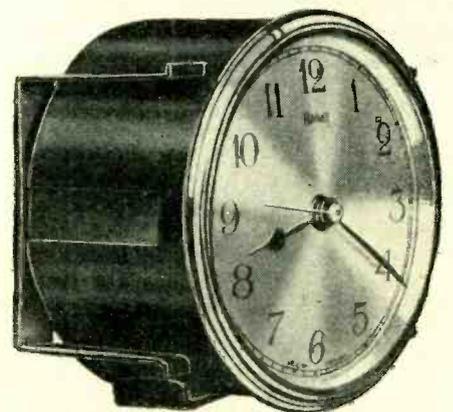
Junit electric clock movement embodying an adjustable fixing ring.

should visit the Junit stand, where they will find a special low-priced electric clock movement designed specially for incorporating in A.C.-operated receivers. It is of the flush-fitting type, and it costs but 30s.

Ferranti, Ltd., will have an electric clock movement also, which can be utilised in the same manner.

The Automatic Coil Winder and Electrical Equipment Co., Ltd., will show a special adaptor for their well-known Avometer. It has been developed to facilitate measuring the various voltages on the electrodes of a valve under working conditions in the set.

There will be an exceptionally fine display of cabinets for housing receivers, radio-gramo-



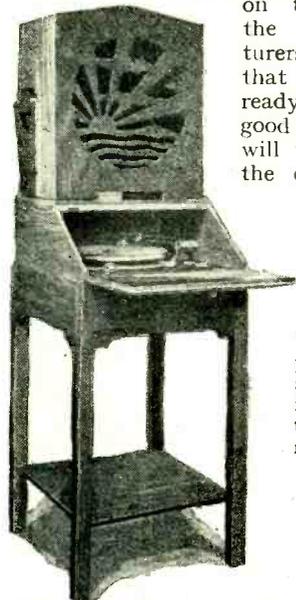
Ferranti electric clock movement for incorporating in A.C. receivers.

phones and loud speakers on the stands of the Carrington Manufacturing Co., Ltd. (Camco), W. & T. Lock, Ltd. (Kabilok), and C. A. Osborn.

What to see at Olympia.—

THE electrical reproduction of gramophone records through the low-frequency side of broadcast receivers has long since passed the experimental stage, and accessories for the conversion of existing sets for this purpose will constitute an important feature of the Show.

Complete radio-gramophones will be found on the stands of all the leading manufacturers, but it is probable that many people, already in possession of a good broadcast receiver, will visit the Show for the express purpose of

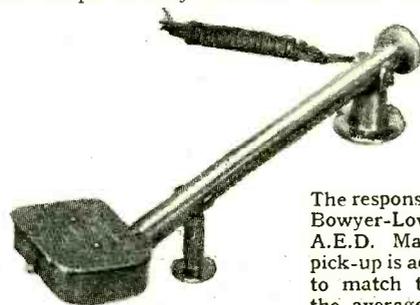


"Bureau-Gram" pedestal by Lawson and Raphael for converting A.C. transportables to radio-gramophones.

finding how to extend the entertainment value of their sets by the addition of gramophone equipment.

PLAYING DESKS.

The conversion need not involve any constructional work of a technical nature, for if the set is equipped with pick-up terminals the whole of the gramophone equipment, including turntable, pick-up and volume control, can be purchased in a single compact unit known as a "playing desk." The Bowyer-Lowe and A.E.D. record-playing unit is a good example, and incorporates the company's latest Mark III pick-up, a log-law volume control, and Simpson's electric turntable. The small depth of the latter component has enabled the makers to adopt a very shallow walnut cabinet of



The response of the Bowyer-Lowe and A.E.D. Mark III pick-up is adjusted to match that of the average moving-coil loud speaker.

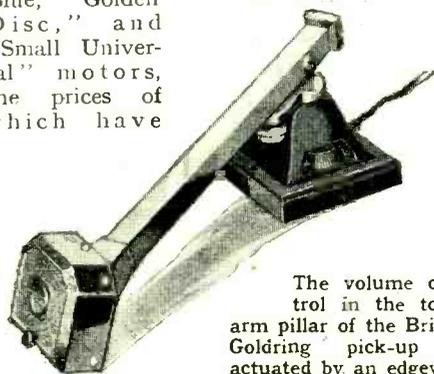
neat design. The H.M.V. Model 116 playing desk has been reduced in price to 7 guineas, and now includes provision for fixed resistances in addition to the volume control, by means of which the output can be adjusted to suit any type of receiver.

Another type of playing desk of rather attractive design will be shown by Messrs. Lawson and Raphael. It is known as the "Bureau-Gram," and forms a pedestal upon which the majority of self-contained mains transportable sets can be mounted with advantage. In standard form it costs 10 guineas, and includes a B.T.H. pick-up and Garrard induction motor. The same underlying idea is to be found in the Apollo playing desk, though this is made only as a table model. There are two types available, one for A.C. mains and the other with a spring motor, at the very attractive figure of £2 18s. 6d.

GRAMOPHONE EQUIPMENT

GRAMOPHONE MOTORS.

Those contemplating the construction of a playing desk or the conversion of an existing gramophone will find a wide range of electrically driven turntables from which to choose. Harlie, Ltd., will be showing three new induction motors of neat design. They are of the self-starting high-speed type, and the governor gives a range of turntable speeds from 75 to 85 r.p.m. The smallest of the range, known as the "Midget" model, is fitted with a 10in. turntable and costs 39s., while the Model 62 de luxe has a handsome bakelite unit plate, and sells for 55s. The Garrard motors are continued in practically the same form as last year, and the same applies to the B.T.H. "Synchro-Blue," "Golden Disc," and "Small Universal" motors, the prices of which have



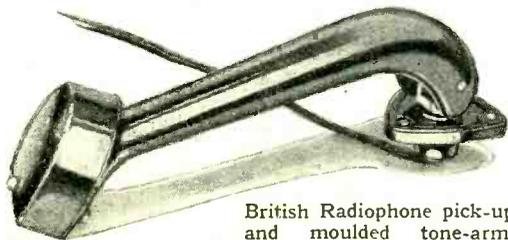
The volume control in the tone-arm pillar of the British Goldring pick-up is actuated by an edgewise dial.

been revised. A new B.T.H. motor—the "Truspeed"—will be shown for the first time. Complete with automatic stop it weighs only 6 lb. 8 oz., and the power consumption is between 6 and 8 watts.

PICK-UPS.

Many new pick-ups will make their debut, and in the majority of cases it has been found possible to obtain the necessary rising characteristic in the bass without amplitude distortion. This feature will be found in the new Harlie Model 65 pick-up and in the Celestion type W8. The latter replaces the old W5 pick-up, and is fitted with a rotating head; the output is from 1.0 to 1.5 volts R.M.S.

In the new Mark III pick-up to be shown on the stand of Bowyer-Lowe and A.E.D., Ltd., the response has been specially modified with the object of giving an even overall response in conjunction with the average moving-coil loud speaker. The windings have an unusually low impedance, so that a robust wire-wound



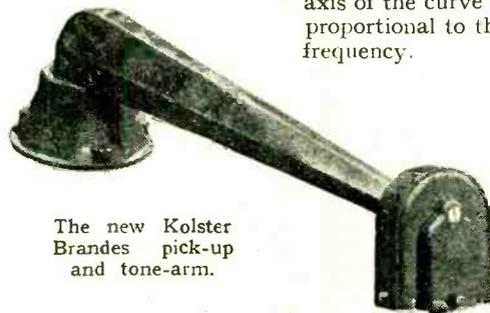
British Radiophone pick-up and moulded tone-arm.

volume control potentiometer of low resistance can be used without losing high notes.

A novel form of built-in volume control is to be found in the pick-up and tone-arm to be exhibited by British Goldring Products, Ltd., and consists of an edgewise knurled knob let into the tone-arm pillar. In the "Unit" pick-up now marketed by the G.E.C. the length of tone-arm and the tracking angle are both adjustable, while in the redesigned Mar-

coniphone Model Kr7A the pick-up leads are now completely screened. The new British Radiophone and Kolster Brandes pick-ups should also repay a careful examination.

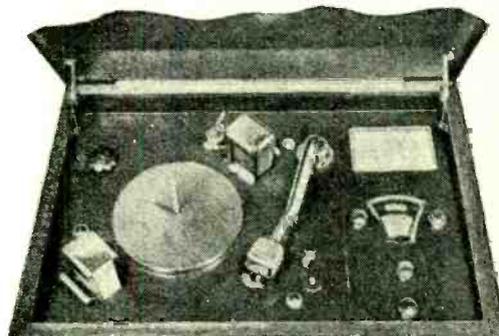
A rapid and accurate method of obtaining pick-up characteristics will be shown by H.M.V. The test record is of the falling tone type, and the output from the pick-up after amplification is passed to a recording voltmeter, which traces the curve on paper drawn at a constant speed through gearing from the record turntable. In this way the horizontal axis of the curve is proportional to the frequency.



The new Kolster Brandes pick-up and tone-arm.

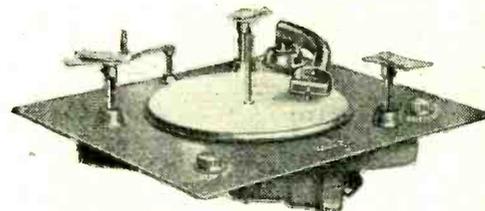
RECORD CHANGERS.

The introduction of continuous series of records in album form has done much to stimulate the demand for automatic record-changing devices. Gramophone enthusiasts who have been unable hitherto to afford such a luxury will this year be sorely tempted, for the H.M.V. record-changer which formed part of the equipment of their more expensive models last year will be available in playing desk form at the very attractive price of 12 guineas. The controls have been simplified and rendered more silent in operation, and the instrument will play eight records or repeat a single record up to eight times.



H.M.V. record-changer, which will be available in playing desk form.

The news that the Garrard Engineering Company have produced a record-changer of simple and original design should ensure a good attendance at their stand. The mechanism is very simple, and a single cam drum controls the whole of the movement. During the playing of the record no part of the record-changing mechanism is in motion, and the full power of the motor is available for driving the turntable. At the end of each record the standard Garrard throw-off mechanism actuates a clutch which brings the cam drum into action. The records are held by three supports, and selection of the next record is made by rotating knife-edge blades. The unit will be supplied in chassis form, and together with a pick-up of Garrard's own manufacture will cost £10.



The new Garrard record-changer, which will include the maker's own pick-up.

What to see at Olympia.—

AFTER the plethora of new valve types of the last two years, valve makers and valve users may well be grateful for an apparent lull in the flow of inventions, permitting the time for improvements in design and a general consolidation of the new positions. The benefits are already obvious in greater consistency among specimens of the same type, in the achievement of rigidity of construction and in the almost complete conquest of microphonic noise. Whilst there are not any noteworthy new principles introduced, there will be found some important improvements and additions to the series already existing.



Osram VDS, an indirectly heated variable-mu valve for D.C. mains.

There is good news for the D.C. user, who can now take his choice from a number of H.F., detector and small output valves quite equal in efficiency to those used in modern A.C. sets. Detector valves with low input impedance due to a reduction of interelectrode capacity have just made their appearance and should assist in improving the selectivity of a receiver by virtue of a decrease in damping of the tuned grid circuit.

In the output range the pentode shows no sign of waning in popularity, as will be evident from a visit to any of the valve manufacturers' stands.

H.F. VALVES.

The variable-mu valve seems to have almost entirely superseded the ordinary screen-grid valve. This is only natural as there is no function which the S.G. valve can perform which cannot be better carried out by the variable-mu type. Of newcomers belonging to this class mention should be made of the Mazda AC/SG.VM, having a slope of 2.2 mA/volt and a generous grid bias of about 45 volts, ensuring a full control of volume from zero to a high maximum. Special care has been taken in so designing the screen feed potentiometer advocated for this valve that the screen volts rise considerably above the mean level between -4 and -10 volts bias where cross-modulation might otherwise make its appearance. The new Mullard valve of variable conductance is styled the VM₄V and is very sensitive at low bias voltages.



Cossor PT.41B, a new directly heated pentode with an anode dissipation of 12 watts.

mu amplifier containing valves which will be in no way inferior to the A.C. type. The new Marconi and Osram VDS is an indirectly



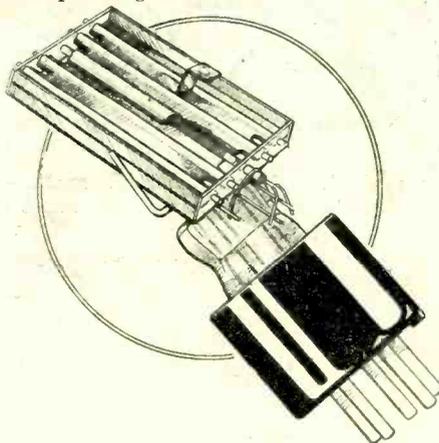
heated D.C. valve consuming 0.25 amp. at 16 volts, being a counterpart to the latest VMS₄ with a slope of 2.4. Owing to certain properties of the screening grid it is advisable to use the same compensated feed arrangement as that already published for the VMS₄, but the resistances should have half the normal value.

A simple circuit can be employed with this series of D.C. valves comprising independent automatic grid bias in the cathode lead of each valve as the heater-cathode insulation is quite unaffected by a difference of potential up to 110 volts. Another variable-mu valve with indirectly heated cathode for D.C. mains is the Mazda DC/2SG.VM, having a heater to carry 0.1 amp. at 20 volts and the high mutual conductance of 2.2 mA/volt.

DETECTORS.

There are signs of a slight revival of anode bend rectification in the second detector position in superheterodynes, and there is an increasing use of the screen grid valve as detector in straight sets, but interesting as these developments are, they do not call for the manufacture of new valve types.

As a power grid detector the new Mullard



The record mutual conductance of 12.6 mA/volt is obtained in the Standard Micromesh PAI output valve. This illustration shows the cooling fins and the close-spaced electrodes.

904V will be of considerable interest, for not only has a new rigid unit construction been embodied which completely defeats microphonic troubles, but also in designing the electrodes the makers have paid special attention to residual capacity, with the result that the input impedance is considerably reduced and damping of the preceding tuned circuit is thereby minimised. The Mullard PMI HL—a valve which has gained considerable popularity as a detector—has been redesigned both mechanically and electrically and is most sensitive at 20 to 50 volts H.T. As a consequence it is extremely economical in anode current.

The Standard Micromesh type HLAI is a new detector for A.C. mains with the remarkable mutual conductance of 8 mA/volt. In this valve and others of the series, close spacing of electrodes has been reduced to a fine art, and in spite of clearances which have hitherto been considered impracticable, the valves stand up to rough usage and a system of cooling fins ensures freedom from grid emission. The anode-to-grid capacity in the HLAI is only 5 mmfds., which is reflected back to the input side as quite a small impedance.

Little modification is being made to the well-known detectors already on the market, and the following, which are representative of

their class, will be retained for the coming season: The Cossor 41 MHF and 41 MHL, Marconi and Osram MH₄, Mazda AC/HL and AC₂/HL, and Mullard 354V.

OUTPUT VALVES.

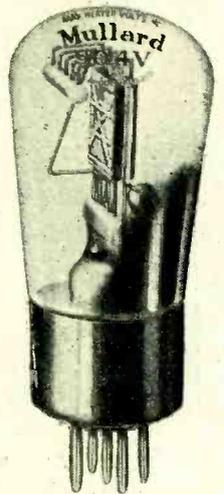
The most striking additions to this class are undoubtedly a series of pentodes, the sensitivity and mutual conductance of which will be seen to be of a very high order. Directly heated pentodes for A.C. mains will be conspicuous and a number of well-known set makers are including them in their more ambitious products. The redesigned Marconi and Osram PT₄ has a directly heated filament (4 volts 1 amp) and is rated for 250 volts on both screen and anode. Its mutual conductance is nearly 3 and the anode dissipation 8 watts. Another directly heated pentode which will find ready application in ambitious radio-gramophones and amplifiers for public entertainment is the Marconi and Osram PT₂₅, requiring 2 amps at 4 volts for the filament. The maximum dissipation is 25 watts, about 40 per cent. of which can be extracted as undistorted A.C. output. In the Cossor range the PT₄₁ and PT₄₁B are new pentodes of the directly heated type with liberal outputs. The second of these has a dissipation of 12 watts and will feed satisfactorily the largest type of moving-coil speaker. Other new output valves of interest are the Mazda PP₃/250 and the DC/2P for A.C. and D.C. mains respectively. The former has a slope of 6.5 and will dissipate 12 watts, while the latter has a heater demand of 0.1 amp. at 35 volts, ensuring extremely economical running.

One of the most outstanding valve exhibits will be the standard Micromesh PAI with the record mutual conductance of 12.6. No less than 1 $\frac{1}{4}$ watts A.C. output can be obtained with 11 volts bias and 200 volts on the anode, these exceptional characteristics being obtained by small clearances.

Little change has taken place in the range available, for the good reason that the standardised types A, B and C developed last season have met practically every demand in receiver design. Both in the directly and indirectly heated types the makers have paid attention to slow heating, thus minimising the effect of high initial voltages on switching on. There is extended use of the hot cathode mercury vapour rectifier where the total current required is beyond the capabilities of the three ordinary standardised types. A new rectifier is being marketed by Standard Telephones and Cables styled the micromesh RI giving nearly 300 volts D.C. at 60 mA.

MAINS RECTIFYING VALVES.

Little change has taken place in the range available, for the good reason that the standardised types A, B and C developed last season have met practically every demand in receiver design. Both in the directly and indirectly heated types the makers have paid attention to slow heating, thus minimising the effect of high initial voltages on switching on. There is extended use of the hot cathode mercury vapour rectifier where the total current required is beyond the capabilities of the three ordinary standardised types. A new rectifier is being marketed by Standard Telephones and Cables styled the micromesh RI giving nearly 300 volts D.C. at 60 mA.



Mullard 904V—a special A.C. detector valve having a low input impedance.

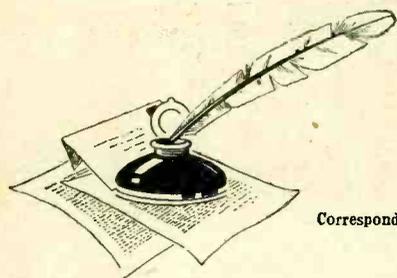


Mazda AC/SG.VM—a new high-slope variable-mu valve for A.C. mains.

Letters to the Editor.

The Editor does not hold himself responsible for the opinions of his correspondents.

Correspondence should be addressed to the Editor, "The Wireless World," Dorset House, Tudor Street, E.C.4, and must be accompanied by the writer's name and address.



Why I Read "The Wireless World."

SEVERAL of your expert contributors have honoured Mr. Tomes with a reply to his first letter; may I, as an amateur, reply to his second letter?

First, I would like to tell him why I have been a regular reader of *The Wireless World* for three and a half years. In January, 1929, I understood crystal sets only. Since then I have passed through all the phases of grid, anode bend, power-grid rectification, low-frequency amplification, D.C. and A.C. mains. To-day with power-grid rectification, push-pull output, and the best m.c. speaker on the market, I obtain a quality of reproduction which those who know say is better than that obtained from any commercial set. In other words, I realise that the object of your paper is to educate and assist the amateur to obtain the best results, and I have been educated. None of the circuits you have published have been spoilt to save expense, and you have never recommended any but the best components. This is precisely the direction in which Mr. Tomes has failed to realise the purpose of your paper, and he has most definitely ignored the value of education.

What, exactly, is the extent of Mr. Tomes's wireless knowledge? On his own showing it is the possession of a radio-gram, built for a child to operate and at a competitive price.

With regard to his statement that half the oscillation is caused by what he calls the "Purist" brigade, if he himself knew how to read a circuit diagram he would also know that, whatever other wireless journals do, you do not sponsor circuits with reaction on the aerial, and none of your readers would be so foolish as to use one that did.

If Mr. Tomes is content to "stay put" with his expensive set, why does he read "The Wireless World" at all?

London, W.C.1.

BM/CBYD.

Empire Broadcasting.

THE "Outspoken Opinion from Kenya" in your issue of June 22nd, just to hand, must have been read with delight and appreciation by thousands of loyal Britishers throughout the Empire who, like myself, seldom miss an opportunity of filtering in the thin, attenuated, "atmosphericky" bits of music and speech we are able to get (on some evenings) from our homeland per G5SW. As Mr. Mann says, we do this from sheer sentiment, as there are dozens of other short-wave stations in other countries whose programmes reach us infinitely more intelligibly and pleasurably than G5SW. For instance, during the whole of our last summer there was hardly a morning that I did not dress and shave to the loud-speaker accompaniment of a good steady musical programme either from W3XAL or WSXX, and in the evenings, in spite of sentiment, one soon abandons hope of G5SW and tunes in something more intelligible.

What is the result? One sees in many an English home an American or Dutch receiving set installed, where one knows that, all things being thought equal, a British-made set would have been given preference. The layman knows little, if anything, about the theory of wireless, or the comparative ability of various nations to manufacture good receiving sets, but is naturally influenced largely by aural

demonstrations as to what better results can be received from America, Russia, France, Italy, or Holland than from England, and wireless salesmen are not slow to work that particular argument for all they are worth.

However, we are all looking forward to the good things promised for somewhere about the end of this year, when I understand from your columns the long-abused Experimental Station is to be superseded by something more steady and reliable—also, I trust, more audible.

Cape Town. ANDREW C. FULLER.

B.B.C. and Canned Music.

A BRIEF glance through this week's *Radio Times* reveals the fact that over nine hours of the time devoted to musical programmes by the B.B.C. are filled up—to use an Americanism—with "canned music." Even the Brighter Sunday movement has been altered to advertise various records made by well-known companies.

Surely this is absolutely unnecessary. Admittedly it is pleasant to hear a resurrection of such famous artists as Patti, Caruso, and others, but why should we have a record of, say, Peter Dawson, Stiles Allen, or Jack Hylton's Band when the B.B.C. can perfectly well afford to pay these artists and thereby help the ever-burning problem of unemployment? Are there not countless thousands of first-class musicians eking out a pitiful existence on the street corners of every large town in this country?—a number that has not been decreased by the introduction of "talkies." If the B.B.C. are so poor, then they should not have spent £500,000 or more on Broadcasting House. A cheaper building would have sufficed.

I make this appeal to you to start some movement and thereby help those who are ever working to solve this unemployment problem. Maybe it is only to help a few, but it will be an excellent start.

MARTIN WOODROFFE.

House of Commons.

What the Ear Hears.

THE letter by Mr. Hughes in your issue of July 29th deserves careful reading. It serves as a reminder that what the listener requires is a simulacrum of the musical image perceived by the occupant of, say, the twelfth row of the stalls in a concert hall.

The test of first-class reproduction is thus largely a matter of the recognition of each separate individual instrument in the orchestra. Although paying due attention to frequency and amplitude, we are apt to forget that it is the manner in which the notes of a musical instrument are caused to vibrate that largely determines its character, e.g., the difference caused by bowing a string or plucking it.

Thus, although in discussing the reproduction of transients we very generally think of the clapping of hands or the clash of cymbals, it is really the "transient commencement" of every note that we need to reproduce most faithfully in order to get the effect of "naturalness" in our homes.

In my own wireless receiver, where I use a diode and one stage of low-frequency R.C. coupling, I have considerably improved reception by increasing the coupling condenser to

0.2 mf. with a corresponding reduction of the grid leak to 100,000 ohms. In this connection one may usefully recall some remarks on low-frequency amplification in the "B.B.C. Handbook for 1929," page 314. In discussing the time constant of R.C. coupling in relation to transients, it is pointed out that transients will be properly reproduced provided the condenser is made large enough.

South Croydon. W. A. SADGROVE.

Broadcast Reproduction.

I AM no expert, but the recent discussion in your columns on the frequency range of receiving sets has opened my eyes to the possibilities and limitations of broadcasting and has been of absorbing interest to me. In common, I believe, with many others of your readers I hope to see more of this.

Mr. Tomes hopes for less. For, says he, "If you want quality you must pay for it, not waste time and space in bickering."

This appears to epitomise the whole of Mr. Tomes's argument, and it is perhaps a pity that he should need a column in which to say it. Mr. Tomes rules out a discussion of frequency range, which is largely a discussion of quality. "What is quality?" is a question which seems to present no problem to him, and how to achieve it (except by purchase) is no affair of his.

Does he imply that you have only to pay and you will, *ipso facto*, receive quality? Faith, we know, is admirable in certain circumstances, and very comforting in the absence of exact knowledge, but it is no true guide in the purchase of a wireless set.

Does Mr. Tomes really believe in always accepting what is offered to him—provided, of course, that he pays a Rolls-Royce price for it?

F. S. AUBYN.

London, N.W.4.

IN Mr. Tomes's reply to Messrs. Cross, Turner and myself he informs us that the recent discussion on "Broadcast Reproduction" has not enabled us to progress one iota.

I maintain it has, inasmuch that it has definitely proved that the decapitation of the upper register to 5,000 cycles is absolutely undesirable, although at the present time it is unavoidable except in localities where field strength is high and receivers are designed for the reception of local stations only.

Although speech and music may sound very good at the above "cut off," both sound excellent, in my opinion, when the "top" is extended. I look forward to the time when we can have as much "top" as we require, and for those who don't—well, all they have to do is to fit a "guillotine" in the shape of a tone control and "behead" their reproduction accordingly.

As regards the "Purist" brigade being responsible for the oscillation nuisance, may I point out that a real "Purist" would never dream of fitting reaction to a quality receiver.

In conclusion, I would ask Mr. Tomes if he has yet heard the "Monodial A.C. Super," a product of *The Wireless World* laboratory, and which for range, selectivity, and good quality under the present conditions is the "goods."

WM. G. YOUNG.

Sparkhill, Birmingham.

READERS' PROBLEMS.

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which particulars, with the fee charged, are to be found on page 144.

Apportioning the Volts.

STATING that he intends to derive H.T. supply for a new receiver through a Westinghouse Style H.T.8 rectifier, a querist seems to doubt whether it will be possible to operate his valves at their maximum anode voltage rating—in his case, 200 volts.

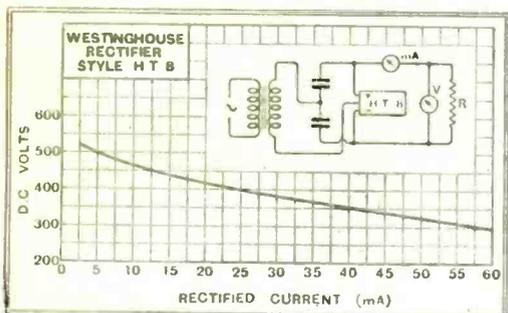


Fig. 1.—A basis for voltage calculations: output curve of a metal rectifier, showing the voltage corresponding to different loadings.

The position is that the proposed set is estimated to consume 45 milliamps., and that a loud speaker field winding of 2,500 ohms resistance will be used for smoothing purposes.

Reference to the output curve which accompanied our review of this rectifier shows that, for a load of 45 milliamperes, the unsmoothed D.C. voltage will amount to practically 335 volts; the loss in the field winding will be $2,500 \times 0.045 = 112.5$ volts. This leaves $335 - 112.5 = 222.5$, or, say, 220 volts, for the receiver itself. The curve is reproduced in Fig. 1.

Thus, the type of rectifier in question would appear to be quite suitable for the set; allowing 200 volts for the anode circuit, there will still remain over 20 volts for bias purposes, which will probably be adequate.

We are inclined to think that our correspondent has been working from the smoothed output voltage data as provided by the manufacturers of his rectifier. It should be remembered that this data takes into account the loss in voltage in a smoothing choke; this loss will not arise in the case which we are considering, or, rather, is allowed for by deducting the voltage absorption in the loud speaker field, which, of course, provides the smoothing.

Imperfect H.F. Filtering.

IN describing a rather peculiar form of instability to which his short-wave receiver is prone, a correspondent states that the trouble occurs only when he is using headphones; it is entirely absent when a loud speaker is employed.

Here we have almost certain proof that whatever H.F. filter device is included in the detector anode circuit is ineffective, or at any rate that wandering H.F. currents are present in the output stage.

A short-wave set suffering from this disability is never a pleasant piece of apparatus to handle, and we recommend that the detector filter system should be overhauled and improved. At the same time, it would probably be worth while to add a choke-condenser filter in the output anode circuit.

A bad earth is often a contributory cause of effects such as those under discussion.

Earthed Condensers or Earthed Coils?

IT is usual to arrange the components of a capacity-coupled band-pass filter in the manner shown in Fig. 2 (a); the condenser rotors are earthed, and the low-potential ends of the coils are "in the air," being connected to the earth line through the coupling condenser C. Practically speaking, there is no alternative to this arrangement when succeeding circuits in the receiver are tuned by the same ganged condenser. In order to apply grid bias to the valve directly associated with the filter, the coupling condenser is shunted by a resistance of 1,000 ohms or so.

Electrically, the arrangement illustrated in Fig. 2 (b) is exactly similar; the coupling condenser C is still common to both tuned circuits, and so acts as a link between them. But the connection of components is reversed; coils are earthed, and condenser rotors are slightly above earth potential. No special precautions are needed here in order to obtain bias, either from a battery or automatically, for the succeeding valve.

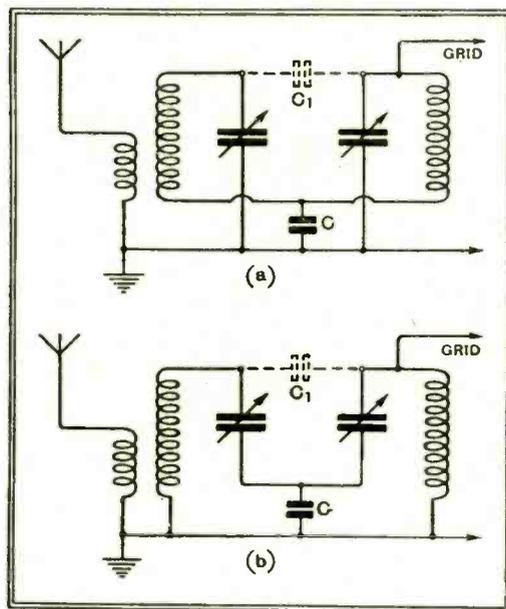


Fig. 2.—Alternative arrangement of a capacity-coupled band-pass filter.

This should make matters clear to a querist who has a set of "potted" coils in which the low-potential end of the windings is electrically connected internally to the screening covers, which it is desired shall be earthed directly. The (b) circuit is clearly the one for him to use, but he must remember that care must be taken to insulate the condenser frame.

Although it does not affect the position directly, we have shown in dotted lines the connection of small "top-end" coupling condensers (C_1), as our correspondent intends to use a filter of the double-capacity type.

Electrolytic Condensers Unsuitable.

ALTHOUGH electrolytic condensers have many attractions, it should be borne in mind that they cannot be connected in A.C. circuits; consequently, their use is definitely ruled out as reservoir capacities in voltage-

doubling circuits with metal rectifiers. We are here referring to the series-connected pair of condensers through which A.C. is fed to the rectifier.

This paragraph is prompted by a reader who submits for criticism the circuit diagram of an H.T. eliminator which he proposes to construct. Electrolytic condensers may be used for smoothing the output from a metal rectifier as satisfactorily as that of any other, but they must not be used for the purpose for which our querist shows them in his diagram.

Detector Current Variations.

WE are asked to say what is the maximum permissible depression of detector anode current—as compared with the normal current under no-signal conditions—which should take place in a power grid detector normally consuming 8.5 milliamps.

This is a matter about which it is impossible to be definite without very complete data regarding the receiver. But in most modern sets the decrease in current may safely amount to about 1 milliampere.

In Terms of Frequency.

A READER who expects shortly to be leaving this country for Egypt intends to take with him a short-wave set, mainly for reception of the B.B.C. station 5SW. He sees from our list that this station operates on a wavelength of 25.53 metres, and fears that he will be troubled with interference from the French station Pontoise, of which the wavelength is 25.63 metres, and which he understands is a fairly powerful transmitter.

His fears should be groundless. For the benefit of those who have not turned their attention to short-wave reception, it is worth while to point out that our usual—but rather reprehensible—habit of thinking in wavelengths is apt to be misleading when we are concerned with this band. In terms of frequency there is a difference of about 50 kilocycles between the two stations in question—enough to accommodate several other telephony frequency channels.

FOREIGN BROADCAST GUIDE.

LISBON (CT1AA)

(Portugal).

Geographical position: 38° 42' N.; 9° 8' W.
Approximate air line from London: 975 miles.
Wavelength: 282.2 m. Frequency: 1,063 kcs.
Power: 2 kW.

Time: Greenwich Mean Time.

Standard Transmission.

22.30-01.00 B.S.T. (Mon., Wed., Sat.).
On short wave (31.25 metres) 23.00-01.00 Thur., Fri.
Announcer: Man.
Call: *Estação Radio Lisboa.*
(On Fridays from B.S.T. 22.00 broadcasts are also carried out on 31.25 m. (9,598 kcs.) when announcements are made in Portuguese, Spanish, French and English.)
Closes down with the playing of the Portuguese National Anthem (gramophone record).

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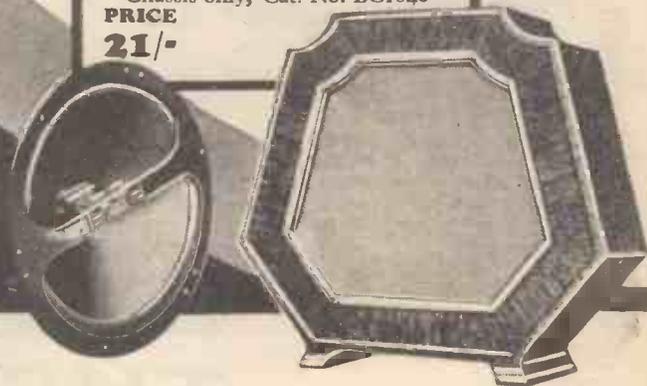
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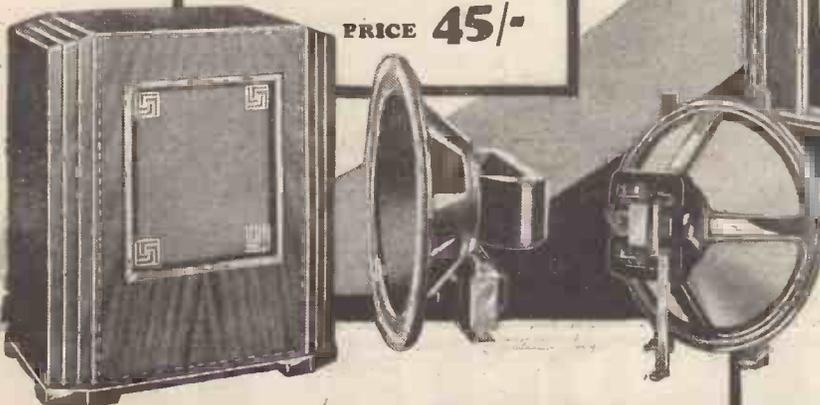
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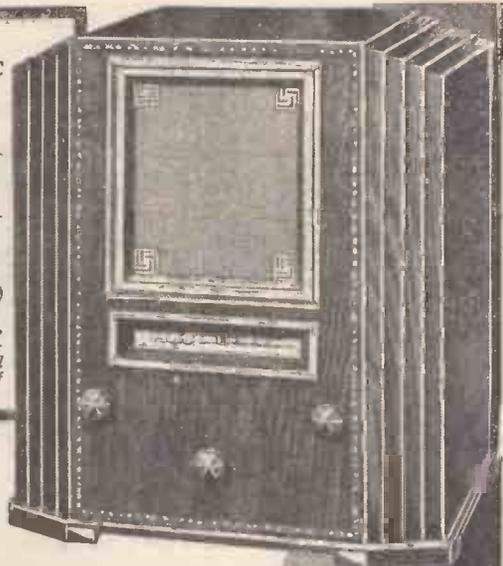


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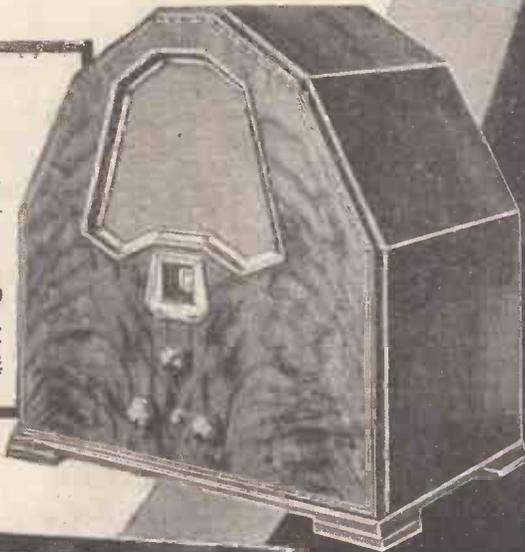


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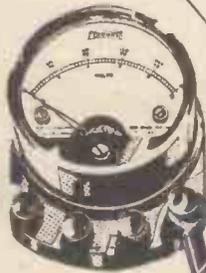
The General Electric Co. Ltd.
Magnet House,
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For A.C. and D.C.
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Without Resistance
4/3
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Resistances In
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Ferranti Radio Components have marked each year's progress at Olympia, and have become the very structure of Radio—the standard by which others are judged.

Radio Components have come and gone: names well known in the early years are forgotten, either the products could not progress, or else they could not stand the test of time.



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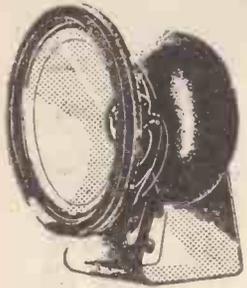
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FERRANTI LTD., Head Office & Works: HOLLINWOOD, LANCASHIRE



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THE VERY STRUCTURE OF RADIO AT OLYMPIA



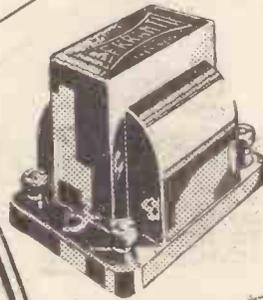
M.C. SPEAKERS

Chassis			
M1.	£8.	18.	6
M2.	£5.	18.	6
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M4T.	£2.	15.	0
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Soundness which is typified from the AF3—still in the identical form in which it was first put on the market 8 years ago—to the M1 speaker, altered and improved with every new discovery of moving coil construction, yet gaining the honour of the first choice in the "Wireless World" Olympia Ballot for the last three consecutive years.

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STAND NO. 78

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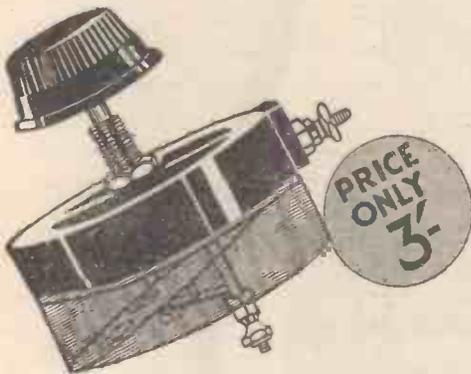
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to be seen on

STAND No. 153

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Be Sure to Visit Us,



THE LEWCOS POTENTIO-METER (PRICE only 3/-) is an example of the high quality and outstanding reliability of LEWCOS PRODUCTS.

A large model illustrating the special features and advantages of this component, will be on view at our stand.

and see for yourself that it is no vain boast when we say that our Radio Products and Wires are the world's finest—they are the very latest developments, made from the best materials by mastercraftsmen and designers. The fact that Lewcos Components are used by many leading receiver manufacturers and consistently specified by experts of wireless journals for their most successful sets, is abundant evidence of their recognised superiority.

WE ARE EXHIBITING AT

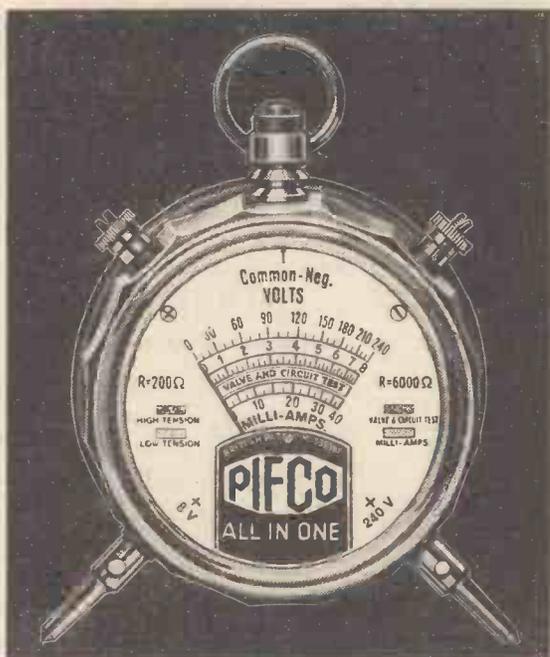


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LEWCOS RADIO PRODUCTS FOR BETTER RECEPTION

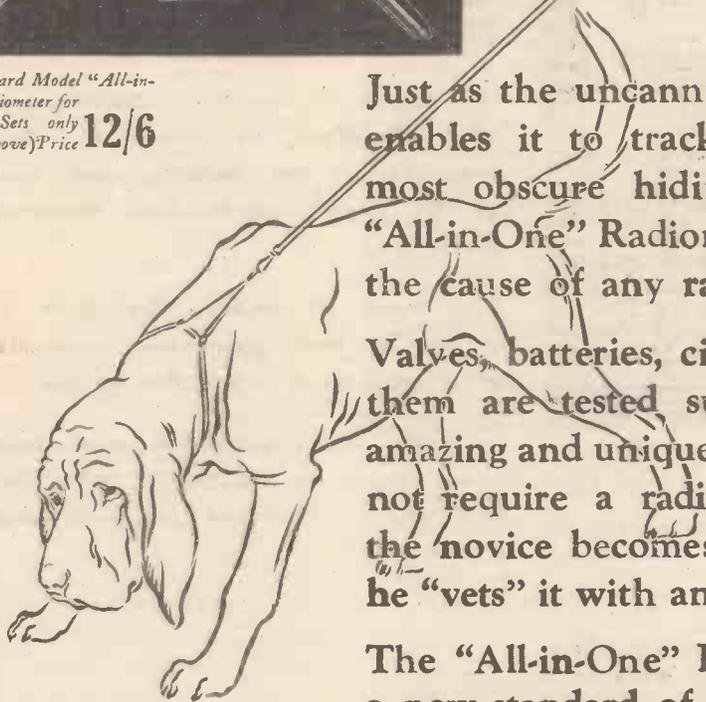
THE LONDON ELECTRIC WIRE COMPANY AND SMITHS LIMITED, CHURCH ROAD, LEYTON, LONDON, E.10

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● Standard Model "All-in-One" Radiometer for Battery Sets only **12/6**
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TRACK RADIO TROUBLES... EASILY.....



Just as the uncanny scent of the bloodhound enables it to track its quarry to even the most obscure hiding place, so the sensitive "All-in-One" Radiometer can trace and reveal the cause of any radio trouble.

Valves, batteries, circuits, components—all of them are tested surely and swiftly by this amazing and unique instrument. And it does not require a radio expert to use it. Even the novice becomes a master of any set when he "vets" it with an "All-in-One" Radiometer.

The "All-in-One" Radiometer ensures a new standard of radio performance from any set by the ease with which it tracks trouble. Ask to see it at any radio dealer's or electrician's.



● De Luxe Model for Battery Sets, Electric Receivers and Mains Units... **£2 2 0**
(shown below)



PIFCO ALL IN ONE RADIOMETER

If any difficulty write direct to:—
PIFCO Limited, High Street, MANCHESTER.





WHEN IT'S A QUESTION OF A NEW RECEIVER

"When it's a question of a new receiver, whether for A.C. or D.C. or battery, my advice is always the same I always say 'Choose Pye.'

The more you know about radio, the more you can appreciate Pye's incomparable technique.

One reason is that Pye receivers are designed at Cambridge by some of the greatest engineers in the industry, and built in one of the most up-to-date factories in the country.

And then, of course, Pye have a standard of quality that guarantees perfection or as near as it is possible to get.

So when my friends ask what receiver they shall buy, I say 'Compare them for yourself, and after comparison, you will surely choose a Pye.'

In every town there is a Pye Service Agent who will be only too pleased to arrange a home demonstration. Pye Service Agents exhibit the Pye sign.

PRECISION · RANGE · FIDELITY



QUALITY RADIO

Pye Radio Ltd., Sales Organization, Paris House, Oxford Circus, London, W.1

For the joy of listening

Climb a hillside on a summer evening. Hear the myriad notes of Nature—the song of the lark, the hum of the bee—blended into one glorious symphony of sound. Here, listening is pure joy, because the sounds are natural . . . unsullied. So, also, is listening to a McMichael receiver. For, of all radio reproduction, that of a McMichael receiver is most natural.

THE NEW McMICHAEL DUPLEX FOUR MAINS TRANSPORTABLE

(For Alternating Current only)

Within a handsome Walnut Cabinet of modern design the set is entirely self-contained, so that it is easily transportable and may be operated wherever a suitable mains socket or plug is available, neither aerial nor earth being necessary.

The circuit employed is similar to that of the Duplex Four Battery models, except for the "mains" adaptation.

Indicating on the Duplex Scale, this circuit includes the latest refinements in design, and gives maximum range and selectivity with a minimum of controls.

Contained in the receiver is a Moving Coil Loud-speaker, the reproduction from which is quite exceptional—no less than sheer delight.

Provision is made for applying a gramophone pick-up, and an external additional loudspeaker or speakers.

PRICE 21 GNS. (Including all Royalties)
Deferred Payments may be arranged



THE McMICHAEL CABINET DUPLEX FOUR PORTABLE (TYPE C)

In this McMichael Cabinet Duplex Four Portable are incorporated all the exclusive features which made the DUPLEX FOUR (leather case portable) so successful. The set is contained in an exceptionally handsome Cabinet of modern design, constructed of finely figured and polished Walnut, and mounted on a ball bearing turntable.

The circuit, batteries, Duplex Scale, etc., are incorporated as in the leather case model. The Receiver is entirely self-contained with internal frame aerial.

Price 17 GNS.

(Including Valves and Royalties)
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H.M. THE KING USES
McMICHAEL PORTABLES

WE ARE EXHIBITING AT



**STAND
No. 58**

ALL BRITISH

Built at our Works at Slough and embodying the experience of eleven years' successful Radio manufacture.

THE McMICHAEL DUPLEX FOUR (TYPE S)

A high efficiency four-valve circuit is employed, double gang tuned to indicate on the Duplex Scale. An automatic Grid Bias dispenses with a Grid Bias Battery and automatically adjusts the reproducing valves to maintain unimpaired tonal quality throughout the life of the High Tension Battery.

The Duplex Scale is a unique McMichael feature which makes for extreme simplicity and certainty of operation. Calibrated in metres, and mechanically coupled to the waveband switch, a pointer moves to the appropriate scale as waveband switch is operated, giving accurate reading of the actual wavelengths. The Battery is of 120 volts. The Battery compartment is closed by a snap clip Battery lid. The set is contained in a handsome case of dark furniture hide, fitted with ebonite panels and controls, with nickelled panel fittings. For protection an aluminium valve screen is employed.

Price 17 GNS.

(Including all equipment and Royalties)
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L. McMICHAEL LTD

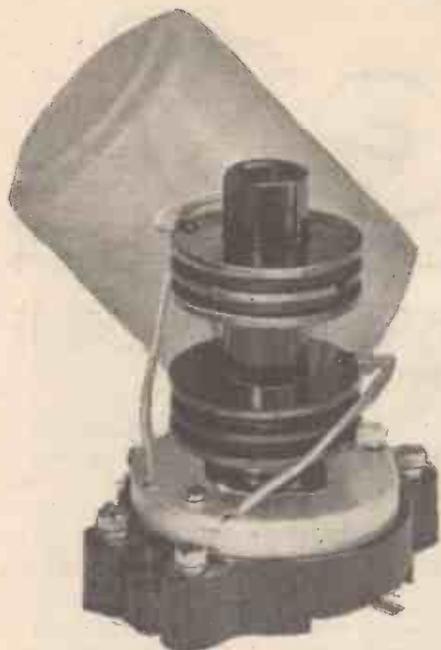
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SLOUGH.

(Telephone: Temple Bar 6988.)

—FOR YOUR— “BABY SUPER”

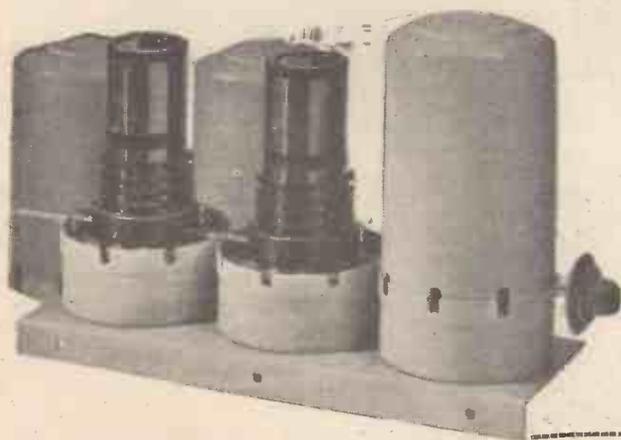


COLVERDYNE INTERMEDIATES

Maximum efficiency will be obtained by the use of Colverdyne Intermediates.

They are designed to work

IN CONJUNCTION WITH COLVERN 'K' TYPE COILS



In receivers of outstanding design Colvern Coils are incorporated . . . Colvern Screened Coils are accurate and reliable, their inductance being guaranteed to be within $\frac{1}{2}\%$. . . Appearance and finish are beyond reproach.

STAND No.

245

RADIO

EXHIBITION

OLYMPIA

19-27th AUGUST.

For the “BABY SUPER”

1 set Baby Super Coils -	-	30' - set
1 Colverdyne, Type 110	-	12'6 ea.
1 Colverdyne, Type DO.110		12'6 "
1 Valve Screen, Type VS.	-	2'9 "

Send for Radio List No. 10.

COLVERN LIMITED, MAWNEYS RD., ROMFORD, ESSEX.

THE NEW

Varley

PROPRIETORS :- OLIVER PELL CONTROL LTD.

**"RECTATONE"
L.F. TRANSFORMER**

Radio reproduction with full and natural treble response. Gramophone reproduction with the bass in proper balance, without over-emphasis of treble. You can get them both from the same receiver with the Varley RECTATONE.

This new transformer compensates for high-note losses in the tuning circuits by frequency compensation in the L.F. amplifier. The RECTATONE frequency response curve is straight up to 1000 cycles per second and then rises reaching a maximum at approximately 4500 cycles—the ideal arrangement.

The degree of compensation is controlled by a variable resistance connected externally between two of the transformer terminals. If this resistance is omitted the RECTATONE functions as a normal transformer giving high and even amplification.

RECTATONE is thus the ideal L.F. coupling for sets using a pick-up or for radio-gramophones, since the tone control so valuable on radio, can be switched out on gramophone where it is unnecessary.



**True tone-balance
from Radio or Record
—with one transformer
Price 15/-**

GET THIS FREE BOOKLET

To Messrs. Varley, Kingsway House, 103, Kingsway, London, W.C.2.
Please send me, free and post free, the

Book of the RECTATONE

Date-----

Name-----

Address-----

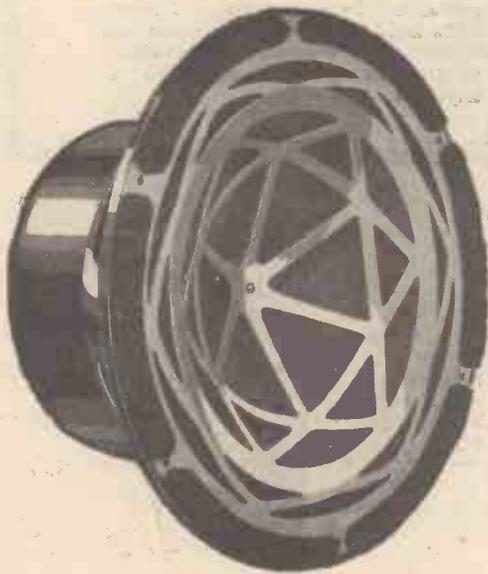
Advertisement of Oliver Pell Control Ltd., Kingsway, London, W.C.2.

Telephone: Holborn 5303.

W.W.1

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**On Stand
69**
GRAND HALL · OLYMPIA
a new
development
in
Moving Coil
Reproducers
will be exhibited—



The **R & A**
"VICTOR"
PERMANENT MAGNET MOVING COIL
REPRODUCER DE-LUXE

The R. & A. 'VICTOR' is a de-luxe reproducer in every sense of the word. Quite apart from its unique design, its massive construction and its flawless finish, the reproduction of speech and music from the lowest to the highest frequency is a revelation. Moreover, its transformer with 6 ratios permits accurate matching of the speech coil with every type of power valve including pentodes.

If you are interested in quality reproduction we invite you to a demonstration on our Stand No. 69, Olympia. We should like your candid opinion of the 'VICTOR,' and to this end we invite you to state briefly on a sheet of notepaper, your impressions after having inspected it and heard its performance.

We will present a 'VICTOR' in de-luxe Cabinet, or cheque for 5 guineas, at entrant's option, to the writer who sends what, in our opinion, is the most apt, comprehensive and impartial criticism, limited to 100 words, provided the entry form at the foot of this page is attached thereto.

Criticisms must reach us not later than the 5th September, and the result will be published in the "Wireless World" 16th September issue.

The staff and employees of R. & A. Ltd. and the Company's Advertising Agents are excluded from this invitation.

Write us for Illustrated Descriptive Literature of this and the complete range of R. & A. Reproducers and Cabinets. Sent Post Free.

REPRODUCERS & AMPLIFIERS LTD.,
FREDERICK ST., WOLVERHAMPTON.

This portion to be attached to
your criticism of the "VICTOR."

Post to reach us not later than 5th Sept.

WIRELESS WORLD.

BRIEF SPECIFICATION

The 'VICTOR' P.M.M.C. Reproducer-de-Luxe has a Cobalt Steel Magnet giving a flux density of 8,000 lines per sq. centimetre. Average speech coil impedance 5.5 ohms. The magnet and 6-ratio transformer are totally enclosed, and the cadmium plated grille and armoured construction eliminate all possibility of damage to diaphragm and magnet. Dimensions 10 1/2" x 5 1/2" deep.

70%
including
6 RATIO TRANSFORMER

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★ **NOW** Instant accuracy in A.C. Readings too—
and simplified accuracy for Valve Testing

SEE STAND No. 206

We Introduce the

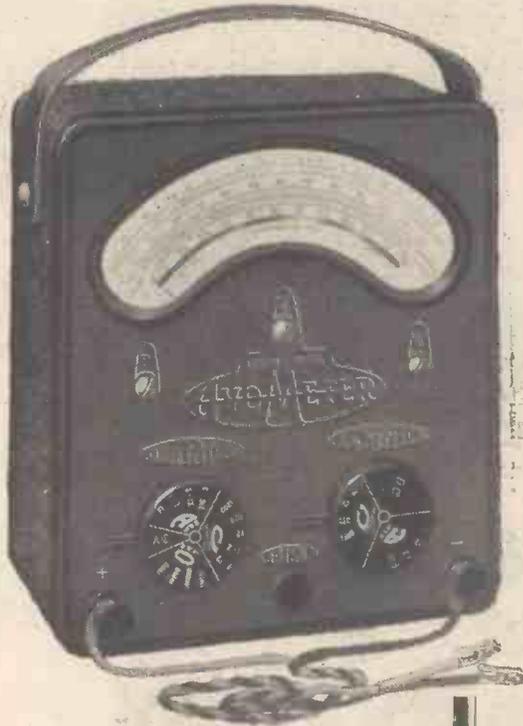
UNIVERSAL AVOMETER

Patents Granted. Others Pending

(Reg. Trade Mark)

for measuring: A.C. and D.C. Current and
also D.C. Resistance

Without external Shunts or
Multipliers.



D.C. Amps		A.C. Amps	
1 milliamperes	to 12 amps	10 milliamps	to 12 amps
0 — 12 amperes		0 — 12 "	
0 — 12 "		0 — 1.2 "	
0 — 0.12 "		0 — 0.12 "	
D.C. Volts		A.C. Volts	
1 millivolt	to 1200 volts	100 millivolts	to 1200 volts
0 — 1200 "		0 — 1200 volts	
0 — 120 "		0 — 120 "	
0 — 12 "		0 — 12 "	
0 — 1.2 "		0 — 1.2 "	
0 — 0.12 "			
D.C. Ohms			
1 ohm to 1 megohm			
0 — 1,000,000 ohms		0 — 12 "	
0 — 100,000 "		0 — 1.2 "	
0 — 10,000 "			
0 — 1,000 "			

As the increasing use of alternating current calls for A.C. measuring instruments in addition to those required for D.C. testing, we have now introduced a UNIVERSAL AVOMETER which not only covers the thirteen D.C. ranges of the Avometer, but also four ranges of A.C. voltages and three of current, for use on 50 cycles.

This new Avometer gives readings in any of 20 different ranges of D.C. Amps, Volts and Ohms, and A.C. Amps and Volts—without external shunts or multipliers, and without calculations of any kind.

AND... The AVODAPTER

Patent Applied for

This new instrument enables all valve circuits to be tested externally and disposes once and for all of the difficulty of making tests inside the set. It consists of a plug, instantly convertible for four or five pin valves, connected to a valve-testing holder or base. The plug is inserted in the valve-holder of the set and the valve under test is plugged into the AvoDapter base. A switch enables anode, screen and grid currents to be measured without change of connections, and filament or heater, screen and anode voltages may be taken simultaneously or separately.

Price, Complete **25/-**

For those already possessing testing equipment, or wishing to make their own, the AvoDapter Patented Convertible Plug can be supplied with a 6-way lead for

7/6

If you do not visit Olympia, send for fully descriptive illustrated pamphlets of the Universal Avometer and the AvoDapter.



AUTOMATIC COIL WINDER &
ELECTRICAL EQUIPMENT CO. LTD.
Winder House, Douglas Street, S.W.1
Telegrams: "Autowinda, Charlton, London." Phone: Victoria 3405-6.

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NEW SUPER-HET GANG

1. A rigid one-piece chassis.
2. Heavy gauge, wide spaced aluminium vanes.
3. Special rotor bearings which ensure permanent accuracy and remarkably free movement.
4. Robust construction throughout.
5. Easily adjustable trimmers to each stage, mounted inside the chassis and operated by external starwheels.
6. A strict system of supervision and testing.

These are some of the points that contribute to the extreme accuracy of these new J.B. Gangs for superhets. Precision has always been a feature of J.B., but in these new Gangs *each stage is matched to within 1/2 per cent. + half a m.m.f.* . . . a standard of accuracy that will meet efficiently the requirements of modern superhet circuits with single-dial control.

The general construction follows that of the J.B. NUGANG, with the exception of one section which has vanes specially shaped to ensure accurate tracking of the oscillator.

Supplied fully-screened, as illustrated, with stout pressed aluminium clip-on lid or "semi-screened" without lid.

		<u>Prices.</u>
<u>Fully-screened.</u>	3-Gang . . .	25/6
	4-Gang . . .	33/-
<u>Semi-screened.</u>	3-Gang . . .	23/-
	4-Gang . . .	30/-

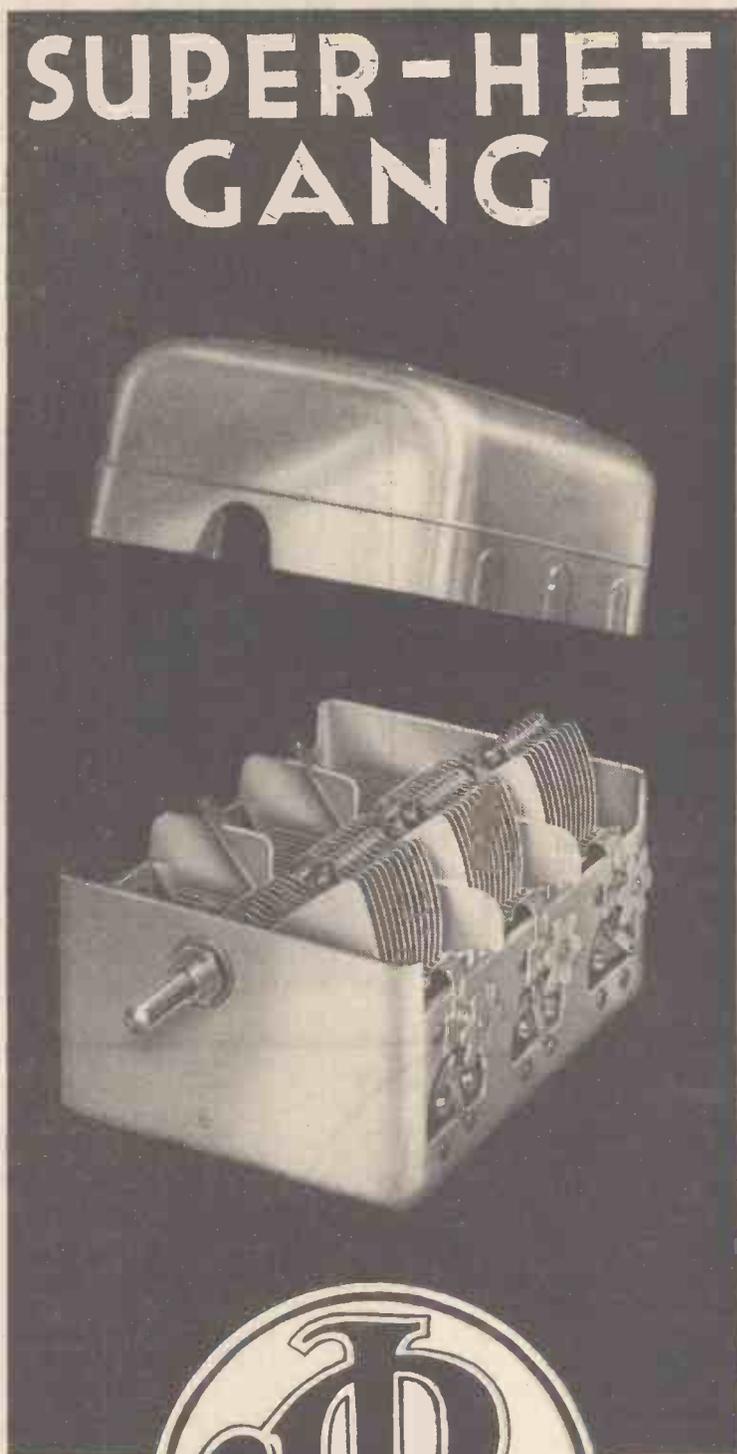
Capacity .0005.

See them on **STAND**
204 — GALLERY, OLYMPIA

PRECISION INSTRUMENTS

Advertisement of Jackson Bros., 72, St. Thomas' Street, London, S.E.1.

Telephone: Hop 1837.



HEAR RADIO AS YOU HAVE NEVER HEARD IT BEFORE—THROUGH THE NEW **BURTON RECEIVERS** SPEAKERS AND COMPONENTS

Here is the new BURTON SGP. All-Electric Receiver, fitted with four valves including rectifier.

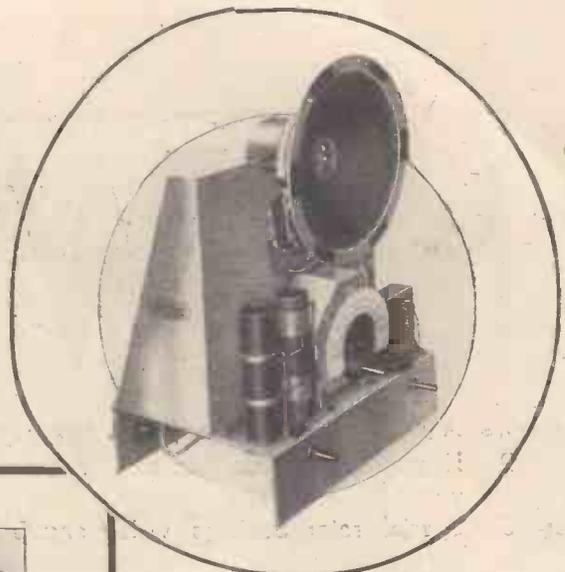
Single dial band pass tuning gives highest standard of selectivity, so essential under present day conditions, without impairing tonal quality.

A power Pentode Valve, tone compensated, giving an output of 2 watts to a B.T.H. Moving Coil Speaker, ensures superb quality of reproduction.

Three controls only, rendering manipulation simplicity itself and extremes of volume obtainable as desired. There are absolutely no exposed "live" parts in this set, which completely eliminates risk of shock.

No Mains Hum. A mains Aerial is provided which enables set to be used without outside Aerial.

Price 16 Guineas.



The BURTON RADIO-GRAM

Fitted with four valves, including 2½ watt output valve and rectifier. B.T.H. Pickup and Motor with fully Automatic stop. Gives magnificent volume and Superb quality of tone. Minimum of controls to facilitate easiest manipulation. A highly selective dual purpose instrument encased in a really handsome Cabinet of Oak. Sets an entirely new standard of Value.

Price 26 Guineas.



SEE US AT
**STAND
NUMBER
ONE
OLYMPIA**



BURTON RADIO PRODUCTS

C. F. & H. BURTON, Progress Works, WALSALL

We are also exhibiting unrivalled values in Battery Operated Sets, Speakers, Components, and ALL-MAINS UNITS. If you cannot Visit our Stand at the Radio-Exhibition, send for latest lists.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

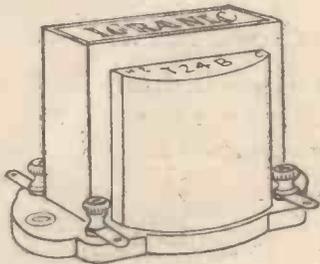
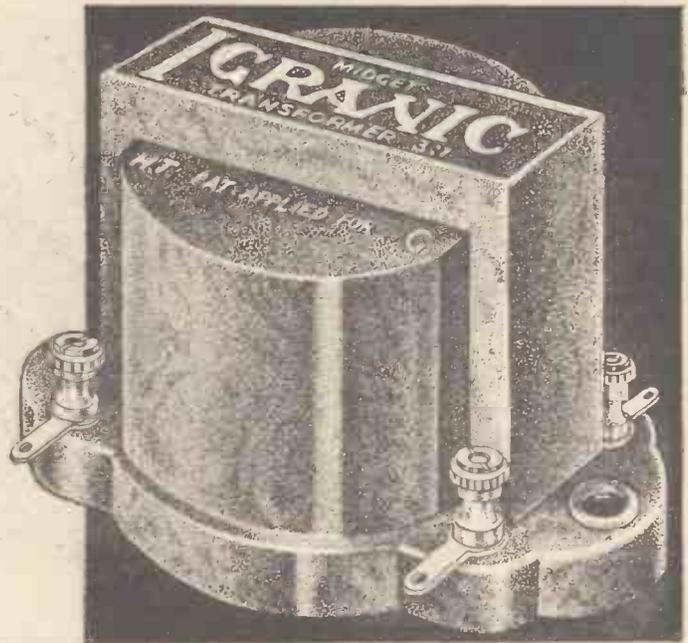


TRANSFORMERS

You cannot expect IGRANIC results unless you build on IGRANIC components, and if there is one component more than any other in which you must have unquestioning faith it is the Transformer. In the designing, construction and finishing of IGRANIC Transformers nothing is left to chance—they are built to the highest standards, and only works' efficiency of the highest order enables them to be priced so economically.

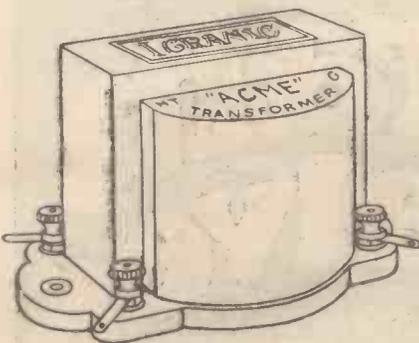
IGRANIC "MIDGET" TRANSFORMER

A masterpiece in miniature—it weighs only 6½ ounces, and its size is 2½" x 1½" x 1½". Primary inductance over 60 Henries. Beautifully finished in brown bakelite. Ratios: 3:1 and 5:1. Price **10'6**



IGRANIC T. 24 B. TRANSFORMER

A good general-purpose transformer at a popular price. Neatly cased in brown bakelite with terminals and soldering tags, Weight 10 oz. Size 2½" x 2½" x 2". Ratios 3:1 and 5:1. Price **5'6**



IGRANIC "ACME" TRANSFORMER

The Transformer 'par excellence'—employs the Igranitic patented bi-metal core which permits of high current-carrying capacity without loss of inductance. Ratios 3:1 and 6:1. Price **17'6**

IGRANIC
COMPONENTS WILL
BE THE MAKING
OF YOUR SET.

Advt. of The Igranitic Electric Co., Ltd., 149, Queen Victoria Street, E.C.4

OLYMPIA, STAND 36

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ON TOP AT OLYMPIA



**Osram
valves**

MADE IN ENGLAND

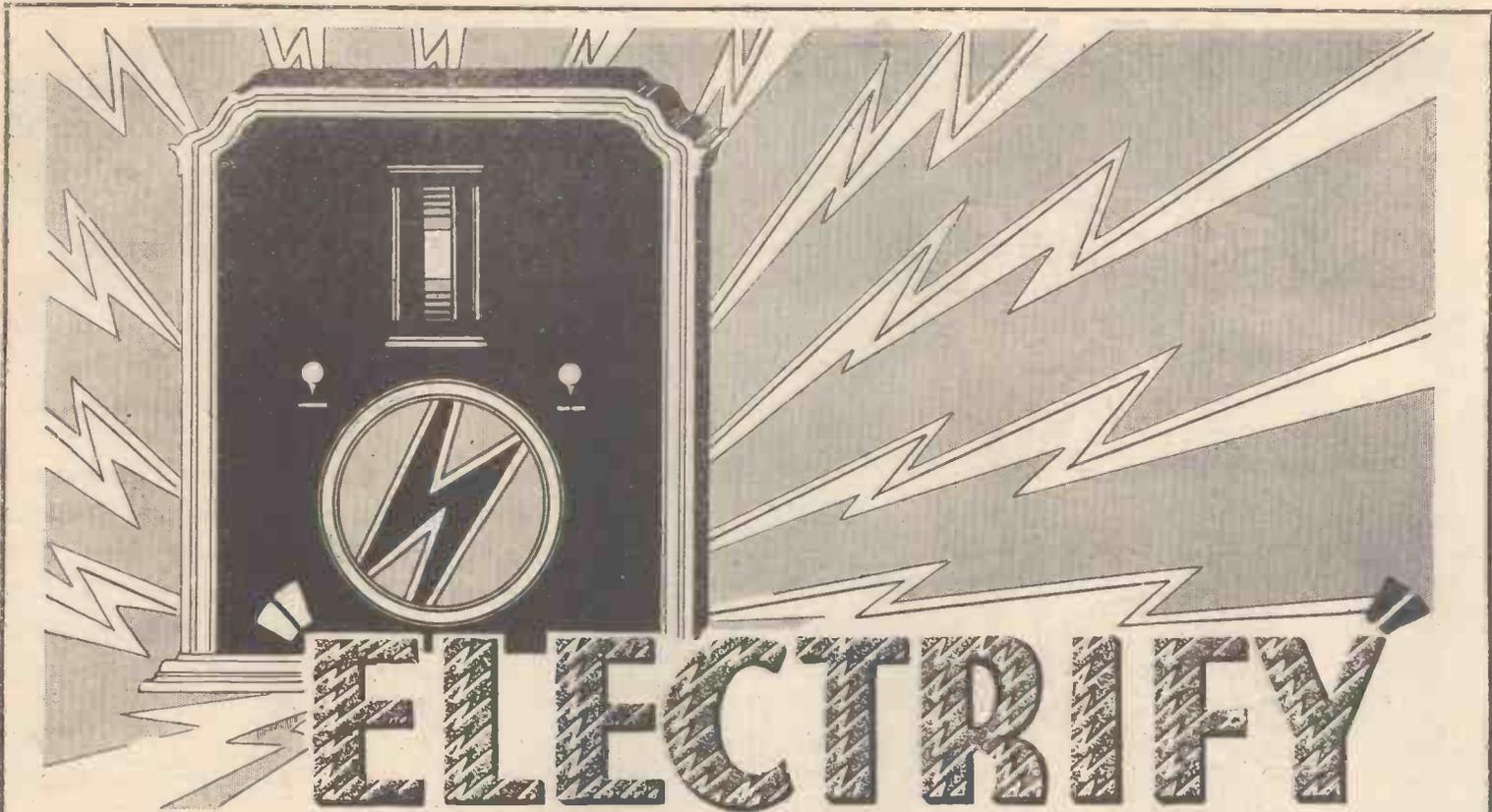
Sold By All
Wireless Dealers.

NATIONAL RADIO EXHIBITION

See the G.E.C. Radio Products on the G.E.C. Stands

Adv. of The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2

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ELECTRIFY
YOUR SET WITH
PERTRIX
 TRADE MARK
DRY BATTERIES
 AND
ACCUMULATORS

SEE THEM
 AT
 RADIOLYMPIA
 STAND No.
126

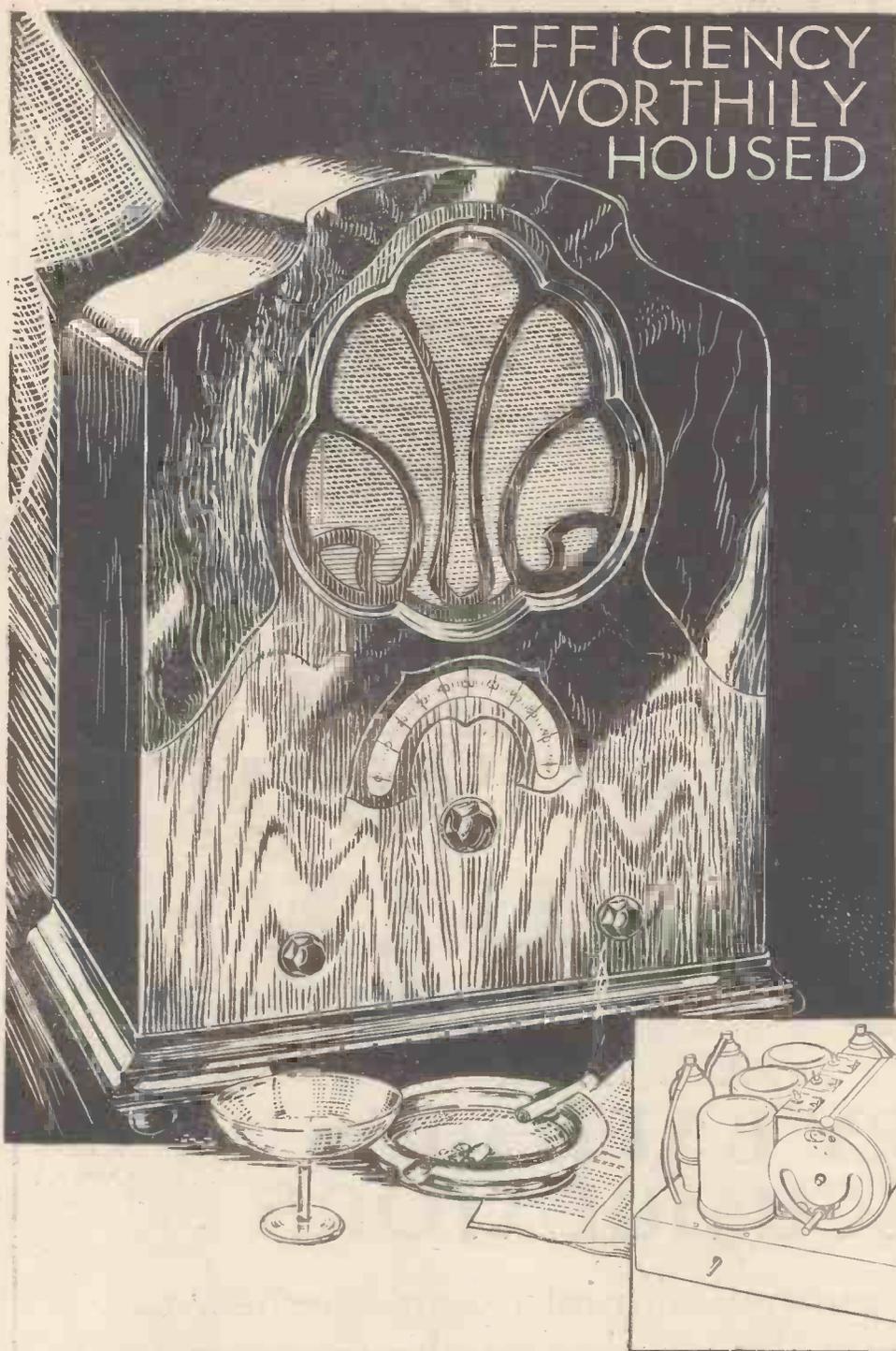
They will put new life into your set—new power to get stations that you have never heard clearly before—And they'll last longer; definitely longer, for they are made by a patent process which provides a recuperative quality unknown to other batteries. 'Electrify' your set with Pertrix Power.

H.T. Batteries from 5/6. L.T. Accumulators from 4/6.

Advt. of Britannia Batteries Ltd., 233, Shaftesbury Avenue, London, W.C.2. Telephone: Temple Bar 7971 (5 lines). BRANCHES: Manchester, Bristol, Glasgow, Dublin, etc. Works: REDDITCH (Worcs.).

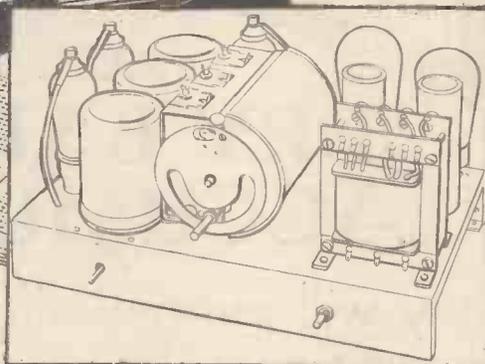
Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

EFFICIENCY
WORTHILY
HOUSED



Our Receivers are standardised—standardised to a definite pitch of efficiency which we have set ourselves, believing that efficiency and efficiency alone is the one thing desirable in Radio. Complicated circuits and novelty features are things of no importance when the Receiver is judged on its ultimate performance.

Outside performance, however, presentation has its obvious demand and our Receivers are built into cabinets which convey to the eye that same efficiency which is apparent to the ear.



Price
19 Guineas
Including Marconi Royalties.
H.P. Terms available.

**JACKSON-BELL
DISTRIBUTORS LTD.**

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79b, Rochester Row,
London, S.W.1
Telephone: Victoria 4671. Ext. 5

SPECIFICATION

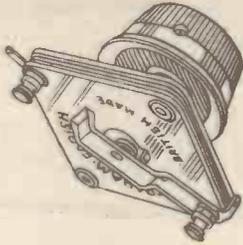
2 H.F. Screen grid stages with variable-mu valves, S.G. detector resistance coupled to power pentode, full wave valve rectification. B.R.V.M.A. valves. Polished walnut cabinet of extreme beauty in design and finish.

**HEAR THIS
AND OUR
FURTHER
MODELS
AT THE
RADIO
SHOW**

STAND N°11, GROUND FLOOR, OLYMPIA.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

GRAHAM FARISH COMPONENTS FOR HIGH EFFICIENCY



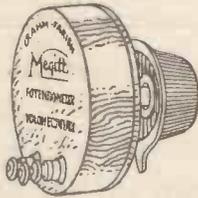
'Litlos' Variable Condensers.
In all capacities up to .0005, or line, straight line capacity and differential. Particularly low loss. Single hole fixing. All capacities and types **2/-**



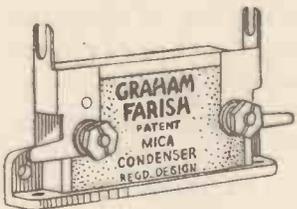
'Ohmite' Resistances.
Better than wire-wound. All values from 300 ohms to 5 Megohms **1/6**

'Megite' Volume Control.

A new design. Potentiometer type. Ideal for loud speaker and pick-up. Nickel-chrome wire-wound. Slipper action, making broken contacts impossible. Absolutely silent. 3 Terminal type. Bakelite case. Single hole fixing.



Resistance up to 25000 ohms - **3/6**
Resistance over 25000 ohms - **4/6**



Graham Farish FIXED CONDENSERS.

In a complete range of capacities, upright or flat mounting. Registered design No. 723271.
.00005 mfd. to .004 mfd. - **1/-**
.005 mfd. to .01 mfd. - **1/6**

The 'GARD' Lightning Arrester.



A permanent and absolute protection against lightning and static charges. No need to switch off during thunderstorms. Definitely does not interfere with reception **1/6**

SEE OUR STAND NO. 50 AT THE OLYMPIA RADIO EXHIBITION.

A Sensational Radio Discovery
PERMANENT-EFFICIENT
EVER-DAMP EARTHING

Rejuvenates the heart of your Receiver

More radio troubles come through faulty earthing than from any other single defect of a receiver. Crackling in the loud speaker, oscillation, mains hum, weak volume and poor tone are ALL caused by an inefficient earth. PREVENT these troubles and get the last ounce of power and purity of reception by fitting a **FILT**—the wonderful new percolative earth—a sensational invention that makes perfect earthing certain.

TO EARTH TERMINAL OF SET



See how it works

Wonderful New Percolative Chemical makes even Dry soil permanently conductive

FILT is based on a completely new principle of CHEMICAL earthing. It doesn't depend on the dampness of your soil or the depth at which you bury it. As soon as it is under ground, the wonderful **FILT** chemical begins to spread and percolate, attracting moisture and making a PERMANENT conductive area for several feet around and below its copper container. It works ANYWHERE, in ANY soil, in ANY climate.

How FILT works and what it does

Imagine dozens of chemical tentacles spreading outwards and downwards through the earth, every tentacle a high conductor of electricity, and every one leading to your earth and through the earth wire to your set. That is what **FILT** gives you. It means high efficiency earthing—always damp—always active—enabling you to get the very utmost out of your set from one year's end to the next. It is the most effective earthing system money can buy.



Get a **FILT** to-day from the nearest radio dealer or order direct (post free) from the sole manufacturers.

GRAHAM FARISH (pat. applied for)

FILT

PERCOLATIVE CHEMICAL EARTH

GRAHAM FARISH LTD.
201, Masons Hill, Bromley, Kent.

2/6 COMPLETE

G.E.C. Radio
SUPREMACY IN RADIO

NEW—A SELF MUSIC MAGNET

ENTIRELY SELF-CONTAINED

Very handsome one-piece Bakelite Cabinet

Ample room for Accumulator and Batteries INSIDE — no battery connections OUTSIDE

2 Screen-Grid Valves ONE KNOB ONLY FOR TUNING

Osram THIRTY-THREE

MUSIC MAGNET

MADE IN ENGLAND
 Sold by all Wireless Dealers.

A high-class home constructor's kit — all self-contained — with all the latest improvements in design and construction

ANOTHER "OSRAM MUSIC MAGNET" SENSATION

The new OSRAM "THIRTY-THREE" MUSIC MAGNET represents an enormous advance in the design of home constructors' kits, both in appearance and performance. Its utter simplicity will be apparent from the illustrations in this advertisement, and the beautiful one-piece Bakelite cabinet with its handsome lines gives an atmosphere of quality far above the price of the kit. It is entirely self-contained, there being no external connections whatever. Loud speaker, accumulator and dry batteries are all accommodated neatly *inside* — no unsightly accessories are needed *outside*.

PRICE 9 GNS.

Including cabinet, built-in loud speaker and OSRAM valves.

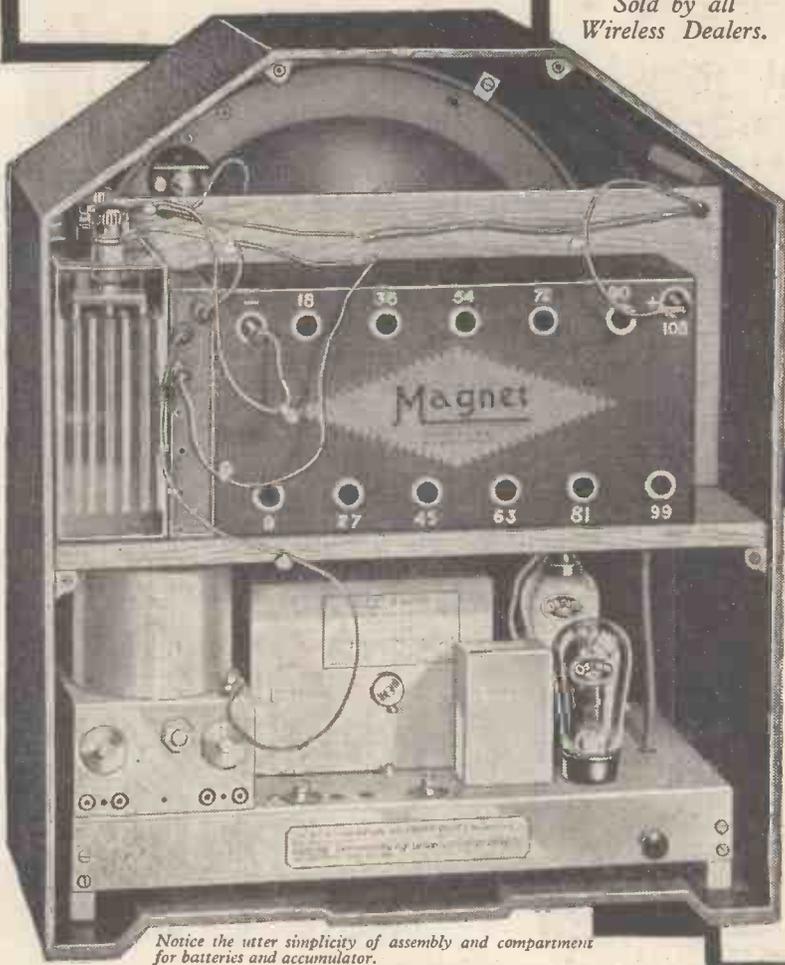
HIRE PURCHASE

Deposit £1 and 12 monthly payments of 15/-

Dimensions: 18½ ins. high, 15¼ ins. wide, 10¼ ins. deep.

You can learn all about this amazing kit by sending for **POST FREE** Constructor's Instruction Chart — a most informative brochure which can be studied at your leisure.

NATIONAL RADIO EXHIBITION
 See the complete range of G.E.C. Radio Products on the G.E.C. stands.



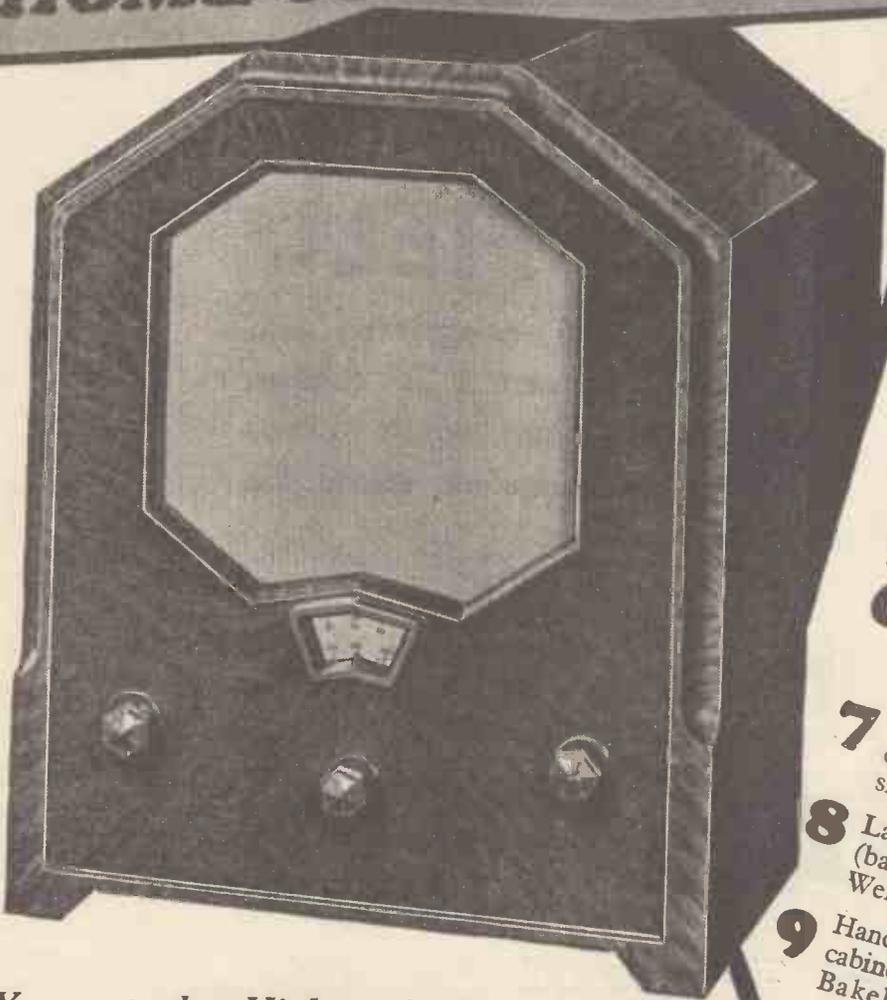
Notice the utter simplicity of assembly and compartment for batteries and accumulator.

A SIMPLE

Adv. of The General Electric Co., Ltd., Magnet House, Kingsway, London, W.C.2.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

-CONTAINED HOME CONSTRUCTOR'S TRIUMPH!



SPECIAL FEATURES

- 1** A complete table model receiver with built-in loud speaker.
- 2** Batteries housed inside cabinet—no external battery connections.
- 3** Two metallised OSRAM screen-grid valves and latest type OSRAM power output valve.
- 4** Screen-grid detector gives great sensitivity.
- 5** Tuning by one knob only.
- 6** New magnetic loud speaker chassis with floating cone ensures highest quality reproduction.
- 7** Unit assemblies make home construction the essence of simplicity.
- 8** Latest OSRAM valves (battery type) with the Wembley filament.
- 9** Handsome one-piece cabinet in moulded Bakelite — walnut graining.

You get the Highest Standard of OSRAM "MUSIC MAGNET" Performance in this Set

The OSRAM "THIRTY-THREE" MUSIC MAGNET is the latest model of the popular "OSRAM Music Magnet" series. A special feature of the circuit design is the inclusion of TWO OSRAM high-conductance metallised Screen-Grid Valves, which means that it will give a performance equal to a great many 4-valve sets on the market—sensitive and selective—powerful and pure reproduction.

A wide range of stations can be tuned in with the greatest ease at good loud speaker strength, and the specially-designed built-in loud speaker gives the highest quality reproduction. Tuning is effected with one knob only.

The OSRAM "THIRTY-THREE" MUSIC MAGNET is the embodiment of all that the home constructor needs most: it is easy to assemble, extremely handsome in appearance, ENTIRELY SELF-CONTAINED, simple to operate and phenomenally low in price.

WRITE for OSRAM "THIRTY-THREE" MUSIC MAGNET Constructor's Instruction Chart, which will be sent you POST FREE. **FILL IN THE COUPON BELOW.** This chart gives simple and clear instructions how to wire the various parts together, and it is crammed full of useful hints and tips as to the operation of the set. **Send for your copy TO-DAY.**



POST
COUPON
TO-DAY

COUPON

Please send me particulars of the OSRAM "THIRTY-THREE," MUSIC MAGNET

Name.....
W.W. Address.....
The General Electric Co. Ltd.
Magnet House,
Kingsway,
London,
W.C.2

Cut out and paste on postcard, or enclose in unsealed envelope, Halfpenny postage in either case.

STEP FROM CHART TO SET

Branches and Public Showrooms throughout Great Britain.



P.M.5
27'6
 COMPLETE
 with three-ratio step-down
 transformer

**THE SENSATION OF
 OLYMPIA**

Go straight to Stand No. 108 and see these great W.B. achievements

"MANSFIELD"

[P.M.5] at 27/6 complete with transformer. Fits any W.B. cabinet. Revolutionary value which brings moving-coil reproduction within the reach of everyone

AND THE NEW

IMPROVED P.M.4

at
42'- COMPLETE
 with three-ratio step-down
 transformer

These guaranteed speakers give true moving-coil reproduction from any 2-valve or multi-valve set.



P.M.4.

**PERMANENT
 MAGNET
 MOVING COIL SPEAKERS**

Write for the new lists FREE of the whole range of W.B. Moving - Coil Speakers, P.M. and Energised,



with their attractive cabinets. Also the new W.B. valveholders and new W.B. switches.

Whiteley Electrical Radio Co., Ltd., Nottingham Road, Mansfield, Notts.

Irish Free State Distributors: Kelly & Shiel, Ltd., 47 Fleet Street, Dublin.

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273

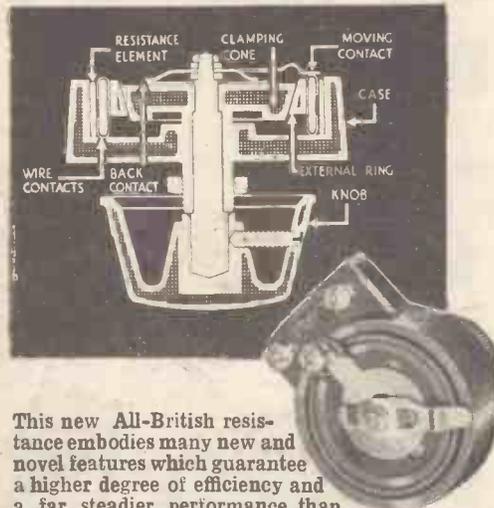
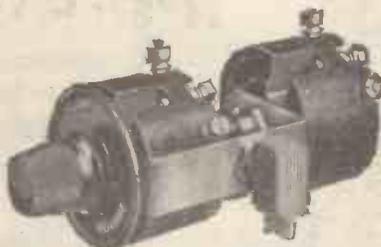


**NEW WATMEL 50,000 ohms
SQUARE LAW TAPERED
RESISTANCE. TYPE 2**

**NEW WATMEL 1932-33
VARIABLE
RESISTANCE. TYPE 3**



**WATMEL DUAL POTENTIOMETER
TYPE M.S. 5**



This resistance is specially wound on a tapered former which gives a perfect square-law reading. This is the first resistance of its kind.

1. Polished Pointer Knob.
2. Engraved Bakelite front plate.
3. Wire wound former.
4. Insulating bush to insulate spindle from panel.
5. Contact finger, Phosphor Bronze.
6. One-hole fixing—brass bearing bush resulting in perfect gearing.
7. Bakelite case, protecting winding.
8. Back self-cleaning contact.
9. Large contact plate.
10. Stops at end of wiring.

Any resistance up to 50,000 ohms, standard wiring **5/6** Square Law **6/6**

Every part is made from the finest materials.

This component has been specially constructed in view of the tendency of modern design to reduce the number of controls. The Watmel Type M.S. 5 Dual Potentiometer is ganged with mains "on" and "off" switch, the one knob controlling mains switch, radio volume control and gramophone control. Price **13/6**.

As specified by "Wireless World" in the *Modern Straight Five*. These can be supplied in any combination values up to 50,000 ohms.

If you have any difficulty in obtaining Watmel Components, write direct to us.

When you buy a Watmel Component you are certain to obtain a product that is absolutely up-to-date—reliable—flawless and made from only the best *British* materials.

**FREE
RESISTANCE CALCULATION
CHART.**

When visiting our Stand ask for a **FREE** Copy of our **"Resistance Calculator Chart."**

This new All-British resistance embodies many new and novel features which guarantee a higher degree of efficiency and a far steadier performance than resistances constructed on old and obsolete principles.

Advantages—

1. The extremely firm and even contact with the element. This is obtained by a new patented clamping cone which directly it is screwed down forces the external ring against the wire band. The pressure is so great that perfect all-round contact is made with the element which will not vary under any circumstances.
2. Self-cleaning wiping contacts. This ensures perfectly clean contact always.
3. Non-Inductive.
4. Silent in operation.
5. Price **4/6** any value from 10,000 ohms to 5 megohms. With quick-break switch. Price **6/6**.

We recommend this resistance (Type 3) where wire-wound potentiometers are not required. Patents for this new resistance have been applied for.

RADIOLYMPIA

**Watmel
COMPONENTS
GET THE BEST OUT OF ANY SET**

STAND No. 273

WATMEL WIRELESS CO. LTD., IMPERIAL WORKS, HIGH STREET, EDGWARE, MIDDX.

Tel.: Edgware 0323

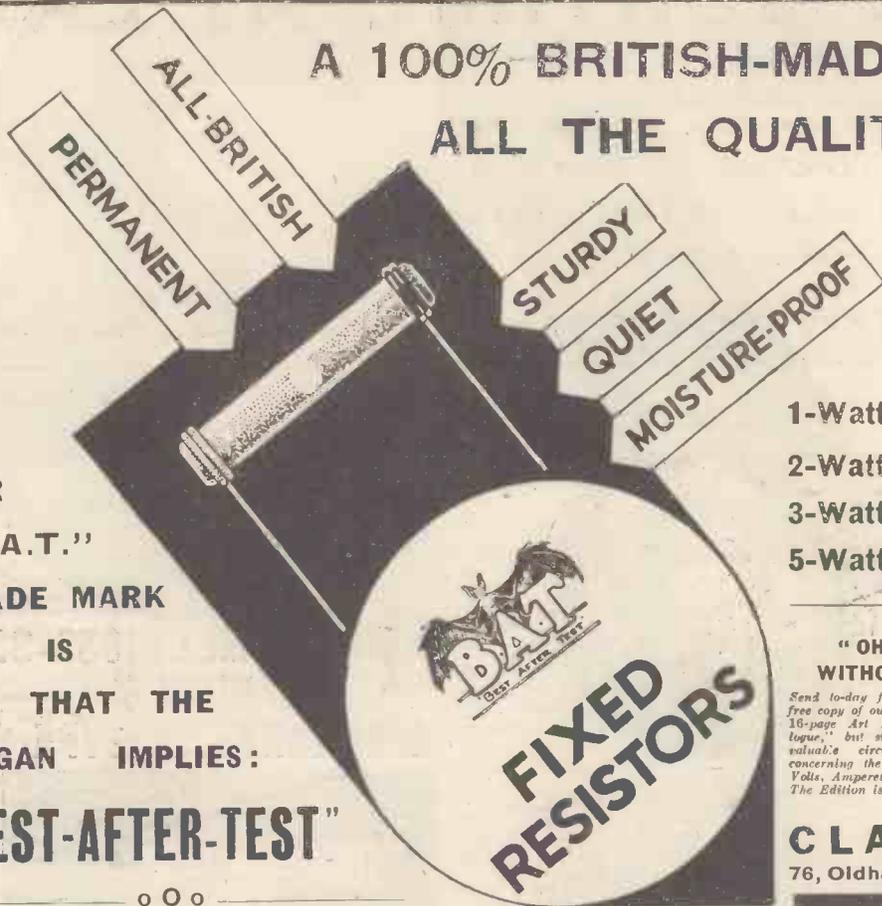
Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

NOW . . . from the LYONS Laboratories . . .

A 100% BRITISH-MADE RESISTANCE WITH ALL THE QUALITIES YOU DEMAND !



OUR
"B.A.T."
TRADE MARK
IS
ALL THAT THE
SLOGAN IMPLIES:
"BEST-AFTER-TEST"



- 1-Watt - 10½d.
- 2-Watts - 1/9
- 3-Watts - 2/9
- 5-Watts - 4/0

"OHMS' LAW WITHOUT TEARS."

Send to-day for your free and post-free copy of our 2-colour, "Copyright," 16-page Art Booklet, "Not a 'Catalogue,' but simple illustrations with valuable circuits and 'ABAC,' concerning the 'mysteries' of Ohms, Volts, Amperes and Watts Dissipation. The Edition is limited.

● No matter what are the features you demand in the Resistors you use, you will find every requirement fulfilled in "B.A.T." (Best-After-Test) Resistors.

Their entirely new process of manufacture ensures that "B.A.T." Resistors are noiseless in operation, permanent in resistance value, and give really perfect voltage regulation. They are sturdily constructed and are definitely proof against surface flaking and the troubles it can cause. Perfect electrical connections are assured, the stout wire leads being heavily soldered to the resistor ends.

"B.A.T." (Best-After-Test) Resistors are definitely guaranteed to be 100% British and are also guaranteed to be non-capacitative and non-inductive.

There are no finer Resistors made than "B.A.T.," a fact substantiated by their widespread use by the leading British Radio Manufacturers.

CLAUDE LYONS LTD.
76, Oldhall St., Liverpool. 40, Buckingham Gate, S.W.1.

● VISIT STAND 23



BRING IN THE WORLD

At Full Loud-speaker Volume!

The Kilodyne 4 is the voice of the world, it receives stations from every Continent, and operates at loud-speaker volume. It opens up a vast new field of interest to the wireless fan.

Tunes down to 12 metres and is adaptable up to 2,000 metres, incorporates S.G. H.F. amplification, absolutely no hand capacity, perfectly smooth reaction, one dial tuning, has been designed by short-wave specialists and praised by leading short-wave critics. It is supplied complete ready for any home constructor to assemble easily or the individual components are obtainable separately.

Total cost of all parts, with blueprints, leads, grid battery, coils for 12.5/85 metres, not including valves, £6 17s. 6d.

Full constructional details with diagrams are contained in the new Eddystone Short Wave Manual. This manual also contains constructional articles for other S.W. Receivers, Adaptors and Convertors, and several interesting S.W. articles.

Sole Manufacturers:
STRATTON & CO., LTD.
BROMSGROVE STREET,
BIRMINGHAM.

London Service Depot:
WEBB'S RADIO STORES
164 Charing Cross Road, W.C.2
Telephone: Temple Bar 2944.

THE
KILODYNE 4

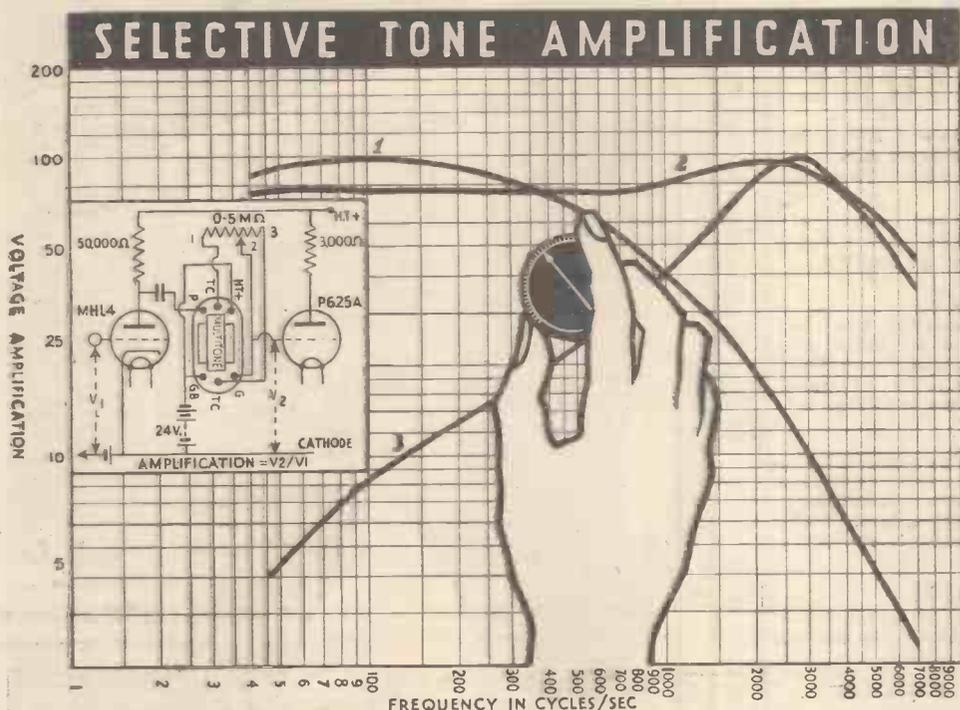


EDDYSTONE

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

TRUE TONE CONTROL AT LAST

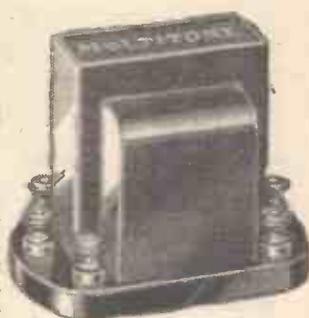
THE MULTITONE ELECTRIC COMPANY HAS SOLVED THE PROBLEM OF DESIGNING A LOW FREQUENCY INTERVALVE TRANSFORMER WITH VARIABLE SELECTIVE TONE AMPLIFICATION, CONTROLLABLE BY A POTENTIOMETER.



4/1 model. This Tone Control Transformer is eminently suitable for radiograms because it gives the best possible performance under widely varying conditions. This Transformer is recommended for all general use.

In addition to the standard Multitone 4/1 model, we have also produced two other models for special uses. The curves of all three are shown below.

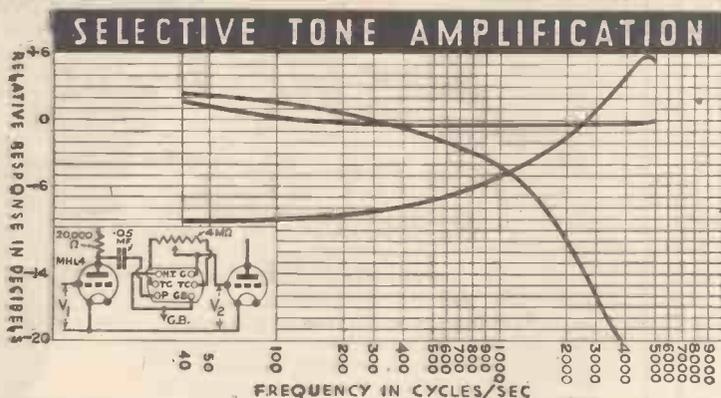
17'6



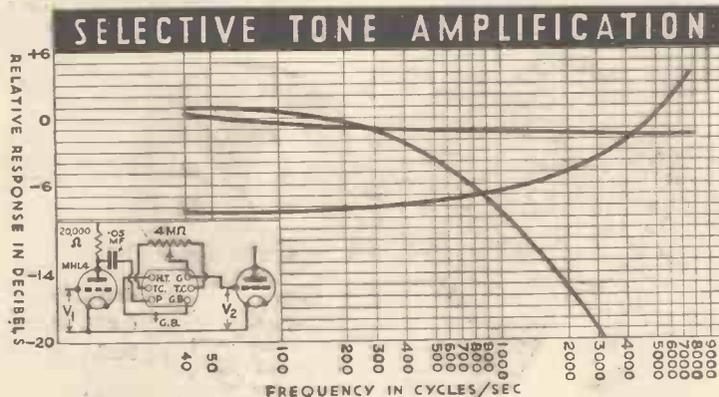
By changing the setting of the Potentiometer, the response-curve of the Multitone Transformer is progressively altered from a falling, through a level, to a rising characteristic. The limiting responses, and an intermediate level-response, are shown by these curves.

Any good Potentiometer exceeding 0.5 megohms can be used with the Tone Control Transformer, but the best results are obtained with the Multitone Graded Potentiometer (Price 3/6), which has been specially designed for this purpose.

Our booklet on Tone-Control will be sent post free on receipt of a postcard.



3.5/1 model. In radio sets and radiograms which aim at a definite 5 kc. audio-frequency band, this model gives True Tone Control over a wide range.



3/1 model. In radio apparatus which aims at the highest quality reproduction, it is desirable to control the response right up to a cut-off just below the heterodyne beat frequency between adjacent carriers. This aim, with the same principle of Tone Control, is realised in this model.

MULTITONE

TONE CONTROL L.F. TRANSFORMER

MULTITONE ELECTRIC CO., LTD., 95-98, WHITE LION STREET, LONDON, N.1
Telephone: North 5063

DUBILIER

INTRODUCE

R

A DRY

ELECTROLYTIC CONDENSER

WITH 6 STAR FEATURES

In the new Dubilier Dry Electrolytic Condenser you have a component of outstanding features. Read for yourself of its six great advantages . . . and think how completely this Dubilier Electrolytic Condenser fills your every demand in this type of condenser. Then remember . . . it is made by Dubilier. And that means that it is as efficient as the finest craftsmanship in the industry can make it. It has already been adopted as a standard by leading set makers.

CONSTRUCTION.

★ The condenser consists of a positive and a negative electrode with a separator impregnated with the electrolyte. The whole is mounted inside a sealed aluminium container fitted with a moulded terminal insulator.

VOLTAGE RATING.

★ The maximum peak voltage (D.C. and A.C. peak) on these condensers should not exceed 450 volts. The actual A.C. ripple voltage impressed may be as high as 70 volts r.m.s.

OVERLOADS.

★ If Dubilier Electrolytic Condensers are subjected to a transient over-voltage, they reform on restoration of normal voltage. A permanent overload, of course, will destroy the condenser.

LEAKAGE.

★ The D.C. leakage current of these condensers is very low. It drops quickly to a fraction of a milliampere after a short period on load. The recovery after a period of rest is also very rapid.

POWER FACTOR.

★ The power factor of these condensers is about 8% which is less than half that of the aqueous types.

TEMPERATURE RANGE.

★ The electrolyte in these condensers contains no free water, and since it is not liquid there can be no splashing or creeping of electrolyte from them. It will not freeze and the condensers are undamaged by exposure to any extremes of cold.



4mfd. Price 4/6
6mfd. Price 5/-
8mfd. Price 5/6

DUBILIER CONDENSER CO. (1925) LTD.

Ducon Works, Victoria Road, North Acton, London, W.3.

WHAT IS BEHIND THE SPEAKER—



If it is a

Darwin
COBALT STEEL PERMANENT MAGNET

You can rest content that you are purchasing a speaker of the highest class. The efforts of our research department have been so successful that DARWIN Magnets have established a definite superiority for Tonal Reproduction, Sensitivity and Long Life. A fact which speaks for itself, is that one out of every two speakers on the market is fitted with a DARWIN Magnet!

OLYMPIA Stand No. 70

Darwins Ltd
CORRECT MAGNET DESIGN
FITZWILLIAM WORKS, SHEFFIELD

ASK YOUR DEALER — IS IT A "DARWIN"?

DOMINION

RECEIVERS

ALL-STEEL CHASSIS

and

MOVING COIL SPEAKERS



Steel for accuracy... steel for rigidity... steel for reliability

The life and reliability of a building depend to a very great extent on the foundations. The same applies to a Radio Receiver—that is why we are employing a Steel Chassis in our 1933 models—Steel for Reliability.

A highly efficient Moving Coil Speaker is built into each cabinet, so that perfect QUALITY of reception is assured.

Every component is subjected to exhaustive tests before being incorporated in the Receiver. Every Receiver complete with its respective B.R.V.M.A. valves is aerially tested before it is allowed to leave our works.

The cabinets are manufactured from the finest selected timber, and of attractive and modern design. In the case of the Battery models, provision has been made in the cabinet to accommodate all batteries.

The 1933 Models can therefore be relied upon for Quality and Reliability in both reception and construction.

Brownie Wireless Co.(G.B.)Ltd., Nelson St. Works, Mornington Crescent, W. 1

ALL-STEEL CHASSIS
★ RECEIVERS ★



DOMINION 2 VALVE A.C. MAINS RECEIVER

Attractive solid figured oak cabinet . . . all-steel chassis . . . built-in moving coil speaker giving vivid and natural reproduction . . . British Detector, Pentode and Rectifying mains valves . . . illuminated slow motion control . . . three aerial tapplings . . . provision for gramophone pick-up and external loud speaker . . . fitted with mains switch. Complete

9 Gns.

including valves and royalty, or 16/9 down and 12 monthly payments of 16/9.



DOMINION BATTERY S.G. 4 RECEIVER

Beautiful figured walnut cabinet . . . all-steel chassis . . . built-in moving coil speaker for highest standard reproduction . . . British screened grid, H.F., L.F. and X.P. 230 valves . . . High Power 150v. H.T., grid bias batteries and L.T. accumulator . . . illuminated slow motion control. Complete

£12 - 10

including valves and royalty and all batteries, or 22/3 down and 12 monthly payments of 22/3.



DOMINION A.C. MAINS S.G.P.3 RECEIVER

Figured walnut cabinet, handsome appearance and beauty of design . . . all-steel chassis . . . built-in moving coil speaker, a revelation of quality with wonderful volume . . . British Screened Grid, Detector, Pentode and Rectifying mains valves . . . illuminated slow motion control . . . selectivity and volume control . . . ganged condensers . . . matched screened coils . . . three aerial tapplings . . . provision for gramophone pick-up and external loud-speaker . . . fitted with mains switch.

Complete

15 Gns.

including valves and royalty, or 28/- down and 12 monthly payments of 28/-.

AN OUTSTANDING



CONTRIBUTION TO COMPACT SET CONSTRUCTION

The new Formo catalogue illustrates many unique improvements in up-to-date components, all moderately priced. Get your copy to-day.

Olympia Stand 100

With the new Multicoupler transformer, Formo again leads the way in better performance and revolutionary improvements. Set construction is simplified by the introduction of a double electrostatic and electromagnetic screen, which permits the Multicoupler to be placed close to an unscreened mains transformer or in the vicinity of H.F. fields without fear of high frequency interference.

The special nickel alloy core is so designed that the primary inductance is not diminished by its economical arrangement also incorporates alternative feed resistances and a coupling condenser. With its eight terminals, which provide a wide combination of connections, the Multicoupler is a very useful component at a useful price.

The MULTICOUPLER

10/6

THE FORMO 'NIGEN' TRANSFORMER

The Formo Nigen Transformer, like the Multicoupler, has a special nickel alloy core, economically arranged without diminishing primary inductance, and is also fitted with a double screen. It is, without doubt, the most efficient L.F. transformer yet produced at such a modest price.

8/6



If any difficulty in obtaining Formo components locally, write to:
The FORMO CO.
 Crown Works, Regent's Park, Southampton.
 London Office: 23, Golden Square, Piccadilly Circus, W.1.
 Telephone: Gerrard 2088.

The well-known McMichael "Colonial" Receiver with specially designed "M-L" Anode Converter. The latter replaces the H.T. batteries or accumulators and operates from 6, 12, 32, 50 or 100 v. D.C., and gives 150 volts 30 m.a. with tapping at 80 volts; grid bias tapings at 1½ and 9 volts. Price complete, £13.10.0



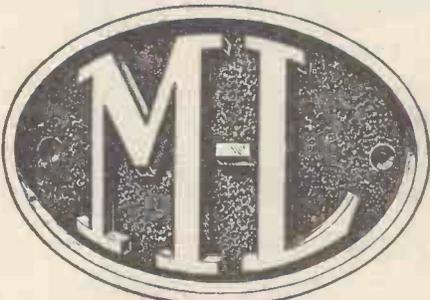
Used and Recommended by L. McMICHAEL LTD., SLOUGH

A smooth constant H.T. supply is always ensured by the "M-L" Anode Converter, which merely requires connecting to a 6 or 12 volt L.T. Battery. Very simple, generates pure D.C. and takes only very modest current from L.T. Battery or lighting plant. Silent in operation. Models to suit all Short and Long Wave Receivers.

Write now for full details and list from ROTAX LTD., RADIO DEPT. 1, WILLEDEN, N.W.10

For McMICHAEL COLONIAL, PHILIPS 2802 OR 2805

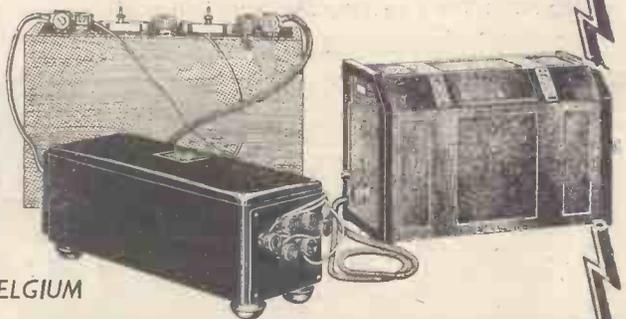
and other Short-Wave Receivers
 Get H.T. Current from L.T. Battery!



ANODE CONVERTERS

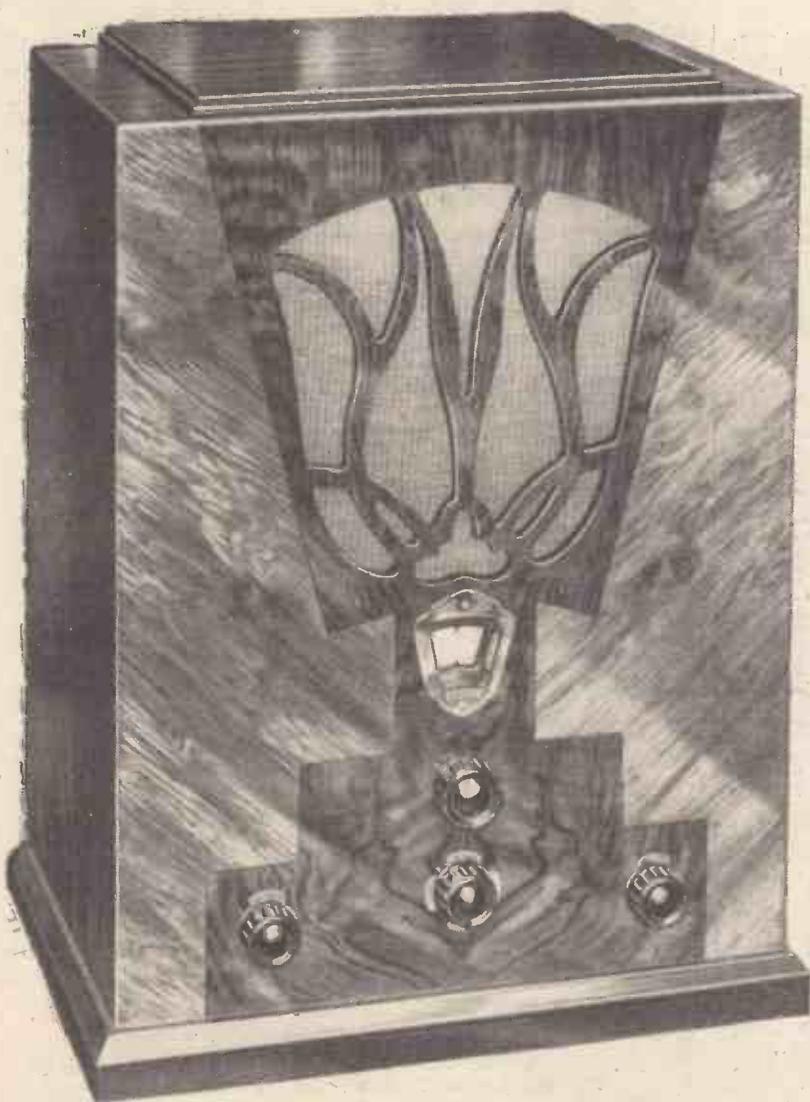
Philips Short-Wave Receiver with specially designed "M-L" Anode Converter. The latter replaces the H.T. batteries or accumulators and operates from 6, 12, 32, 50 or 100 v. D.C., giving 150 volts 30 m.a. with tapings at 100 and 50 volts; grid bias tapings at 4½ and 15 volts. Price complete, £13.10.0

Used and Recommended by PHILIPS, LONDON & BELGIUM



MAINS PERFORMANCE, BATTERY FED.

The **LOTUS** sensational BAND PASS



This de Luxe model is undoubtedly the "last word" in Battery Operated Receivers—in appearance and in performance it is identical with expensive modern all mains sets. The radio side is exactly the same as our A.C. model, which incorporates Band Pass Tuning and has been so successfully designed by our Engineers that it is now possible and economical to work a set of this class from dry batteries.

It incorporates a Permanent Magnet Moving Coil Speaker and the H.T. consumption is only 9 M.A. This set constitutes one of the greatest advances in Radio construction and is a tribute to the skill of our Engineers.

3

14 GNS

H.P. TERMS

Price complete with Exide and Drydex Batteries, ready for immediate use, is 14 Gns. (including Royalty £1), or £1-7-9 deposit and 11 monthly payments of £1-7-9.

LOTUS DESIGNERS FIRST IN THE FIELD AGAIN

★ Send NOW for Folder (free) giving full details of the Set. If you also require your copy of the Booklet, "Choosing a Wireless Set," enclose 3d. in stamps.



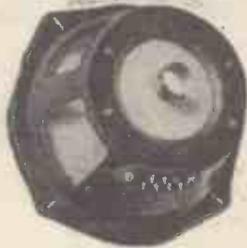
LOTUS RADIO LTD., MILL LANE, LIVERPOOL LEADERSHIP

SONOCHORDE

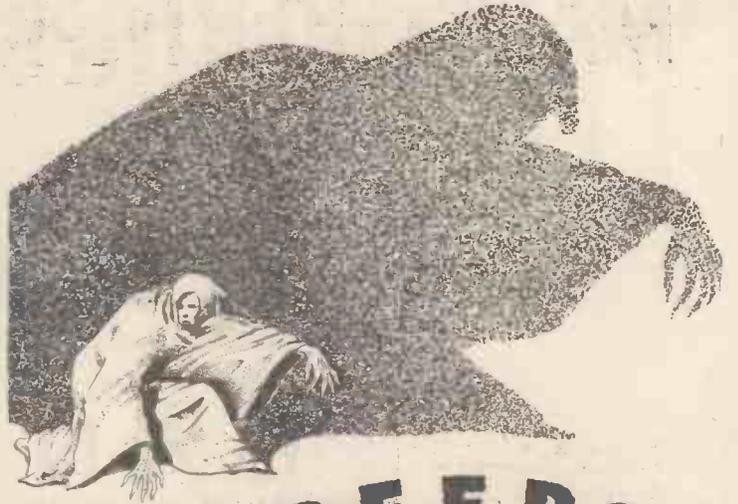
the Speaker with the Permanently Aligned Speech Coil

Be sure to visit Stand 262 to see and hear the new Sonochorde range of moving coil speaker units. Sonochorde employs the new concentric disc method of suspension which ensures permanent alignment of the speech coil—a greater overall frequency response and added sensitivity. Note the attractive prices, all of which include a universal transformer suited to either pentode or power output valves.

Sonochorde speakers are also available in dual matched pairs.



Note the new and revolutionary SONOCHORDE centring disc. It increases sensitivity, affords a better response and eliminates service difficulties.



IT CREEPS—
it creeps on you every night!

SLOWLY INSIDIOUSLY

Valve deterioration is not sudden like switching out a light. It is so gradual in fact that you scarcely notice any difference until you realise that your wireless receiver is failing to give you really satisfactory reproduction.

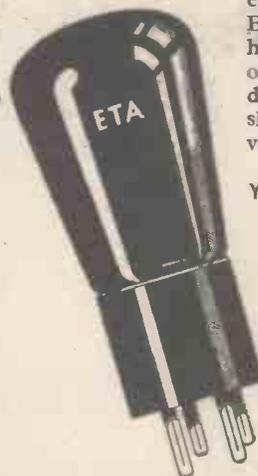
If only it were possible to compare your receiver as it is now by placing it beside the same receiver when you bought it a year ago, you would be astonished at the loss in tone value, selectivity and clarity it has suffered.

If you have had your set for twelve months, or even less with some receivers, and only one set of valves, you can be sure that it has lost some of its original purity and crispness. Fit a set of ETA valves to-day and it will be as good as ever it was or even better.

ETA valves give you the highest possible standard of reproduction. They deteriorate much more slowly than many other valves.

PRICES FROM
5/6

**YOU NEED NEW VALVES
GOOD VALVES — ETA VALVES**



ETA
THE INTERNATIONAL VALVE

STAND No. 262 OLYMPIA

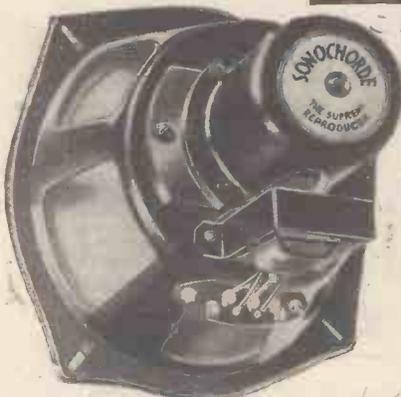


Permanent Magnet Model **32/6** complete

Mains Energised Models in 2500, 4700 and 6500 ohms. **25/-** complete

Dual Matched P.M. Units **65/-** The pair

Dual Matched Mains Energised Units **50/-** The pair



SONOCHORDE BROADCAST CONCERT

Be sure to listen to the Sonochorde Broadcast Concert transmitted from Radio Normandie 223 metres on Sunday next August 21st, 12 mid-night to 12.30 a.m.

SONOCHORDE REPRODUCERS

1, WILLESDEN LANE, LONDON, N.W.6.

Phone : Maida Vale 6066 (5 lines).

SERVICE COUPON

To the ELECTRICAL TRADING ASSOCIATION LTD., Aldwych House, Aldwych, London, W.C.2.

A. Please let me know the correct type of ETA valves to replace my present valves which are as under

1..... 2..... 3..... 4..... 5.....
(Insert type letters and number)

B. Please advise me which ETA valves to use for the following receiver or circuit.

Specify Type No. and Name

Name.....

Address.....

W.W. 15 8.32

WESTINGHOUSE AT OLYMPIA

RADIO EXHIBITION

AUGUST 19TH—27TH

JUST RELEASED



GET A COPY AT STAND 89



METAL RECTIFIERS

—the rectifiers of to-day and to-morrow

H.T.

Type	D.C. OUTPUT		Price
	Volts	mA.	
H.T.5	120	20	12/6
H.T.6	175	25	15/-
H.T.7	200	28	17/6
H.T.8	250	60	18/6
H.T.9	300	60	21/-
H.T.10	200	100	21/-
H.T.11	500	120	35/-
	400	150	

YEAR by year the Radio Exhibitions show the advances made in the Wireless Industry. This year marks another step forward and on **STAND 89** will be shown the Westinghouse contribution to the march of progress. Do not miss this exhibit. The complete range of Westinghouse Metal Rectifiers will be on view—a range covering eliminator, receiver and battery charging needs—and there will be a demonstration of moving-coil loud speakers, the pot magnets of which are fed from the A.C. mains by means of a Westinghouse Metal Rectifier.

L.T.

Type	D.C. OUTPUT		Price
	Volts	Amps.	
L.T.1	6	0.25	10/6
L.T.2	6	0.5	11/-
L.T.4	6	1.0	13/-
L.T.5	12	1.0	15/-
L.T.6	6	2.0	30/-
A.4	9	2.0	39/6
A.6	6	3.0	47/6

THE WESTINGHOUSE BRAKE & SAXBY SIGNAL CO., LTD., 82, YORK ROAD, KING'S CROSS, LONDON, N.1

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DUBILIER

OFFER YOU
CONDENSERS OF
GREATER FACTOR
OF SAFETY AT
LESS COST



Now there is no excuse for taking risks in choosing Condensers. Dubilier have brought condenser dependability within the reach of everyone. Now, at prices comparable with those you have hitherto paid for condensers of questionable quality, you can buy Dubilier Condensers and know, when your Set fails you, that it is not a condenser at fault.

This Dubilier range meets every constructor's demands. It includes the condensers you need at the prices you want to pay.

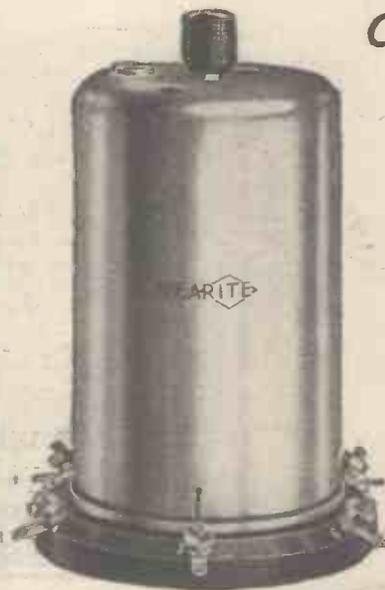


TYPE L.S.A		TYPE B.S.		TYPE L.S.C.	
400 volts D.C. (peak) working	1,000 volts D.C. test	250 volts D.C. (peak) working	500 volts D.C. test	800 volts D.C. (peak) working	1,600 volts D.C. test
.5 μf. ... 2/6	1 " ... 3/-	1 μf. ... 2/-	2 " ... 2 ⁷ / ₈	.5 μf. ... 5/-	1 " ... 6/-
2 " ... 4/6	4 " ... 8/-	4 " ... 2/-	6 " ... 2 ⁷ / ₈	2 " ... 9/-	4 " ... 16/-
6 " ... 12/-	10 " ... 18/-	4 " ... 5/-	10 " ... 36/-	6 " ... 24/-	10 " ... 36/-

DUBILIER CONDENSER CO. (1925) LTD.,
DUGON WORKS, VICTORIA ROAD, N. ACTON, LONDON, W.3

GET THE BEST FROM YOUR "BABY-SUPER" — use these

WEARITE
COMPONENTS



The WEARITE I.F. TRANSFORMER

ONLY when the best goes into a set can the best come out of it—that is why the designer of the "Baby-Super" went to Wearite for those vitally important components—the intermediate frequency transformers. With a reputation second-to-none in the design and construction of coils, Wearite guarantee every coil supplied to conform in every particular to the specification laid down by the author of the set. You will need two of these transformers and the following Wearite parts for your "Baby-Super."

PRICE 12'6 each

(Guaranteed to Author's Specification)

YOU WILL ALSO NEED THE FOLLOWING:—

Wearite Combined Volume Control (15,000 ohms) Q.V.C. and Mains Switch G40

PRICE 6'6

Wearite Mains Switch G40

PRICE 1'6

5 Wearite 5-pin Valve Holders

PRICE 1'3 each

and range of new Wearite D.R. Resistances—values as specification.

SEE THE "BABY-SUPER" ON THE WEARITE STAND 82 at OLYMPIA

—together with the complete range of Wearite components—each and all built with the constructors need always in view.

Write now for applicable leaflet, or for details of any component you are needing. Remember, too, Wearite solve your technical problems free—address to "Information Department."

WEARITE
COMPONENTS

WRIGHT & WEAIRE, Ltd., 740, High Road, Tottenham, N.17
TELEPHONE: Tottenham 3847-8-9



LATEST PHASES in MODERN RADIO

To the practical minded experimenter and the highly critical listener, R.I. once again present a programme of still Better Radio in components and sets that, to-day, are greatest in their real utility, reliability and value. They set the standard of future practice and so retain a lead which, for over 10 years, R.I. have never failed to hold. Ask for your copy of the new R.I. Catalogue—free from your dealer or us.

“PARAFEEED” COUPLING UNIT

The whole original “Parafeed” system now completely metal screened within a bakelite case, with provision for earthing.

The “Parafeed” Transformer included in the coupling unit gives ratio changes of 1:2, 1:3, 1:4. The resistance capacity unit is completely ISOLATED from the transformer and eight terminals are fitted on base, four each side so that the transformer and resistance, although encased, can be connected in ten different ways by following diagrams issued with each unit. The facilities provided for changing the ratio permit of the valve and coupling unit GAIN to be adjusted to suit any conditions. For constructors this feature is an absolute necessity. The internal resistances and condenser have values as originally recommended for the “Parafeed” system. The unit is also efficient for:—

1. Utilising the “Parafeed” as a gramophone Pick-up input transformer.
2. Choke feed connection to the “Parafeed.”
3. Push-pull input in a novel method employing one additional “Parafeed” only.

Get the fully descriptive brochure which shows ten alternative methods of connecting the unit.



11/9

A REVOLUTION IN SHORT WAVE PRACTICE—The “ANTINODAL” SHORT WAVE COIL UNIT

This wonderful new unit has revolutionised short wave practice. It comprises a short wave coil incorporating a loading inductance which provides or allows an alternative electrical position for the serial coupling coil. It bridges dead spots and always provides sufficient SMOOTH reaction to produce oscillation at all tuning positions.

Stations difficult or impossible to receive can now be tuned in with ease and certainty.

6/9



The “Antinodal” Coil Unit is incorporated in the “Antinodal” Short Wave Amplifier Adaptor which enables battery driven receivers to obtain any stations on wavebands between 12 and 80 metres besides the normal wavebands. It is the only S.W. adaptor permitting the detector of the existing set to be used for amplification purposes. Price 90/-

THE NEW 6 VALVE A.C. MAINS SUPER-HETERODYNE SET

25 GNS.

A “Super-Het.” of amazing performance. Reception is clear, selectivity is “knife-edged,” the moving coil speaker gives volume loud enough for a dance hall. Mains hum is entirely absent. It is designed for operation with internal or external aerial. Facilities are provided for Gramophone Pick-up. A novel multiple switch covers “on,” “off,” gramophone and wave change and operates a shutter on the illuminated dial which exposes the “short” or “long” wavelengths as desired and covers them when the pick-up is required. A control is provided enabling the tone of reproduction to be varied to suit the listeners individual taste.



HANDSOME WALNUT CABINET

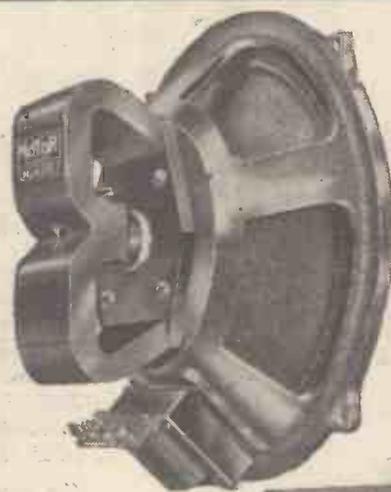
THE NEW “MADRIGAL” 3 VALVE A.C. MAINS RECEIVER 17 GNS.

Exactly covers the changes in Broadcast Radio and Developments in Electric Mains Supply. An absolutely reliable receiver that may be safely recommended by the man who knows. Brilliantly designed circuit ensuring perfect reproduction, and full volume on the widest range of stations. Robust chassis and valves for serviceability. Handsome, figured walnut case. Simple controls. Moving coil P.M. type loud speaker. Gramophone pick-up provision. No external aerial necessary for local stations. Illuminated scale calibrated in wavelengths.

R.I. Ltd., Croydon, Surrey. Phone: Thornon Heath 3211.

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QUALITY is the MoToR POLICY



MoToR MINOR

Permanent Magnet
MOVING COIL
Including
Transformer
and Baffle
Board **39'6**

CHESTER . . . Handsome Walnut cabinet incorporating the MoToR Minor P.M. Moving Coil speaker.

65'.

MoToR Minor unit in attractive leatherette **BAFFLE CASE**, as illustrated below.

45'.

SUPERIOR performance and a high quality that will make you and your friends gasp with admiration—that is what MoToR has aimed at—and achieved, in the richness of tone, naturalness of speech, and unusual sensitivity of the MoToR Minor Moving Coil speaker.

Make quality your policy, too—pay a visit to our demonstration showrooms opposite Olympia and hear this and the full range of MoToR speakers under real working conditions.

Then you will realise that you don't need a new set—you just need a MoToR Minor.

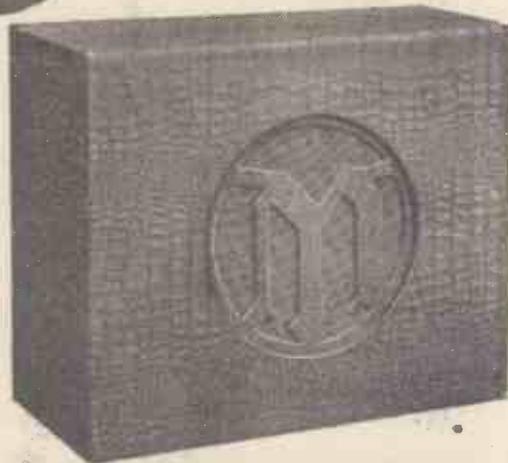
BRITISH
MADE

D.C. Resistance: 10 ohms.
Impedance of Speechcoil: 5 ohms. Approx. Coil Gap: 1 mm. Transformer Tappings: 25:1. 20:1. 15:1.

Demonstration Showrooms:
**67, HAMMERSMITH ROAD, W.14
OPPOSITE EMPIRE HALL**

TEKADE RADIO AND ELECTRIC LTD.
147, Farringdon Road, London, E.C.1. 'Phone: Clerk. 2486

In both moving coil and balanced armature type speakers, MoToR is supreme. Write for fully descriptive pamphlets to:



Stop..look..listen..at Radiolympia

This is British Radio's most spectacular show—don't miss it whatever you do! If you want to know anything about your Radio, or the Radio you hope will be yours, all your queries can be answered at Radiolympia by the experts who will show you all Radio's latest developments. Everyone who realises the important part played by Radio in modern life should visit Radio's most modern show. Listeners and constructors alike can find a thousand things to interest them. See you all at Radiolympia!

COME TO RADIOLYMPIA

WHERE BRITISH IS BEST!

AUGUST 19-27

ADMISSION 1/6

DANCING FREE

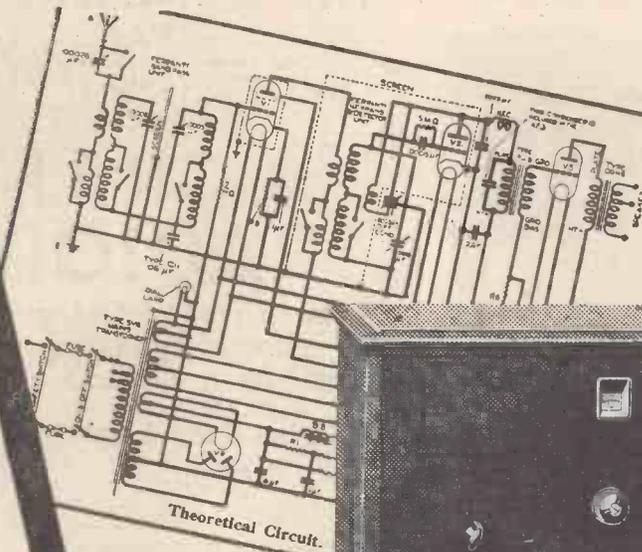
11 a.m. to 10 p.m. Daily

ORGANISED BY THE RADIO
MANUFACTURERS' ASSOCIATION

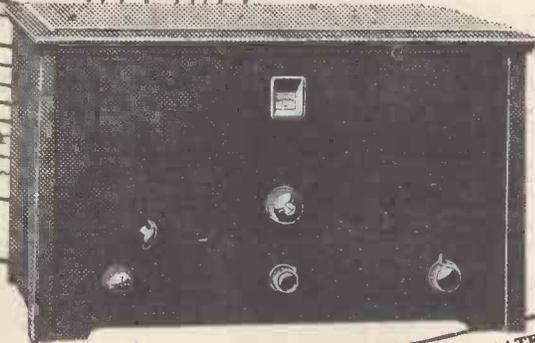
It is impossible to buy any completely manufactured set (at or about the same price) which can give anything like the **PERFORMANCE** of these

The Quality of reproduction is superb.

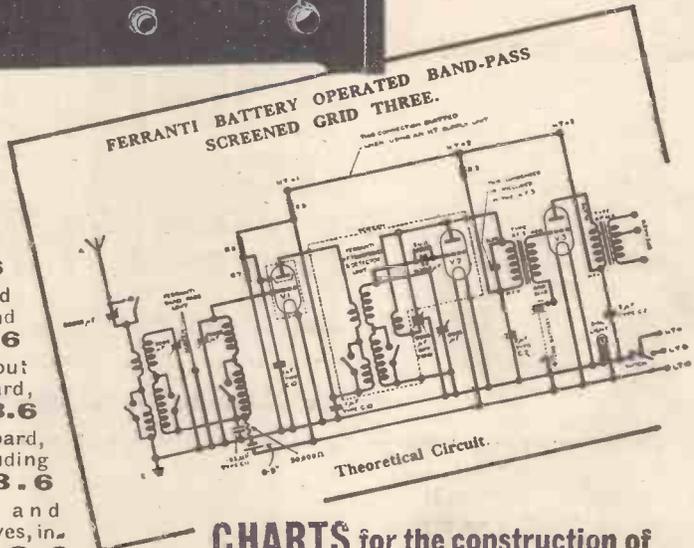
Ask for a Chart, and see the made-up Sets at **OLYMPIA Stand 78**



Completed Set in walnut finish Cabinet.



- PRICES :**
BATTERY KIT, without Valves, Batteries, Panel and Baseboard - **£7.14.6**
 With Panel and Baseboard, but without Valves and Batteries - **£7.19.6**
 With Cabinet, Panel and Baseboard, without Valves and Batteries - **£9.4.6**
A.C. MAINS KIT, without Valves, Panel and Baseboard, including Royalty **£10.18.6**
 With Panel and Baseboard, without Valves, including Royalty - **£11.3.6**
 With Cabinet, Panel and Baseboard, without Valves, including Royalty **£12.8.6**
FERRANTI H.F. BAND-PASS STAGE only, comprising Triple-Gang Tuning Condenser, Band-Pass Coils, etc. **£4.6.6**



CHARTS for the construction of either the A.C. Mains or Battery Model may be had from your dealer, or will be sent on receipt of 1½d. stamp.

FERRANTI BAND-PASS RECEIVERS

These Receivers have selectivity high enough to receive most of the worth-while Radio Transmissions available, maintaining at the same time **HIGH QUALITY REPRODUCTION**.

This result is largely due to our supplying the coils and tuning condensers adjusted together with great accuracy (plus or minus .000000125 mf. at minimum and plus or minus .00000075 mf. at maximum capacity) and having complete control of most of the vital parts on which success depends. Complete Kits or separate parts may be purchased and may be obtained immediately.

ALL FERRANTI COMPONENTS ARE AVAILABLE FROM STOCK

FERRANTI LTD. Constructors Section, HOLLINWOOD, LANCASHIRE

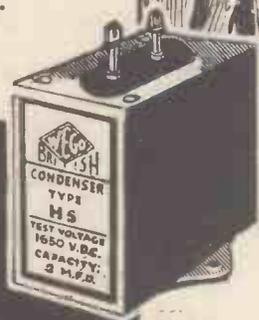
"WEGO, OF COURSE"

"... and by the careful selection of components we have reduced the cost of production testing to an absolute minimum."

"Eh? ... condensers? ... Why WEGO of course!"

IMPORTANT receiver manufacturers throughout the world are fitting WEGO Condensers to their production models because exhaustive tests have shown them to be completely reliable and to conform to specification with an almost uncanny accuracy.

These manufacturers have unlimited facilities for testing components and stringent tests for searching out defects. Follow their lead and always specify WEGO.



An indication of prices :-

- 1 MFD 500 V.D.C. Test 1/9
- 2 MFD 500 V.D.C. Test 2/6
- 1 MFD 1650 V.D.C. Test 3/4
- 2 MFD 1650 V.D.C. Test 4/6



SEE THEM ON STAND No. 284 AT THE RADIO EXHIBITION.

The WEGO CONDENSER CO. Ltd., Spencer House, South Place, E.C.2. Works: PERIVALE, GREENFORD, MIDDLESEX. Phone: National 450.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

THE MANUWARES COMPANY
ANNOUNCE
ANOTHER NOTABLE ACHIEVEMENT
IN THEIR

GRAFTON RADIOPHONES

Transportable Instruments. Unsurpassed in compactness and construction with exquisite tone and faultless components.

3 Valve Band Pass Receiver.

Model 505.

A.C. or D.C. Mains.

The felt and cork lined cabinet adds to the natural beauty of the moving coil speaker reproduction. It is fitted with electrically driven turntable and every component is of the best quality obtainable.



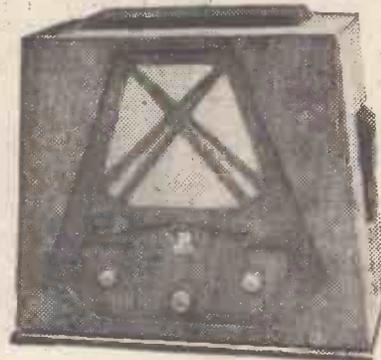
23 GNS. Mahogany or Oak

24 GNS. Walnut.

The GRAFTON TABLE-GRAND RADIOGRAMPHONE.

VISIT
STANDS Nos. 183 and 31
OLYMPIA

WHERE THESE INSTRUMENTS ARE DISPLAYED.



3 Valve Band Pass Receiver.

Model 405.

A.C. or D.C. Mains.

Illuminated tuning scales calibrated in wavelengths. The three centralised controls are in the most accessible position. Provision is made for gramophone pick-up attachment.

The GRAFTON TABLE RADIOPHONE.

16 GNS. Oak, Mahogany, or Walnut.

GRAFTON RADIOPHONES are built to the highest standard of quality.

The
MANUWARES

Company,

79, LOTS ROAD,

CHELSEA, LONDON, S.W.10.

TEL.: FLAXMAN 3849.

BCM. JAY. DE LUXE.

POLAR STAR CONDENSERS



One of many features:
ACCURATE SPACING OF
VANES BY PRECISION
MACHINE ASSEMBLY.

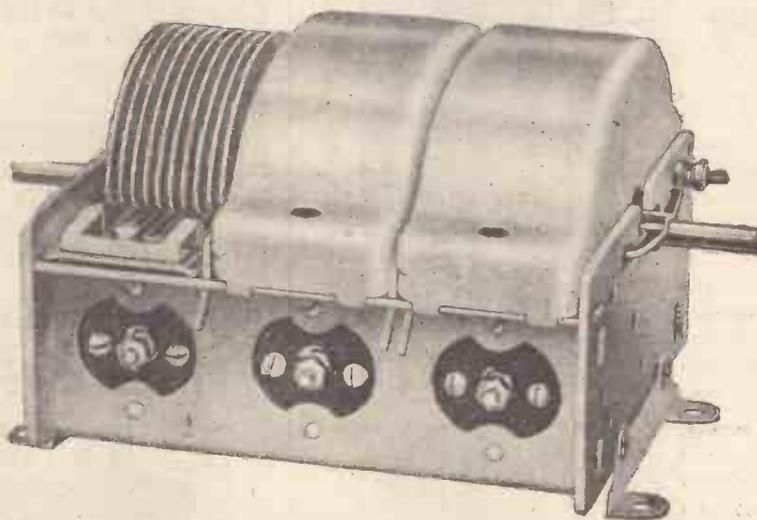
A splendid contribution to
superheterodyne circuits
is provided by the latest

POLAR STAR SUPERHETERODYNE THREE GANG CONDENSER

Why Polar only
was Specified for

THE

"BABY SUPER"



- 1. Cadmium plated steel frames.
- 2. Trimmers operated from top.
- 3. Accurate spacing of vanes.
- 4. Matched within $\frac{1}{2}$ of 1%, plus or minus 1 mmfd.

27'6

Two Sections .0005 with
one Tracking Section.
DISC DRIVE - - 5/-

POLAR CONDENSERS

NEW 36-PAGE CATALOGUE "W.S." FREE.

Continental Representatives:
FRANCE: W. A. Swift, 6, Rue Deguerry, Paris XI.
HOLLAND: Firma H. K. Smith, Keizersgracht, 150, Amsterdam C.
BELGIUM: M. M. de la Saulx & Steinbuch, S.A., 19, Rue du Japon Uccle, Bruxelles.

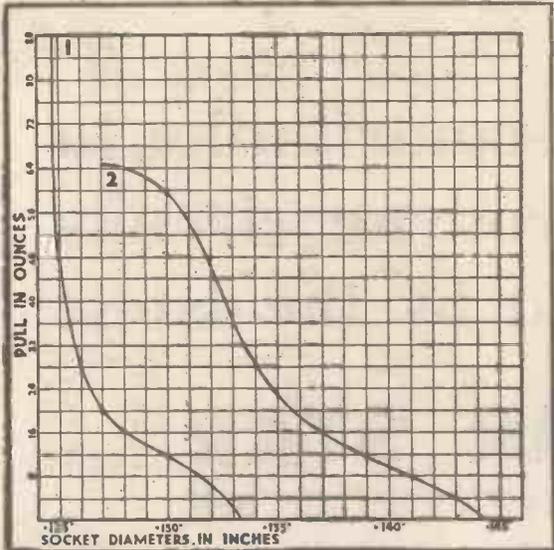


Admt. Wingrove & Rogers, Ltd., 188-9, Strand, London, W.C.2.

Polar Works, Old Swan, Liverpool.

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Which is the better plug ?



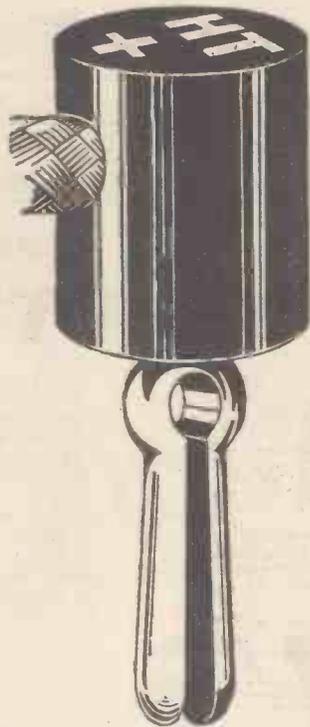
New "BOWSPRING" Wander plug

Some wander plugs grip a limited range of sockets strongly. Others adapt themselves to a wide range of sockets, but make such light contact that they easily come adrift.

The curves above record the performance of two wander plugs—(1) a typical 'split pin' type and (2) the new Belling-Lee "Bowspring."

Starting from a small socket, each plug has been pulled out and pushed into progressively larger sockets until no contact is made. The curves show the force in ounces needed to pull each plug from the various sockets.

A glance will show which is the better plug. The "Bowspring" gives strong pressure over a far wider range of diameters than any plug we have so far tested.



$1\frac{1}{2}^d$

BELLING-LEE
FOR EVERY RADIO CONNECTION

Advt. of Belling & Lee Ltd., Cambridge Arterial Rd., Enfield, Mdx.

NEW

PARMEKO

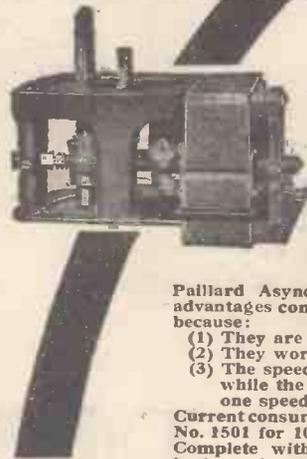
PRODUCTS

on view at Stand
GROUND 67 FLOOR

Don't miss this Stand. A whole new range of PARMEKO Transformers and Amplifiers has been brought out, and is shown for the first time. Representing the very latest word in construction. Ask for our new Catalogue (a really Complete transformer list) at the Stand, or write for it to

PARTRIDGE & MEE, LTD.,
74, New Oxford St., London, W.C.1, & LEICESTER
(Museum 5070) (Aylestone 487)

The PERFECT MOTOR for your RADIOGRAM must be ASYNCHRONOUS



TERMS FOR
HIRE PURCHASE
Type 1503, with
auto brake,
5/6 down and 11
payments of 4/9

Paillard Asynchronous motors have enormous advantages compared with the synchronous types because:

- (1) They are self starting.
- (2) They work on various periodicities.
- (3) The speed can be varied within wide limits while the synchronous motors run only at one speed and are not self starting.

Current consumption about 13 watts. 4" x 4 1/2" x 2 1/2".
No. 1501 for 100-130 v. No. 1503 for 200-250 v.
Complete with 12" Turntable, and combined brake and switch.

CONVERT YOUR RECEIVER INTO A RADIOGRAM WITH THE FAMOUS PAILLARD JUNIOR ELECTRIC ASYNCHRONOUS MOTOR WITH AUTOMATIC BRAKE **52/6**

READY NOW. The above motor running at 33 and 78 r.p.m. Price £3.0.0

APOLLO GRAMOPHONE CO., LTD.
(Dept. W.W.), 4-5, Bunhill Row, London, E.C.1.
Fully illustrated price list of motors and pick-ups on application.

ROLA

MODEL FP 2500

35/-

USED
and Specified

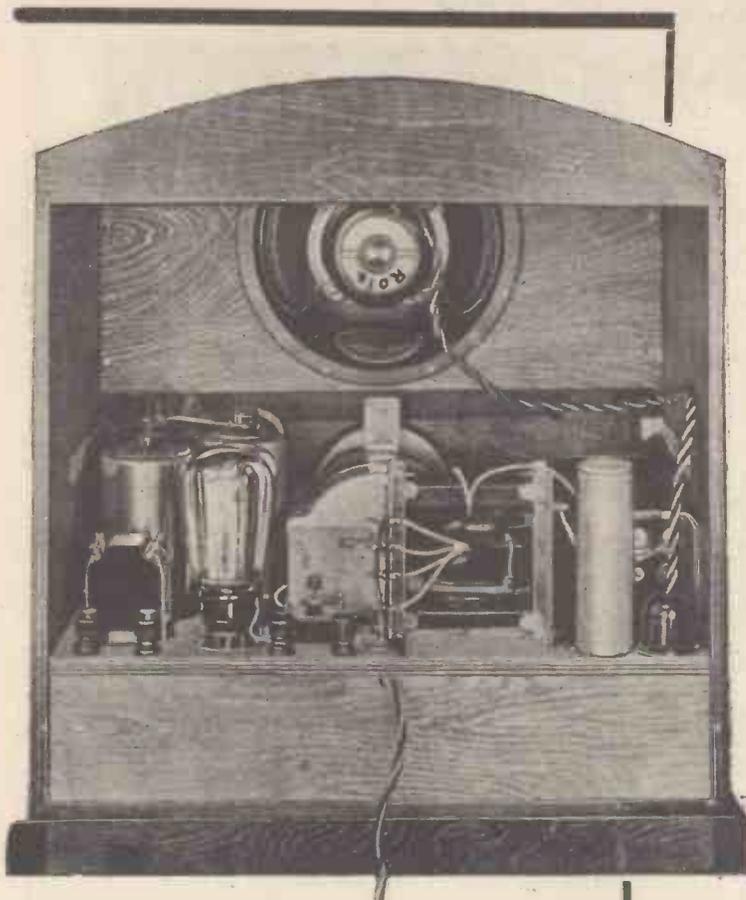
by the

Wireless World

for their "SET OF THE SEASON"

the

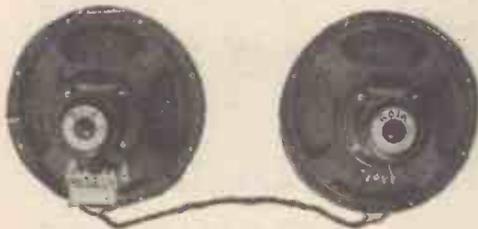
"BABY SUPER"



VISIT ROLA AT OLYMPIA
STAND 45

'Phone: Shepherds Bush 3205

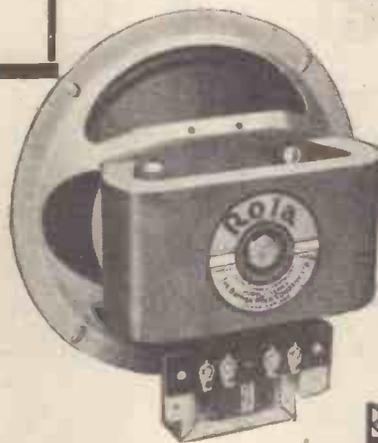
ROLA DUAL BALANCED PAIRS



Rola Dual Balanced Speakers have been supplied FOR SEVERAL MONTHS past to various Radio Manufacturers.

These speakers are so constructed as to secure a degree of tonal fidelity which no single speaker can possess. The inherent frequencies and resonant points balance out, resulting in almost perfect reproduction over the whole harmonic scale.

These pairs consist of two F6 (7 1/2 in. Cone) Mains Energised Speakers at £3 10s. Od. the pair, or one F6 (7 1/2 in. Cone) and one F7 (9 in. Cone) Mains Energised Speakers at £4 5s. Od. the pair, or a balanced pair of Permanent Magnet Speakers (7 1/2 in. Cone) at £5 2s. 6d. All pairs are complete with multi ratio Input Transformer suitable for triode, or pentode valve.



MODEL F5-PM
(6" Cone)

32/6

Field Excited
Type—8 ohms
(6-10v. D.C.),
2,000 ohms
(110-175v.
D.C.), 4,700
ohms (150-
200 v. D.C.)
and 6,300 ohms (200-250v. D.C.) — 27/6

Write to-day for details and prices of other models.

The Wireless World's expert designers know that ultimately the performance of the best of sets must depend upon its loud speaker. They chose Rola for the Wireless World Baby Super because it affords that brilliance of tone and fidelity of reproduction which only the finest Moving Coil Speakers can provide. A Rola speaker in your set will ensure a degree of acoustical accuracy which has never yet been approached. Select a suitable model from Rola's extensive range . . . the latest addition is illustrated herewith.

Rola Speakers are
The Outcome of 9 Years
Acoustical Research.

Made in Europe's most modern
Moving Coil Speaker Factory.

More copied in appearance BUT NOT
IN PERFORMANCE than any
other speaker in the History of Radio.

Fitted as Standard by the large
Majority of British Manufacturers.

The World's Finest
Reproducers.

Over 1 1/2 Million in Use.

ROLA SPEAKERS

for better
Radio Reception



THE BRITISH ROLA CO. LTD.
Brondebury Works,
179, High Road, Kilburn, N.W.6
Telephone: Maida Vale 5017-8-9.

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable.

Here's Proof of B.S.R. Performance



J. B. POSTLE, M.W.R.A.
Red Lion Street
AYLSHAM
Electrical Radio Engineer



June 25th. 1932.

Dear Sirs, It is with very great satisfaction I write you regarding your 50 watt Power Amplifier. This is a very sound job, and I am delighted with the output. The reproduction is wonderfully natural, the power beyond realisation. We had over 500 people dancing, and we received a great applause.

Yours faithfully,
J. B. Postle

P.S. You are quite at liberty to use this letter to let my fellow traders know that I have found something good.

B.S.R. Old Hill, Staffs.

Authorised Dealer
MARCONI PHONE CO'S LTD.
GENERAL ELECTRIC CO.
KOLSTER BRANDES
S. G. BROWN, LTD.
AMPLION LTD.
BURNDENTS
MEMICHAEL
MULLARD
PHILLIPS
COSSOR
LISSEN

The **BSR** 50 Watt Amplifier

ALL MAINS

Designed by, and manufactured under the personal supervision of Mr. D. McDonald, B.Sc. (Hons.), Assoc. I.R.E., the originator of Screened Grid Low Frequency Amplification.

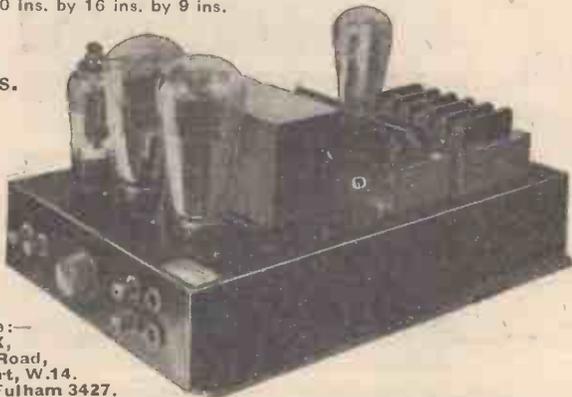
(LESS VALVES)
19 GNS.

Specification includes enamelled steel chassis, Screened Grid L.F. Amplification, Resistance Capacity Coupling, and 2 PPS/400 Power Valves. A 3-ratio Output Transformer is incorporated, also volume control. Two input tapings are provided for Radio and Gram. Pick-up, and three tapings for operation on mains of from 190/210, 210/230 and 230/250 v. 50 cycles. Plugs for supplying H.T. and L.T. A.C. to radio chassis are also incorporated. Dimensions: 10 ins. by 16 ins. by 9 ins.

The B.S.R. Radio Chassis for use with this Amplifier is now available.

Write for details.

Write for Particulars.



London Representative:—
R. D. ELCOX,
77, Perham Road,
Baron's Court, W.14.
Phone: Fulham 3427.

BIRMINGHAM SOUND REPRODUCERS
CLAREMONT WORKS, OLD HILL, STAFFS.

The famous **BRITISH GENERAL TUNING UNIT**



now reduced to **10'6**

See our display at the Radio Exhibition
AUGUST 19-27,

STAND 29

By reason of increased demand and enlarged production we are able this season to offer our well-known Tuning Unit at 10/6 instead of 14/6 as before. This Unit effectively replaces plug-in coils and covers the entire wave-band, from 200-2,000 metres. Easy fixing; simple tuning. Full instructions supplied with every model.

From all dealers or direct from the manufacturers—

BRITISH GENERAL MANUFACTURING CO., LTD.
Brockley Works, London, S.E.4

DO NOT MISS

the



1933
range

of
KABILOK
CABINETS

on
STAND 101
Ground Floor,
OLYMPIA

The
BEAUFORT

A typical example of the pleasing designs embodied in the new 1933 Kabilok Cabinets, used in the best "Wireless World" Radiograms recently published.



Write for Illustrated List.

W. & T. LOCK LTD. 5, ST. PETERS WORKS, BATH
London Showrooms: 11, Red Lion Square, W.C.1.

99 P.M.

SPECIAL FEATURES

- 1 Heavy Magnet forged from highest grade magnet steel.
- 2 Powerful and permanent energy.
- 3 Magnetic energy in air gap is exceptionally high—1,320,000 ergs.
- 4 Pole pieces cadmium plated to prevent rusting.
- 5 Milam side plates are fitted to the Magnet to exclude dust and magnetic particles from being attracted into the air gap.
- 6 Specially designed cone and speech coil. Astonishing faithful reproduction.
- 7 Valve matching transformer incorporated. Undistorted output 3½ watts.

PRICE

59'6

Write for Catalogue
W.W. 50.S.

makes Moving Coil History

BRITISH MADE



There are many moving coil speakers but only one Blue Spot 99 P.M.—and it is absolutely and completely unique.

No misleading figures as to flux density are given since these do not give a true indication of the quality of the magnet. An inferior magnet will give a very high flux density in a small air gap. The magnetic energy in the air gap of Blue Spot 99 P.M. is of the exceptionally high order of 1,320,000 ergs. 99 P.M. is a speaker of the highest quality from every point of view.

THE BRITISH BLUE SPOT COMPANY LTD

BLUE SPOT HOUSE · 94/96 ROSOMAN STREET · ROSEBERY AVENUE · LONDON · E.C.1

Telephone: Clerkenwell 3570.

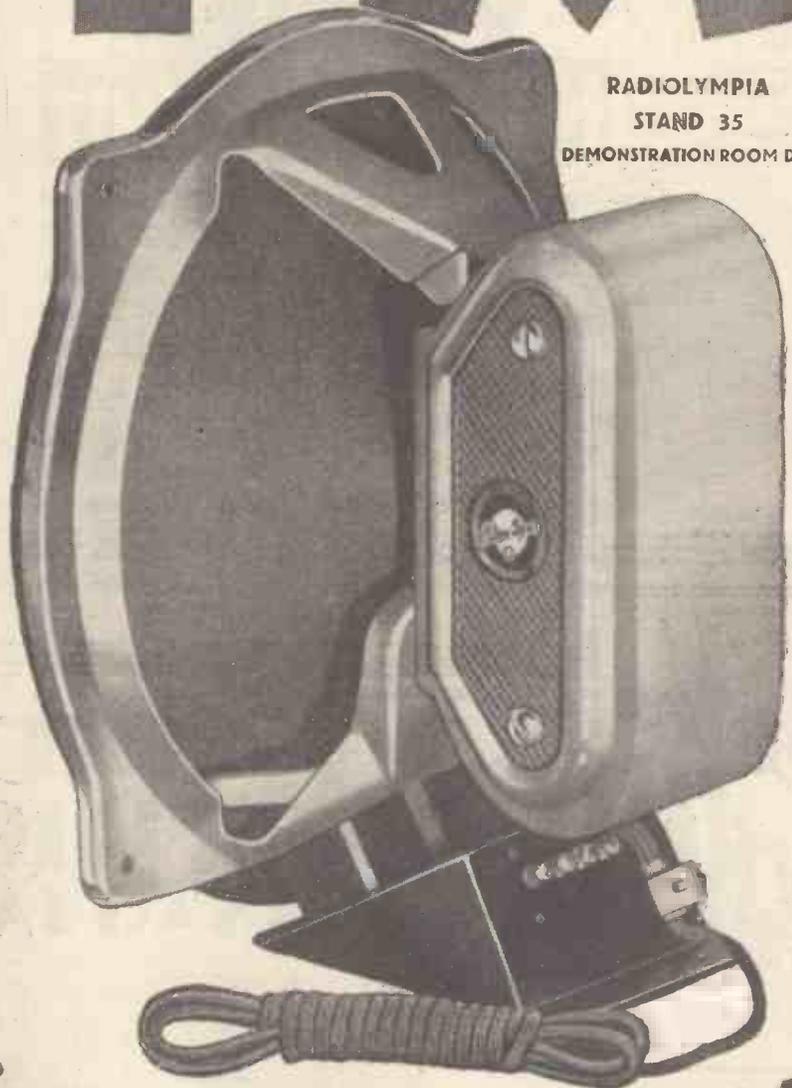
Telegrams: "Bluspot, Isling, London."

Distributors for Northern England, Scotland and Wales: H. C. RAWSON (Sheffield and London), Ltd., 100, London Road, Sheffield; 22, St. Mary's Parsonage, Manchester; 44-46, High Bridge, Newcastle; 37-8-9, Clyde Place, Glasgow.

RADIOLYMPIA

STAND 35

DEMONSTRATION ROOM D13



"It is all that You say"

High Tension Current will cost you practically nothing if you use the Milnes H.T. Supply Unit. The Unit is definitely better than mains supply. It gives a dead silent background, and will operate the largest set. For constant voltage, steady current and long life it cannot be surpassed. Its action is entirely automatic, for the Unit is charged from the L.T. accumulator when the set is not in use, with comparatively no increase in your L.T. consumption. It is impossible to damage the Milnes Unit, or waste L.T. Current by overcharging, and the Unit requires very little attention. Write to-day for full details.

PRICES IN U.K.	
90 Volt	£2-18-0
120 Volt	£3-16-0
150 Volt	£4-14-0

MILNES H.T. SUPPLY UNIT

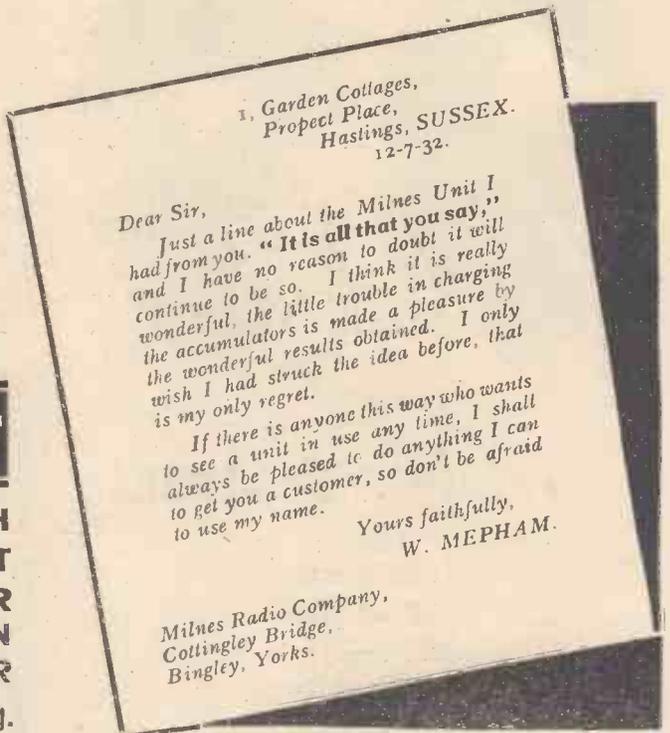


Many People have already scrapped their Eliminators in its favour.

SUPPLIES HIGH TENSION CURRENT FROM YOUR LOW TENSION ACCUMULATOR practically for Nothing.

Telephone: Bingley 500.

MILNES RADIO COMPANY
Aire Works, Cottingley Bridge, Bingley, Yorks.



1, Garden Cottages,
Propect Place, SUSSEX.
Hastings, SUSSEX.
12-7-32.

Dear Sir,
Just a line about the Milnes Unit I had from you. "It is all that you say," and I have no reason to doubt it will continue to be so. I think it is really wonderful, the little trouble in charging the accumulators is made a pleasure by the wonderful results obtained. I only wish I had struck the idea before, that is my only regret.

If there is anyone this way who wants to see a unit in use any time, I shall always be pleased to do anything I can to get you a customer, so don't be afraid to use my name.

Yours faithfully,
W. MEPHAM.

Milnes Radio Company,
Cottingley Bridge,
Bingley, Yorks.

See the
CHALLIS
TRANSFORMERS

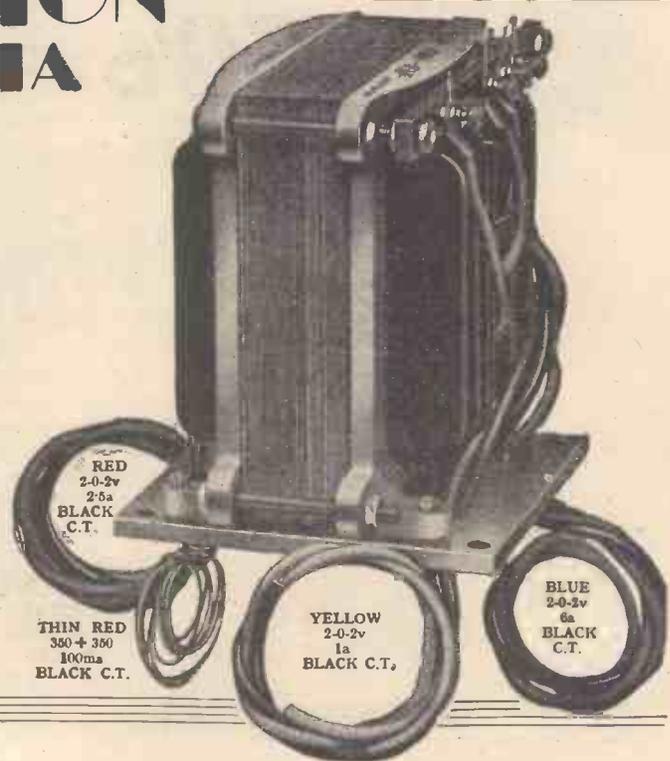
RADIO EXHIBITION OLYMPIA

PRICE
37/6
EACH

Specified AND INCLUDED in the **Wireless World** "MONODIAL A.C. SUPER"

Send for a list of Transformers and Chokes for the New Rectifiers

CHALLIS TRANSFORMERS PARK RD., RUGBY



RED 2-0-2v 2-5a BLACK C.T.

THIN RED 350 + 350 100ma BLACK C.T.

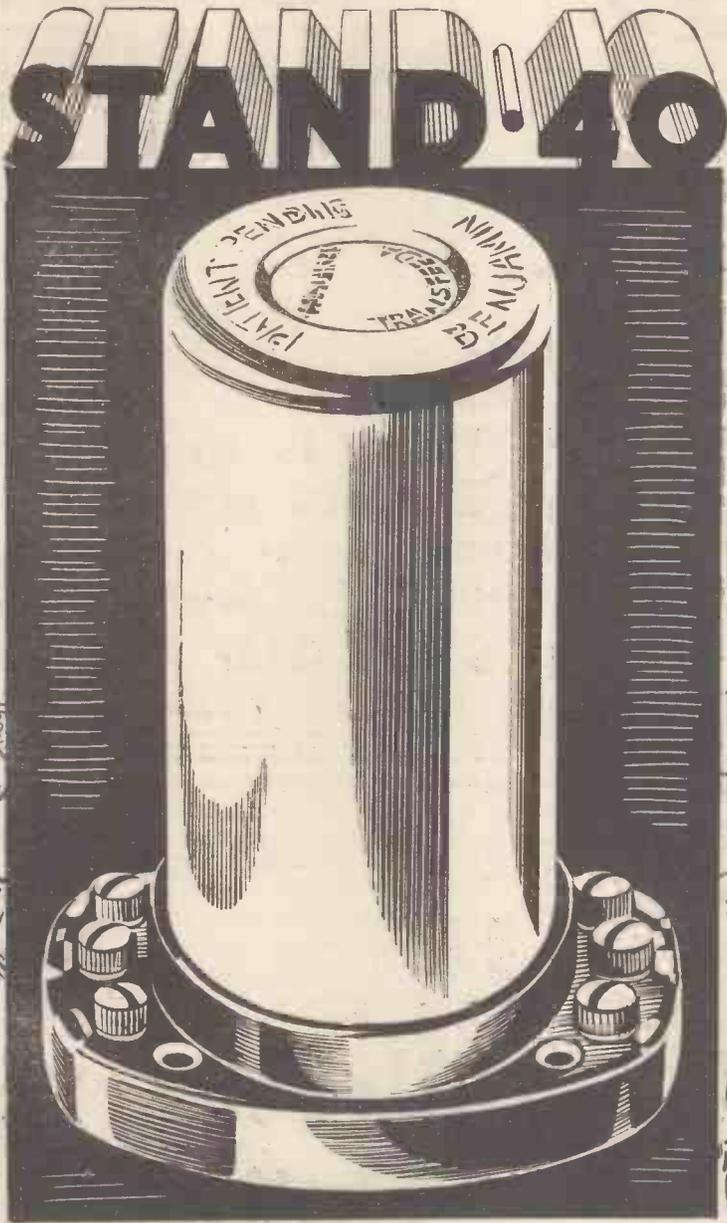
YELLOW 2-0-2v 1a BLACK C.T.

BLUE 2-0-2v 6a BLACK C.T.

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See the "TRANSFEEDA"

at



PRAISE INDEED!

"even if anything better could be accomplished we could not as yet make use of it."

This is what "Popular Wireless" has to say after testing out the **BENJAMIN TRANSFEEDA**—the original resistance fed transformer that is creating such a stir amongst set Designers and Constructors. The **BENJAMIN TRANSFEEDA** has revolutionised L.F. amplification practice. Fit a Transfeeda in place of any transformer and you will be delighted with the full, round, distortionless volume you will get from your receiver for the modest outlay of **11/6**. If you can't get near **STAND 40** at the Exhibition let us send you List 1292, which describes the Transfeeda fully and gives diagrams and circuits on how to use it.

BENJAMIN

THE BENJAMIN ELECTRIC Ltd. TARIFF ROAD, TOTTENHAM, N.17

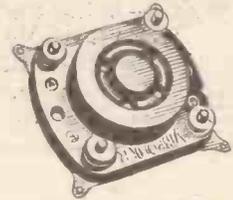
★ *Note these reduced prices.....*

FIVE-PIN



7/6d 1/3d

VIBROLDER



7/6d 10d

CLEARERTONE



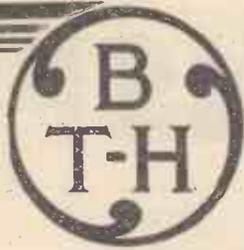
2/6d 1/6d

PUSH-PULL SWITCH



7/6d 9d

New!



Announcing two entirely new electric gramophone motors of novel design.

'Truspeed'

For 50 cycle A.C. supplies, 100-250 volts. One of the latest products of B.T.H. research embodies a unique and patented design.

Speed is electrically controlled and cannot vary with the heaviest recording. Automatic stop operates instantly and is adjustable for any make of tone arm. Current consumption is almost negligible—being only 6 to 8 watts. Beautifully finished in florentine bronze with mounting plate and 12" plush-covered turn-table. **Price - £2.9.6**

'Universal'

For A.C. or D.C. supplies, 100-250 volts. A heavy duty motor of exceptionally robust construction designed for continuous hard work.

The driving unit is of ample dimensions, its armature rotating at turn-table speed. The correct speed is always maintained by means of a perfectly balanced governor. Equipped with a 12" plush-covered turn-table, mounting plate and automatic stop, there is no doubt that this machine is far in advance of any universal motor yet produced. **Price - £5.10.0**

In addition to the "Truspeed" and "Universal," the three models which have proved so successful during the present season are now offered at considerably reduced prices.

See all the models at

STAND 119



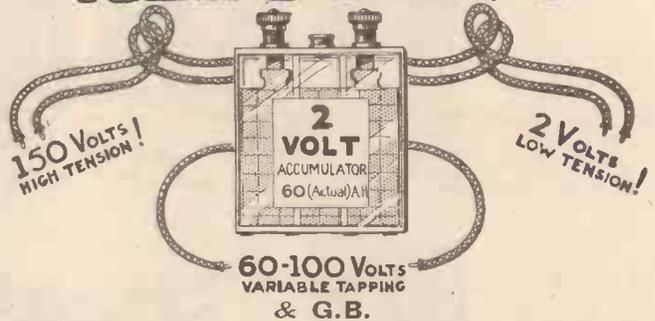
**The British Thomson-Houston Co., Ltd.,
Head Office and Works RUGBY**

A1269N

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Your L.T. Accumulator

NOW
the source of
ALL POWER



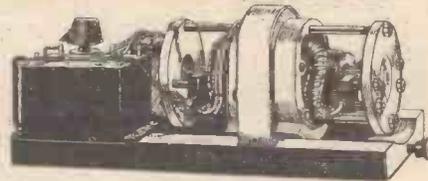
Here is good news for Battery set users!

Electro Dynamic (of Rotary Converter fame) has produced an Anode Converter that provides a constant, high capacity H.T. current, sufficient for a super power valve and moving coil speaker. Your present 2 volt L.T. accumulator is all that is required to give you the convenience and improved reception that only a mains set has, so far, provided.

Absolutely silent, free from interference and housed in a box that can be fitted in place of an H.T. dry battery, this wonderful little converter is a triumph of efficiency that banishes the bugbear of dry batteries for ever. Nothing to go wrong, fully guaranteed and supplied with a variable tapping giving 60 to 100 volts for S.G. and detector valves. Enjoy the pleasure of unfailing H.T. supply and the consequent improvement in reception by fitting an Anode Converter.

Electro Dynamic

Can also be supplied for 6, 12, 24 & 50 volt input at the same price, **£7 : 10 : 0**



See it on
STAND
157
RADIO SHOW,
OLYMPIA
or ask your
dealer to
arrange a
demonstration.

Write for illustrated folder to:—
ELECTRO DYNAMIC CONSTRUCTION
CO. LTD.,
DEVONSHIRE GROVE, LONDON, S.E.15.

LOOK FOR "EDDY" IN YOUR DEALER'S WINDOW



STAND

Nos. 75 & 230

RADIOLYMPIA

(Aug. 19—27)

FACTS YOU SHOULD KNOW ABOUT THE MAZDA PENTODES



The output stage in portable battery-driven receivers has always presented a problem to the designer on account of the limited H.T. supply available.

THE MAZDA PEN 220 has solved this problem as, owing to its extreme sensitivity, ample volume can be obtained with only 4 M/a anode consumption. The Pen 220 has, in addition, rapidly gained favour in the case of standard battery-operated receivers where economical H.T. consumption is an important consideration.

THE PEN 220A is a high-power output pentode suitable for driving a large moving-coil speaker. It should be used in conjunction with an eliminator.

THE PEN 425 for receivers operating on anode voltages above 150.

THE AC/PEN, the finest all-mains power pentode, sensitive enough to operate a loud speaker direct from aerial input.

Full details of these and other useful Mazda types will be found in the Mazda catalogue, sent FREE on request.

Mazda valves are fitted by all the leading receiver manufacturers. All good radio dealers stock them.

The amazing

MAZDA THE BRITISH VALVES

EDISWAN RADIO

100% BRITISH—Designed by British Engineers

The Edison Swan Electric Co. Ltd.



155 Charing Cross Rd. London. W.C.2

Mazda Radio Valves are manufactured for The British

Thomson-Houston Co. Ltd., London and Rugby.

V.167

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WHERE ONLY THE BEST WILL DO

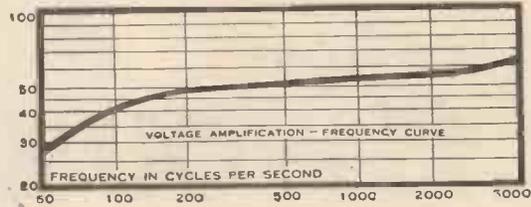
3 YEARS GUARANTEE



LEADING set designers and discriminating constructors are turning to Slektun—the Super Transformer. There is reason in their choice—four reasons for their preference:—

1. Specially constructed silicon iron core of very high permeability.
2. Patented process eliminates all possibility of short-circuited turns.
3. Ends of all windings hermetically sealed.
4. Paper insertions between every layer of windings.

These are the reasons for the Slektun Super's unfailing dependability—the reasons for the three-year guarantee.



SLEKTUN

SUPER TRANSFORMERS

8'6"
RANGE 2-1 3-1 4-1 5-1

SEE THE FULL RANGE OF SLEKTUN COMPONENTS AT OLYMPIA Stand **205**

SLEKTUN PRODUCTS LTD., 21, DOUGLAS STREET, WESTMINSTER, S.W.1

Now permanently matched!



Utility was the first ganged condenser guaranteed matched to 1/2% accuracy. But it is not sufficient to know that your ganged condenser was accurately matched when it left the maker's factory. More important is it that the condenser should remain matched when it is functioning in your set.

You can depend on the new Utility ganged condenser remaining permanently matched. But only by the Utility method of manufacture can a constant accuracy factor be assured and thus only the Utility ganged condenser is guaranteed permanently matched.

PRICES:

		Less dial.	With dial.
W313/2	2-Gang, semi-screened	15/-	17/6
W313/3	3-Gang, do.	22/6	25/-
W313/4	4-Gang, do.	30/-	32/6
W314/2	2-Gang, fully screened	17/-	19/6
W314/3	3-Gang, do.	25/-	27/6
W314/4	4-Gang, do.	33/-	35/6

A full range of super-het. condensers is also available.

From your dealer or post free from the makers.

Meet us

at **OLYMPIA, STAND 118**
WILKINS & WRIGHT, LIMITED,
Utility Works, Holyhead Road, Birmingham.

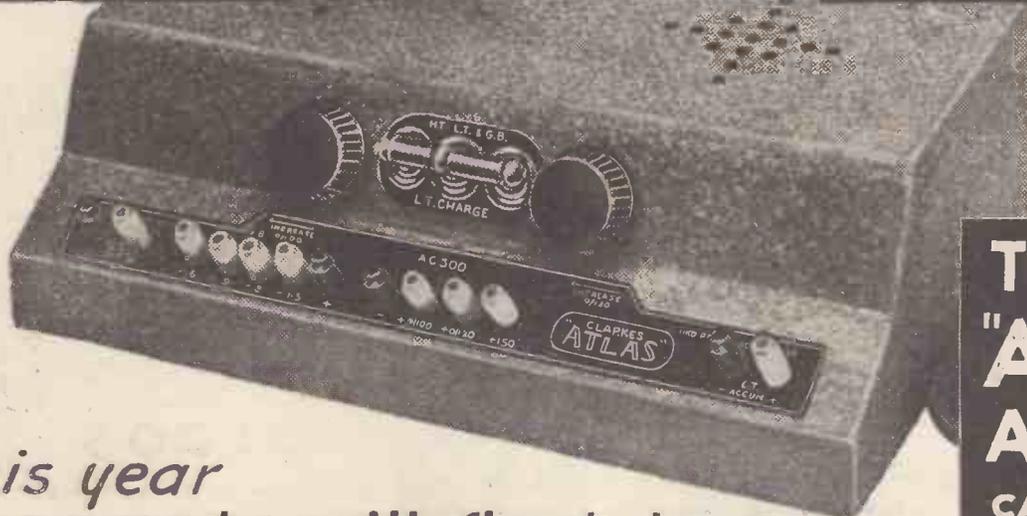
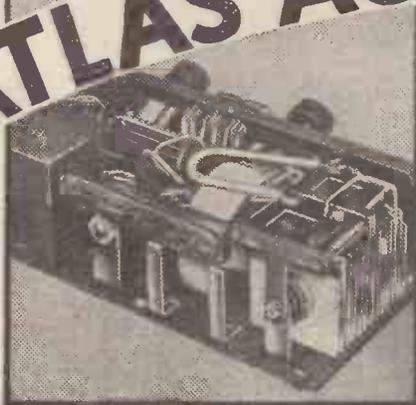
AGENTS—London: E. R. Merton, Ltd., 22, Bartlett's Buildings, Holborn Circus, E.C.4.
Scottish: E. B. Hammond, 113, Vincent Street, Glasgow; Lancashire and Cheshire: J. R. Lister, 93, Old Road, Blackley, Manchester; Westmorland, Cumberland, Durham, Northumberland, Yorkshire and Derbyshire: H. C. Ragson, Ltd., 100, London Road, Sheffield; South Western: Lawrence Fraser, Chelsea House, Lansdown Road, Bath.

Utility

CONDENSERS

"ATLAS" AGAIN GO ONE BETTER

NOW THREE ALTERNATIVE OUTPUTS



This year
 experts will flock to see
THE NEW "ATLAS" A.C. 300
ON STAND N° 91 !

The new
"ATLAS"
A.C. 300
 CASH PRICE
£6-10
 OR 10/- DOWN

... Experts said it could not be done. But just as "ATLAS" last year improved the Olympia Ballot Winner of 1930, so have they improved the 1931 Ballot winner: adding amongst other refinements, the new "ATLAS" regulated output to ensure correct voltages irrespective of the milliamps consumed. And all without any increase in price !

This new "ATLAS" Model A.C.300 is emphatically the last word in mains unit design and most probably will remain the standard for years to come.

There are two variable H.T. Tappings of 0/100 and 0/120 volts and one fixed of 150 volts. Four G.B. Tappings of 1½, 3, 9, and 16 volts, independent of H.T. and

smoothed by electrolytic condensers. L.T. Trickle Charger for 2, 4 and 6 volt Accumulators at 0.5 amps. The H.T. Output is regulated by three tappings to give 12, 18 and 25 mA at 150 volts. Tapped Input for 200/250 and 100/125 volts 40/120 Cycles. Safety Trickle Charger Isolating Switch. Combined Plug-Adaptor. Westinghouse Rectifiers. Size 10½" x 6" x 3½". Fully guaranteed for 12 months.

See it at Olympia. Test it for yourself. Ask your dealer for a demonstration to-day. There's no comparison with "ATLAS."

Post the coupon now for full details of "ATLAS" Mains Units for every set, and "ATLAS" Guaranteed Components.

POST THIS COUPON NOW !

Messrs. H. Clarke & Co. (M/cr.) Ltd.,
 George Street, Patricroft, Manchester.

Please send full details of "ATLAS" Mains Units and Components.

Name

Address

31/19/32.

"CLARKE'S ATLAS" MAINS UNITS

H. CLARKE & CO. (M/CR.) LTD.,
 "ATLAS" WORKS, GEORGE STREET, PATRICROFT,
 MANCHESTER. SOUTHERN OFFICES: Bush House, W.C.2.

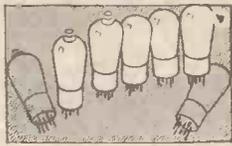
FIRST ANNOUNCEMENT

The EKCO New 5 v. Super-Het

COMPLETE STATION
SEPARATION....
SUPER SELECTIVITY



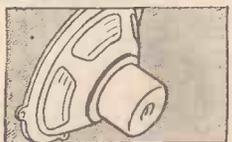
5 VALVES WITH
THE POWER OF 7...
LOW RUNNING COSTS



7 TUNED CIRCUITS
ONE KNOB CONTROL.
RANGE COMBINED
WITH SIMPLICITY



LATEST TYPE OF
MOVING-COIL
SPEAKER....
SUPERB TONE



Olympia Stand
No. 65

Demonstration
Room D.16

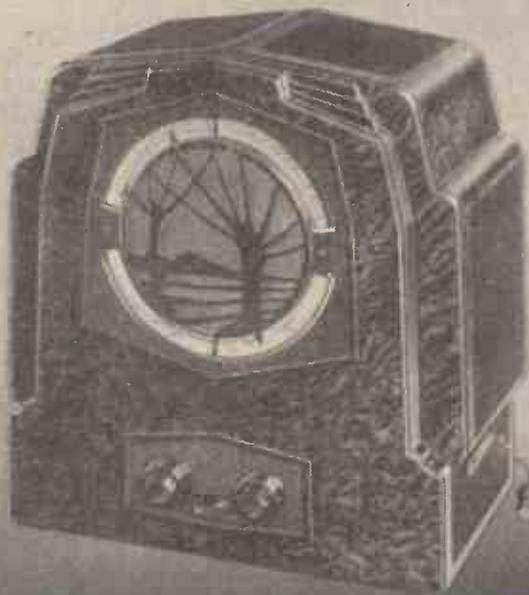
STATIONS BY NAME! The simplest set in the world to tune! Choose your programme by merely turning the pointer to the name of the station! This superb new model is housed in one of the most beautiful walnut figured bakelite cabinets imaginable. Complete with built-in moving-coil speaker giving faultless reproduction and wonderful volume.

MODEL S.H.25 PRICE 24 GNS.

or 12 monthly payments of £2.6.3

To E. K. Cole Ltd., Dept. W.12 EKCO Works, Southend-on-Sea.
Please send me full details of EKCO All-Electric Radio.

Name.....
Address.....



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RADIOPAK

(REGISTERED)
THE ONLY COMPLETE BAND-PASS TUNER

PRICE
£3
COMPLETE



MATCHED PERFECTION

Revolutionising Set Construction!

For some time now Band-Pass tuning has been recognised as the best solution to modern problems of selectivity, but hitherto because of difficulties encountered in obtaining accurate matching of coils and condensers, true Band-pass tuning has seldom been achieved.

The British Radiophone Radiopak unit has been specially produced to bring perfect Band-pass tuning within reach of all constructors.

The unit consists of the necessary coils; the gang condenser with illuminated slow motion

escutcheon and disc drive calibrated in wavelengths; a wave change switch; and a wire wound volume control complete with on-off Q.M.B. power switch. The switching arrangement is the best yet devised for any radio component and the combined volume control and switch is one of the famous Radiophone standard types needing no further recommendation. Owing to the high degree of accuracy in the matching of the coils and condensers, this unit will REVOLUTIONISE modern set construction. Write for full descriptive particulars, to Dept W.W.1.

★ SEE THE RADIOPAK AND OTHER NEW
RADIOPHONE COMPONENTS ON STAND 93

THE BRITISH RADIOPHONE LTD.

ALDWYCH HOUSE, ALDWYCH, W.C.2.

Telephone: Holborn 6744.

MOST IMPORTANT OF ALL

**THE WORLD'S
LARGEST
& MOST
COMPREHENSIVE
ILLUSTRATED
CATALOGUE
&
MANUAL**

what is Bulgin doing for the coming season?

Each successive year Bulgin have shown a definite stride forward—progressing rapidly into a position of pre-eminence in the Realm of Radio Components.

This year marks the greatest stride of all; never before has a new season's programme listed such a phenomenally wide selection of new and original components.

**ON OUR STAND AT OLYMPIA YOU WILL SEE
The NEW Transcoupler, The NEW Lightning Switch,
NEW Mains Switches, NEW Chokes, NEW Trans-
formers, NEW Fuse Plugs, NEW Wall Jacks,
NEW Volume Controls, etc., etc.,**

and a complete range of unique components unrivalled by any firm in the industry. See them, inspect them, mark their sterling quality and advanced design. Note the price of the finest components in the world.

LEADERSHIP is clearly apparent in every page of the **NEW and ENLARGED CATALOGUE AND MANUAL, 80 PAGES—FULLY ILLUSTRATED. GET YOUR COPY NOW. Enclose 2d. postage.**



**STAND
151
OLYMPIA**

BULGIN

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Telephone: Grange Wood 3266 & 7.
London Showrooms: 9-10-11, Cursitor Street, E.C.4. Telephone: Holborn 2072.

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THE
MASTER TOUCH
OF THE
"AUTHENTIC"
PRODUCT



UNIQUE
in their story
in their superiority

From Fleming and De Forest to the present day, unceasing research has lifted the valve from one triumph to another, and in the van of every real development the name of Marconi can invariably be found. The first dull-emitter valve—the first power valve—the first special H.F. valve—the first British screen grid valve—the first A.C. mains valve—the first satisfactory D.C. mains valve—the first British variable-Mu valve—every one MARCONI! This is indeed a record to be proud of, but in the factory and research laboratory the work of progress even now continues unabated.

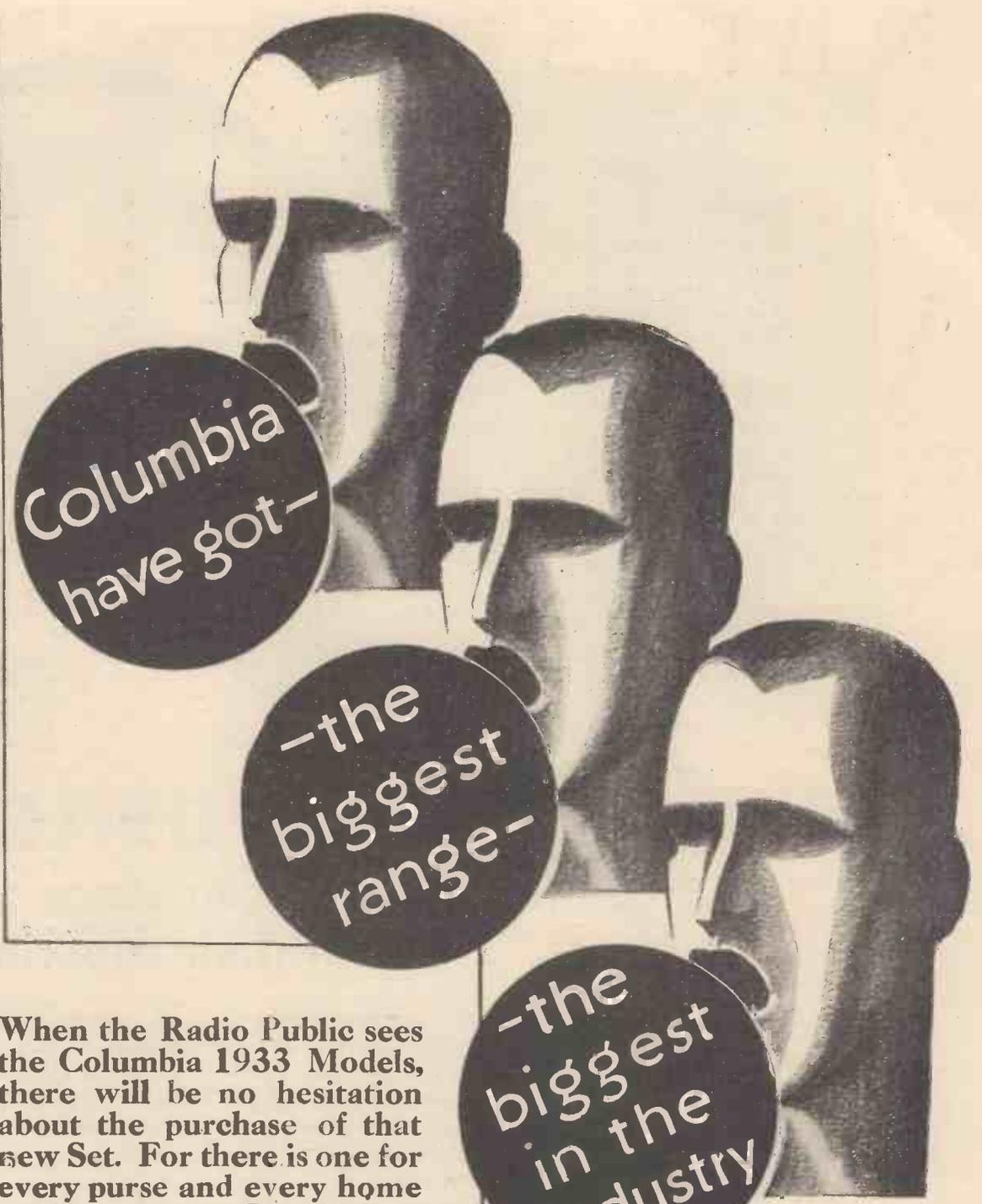
That is why MARCONI valves are the invariable choice of all who demand consistent high efficiency.

Come and see the latest MARCONI developments, and discuss your valve problems with us, at

RADIOLYMPIA' STAND No. 74

THE MARCONIPHONE COMPANY LIMITED
RADIO HOUSE 210-212 TOTTENHAM COURT ROAD LONDON W1

MARCONI VALVES



Columbia
have got -

-the
biggest
range-

-the
biggest
in the
industry

Please send me catalogue of new 1933 Models
Name.....
Address.....
Cut this out and post it in an unsealed envelope bearing 1d. stamp to Columbia, 98 Clerkenwell Road, London, E.C.1
W.W. 19 Aug. 32

THIS COUPON
WILL BRING
YOU ALL THE
LATEST NEWS



When the Radio Public sees the Columbia 1933 Models, there will be no hesitation about the purchase of that new Set. For there is one for every purse and every home requirement. Imagine a Radio and Radio-Gramophone family with a set as low in price as £4 : 7 : 6 and many others very gradually rising in price to the world's finest Radio-Gramophone at £94 : 10 : 0 ! Columbia Radio is an exhibition in itself. Come to Olympia and see it at Stand No. 86.

ON PARADE
AT STAND
86

Columbia

RADIO
RADIO - GRAPHOPHONES

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OSTAR-GANZ

MISSING at RADIOLYMPIA

THE ONLY RANGE OF MAINS VALVES, KITS, AND SETS AVAILABLE IN ENGLAND, UTILISING FULL A.C. OR D.C. MAINS VOLTAGE INDIRECTLY HEATED FILAMENT VALVES.

READ THESE TRIBUTES:—

What the PUBLIC says:—

FROM BATTERY TO MAINS.

The set was converted to operate these valves by a simple alteration of the wiring only and no additional apparatus whatever was necessary. . . . Volume appreciably greater. . . . The quality of reproduction is extremely good . . . no mains hum or disturbances. . . .

—G. H. W., Lancing, Sussex.

VOLUME ALMOST DOUBLED.

. . . I now use the Ostar-Ganz Valves for second detector and push-pull with the result that the volume is almost doubled . . . I am more than satisfied.

—D. C. P., Acton, W.3.

VERY SATISFACTORY SERVICE.

The Ostar-Ganz Valves which you supplied some months ago are giving very satisfactory service indeed and no trouble has been experienced with them. They are especially useful to owners of wireless sets who have direct current mains available; both on the grounds of simplicity of wiring and economy and your firm are to be congratulated on such excellent Valves.

—J. E. B., Surbiton, Surrey.

What the DEALER says:—

VERY PLEASSED WITH PERFORMANCE.

I am glad to tell you now we have got a Neutrodyne receiver in action fitted with your valves, we are very well pleased with the performance. Every wireless customer is not allowed to leave my premises without knowing about Ostar Valves.

—S. D. J., Aberdeen.

PASSED ALL EXPECTATIONS.

Just to let you know "Ostar-Ganz" High tension, mains valves passed all expectations.

—W. P., Fulham, S.W.

What the RADIO ENGINEER

says:—

ABSOLUTELY HUM FREE.

I am satisfied re the valves received and the pair of them are working an Electro Dynamic D.C. Moving Coil speaker at 230 V. 250 mA. as good as any Cinema Speaker, absolutely hum free, and anyone requiring a testimonial can be referred to me.

A. S. J., Radio Engineer, Nelson, Lancs.

PROVED ENTIRELY SATISFACTORY.

I have made tests on the Valves supplied in D.C. mains operated amplifier for talking film use, and for this purpose they have proved entirely satisfactory in all respects.

—A. S. J.

MOST SATISFACTORY.

I have just completed a two-valve D.C. mains operated receiver employing two of your valves, types A-520 and L-1525 and am pleased to say that this set works most satisfactory.

—E. L. G., B.Sc. Consulting Radio Engineer, N.W.1.

What the PRESS says:—

AGREEABLY SURPRISED.

As regards results—I can say I was most agreeably surprised. A two-valve set using these valves is just about as good as one using the lower voltage types we have in this country. But it is at the same time not only very much easier to build, it is cheaper, and it can be used, without change, on either D.C. or A.C.

This seems absurd, I know, but it must be remembered that as the heaters of the valves take the full mains voltage across them they need neither a breakdown resistance (in the case of the D.C.) nor a stepdown transformer (where A.C. is concerned).

—Popular Wireless, June 18th.

SENSITIVITY.

In the new Ostar "Universal" valve, which is used as a detector, special precautions are taken to ensure complete insulation of the grid. The glass bulb of this particular valve is screened by copper wire netting. Sensitivity freedom from background noises, and general performance of the "Universal" sets would appear to compare quite favourably with that of similar types employing standard low-voltage A.C. Valves.

—Wireless World, June 15th.

UNIVERSAL



All Mains Sets

for use with A.C. or D.C. without alteration.

The new marvel of Radio employing the Ostar-Ganz High Voltage Mains Valves.

Model A.3. utilising 3 Valves at 10 Gns.

Model B.4. utilising 4 Valves at 12 Gns.

Complete with Magnavox Moving Coil loud speaker.

This set is the simplest of all sets to operate.

Superb reproduction and no mains hum.

British made by British labour.

VALVES

POST THIS COUPON TODAY

To EUGEN FORBAT, Sole representative for Great Britain, c/o Nivalight Ltd., 1, Rosebery Avenue, London, E.C.1.

Please send me the following:—

- General Purpose Valves - - - 17/6 each
- Detector - - - - - 17/6 "
- Power - - - - - 17/6 "
- Super Power Valve - - - - 18/- "
- Rectifying Valve (50 m.a.) - - 14/6 "
- Rectifying Valve (125 m.a.) - - 15/6 "

The voltage of my supply mains is volts.
Enclosed is remittance for £ s. d.

Mr., Mrs. or Miss

KITS

POST THIS COUPON TODAY

To EUGEN FORBAT, c/o Nivalight Ltd., 1, Rosebery Avenue, London, E.C.1.

Please send me:—

- 2-Valve receiver kit complete with rectifier £6.10.0
- 3-Valve receiver kit complete with rectifier £8.8.0
- 2-Valve amplifier kit complete with rectifier £4.4.0
- 3-Valve amplifier kit complete with rectifier £5.5.0

The voltage of my supply mains is volts.

Enclosed is remittance for £ s. d.

Mr., Mrs. or Miss

SETS

See and Hear these Sets at:—

9, MACLISE ROAD

JUST AT THE BACK OF

OLYMPIA

(Opposite Addison Road Station).

Advt. of CHARTERHOUSE RADIO, 2 & 3, Charterhouse Square, E.C.1.



SAFEGUARDS THE CONSTRUCTOR

At Stand 17
HAYNES DESIGNS
 again reveal all that
 is new in radio

ASK at the stand, or send a post card for **FREE CONSTRUCTIONAL PAMPHLETS**, just produced, of two outstanding sets — the new **A.C. Single Dial Super** and the **Quality Receiver**.

HAYNES RADIO
 57, Hatton Garden . . London, E.C.1

Chancery 8023

QUALITY and QUANTITY

—the wonderful blend that makes

Player's Please



Save your Player packets for the Imperial Tobacco Company's **POSTER COMPETITION**.
 Ask your Tobacconist for particulars

£20,000 IN CASH PRIZES

5 FOR 3^D
 10 FOR 6^D
 20 FOR 11½^D

HCC1309

No Chatter

No Scratching—No Case Resonance

with the All-British



Clarion Pick-up



PRICE
21/-

Handsome finished in Walnut Bakelite

Ask your dealer to let you see and hear the wonderful range of Clarion 100-per-cent British-made Radio instruments.

Table Model, Console Model, Radio-gramophone, Radio-gramophone with Automatic Record Changer.

The all-British Clarion Pick-up is amazing in its realism. The entire absence of extraneous noises ensures smoothness of tone which provides an added joy from your records. This model is fitted to the famous Clarion Radio-gram. Can be fitted to any gramophone in five minutes.

BRITISH CLARION Co., Ltd.

Clarion Works, Miller St., N.W.1

Telephone: Museum 3624/3625.

Telegrams: Crosradcla, Norwest, London

"HIS MASTER'S VOICE" at Olympia, STAND NO 55 (GRAND HALL)

In addition to the four new instruments illustrated, "His Master's Voice" will show at Olympia, the following range of models for the new season:—

	PRICE
MODEL 501 Transportable Radiogram	25 guineas
MODEL 435 De Luxe Radio Four	17 guineas
MODEL 174 Super-Power Speaker	£7. 10. 0
MODEL LS7 Universal Speaker	£4. 15. 0
MODEL 116 Record Player	7 guineas
MODEL 117 Auto Record-Player	12 guineas
MODEL 553 Auto-Electrogram	42 guineas

Current models which have proved so enormously popular during the past season, and which have established a new standard in the reproduction of broadcast and recorded music, will also be continued.

Visit the "His Master's Voice" Stand—see and hear these instruments . . . examine the many improvements in the range. And whatever else you do, you must see the pre-release showing of the most wonderful industrial 'talkie' yet made — Demonstration Room D18. Free tickets will be obtainable at Stand No. 55.



Superhet Portable Six 17 gns. Model 459

Superhet Lowboy Seven 32 gns. Model 470



Superhet Ten Auto-radiogram 80 gns. Model 532

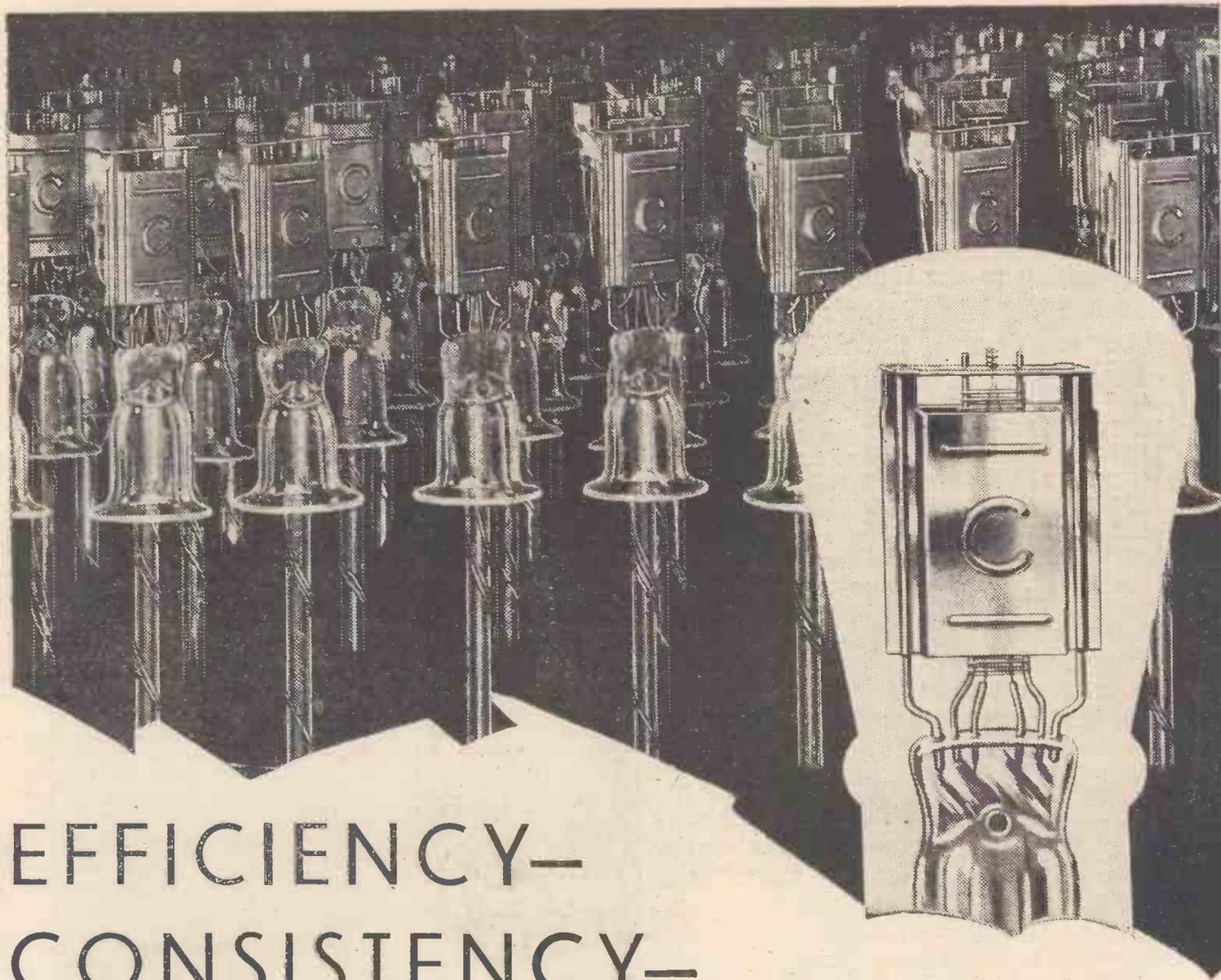
Superhet Radiogram Seven 50 gns. Model 522

His Master's Voice RADIO — "True to Life"



The Gramophone Co. Ltd., London, W.1.

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EFFICIENCY—
 CONSISTENCY—
 AND LONG LIFE *due to the famous*

THE efficiency of a valve depends upon the accuracy with which its elements are spaced. In every type of Cossor Valve, the elements are positioned in permanent alignment with microscopic precision by the famous Mica Bridge.

Because they are rigidly secured in correct relationship variation in characteristics is impossible. Cossor Valves can therefore be depended upon for efficient and consistent performance throughout their exceptionally long life.

MICA
 BRIDGE

STAND
 No. 60
 Olympia

COSSOR
ALL-BRITISH VALVES

A copy of the 40 page Cossor Wireless Book B17 will be sent you free on application to A. C. Cossor Ltd., Melody Dept., Highbury Grove, London, N.5.

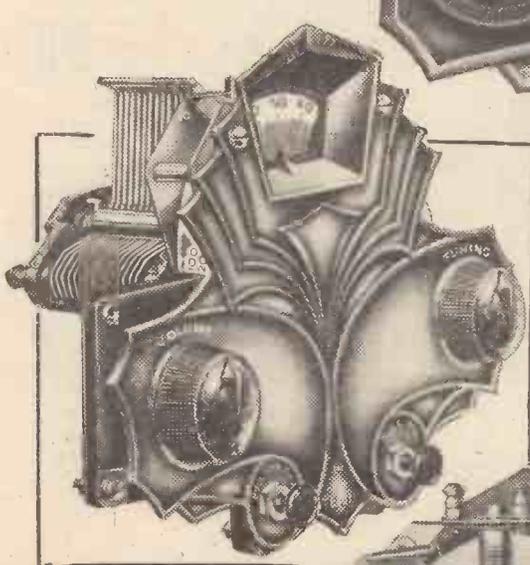
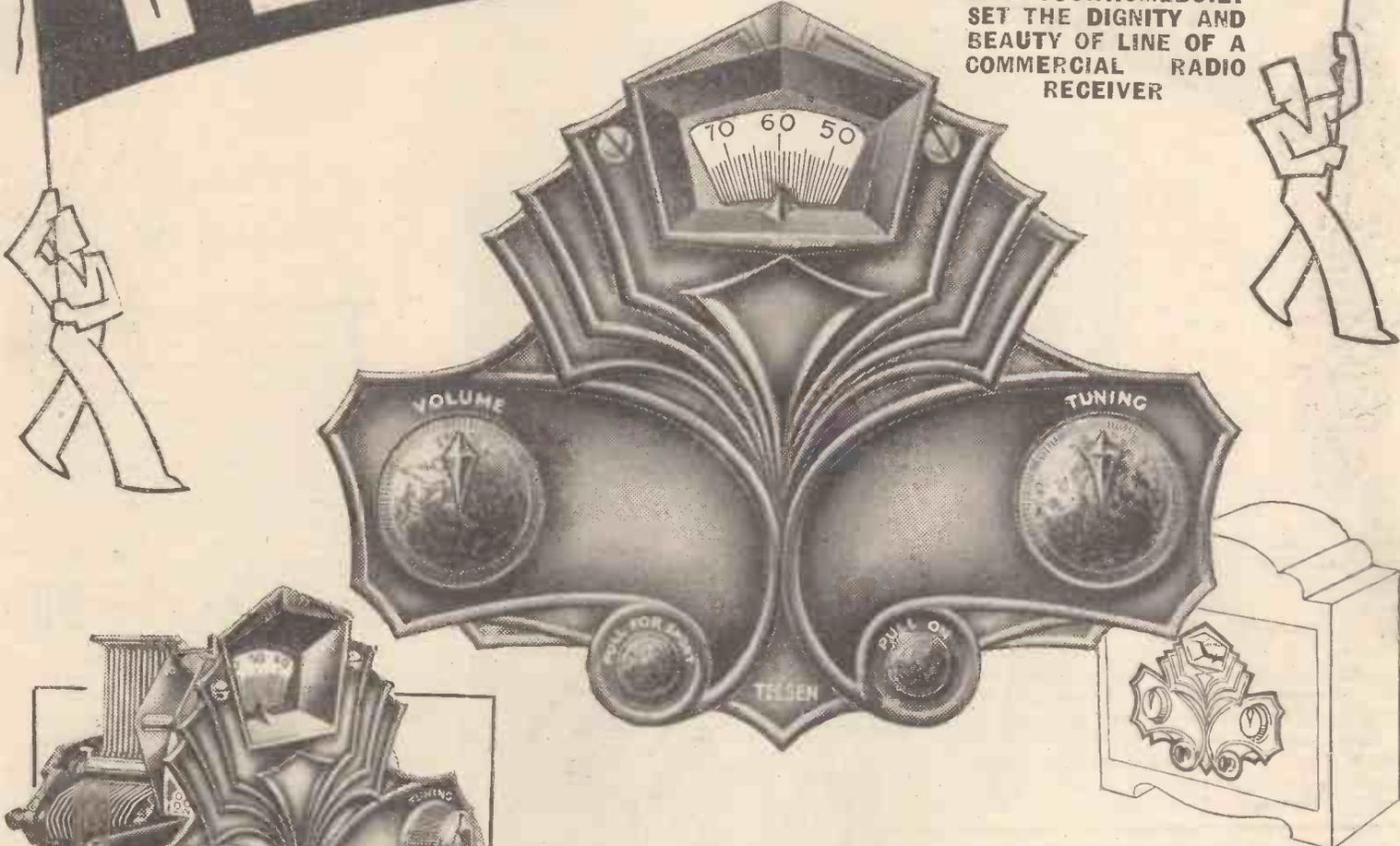
A. C. COSSOR, LTD., Highbury Grove, London, N.5. Depots at Birmingham, Bristol, Glasgow, Leeds, Liverpool, Manchester, Newcastle, Sheffield and Dublin.

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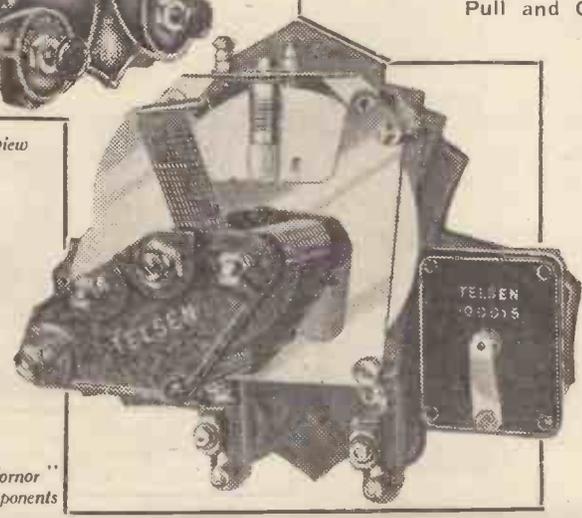
TELSEN

TELORNOR

GIVES YOUR HOME BUILT SET THE DIGNITY AND BEAUTY OF LINE OF A COMMERCIAL RADIO RECEIVER



Three-quarter front view of the "Telornor."



Back view of the "Telornor" showing how the components can be mounted.

GIVE your home-built set the dignity of an expensive commercial radio receiver with the new Telsen TELORNOR. It makes better sets easy to build. The handsome silver oxidised escutcheon plate, complete with the Illuminated Disc Drive, adds immensely to the "good looks" of your set, and permits with the minimum of trouble, a very effective grouping of your Volume, Tuning, Push-Pull and On-Off controls. Ask your dealer to show you a TELORNOR Illuminated Disc Drive. It will make your new set a set to be proud of—in appearance as well as in performance.

No. W.206.

7'6

TELSEN

RADIO COMPONENTS

See the Complete Range of
TELSEN RADIO COMPONENTS
 on STAND No. 66 at RADIOLYMPIA

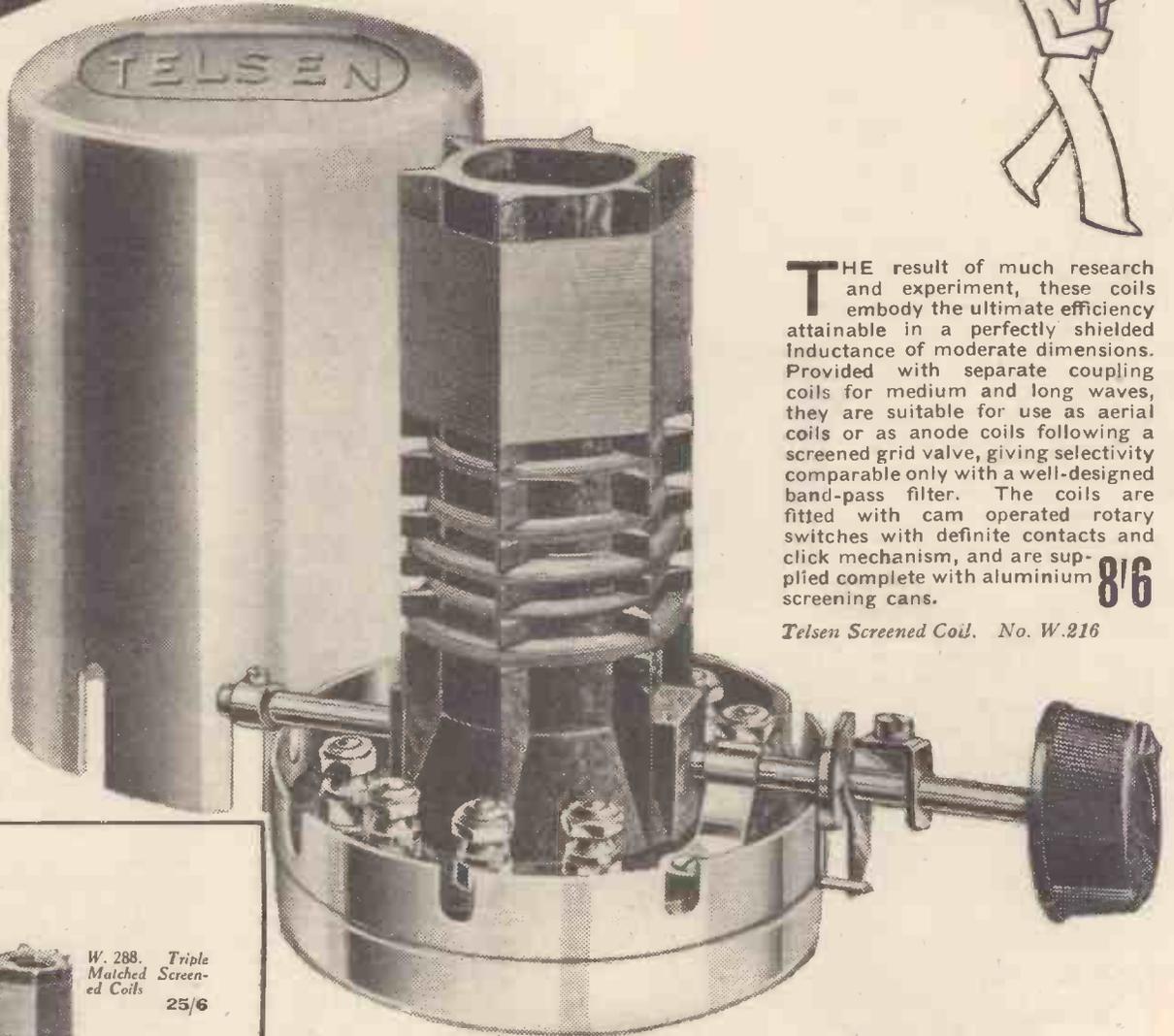
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ANNOUNCEMENT OF THE TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM

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TELSEN

SCREENED TUNING COILS

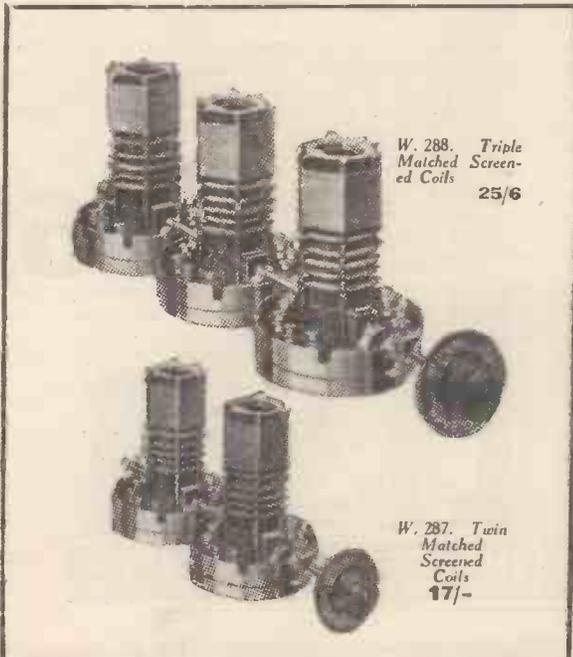


THE result of much research and experiment, these coils embody the ultimate efficiency attainable in a perfectly shielded Inductance of moderate dimensions. Provided with separate coupling coils for medium and long waves, they are suitable for use as aerial coils or as anode coils following a screened grid valve, giving selectivity comparable only with a well-designed band-pass filter. The coils are fitted with cam operated rotary switches with definite contacts and click mechanism, and are supplied complete with aluminium **8/6** screening cans.

Telsen Screened Coil. No. W.216

TELSEN COIL SWITCH KNOB ASSEMBLY

Specially designed for use with the Telsen Screened Tuning Coils. The extension on the knob spindle fits over the switch rod supplied with the Coils, a firm coupling to the rod being ensured by tightening the small screw provided. The assembly is suitable for mounting to any standard thickness of panel, and includes a neat disc escutcheon. The knob is of the push-on type in Black Bakelite. No. W.218 **1/-**



W. 288. Triple Matched Screened Coils **25/6**

W. 287. Twin Matched Screened Coils **17/-**

TELSEN COIL SWITCH COUPLING ASSEMBLY

When it is desired to mount two or more of the Telsen Screened Coils in a line parallel to the panel, and to control the wave-change switching by a single knob on the panel, this switch coupling assembly will be found indispensable. The link arms of the coupler are fitted over the switch rods of the coils, and adjusting slots are provided in the link bar to allow for the spacing of the coils varying from 3 in. to 6 1/2 in. The whole assembly has a neat nickel-plated finish, is perfectly smooth and positive in action, and free from backlash. **6d.** No. W.217

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RADIO COMPONENTS

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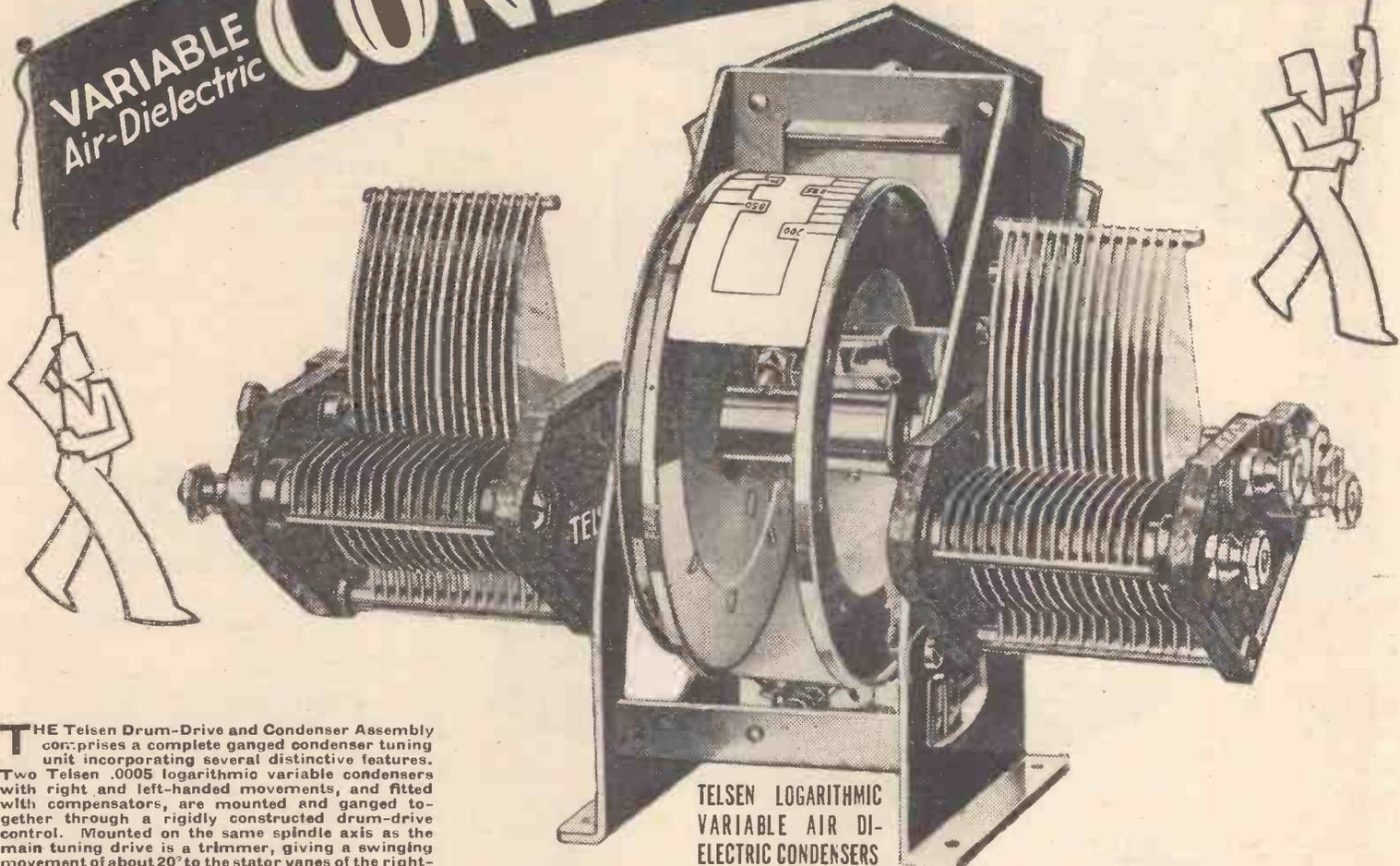
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TELSEN

VARIABLE CONDENSERS and DRUM-DRIVE



THE Telsen Drum-Drive and Condenser Assembly comprises a complete ganged condenser tuning unit incorporating several distinctive features. Two Telsen .0005 logarithmic variable condensers with right and left-handed movements, and fitted with compensators, are mounted and ganged together through a rigidly constructed drum-drive control. Mounted on the same spindle axis as the main tuning drive is a trimmer, giving a swinging movement of about 20° to the stator vanes of the right-hand variable condenser, thereby enabling perfect matching of the condensers to be maintained throughout the Tuning Range. Two scales are supplied with the unit, one marked in wavelengths and one in graduations from 0-100. The Scale is illuminated and has the additional advantage of being easily removable when it is desired to fit one of special calibration. The escutcheon is handsomely finished in oxidised silver, and knobs of the push-on type are fitted. Provision is made for panel and baseboard mounting and a double-ended spanner is supplied free with the unit for fitting the variable condensers. Full instructions for mounting are included with every unit.

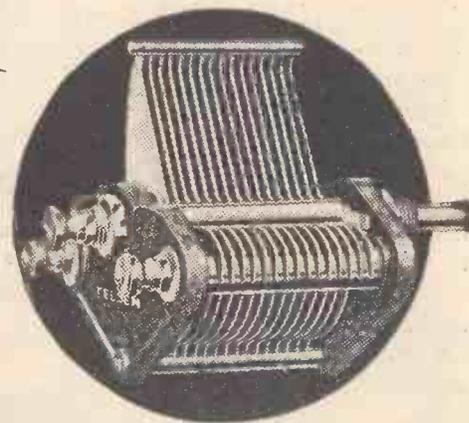
17/6

No. W.262. Price

TELSEN LOGARITHMIC VARIABLE AIR DIELECTRIC CONDENSERS

The Frame is braced by three solid pillars, and the effective clamping of the vanes, each held at three points, makes distortion impossible. The rotor is also built into a rigid unit, the vanes being held at both ends. Generous bearings obviate backlash or end-plate. Models No. 260 and 261 (left hand and right hand movements respectively) incorporate a compensator (max. cap. 60 micro-microhenries) for balancing out stray capacities, thus greatly facilitating ganging.

Model.	Cap.	Price.	Model.	Cap.	Price.
No. 130	.00025	4/6	No. 132	.0005	4/3
No. 131	.00035	4/6	No. 261		
No. 260 (Left hand movement with trimmer)	.0005	5/-	(Right hand movement with trimmer)	.0005	5/-



TELSEN DRUM DRIVE

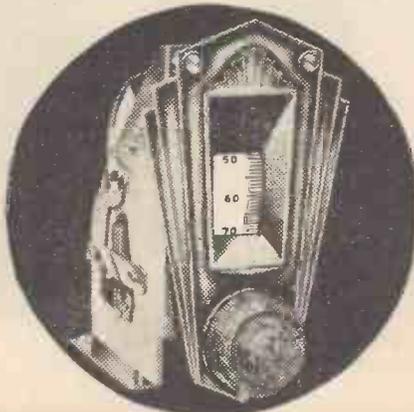
Follows standard practice generally, but embodies several detail refinements, among which may be instanced the cord discs, arranged to reduce wear to a minimum and to prevent over-run, and the rocking stator trimmer, which gives a variation of 20°, and visual indication of setting. For use with Telsen screened coils, an extra scale, marked in wavelengths, is supplied free of charge. Illustration shows escutcheon, handsomely finished in oxidised silver.

8/6

TELSEN

RADIO COMPONENTS

See the Complete Range of
TELSEN RADIO COMPONENTS
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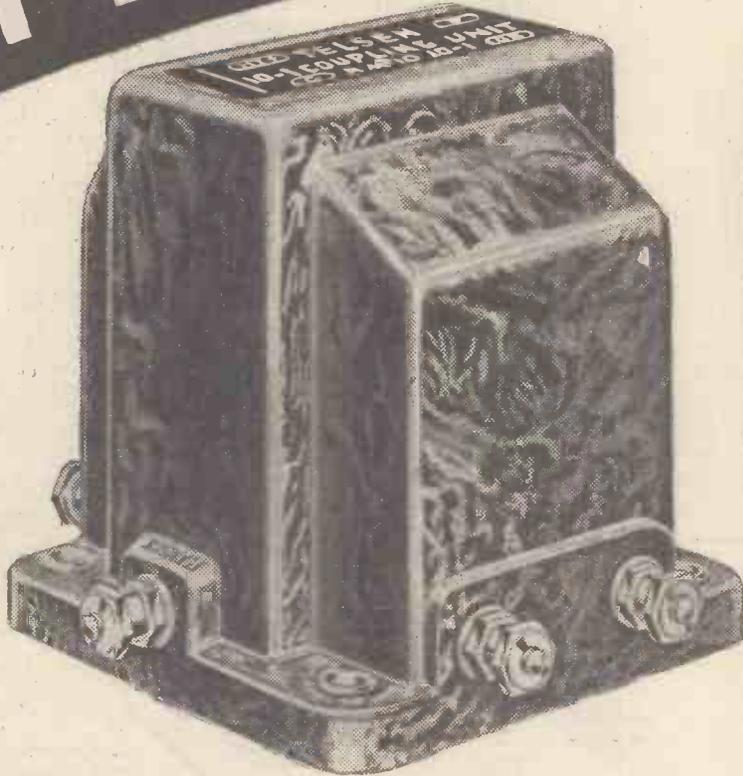
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TELSEN

10-1 COUPLING UNIT & 1-1 COUPLING UNIT



TELSEN 10-1 INTERVALVE COUPLING UNIT

This is a filter-fed transformer using a high permeability nickel alloy core, which enables a 10-1 voltage step-up to be attained while preserving an exceptionally good frequency characteristic. The response is compensated in the higher frequencies for use with a pentode valve, this combination giving an amplification greater than anything previously achieved, equal to two ordinary L.F. stages, but with better quality of reproduction. No. W.215

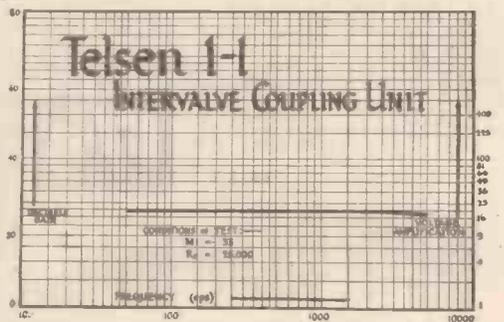
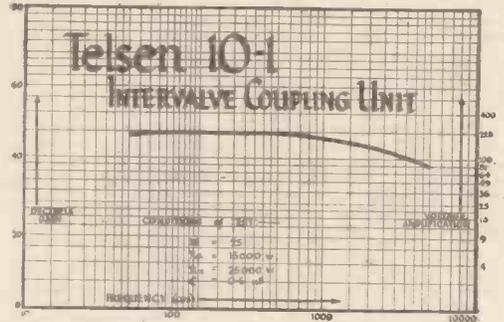
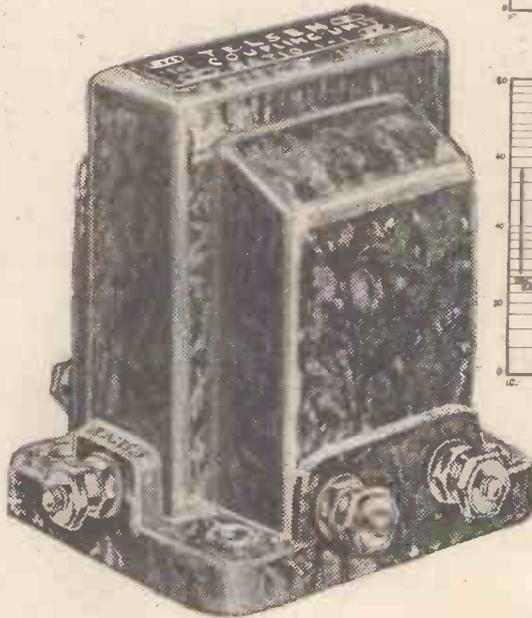


12'6

TELSEN 1-1 INTERVALVE COUPLING UNIT

This is a modern development of the one time deservedly popular R.C. units. It incorporates a low pass filter feed in its anode circuit, thus effectively preventing "motor-boating," "threshold howl," and other forms of instability arising out of common couplings in eliminator and battery circuits. Used with an H.L. type valve it will give an amplification of about 20 and a perfect frequency response, at the same time consuming negligible H.T. current. No. W.214.

7'6



TELSEN

RADIO COMPONENTS

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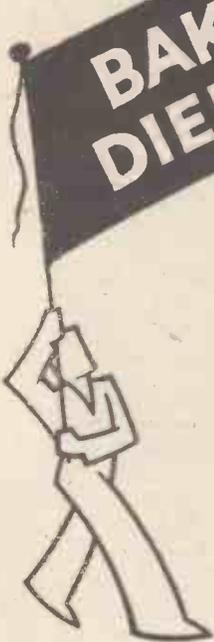
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TELSEN CONDENSERS

BAKELITE DIELECTRIC



TELSEN AERIAL SERIES CONDENSER

This component forms an ideal volume and selectivity control. The internal construction permits of an extremely low minimum capacity. Keyed externally on the spindle is a switch arm which connects with a contact on the fixed vanes when rotated to maximum position. This short circuits the condenser for maximum volume. The rotor movement is limited by definite stops. The vanes are interleaved with the finest quality solid dielectric, and solidly constructed throughout. Supplied complete with knob.
Capacity .0003 - - - W.205

2/3

TELSEN BAKELITE DIELECTRIC TUNING CONDENSERS

Redesigned on an entirely new principle, giving great rigidity with compactness and high efficiency. May be used with confidence where space is limited. The well-braced vanes are interleaved with a minimum of highest quality solid dielectric, ensuring complete accuracy of tuning. Supplied complete with knob.

Capacity No.
.0005 - W.193
.0003 - W.194

2/6

TELSEN REACTION CONDENSERS

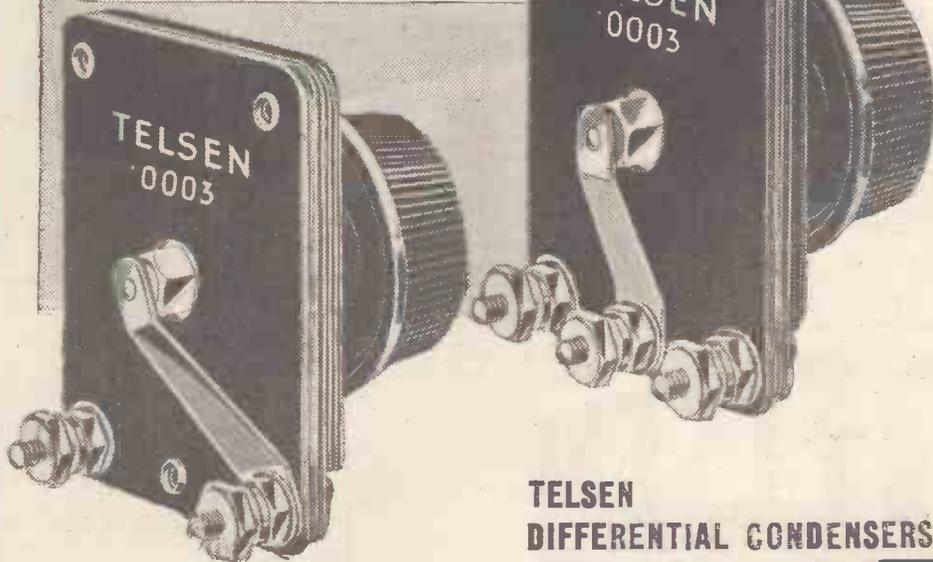
Improved type, of great rigidity and precise construction. The Rotor Vanes are keyed to the spindle, and fitted with definite stops. The vanes are interleaved with finest quality solid dielectric. A strong nickel silver contact makes connection to the rotor, and a positive connection is made to the stator vanes. Complete with knob.

Capacity .0003 No. W.188
.00015 W.189
.0001 W.190

.00075 W.191
.0005 W.192

2/4

2/6



TELSEN DIFFERENTIAL CONDENSERS

Capacity No.
.0003 W.185
.00015 W.186
.0001 W.187

2/6

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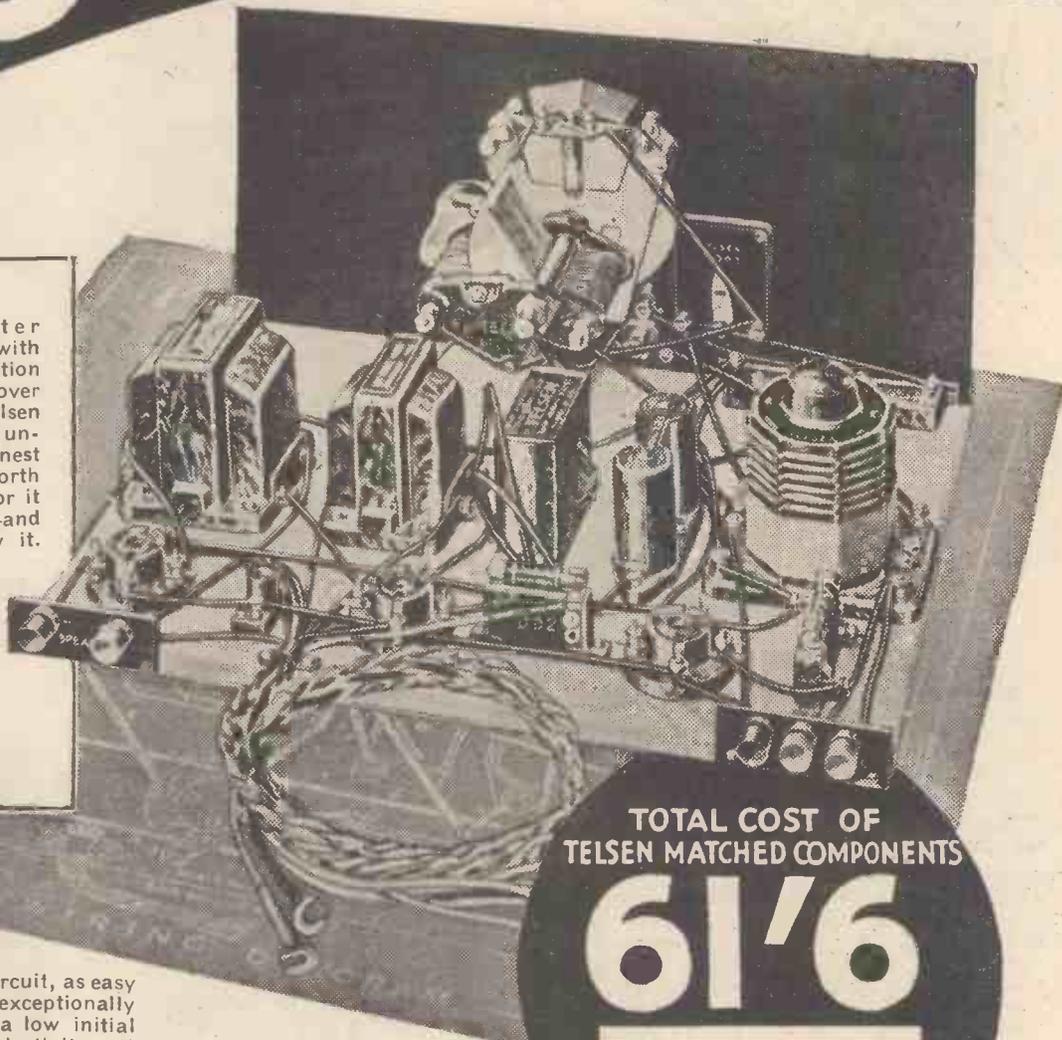
The TELSEN

AJAX 3



Bigger . . . better . . . packed with valuable information from cover to cover—the new Telsen Radiomag is undoubtedly the finest radio sixpennyworth ever offered. For it appeals to all—and all can profit by it. In simple language, illustrated by photographs and diagrams, and complete with three full-size 1s. blueprints, it tells you how to build the latest circuits . . . how to modernise your existing set . . . how to rectify little faults . . . how to get the best out of your set in every way. Get a copy NOW!

graphs and diagrams, and complete with three full-size 1s. blueprints, it tells you how to build the latest circuits . . . how to modernise your existing set . . . how to rectify little faults . . . how to get the best out of your set in every way. Get a copy NOW!



TOTAL COST OF
TELSEN MATCHED COMPONENTS

61'6

For building the "Ajax 3," including panel, baseboard, terminals, battery cords and all accessories.

A HIGHLY efficient "Straight Three" circuit, as easy to operate as it is to build, giving an exceptionally brilliant all-round performance with a low initial and upkeep cost, the range, power, selectivity and general quality of reproduction setting a new standard for receivers of this type. Free full-size 1s. blueprint, together with full constructional details, are contained in the new issue of the Telsen Radiomag, which also gives full particulars of the improved and now all-embracing range of Telsen Radio Components at the still lower prices made possible by Telsen's enormous sale. Now on sale at all radio dealers and newsagents. Price 6d.

TELSEN RADIO COMPONENTS

See the Complete Range of
TELSEN RADIO COMPONENTS
on STAND No. 66 at RADIOLYMPIA



CONSTRUCTORS OUTFIT "TELORNOR"

Contains all the sundry requirements for the construction of any type of receiver Circuits using the Telornor. Of these, the Telsen "Triple 3," the "Ajax 3," and the "Nimrod 2," are excellent examples. All are supplied neatly packed in a carton with instructions.

3'6

Included in the Outfit are the following components:

Specially cut and drilled crystalline finish panel. 14 in. by 10 in. Baseboard. Eight-way Battery Cord. Complete set of Wander Plugs suitably engraved, and Spade Terminals. Terminals for Aerial, Earth

and Loud-speaker. Engraved Terminal Strips. An ample supply of 22S.W.G. Tinned Copper Wire and necessary Sleeving for wiring up the set. A double-ended Spanner for mounting the single-

hole fixing components. A four-way Spanner for tightening up all terminal nuts. All the Wood Screws and sundry other small accessories contributing to the complete assembly of the finished Receiver.

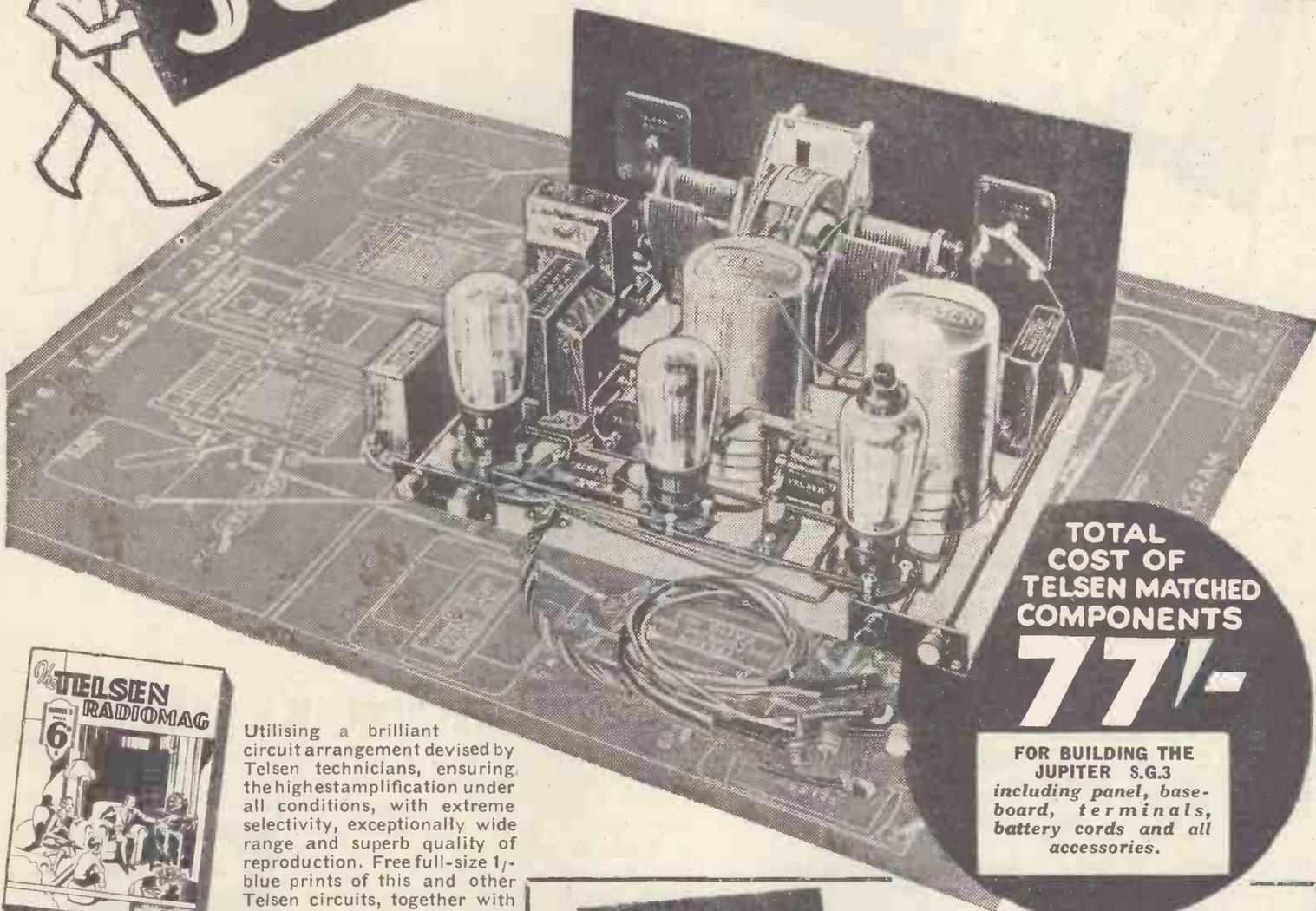
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The **TELSEN**

JUPITER S.G.3



**TOTAL
COST OF
TELSEN MATCHED
COMPONENTS**

77/-

**FOR BUILDING THE
JUPITER S.G.3
including panel, base-
board, terminals,
battery cords and all
accessories.**



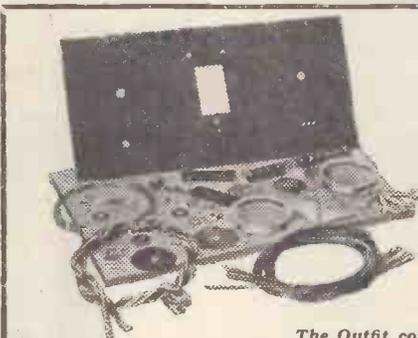
Utilising a brilliant circuit arrangement devised by Telsen technicians, ensuring the highest amplification under all conditions, with extreme selectivity, exceptionally wide range and superb quality of reproduction. Free full-size 1/4-blue prints of this and other Telsen circuits, together with full instructions and a wealth of interesting and valuable information, including particulars of the improved and now all-embracing range of Telsen Radio Components at the still lower prices, made possible by Telsen's enormous sale, are contained in the new, bigger and better issue of the Telsen Radiomag. Get a copy NOW—price 6d. from your radio dealer or newsagent.

formation, including particulars of the improved and now all-embracing range of Telsen Radio Components at the still lower prices, made possible by Telsen's enormous sale, are contained in the new, bigger and better issue of the Telsen Radiomag. Get a copy NOW—price 6d. from your radio dealer or newsagent.

TELSEN

RADIO COMPONENTS

See the Complete Range of
TELSEN RADIO COMPONENTS
on **STAND No. 66 at RADIOLYMPIA**



**DRUM DRIVE
CONSTRUCTORS' OUTFIT**

This Outfit contains all the necessary requirements for the construction of the **TELSEN "JUPITER 3,"** but the constructor will find the Outfit of great value in the building up of any receiver circuit employing the drum drive condenser assembly, No. 219

3/6

The Outfit contains the following:—

- 1 Metal panel with attractive crystalline finish, specially cut and drilled for mounting the Telsen Drum Drive, and other panel mounted components normally required in a ganged condenser receiver.
- 1 Baseboard 14in. X 10in.
- 1 Aerial and earth terminal strip.
- 1 Loudspeaker terminal strip.
- 2 Red terminals complete and mounted in holder.
- 2 Black terminals complete and mounted in holder.
- 7 Wander plugs mounted in holder.
- 2 Spade tags.
- 1 8-way battery cord.
- 1 Cord clip.
- 2 Large insulating washers.
- 1 Small thick insulating bush.
- 1 Small thin insulating bush.
- 2 Spacing nuts for the reaction and aerial series condensers.
- 2 Spacing nuts for the "On-Off" Switch.
- 1 Wave change escutcheon with two screws and nuts.
- 1 Separator escutcheon.
- 1 Volume escutcheon.
- 1 "On-Off" escutcheon.
- 2 Height plinths for the matched screened coils.
- 1/2 in. of 3 mm. sleeving (black).
- 1 1/2 in. of 3 mm. sleeving (red).
- 20 feet of 1 1/2 mm. sleeving (green).
- 21 feet of 22 S.W.G. tinned copper wire.
- 1 Double-ended spanner for locknuts.
- 1 Four-way spanner.
- Assortment of 1/4 in., 1/2 in., 3/4 in. and 1 1/4 in. wood screws.

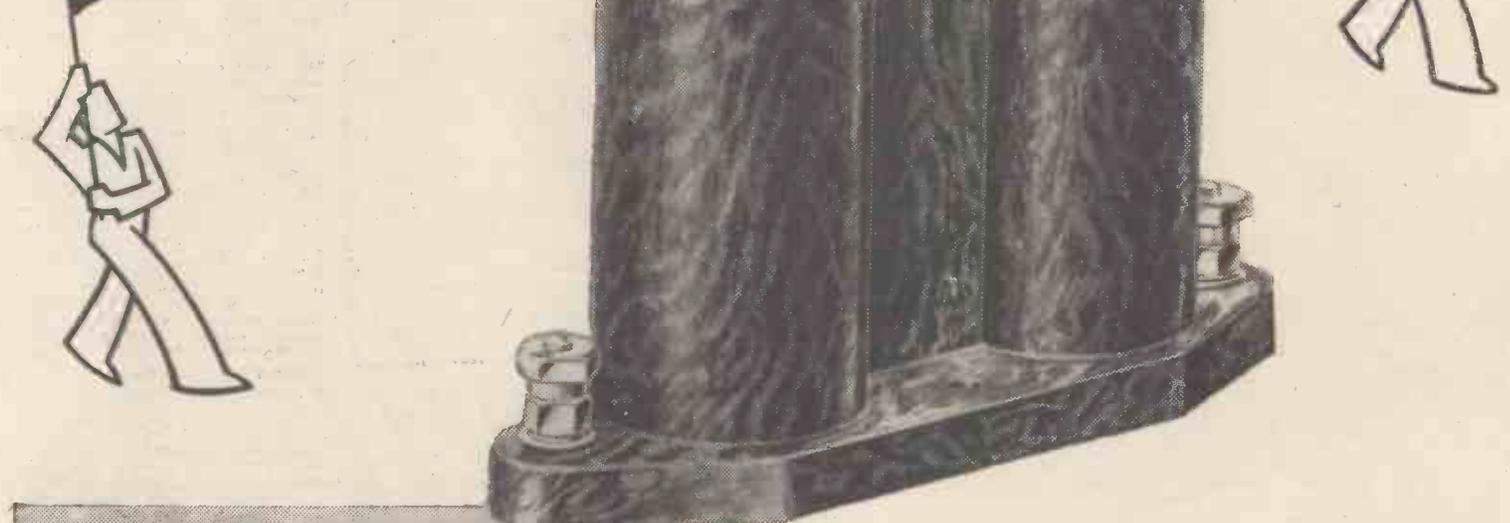
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TELSEN

H.F. CHOKES



 A close-up photograph of a Telsen Standard H.F. Choke. The component is cylindrical with a base and two terminals. The top of the component is labeled 'BRITISH MADE', 'TELSEN H.F. CHOKE', and '157-722'. The base is labeled 'TELSEN ELECTRIC CO. LTD. ENG.'.

TELSEN STANDARD H.F. CHOKE

The Telsen Standard H.F. Choke utilises the minimum baseboard space. It is designed to cover the whole broadcast band, has very low self-capacity, and is highly suitable for reaction circuits. The inductance is 150,000 microhenrys and the resistance 400 ohms. It has proved very popular and has been incorporated by set designers in many of the leading circuits.

2/-

No. W.75

TELSEN BINOCULAR H.F. CHOKE

In H.F. amplification the performance of a choke is of supreme importance. The Telsen binocular H.F. Choke is called for wherever the highest efficiency is required. It has a high inductance of 250,000 microhenrys, low self-capacity, and a negligible external field, due to the binocular formation, making it the ideal choke for a high-class circuit.

No. W. 74

5/-

TELSEN

RADIO COMPONENTS

See the Complete Range of
TELSEN RADIO COMPONENTS
 on STAND No. 66 at RADIOLYMPIA

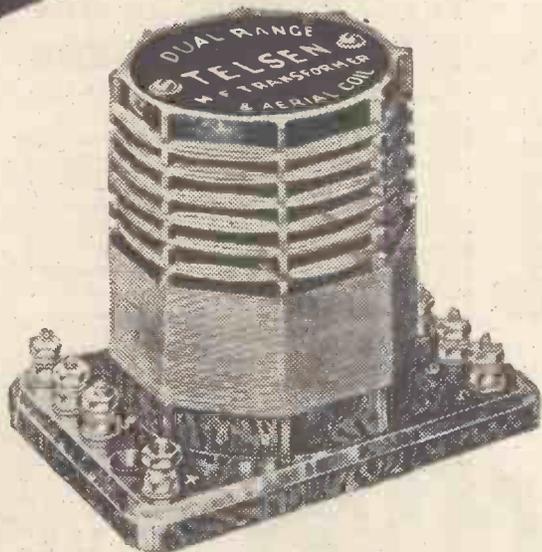
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ANNOUNCEMENT OF THE TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM

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TELSEN

DUAL-RANGE AERIAL COILS



THE TELSEN H.F. COIL

May be used for H.F. amplification with Screened-Grid Valve, either as an H.F. Transformer, or alternately as a tuned grid or tuned anode coil. It also makes a highly efficient aerial coil where the adjustable selectivity feature is not required. No. W.154

5/6



TELSEN DUAL-RANGE AERIAL COIL

Incorporates a variable selectivity device, making the coil suitable for widely varying reception conditions. This adjustment also acts as an excellent volume control, and is equally effective on long and short waves. The wave-band change is effected by means of a three-point switch and a reaction winding is included. No. W.76

7/6

TELSEN COMBINED DUAL-RANGE SHORT-WAVE COIL UNIT

This unit, for the first time, brings the construction of short-wave receivers into line with the simplicity of modern practice. When tuned by a Telsen .00025 Condenser, a wave range of 20 to 80 metres can be covered by the operation of a switch, as in ordinary broadcast practice. The unit incorporates windings for aerial, tuning and reaction circuits, all coils being wound with stranded wire. The coil is also suitable for use with sets covering all wave-bands with a .0005 Tuning Condenser. In this case the Dual-range feature is not employed. No. W.174

4/6



TELSEN

RADIO COMPONENTS

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TELSEN RADIO COMPONENTS
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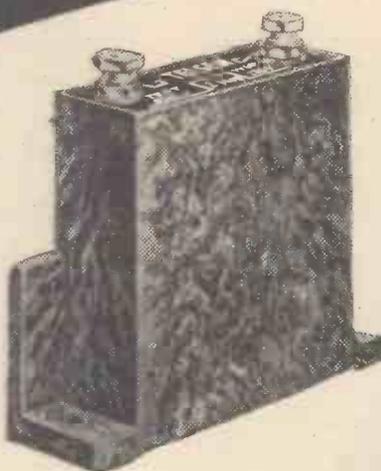
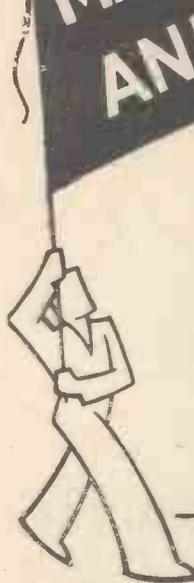
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Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable,

TELSEN

MANSBRIDGE
AND MICA

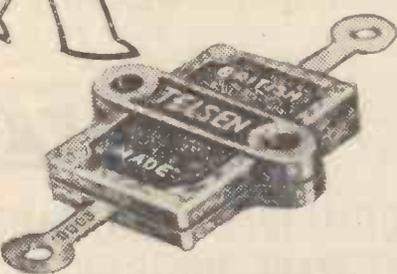
CONDENSERS



TELSEN MANSBRIDGE TYPE CONDENSERS

These are made by the most advanced processes from the finest materials it is possible to obtain, and subjected during manufacture to a series of stringent tests under laboratory conditions. They are of the true Mansbridge type, self-sealing, non-inductive and hermetically sealed. They are offered in two types, the capacities from .01 to 2 Mfd. in Bakelite cases, and in blocks of 4, 6, and 8 Mfd. in metal cases with soldering tags.

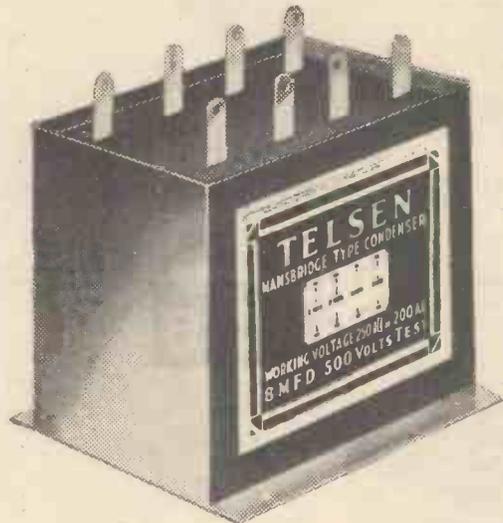
CAP. 500 Volt Test		1,000 Volt Test	
MFD.	NO. PRICE.	NO.	PRICE.
.01	W.232 1/6	W.239	2/6
.04	W.230 1/9	W.237	2/9
.1	W.231 1/9	W.238	2/9
.25	W.229 2/-	W.236	3/-
.5	W.228 2/3	W.235	3/3
1.	W.227 2/3	W.234	3/6
2.	W.226 3/-	W.233	5/-



TELSEN TAG CONDENSERS

This type is of extremely compact and sturdy construction. It may be mounted on either insulated or metal panels by utilising the two baseboard screw holes in the neatly designed moulded casing. The tags enable the condenser to be connected to any other component, either directly or by soldering. H.F. losses are negligible. The capacity is stamped on the soldering tag.

CAPACITY.	NO.
.0001	W.207
.0002	W.208
.0003	W.209
.0004	W.210
.0005	W.211
.001	W.212
.002	W.213



TELSEN MANSBRIDGE BLOCK CONDENSERS

These are contained in metal cases finished in brown and with fixing holes. As with the other types of Telsen Mansbridge Condensers, they are self-sealing, non-inductive and hermetically sealed. Three types, each made having total capacities of 4, 6, and 8 mfd., each type being divided into 2-mfd. sections, so that several arrangements of capacity may be obtained. Neat and substantial soldering tags are provided for each section.

CAP. 500 Volt Test.		PRICE
MFD.	CAT. NO.	
4	W.175	5/6
6	W.176	8/-
8	W.177	10/6

1,000 Volt Test.		PRICE
CAT. NO.		
W.178	..	9/6
W.179	..	14/6

TELSEN "MICA" CONDENSERS

The New Telsen "Mica" Condensers represent an important advance in technique. H.F. losses have been practically eliminated even in the larger capacities. In order to distinguish them from the earlier type, now to be discontinued, the new condensers are enclosed in a re-designed case, which, while possessing all the adaptability of the previous one as to flat and vertical mounting, is of more attractive appearance. Grid-leak clips may, as heretofore, be mounted in series or in shunt and are supplied at no extra charge with capacities .0001, .0002, and .0003 mtd.



CAP. MFD.	NO.	PRICE.
.0001	W.240	1/-
.0002	W.241	
.0003	W.242	
.0004	W.243	
.0005	W.244	
.001	W.245	
.002	W.246	
.006	W.247	1/3



TELSEN PRE-SET CONDENSERS

Very low minimum capacity, giving a wide range of selectivity adjustment when used in aerial circuit. Substantially made, easily adjusted and provided with locking ring. High insulation and low loss.

MAX. CAP. MFD.	MIN. CAP. MFD.	NO.
.002	.00025	W.149
.001	.00052	W.150
.0003	.00016	W.151
.0001	.00005	W.152

TELSEN

RADIO COMPONENTS

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TELSEN RADIO COMPONENTS
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BROADCASTING STATIONS ABROAD.

ARRANGED IN ORDER OF WAVELENGTH.

Wavelength in Metres.	Frequency in Kilocycles.	Power in kW.	Station.	Tuning Positions.	Wavelength in Metres.	Frequency in Kilocycles.	Power in kW.	Station.	Tuning Positions.
1935	155	7	Kaunas (Kovno) (Lithuania)		447.1	671	0.15	Rjukan (Norway). (Relays Oslo)	
1875	160	8.5	Huizen (Holland). (Exchanges wavelengths with Hilversum every three months.)		447.1	671	0.08	Notodden (Norway). (Relays Oslo)	
1796	167	54	Lahti (Finland)		441.2	680	50	Rome, IRO. (S.-W. Station, 2RO on 25.4 m.)	
1724	174	75	Radio Paris, C.F.R.		435.4	689	55	Stockholm, SASA (Sweden)	
1635	183.5	60	Zeesen (Königswusterhausen) (Germany). (Generally relays Berlin.)		431	696	2.5	Belgrade (Yugoslavia)	
1600	187.5	10	Irkoutsk, RV14 (Russia)		424.3	707	2	Madrid, EAJ7 (Union Radio). (After 7.0 p.m.)	
1554.4	193	30	Daventry National, (S.-W. Stn. G5SW on 25.53 m.)		424.3	707	1.3	Madrid, EAJ2 (Radio Espana). (Up to 7.0 p.m.)	
1538	195	7	Ankara (Angora) (Turkey)		424.3	707	100	Moscow, Imini Stalina (Russia)	
1481	202.5	100	Moscow, RV1 (Old Komitern) (Russia)		419	716	1.5	Berlin, No. 1, Witzleben (Germany)	
1446	207.5	13	Eifel Tower, FLE, Paris		416.4	720.5	5	Rabat (Morocco)	
1412	212.5	120	Warsaw 1 (Poland)		413	725	1.2	Dublin (Irish Free State)	
1380	217.5	100	Novosibirsk, RV6 (Russia)		408.7	734	16	Katowitz (Poland)	
1350	222.2	0.5	Tunis-Kasbah (Tunisia)		403.8	743	25	Sottens (Radio Suisse Romande) (Switzerland)	
1348	222.5	30	Motala (Sweden). (Relays Stockholm)		398.9	752	25	Midland Regional	
1304	230	100	Moscow, WZSPS (Trade Union) (Russia)		394.2	761	12	Bucharest (Roumania)	
1260	238	10	Baku, RV8 (Russia)		389.6	770	1.5	Frankfurt-a-M. (Germany)	
1229.5	244	0.6	Boden (Sweden). (Relays Stockholm)		389.6	770	10	Archangel, RV36 (Russia)	
1200	250	5	Stamboul (Turkey)		385.1	779	8	Toulouse (Radiophonie du Midi) (France)	
1200	250	21	Reykjavik (Iceland)		385.1	779	10	Stalino, RV26 (Russia)	
1170	256	25	Tashkent, RV11 (Russia)		381	788	16	Lwow (Lemberg) (Poland)	
1154	260	7.5	Kalundborg (Denmark)		376.4	797	50	Scottish Regional (Falkirk)	
1117	268.5	40	Moscow, Popoff RV58 (Russia)		372.2	806	1.5	Hamburg (Germany)	
1100	272.7	35	Minsk Koloditschi, RV10 (Russia)		370.1	810.5	0.8	Radio, LL, Paris	
1083	277	60	Oslo (Norway)		368.1	815	1	Seville, EAJ5 (Union Radio) (Spain)	
1071	280	10	Tiflis, RV7 (Russia)		368.1	815	10	Helsinki (Finland). (Relays Lahti)	
1035	290	36	Kiev, RV9 (Russia)		363.1	815	10	Bolzano (Italy)	
1000	300	100	Leningrad, Kolpino RV53 (Russia)		363.1	815	10	Kharkov, RV20 (Russia)	
968	310	10	Alma Ata, RV60 (Russia)		364.1	824	1	Bergen (Norway)	
938	320	20	Kharkov, RV4 (Russia)		363.6	825	16	Algiers (Algeria)	
882	340	20	Saratov, RV3 (Russia)		360.6	832	60	Mühlacker (Stuttgart) (Germany)	
849	353.4	4	Rostov-on-Don, RV12 (Russia)		355.9	843	50	London Regional (Brookmans Park)	
825	363.6	50	Sverdlovsk, RV5 (Russia)		352.1	852	7	Graz (Austria). (Relays Vienna)	
770	389	0.6	Ostersund (Sweden). (Relays Stockholm)		348.8	860	7.6	Barcelona, EAJ1 (Spain)	
760	395	1.3	Geneva (Switzerland). (Relays Sottens)		348.8	860	10	Leningrad, RV70 (Russia)	
720	416.6	20	Moscow, RV2 (Experimental) (Russia)		345.2	869	11.5	Strasbourg, PTT (France)	
700	428.6	4	Minsk, RV10 (Russia)		341.7	878	35	Brno (Brunn) (Czechoslovakia)	
690	434.6	1.5	Oulu (Uleaborg) (Finland)		338.2	887	15	Brussels II, Velthem (Belgium). (Flemish Programme.)	
680	441.2	0.6	Lausanne (Switzerland). (Relays Sottens)		335	896	5	Cadiz (Spain)	
575	521.5	1.2	Samara, RV16 (Russia)		334.4	897	1.9	Poznan (Poland)	
574.7	522	2.5	Ljubljana (Yugoslavia)		331.4	905	7	Milan (Italy). (Relays Turin)	
569	527	0.25	Freiburg-im-Breisgau (Germany). (Relays Stuttgart)		328.2	914	60	Poste Parisien (France)	
568.1	528	2	Grenoble (France)		325	923	1.5	Breslau (Germany)	
566	530	0.25	Hanover (Germany). (Relays Hamburg)		321.9	932	10	Göteborg (Sweden). (Relays Stockholm)	
563	533	16	Wilno (Poland). (Relay Station)		318.8	941	0.5	Sofia (Bulgaria)	
560	536	0.25	Augsburg (Germany). (Relays Munich)		318.8	941	0.25	Dresden (Germany). (Relays Leipzig)	
560	536	1.5	Kaiserslautern (Germany). (Relays Munich)		318.8	941	1.5	Naples, INA (Italy). (Relays Rome)	
550	545	18.5	Hamar (Norway). (Relays Oslo)		315.8	950	1.6	Marseilles, PTT (France)	
542	554	3	Budapest No. 1 Lakihegy (Hungary)		312.8	959	1.7	Cracow (Poland)	
542	554	10	Palermo (Italy)		312.8	959	10	Genoa, IGE (Italy). (Relays Turin)	
533	563	1.5	Sundsvall (Sweden). (Relays Stockholm)		309.9	968	1	Cardiff	
525	571	15	Munich (Germany)		307	977	0.7	Radio Vitus (Paris)	
517	580	15	Riga (Latvia)		307	977	0.5	Falun (Sweden)	
509	589	15	Vienna (Rosenhügel) (Austria)		307	977	0.75	Zagreb (Yugoslavia)	
508	590	10	Brussels No. 1, Velthem (Belgium). (French Programme.)		304	986	13	Bordeaux Lafayette, PTT (France)	
501.7	598	10	Astrakhan, RV35 (Russia)		301.5	995	50	North National (Manchester)	
500.8	599	20	Nijni Novgorod, RV42 (Russia)		298.8	1004	11	Tallinn (Esthonia)	
493.4	608	1.2	Florence, IFI (Italy). (Relays Turin)		296.1	1013	7	Hilversum (Holland). (Up to 4.40 p.m.)	
488.6	614	120	Trondheim (Norway)		296.1	1013	20	Hilversum (Holland). (After 4.40 p.m.)	
486.2	617	10	Prague, No. 1 (Czechoslovakia)		293.5	1022	0.7	(Exchanges wavelengths with Huizen every three months.)	
480	625	50	Ufa, RV22 (Russia)		293.5	1022	2.6	Limoges, PTT (France)	
480	625	10	North Regional (Manchester)		291	1031	1	Kosice (Czechoslovakia)	
472.4	635	60	Ivanovo-Voznesenk, RV33 (Russia)		291	1031	10	Tampere (Finland). (Relays Helsinki)	
465.8	644	1.5	Langenberg (Germany)		288.3	1040	50	Viipuri (Viborg) (Finland). (Relays Helsinki)	
465.8	644	0.5	Lyons la Doua, PTT (France)		288.3	1040	—	Scottish National (Falkirk)	
459.4	653	60	Tartu (Esthonia)		287.1	1045	0.7	British Relay Stations (Bournemouth, Plymouth, Swansea)	
453.2	662	0.6	Beromünster (Schweizerischer Landessender) (Switzerland)		286	1049	0.8	Lyons (Radio-Lyon) (France)	
453.2	662	1	San Sebastian, EAJ8 (Spain)		283.6	1058	0.5	Montpellier (France)	
453.2	662	0.5	Pori (Bjorneborg) (Finland)		283.6	1058	0.5	German Relay Stations (Berlin, Magdebourg, Stettin)	
453.2	662	0.5	Danzig. (Relays Heilsberg)		283.6	1058	0.5	Innsbruck (Austria). (Relays Vienna)	
453.2	662	0.7	Klagenfurt (Austria). (Relays Vienna)		282.2	1063	2	Lisbon CT 1AA (Portugal). (Short-wave Station on 31.35 m.)	
453.2	662	1	Porsgrund (Norway). (Relays Oslo)		281.2	1067	0.75	Copenhagen (Denmark)	
453.2	662	0.1	Salamanca, EAJ22 (Spain)		278.8	1076	13.5	Bratislava (Czechoslovakia)	
453.2	662	0.5	Tromsø (Norway)		276.5	1085	60	Heilsberg (Germany).	
453.2	662	0.5	Bodø (Norway)		273.7	1096	7	Turin (Italy)	
453.2	662	0.15	Upsala (Sweden). (Relays Stockholm)		271.5	1105	1.3	Rennes, PTT (France)	
450.4	666.7	10	Odessa, RV13 (Russia)		269.8	1112	0.25	Bremen (Germany). (Relays Hamburg)	
447.1	671	0.7	Paris, Ecole Supérieure, PTT		269.8	1115	20	Bari (Italy)	
447.1	671	0.35	Aalesund (Norway)		267.6	1121	8	Valencia (Spain)	
					265.8	1128.5	1.3	Lille, PTT (France)	
					263.8	1137	11.2	Moravska Ostrava (Czechoslovakia)	

BROADCASTING STATIONS ABROAD (In Order of Wavelength).

Wavelength in Metres.	Frequency in Kilocycles.	Power in kW.	Station.	Tuning Positions.	Wavelength in Metres.	Frequency in Kilocycles.	Power in kW.	Station.	Tuning Positions.
261.5	1147	50	London National (Brookmans Park)		235.5	1274	0.5	Kristiansand (Norway)	
259.3	1157	2	Leipzig (Germany)		235	1283	1.65	Lodz (Poland). (Relay Station)	
257.1	1167	10	Hörby (Sweden). (Relays Stockholm)		232.2	1292	0.25	Kiel (Germany). (Relays Hamburg)	
255.1	1176	0.7	Toulouse, PTT (France)		230.6	1301	0.25	Norrköping (Sweden)	
253.1	1185	5	Gleiwitz (Germany). (Relays Breslau)		230.6	1301	—	Swedish Relay Stations (Malmö, Karlstad, Hälsingborg, Umea)	
252	1193	1	Barcelona, EAJ15 (Assoc. Nat.) (Spain)		230.6	1301	0.25	Trollhätten (Sweden)	
249.6	1202	—	Almeria, EAJ18 (Spain)		227.4	1310	0.5	Uddevalla (Sweden)	
249.6	1202	0.3	Prague, No. 2 (Czechoslovakia). (Temporary)		227.4	1310	0.5	Flensburg (Germany). (Relays Hamburg)	
249.6	1202	0.8	Varberg (Sweden). (Provisional)		226	1328	0.15	Hudiksvall (Sweden). (Provisional)	
247.7	1211	10	Juan-les-Pins, Nice (France)		224.4	1337	1	Cork (Irish Free State)	
247.7	1211	0.2	Trieste (Italy)		223	1345	10	Fécamp, Radio-Normandie (France)	
245.9	1220	0.01	Kalmar (Sweden)		221.4	1355	0.4	Helsinki, No. 2 (Finland)	
245.9	1220	0.5	Bloemendal (Holland). (Sundays only)		219.9	1365	1.5	Béziers (France)	
245.9	1220	0.4	Berne (Switzerland)		218.5	1373	0.5	Salzburg (Austria). (Relays Vienna)	
245.9	1220	0.2	Cartagena (Spain)		217	1382	0.5	Königsburg (East Prussia) (Germany)	
245.9	1220	0.25	Eskilstuna (Sweden). (Relays Stockholm)		215.6	1391	0.2	Halmstad (Sweden)	
245.9	1220	0.5	Cassel (Germany). (Relays Frankfurt)		215.6	1391	0.1	Brussels, Radio-Conférence	
245.9	1220	0.5	Linz (Austria). (Relays Vienna)		214.3	1400	1	Aberdeen	
245.9	1220	0.4	Pietarsaari (Finland)		214.4	1400	10	Warsaw, No. 2 (Poland)	
245.9	1220	0.1	Säffle (Sweden). (Relays Stockholm)		211.3	1420	1	Newcastle	
245.9	1220	0.1	Schaerbeek (Belgium)		209.8	1430	—	Budapest, No. 2 (Hungary)	
245.9	1220	0.5	Turku (Abo) (Finland). (Relays Helsinki)		207	1450	0.15	Boras (Sweden)	
244.1	2229	0.5	Basle (Switzerland)		206	1460	0.2	Ornsköldsvisk (Sweden)	
242.3	1238	1	Belfast (N. Ireland)		204.1	1470	0.2	Gävle (Sweden)	
240.6	1247	0.5	Stavanger (Norway)		202.7	1480	0.25	Kristinehamn (Sweden)	
238.9	1256	2	Nürnberg (Germany). (Relays M.)		201.3	1490	0.25	Jönköping (Sweden)	
237.2	1265	3	Bordeaux, Sud-Ouest (France)		195	1530	0.2	Karlskrona (Sweden)	
237.2	1265	0.07	Nimes (France)						

PRINCIPAL SHORT-WAVE STATIONS. ARRANGED IN ORDER OF WAVELENGTH.

(N.B.—Times of Transmission, given in parentheses, are approximate only and represent B.S.T.)

Wavelength in Metres.	Frequency in Kilocycles.	Call Sign.	Station.	Tuning Positions.	Wavelength in Metres.	Frequency in Kilocycles.	Call Sign.	Station.	Tuning Positions.
14.47	20,720	LSV	Buenos Aires (Argentina). (Sun. 22.00)		39.7	7,556	HKF	Bogota (Colombia). (Westinghouse Labs.)	
15.93	18,830	PLE	Bandoeng (Java). (Tues. 14.40-16.40)		41.0	7,320	HSP2	Bangkok (Siam). (Mon. 14.00)	
16.57	18,105	W9XAA	Chicago, Ill. (U.S.A.). (Relays WCFL)		41.5	7,320	—	Budapest (Hungary). (Tech. Sch.) (07.30-08.10)	
16.82	17,804	PCV	Kootwijk (Holland). "Voice of Holland." (Sat. 15.40)		41.5	7,230	HB9D	Zurich (Radio Club) (Switzerland). (1st and 3rd Sun.)	
16.9	17,750	HSP	Bangkok (Siam). (Sun. and Tues. 21.00)		41.6	7,211	EAR58	Tenerife (Radio Club) (Canary Islands)	
19.56	15,340	W2XAD	South Schenectady, N.Y. (U.S.A.) (Daily 21.00)		41.7	7,195	VS1AB	Singapore (Malay States). (Sun. and Wed. 15.30)	
19.68	15,244	FYA	Pontoise (France). (Colonial Stn. E-W)		42.0	7,143	VK2HR	Sydney (Australia)	
19.72	15,210	W8XK	East Pittsburg, Pa. (U.S.A.) (Relays KDKA)		43.0	6,970	EAR110	Madrid. (Tues. and Sat. 23.30)	
19.73	15,200	DJB	Zeesen (Germany). (Daily 14.00-18.00)		43.75	6,860	—	Radio Vitus, Paris. (Daily 20.30)	
19.84	15,120	HVJ	Vatican State, Rome. (Daily 12.00)		44.92	6,675	TGW	Guatemala City (Central America). (Daily 04.00)	
19.9	15,075	T14NRH	Heredia (Costa Rica). (Sat., Sun., Mon. 17.00 and 22.00)		45.0	6,667	FMSKR	Constantine (Algeria). (Mon. and Fri. 23.00)	
20.5	14,630	XDA	Chapultepec (Mexico). (Daily 20.30)		45.38	6,611	REN	Moscow (Relays Trade Union Stn.)	
21.5	13,950	—	Bucharest University (Roumania). (Wed. and Sat. 20.00)		46.67	6,426	VE9BY	London, Ont. (Canada). (Sat. 01.00 Sun. 02.00)	
23.38	12,820	—	Rabat (Morocco). (Sun. 12.30)		46.69	6,425	W3XL	Bound Brook, N.J. (U.S.A.). (Fri. 22.00 and 04.00, Sat. 18.30 and 04.00)	
25.2	11,900	FYA	Pontoise (France). (Colonial Stn. N-S)		47.0	6,382	HCIDR	Quito, Ecuador. (Daily 02.00)	
25.25	11,880	W8XK	East Pittsburg, Pa. (U.S.A.) (Relays KDKA)		48.0	6,250	CN8MC	Casablanca (Morocco). (Relays Rabat)	
25.27	11,870	VUC	Calcutta (India). (Weekdays 02.45 and 15.15)		48.05	6,243	HKD	Barranquilla (Colombia). (Weekdays 00.45)	
25.34	11,840	W9XAA	Chicago, Ill. (U.S.A.). (Relays WCFL)		48.2	6,220	2RO	Rome (Italy)	
25.4	11,810	2RO	Prato Smeraldo, Rome. (16.00 and 19.30)		48.35	6,205	HKC	Bogota (Colombia). (Daily 16.00)	
25.42	11,800	VE9GW	Bowmanville (Canada). (Daily 18.00)		48.65	6,167	X1F	Mexico City (Mexico)	
25.5	11,760	XDA	Chapultepec (Mexico). (Daily 21.00)		48.8	6,147	VE9CL	Winnipeg (Canada). (Daily ex. Sun. 00.30)	
25.53	11,750	G8SW	Chelmsford. (Relays Daventry National daily, ex. Sun.)		48.86	6,140	W8XK	East Pittsburg, Pa. (U.S.A.) (Relays KDKA)	
25.6	11,715	VE9JR	Winnipeg (Canada). (Daily ex. Sat. and Sun. 17.45)		49.02	6,120	W2XE	Long Island, N.Y. (U.S.A.) (Relays WABC)	
25.63	11,700	FYA	Pontoise (France). (Colonial Stn. E-W daily 21.00)		49.18	6,100	W3XAL	Bound Brook, N.Y. (Relays WJZ)	
28.2	10,365	PLR	Bandoeng (Java). (Daily 11.00-15.00)		49.22	6,095	VE9GW	Bowmanville, Ont. (Canada). (Daily 21.00)	
28.98	10,350	LSX	Buenos Aires (Argentina). (Daily 21.30)		49.34	6,080	W9XAA	Chicago, Ill. (U.S.A.). (Relays WCFL)	
29.3	10,223	T14NRH	Heredia (Costa Rica). (Daily 23.00 and 03.00)		49.4	6,072	W2XCX	Kearny, N.J. (U.S.A.). (Relays WOR)	
30.0	10,000	—	Belgrade (Yugoslavia). (Mon. 21.00)		49.4	6,072	UOR2	Vienna. (Tues. 13.00, Thurs. 15.00, Sat. 23.00)	
30.4	9,869	EAQ	Aranjuez (Spain). (Daily 00.30, Sat. 19.00)		49.4	6,069	ZTJ	Johannesburg (S. Africa). (Daily 16.30)	
31.10	9,640	HS2PJ	Bangkok (Siam). (Mon. 02.00-05.00)		49.43	6,069	VE9CS	Vancouver, B.C. (Canada)	
31.25	9,598	CT1AA	Lisbon (Portugal). (Thurs. and Fri. 23.00-01.00)		49.46	6,065	—	Motala (Sweden). (Relays Stockholm)	
31.28	9,590	VK2ME	Sydney (Australia). (Sun. 04.00, 08.30, 10.30, 17.30)		49.5	6,060	W3XAU	Philadelphia, Pa. (U.S.A.) (Relays WCAU)	
31.3	9,582	W3XAU	Philadelphia, Pa. (U.S.A.). (Daily ex. Thurs. and Fri. 21.00)		49.5	6,060	W8XAL	Mason, Ohio (U.S.A.). (Relays WLW)	
31.35	9,570	W1XAZ	East Springfield, Mass. (U.S.A.) (Relays WBZ)		49.5	6,060	VQ7LO	Nairobi (Kenya Colony). (Daily 16.30)	
31.35	9,570	W1XAZ	East Springfield, Mass. (U.S.A.) (Relays WBZ)		49.59	6,050	VE9HX	Halifax (Nova Scotia). (Relays CHNS)	
31.35	9,570	W1XAZ	East Springfield, Mass. (U.S.A.) (Relays WBZ)		49.67	6,042	W2XAL	Goytesville, N.J. (U.S.A.) (Relays WRNY)	
31.35	9,570	W1XAZ	East Springfield, Mass. (U.S.A.) (Relays WBZ)		49.8	6,023	XEW	Mexico City (Mexico). (Daily 02.00)	
31.38	9,560	SR1	Posen (Poland). (Tues. and Thurs. 19.30)		49.83	6,020	W9XF	Chicago, Ill. (U.S.A.). (Relays WENR)	
31.48	9,530	W2XAF	Schenectady, N.Y. (U.S.A.). (Relays WGY)		49.96	6,005	HRB	Tegucigalpa (Honduras). (Daily ex. Sun. 00.00-05.00)	
31.51	9,520	OXY	Skamlebaek (Denmark). (Relays Copenhagen)		50.0	6,000	EAR25	Barcelona, Radio Club (Spain). (Sat. 21.00)	
31.55	9,510	VK3ME	Melbourne (Australia). (Wed. and Sat. 11.00)		50.0	6,000	RW59	Moscow	
31.58	9,500	—	Rio de Janeiro (Brazil). (Daily 23.30)		50.0	6,000	ZL3ZC	Christchurch (New Zealand). (Wed. 03.00, Sat. 07.30)	
31.86	9,415	PLV	Bandoeng (Java). (Tues. 14.40)		50.0	6,000	FIUI	Tananarive, P.T.T. (Madagascar)	
32.0	9,390	CT3AQ	Funchal (Madeira). (Tues. and Thurs. 10.30-12.30)		50.26	5,970	HVJ	Vatican State, Rome. (Daily 20.00)	
32.26	9,300	—	Rabat (Morocco). (Sun. 20.00)		51.22	5,857	XDA	Chapultepec (Mexico)	
33.50	8,928	TGX	Guatemala City (S. American)		54.52	5,502	W2XBH	Brooklyn, N.Y. (U.S.A.). (Relays WCGU)	
34.68	8,650	VE9BY	London, Ont. (Canada). (Mon. 21.00)		58.0	5,172	OK1MPT	Prague (Czechoslovakia). (Tues. and Fri. 20.30)	
34.68	8,650	W2XV	Long Island, N.Y. (U.S.A.). (Fri. 23.00)		61.0	4,918	F8GC	Radio LL (Paris). (Daily 12.30 and 19.00)	
36.92	8,125	PLW	Bandoeng (Java). (Daily 11.00-15.00)		62.5	4,800	W2XV	Long Island, N.Y. (U.S.A.). (Fri. 24.00)	
37.2	8,060	OUI TH	Vienna (Techn. College). (Mon. and Thurs. 21.30)		62.56	4,795	VE9BY	London, Ont. (Canada). (Sun. 06.00)	
39.4	7,612	X26A	Nuevo Laredo (Mexico). (Thurs. 17.00)		70.2	4,273	RW15	Khabarovsk (Russia). (Daily 10.00-13.00)	
					80.0	3,750	2RO	Rome	

ALGIERS

363.3 metres; 13 kW.—7.0 p.m., Concert of Dance Music. 7.30, Songs from Operas; Arias from (a) Alceste (Gluck), (b) The Twilight of the Gods (Wagner), (c) Faust (Gounod), (d) Carmen (Bizet). 7.45, Instrumental Solos. 8.0, Concert of Variety Music on Gramophone Records. 10.0 (approx.), Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 349 metres; 8 kW.—12 Noon, Chimes from the Cathedral, and Weather Forecast. 2.0 p.m., Light Music on Gramophone Records. 2.30, Theatre Notes, Amusement Guide, and Popular Music on Gramophone Records (contd.). 3.0, Film Review, followed by Concert by the Station Sextet. 4.0, Programme for Hospitals and Benevolent Institutions, with Gramophone Records. 5.0 to 6.30, Interval. 6.30, Light Music on Gramophone Records. 7.0, Concert by the Station Orchestra: Estudiantina (Turina); Selection from The Huguenots (Meyerbeer); Waltz, Chulerias (Menzar); Aubade (Caludi). 7.30, Song Recital, by Mario Marco (Tenor). 8.0, Agricultural Talk in Catalan. 8.10, Concert by the Station Orchestra: Soloist, Mary Mabel (Songs); Songs: (a) El majó discreto (Granados), (b) L'amour des Roses (C. Franck); Persian Dance (Guiraud); Consolation No. 1 (Liszt); Songs: (a) Widmung (Schuman), (b) Aria from La Bohème (Puccini); Jota, from La Dolores (Breton). 9.0, Dance Music by the Melody Boys, relayed from the Excelsior Dance Hall. 10.0, Programme for Women. 10.15, Request Gramophone Concert. 11.45, Chess Lesson. 12 Midnight, Close Down.

BASEL.—See Schweizerischer Landesender.

BELGRADE

430.4 metres; 2.5 kW.—12.5 p.m., Popular Music on Gramophone Records. 12.30, Concert by the Station Orchestra. 1.30, News Bulletin. 4.0, Concert of Cigány Music by the Sandor Radu Orchestra. 5.0, Medical Talk. 5.30, Recital of Jugoslav Songs by Suleiman Dhakic. 7.25, Time Signal and Programme Announcements. 7.30, Choral Concert. 8.20, Talk on Wireless, followed by Sports Notes. 9.0, Concert by the Station Orchestra, with Zika Tomis (Songs); Overture (Biniecki); Aria from Morana (Gótvac); Aria from A Night in May (Rimsky-Korsakov); Polovtsian Dances from Prince Igor (Borodin); Aria from Halka (Moniuszko); Aria from The Bartered Bride (Smetana); Slav Dances Nos. 9 and 10 (Dvorak). 10.0, News Bulletin. 10.20, Popular Music on Gramophone Records. 10.40, Cigány Music relayed from the Rudnician Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 40 kW.—11.0 a.m. (approx.), See Berlin (Witzleben). 12 Noon, Reading of Lyrics. 12.10 to 2.30 p.m., See Berlin (Witzleben). 2.30, Heinrich Gutberlet reads from his own Works. 3.0, Two Sketches for Children, on Gramophone Records. 3.30, Talk: Roadways of the World—Mountain Roads. 4.0 (approx.) to 6.0, Programme from Berlin (Witzleben). 6.0, Talk by Hermann Rössler. 6.30, Talk: Men and their Callings—The Mounted Police. 7.0, See Leipzig. 7.20, See Munich. 8.30, See Heilsberg. 9.30, See Langenberg. 10.15, Weather, News and Sports Notes. 10.30 (approx.) till Close Down, See Berlin (Witzleben). 12 Midnight (approx.), Close Down.

BERLIN

{WITZLEBEN}, 419.5 metres; 1.5 kW.—11.0 a.m. Public Meeting of the National Association of Wireless Traders, relayed from the Radio Exhibition; Speeches, and Music by the Berlin Wireless Orchestra, conducted by Bruno Seidler-Winkler; Overture, Iphigenia in Aulis (Gluck); Inaugural Address by Director Otto Löffler, President of the Association; Address by Dr. Hans Bredow; Address by Herr Hans Neupert: The Protection of the Radio Trade; Closing Address by the President; Huldigungsmarsch (Liszt). 12 Noon, Walter Gutkelch reads from his own Poems. 12.10 p.m., Concert by the German Concert Orchestra, conducted by Peter Schmitz, relayed from the Radio Exhibition; Overture, Abu Hassan (Weber); Suite, Aus dem Morgenlande (Heuberger); Waltz from Dame Kobold (Weingartner); Suite, Roma (Bizet); Overture, The Betrothal by Lanternlight (Offenbach); Entr'acte and Waltz from La Vie Parisienne (Offenbach); Czardas from Ritter Pasmann (Johann Strauss); Intermezzo from The Arabian Nights (Johann Strauss); Overture, Die Fledermaus (Johann Strauss). 2.0, Talk for Parents: Protecting Children from the Dangers of Street Accidents. 2.30, Fairy Tales for Children. 3.0, Swabian Folk Songs with Lute Accompaniment. 3.30, Two One-Act Plays: (a) The Triumph of Science (Tristan Bernard); (b) A School Lesson in 3,000 A.D. (Paul Schaal). 4.30, Wind Instrument Concert, conducted by Hermann Schulze-Wittenberg, relayed from the Radio Exhibition; Overture, William Tell (Rossini); Selection from Madame Butterfly (Puccini-Renfield); Waltz, Lustiges Wien (Meisel); March, Jugend voran (Translatour); Procession of the Mastersingers, from The Mastersingers (Wagner); Coronation March (Richard Strauss); Waltz Rhapsody, Fuszta-Legenden (Lindsay-Thelmer). 6.0, Talk by Albert Schweitzer: The City of the Thousand Temples. 6.25, Pianoforte Recital

SUNDAY

AUGUST THE TWENTY-FIRST.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Buffs' Service of Remembrance and Laying Up of the Colours of the 1st Bn. of the Regiment, relayed from Canterbury. Orchestral programme. Concert of Russian music. Military Band concert. Service from Crowstone Congregational Church. Orchestral concert.
- LONDON REGIONAL** Instrumental concert. Song and violin recital. Service from Dunblane Cathedral. Orchestral concert.
- MIDLAND REGIONAL** Concert of chamber music. Service from St. Mark's Church, Londonderry, Birmingham. Military Band concert. Pianoforte recital.
- NORTH REGIONAL** Orchestral concert. Service from St. John's Wesleyan Church, Colwyn Bay. Band concert.
- WEST REGIONAL** Service from St. John's Wesleyan Church, Colwyn Bay. Orchestral concert.
- SCOTTISH REGIONAL** Orchestral concert. Service from Dunblane Cathedral. National programme.
- BELFAST** National and London Regional programmes.

ABROAD

- BERO-MUNSTER** Talk in English: "English Character and English Ways."
- BUCHAREST** Opera: "The Barber of Seville" (Rossini).
- COPENHAGEN** A. Bach Prelude and Fugue on the Guitar.
- LEIPZIG** Folk Music with Concertina Orchestra.
- LANGENBERG** Great choral concert from the Mining Area of Recklingshausen.
- VIENNA** Salzburg Festival: Concert by Vienna Philharmonic Orchestra.

by Walter Welsch. 7.0, See Leipzig. 7.25, Martin Raschke reads from his own Works. 7.50, Sports Notes. 8.0, Variety Programme, directed by Alfred Braun, relayed from the Radio Exhibition. 10.0, Weather, News, and Sports Notes. 10.30, Gramophone Records of Songs by Enrico Caruso. 11.0, See Munich. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landesender.

BEROMUNSTER.—See Schweizerischer Landesender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—12 Noon, Relay from Paris (Ecole Supérieure), 447.1 metres. 2.0, Relay from Paris or Relay of a Local Celebration. 6.15 (approx.), Radio Journal. 8.0, Programme for Ex-Servicemen. 8.15, Lottery Results. 8.30, Popular Music on Gramophone Records. 9.0, Concert of Classical and Modern Music, with Songs. After the Concert, Theatre Guide and Time Signal.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW.; and GLEIWITZ, 253 metres.—10.0 a.m., Protestant Service. 11.0, Relay of the Unveiling of the Leuthen War Memorial. 12 Noon, Trombone Concert. 12.45 p.m., Concert from Berlin (Witzleben). 2.0, News Bulletin. 2.10, Appeal on Behalf of Unemployed Youths. 2.35, Talk for Parents. 3.30, Talk for the Young: Boys in Other Lands. 4.0, Variety Programme from Stuttgart. 6.0, The Life-Boat Service at Work—A Radio Report from Breslau Waters. 6.30, A Little Dramatic Interlude (Georg Zivier). 6.50, Pianoforte Recital by Hanna Horn: Sonata in E flat (Haydn); Berceuse in D flat (Chopin); Scherzo in D minor (Chopin). 7.20, Weather Forecast and Sports Results. 7.30, Gramophone Concert of Popular Music. 7.55, Reading: Bahnwärter Thiel (Gerhart Hauptmann). 8.30, See Heilsberg. 9.10, Dance Music. 9.30, Rosicke's Spirit Comedy (Georg Hirschfeld). 10.45, Time, Weather, News, and Programme Announcements. 11.15, Dance Music from Berlin (Witzleben). 12.30 a.m. (Monday) Silent Night.

BRUSSELS (No. 1)

No. 1, I.N.R., 509 metres; 15 kW.—12 Noon, Concert conducted by André Fellemann, relayed from the Grand Hotel, Antwerp. 1.0 p.m., Le Journal Parlé. 5.0, Orchestral Concert conducted by Franz André. 6.0, Variety Concert on Gramophone Records. 6.30, Concert of Troubadour and Wandering Minstrel Songs. 7.0, Nursery Suite (Elgar) on Gramophone Records. 7.15, Religious Address. 7.30, Le Journal Parlé. 8.0, Mozart-Debussy Pianoforte Recital by Mlle. G. Viala. 8.30, Gramophone Records. Selection from La Princesse jaune (Saint-Saëns); Night on the Bare

Mountain (Mussorgsky). 8.45, Humorous Dialogue (Donnay). 9.0, Concert from the Kursaal, Ostend. Conductor: François Rasse, Soloist: Elyra de Hidalgo. March, Pomp and Circumstance (Elgar); Ballet Music from Antar (Dupont); Cello Solos: (a) Intermezzo (Granados), (b) Minuet (Lazart); Songs: (a) Aria of the Bells from L'akmé (Delibes), (b) Bolero (Ravel), (c) Aria from Lucia di Lammermoor (Donizetti); Hungarian Fantasia (Liszt). After the Concert, Le Journal Parlé and Dance Music from the Kursaal, Ostend. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

No. 2, N.I.R.; 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by the Tea Room Orchestra. 1.0 p.m., Le Journal Parlé. 1.10, Popular Song Recital by Q. Van Trig. J. Van der Spurt (Pianoforte). 1.30, Concert (contd.). 5.0, The dansant from the Casino, Knocke. 6.0, Acts 1 and 2 of Lucia di Lammermoor—Opera (Donizetti). 7.15, Religious Address. 7.30, Music Review by Paul Gilson. 8.0, Concert by the Radio Orchestra, conducted by Franz André. In the intervals at 8.15 and 8.30, Humorous Items. 10.0, Le Journal Parlé. 10.10, Concert by Max Alexys and his Orchestra, relayed from the Ancienne Belgique. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—9.15 a.m., Programme for Children. 9.30, Religious Address. 9.45, Choral Selections of Sacred Music. 10.0, Concert of Romanian Music by the Puciano Orchestra. 11.0, Popular Music on Gramophone Records. 11.45, News Bulletin and Time Signal. 12 Noon, Light Music on Gramophone Records. 3.0 p.m., Programme for Peasants. 4.0, Concert of Light Music and Romanian Music by the Ionescu Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Concert by the Ionescu Orchestra. (contd.). 6.0, Educational Programme. 6.40, The Barber of Seville—Opera (Rossini), conducted by Carlo Brunetti. In the intervals, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 210 metres from 6.0 p.m. till 12 Midnight.—9.0 a.m., Press Review and Beauty Culture. 10.0, Evangelical Service. 11.0, Catholic Service, followed by Time Signal and Weather Forecast, and Concert by the Budapest Concert Orchestra. Conductor: Anton Deutsch. 2.0, Light Music on Gramophone Records. 3.0, Agricultural Talk. 4.0, Hungarian Folk Songs by a Children's Choir. 4.30, Talk. 4.55, News Bulletin and Announcements. 5.0, Concert by the Viranyi Salon Orchestra. 6.0, A Microphone Conversation by Nuschi Somogyi and Marton Rátkai. T. Polgar at the Pianoforte. 7.0, Dance Music. 8.0, Sports Notes and Racing Results. 8.20, The Growth of

the Operetta (XVI): Lehar Concert by the Orchestra of the Royal Hungarian Opera House. Soloists: Louise Szabo and Franz Szekelyhidy. Introductory Talk by Imre Farkas. Die Pester Frauen; Selection from The Merry Widow; Melody from Die Prinzessin; Selection from The Count of Luxembourg; Selection from Eva; Song from Endlich allein; Two Songs from Where the Lark sings; Selection from Paganini; Selection from Frederica; Three Songs from The Land of Smiles. After the Programme: Time Signal and Sports Notes, followed by Cigány Music from the Café Ostend. Soloist: P. Kalmár (Hungarian Folk Songs).

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres, 0.75 kW.; and KALUNDBORG, 1,153 metres, 7.5 kW.—8.30 a.m., Morning Gymnastics. 10.0, Divine Service from the Cathedral, Maribo. 11.30, Weather Forecast. 11.45, News Bulletin. 12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., Orchestral Concert, conducted by Emil Reesen. Overture, Così fan tutte (Mozart); Serenade for Strings, Eine kleine Nachtmusik (Mozart); Ballet Music from Aida (Verdi); Overture in E minor (Schubert); Musette from King Christian II (Sibelius); Hungarian Rhapsody No. 2 (Liszt). 1.0, Talk in English. 1.20, Talk in German: Difficulties in the German Language. 1.40, Reading in French. 2.0, Divine Service Relay. 3.30, Orchestral Concert of Light Music relayed from the Zoological Gardens. In the interval, Reading. 5.30 to 6.20, Interval. 6.20, Talk: The Experiences of a Comic Artist. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.17, Sports Notes. 7.30, Talk: Impressions of the Disarmament Conference at Geneva. 8.0, Chimes from the Town Hall. 8.2, Judith—Tragedy in Five Acts (Hebbel). 9.35, Guitar Recital by Heinrich Albert: Prelude and Fugue (Bach); Sonata Op. 15 (Sor); Etude in E minor (Mertz); Old Viennese Waltz (Heinrich Albert); Spanish Song (Heinrich Albert); Arab Serenade (Tarrega). 10.5, News Bulletin. 10.15, Orchestral Concert conducted by Emil Reesen: Overture, Casanova (Lincke); Spanish Waltz, Toreador (Royle); Selection from The Merry Widow (Lehar); Marechiaro (Tosti); Ideale (Tosti); Intermezzo, In a Persian Market (Ketyelbey); Barcarolle, Une nuit à Lisbonne (Saint-Saëns); The Dolls' Dance (Turina); Spanish March (Gyldmark). 11.0, Dance Music from the Wivex Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Monday), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and Announcements. 7.35, See Warsaw. 7.50 to 7.55, Interval. 7.55, Programme Announcements. 8.0, See Warsaw. 9.50, Sports Notes. 10.0, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—8.30 p.m., Time Signal. 8.32, Orchestral and Vocal Concert. 11.0, Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—6.0 to 8.0 p.m., Programme in English, by the I.B.C. 6.0, Programme for Children. 6.30, Military Band: Overture to Zampa (Hérold); Scena, Tally Ho! (Barsotti); Prelude to Lohengrin (Wagner); Humoresque, The Squirrel Dance (Elliot-Smith); Selection from The Three Musketeers (Friml); Cradle Song (Brahms); Intermezzo, In a Persian Market (Ketyelbey); March, The King's Guard (Keith). 7.0, Dance Music by the Renis Revellers: Was that the Human Thing to do; Now that you're gone; Auf Wiedersehen my Dear; Rain on the Roof; Good-night, Vienna; My sweet Virginia; Just Humming Along. 7.30, Orchestral and Vocal Concert. Orchestra: The Blackbird; Songs: (a) Honour and Arms (Handel), (b) I rage, I melt, I burn (Handel), (c) O Rudder than the Cherry (Handel); Orchestra: (a) Strip the Willow. (b) Petronella; Song: The Arrow and the Song (Balfe); Orchestra: All through the Night. 8.0 to 9.0, Programme in French. 9.0 till Close Down, Programme in English by the I.B.C. 9.0, Orchestral Music: Spring Song (Korndelsohn); Hymn to the Sun (Rimsky-Korsakov); Poème (Fibich); Solveig's Song and Anitra's Dance, from Peer Gynt (Grieg); Le Cygne (Saint-Saëns); Salut d'amour (Elgar); Minuet in E flat (Mozart). 9.30, Light Music: Hungarian March (Berlioz); Come to the Fair (Eashope Martin); Three for Jack (German); Mignonette (Friml); The Sleeping Beauty Waltz (Tchaikovsky); L'assise o' Mine; Pale Hands I love (Woodford-Finden); Londonderry Air (arr. Grainger). 10.0, Albumblatt (Wagner); Air for the G String (Bach); Tambourin chinois (Kreisl); Romance (Saint-Saëns); Träumerei (Schumann); Larghetto (Weber); Ballet Music from Rosamunde (Schubert); Minuet from Berenice (Handel). 10.30, Dance Music: Put that Sun back in the Sky; Kicking the Gong around; Lullaby of the Leaves; Georgia on my Mind; If I didn't have You; Living in Clover; Gone for Ever; Love, you Funny Thing. 11.0, The Studio Chorus in Selec-

AUGUST 21st

SUNDAY

continued.

tions from (a) Congress Dances, (b) George White's Scandals, (c) Cavalcade, (d) The Desert Song. 11.30, Novelty Quartet: Lonely Troubadour (Klenner); Ready for the River (Burke); The Sun is at my Window (Mayer); My Fate is in Your Hands (Waller). 11.45, Hawaiian Sextet, in Traditional Hawaiian Airs: Killima; Hawaiian Hotel; Palikiko; Aloha Oe. 12 Midnight, Orchestral and Vocal Concert. Songs: (a) Just an Old Refrain (Wynn), (b) In the Still of the Night (Berwick), (c) Waiting by the Silvery Rio Grande (Moll); Orchestra: The Rappickers' Party; Songs: (a) Watching my Dreams go by, (b) When you're smiling (Fisher), (c) The Kiss Waltz (Burke); Orchestra: Fretwork Fragments. 12.30 a.m. (Monday), Pianoforte Quartet: Sweet Adeline; Who cares; She jumped on her Pushbike; I wanna be loved by you; I wouldn't change you for the World; Ball, Picnics, and Parties; Sweet Temptation; In the Shade of the Old Apple Tree. 1.0, Variety Concert: Gay Gordons; My Brother makes the Noises for the Talkies; My Canary has Circles under his Eyes; Velma; Hobo Bill's Last Ride; The Squire and the Deacon; Lopeziana; Marilyn getting a Job; I'm gonna yodel my Way; The Old Pine Tree; The Huntsman; O Zuyder zee; Yodelling Sam. 2.0; Dance Music by the Icolians: Just you, just me; Marianne; A Night of Happiness; An old Italian Love Song; Like a Breath of Springtime; Sing a Little Theme Song; Speaking of Kentucky Days; Crying for the Carolines; Sitting by the Window; Think of you, think of Me; The Love Waltz; When the Red Roses; The Dancing Tailor; Dreamy Honolulu; When I see my Sugar; Tondeleyo. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—10.40 a.m., Talk: A Gay Excursion down the Mosel. 11.0, Dialogue on the New Nassau Provincial Theatre. 11.35, See Stuttgart. 1.5, Gramophone Concert of Variety Music. 2.0, Three Agricultural Talks. 2.10, See Stuttgart. 2.30, Gardening Talk. 3.0, See Stuttgart. 6.0, Reading (Karl Zimmermann). 6.25, Variety Programme. 7.0, See Leipzig. 7.20, Weather Forecast and Sports Notes. 7.30, See Stuttgart. 10.0, Time, News, Weather Report, and Sports Notes. 10.45 See Munich. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—11.30 a.m., A Visit to Hagenbeck's Zoo. 12 Noon, Time and Weather. 12.5 p.m., Concert of Light and Classical Music. 1.15, Concert from Berlin (Witzleben). 2.0, Fairy Tales from Many Lands, read by the Author. L. S. Krug, with Interludes by the Little Station Orchestra. 2.45, Rambling on the Lüneburger Heide—A Radio Picture. 4.0 (from Hanover), Military Band Concert. 5.0 (from Kiel), Orchestral Concert: March, Rüm Hart, klar Kimmig (Homburg); Overture, Nachklänge aus Ossian (Gade); Berceuse (Järnefelt); March from Sigurd Jorsalfar (Grieg); Song, Tes yeux (Bonincontro); Rhapsody No. 3 (Svendens); Wedding March (Söderman). 3.0 (from Kiel), Haydn-Mozart-Beethoven Concert: Concerto for Oboe and Pianoforte (Haydn); Andante for Flute and Pianoforte (Mozart); Trio for Flute, Bassoon and Pianoforte (Beethoven). 7.0, See Leipzig. 7.30, Radio Report on the Light Athletics Contests arranged by the Workers' Gymnastic and Sports League. 7.40, Sports Review. 7.55, Weather Forecast. 8.0, Bully, the Man—The Story of a Remarkable Life, related by Robert Walter with the aid of Contemporary Documents. 8.30, See Heilsberg. 9.30 (from Hanover), Round the Isenstein—A Radio Picture of a Landscape rich in Song and Story. In an interval at 10.15, News Bulletin.

HANOVER.—See Hamburg.

HEILSBURG

275.5 metres; 60 kW. and DANZIG, 453.2 metres.—10.30 a.m., Celebrations for the Opening of the Twentieth East German Fair. 11.30, Memorial Programme for Charles de Coster. 12.10 p.m., Concert from Berlin (Witzleben). 2.0 p.m., Talk on Chess. 2.35 (from Danzig), Talk for Young People: Along the West Coast of North America to Canada. 3.5, Talk: Two Hundred Years of the Herrnhuter—a Branch of the Moravian Brethren. 3.20, Recital of Children's Songs by Lita Maxwitat. 3.45, Concert by the Königsberg Opera House Orchestra, conducted by Karl Hrubetz: March, Freiheitsjubel (Blankenburg); Overture, Banditenstreichle (Suppé); Lagunen-Walzer (Johann Strauss); Overture, Fra Diavolo (Auber); Waltz, Weltstadtbilder (Johann Müller); Potpourri of Ziehrer's Music (Dauber); Descriptive Piece, Die Puppenhochzeit (Siede); Paraphrase on Lassen's Song, Ich hatte einst ein schönes Vaterland (Heyer);

Polka Mazurka, Das liegt bei uns im Blut (Ziehrer); American March, Hollywood (Leopold). In the interval, Accordion Solos. 5.45, Sports Notes. 5.55, Talk for the Sixtieth Birthday of Koritz Holm. 6.35, Talk: Work, Service and the Community. 7.0, Sports Notes. 7.20, See Munich. 8.30, Grand Tattoo—by Twelve United Bands, conducted by Korulin: York March (Beethoven); The Great Elector's Cavalry March; March, Fredericus-Rex; Der Torgauer Parademarsch; Dessau March; Army March No. 9; The Duke of Brunswick, Prussian Fanfare (Korulin); The Grand Tattoo; Tattoo March. 9.30, Announcements. 9.35, Viennese Airs by the Little Orag Orchestra, conducted by Eugen Willeken; Soloist, Walter Simlinger (Tenor). 10.35, News and Sports Notes, followed by Dance Music Relay. 12.30 a.m. (Monday), Close Down.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. 7 kW. up to 4.40 p.m.—8.10 a.m., Religious Programme by the Christian Radio Society (N.C.R.V.). 9.10 to 4.40 p.m., Programme of the Catholic Radio Society (K.R.O.). 9.10, Gramophone Records of Light Music. 9.40, Mass from St. Joseph's Church. 11.10, Variety Music on Gramophone Records. 11.40, Sextet Concert. 1.25, Talk. 1.50, Literary Talk. 2.10, Orchestral Concert relayed from Bois-le-Duc: Melody from Le tribut de Zamora (Gounod); Selection from Morning, Noon, and Night (Suppé); Waltz, Les Sirènes (Waldteufel); Ballet Music from Coppélia (Delibes); Pieces for Saxophone Quartet: (a) Minuet (Boccherini), (b) Largo (Beethoven); Florentine March (Fucik); Overture, Pique Dame (Suppé); Divertissement espagnol (Désormes); Waltz, Dolorès (Waldteufel); Les Camélias (Charnier); Le Cent Cinquanteaire (Guillaume). In the interval, Recital by M. J. van Beek (Cornet) and M. J. Doornik (Flute). 4.10, Programme for Invalids. 4.40, N.C.R.V. Programme: Divine Service and Gramophone Concert of Sacred Music, relayed from Maassluis. 7.25 till Close Down, K.R.O. Programme. 7.25, Religious Address. 7.50, Gramophone Records of Light Music. 8.30, See Heilsberg. 9.30, See Langenberg. 10.20, Epilogue. 10.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—7.55 to 9.10 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 7.55 to 8.10, Physical Culture. 8.20, Talk for Workers in Esperanto. 8.40, Pigeon Flying Report and Football Notes. 8.45, Gardening Talk. 9.10, Address by G. J. Zwertbroeck. 9.40, Programme of the Liberal Protestant Radio Society (V.P.R.O.); Divine Service relayed from a Church in Utrecht. 11.40 to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.) 11.40, Time Signal. 11.41, Orchestral Concert conducted by Willem Knikker; in the interval, Popular Music on Gramophone Records. 1.40, Weekly Book Review. 2.10, Pianoforte Recital by Gerrard Hengeveld. 2.40, Concert by The Hague Orchestra, relayed from the Kurhaus, Scheveningen; Conductor: Nico Tremp; Soloist: Hélène V. Cals (Soprano); Overture, Anacron (Cherubini); Arias for Soprano (Mozart); First Suite from L'Arlesienne (Bizet); Gramophone Records of Light Music; Overture, Die Fledermaus (Johann Strauss); Waltz, The Blue Danube (Johann Strauss); Elegiac Melodies (Grieg); Symphonic Poem, Les Préludes (Liszt). 4.10, Variety Music on Gramophone Records. 4.40 to 7.40, V.A.R.A. Programme. 4.40, Orchestral Concert conducted by Dr. W. Grebel, with the Collaboration of the De Volksstem Mixed Choir, conducted by P. Janssen. 5.40, Orchestral Concert, conducted by Harry Wiggelaar. 6.25, Literary Talk. 6.55, Concert (continued). 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time Signal. 7.41, News Bulletin. 7.50, Concert by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte and Interludes by the Rhythmi Brothers. 8.55, Talk by Felix Timmermans. 9.25, Orchestral Concert, conducted by Nico Tremp; Soloist: Grethe Weijnschent-Hogenbirk (Songs); In the interval, Light Music on Gramophone Records. 11.10, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW. and HELSINKI, 368.1 metres.—6.10 p.m., Talk. 6.35, Concert by the Radio Orchestra. 7.0, Pianoforte Recital. 7.30, Talk. 7.55, Popular Music by the Radio Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert of Military Music. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.0 a.m., See Vienna. 12.50 p.m., The Music of the Week. 1.0, Orchestral Concert conducted by Eysoldt.

2.30, Talk on Chess. 2.50, Talk: Gliding as a National Sport. 3.20, Agricultural Talk. 3.45, Talk: Nature and Intellect in Literature. 4.5, Reading from Kurt Hamsun's Works. 4.30, Concert from Stuttgart. 6.0, Grand Choral Radio Concert from a Mining Area—Relay from the Propsteikirche, Recklingshausen. The Gregorian Choir, Boys' Choir, and Hein Schumacher (Organ). Mixed A Capella Choir: (a) O Domine Jesu Christe (Palestrina), (b) Jesu dulcis memoria (Vitoria). Address by Provost Heiermann. Passacaglia for Organ (Frescobaldi); Selections for Gregorian Choir and Organ, (a) Graduale and Alleluiah, (b) Ave Verum (Mozart); Adagio and Allegro from the Organ Concerto in B Flat (Handel); Mixed A Capella Choir: Tantum ergo (Bruckner). Six-part Mixed A Capella Choir: (a) Offertory for the Feast of the Assumption, (b) Laudate Dominum (Nebes). Organ Solos: Intermezzo and Prelude, Op. 9 (Schröder). 7.0, See Leipzig. 7.20, Relay from Herne of the German Water Polo Championship (on Gramophone Records). 7.35, Sports Notes. 7.45, Variety Programme. 8.30, See Heilsberg. 9.30, Brüderlein fein—Old Viennese Musical Play in One Act (Fall). 10.15, News, Announcements, and Sports Notes. 10.45, See Munich, 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres, 2 kW.; and DRESDEN, 319 metres.—12 Noon, Concert from Berlin (Witzleben). 2.0 p.m., Weather and Time Signal. 2.5, Programme Announcements for the Coming Week. 2.25, Agricultural Notes. 2.40, Esperanto Lesson. 3.0, Concert of Folk Music for Choir and Concertina Orchestra. Conductors: Eduard Nietner and Curt Nestler. 3.45 to 4.10, Talk on Walter Petry, and Reading from his Works. 4.20, Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weher: Overture, In Italien (Goldmark); Minuet in A (Moskowsky); Marianna-Walzer (Waldteufel); Wiener Spaziergänge (Konczak). 5.20, Topical Talk. 5.30, Choral Concert relayed from Bad Elster. 6.0, Jest, Satire, and Irony—a Radio Play after Christian Dietrich Grabbe. 7.0, Running Commentary on the Swimming Championships in Erfurt (on Gramophone Records). 7.35, Sonata for Pianoforte and 'Cello in D, Op. 58, No. 2 (Mendelssohn). 8.0, Reading from the Works of Peter Rosegger, with Commentary. 8.30, See Heilsberg. 9.30, The Unknown Loewe—Recital by Walter Zimmer (Bass-Baritone); Saul und Samuel; Elvershöh; Tod und Tödin; Der Zauberlehrling; Die lauer; Feuersgedanken; Totentanz; Heinzelmännchen; Trommelstädchen. 10.15, News, followed by Concert from Munich. 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—5.0 p.m., Concert of Light Music. 8.0, Violin Recital by M. Ruppel. 9.0, Dance Music from Bled. 10.0, Time Signal and News Bulletin, followed by a Concert of Popular Music.

LWOW

381 metres; 16 kW.—7.15 p.m., Miscellaneous Items. 7.35, Popular Music on Gramophone Records. 8.0, See Warsaw. 9.50, Sports Notes. 9.52, Relay of Polish Stations. 10.0, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—11.10 a.m., Orchestral Concert. 12 Noon till Close Down, Relay from Paris (Ecole Supérieure), (447.1 metres).

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—9.0 to 10.0 a.m., Topical Review. 3.30, p.m., Chimes and Time Signal, followed by a Concert of Light Music. 5.0 to 8.0, Interval. 8.0, Chimes and Request Gramophone Concert. 9.30 to 11.0, Interval. 11.0, Chimes and Time Signal. 11.5 (approx.), Song Recital by Luisa Osma, followed by a Concert by the Municipal Band, conducted by Villa, relayed from Rosales. 1.30 a.m. (Monday), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 9.0, Talk in German: Fathers and Sons. 9.55, Time Signal. 10.0, Talk in English: Fathers and Sons.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—10.0 a.m., Catholic Service. 10.45, Chimes from Our Lady's Church. 11.0, See Vienna. 1.5 p.m., Time Signal, Weather Forecast, and Programme Announcements. 1.15, Agricultural Talk. 1.35, Light Music on Gramophone Records. 2.30, Chess Lesson. 3.15, Recital of Arias by

Berta Taubert-Metzmacher (Soprano), with 'Cello Obligato. 4.0, Programme for Children: Punch and Judy Show. 4.20, Song Recital by Gertrude Laud (Contralto). 4.40, Talk: An Excursion in Upper Bavaria. 5.5, Concert of Popular Music by the Station Orchestra. 6.15, Topical Talk. 6.35, Violin and Pianoforte Recital by Otto Kobin and Erich Valentin. Sonata for Violin and Pianoforte dedicated to Joseph Joachim (Schuman, Brahms, and Dietrich). 7.10, Weather Forecast and Sports Notes. 7.20, Bavarian Peasants' Calendar—Radio Sequence (K. Adlmaier and Wilfried Feldhüter). 8.30, See Heilsberg. 9.30, Concert by the Munich Chamber Orchestra. Conductor: Friedrich Rein. Soloist: E. Gianna (Baritone). 10.20, Time Signal, Weather Forecast, News Bulletin, and Sports Notes. 10.45, Water-Polo Championships of the German Workers' Sports Society, relayed from Herne (Westphalia). 11.0, Concert by the Ludwig Wörthmüller Orchestra. Soloist: Peter von der Osten. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres, and Rjukan, 447.1 metres.—10.30, Religious Notes. 10.40, Chimes and Religious Address. 1.0, Commentary on the Swimming Races for the Championship of Norway, relayed from Bergen (364 metres). 3.0, Talk by H. Traedel. 4.0, Unveiling of the Bjørnstjerne Bjørnson Memorial; Speeches followed by Orchestral and Choral Music. 6.30, Commentary on the Athletics Contest for the Championship of Norway. 6.45, Talk. 7.15, Weather Forecast and News Bulletin. 7.30, Violin and Accordion Recital. 8.0, Provincial Programme, relayed from Kongsberg. 9.0, Song Recital by Erling Krogh. 9.40, Weather Forecast and News Bulletin. 10.0, Topical Talk. 10.15, Concert by the Station Orchestra. Conductor: M. Hugo Kramm; Overture, The Hebrides (Mendelssohn); Selection from the Barber of Bagdad (Cornelius); Pavane (Ravel); Rhapsody No. 12 (Liszt); Danauweihen (Johann Strauss). 11.15 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—10.25 a.m., Religious Programme. 10.40, Sacred Music. 11.15, Agricultural Talk. 12.45 p.m., Giornale Radio. 1.0 to 2.0, Concert of Light Music and Songs on Gramophone Records. In the interval at 1.30, Time, Announcements and Weather. 5.30 to 6.30, Popular Concert. 8.0, Announcements and Giornale Radio. 8.20, Sports Notes. 8.25, Popular Music on Gramophone Records. 8.30, Time and Announcements. 8.45, Symphony Concert conducted by A. La Rosa Parodi. Reading in the interval. 10.0 (approx.), Variety Concert. 10.55, News Bulletin.

PARIS

EIFFEU TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (preliminary and 6-dot Signals).—1.0 p.m., News Bulletin. 1.10, Weather Forecast. 1.25 to 2.30, Symphony Concert conducted by M. Flament; Programme of Music by Ganne and Messager; Marche arabe (Ganne); 'Cello Solo: Extase (Ganne); Pavane, Mazurka, Scene and Waltz from Isoline (Messager); Three Pieces (Ganne): (a) Danse mystique, (b) La Sabotière, (c) Danse profane; Selection from L'Amour masqué (Messager); Duet from La maison grise (Messager); Three Minuets (Ganne): (a) Menuet rose, (b) Menuet fleuri, (c) Menuet pain; Selection from Les Deux Pigeons (Messager). 6.45, Le Journal Parlé. 7.45, Programme for Children. 8.20, Weather Forecast. 8.30, Gramophone Concert of Old and Light Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—10.0 a.m., Press Review. 10.5 to 1.5 p.m., Sponsored Concerts. 1.5, Light Music on Gramophone Records. 2.0 to 7.0, Interval. 7.0, News Bulletin and Press Review. 7.5, Variety Music on Gramophone Records. 7.15, Sports Notes. 7.25, Gramophone Concert (cont'd). 8.15, Catholic Notes. 8.30, Journal Parlé and News. 8.45, Concert: Soloists, Mlle. Yole Bertacchini (Songs) and Mlle. F. Sabatini (Pianoforte); Songs: (a) Serenade (Mascagni), (b) Air from Madame Butterfly (Puccini), (c) A Vuchela (Tosti), (d) Aria from L'Elisir d'amore (Donizetti); Overture, The Cunning Peasant (Dvorak); Waltz Suite from Contess Maritza (Kalmann); Selection from Loute (Szulc); String Quartet, Op. 112 (Saint-Saëns); Pianoforte Solos: (a) The Lark (Glinka-Balakirev), (b) Seguidilla (Albeniz); Selection from Le Postillon de Longjumeau (Adam); Paysage sardais (Silesu); Selection from L'Elisir d'amore (Donizetti); Clair de lune (Novak); Selection from Florodora (Stuart); Maschinska-Czardas (Michiels); Liberty March (Kostal). 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—7.45 a.m., Light Music on Gramophone Records. 8.0, Weather and Press Review. 8.30, Physical Culture. 12 Noon, Religious Address. 12.20 p.m., Toccata and Fugue in

AUGUST 21st **SUNDAY** continued.

E Minor (Bach). 12.30, Bilboquet takes a Photograph. 12.45, Press Review, News, and Weather. 1.0, Massenet Concert on Gramophone Records: Cie qui disent les cloches; Eley; Enchantement; Noël Païen; Si tu veux Mignonne; Pensée d'automne; Scènes pittoresques. 1.30 to 3.0, Programme in English by the I.B.C. 1.30, Variety Music on Gramophone Records; Announcer: Mr. T. St. A. Ronald: The Voice in the Old Village Choir, by Lew White (Organ); Was that the Human Thing to do, by the Boswell Sisters; My Silent Love, by Victor Young and his Orchestra, with Frank Munn; My Woman, by Bing Crosby; The Angel's Lullaby, by the Rhonda Valley Male Quartet; Crazy People, by Cliff Edwards; Dinah, by Bing Crosby, with the Mills Brothers; There I go, dreaming again, by Victor Young and his Orchestra. 2.0, Popular Music on Gramophone Records; Announcer: Mr. T. St. A. Ronald: You're taking a Chance with me, by Jack Hylton and his Orchestra; Beautiful Garden of Roses, by Maurice Elwin (Baritone); Minnie the Moocher's Wedding Day, by Roy Fox and his Band; My Silent Love, by Ron Aldridge and his Reno Boys; O, Mistress, Fond and Fair, from Casanova, by Roy Henderson (Baritone); Only My Song, by Frank Titterton (Tenor); One Hour with You, by Jack Hylton and his Orchestra; Good Evening, by Arthur Lally and his Orchestra; Selection from Hot-Cha, by Edythe Baker (Pianoforte); Rudy's Rambles, by Rudy Starita (Xylophone); Three, by Alfred Piccaver (Tenor); The "O" Song, by George Buck and the Crowd; Underneath the Arches, by Jack Hylton and his Orchestra; Gone for Ever, by Roy Fox and his Band; The Gladiator's Farewell, by the Westminster Military Band; The Cuban Love Song, by Alex Taylor (Organ). 3.0, Interval. 4.0, Programme in English by the I.B.C. Gaumont British Non-stop Variety; Announcer: Captain C. Clayton-Hutton. 6.0, Gramophone Concert of Popular Music. 6.45, Programme in English by the I.B.C.; Second Concert on behalf of the Gaumont-British Picture Corporation; Music by the Alhambra Paris Orchestra under Lucien Goldy; Captain C. Clayton-Hutton announcing. 7.45, Radio Paris Circus. 8.15, Press Review and News. 8.30, Concert of Gramophone Records and Popular Songs. In the interval at 9.15, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by WBXX on 48.86 metres; and 25.27 metres.—9.0 p.m., Cathedral of Song, from New York. 9.30, The Friendly Hour. 10.0, Shadyside Presbyterian Church Services. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Weather Report. 11.5, Teaberry Sport Review. 11.10, Press News Reeler. 11.15, Westinghouse Concert. 11.45, Rita Cavalry (Spanish Soprano). 11.59, Time Signal. 12 Midnight, KDKA Players. 12.30 a.m. (Monday), The Commodores, from New York. 1.0, McCravy Brothers. 1.15, S.R.O. Programme, from New York. 2.0, Enna Jettick Melodies, from New York. 2.15, Programme to be announced. 3.15, The Old Singing Master, from New York. 3.45, War Stories, by Walter G. Myers. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News. 4.20, Alexander Roy (Tenor). 4.30, Will Ryshane and his Orchestra. 5.0, Time Signal and Good Night.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.0 p.m., Popular Music on Gramophone Records. 7.15, Announcements and News Bulletin. 7.35, Light Music on Gramophone Records. 7.58, Time Signal. 8.0, See Warsaw. 9.50, Time Signal, Sports Notes and Police Report. 10.0, See Warsaw. 10.40, News Bulletin. 10.50, See Warsaw. 11.30 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW. LAUSANNE, 680 metres; and GENEVA, 760 metres.—10.0 a.m. (from Lausanne), Protestant Service. 11.0 (from Geneva), Light Music on Gramophone Records. 12.30 p.m., News Bulletin and Weather Forecast. 12.40, Concert by the Station Orchestra. 2.0 to 7.0, Interval. 7.0 (from Lausanne), Catholic Address. 7.30 (from Geneva), Popular Music on Gramophone Records. 8.0, Concert by the Station Orchestra. 9.0 (from Lausanne), Cabaret Concert. 10.0, News Bulletin and Weather Forecast. 10.15, Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW. Relayed by Naples, 319 metres; and BRO, 25.4 metres.—9.40 a.m., News Bulletin. 9.45, Agricultural Prices. 10.0, Religious Programme. 10.15, Sacred Music. 10.45 to 11.0, Sports Notes and Amusement Guide. 12.30 to 2.0 p.m., Concert of Light Vocal and Instrumental Music. In the interval at 1.30, Time and Announcements. 4.30 (Naples), Programme for Children, Weather, and Sports Notes. 5.0 to 6.15, Vocal and Instrumental Concert; Sports Notes in the interval. 7.25 (Naples), Shipping and Sports News. 7.30, Sports Notes, Announcements, and News Bulletin. 8.0, Time and Announcements. 8.30, Sports Notes. 8.45, The Truthful Liar—Vaudeville in One Act (Eugene Feribé), with Musical Setting by Gaetano

Zuccoli. 9.45 (approx.), Cirillino—Children's Fable in Three Acts (Zuccoli); News after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 60 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—7.30 p.m. till Close Down, New York Relay. 7.30, Moonshine and Honeysuckle. 8.0, Gus Anrheim's Orchestra. 8.30, National Sunday Forum. 9.0, Iodent Programme, with Jane Froman. 9.15, Wildroot Institute. 9.30, Musical Programme. 9.45, Pastels. 10.30, Pop Concert. 11.0, Catholic Hour. 11.30, Sweetheart Days. 12 Midnight, Donald Noris and his Orchestra. 12.30 a.m. (Monday), Orchestral Gems. 1.0, Chase and Sanborn Programme. 2.0, Our Government, by David Lawrence. 2.15, American Album of Familiar Music. 2.45, Sheaffer Lifetime Review. 3.0, Musings. 3.15, L'Heure Exquise. 3.45, Sunday at Beth Parker's. 4.15, Emerson Gill's Orchestra. 4.45, Mood Orientale. 5.0, Teddy Black's Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 469 metres; 60 kW.; BASLE, 244.1 metres; and BERNE, 246 metres.—10.0 a.m. (from Zürich), Catholic Service. 11.0, See Vienna. 12 Noon (approx.), Concert by the Station Orchestra. 12.28 p.m., Time Signal and Weather Forecast. 12.30, News Bulletin. 12.40, Orchestral Concert. 1.30, Concert of Popular Music on Gramophone Records. 2.15, Interval. 3.30 (from Zürich), Zither Concert, conducted by E. Holz. 4.0, Variety Concert on Gramophone Records. 5.0 (from Zürich), Reading of Poems by Elisar von Kupffer. 5.30, Light Music on Gramophone Records. 6.0 (from Zürich), Amusing Intellectual Problems. 6.30 (from Zürich), Talk in English: English Character and English Ways. 7.0, Time Signal, Weather Forecast, and Sports Notes. 7.5, Popular Music on Gramophone Records. 7.30 (from Zürich), Talk: Through Spain. 8.0 (from Basle), The Development of the Pianoforte Trio—Talk by Otto Maag, with Illustrations by E. Henneberger (Pianoforte), K. Schwaller (Violin), and F. Abel (Cello). 9.15, Reading by R. Eckenstein. 9.30, Weather Forecast and News Bulletin. 9.45, Concert by the Station Orchestra, conducted by E. Gilbert. 10.15, Sports Notes. 10.30, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA; 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—11.0 a.m., Divine Service Relay. 12.45 p.m., Weather Forecast. 3.30 (from Boden), Talk. 4.0, Gramophone Records of Variety Music. 5.5, Reading. 5.30, Cello Recital by Roman Sukstulsky: Sonata (Giuseppe Valentini); Caprice (Franchomme-Dukstalsky); Russian Folk Song (arr. Dukstalsky); Minuet (Becker); Dance of the Green Devil (Cassado). 6.0, Divine Service. 7.15, Weather and News. 7.35, Reading. 8.5, Light Orchestral Concert from the Royal Academy of Music. Conductor, Johan Kärman: March from Sigurd Jorsalfar (Grieg); Overture, Masaniello (Auber); Valse des brunes (Ganne); Potpourri of Swedish Folk Melodies and Dances (Alexanderson); Selection from The Land of Smiles (Lehar); Potpourri (Kahrmann-Berlin); Spanish March, Escamillo (Kahrmann). 9.15, A Play in One Act (Henry Bordeaux). 9.45, Weather and News. 10.0, Orchestral Concert: Concerto grosso in F, No. 24 (Handel); Summer—from the Four Seasons (Vivaldi-Grevillius); Orchestral Suite in E (Stamitz); Ballet Suite (Lully-Mottl). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—10.45 a.m., Protestant Service. 11.30, Catholic Service. 12 Noon, Gramophone Concert of Classical and Light Music. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.2 p.m., Gramophone Concert of Popular Music. 2.0, Talk in French: Imaginary Cruises. 2.15, Light Music on Gramophone Records. 3.0, Orchestral Concert relayed from Plombières-les-Bains. Conductor: M. Wolfert. Overture, William Tell (Rossini); Andante from the Fifth Symphony (Beethoven); Ballet Music from Isoline (Messager); Selection from Le Jongleur de Notre Dame (Massenet); Suite from L'Arlesienne (Bizet). In the interval, Talk. 4.15, Dance Melodies on Gramophone Records. 4.45, Talk in German: Taxes and the Economic Crisis. 5.0, Concert by the Station Orchestra, conducted by M. Roskam: March (Christ); Waltz (Fucik); Czardas (Grossman); Overture, The Crown Diamonds (Auber); Selection from Aida (Verdi); Cavatina (Raft); Serenade in A (Widor); En sordine (Telam); Melodies from Il est charmant (Morteti). 6.0, Medical Talk in French. 6.15, Sports Talk in French. 6.30, Concert by the Station Orchestra, conducted by M. de Villers: Overture, The Water Carrier (Cherubini); Aria from Stabat Mater (Rossini); Suite brève, for Small Orchestra (Dubois); Selection from Hérodiade (Massenet); Symphonie Poem, La Procession (Dupuis); Alla Polacca (Mignan). 7.30, Time Signal. 7.32, News in French and German, and Sports Results. 7.45, Alsatian Evening. Cocaine—A Play in Three Acts (Ferd. Bastian), in Alsatian Dialect. 9.15, Concert by a Naval Band, relayed from Marseilles, 315 metres. 10.30, Dance Music from the Casino, Niederronn-les-Bains. 12 Midnight (approx.), Close Down.

4.30, Dance Music from the Luna Park Lido, Milan. 6.15 to 6.25, Sports Notes. 7.0, Announcements. 7.5, Variety Music on Gramophone Records. In the interval at 7.30, Time and Announcements. 8.0, Giornale radio and Sports Notes. 8.30, I Vespri siciliani (Sicilian Vespers)—Opera in Five Acts (Verdi). In the intervals, Reading and Theatre Notes; Giornale radio after the Opera.

VIENNA

517 metres; 15 kW.—Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—11.0 a.m., Salzburg Festival: Eighth Orchestral Concert, by the Vienna Philharmonic Orchestra, conducted by Richard Strauss: Tone Poem, Thus spake Zarathustra, Op. 30 (Richard Strauss); Alpine Symphony (Richard Strauss). 12.50 Concert of German Operetta Music, by the Vienna Symphony Orchestra, conducted by Willy Seidl: Overture, Gri-Gri (Lincke); Waltz Air from The Girl in the Taxi (Gilbert); Selection from Das Dorf ohne Glocke (Künnecke); Selection from The Lady of the Rose (Gilbert); Song from Dolly (Hirsch); Waltz Air from Das Weib im Purpur (Gilbert); Selection from The Maid of the Black Forest (Jessel); March, Unter Linden, from Filmzauber (Kollo). 2.10, Report on the Round Europe Air Race, 1932, relayed from the Aerodrome, Aspern. 3.0, Time, News and Programme Announcements. 3.5, Talk: Two Pioneers of North Polar Exploration, the Austrians Payer and Weyprecht. 3.30, Claude Debussy Concert, for the Seventieth Anniversary of the Composer's Birth; Bernard Kaff (Pianoforte), Lill Ulanowsky (Songs), Otto Schulhof (Accompanist), and the Anita Ast Quartet; Suite for Pianoforte: (a) Prelude, (b) Sarabande, (c) Toccata. Songs: (a) Les Angélus, (b) Le soir, (c) Romance, (d) Mandoline. Pianoforte Solos: Four Pieces from the Préludes; String Quartet in G Minor, Op. 10. 4.35, Talk: A Journey from Vienna to Kitzbühel. 5.0, Running Commentary on the International Tennis Tournament, relayed from Pörschach, with Dance Music in the intervals. 7.0, Time, Sports Notes and Programme Announcements. 7.10, The Rescue of Immortality—an almost-Tragic Skit (Hartung). 7.35, Franz Schubert's Swan-Song—Recital by Anton Tausche (Baritone); Liebesohrhaft; Kriegers Ahnung; Frühlingsehnsucht; Ständchen; Aufenhalt; In der Ferne; Abschied; Der Atlas; Ihr Bild; Das Fischermäddchen; Die Stadt; Am Meer; Der Doppelgänger; Die Taubenpost. 8.15, Old Heidelberg—A Play in Five Acts (W. Meyer-Förster). 10.20, News and Announcements. 10.35, Late Concert by the Geiger Orchestra, relayed from the Waldsteingarten.

WARSAW

1,411 metres; 120 kW.—9.25 a.m., Weather Report. 9.30, Low Mass, relayed from Wilno (563 metres). 10.10, Interval. 10.15, Report on the International Aviation Tour, relayed from the Aerodrome. 10.55, Interval. 11.0, See Vienna. 12.50 p.m., Report on the Aviation Tour, relayed from the Aerodrome, Cracow. 1.0, Educational Talk. 1.15, Light Music on Gramophone Records. 2.0, Talk: How to prevent Digestive Troubles. 2.15, Song Recital by J. Korolkiewicz (Baritone). 2.30, Agricultural Talk. 2.50, Violin and Song Recital: Berceuse (Mlynarski); Hopak (Muskovsky-Dushkin); The Swan (Saint-Saëns); Couiavienne (Lada); Songs: Two Melodies (Tchaikovsky); Gavotte (Bohni); Lieberlein (Kreiser). In the interval at 3.5, Agricultural Talk. 3.40, Weekly Radio Journal for Children. 3.55, Reading for Young People. 4.5, Popular Music on Gramophone Records. 4.45, Topical Talk. 5.0, Orchestral Concert, conducted by J. Oziminski. In the intervals, Songs by Alex. Karpacki (Baritone), relayed from Poznan: Overture, The Barber of Seville (Rossini); Introduction to La Traviata (Verdi); Songs: (a) Aria from A Masked Ball (Verdi), (b) Monologue from Othello (Verdi), (c) Monologue from André Chénier (Giordano); Dance from Prince Igor (Borodin); Songs: (a) Aria from Prince Igor (Borodin), (b) Aria from Iolanthe (Tchaikovsky). 6.0, Reading: The Uhlans. 6.20, Orchestral Concert, relayed from Ciechocinek. 7.15, Miscellaneous Items. 7.35, Answers to Correspondents on Technical Problems. 7.50, Interval. 7.55, Programme Announcements. 8.0, Concert by the Warsaw Philharmonic Orchestra, conducted by Oziminski. Soloist: Salecki (Tenor). Polonaise, Resignation (Kania); Overture, Otto the Archer (Münchheimer); Ballet Music: The Maiden of the Glaciers (Guzewski); Melodies from: (a) The Haunted Castle, (b) Verbum Noble, and (c) Halka (Moniuszko). 8.45, Reading. 9.0, Concert (contd.): Gavotte and Minuet from Manon (Massenet); Melody from Carmen (Bizet); Songs: (a) Aria from The Pearl Fishers (Bizet), (b) Aria from Manon Lescaut (Puccini), (c) Aria from Werther (Massenet); Waltz, Frascati (Litolff); Indian March (Meyerbeer). 9.50, Sports Notes. 10.0, Concert of Dance Music. 10.40, Aviation Weather Forecast. 10.45, Sports Notes. 10.50, Concert of Dance Music. 11.30 (approx.), Close Down.

WILNO

563 metres; 16 kW.—7.15 p.m., Talk. 7.35, See Warsaw. 7.50, Programme Announcements and Miscellaneous Items. 8.0, See Warsaw. 11.30 (approx.), Close Down.

Announcements. 4.30, Dance Music from the Luna Park Lido, Milan. 6.15 to 6.25, Sports Notes. 7.0, Announcements. 7.5, Variety Music on Gramophone Records. In the interval at 7.30, Time and Announcements. 8.0, Giornale radio and Sports Notes. 8.30, I Vespri siciliani (Sicilian Vespers)—Opera in Five Acts (Verdi). In the intervals, Reading and Theatre Notes; Giornale radio after the Opera.

STUTTGART

MUHLACKER, 360.5 metres, 60 kW.; and FREIBURG, 570 metres.—10.0 a.m. (from Freiburg), Radio Report from the International Mountain Race, 1932. 10.15, Harpsichord Recital. 10.40, Evangelical Service. 11.35 (from Freiburg), Radio Report on the International Mountain Race (contd.). 11.50, Orchestral Concert from the Burggarten, Triberg, 12.50 p.m. (from Freiburg), Mountain Race, 1932 (contd.). 1.5, Topical Talk. 1.20, Gramophone Concert of Film Star Records. 2.10 (from Freiburg), Results of the 1932 Mountain Race. 2.30 (from Friedrichshafen), Concert by the Waidmann Vocal Quartet. 3.0, Programme for Children. 4.0 (from Karlsruhe), Variety Concert. Soloists: Ida Bauer, Eva Schwarz, Adele Eberl, Hilde Hellmuth, Egid Torrif, Alfred Fiermet, Leo Maecher, and Karl Heinz Löser. Overture, Die Fledermaus (Johann Strauss); Song and Quartet from Frühlingluft (Johann Strauss); Song and Duet from Frederica (Lehar); Czardas and Song from Die Fledermas (Johann Strauss); Three Melodies from The Geisha (Jones); Prelude to Countess Maritza (Kálmán); Czardas and Two Duets from Countess Maritza (Kálmán); Two Duets from Das Weib im Purpur (Gilbert); Two Songs and Quartet from Das Veilchen von Montmartre (Kálmán); Two Duets from The Count of Luxembourg (Lehar); Three Duets from The Gipsy Princess (Kálmán); Two Songs and Duet from The Dubarry (Mackeben); Quartet from The Dollar Princess (Fall); American March from The Dollar Princess (Fall). 6.0, Talk and Readings: Oskar Baum. 6.25, Talk on Korfiz Holm and Reading from his Works, for the Author's Sixtieth Birthday. 6.50, Sports Notes. 7.0, See Leipzig. 7.20, Second Sports Notes. 7.30, Cello and Pianoforte Recital by Ferdinand Merten and Erwin Kübler: Pastoral (Couperin); Toccata (Frescobaldi, arr. Cassado); Spanish Serenade (Glazounov); Chanson napolitaine (Cesar Cassella); Forest Calm (Dvorak); Adagio and Allegro (Schumann). 8.10, Variety Concert by the Stuttgart Philharmonic Orchestra and Soloists. 10.20, Time, Weather, News, and Programme Announcements. 10.45, See Munich. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—12.30 p.m., Catholic Service. 1.0, News Bulletin. 1.15, Military Music. 1.40, Agricultural Report. 1.45, Protestant Service. 3.30, Transmission of Pictures. 5.0, Transmission of Pictures. 5.15, Concert. Melodies from Les Erynnies (Massenet): (a) Prelude, (b) Invocation, (c) Scène religieuse; Melody from Le Roi maigre lui (Chabrier); Melody from La Habanera (Laparra); Three Airs from La Basoche (Messager); Air from Paganini (Lehar). 6.0, Orchestral Music and Chansonnettes. 6.30, Horse Racing Results. 6.45, Cello Recital. 7.0, Orchestral Music: Danse macabre (Saint-Saëns); Melody from The Italian Girl in Algiers (Rossini). 7.15, Light Music. 7.30, Programme Announcements. 7.35, News Bulletin. 7.45, Military Music. 8.0, Accordion Solos. 8.15, Opera Music: Melodies from (a) The Queen of Sheba (Gounod), (b) Le Cid (Massenet), (c) Patrie (Paladilhe), (d) Carmen (Bizet), (e) Mignon (Thomas) and (f) Eglaciel (Leonca-vallo). 8.45, Vocal Tangos. 9.0, Music by a Viennese Orchestra. 9.30, Songs from (a) La Bohème (Puccini) and (b) Romeo and Juliet (Gounod). 9.45, Operetta Music. 10.0, Sponsored Concert. 10.30, North African News. 11.15, Dance Music. 11.30, Orchestral Music: Symphonie fantastique (Berlioz); Rédemption (C. Franck). 12 Midnight, Weather, Announcements and Close Down.

TRIESTE

247.7 metres; 10 kW.—9.40 a.m. to 7.5 p.m., See Turin. 7.5, Quintet Concert: Overture, La dame blanche (Boieldieu); Canzone d'autunno (Marchetti); Two Happy Hearts (Abraham); Air (Gungl); Crisanteми d'oro (Mascheroni); Selection from Turandot (Puccini); Liebesrausch (Sonntag); Prendila come viene (Visintini). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—9.40 a.m., Giornale radio. 10.45, Agricultural Report. 11.0, Mass, relayed from the Church of the Annunciation, Florence. 12 Noon to 12.15 p.m., Religious Programme. 12.30 to 2.30, Variety Concert. In the interval at 1.0, Time and

ALGIERS

363.3 metres; 13 kW.—7.0 p.m., Market Prices and Exchange Quotations. 7.10, Shipping Notes and Weather Report. 7.15, Concert of Light Music. 7.55, News Bulletin and Time Signal. 8.0, Concert of Modern French Music. 9.30, Bach Concert. 10.0 (approx.), Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJL, 349 metres; 8 kW.—8.0 p.m., Trio Concert: Selection from A Masked Ball (Verdi); Andante from the Cassation in G (Mozart); Minuet, Clair de lune (Fauré); Czardas, Katarina (Michiels). 8.30, Exchange Quotations, Talk in Catalan, and Request Gramophone Concert, followed by Sports Notes and News. 10.0, Chimes and Weather Forecast. 10.15, Concert by the Station Orchestra: March (Leopold); Waltz (Laurent-Courtioux); Adagio from the Septet (Beethoven); Romance (Saint-Saëns); Dance of the Apprentices from the Mastersingers (Wagner); Gavotte and Musette (d'Ambrosio). 11.0, La Parranda—Musical Comedy in Three Acts (Alonso). 1.0 a.m. (Tuesday), Close Down.

BASLE.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.5 kW.—5.0 p.m., Popular Music on Gramophone Records. 6.0, Song Recital: Der Schmerz (Beethoven); Das Veilchen (Mozart); Largo (Handel); Arias from (a) Turandot (Puccini), (b) Madame Butterfly (Puccini). 7.25, Time Signal and Programme Announcements. 7.30, Talk. 8.0, Comedy by the Station Orchestra. 8.40, A Concert for Pianoforte. Two Violins, Viola, and Cello (Dohnanyi). 10.10, Song Recital. 10.40, Cigány Music, relayed from the Petrograd Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.5 p.m., English Talk for Schools: A Business Man's Week-end; followed by Gramophone Concert of Popular-Songs, and Weather for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of Operetta Potpourris, relayed from Berlin (Witzleben). 3.0, Reading of Short Stories. 3.30, Weather and Exchange. 3.40, Talk for Young People: Goethe's Early Poems and their Appeal to the Young. 4.0, Educational Talk. 4.30, See Berlin (Witzleben). 5.30, Talk: The Problem of Emigration. 6.0, Making Music with Invisible Partners. 6.30, Elementary Spanish Lesson. 6.55, Weather for Farmers. 7.0, Talk: Two Hundred Years of Herrnhut. 7.30, Agricultural Talk, followed by Weather for Farmers. 8.0, See Breslau. 9.0, Programme from Berlin (Witzleben). 10.50 (approx.), Concert from Leipzig. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.30 p.m., Orchestral Concert from the Radio Exhibition. Conductor: Eugen Sonntag. Prelude to The Mastersingers (Wagner); Two Hungarian Dances (Brahms); Selection from Tieffand (d'Albert); Waltz, Accelerationen (Johann Strauss); Norwegian Dances (Grieg); Wedding Waltz (Dohnanyi). 5.30, Programme for Young People—Feeding the Birds of Prey, relayed from the Zoo. 5.50, The World Cycling Championship in Rome—An Interview with the German Champion, Walter Swall. 6.0, Orchestral Concert from the Radio Exhibition: Caucasian Sketches (Ippolitov-Ivanov); Fairy Dance and Waltz, from the Suite Sleeping Beauty (Tchaikovsky); Selection from Die Faschingszeit (Kalmán). 6.30, Medical Talk. 6.55, The Witzleben Station informs its Listeners. 7.0, Topical Talk. 7.10, Poems (Alfred Escher and Hans Gebser). 7.30, Talk: The German Press Abroad. 8.0, Orchestral Concert from the Radio Exhibition. Conductor, Hermann Männecke: Military March No. 3 in E flat (Schubert, arr. Männecke); Overture, Euryanthe (Weber); Trumpet Solo: Der Dessauer Marsch; Love Scene from Feuersnot (Richard Strauss); Potpourri, O Deutschland in Ehren (Otto Lindemann). 9.0, News and Sports Notes. 9.10, Twelfth Night—Comedy (Shakespeare), with Music by Hamperlinck, followed by Second News and Dance Music from the Peninsula. 12.30 a.m. (Tuesday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin, Exchange Quotations, and Market Prices. 7.30, Popular Music on Gramophone Records. 8.10, Lottery Results. 8.15, Charades. 8.20, News and Weather Forecast. 8.30, See Paris (Eiffel Tower). After the Relay, Theatre Guide and Time Signal.

BREMEN.—See Hamburg.

BRESLAU

325 metres, 1.5 kW.; and GLEIWITZ, 253 metres.—4.50 p.m., Concert by the Station

MONDAY

AUGUST THE TWENTY-SECOND.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Light classical concert. Orchestral concert. Miss V. Sackville-West: New Books. Violoncello recital. Promenade concert from Queen's Hall. Instrumental concert. Dance music.

LONDON REGIONAL Orchestral concert. Vaudeville programme. Dance music.

MIDLAND REGIONAL Orchestral concert. Light music. Band programme. London Regional programme.

NORTH REGIONAL Organ music. Orchestral concert. London Regional programme.

WEST REGIONAL Orchestral concert. "The Pipe in the Fields," a play by T. C. Murray; and "Sovereign Love," a comedy by T. C. Murray, presented by the Abbey Players. National programme.

SCOTTISH REGIONAL Organ music. Instrumental concert. Dance music. National programme.

BELFAST Organ music. Orchestral concert. "The Pipe in the Fields," a play by T. C. Murray; and "Sovereign Love," a comedy by T. C. Murray, presented by the Abbey Players. National programme.

ABROAD

BRUSSELS (No. 2) Concert from Ostend Kursaal.

HAMBURG Music for Strings by Hamburg Philharmonic Orchestra.

PARIS (Radio Paris) Debussy Celebration concert (Gramophone Records).

STRASBOURG Classical concert from Vichy Casino.

WARSAW Operetta: "The Dollar Princess" (Fall), relayed from the Cichocinek Theatre.

Orchestra, conducted by Franz Marzalek; Overture, In the Well (Blodek); Rustic Suite (Amadei); Kaiser-Walzer (Joh. Strauss); Selection from Der Orlov (Granchiststaedten); March, Hoch Blauenburg (Stelzig). 5.30, Agricultural Prices, followed by Book Review. 5.50, Programme to be announced. 6.10, French Lesson. 6.25, Reading: Berkerlehnis (Hanshartmann v. Schlotheim). 6.40, Good or Evil? (Gabriele Lichey). 7.0, Reading: From the Diary of a Gunner (Gerhard Siegel). 7.30, Weather Forecast. 7.32, Gramophone Concert: Ballet Music from The Bartered Bride (Smetana); Selection from Schön ist die Welt (Lehar); Waltz, Estudiantina (Waldteufel); Potpourri of Old Operettas; Polka, Tritsch-Tratsch (Johann Strauss); Finnish Cavalry March. 8.0, Concert of Rhapsodies, by the Silesian Philharmonic Orchestra; Norwegian Rhapsody (Svendsen); Oriental Dance Rhapsody (Mraczek); Evening Rhapsody (Raff); Slav Rhapsody (Dvorak); Spanish Rhapsody (Ravel). 9.0, News Bulletin. 9.10, Concert Version of Tannhäuser—Opera (Wagner), by the Ensemble of the Breslan Municipal Theatre and the Silesian Philharmonic Orchestra, Introductory Talk and Commentary by Dr. Hermann Matzke. 10.0, Time, Weather, News, Sports Notes and Programme Announcements. 10.25, Answers to Correspondents. 10.35, Silent Night.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Orchestral Concert conducted by Franz André. In the interval at 1.0 p.m., Le Journal Parlé. 5.0, Orchestral Concert conducted by Franz André: Marche joyeuse (Chabrier); To the Strains of the Cigany Band (Meyer-Helmond); Selection from Le Grand Mogol (Audran); The Canary (Poliakine); Waltz, Soleil d'Espagne (Popy); Selection from Tip-Toes (Gershwin); Conte pastoral and Conte amusant (Godard); Tango, Bells in the Moonlight (Novro); Foxtrot, Egyptian Ella (Campbell). 6.0, Gramophone Concert: Phaisir d'amour (Martini); A Trumpet Voluntary (Purcell-Ward); Le Mariage des roses (César Franck); Melody (Walford-Davies). 6.15, Talk: Wansart—a Belgian Sculptor. 6.30, Gramophone Concert: Fantastic Dance (Turina); Chanson d'Avril (Bizet); Romance in F (Beethoven); Carnaval de Venise (Benedict); Aria from The Pearl Fishers (Bizet); Overture, Oberon (Weber). 7.15, Talk: Music and Poetry. 7.30, Programme for Women and Theatre Review. 8.0, Merette—Comedy in One Act (Soulo), by the Walloon Dramatic Society of Namur. 8.45, Talk: The Belgian Author, Armand Reimic, with Readings from his Works. 9.0, Concert relayed from the Casino, Knocke. Soloists: Theo Van Hamburg (Cello), M. Harvat (Violin), and F. Den Boer. 9.30, Second and Third Acts of A Waltz Dream—Operetta (Oscar Strauss), relayed from the Théâtre de la Monnaie.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert by Max Alexys and his Orchestra. 1.0 p.m., Le Journal Parlé. 1.40, Concert (cont'd.). 5.0, Concert by the Symphony Orchestra, conducted by Jean Kumps; Overture, Si j'étais roi (Adam); Entr'acte from Mignon (Thomas); Selection from Les Noces de Jeannette (Masse); Ballet Music from Hérodiade (Massenet); Intermezzo from Cavalleria rusticana (Mascagni); Ballet Music from Faust (Gounod). 6.0, Gramophone Concert: Il Trillo del Diavolo (Tartini); March from The Queen of Sheba (Gounod); Sicilienne (Fauré); Rhapsody No. 2 (Liszt); Symphonic Poem, Stenka Razin (Glazounov); Chants russes (Lalo); Symphony No. 2 (Beethoven). 7.15, Variety Items. 7.30, Sports Review. 8.0, Concert by the Symphony Orchestra, conducted by Jean Kumps; Overture, The Bohemian Girl (Balfe); Berceuse (Fauré); Träumerei (Schumann); Spanish Scenes (Muller); Holidays (Lauweryns). 8.45, Reading (Buysse). 9.0, Concert from the Kursaal, Ostend: Conductor, Toussaint de Sutter; Soloists, Suzanne Duman (Songs) and M. Bilotti (Pianoforte); Symphonic Poem, Death and Transfiguration (Richard Strauss); Avenged (Hansen); Pianoforte Concerto No. 2 in A (Liszt); Aria from Werther (Massenet); Overture, The Magic Flute (Mozart). After the Concert, Journal Parlé and Dance Music, relayed from the Casino, Knocke. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra: March, El Capitán (Souza); Waltz, Estudiantina (Waldteufel); Selection from Turandot (Puccini); Slav Dance No. 15 (Dvorak). 5.0, News Bulletin and Time Signal. 5.10, Concert by the Station Orchestra (cont'd.): Melodies from The Rose of Stamboul (Fall); Ballet Music from The Demon (Rubinstein). 6.0, Educational Programme. 6.40, Popular Music on Gramophone Records. 7.0, Time Signal. 7.1, Concert of Chamber Music by Carlo Brunetti (Pianoforte), A. Sarvas (Violin), Schwartz (Viola), I. Bonis (Cello), and G. Maurer (Double Bass); The Trout Quartet (Schubert). 7.30, Theatre Notes. 7.45, Concert of Chamber Music (cont'd.): Quartet in D, Op. 76, No. 5 (Haydn). 9.15, Concert of Dance Music, relayed from the Lido. 10.0, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme relayed on 210 metres from 7.35 p.m. to 12 Midnight.—4.0 p.m., Programme for Women. 5.0, Concert of Cigány Music by the Gyula Horváth Orchestra. 6.0, Reading: Nikolaus Bard. 6.35, Concert of Light Music on Gramophone

Records; 1812 Overture (Tchaikovsky); Toccata in E (Bach); Sérénade mélancolique (Tchaikovsky); Finlandia (Sibelius); Potpourri (Puccini); Le triomphe de l'amour (Lully); Prelude to Alceste (Lully); Marcu from Thésée (Lully); Ballet from Coppélia (Delibes). 7.35, Programme from the Works of the Author Friedrich Karinthy. 8.35, News Bulletin and Time Signal. 8.50, Concert by the Prizewinners at the Vienna Competition; Accompaniment by the Budapest Concert Orchestra, conducted by D. Markus. In the interval at 10.0, Weather Forecast. After the Programme, Dance Music by the Mandits' Jazz Band, from the Rheinpark. CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW. and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Chimes from the Town Hall. 12.1 p.m., Weather Report. 12.5, Concert relayed from the Bellevue Strandhotel. 2.0 to 2.50, Interval. 2.50, Talk for Housewives. 3.0, Concert by Louis Prell's Instrumental Ensemble: Spanish March, Cartagena (Grit); Doktrinenzwalzer (Ed. Strauss); Selection from White Horse Inn (Benatzky); Canzonetta (Friml); Sérénade, Auld Corsica (Pinozzi); Valse en sourdine (Ackermans); Foxtrot, Nobody else but Elsie. Reading, Waltz (Albouth); Cossack Song (Czernek); Selection from The Flower of Hawaii (Abraham); Vienna, City of my dreams (Sieczynski); Bubiköpfchens Verlobung (Dieker); Melody (Heykens); Pasodoble, Zaragossa (de Gredos). 5.0, Gramophone Concert: Aria from Madame Butterfly (Puccini); Visione Veneziana (Brogli); Aria from Rigoletto (Verdi); Autumn (Tchaikovsky); Aria from The Grave of Askold (Werstoffski); Paradise (Brown and Clifford); Foxtrot, Rhythm like this; I'm crooning a Tune about June. 5.40, Exchange Quotations and Fish Market Report. 5.50, Talk. 6.20, Elementary English Lesson. 6.50, Weather Report. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk on Housing Questions. 8.0, Time Signal. 8.1, Orchestral Concert of Norse Music conducted by Launy Grondahl; Overture, Nachklänge aus Oasien (Gade); Music from Peer Gynt (Grieg); Festival Polonaise (Svendsen); Ballet Music from King and Marshal (Heise); Swedish Rhapsody, Midsommervaka (Alfvén); Tone Poem, Finlandia (Sibelius). 9.0, Reading (Pushkin). 9.25, Lortzing Concert conducted by Launy Grondahl. Soloist: Einar Norby (Songs). Overture, Aria and Ballet Music from Czar and Carpenter; Overture and Aria from Der Wallenschmied; Selection from Undine; Selection from Der Wildschütz; Overture, Die beiden Schützen. 10.25, News Bulletin. 10.40, Oboe Recital by Henry Munk. Folmer Jensen at the Pianoforte. Fantasia concertante (le Boucher); Asturias on Spanish Themes (Busser). 11.0 (approx.), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and Announcements. 7.35, Radio Journal. 7.45, Talk: Henryk Siemiradzki, for the Thirtieth Anniversary of his Death. 8.0, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Stock Report, Weather Forecast, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Recitations. 8.0, Concert of Overtures by the Station Sextet: Semiramide (Rossini); The Crown Diamonds (Auber); The Merry Wives of Windsor (Nicolaï). 8.30, Pianoforte Recital by Geraldine Neeson: Preludes by Field, Chopin and Rachmaninov. 8.45, Popular Entr'actes by the Station Sextet. 9.0, Baritone Solos by R. W. Cobbe. 9.15, Sketch by Eva Brennan and Company. 9.55, Soprano Solos by G. Mortimer. 10.5, The Station Sextet. 10.30, Time Signal, News Bulletin, Weather Forecast, and Close Down.

FECAMP

223 metres; 10 kW.—10.0 p.m. to 1.0 a.m. (Tuesday), Programme in English by the I.B.C. 10.0 p.m., Dance Music by the Iboicians: At your Command. Time alone will tell, Sweet and Lovely, Blues in my Heart, Dance Hall Doll, Guilty, Sing a Little Jingle, I'll Putecha Putecha in the Paper, I'm all dressed up, I'm getting Superstitious, Cuckoo Waltz, It looks like Rain, I want a little less of Moonlight, Let a little Pleasure, Look in the Looking-glass, Little Girl. 11.0, Song Recital: The Big Pond (Fain), Say a little Prayer for Me (Nicholls), Crying for the Carolines (Warren), Selection from Viktoria and her Hussar (Abrahams), Wasn't it nice? (Seymour), Gipsy Melody (Nicholls), The Squirrel Dance (Elliot-Smith). 11.30, Variety Music; River Stay 'way from my Door, Rocking Chair, Nowt about Owt, Painting the Clouds, Dark Subjects, O'er the Hills to Ardernery, Somebody's Waiting for Me. 12 Midnight, Dance Music by the Iboicians:

AUGUST 22nd

MONDAY

continued.

Absence makes the Heart grow Fonder, Don't tell her, That's where the South begins, Falling in Love Again, Californian Serenade, After your Kiss, You taught me all I know, That Night in Venice, The Chum Song, If you haven't got Love, Scottish Medley, Come to me, I believe in you, Swingin' in a Hammock, A Cottage for Sale, Time will tell. 12.57 a.m. (Tuesday), I.B.C. Good-night Melody. 1.0, Close Down.

FLENSBURG.—See Hamburg.
FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—5.0 p.m., Concert from Langenberg. 6.15, Economic Notes. 6.25, Talk for Workers. 6.50, English Language Lesson. 7.15, Time, Weather, Programme Announcements, and Economic Notes. 7.30, Recital of Popular Songs by Robert Koppel. 8.15, An Evening of Leisure—Radio Report, by Paul Laven. 9.15, Concert of Chamber Music for Wind Instruments: Quintet, Op. 23, for Flute, Oboe, Clarinet, Horn and Bassoon (Lendvai); Quintet, Op. 52, for Flute, Clarinet, Bassoon, Horn and Piano (Spohr). 10.0, Time, Weather, News, and Sports Notes. 10.45, Dance Music from Stuttgart. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—5.55 p.m., Youth speaks to Youth—Talk: The Machine: Friend or Enemy, Blessing or Curse of Mankind? 6.25, Symphonic Poem, Danse macabre (Saint-Saëns). 6.35, A Radio Picture for Workers: Young People in Industry. 6.55, Exchange Quotations. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20, Vocal and Orchestral Concert of Folk Music; Soloist: Ellen Watweyne (Songs). 8.0, Concert of Music for Strings by the Hamburg Philharmonic Orchestra, conducted by Horst Platen; Soloist: Vilma Krüger (Harpist): Little Serenade in Five Movements (Trunk); Minuets Nos. 1 and 3 (Schubert); Herzwund (Grieg); Harp Solo: Valse caprice (Verdalle); Scherzo (Dvorak); Harp Solo: Slav Dance (Verdalle); Waltz (Tchaikovsky). 8.50, Fantastic Possibilities—A Glimpse into the International Electrical Conference of 1950 (Dr. Funk). 9.40, Merresgruss und Seemorgen—Two Symphonic Fantasias (Max von Schillings), played by the Hamburg Philharmonic Orchestra. 10.0, News Bulletin, Weather Forecast, Time Signal, and Announcements. 10.20, Late Concert, relayed from the Café Wallhof.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—1.5 p.m., Gramophone Concert; Part I—Wagner Music: Entry of the Guests into the Wartburg, from Tannhäuser; Tenor Solo from The Valkyries; Good Friday Magic from Parsifal; Melody from Tristan and Isolde; Prelude to the Mastersingers; The Ride of the Valkyries; Part II; Light Music; Hindu Song (Rimsky-Korsakov); Extase (Ganne); Dubinushka (Schirrmann); In einem kühlen Grunde (Gluck); Spatzen-Fromenade (Egg); Engel-parade (Giessner); Piccolo Solos: (a) Die beiden kleinen Finken, (b) Die beiden Grasmücken; Im Spielwarenladen (Jessel); Der kreuzförmige Kupferschmied (Peter). 2.30 to 3.30, Interval. 3.30, Programme for Children. 4.0, Concert by the Little Orag Orchestra, conducted by Eugen Wilcken; March, Jugend heraus (Teike); Overture, Der Wildschütz (Lortzing); Peasant Suite (Ailbout); Waltz, Jungherrntänze (Gungl); Selection from Der Tenor der Herzogin (Künneke); Overture, Flotte Bursche (Suppé); Bib and Bob (Demaret); Pupperl (Siede); Waltz, Junge Mädchen tanzen gern (Eysler); Selection from The Eird Fancier (Zeller). 5.45, Talk: East Prussian Country Life during the Past Century. 6.15, Market Prices. 6.25 (from Danzig), Talk: The Introduction of the Danzig Currency. 6.50, Talk: Memorable Days of the Week. 7.0, Gustav Bellin Programme. 7.25, Talk: Fifty Years of Wagner's Parsifal, with Gramophone Illustrations. 8.10, Weather Forecast. 8.15, See Frankfurt. 9.15, Announcements. 9.25, Delikatessen—Concert by the Radio Male Voice Choir, conducted by Hugo Hartung, with Interludes by the Little Orag Orchestra. Tafelmusik from Die Fledermaus (Johann Strauss); Tafellied (Haydn); Paprika (Lodge); Katzenpastete (Haydn); Gourmand-Polka (Waldteufel); Der Speisezettel (Zöllner); Tee bei Maikäfers (Noack); Das Käselied (Fiebach); Radieschen-Walzer (Hofländer); Eskimojade (Gernerth); In the Tea-house of the Hundred Steps (Yoshitomo); Waltz, Wiener Bonbons (Johann Strauss). 10.10 (approx.), News and Sports Notes.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Christian Radio Society (N.C.R.V.). 7.40 a.m., Bible Reading. 7.55, Gramophone Records of Light Music. 9.10, Interval. 10.10, Programme for Invalids. 10.40, Reading. 11.10, Gramophone Records of Popular Music. In the interval at 11.40, Police Notes. 12.10 p.m., Organ Recital by Jan Zwart: Introduction (Zwart); Klage (Rheinberger); Alla Marcia (Rheinberger); Canzonetta (Rheinberger); Sonata No. 2 (Guilmant); Cantabile (C. Franck); Finale (C. Franck); Andantino (C. Franck); Sonata No. 4 (Mendelssohn); Pastorale (Widor); Toccata (Widor); Scherzo (Widor); Finale (Zwart). 1.40, Gramophone Records of Variety Music. 2.15, Talk. 2.55, Dressmaking Lesson. 3.10, Millinery Lesson. 3.25, Interval. 3.40, Programme for Invalids. 4.40, Quintet Concert: Overture, Pique Dame (Suppé); Waltz, Les Sirènes (Waldteufel); Selection from L'Arcaïene (Meyerbeer); Ballet Music from Coppélia (Delibes); Interval; Selection from The Barber of Seville (Rossini); Overture, Zampa (Hérold); March, El Capitan (Souza); Mein Regiment (Blankenburg). 6.10, The Letter Box. 7.10, Police Notes. 7.25, News Bulletin. 7.40, Mouth Organ Concert: Ein fester Burg ist unser Gott; March (Corn); Song, Le gaillard (Merzdorf); Interlude; Potpourri of Dutch Songs; Evening Bells (Bortniansky); Wiegenlied (Brahms); March, Wien bleibt Wien (Schrammel); Intermezzo; March Manceuvres (Stanz); March, Concordia (van Wouw); Potpourri; Finale, Wilhelmus van Nassouwe. 8.40, Talk. 9.10, Song and Piano-forte Recital by Ina Mulder-Belser (Contraalto) and G. Hengeveld (Piano-forte): Dopo tante e tante pene (Marcello); Chio mai vi possa (Händel); Eight Gipsy Songs (Brahms); Interlude; Um Mitternacht (Mahler); Liebst du um Schönheit (Mahler); Ablösung im Sommer (Mahler); Wenn du zu den Blumen gehst (Wolf); Das ist ein Brausen und Heulen (Wolf); Wandlerlied (Wolf); Interlude; Beatrix I (Beyerle); Hier onder 't wuivend geboomte (Kuijer); De nare schaduw is aan het breken (Sigtenhorst-Meyer); Ik ben de lieve lente (Schnitzler); Huppelend en trippelend (Schnitzler). 10.20, News Bulletin. 10.30, Gramophone Records of Light Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25, Physical Culture. 7.40, Gramophone Records of Variety Music. 9.40, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55 till Close Down, V.A.R.A. Programme. 9.55, Recitations. 10.10, Mandoline Concert with Songs. 10.30, Recitations. 11.0, Concert (continued). 11.15, Gramophone Records of Popular Music. 11.25, Recitations. 11.40, Septet Concert with Variety Music on Gramophone Records. 1.25 to 1.55 p.m., Interval. 1.55, Literary Talk. 2.40, Talk: The History of Music—Percy Scholes, with Gramophone Illustrations. 3.10, Programme for Children. 4.40, Septet Concert, with Gramophone Records of Popular Music in the interval. 5.55, Recitations. 6.10, Organ, Violin, and 'Cello Recital; Wedding Procession from Peramos (Rubinstein); Barcarolle from the Seasons (Haydn); Serenade and Song from Don Quichotte (Massenet); Gavotte for 'Cello (Rameau-Van Lier); Selection from Samson and Delilah (Saint-Saëns-Tavan). 6.55, Recitations. 7.10, Recital (continued); Chanson de l'Aieule and Air de Ballet from Scenes mignonnes (Tartanac); Gipsy Caprice (Kreisler); Sulte, Petites orientales (Pouget). 7.40, When Love Dies—One Act Comedy (Avertchenko). 8.0, Orchestral Concert, conducted by Harry Wiggelaar; Soloist: Faniella Lohoff (Songs); Prelude to Lohengrin (Wagner); Elizabeth's Prayer from Tannhäuser (Wagner); Entry of the Guests into the Wartburg from Tannhäuser (Wagner); Death of Isolde from Tristan and Isolde (Wagner); Prelude to Act III of Lohengrin (Wagner). 8.40, Radio Play (Lichtenberg). 8.55, Concert (continued); Overture, Phèdre (Massenet); Aria from Hérodiade (Massenet); Prelude to Act II of Carmen (Bizet); Habanera from Carmen (Bizet); Waltz from Faust (Gounod); Prelude to Act III of Carmen (Bizet); Aria from La Bohème (Puccini). 9.40, News Bulletin. 9.55, Organ Recital by Johan Jong; Humoresque (Dvorak); Scène de Ballet (Frederiksen); Gitta entdeckt ihr Herz (Brodzsky). 10.10, Variety Music on Gramophone Records. 10.20, Organ Recital (continued); Ufaton-Bomben (Borchert); Schlager Parade, 1932 (Golwyn); Lasst Schlager sprechen (Dostal). 11.0, Gramophone Records of Variety Music. 11.40 approx., Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLACENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW. and HELSINKI, 368.1 metres.—6.15 p.m., Song Recital by Jorma Huttunen. 6.40, Talk. 7.5, Violin Recital by Arthur Johnson: Sonata in E Minor (Corelli); Melody (Gardner); Spanish Dance (Granados arr. Kreisler); Romance (Mozart arr. Koenen); Tempo de Minuetto (Pugnani arr. Kreisler). 7.30, Recitations. 7.55, Concert by the Radio Orchestra: Overture, Poet and Peasant (Suppé); Moment musical (Schubert); Melody from The Queen of Spades (Tchaikovsky); Ballet égyptien (Lugmink); Waltz, Estudiantina (Waldteufel). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Dance Music, relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert. The Berlin State Opera House Orchestra: Overture—Morning, Noon, and Night (Suppé); Julius Patzak (Tenor); Aria from Don Cesar (Dellinger). The Berlin State Opera House Orchestra: Selection from The Gipsy Baron (Johann Strauss); Julius Patzak; Aria from Die Landstreicher (Ziehrer). The Ilja Livschakov Orchestra: Selection from The Dubarry (Millöcker-Mackeben). Willy Domgraf-Fassbender (Baritone): Song and English Waltz, Nur dir will ich gehören (Aaken-Wilcynsky). The Ilja Livschakov Dance Orchestra: Selection from Ronny (Kälman). 12 Noon, Concert from Stuttgart. 1.15 p.m., Weather, News, and Time Signal. 1.30, Concert conducted by Eysoldt; Potpourri, Erinnerung an Bayreuth (Morena); Overture, Der Waffenschmied (Lortzing); Melody (Rubinstein); Moment Musical (Schubert); Thermen-Walzer (Strauss); Selection from Die Puppenfee (Bayer). 2.30, Meat Market Prices. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. Old Fairy Tales and Music. 4.20, Talks for Young People. 5.0, Concert conducted by Eysoldt. 6.20, Talk for Women: Outstanding Women in World History. 6.45, Weather; Time, Economic and Sports Notes. 7.0, Reading (Felix Braun). 7.20, Topical Talk. 7.30, Talk: Modern Traffic Problems. 7.55, News Bulletin. 8.15 to 10.20, See Frankfurt. 10.20, News, Announcements, and Sports Notes. 10.45, Concert from Stuttgart.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres, 2 kW.; and DRESDEN, 319 metres.—6.0 p.m., Book Review. 6.30, Talk: The Psychology of Broadcast Announcements. 7.0, Talk: Life in a Halle Youth Hostel. 7.30, Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber. Soloist: Hans Kunz (Baritone). Overture, Dame Kobold (Reinecke); Musikalische Dorgeschichten (Kretschmer); Five Songs, (a) August (Haas), (b) Sommernacht (Graener), (c) Unter Blüten (Trunk), (d) Schnitterlied (Trunk), (e) Daheim (Kaun); Orchestral Suite from Nussknacker and Mausekönig, Op. 7 (Schaub); Polonaise (Dvorak); Four Songs, (a) Abendgang (Trunk), (b) Ewig jung ist nur die Sonne (Windsparger), (c) Der Hufschmid (Rinkens), (d) Ich liebe dich (R. Strauss); Overture, Simplicius (Joh. Strauss); Laura Waltz (Millöcker). 9.0, The Destiny of Peoples as affected by Rivers—A Literary Sequence by Dr. Erna Freymuth. 10.5, News Bulletin. 10.15 (approx.), Concert of Light Music by the Pletzsch-Marko Orchestra: Overture, Masaniello (Auber); Waltz, Gruss aus Wien (Joh. Strauss); Suite, Butterfly Scenes (Fletcher); Czardas, Vilany (Lindsay-Thaimer); Im Spielwarenladen (Jessel); Potpourri of Mendelssohn Melodies (Fétras); Diavoletta (Lindemann); Potpourri, für Herz und Gemüt (Kozák). 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Quintet Concert. 7.0, Talk: Economics and Education. 7.30, Talk: The Modern Foundry. 8.0, Violin and Piano-forte Recital. 9.0, Quintet Concert. 10.0, Time Signal and News Bulletin, followed by a Concert of Light Music.

LWOW

381 metres; 10 kW.—7.15 p.m., Miscellaneous Items. 7.35, See Warsaw. 7.45, Talk. 8.0 till Close Down, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA; 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert. 7.30, Radio Gazette for Lyons and the South East. 8.30, Orchestral Concert of Classical Music, relayed from the Casino, Vichy; Conductor, Paul Paray; Soloist, Alfred Cortot (Piano-forte).

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotation and Market Prices, followed by a Request Gramophone Concert. 9.15, General News Bulletin. 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talk in English by a Soviet Student. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg (239 metres).—5.0 p.m., Concert from Langenberg. 6.15, Talk: The History of the Development of the Isar Valley. 6.35, Talk for Workers, Chauffeurs and other Motor Drivers. 6.55, Time Weather and Agricultural Notes. 7.5, Piano-forte Recital by Emmy Braun: Polonaise in E (Liszt); Barcarolle (Chopin); Prelude and Nocturne (Dobrowen); Piece to be announced. 7.40, Health Talk. 8.0, Die schöne Bissette—Operetta in Three Acts, and a Prologue (Fall). 10.0, Talk: Life from the Journalist's Point of View. 10.20, Time Signal, Weather Forecast, News Bulletin, and Sports Notes. 10.45, Concert from Stuttgart. 12 (midnight), Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSTERSUND.—See Stockholm.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—6.0 p.m., Concert by M. O. Gustavson (Violin), Glende (Viola), M. Rusted ('Cello), M. P. Heindriksen (Piano-forte), and W. Schubert (Accordion). 7.0, Announcements, Weather Forecast, and News Bulletin. 7.30, Talk. 8.0, Time Signal. 8.2, Song Recital by the Oslo Women's Choir. 8.30, Piano-forte and Violin Recital by Mme. Mildred Selmer and Harald Eldsno: Villanella (Respighi); La fille aux cheveux de lin (Debussy); Arabesque No. 2 (Debussy); Seguidillas (Albeniz). 9.10, Political Review. 9.40, Weather Forecast and News Bulletin. 10.0, Topical Talk. 10.15, Concert of Light Music. 10.45 (approx.), Close Down.

PALERMO

542 metres; 3 kW.—5.30 p.m., Popular Music on Gramophone Records. 6.30 to 8.0, Interval. 8.0, Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Popular Music on Gramophone Records. In an interval at 8.30, Time Signal and Announcements. 8.45, Concert of Chamber Music: Piano-forte Solos: (a) Invocation (Albeniz), (b) Serenata (Savasta), (c) Caprice (Savasta); Violin Solos: (a) Concerto in D (Mozart), (b) Air on the Fourth String (Bach), (c) Prelude in E (Bach); 'Cello Solos: (a) Sonata in A Minor (Vivaldi), (b) Kol Nidrei (Bruch). In an interval, Book Review. 9.30 (approx.), "Schicchier e grande"—Comedy in One Act (Lopez), followed by Concert (contd.); Trio in D Minor (Arensky). 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (preliminary and 6-dot Signals). 6.45 p.m., Cinema Review. 7.0, Le Journal Parlé. 8.20, Weather Forecast. 8.30, Orchestral Concert, relayed from Vichy: The Chorus with Alfred Cortot (Piano-forte); The Seventh Symphony (Beethoven); Concerto in F minor for Piano-forte and Orchestra (Chopin); Bourrée fantasque (Chabrier); La procession nocturne (Rabaud); Cantique de Racine (Fauré); Symphonic Variations for Piano-forte and Orchestra (Franck). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—7.0 p.m., News Bulletin and Press Review. 7.5, Light Music on Gramophone Records. 7.15, Sponsored Programme. 7.45, Gramophone Concert (contd.). 8.0, Sports Notes. 8.20, Archaeological Talk: Expeditions round Paris. 8.30, Journal Parlé and News Bulletin. 8.45, Sponsored Concert. 10.0, Dance Music relayed from Les Ambassadeurs. 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—7.45 a.m., Light Music on Gramophone Records. 8.0, Press Review and Weather. 8.30, Physical Culture Lesson. 12 Noon, Debussy Concert for the Seventieth Anniversary of his Birth, on Gramophone Records: Petite Suite; Arabesque No. 1 for Harp; Prélude à après-midi d'un faune; Green from Aqua-

AUGUST 22nd

MONDAY

continued.

relies. 12.30 p.m., Popular Music on Gramophone Records. 1.0, Exchange, News, and Weather. 1.5, Debussy Concert (cont'd): Mandoline; Rhapsody for Clarinet; Nages and Fêtes from Nocturnes; Scene from Pelléas et Mélisande; Violin Solo: Gollivog's Cake-walk; Pianoforte Solo: Jardins sous la pluie; Andante from the Quartet; Saxophone for Flute; La Boite à bijoux. In the intervals at 1.30 and 2.0, Exchange. 3.45, Exchange and Market Prices. 4.30, Concert relayed from the American Conservatoire, Fontainebleau. 5.30, Market Prices, Weather, Agricultural Report, Talk, and Racing Results. 7.0, Gounod Gramophone Concert: Overture and Cantilène from Mirella; Cortège from The Queen of Sheba. Chorals: (a) Felix culpa, (b) Je te rends grâce; Jerusalem; Serenade; Le Vallon; Three Airs from Romeo and Juliet; (c) Rise Fair Sun in Heaven (b) Romeo's Cavatina, (c) 'Tis there, all hall, oh Tomb. 7.45, Commercial Prices and News. 8.0, Un Client sérieux—Play (Courteline). 8.30, News, Sports, Notes, and Weather. 8.45, Sur un Banc—Play (Hirsch). 9.15, Press Review and News. 9.30, Gramophone Concert of Music from Many Lands: Symphonic Poem, Phaëton (Saint-Saëns); Popular Spanish Songs (Fallá); Symphonic Poem, Finlandia (Sibelius); The Song of the Flea (Moussorgsky); Le fontaine di Roma (Respighi); Polonaise (Chopin); Wiener Blut (Johann Strauss); Saudades do Brazil (Milhaud); Two Etudes for Choir (Voeltz); Symphonic Poem, Death and Transfiguration (Rich. Strauss).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relay by W8XK on 48.85 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Reports. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, KDKA Kiddies' Klub. 10.15, Teaberry Baseball Scores. 10.20, David Lawrence Dispatch. 10.25, KDKA Artist Bulletin. 10.28, Programme Announcements. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day. 11.6, Teaberry Sports Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, Westinghouse Parade. 11.45 to 4.0 a.m. (Tuesday), New York Relay. 11.45, To-day's News, by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Tastyest Jesters. 12.30, Stebbins Boys. 12.45, Billy Jones and Ernie Hare. 1.0, Time Signal and Carnation Contended Programme. 1.30, The Marseillaise 2.0, Sinclair Minstrels. 2.30, George Olson's Orchestra. 3.0, The Country Doctor. 3.15, Absorbine, Jr. Footnotes. 3.30, Tish. 3.45, Jane Frohman and her Band. 4.0, Time Signal. 4.1, Teaberry Sports Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, The Music Box. 4.50, Jack Pettis and his Orchestra. 5.0, Terrace Gardens Orchestra, from New York. 5.30, Time Signal and Good Night.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.0 kW.—7.15, Announcements and News Bulletin. 7.35, See Warsaw. 7.45, Popular Music on Gramophone Records. 7.58, Time Signal. 8.0, See Warsaw. 8.15, Light Music on Gramophone Records. 8.25, See Warsaw. In the intervals, News. After the relay, Programme Announcements. 11.30, Time Signal, Sports Notes and Police Report. 11.50 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW; LAUSANNE, 680 metres, and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Geneva), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5 (from Geneva), Popular Music on Gramophone Records. 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1 (from Lausanne), Programme for Children. 7.0, Weather Forecast. 7.1 (from Lausanne), Lecture Recital by M. Marcel Sénéclaud. 7.40 (from Geneva), Recitations by M. René-Louis Picaud. 7.55, News Bulletin. 8.0 (from Geneva), Literary Programme. 8.30 (from Geneva), Pianoforte Recital by Jacqueline Nourrit (aged eleven). 9.0, Variety Concert by the Station Orchestra. 10.0, News Bulletin and Weather Forecast. 10.15, Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.0 a.m., Weather Report. 5.0 p.m., Weather Report. 8.30, Weather Forecast. 8.40, Popular Music by the Radio Quartet. 9.0, Chimes and Gramophone Records of Songs and Pianoforte Solos. 9.30, News Bulletin.

RIGA

525 metres; 15 kW.—5.0 p.m., Talk on Swimming. 5.30, Concert by a Mandoline Orchestra: Spanish Waltz (Aletter); Mazurka (Chik); Waltz, In Mexico (Morena); Cinderella's Wedding Procession (Dieker); Air (Velki); Serenade (Jakovaki); The Hawks (Fredriksen); Chant triste (Tchaikovsky);

Melody (Siede); The Mill in the Forest (Ellenberg). 6.30, Agricultural Talk. 7.0, Weather Report. 7.3, A Sketch. 8.0, News Bulletin. 8.20, Concert of Popular Music. 9.0, Weather Report. 9.5, Comedies. 9.30 (on 198.5 metres), Concert of Popular Music. 10.15 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 1RO, 441 metres; 50 kW. Relay by Naples, 319 metres, and 2RO, 25.4 metres.—8.15 to 8.30 a.m., Giornale radio and Announcements. 12.30 to 2.15 p.m., Weather, followed by Gramophone Concert of Variety Music. In the intervals at 1.15, Giornale radio, and at 1.30, Time and Announcements. 5.0, Exchange, Programme for Children, Giornale radio and Announcements. 5.30 to 6.15, Instrumental and Vocal Concert: Suite for 'Cello and Pianoforte (Sokolov); Soprano Solos: (a) La pastorella (Castelliovotedesco), (b) Cradle Song (Tchaikovsky); Tenor Solos: (a) Song from Venezia (Storbi), (b) Se tra l'erba (Donaudy), (c) Vendemmia (Tocchi); 'Cello and Pianoforte Pieces: (a) Elegy, (b) Slav Dance (Scharwenka); Soprano Solo from Maria di Rohan (Donizetti). 7.10 (Naples), Shipping and Sports Notes. 7.15, Agricultural Notes, Announcements and Giornale radio. 8.0, Time, Announcements and Gramophone Records of Variety Music. 8.30, Sports Notes, Announcements, Review of Books and Tourist Report. 8.45, The Departure for Asia—Play in One Act (Lucio d'Ambrà). 9.15, Concert of Light Music: Gioconda Silhouette (Hamud); Soprano Solo, Sei tu (Mascheroni-Dory); Tenor Solo, Il negro (Bortolano); Soprano Solo, La canzone di Friguetta (Montagnani); Soprano Solo, You can't trifle with Love (Bixio); Tenor Solo, Canzone a Rumina (Rampoldi); Potpourri of Danes (Borchert); March, Moscovita (Licari); Soprano Solo, Eva diceva (Lao Schor); Tenor Solo, Era una donna bruna (d'Anzi); Soprano Solo, Ki-Ko-Ki (Lanzetta); Selection from Frühlingsluft (Josef Strauss); Soprano Solo, Chi se la piglia muore (Valente); Tenor Solo, Love is like a Talking Film (Stolz); Romanesca (Guarino). Talk in the interval. 10.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relay by intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—9.0 p.m., Book Chat. 9.15, William Steven (Bartone). 9.30, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15, Swanee Serenaders, from New York. 10.40, A.B.C. Thumbail Sketches. 10.45, Swanee Serenaders, from New York. 11.0, Waldorf-Astoria Orchestra, from New York. 11.30, Musical Programme. 11.55, Baseball Scores. 12 Midnight, Under the Big Top. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Tuesday), Chandu, the Magician. 12.30 to 4.0, New York Relay. 12.30, Maxwell Tune Blenders. 12.45, The Goldbergs. 1.0, Soconyland Sketch. 1.30, Voice of Firestone. 2.0, A & P Gipsies. 2.30, Parade of the States. 3.0, National Radio Forum. 3.30, Do You Remember? 4.0, Armchair Chats. 4.15, Johnny Albright (Crooner). 4.30, Gordie Randall's Orchestra. 5.0, Rex Koury (Organist). 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres, 60 kW.; BASLE, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Variety Concert on Gramophone Records. 1.35, Weather Forecast, and Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Concert by the Small Station Orchestra. 4.0 (from Basle), Concert by the Radio Quartet. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Basle), Talk for Children. 7.0, Time Signal and Weather Forecast, followed by Recital of Beethoven Pianoforte Sonatas by Arthur Schnabel (on Gramophone Records). 7.30 (from Basle), Talk: The Development of the Ideal of a League of Nations from Kant to Wilson. 8.0 (from Zürich), Concert of Modern Dance Music and Songs by the Station Dance Orchestra; Conductor, M. Scherbaum; Soloist, L. Krauss-Elka (in his own songs). 8.50, Concert of Old Dance Music by the Station Orchestra. Conductor, E. Gilbert. 9.10, Concerto for Trombone and Orchestra (Gräfe). Soloist: Walter Schwinger. 9.30, Weather Forecast and News Bulletin. 9.45, Late Concert by the Station Orchestra. 10.30, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relay by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m. (from Sundsvall), Historical Reading. 5.30, Talk. 6.0, Gramo-

phone Records of Variety Music. 7.0, Reading. 7.15, Weather and News. 7.30, Talk: The Riksdag Elections. 8.0, Madrigal Concert by the Radio Choir. 8.30, The Practical Corner. 8.45, Military Band Concert, conducted by Georg Pegel: March (Blankenpegel); Fantasia on Swedish Melodies (Pegel); Clarinet Solo: Theme with Variations (Crusell); Duet from Lohengrin (Wagner); In a Chinese Temple Garden (Ketelbey); Waltz, Wienerblut (Johann Strauss); Selection from The Geisha (Jones); March (Möller). 9.45, Weather and News. 10.0, Concert of Light Music for Strings: Wedding March from A Midsummer Night's Dream (Mendelssohn); Overture, Der Wildschütz (Lortzing); Erotic Melody (Friden); Waltz, Wiener-Extrablätter (Trauslauer); Fjällvandrings (Wesslander); Tango (Wiga); Potpourri, Von Wien durch die Welt (Hruby). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Classical Music. 12.45 p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Orchestral Concert relayed from Bordeaux-Lafayette. 1.50, Literary Review in German. 4.45, Talk in French: Jewish Alsace, its History and Monuments. 5.0, Concert of Dance Music by the Station Orchestra. 6.0, Literary Talk in French: Bourdaloue. 6.15, Dietetic Talk in French. 6.30, Concert by the Station Orchestra, conducted by M. Maurice de Villers: Overture, La Princesse jaune (Saint-Saëns); Divertissement (Lalo); Selection from Le Roi d'Ys (Lalo); Le pas des fleurs (Delibes); Entr'acte from Piccolino (Guiraud); Fête polonaise (Chabrier). 7.30, Time Signal. 7.32, News in French and German. 7.45, Concert by the Station Orchestra, conducted by M. Maurice de Villers: Marche lorraine (Ganne); Waltz, Myosotis (Waldeutele); Overture, The Caliph of Bagdad (Boieldieu); Selection from The Merry Widow (Lehar); Mattinata (Leoncavallo); Serenade (Padilla); Valse poudrée (Popy); Marche française (Filippucci). 8.20, Concert of Classical Music conducted by M. Paul Paray, relayed from the Grand Casino, Vichy. Soloist: Alfred Cortot (Pianoforte).

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—10.0 a.m., Organ Recital of French Music, relayed from the Ufa Palace: Musette (Offenbach); Waltz, Clair de Lune (Godard); La lettre de Manon (Gillet); Spring Song (Gounod); Waltz from Coppélia (Delibes); Salut d'amour (Elgar). 10.20 (from Karlsruhe), Two Pianoforte Trios: Trio in A Minor, Op. 61 (Graener); Trio in D Minor, Op. 32 (Arensky). 11.0, Time and News. 11.55, Weather Forecast. 12 Noon, Orchestral Concert. 1.15 p.m., Time, Weather, News and Programme Announcements. 1.30, Gramophone Concert of Wind Instrument Music: Entry March from Tannhäuser (Wagner); Triumphal March from Aida (Verdi); Overture, Martha (Flotow); Sefira (Siede); A Wedding Procession in Lilliput; Potpourri, Deutsche Marschperlen (Blankenburg); March Potpourri (Robrecht). 2.0 to 2.30, Sponsored Concert. 5.0, Concert from Langenberg. 6.15, Time and Weather. 6.25, Talk: Flowers and Insects. 6.50, See Frankfurt. 7.15, Time, Weather, and Agricultural Notes. 7.30 to 10.20, See Frankfurt. 10.20, Time, Weather, News, and Programme Announcements. 10.40, Talk on Chess. 10.45 (approx.), Concert by the Dance Band of the Stuttgart Philharmonic Orchestra.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Music by an Argentine Orchestra. 5.45, Chansonnettes. 6.0, Airs from (a) The Tales of Hoffmann (Offenbach), and (b) Don Pasquale (Donizetti). 6.15, Exchange and Horse Racing Results. 6.30, Variety Music on Gramophone Records. 7.30, Programme Announcements and News. 7.35 (approx.), Accordion Recital. 8.0, Military Music. 8.15, Concert: Airs from (a) Les Dragons de Villars (Mailart), (b) The Daughter of the Regiment (Donizetti), (c) Rigoletto (Verdi), and (d) Romeo and Juliet (Gounod); Dans l'éclat de la chapelle (Mandré); Dance of the Seven Veils from Salomé (R. Strauss). 8.45, Music by a Viennese Orchestra. 9.0, Music by an Argentine Orchestra. 9.15, Sound Film Music. 9.30, Concert: Overture, Banditenstrelche (Suppé); Prelude to L'Arlésienne (Bizet); Accordion Solos: Melodies from (a) Enlève-moi (Gaboroche), and (b) Mariska (Cazes). 10.15, Dance Music. 10.30, North African News. 10.45, Orchestral Music. 11.0, Concert: Tout est permis quand on rêve (Heymann); Moonlight on the Colorado (Moll); Derrière les volets (Terrier); Air from Lakmé (Delibes); The Whistler and his Dog (Pryor); Melody from Le Prix d'un Baiser (Megika); Quand on n'a pas le pied

marin (Messenger); The Lancers' Quadrille (Marie); Les Rameaux (Fauré); Selection from Poet and Peasant (Suppé). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.0 p.m., Quintet Concert: Sei la mia fortuna (Ricardo); Deliriumwaller (Strauss); Air (May); Canzone del perchè (Mariotti); Melody (Translater); Selection from The Circus Princess (Kálmán); Tra i palmizi (Montanaro); Modistina (Chiappo). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relay by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.0 p.m., Concert: Impression d'Oriente (Amadei); Zulaika (Ago); I cadetti di Guascogna (Donati). In the intervals, at 7.25, Tourist Talk; and at 7.30, Time and Announcements. 8.0, Giornale Radio, Weather, and Light Music on Gramophone Records. 8.20, Review of New Books. 8.30 (approx.), Orchestral Concert: Overture, I promessi sposi (Ponchielli); Dance of the Waves from Loreley (Catalani); Excelsior (Marenco); Intermezzo (Moussorgsky); Selection from Madame Butterfly (Puccini). 9.20, One-Act Comedy. 10.0 (approx.), Concert (cont'd.): Overture, Zampa (Hérold); Danse macabre (Saint-Saëns); Selection from Aida (Verdi); Hungarian Dances Nos. 5 and 6 (Brahms); Selection from The Caliph of Bagdad (Boieldieu). 11.0, Giornale Radio.

VATICAN CITY

19.84 metres (morning) and 50.26 metres (evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Italian. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relay by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—4.55 p.m., Concert. Soloist, Max Geiger (Violin). Concert Overture (Geiger); Waltz, Die Romantiker (Lanner); Selection from Rigoletto (Verdi); Violin Solo, Romance (Beethoven); Der Rose Hochzeitstag (Jessel); Ballet Suite from Tatjana (Lehár); Waltz, Stundengen, Tagelang (Samek); Fox-trot, Goldblondes Mädchen (Granchataden); Selection from Dubinuschka (Schermann). 6.10, Talk: Around the Bisamberg. 6.30, Books of Reference in connection with the Week's Radio Talks. 6.35, Talk: Old Vienna. 7.0, Talk: An Excursion in the Manhart Valley. 7.25, Time Signal, Weather Forecast, and Programme Announcements. 7.35, Recital of German and Moravian Folk Songs. The German Folk Song Society, conducted by Georg Kotek. 8.25, Concert by the Vienna Symphony Orchestra. Conductor, Hermann Scherchen. Soloist, Rafael Laues ('Cello'); Symphonic Variations for 'Cello and Orchestra (Mengelberg); Ninth Symphony (Mahler). 10.5, News Bulletin, Weather Forecast, and Miscellaneous Announcements. 10.20, Dance Music by the Karl Krall Jazz Band, with Vocal Refrains by Emil Petroff.

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Report. 12.45, Popular Music on Gramophone Records. 1.25, Interval. 1.35, Light Music on Gramophone Records. 2.10, Interval. 3.0, Economic Report. 3.10, Gramophone Records of Popular Music. 3.30, Review of Traffic and Transport Problems. 3.40, Variety Music on Gramophone Records. 4.35, News. 4.40, Talk in French. 5.0, Pianoforte and Song Recital by Hélène Korff (Soprano) and E. Rozenblum (Pianoforte). Pianoforte Solos: (a) Sonatas in D flat and G minor (Cantallos), (c) Sonata in C minor (Albiniz), (d) Rondo in G (Beethoven), (e) Perpetuum mobile (Weber); Songs: (a) Aria from The Pearl Fishers (Bizet), (b) Songs my Mother taught me (Dvorak), (c) Song (Brahms); Pianoforte Solos: (a) Two Mazurkas (Tansman), (b) Rondo (Bartok), (c) Passatempo (Castelliovotedesco), (d) Capriccio (Dohnanyi); Songs: (a) Marietta's Songs from Die tote Stadt (Korngold), (b) Petite hirondelle (Moniuszko), (c) Song (Maszynski). 6.0, Talk: The Poet Jean Kochanowski. 6.20, Concert of Dance Music. 7.15, Miscellaneous Items. 7.35, Radio Journal. 7.45, Agricultural Talk. 7.55, Programme Announcements. 8.0, Reading: A Drama of the Glaciers. 8.15, Popular Music on Gramophone Records. 8.25, The Dollar Princess—Opera (Fall), relayed from the Theatre at Clichocinek. In the first interval, Radio Journal; in the second and third intervals, Aviation Weather Report and Sports Notes.

WILNO

563 metres; 16 kW.—7.15 p.m., Talk in Lithuanian. 7.30, Programme Announcements. 7.35, See Warsaw. 7.45, Sports Notes. 8.0, See Warsaw. 11.30 (approx.), Close Down. ZÜRICH.—See Schweizerischer Landseender.

TUESDAY

AUGUST THE TWENTY-THIRD.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Organ music. Orchestral concert. Programme of French music. "Miscellany" programme. Vaudeville programme. Dance music.
- LONDON REGIONAL** Orchestral concert. Ballad concert. Band concert. Promenade concert from Queen's Hall. Dance music.
- MIDLAND REGIONAL** Orchestral concert. "Dreams of Ireland" orchestral programme. Rev. Frank Jennings: Tramps—their ways, habits and haunts. London Regional programme.
- NORTH REGIONAL** Orchestral concert. Mr. L. M. Angus Butterworth: Some Historic Cheshire Houses. London Regional programme.
- WEST REGIONAL** "Hurdy Gurdy," a selection of songs from stage and screen. National programme.
- SCOTTISH REGIONAL** Orchestral concert. "Truly Rural," vaudeville programme. National programme.
- BELFAST** Orchestral concert. Dance music. National programme.
- HAMBURG** "Adventurous Genius." A Literary and Musical Programme.
- HUIZEN** Concert from the Hotel Atlanta, Rotterdam.
- LANGENBERG** Bach-Busoni Concert by the Station Orchestra and Chorus.
- MUNICH** Debussy concert.
- ROME** Opera: "Lodoletta" (Mascagni).

ABROAD

ALGIERS
363.3 metres; 13 kW.—7.0 p.m., Market Prices and Exchange. Quotations. 7.10, Shipping Notes and Weather Report. 7.15, Tangos and Waltzes. 7.30, Readings from Les précieuses ridicules (Molière) and Cyrano de Bergerac (Edmond Rostand). 7.45, Concert of Dance Music. 7.55, News Bulletin and Time Signal. 8.0, Concert of Chamber Music: Quartet (Debussy); Rondo from the Trio for Piano, Oboe, and Bassoon (Poulenc); Selections from the Quartet in E Flat (Mendelssohn). 9.0, Concert of Oriental Music.

BARCELONA
RADIO BARCELONA; Call EAJI, 349 metres; 8 kW.—8.0 p.m., Trio Concert; Serenata al viento (Mascheroni); Spring Song (Mendelssohn); Chant russe from the Concerto Op. 29 (Lalo); Selection from Le Roi d'Ys (Lalo). 8.30, Exchange Quotations, Request Gramophone Concert and News. 10.0, Chimes, Weather Forecast; Talk for the Families of Sailors on the High Seas, and Market Prices. 10.10; Concert by the Station Orchestra: March; Le Grogard (Paris); Waltz, Anita (Courtisou); Réverie hindoue (Staub); Berceuse (Debussy). 10.30, Song Recital by Fernando Cortés (Tenor). 11.0, Astronomical Talk. 11.10, Concert of Classical Dances by the Barcelona Philharmonic Orchestra; Overture, The Italian Girl in Algiers (Rossini); Schottische, El marino (Cotó); Mazurka, La trenza (Escalas); Habanera, La mulatita (Escalas); Polka, La bacanal (Cotó); Schottische, El filosofo (Clarina); Waltz, El Mauiqui (Cotó). 12.30 a.m. (Wednesday), Dance Music by the Melody Boys, relayed from the Excelsior Dance Hall. 1.0, Close Down.

BASLE—See Schweizerischer Landessender.

BELGRADE
430.4 metres; 2.5 kW.—5.0 p.m., Popular Music on Gramophone Records. 5.45, Concert by the Station Orchestra. 7.25, Time Signal and Programme Announcements. 7.30, Talk. 8.0, Song Recital by Anita Gorska. 8.30, Popular Concert and Chamber Music, relayed from Zagreb (307 metres). 10.30, News Bulletin, followed by Cigany Music from the Toplice Restaurant.

BERLIN
KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.5 p.m., French Lesson for Schools, followed by Gramophone Records of Debussy Music and Weather for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of Operatic Music, relayed from Berlin (Witzleben). 3.0, Talk: The Life of the Asiatic Nomads. 3.30, Weather and Exchange. 3.45, Talk for Women: Practical Household Hints. 4.0, Talk: Tradition and Convention. 4.30, See Leipzig. 5.30, Talk: The Anecdote as Historical Report. 6.0, Talk: The Form of Songs. 6.30, Talk: The Industrial Crisis and the Burden of Taxation. 6.55, Weather for Farmers. 7.0, Talk: Modern Graphology. 7.30, Talk on Plant Life. 7.45, Wireless Technical Talk, followed by Weather for Farmers. 8.0, Programme from Berlin (Witzleben). 9.10 (approx.). See Stuttgart. 10.10, Weather, News, and Sports Notes. 10.30, Concert from Hamburg. 12 Midnight (approx.), Close Down.

BERLIN
WITZLEBEN, 419.5 metres; 1.5 kW.—4.30 p.m., Wind-Instrument Concert, relayed from the Radio Exhibition: March, Berliner Punks (Jander); Overture on an Old Thuringian Folk Song (Lassen); The Helmsman's Song and Sailors' Chorus from The Flying Dutchman (Wagner); March, Sporthelden (Mannfred); Spanish Rhapsody (Richardy); Overture, Tannhäuser (Wagner); Waltz-Intermezzo, Was Blumen träumen (Translatour); Ballet Music from Coppélia (Delibes-Voigt); Schmetterlingstanz (Rassel); March, Deutscher Schutzgeist (Jander). 6.0, Programme for Children. 6.20, Books on Biology, a Review by Dr. Hermann Muckermann. 6.50, Labour Market Report. 7.0, Topical Talk. 7.10, Concert by a Massed Orchestra of Two Hundred Unemployed Musicians, relayed from the Radio Exhibition: Overture, Rienzi (Wagner); Norwegian Artists' Carnival (Svendsen); March from Sigurd Jorsalfar (Grieg); Invitation to the Dance (Weber); Morgenstimmung—First Movement from the Romantic Symphony in A (Schmalstich); Prelude to The Flying Dutchman (Wagner); Polonaise in E (Liszt); Waltz, Tales from the Vienna Woods (Joh. Strauss); Movement from the Märkische Suite (Kaun); Triumphal March from Aida (Verdi). 9.0, News and Sports Notes. 9.10, Herr Brehm's Noah's Ark (Oda Weibrecht). 10.10, Weather, News, and Sports Notes.

BERNE—See Schweizerischer Landessender.

BROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE
304 metres; 13 kW.—7.30 p.m., News Bulletin and Exchange Quotations. 7.40, Request Music on Gramophone Records. 8.10, Lottery Results. 8.45, News Bulletin and Weather Forecast. 8.50, See Paris (Eiffel Tower). After the Relay, Theatre Guide and Time Signal.

BREMEN.—See Hamburg.

BRESLAU
325 metres; 1.5 kW. and **GLEIWITZ**, 253 metres.—4.55 p.m., Orchestral Concert conducted by Franz Marszałek; Selection from Wenn die Liebe erwacht (Künneke); Ballet Suite (Gyldenmark); Overture, La belle Hélène (Offenbach). 5.45, Market Prices and Talk. 6.10, This will interest you—a Surprise Programme. 6.30, Talk for Women: The Welfare of the Worker. 6.55, Reading: Heimkehr (Stefan Sedlacek). 7.10, I help an Old Man (Beate Buchmann). 7.30, Weather for Farmers. 7.32, Gramophone Concert; The Berlin Philharmonic Orchestra, conducted by Clemens Schmalstich; Selection from Madame Butterfly (Puccini); The Steiner Brothers Orchestra; Waltz, Plattergeister (Josef Strauss); The Steiner Brothers Orchestra; Polka-Mazurka, Die schöne Polin (Müller); Gandino and his Orchestra; Traut' die Gard' ist da (Oscar Straus); Emil Rössz and his Orchestra; Waltz, Dorfkinder (Kálmán); Military Band conducted by Adolf Berdien; March, Unter dem Doppeladler (J. Wagner). 8.0, The Life of German Emigrants, 1918-1932—a Radio Sequence (Friedrich Carl Westphal); Part II, The Siebenbürgen-Banat—The Volga Republic. 9.0, News Bulletin. 9.10, "Cello" Recital by Fritz Binnovsky; Sonata in C (Moffat); Toccata (Prescobaldi-Cassado); Canzone (Hasse); Rondo (Boccherini). 9.40, Topical Talk. 10.10, Time, Weather, News, Sports Notes and Programme Announcements. 10.40, Reminiscences of a Sports Tour round the Silesian Provincial Towns. 10.55, Dance Music. 12 Midnight (approx.), Close Down.

BRUSSELS (No. 1)
I.N.R., 509 metres; 15 kW.—12 Noon, Gramophone Concert of Light Music, arranged by the Belgian Catholic Radio Society. 1.0 p.m. (in the interval), Le Journal Parlé. 5.0, Concert by the Station Orchestra, conducted by Jean Kumps: Overture, Il Seraglio (Mozart); Symphony No. 8 (Beethoven); Serenade (Elgar); Nocturne and Scherzo from A Midsummer Night's Dream (Mendelssohn); Two Dances (Brahms). 5.45, Programme for Children, arranged by the Belgian Catholic Radio Society. 6.20, Literary Review. 6.30, The East in the Eyes of the West—Gramophone Concert: Oriental Suite (Popy); In a Persian Market (Ketyelbey); In the Mystic Land of Egypt (Ketyelbey); Music from the Ballet égyptien (Luigin) as played by Turks, Persians, and Armenians. 7.15, Catholic Report. 7.30, Film Review. 8.0, Concert by the Radio Orchestra, conducted by Charles Walpot. 9.0, Concert, relayed from the Casino, Knocke; Soloist: Mme. Watte (Songs); Overture, Roxelane (Yau Nieuwenhove); Elegy for Strings (Glazer); Song from Les Noces de Jeannette (Masse); Symphonic Poem, Lovelace (Buffin); Aria from Zémire et Azor (Grétry); Hungarian Rhapsody No. 1 in F (Liszt). After the Con-

cert, Le Journal Parlé and Gramophone Dance Music: Waltz, Aubade charmuse (Peyronnin); Foxtrot (Gutman); Pasodoble, Mutchico (Rodde); Waltz, The Lady in the Moon (Wiga); Foxtrot, The Wedding of the Birds (Tobias); Tango, El Relicario (Padilla); One-step, Tom Thumb's Drum (Sarony). 11.0 (approx.), Close Down.

BRUSSELS (No. 2)
N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Gramophone Concert: Overture, Egmont (Beethoven); Dance of the Fireflies and Waltz of the Sylphs from The Damnation of Faust (Berlioz); March (Handel); Elegy (Massenet); Selection from Der Freischütz (Weber); Waltz from Sleeping Beauty (Tchaikovsky); Egyptian March (Johann Strauss); Waltz Potpourri (Robrecht); Clair de lune from Werther (Massenet); Addio a Napoli (Cottner); Selection from The Dance of the Dragonflies (Lehár); Selection from Die Fledermaus (Johann Strauss). 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert (contd.); En avant les rouges (Ducat); Popular Songs (Komzák); Liebesfreud (Kreislner); Czardas (Grossmann); Java (Eblinger); La Venta de Tritana (de Zafra); Selection from Viktoria and her Hussar (Abraham); My Brother makes the Noises for the Talkies (Amberg); Selection from Sunny (Kern); Dance of the Little Dutch Doll (Walker); Happy Feet (Yellen-Ager); The Doll Dance (Brown); A Little Slow Foxtrot with Mary (Kálmán); Little White Lies (Donaldson); Lady of Spain (Evans); Parade March (Strauss). 5.0, Orchestral Concert, conducted by Charles Walpot; Radetzky March (Strauss); Gavotte (Godard); An der schönen grünen Narenta (Komzák); Paysage (Douliet); Potpourri, Ripe Fruit (Morena). 5.45, Programme for Children. 6.30, Gramophone Concert: Carnival Overture (Dvorák); Selection from Le Maschere (Mascagni); Le Carnaval des Animaux (Saint-Saëns). 7.15, Talk. 7.30, Le Journal Parlé. 8.0, Italian and French Opera—Orchestral Concert, conducted by Jean Kumps; Soloist, Eve Govy (Songs); Selection from Aida (Verdi); Songs; Overture, The Barber of Seville (Rossini); Gramophone Records: (a) Song from the Girl of the Golden West (Puccini); (b) Aria from The Barber of Seville (Rossini); Selection from The Daughter of the Regiment (Donizetti). 8.45, Talk: Women and Social Service. 9.0, Concert (contd.): Overture, Mignon (Thomas); Songs; Selection from Lakmé (Delibes); Gramophone Records: (a) Aria from Martha (Fotow); (b) Aria from Le Jongleur de Notre Dame (Massenet); Selection from Carmen (Bizet). 10.0, Le Journal Parlé. 10.10, Gramophone Concert: The Temple of the Bells (Yoshitomo); Ich möchte einmal wieder verliebt sein (Stolz); Waltz Potpourri (Hildebrandt); Ja, grün ist die Heide (Liling); Popular Song Potpourri (Markgraf); Potpourri, Das Beste vom Besten (Dostal); In Traum hast

du mir, z'les erlaubt (Stolz); Polka Potpourri (Lindemann). 11.0 (approx.), Close Down.

BUCHAREST
394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Romanian Music by the Motoi Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Orchestral Concert (contd.). 6.0, Educational Programme. 6.40, Popular Music on Gramophone Records. 7.0, Time Signal. 7.1, Concert by the Station Orchestra; Marche solemelle (Cui); Oriental Suite, The Arabian Nights (Bortkiewicz). 7.30, Talk. 7.45, Song Recital by Valentine Cretoiu. 8.15, Concert by the Station Orchestra (contd.); Selection from Hansel and Gretel (Humperdick); Holberg Suite (Grieg); Wedding March (Mendelssohn). 8.45, News Bulletin.

BUDAPEST
550 metres; 18.5 kW.—Programme also relayed on 210 metres from 7.15 p.m. to 12 Midnight. 5.30 p.m., Orchestral Concert; Overture, Die Fledermaus (Johann Strauss); Wedding Waltz (Dohnányi); Air (Siklos); Selection from Carmen (Bizet); Mozart Potpourri (arr. Urbach); Selection from Rigoletto (Verdi); Overture, Alexandra (Szirmai). 6.45, Talk: Radio and the Press. 7.15, Recital of Hungarian Folk Songs by Margarete Bodan. 8.30, News Bulletin. 8.45, Talk. 8.50, Concert by the Orchestra of the Royal Hungarian Opera House. Conductor: Ernst Dohnányi. Overture, The Magic Flute (Mozart); Serenade in D, Op. 11 (Brahms); The Sixth Symphony (Beethoven). 10.15, Weather Forecast, followed by Dance Music on Gramophone Records. 11.15, Cigany Music by the F. Hedervary Orchestra from the Parlament-Keller.

CASSEL.—See Frankfurt.

COPENHAGEN
281 metres; 0.75 kW. and **KALUNDBORG**, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.2 p.m., Weather Forecast. 12.5, String Ensemble Concert relayed from the Wivex Restaurant. 2.0 to 3.30, Interval. 3.30, Wind-Instrument Concert. Soloist: Karl Johan Klinge (Songs); Cortege (Danning); Overture, Si j'étais Roi (Adam); Waltz, The Blue Danube (Johann Strauss); Two Pieces from The Seasons (Tchaikovsky): (a) September, and (b) November; Melody from Carmen (Bizet); Russian March (Semjonov); Overture, Giroflé-Girofla (Lecocq); Waltz, Roses from the South (Johann Strauss); Pfeifien (Johann Strauss); Melody from Der var engang (Lange-Müller); Deilige Land (Danning); March, Hilsen til vore Venner (Lumbye). 5.30 to 5.40, Interval. 5.40, Exchange and Fish Market Prices. 5.50, Talk: Education and Language. 6.20, German Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk for Workers. 8.0, Chimes from the Town Hall. 8.2, An Enemy of the People—Comedy in Five Acts (Ibsen). 10.0, News Bulletin. 10.15, Violin Recital by Louis Prell; Polonaise No. 2 in A (Wieniawsky); Andante from the Violin Concerto in G Minor (Bruch); Introduction and Rondo capriccioso (Saint-Saëns). 10.35, Dance Music from the Ritz Restaurant; In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Wednesday), Close Down.

CORK.—See Dublin.

CRACOW
312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and Programme Announcements. 7.35, Radio Journal. 7.45, Talk: Old Cracow. 8.0, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN
Call 2RN, 413 metres; 1.2 kW. and **CORK**, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Stock Report, Weather Forecast and Light Music on Gramophone Records. 6.15, Programme for Children. 7.0, Popular Music on Gramophone Records. 7.15, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 8.0, Concert by the Augmented Station Orchestra. 8.30; Traditional Fiddle Solos by Cormac MacPhionnlaí. 8.45, Orchestral Music. 9.0, Baritone Solos by John F. West. 9.15, Concert by the Station String Orchestra. 10.0, Soprano Solos by Mary B. Collins. 10.15, The Augmented Station Orchestra. 10.30, Time Signal, News Bulletin, Weather Report and Close Down.

FECAMP
223 metres; 10 kW.—10.0 p.m. to 1.0 a.m. (Wednesday), Programme in English by the I.B.C.—10.0 p.m., Concert of Dance Music by the Icolians: "All Hands on Deck"; Sleep, Baby, sleep; We're uncomfortable; A Man and a Maid; Sweetheart, we need each Other; Clickoo in the Clock; You're always in my Arms; Peasant Love Song; At last I'm in Love; He's so unusual; Wedding in the Ark; Where the sweet Forget-me-nots; Red-hot Rhythm; Congratulations; March of the Grenadiers; March of the Chocolate Soldiers. 11.0, Trio Recital: Chanson triste

AUGUST 23rd

TUESDAY

continued.

(Tchaikovsky): Meditation (Massenet); Rondo Capriccioso (Mendelssohn); To-ador et Andalous (Rubinstein); Pizzicato from Sylvia (Debussy); Softly awakes my Heart (Saint-Saëns); Minuet in G (Paderewsky); Narcissus (Nevin). 11.50, Song Recital: Because (d'Hardelot); The Second Minuet (Besley); My dear Soul (Sunderland); Sweetest Flower (Hawley). 11.45, Banjo and Accordion Duets: Flor d'Espagna (Vola); Java de Doudonne (Padilla); Rosa (Vola); Skaters' Waltz (Waldteufel); 12 Midnight, Concert of Dance Music by the Ibcosians; Confessing: They all fall in Love; Without a Song; I owe you; Love is like that; Maudie; My Future just passed; Pretty Kitty Kelly; A quiet little Corner; Over the Garden Wall; Sitting at a Table; When the Circus comes to Town; Pardon, Madame; Try: What a Perfect Night for Love; You are my Heart's Delight. 12.57 a.m. (Wednesday), I.B.C. Goodnight Melody. 1.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW. and CASSEL, 246 metres.—5.0 p.m., Concert relayed from Schlangenbad. 6.15, Economic Notes. 6.25 to 7.15, See Stuttgart. 7.16, Time, Weather, Programme Announcements and Industrial Report. 7.30, Where is Goethe?—A Radio Play (Herbert Eulenberg). 8.0, See Vienna. 9.10, See Stuttgart. 10.10, Time, Weather, News and Sports Notes. 10.30, Dance Music from Stuttgart. 12 Midnight, Close Down.

FREDRIKSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha, in Morse, 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—4.20 p.m. (from Hanover), Concert by the Dresden Philharmonic Orchestra, conducted by Walter Stöver. Soloists: Frau Krümer-Bergau and Anton Maria Topitz (Songs); Overture; Dou Giovanni (Mozart); Aria from Don Carlos (Verdi); Prelude to Lohengrin (Wagner); Song, Lohengrin's Narrative from Lohengrin (Wagner); Variations on a Swabian Folk Song (Senger); Duet from Il Trovatore (Verdi). 5.20, Talk: The Saar and Reparations. 5.55, Variety Programme. 6.30, Talk: The Struggle for Manchuria. 6.55, Exchange Quotations. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20, Adventurous Genius—A Literary and Musical Programme; The Station Orchestra; Soloist: Ernst Glaser-Oslo (Violin); The Meu of Prometheus (Beethoven); Part I: Tilting at the Windmills of Life—Cervantes, the Author of Don Quixote; Part II, The Crucifixion of the Soul—Dante and his Divine Comedy; Part III, The Demons of Music—Paganini, The Wizard of the Violin; Part IV, A Bohemian in the Salons—Abbé Liszt, in Budapest, Weimar and Rome; Hungarian Rhapsody No. 6 (Liszt). 9.0, Popular Music on the Organ: Overture, Die schöne Galathée (Suppé); Minuet in D (Mozart); Suite, In a Chinese Temple Garden (Kettelbey); Waltz Boston (Drigo); Selection from Cavalleria rusticana (Mascagni). 9.25, Helene Voigt-Diederichs reads from her own Works. 10.0, Time, Weather, News and Announcements. 10.20, Late Concert, conducted by Horst Platen: Fantasia on a Canadian Folk Song (Gillon); Three Movements from the King Christian Suite (Sinding); Selection from Siberia (Giordano); Two Movements from the Suite, Fröhliches Wandern (Kau); Waltz, To the Shades of Joh. Strauss (Busoni); Waltz Intermzzo, Auf einem Kinderball (Reuter); Selection from The Dollar Princess (Fall); Waltz from Die Puppenfee (Bayer); Potpourri, Fortissimo (Kalmán).
HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW. and DANZIG, 453.2 metres.—11.30 a.m., Concert by the Little Orag Orchestra, conducted by Eugen Wilcken; Prelude to the Third Act of The Cricket on the Hearth (Goldmark); Romantic Suite (Bullerian); Waltz, Marienklänge (Josef Strauss); Humorous Piece (Caludi); Marionetten auf der Spieluhr (Armandola); Selection from Die toten Augen (d'Albert); Cello Solos: (a) Forest Calm (Dvorak), (b) Elf Dance (d'Albert); Suite of Viennese Waltzes (Gillon); Catalan Rhapsody (Albault). 1.20 p.m., News Bulletin. 1.30, Gramophone Concert: Part I, Cavalry Marches; Pestreveille (Golde); Hoch die Kavallerie (Machetanz); Fest im Sattel (Oscheit); Husarenvedette (Fucik); The Great Elector (Simon); Parade March of the Eighteenth Hussars (Henriou); Fehrbellner Reitermarsch (Henriou); Tattoo; Part II, Songs by Richard Tauber and Joseph Schmidt; Richard Tauber: Song from Der Ewige Jüngling (Kienzl); Joseph Schmidt: O Paradise, from L'Africaine (Meyerbeer); Richard Tauber: Liebesfeier (Weingartner); Joseph Schmidt: Española; Richard Tauber: Your tiny hand is frozen, from La Bohème (Puccini); Joseph Schmidt: Aria from Il Trovatore (Verdi). 2.30, Sponsored Programme, with Gramophone Records. 4.0, Musical Programme for Young People. 4.20, Concert by the Little Orag

Orchestra, conducted by Eugen Wilcken; Romantic Overture (Kéler-Béla); Waltz, Blonde or Brunette (Waldteufel); Serenade, Bolivia (Castaldo); Und Pepita tanzt (Gutzeit); Potpourri, Veribus unitus (Richter); Spanish Serenade (Gillet); Roumanian Serenade, Marica (Marco); Waltz, Hydro-pathen (Gungl); March, Von Welle zu Welle (Senger). 5.45, Talk: Keep an Eye on your Purse. 6.15, Market Prices. 6.30, Talk for Workers. 7.0 (from Danzig), A Day in Weimar—Radio Sequence (Alice Fliegel). 7.50, Weather Forecast. 8.0, See Vienna. 10.10 (approx.), Weather, News and Sports Notes.

HILVERSUM

Announced HILVERSUM, 296.1 metres; 20 kW (7 kW up to 4.40 p.m.).—Programme of the Catholic Radio Society (K.R.O.).—7.40 a.m., Gramophone Records of Variety Music. 8.55, Interval. 9.40, Gramophone Records (cont.). 11.10, Religious Address. 11.40, Police Notes. 11.55, Trio Concert: March (Kockert); Simple aveu (Thomé); Waltz from Gipsy Love (Lehar); Melody from Wonder Bar (Katscher); Potpourri, Was die Donau erzählt (Morena); Geht's dir gut, komm zu mir (May); Selection from The Bird Fancier (Zeller); Romance (Wieniawsky); Deutsche Grüsse (Lincke); Whistling Waltz (Reaves); March, Die Fabne ruft (Siede). 1.25, Gramophone Records of Light Music. 1.40, Talk for Women. 2.10, Gramophone Records of Popular Music. 2.25, Relay of the Opening of the New Town Hall at Rosmond by Her Royal Highness Princess Juliana. 3.25, Talk for Women. 3.55, Interval. 4.10, Orchestral Concert conducted by Joh. Gerritsen: Overture, Zanetta (Auber); Trois pièces brèves (C. Franck); Scènes pittoresques (Massenet); Gramophone Records of Variety Music: Overture, The Golden Cross (Brüll); Selection from The Mastersingers (Wagner); Valse caprice (Rubinstein); Two Alsatian Dances (Razigade); Gramophone Records of Variety Music; Melody from Milena (Block); Selection from The Girl of the Golden West (Puccini); Selection from Carmen (Bizet); Wedding March (Mendelssohn). 6.50, Talk. 7.10, Police Notes. 7.25, Talk. 7.40, Concert by the Tilburg Police Band: March, L'enfant du troupe (Barbe); March, Veluvia (Frantzen); Overture, Rihana (Delbecq); March, Loud Speaker (Leeuwen); March, Tiraillours (Werkman); Selection from William Tell (Rossini); March, Patrouille (Werkman); March, Lantenne (Leeuwen). 8.40, News Bulletin. 8.55, Murder—Tragicomedy (Ballings). 9.40, Concert: Military March (Schubert); Czardas from Countess Maritza (Kalmán); Potpourri, Eisblumen (Leuschner); Whimsical Charms (Lander); Offenbach Potpourri (Urbach); Lola (Collazzo); Waltz, Tanzen möcht ich (Kalmán); Finale. 10.40, Variety Music on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—Programme of the Algeene Vereeniging Radio Omroep (A.V.R.O.). 7.40 a.m., Time Signal. 7.41, Variety Music on Gramophone Records. 8.40, Orchestral Concert conducted by Nico Treep: Overture, The Daughter of the Regiment (Donizetti); Lyric Suite (d'Albert); Spring Song (Mendelssohn); Venetian Song (Mendelssohn); Hindu Song (Rimsky-Korsakov); Selection from Don Giovanni (Mozart); Aubade a Musette (Poppy); Oriental Serenade (Popper); Hark, Hark the Lark (Schubert); Moment Musical (Schubert); Ave Verum (Mozart). 9.40, Time Signal. 9.41, The Daily Service. 9.55, Gramophone Records of Popular Music. 10.40, Organ Recital by Frans Hasselaar, with Bass-Baritone Solos by Jaap Stroomenbergh: Prelude and Fugue in A Minor (Bach). Bass-Baritone Solos: (a) Recitative and Aria from The Messiah (Handel), (b) Recitative and Aria from Herr, wie du willst (Bach). First Movement from the Sonata for Organ (Moullart). Bass-Baritone Solos: (a) Wiegenlied (Grieg), (b) Letzter Frühling (Grieg), (c) Im Abendrot (Schubert), (d) Der Kreuzzug (Schubert). Improvisation (Hasselaar). 11.40, Time Signal. 11.41, Orchestral Concert conducted by Louis Schmidt: Overture, Norma (Bellini); Suite Gaie (Marie); Catalonian Caprice (Albéniz); La perla de los tangos (Albéniz); Interlude by The Three Synopators: Waltz, Das Goldschmieds Töchterlein (Pétra); Marquissette (Lindsay-Theimer); Mazurka (Mlynarski); Selection from Adrienne Lecouvreur (Cilea); Laughing Beauty (Kockert); Fröschkönigs Fackelzug (Kronberger-Marriott). Interlude by The Three Synopators. Styrian Dances (Lanner); Selection from Die Landstreicher (Ziehrer); Wehmüt (Teilman); Wir tanzen ringelreihen, from The Dollar Princess (Fall); Glow Worm Idyll, from Lysistrata (Lincke); Russian March (Ohlsen). 1.55 to 2.10, Interval. 2.10, Talk. 2.40, Variety Music on Gramophone Records. 3.10, Concert by Jack Hollis and his Orchestra, relayed from the Grand Hotel, The Hague. 4.10, Programme for Children. 5.10, Concert by Kovacs Lajos and his Orchestra, with Songs by Bob Scholte. 5.40 (in the interval), Talk. 7.10, Guitar Quintet No. 3 (Boccherini). 7.40, Time Signal. 7.41, Orchestral Concert con-

ducted by Nico Treep: March, Hoch Heidecksburg (Herzer); Overture, Poet and Peasant (Suppé). Items by Schutte's Attraction Band: Slavonic Rhapsody No. 2 (Friedemann); Melody (Robrecht); Foxtrot for Xylophone and Orchestra (Arndt). Items by Schutte's Attraction Band: Recitations and Songs by Wouter Loub; Russian Dance, Pjassowaja (Bullerian); Waltz, Für diesen Kuss der ganzen Welt (Ziehrer); The One Man Band (Weems); Laughing Baby (Plesow). Schutte's Attraction Band. Xylophone Solos: Hungarian Melodies (Krüger); Champagne Gallop for Xylophone and Orchestra (Lumbye); Wedding in India (Percy); A.V.R.O. March (Treep). 9.40, Weather and News. 9.55, Concert by the Wireless Orchestra, conducted by Nico Treep. 10.40, Concert relayed from the Hotel Atlanta, Rotterdam. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW. and HELSINKI, 368.1 metres.—6.15 p.m., Pianoforte Recital by L. von Waldstein; Variations, Weinen und Klagen (Liszt-Bach); Preludes (Chopin); Overture in E Minor (Waldstein). 6.35, Talk. 7.0, Concert by the Station Orchestra. 7.35, Talk. 8.0, Cello Recital by Yrjö Selin: Sonata in D Minor (Veracini arr. Salmon); Prelude, Sarahande and Bourrée (Bach); Orientale (Cui); The Lark (Alabieff); Spanish Serenade (Popper). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Dance Music relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—12 Noon, Concert from Stuttgart. 1.15 p.m., Weather, News, and Time Signal. 1.30 to 2.30, Concert by the Unemployed Musicians' Orchestra of Dortmund: Marching Song, Westfalenmaid (Haslind); Overture, Czar and Carpenter (Lortzing); Potpourri of Schubert Music (Urbach); Potpourri of Lehár Music (Geiger); March, Hoch Heidecksburg (Blankenburg). 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Talk: The Open Air Theatre. 4.40, Talk: A Ramble by the Banks of the Wupper. 5.0, Concert from Frankfurt. 6.15, Read the World on Gramophone Records: Curaçao, the Dry Island. 6.45, Weather, Time, Economic, and Sports Notes. 7.0, Wireless Notes. 7.10, Talk: German-Swiss Economic Agreements. 7.30, Talk: The Value of Private Enterprise. 7.55, News Bulletin. 8.0, See Vienna. 8.45, Bach-Busoni Concert by the Station Orchestra and Chorus, conducted by Buschköter; Soloists: Theophil Demetriescu (Pianoforte) and Mittmann and Rhein (Violin); Concerto for Two Violins in D minor, No. 3 (Bach); Pianoforte Concerto, Op. 39, with Orchestra and Male Voice Choir (Busoni). 10.25, News, Announcements, Sports Notes, and Silent Night.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW.; and DRESDEN, 319 metres.—4.30 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer: Lustige Ouverture (Leuschner); German Dances (Schubert); Kleine Unterhaltungsmusik for Strings, and Pianoforte (Siegl); Melodies from Martha (Plotow); Weibheimenwäzler (Joh. Strauss, Nephew); Overture, Der dumme August (Gallé); Two Viennese Dances (Friedemann-Gärtner); March, Schneidige Truppe (Lehnhardt). 5.30, Weather, Time, and Economic Notes. 6.5, Talk for Women: German Women in South America. 6.50, The Leipzig Station informs its Listeners... 7.0, Talk: The Significance of the Generation in Our Times. 7.30, Concert of Light Music by the Emdé Orchestra; March, Feuer los! (Holzmann); Overture, Nakisris Hochzeit (Lincke); Dreamland Waltz (Fucik); Modern Dances, Serenata d'Amalfi (Beccé); Selection from The Maid of the Black Forest (Jessel). 8.15, Reading from and Talk on Eduards Traum (Wilhelm Busch). 8.45, Concert (cont'd): Modern Dance Airs; Volga Song from The Czarevitch (Lehár); Dorfkind-Wäzler (Kálmán); Intermezzo, Späzen-Promenade (Egg); Mit Standarten (v. Blon). 9.15, Talk: Economic Problems of the Day. 9.25, Helene Voigt-Diederichs reads from her Book, Schleswig-Holsteiner Landleute. 10.5, News Bulletin. 10.15 (approx.), Concert of Contemporary Chamber Music: Dorothea Schröder (Contralto); Franz Genzel (Violin); and Kurt Herrmann (Pianoforte); Accompanist, Friedbert Sammler: Pianoforte Sonata in B (Knab); Six Songs (Rodatz); Sonata in A Minor, Op. 27, for Violin and Pianoforte (Schmid). 11.30 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Reading. 6.30, Quintet Concert. 7.30, Talk on Poland. 8.0, Esperanto Lesson. 8.30, Programme relayed from Zagreb, 307 metres. 10.30, Time Signal and News Bulletin.

LWOW

381 metres; 16 kW.—7.15 p.m., Miscellaneous Items. 7.35, See Warsaw. 7.45, Answers to Correspondence on Technical Questions. 8.0, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert: Song (Lehár); Melody from Rose Marie (Friml); Mattinata (Leoncavallo); Melodies from Nina Rosa (Romberg); Monologue from Nudistes (Colline); Waltz, Gold and Silver (Lehár); Selection from Orpheus in the Underworld (Offenbach). 7.30, Radio Gazette for Lyons and the South-East. 8.30, Gala Concert relayed from Lille (265.4 metres).

MADRID

UNION RADIO, Call EA7, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations and Market Prices, followed by Request Gramophone Concert. In an interval at 8.30, Talk by Joquin España Cantos. 9.15, News Bulletin and Political Review. 9.30, to 11.0, Interval. 11.0, Chimes, Time Signal and Political Review. 11.15 (approx.), Extracts from Manon—Opera (Massenet) on Gramophone Records. 1.15 a.m. (Wednesday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talk in Dutch: The Agricultural Labourer in the Soviet Union. 9.0, Talk in French, by a Soviet Student. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—5.0 p.m., See Frankfurt. 6.15, Talk: Among the Pottery Workers, by the Ammersee. 6.35, Talk: The History of the Development of the Isar Valley (11). 6.55, Time Signal, Weather Forecast, and News Bulletin. 7.5, Programme to be announced. 7.25 (from Nürnberg), Choral Music. 7.50, Talk: German Contemporary History. 8.10, Concert by the Munich Professional Musicians' Orchestral Society; Conductor: Ernst Hagel; Soloist: Sandro Vitoshy (Tenor). 9.0, Der Salamander—a Lyrical Narrative (Paul Heyse). 9.25, Debussy Concert on the 70th Anniversary of the Composer's Birth (1862-1918); Soloists: Margot Leander (Soprano), Anton Polwolny (Clarinet), and Karl H. Weiler (Pianoforte); Hommage à Rameau. Songs: (a) Air, (b) Le Fanne, (c) Mandoline; Clarinet Solos: Talk: Debussy as the Discoverer of a New Style; Reproductions on a Mechanical Pianoforte of Debussy playing his own Music; Selections from La Mer (on Gramophone Records). 10.20, Time Signal, Weather Forecast, News Bulletin, and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—6.0 p.m., Programme for Housewives. 6.45, Accordion Music. 7.0, Announcements, Weather Forecast and News Bulletin. 7.30, Recitations. 8.0, Talk and Concert of Light Music. 9.10, Talk on Aalesund. 9.30, Agricultural Notes. 9.40, Weather Forecast and News Bulletin. 10.0, Topical Talk. 10.15, Song Recital by Mme. Erica Darbow. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.40 p.m., Sextet Concert: The Splendour of the Morning (Rossini); Spanish Dance (Sarasate); Selection from Madame di Tebe (Lombardo); Song, Dance of the Hours, from La Gioconda (Ponchielli); Selection from Falstaff (Verdi); Song: Selection from Wonder Bar (Katscher). 8.0, Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Light Music on Gramophone Records. 8.30 (in an interval), Time Signal and Announcements. 8.45, The Secret Marriage—Opera (Cimarosa). In the intervals, Talk: Wireless for the Family and Art Notes. 10.55, News Bulletin.

PARIS

EIFFEL TOWER; Call FLE; 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres), at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 6.45 p.m., Talk: Drama of To-day and Yesterday. 7.0, Le Journal Parlé. 8.20, Weather Forecast. 8.30, Concert of Chamber Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—7.0 p.m., News Bulletin and Press Review. 7.5, Light Music on Gramophone Records. 7.30, Sponsored Gramophone Concert. 8.0, Light Music on Gramophone Records (cont'd.). 8.30, Journal Parlé and News Bulletin. 8.45, Concert: Soloist, M. Louis Guénot (Songs);

AUGUST 23rd

TUESDAY

continued.

Songs: (a) Air from Le Châlet (Adam), (b) Chanson de pêcheur (Fauré), (c) Aria from Don Quichotte (Massenet), (d) Aria from Philémon et Bancia (Gounod); Overture, Sicilian Vespers (Verdi); Melody from The Dance of the Dragonflies (Lehár); Selection from Le Siré de Vergy (Tarrasse); Trio for Pianoforte, Violin, and Cello (Ravel); Selection from Hérodiade (Massenet); Serenade (Lange-Müller); Ballet from The Queen of Sheba (Gounod); Ékxâse (Rubinstein); Melody from William Tell (Rossini); A Village Wedding (Godard); Ballet Air from The Persée (Leroux); Dance of the Fairies (Gade); Norwegian Dance, No. 1 (Grieg). 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records: Waltz from Faust (Gounod-Liszt); Romance (Rubinstein); Syncope (Kreisler). 8.0, News and Weather. 12 Noon, A Concert in 1830 on Gramophone Records: Overture, Euryanthe (Weber); Ah! quel plaisir, from Le Maître de Chapelle (Paër); Ce domaine—Fuyons, from La Dame Blanche (Boisdequin); Adagio and Finale from the Violin Concerto (Beethoven); Overture, William Tell (Rossini); Aria from The Barber of Seville (Rossini); Symphony No. 4 (Beethoven). In the intervals at 1.0, Exchange, News and Weather, at 1.30, Exchange, and at 2.0, Exchange and Announcements. 3.45, Exchange and Market Prices. 6.30, Market Prices, Weather, Agricultural Report, Talk and Racing Results. 7.0, Gramophone Concert: Overture and Aria from The Magic Flute (Mozart); Aria from Figaro (Mozart); Aria from The Magic Flute (Mozart); Two Arias from L'Elisir d'amore (Donizetti); Two Arias from Faust (Gounod); Depuis le jour, from Louise (Charpentier); La fleur, from Gwendoline (Chabrier); Introduction to Act I of Fervaal (d'Indy). 7.45, Commercial Prices and News. 8.0, Le Châlet—Opéra-Comique (Adam); Soloists, Antoinette Réville and MM. Morturier and Guého. In the interval at 8.30, News, Weather, and review by Pierre Seize. 9.15, Press Review and News. 9.30, Orchestral Concert, conducted by Raoul Labis: Petite Suite d'Orchestre (Bizet); Selection from Hans, the Flute-Player (Ganne); Ballet égyptien (Luigini); Cortège burlesque (Chabrier). Gramophone Records: (a) Two Songs from La Basoche (Messager), (b) The Lost Chord (Sullivan), (c) Marche des petits Pierrots (Bosc), (d) Un début au Théâtre (Bach and Laverne), (e) Merci bien, mesieurs, dames (Bach and Laverne), (f) Selection from Aida (Verdi).

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores, 9.5, Business News. 9.15, Report. 9.32, Market Report. 9.45, Programme to be announced. 9.30, Weather gramme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Booking Service. 10.12, Programme Announcements. 10.15, Programme to be announced. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News Today. 11.6, Teaberry Sport Review. 11.7, Press News Reeler. 11.14, Weather Report. 11.15, KDKA Kiddies' Klub. 11.30, Sheer Romance. 11.45, To-day's News by Lowell Thomas, from New York. 12 Midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Wednesday), Talk. 12.30, The Stebbins Boys, from New York. 12.45, Gene Austin and his Orchestra, from New York. 1.0, Time Signal and Programme to be announced. 1.30, Samuel Di Primo (Tenor). 1.45 to 3.0, New York Relay. 1.45, Rosa Low Song Recital. 2.0, Household Finance Programme. 2.30, National Oratorio Society. 3.0, The Country Doctor. 3.15, Westinghouse Pioneers. 3.30, Fish, from New York. 3.45, Florence Fisher Parry Drops In. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Louis Frayne (Soprano). 4.30, Jack Pettis and his Orchestra. 5.0, Dancing in Milwaukee, from New York. 5.30, Time Signal and Good Night.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.15 p.m., Announcements and News Bulletin. 7.35, See Warsaw. 7.45, Popular Music on Gramophone Records. 7.58, Time Signal. 8.0, Louis d'Arma-Dietz Concert by the Moniuszko Mixed Choir, conducted by Michal Swierzyński. 9.10, See Warsaw. In the intervals Theatre Notes. 9.55, Time Signal, Sports Notes and Police Report. 10.15, Dance Music on Gramophone Records. 11.40, Organ Recital of Light Music, relayed from Le Soleil Cinema.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE**, 660 metres; and **GENEVA**, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Geneva), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5 (from Geneva), Popular Music on Gramophone Records. 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1 (from Lau-

sanne), Programme for Women. 5.30 (from Montreux), Concert, relayed from the Ungaria Restaurant. 6.0 (from Geneva), Popular Music on Gramophone Records. 6.40 (from Lausanne), Talk: Lu Tibet, an interview with the Dudaï-Lama. 7.0, Weather Forecast. 7.1 (from Geneva), Variety Music on Gramophone Records. 7.30 (from Geneva), Topical Talk: Through the World. 7.55, Announcements. 8.0, Promenade Concert, relayed from London. 10.0, News Bulletin and Weather Forecast. 10.15, Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.0 a.m., Weather Report. 5.0 p.m., Weather Report. 8.30, Weather Report. 8.40, Cello Solos by Thorhallur Arnason. 9.0, Chimes and Gramophone Records of Music by Offenbach. 9.30, News Bulletin.

RJKUKAN.—See Oslo.

ROME

Call 1RO, 441 metres; 50 kW. Relayed by Naples, 319 metres, and 2RO, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Light Music. 1.0 to 2.15, Sextet Concert: Castles in Spain (Sedam); Rapsodia romana (Carabella); Selection from La Belle Hélène (Offenbach); Guitar Solos; Canzona vagabonda (De Michel); Anitra's Dance from Peer Gynt (Grieg); Selection from I Pagliacci (Leoncavallo). In the intervals, at 1.15, Giornale Radio; and at 1.30, Time and Announcements. 5.0, Exchange, Children's Radio Review, Giornale Radio, and Announcements. 5.30, Song Recital by Liliaua Dovil (Soprano); Le Nil (Leroux); The Sleeping Child (Moussorgsky); The Sea (Borodin); Mattinata (Mariotti). 5.40 to 6.15, Variety Concert; Soloists: Iolanda Calabi (Violin) and E. Cameretti Capocelato (Pianoforte); Interlude (Culotta); Barcarolle from Silvano (Mascagni); Andante from the Concerto for Violin and Pianoforte in E Minor (d'Ambrosio); Polonaise in C Sharp Minor for Pianoforte (Chopin); Cradle Song (Guarino); Prelude (Rachmaninov). 7.10 (Naples), Shipping and Sports Notes. 7.15, Atmospheric Signals, Agricultural Notes, Announcements, and Giornale Radio. 8.0, Time, Announcements, and Gramophone Records of Variety Music. 8.30, Sports Notes, Announcements, and Tourist Report. 8.45 (from Leghorn), Lodoletta—Opera in Three Acts (Mascagni). **SALZBURG**.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—9.0 p.m., Bridge Lesson. 9.15, Studio Ensemble. 9.35, News Items. 9.45, Stock Reports and Police Notices. 10.0, Garden Melodies, from New York. 11.0, Joe and Eddie. 11.15, Olffe Yettru (Pianist). 11.25, Baseball Scores. 11.30, With Gray McClintock in the Canadian North-West. 11.45, Back of the News in Washington, by William Hard, from New York. 12 Midnight General Electric Programme. 12 Midnight (W2XAF only), Stock Reports. 12.15 a.m. (Wednesday), Chaudi, the Magician. 12.30 till Close Down. New York Relay. 12.30, Ray Perkins (Barbasoloist). 12.45, The Goldbergs. 1.0, Blackstone Plantation. 1.30, Walter Smith and his Band. 2.0, National Civic Artists. 2.30, Ed Wynn and the Fire Chief Band. 3.0, Lucky Strike Dance Hour. 4.0, Emerson Gill's Orchestra. 4.30, Jack Denny and his Orchestra. 5.0, Ralph Kirby (Dream Singer). 5.5, Paul Whiteman and his Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE**, 244.1 metres; and **BERNE**, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Concert by the Station Orchestra. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Concert by the Small Station Orchestra. 4.0, Hungarian Dances and Folk Songs on Gramophone Records. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Berne), Talk: The European Market for Raw Materials. 7.0, Time Signal and Weather Forecast. 7.5 (from Berne), Tourist Talk: Locarno. 7.30 (from Berne), Programme for Women. 8.0 (from Berne), Promenade Concert of English Music, relayed from London. 9.30 (approx.), Weather Forecast and News Bulletin. 9.40 (approx.) (from Berne), Concert of Operetta Music by the Station Orchestra. Soloist: Walter Schor (Tenor). C. Lertz at the Pianoforte. 10.30, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 426 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres, and Sundsvall, 542 metres.—5.5 p.m. (from Göteborg), Programme for Children. 5.30, Orchestral Concert; Overture, La Belle Hélène (Offen-

bach); Waltz, I misteri dell'Adige (Carena); Selection from Tannhäuser (Wagner); Vid Frösö kyrka (Peterson-Berger); Selection from The Flower of Hawaii (Abraham); Piece (Grieg). 6.30, Reading. 6.55, Recital of German Sound Film Songs by Ola Isene; Es ist so wunderschön aufzuste'n (Michael Krauss); Marching Song, Ein bisschen Freude (Michael Krauss); Waltz, Die Musik und der Tanz und die Nacht (Otto Stransky); Foxtrot, Heut bin ich gut aufgelegt (Jurmann-Kaper); Rumba, Ich suche Eine, die mir allein gehört (Jurmann-Kaper); Tango, In Santa Lucia (Stransky); Slow Foxtrot, Du kannst so liebenswürdig sein (Michael Krauss). 7.15, Weather and News. 7.30, Talk. 8.0, Light Orchestral Concert; Overture, Si j'étais roi (Adam); Suite from Coppélia (Delibes); Selection from The Rose of Stamboul (Fall); Waltz, Estudiantina (Waldteufel); Selection from Das Veilchen vom Montmartre (Kálmán). 9.15, Literary Review. 9.45, Weather and News. 10.0, Gramophone Concert of Variety Music. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Records of Operetta and Light Music. 12.45 p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Popular Music on Gramophone Records. 1.30, Instrumental Concert relayed from Toulouse (P.T.T.). (255 metres). 2.15 to 4.45, Interval. 4.45, Talk in French: The Art of Travelling. 5.0, Concert by the Station Orchestra, conducted by M. Roskam: Overture, Der Königleutnant (Titl); Waltz, Hofballtänze (Lauer); Italian Serenade (Monfred); Selection from La Navarraise (Massenet); Cello Solo: Chants russes (Lalo); Little Suite (Michels); March (Krier). 6.0, Talk in German; Fischart, an Alsatian Author. 6.15, Talk in French on Current Problems. 6.30, Concert by the Station Orchestra, conducted by M. Maurice de Villers; Scènes alsaciennes (Massenet); Albumblatt (Wagner); Overture, Maehiello (Auber); Selection from The Daughter of the Regiment (Donizetti); Marche aux flambeaux (Meyerbeer). 7.30, Time Signal. 7.32, News in French and German. 7.45, Concert by the Station Orchestra (contd.); Marche tartare (Ganne); Waltz, The Wedding of the Winds (Hall); Overture, Paraglyph 2 (Suppé); Suite from Coppélia (Delibes); Polonaise in A (Chopin). 8.30, Gala Concert relayed from Lille (265.4 metres).

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG**, 570 metres.—12 Noon, Round the World in a Zeppelin—Orchestral Concert conducted by Alexander Laszlo. 1.15 p.m., Time, Weather and News. 1.30, Gramophone Records of Sam Baskini and his Orchestra. 2.0 to 2.30, Sponsored Concert. 3.0, Talk on Flowers. 3.30, Talk for Women: Women, Plants and Animals. 4.0, Orchestral Concert conducted by Albert Hitzig, relayed from Badenweiler. 5.0, Concert from Schlangenbad. 6.15, Time and Weather. 6.25, Talk: The Stuttgart Art Collection. 6.50, Talk: Travel Pictures. 7.15, Time, Weather and Agricultural Notes. 7.30, See Frankfurt. 8.0, See Vienna. 9.10, Aleko—Opera in One Act after Pushkin's Poem The Gypsies (Rachmaninov). 10.10, Time, Weather, News and Programme Announcements. 10.30, Concert by the Dance Band of the Stuttgart Philharmonic Orchestra, conducted by Harry Risch. Programme of Modern Operetta Music: Marching Song from Böhmisches Musikanten (Grün); Three Melodies from Das Veilchen vom Montmartre (Kalman); Waltz, Song and Potpourri zur goldenen Liebe (Benatzky); Two Songs from Reklame (Granichstaedten); Song and Furiant from Böhmisches Musikanten (Grün); Two Melodies and Potpourri from The Flower of Hawaii (Abraham). 12 Midnight (approx.), Close Down. **SUNDSVALL**.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Orchestral Music. 5.45, Airs from (a) Cavalleria rusticana (Mascagni), (b) Werther (Massenet), (c) Rigoletto (Verdi), and (d) Carmen (Bizet), followed by Accordion Solos. 6.15, Orchestral Music: Two Melodies from the Symphonie fantastique (Berlioz); Symphonic Dance No. 1 (Grieg); Le Cygne (Saint-Saëns). 6.30, Exchange Quotations and Horse Racing Results. 6.45, Dance Music. 7.0, Light Music. 7.30, Programme Announcements and News. 7.45, Music by a Viennese Orchestra. 8.0, Concert of Sound Film Melodies and Military Music. 8.30, Extracts from Manon—Opera (Massenet). In the intervals, Light Music. 10.30, North African News. 10.45, Extracts from Manon (contd.). 10.45, Concert: Midnight on Maundy Thursday (Turina); Melody from Masaniello (Auber). Airs from (a) Hérodiade (Massenet), (b) Faust (Gounod), (c) Der Freischütz (Weber), (d) Kadubec (Yvain), and (e) The Geisha (Jones). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—5.0 to 6.0 p.m.,

Variety Concert; Concerto in A (Mozart); Violin Solos: (a) Andante from the Spanish Symphony (Lalo), (b) Umoreca (Respighi), (c) Andalusian Serenade (Monasterio); Overture, Der Freischütz (Weber); Selection from La Gioconda (Ponchielli); Celestial Harmony (Ziehrer). 6.35, Giornale Radio and Agricultural Notes from Turin. 7.0, Quintet Concert; El cabrero (Filippini); Melody (Lehár); Chinese Street Serenade (Siede); Ever or Never (Waldteufel); L'occhio della donna (Maggi); Selection from Acqua cheta (Pietri); In the Green Woods (Sachet); Cioci danza (De Micheli). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Gonoa, 312.8 metres; and Florence, 600.8 metres.—7.0 p.m., Concert: Overture, Light Cavalry (Suppé); In a Chinese Theatre (Dreyer); Festa al villaggio (Rino). 7.25, Tourist Talk. 7.30, Time and Announcements. 7.35, Light Music on Gramophone Records. 8.30, An Operetta in Three Acts. In the intervals, Scientific Talk and Notes on Art. 11.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.45 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—5.10 p.m., Gramophone Records of a Symphony Orchestra, conducted by Glazunov: Ballet, The Seasons (Glazunov). 5.50, Gramophone Records of the Ferdj Kaufmann Orchestra: Die Post im Walde (Schäffer); Schneeglöcklein läuten (Lindemann); Potpourri, Schön ist die Welt (Lehár-Rhode); Siciliana (Schmalstich); The Rose-Beetle goes a-wooing (Armandola); Der kreuzfödele Kupferschmied (Peter). 6.15, Talk: The International Ethnographical Missionary Exhibition in Marjazzell. 6.40, Architectural Talk: Houses at the Vienna Autumn Fair. 6.50, Agricultural Talk. 7.10, Physical Culture. 7.30, Time Signal, Weather Forecast, and Programme Announcements. 7.40, A Song from the Open Streets—Poems (Walt Whitman), translated and recited by Max Hayek. 8.0, Concert of Operetta Music: Soloists, Anny Coty (Soprano) and Karl Ziegler (Tenor): Overture and Duet from Die lustige Nibelungen (O. Straus); Waltz, In lauschiger Nacht, from Die Landstreicher (Ziehrer); Two Songs from Eine Nacht in Venedig (Joh. Strauss); Introduction to Der süsse Kavalier (Fall); Eufraat from Die geschiedene Frau (Fall); Soprano Solo from Fatinitza (Suppé); Soprano Solo from Wiener Blut (Johann Strauss); Selection from Countess Maritza (Kalman); Duet from Der Schmetterling (Weinberger); Overture, Das Modell (Suppé); Tenor Solo and Waltz Intermezzo from Die silberne Tänzerin (Bittner); Soprano Solo from The Czarevitch (Lehár); Duet from Brüderlein fein (Fall); Selection from Die goldene Melsterin (Eysler). 10.0, News Bulletin. 10.15, Dauce Music from Hübner's Parkhotel Schönbrunn.

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of Notre Dame at Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Report. 12.45, Popular Music on Gramophone Records. 1.25, Interval. 1.35, Variety Music on Gramophone Records. 2.10, Interval. 3.0, Economic Report. 3.10, Light Music on Gramophone Records. 3.30, Aviation Notes. 3.35, Announcements. 3.40, Popular Music on Gramophone Records. 4.35, Announcements. 4.40, Programme for Women. 5.0, Concert of Popular Music by the Warsaw Philharmonic Orchestra. Conductor: Wolfstäl: Overture, Leonora No. 2 (Beethoven); First Part of the Symphony in D—the Jupiter (Mozart); Symphonic Poem, The Steppes (Noskowski); Fireflies' Dance, Dance of the Sylphs, and Rakoczy March from The Damnation of Faust (Berlioz). 6.0, Talk: Marine Gardens. 6.20, Dance Music from the Hotel d'Europe. 7.15, Miscellaneous Items. 7.35, Radio Journal. 7.45, Agricultural Notes. 7.55, Programme Announcements. 8.0, Concert of Popular Music by the Warsaw Philharmonic Orchestra; Conductor: J. Oziminski; Soloist: C. Wilkomirski ('Cello): Ballet Music from The Queen of Sheba (Goldmark); Chanson triste (Tchaikovsky); Serenata alla Moreca (Jones); Surabande (Gounod); Cello Solos: (a) Introduction and Allegro in Old Spanish Style (Cassado), (b) Bourrée (Casello), (c) Les Chérubins (Couperin), (d) Waltz and Tambourin Chinois (Kreisler); Hungarian Suite (Hoffmann). 8.55, Feuilleton. 9.10, Concert (contd.). Gavotte (Lully); Intermezzo from the 'Cello Concerto (Lalo); Overture, Les Girondins (Litoff); Intermezzo and Barcarolle from The Tales of Hoffmann (Offenbach); Perpetuum mobile (Johann Strauss); Mazurka in A, Op. 28, No. 8 (Noskowski). 9.50, Radio Journal. 9.55, Aviation Weather Report. 10.0, Dance Music. 10.40, Sports Notes. 10.50, Dance Music (contd.). 11.50 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ALGIERS

363.3 metres; 13 kW.—7.0 p.m., Market Prices and Exchange Quotations 7.10, Shipping Notes and Weather Report. 7.15, Military Music. 7.30, Songs from Sound Films. 7.45; Violin Recital. 7.55, News Bulletin and Time Signal. 8.0, Talk: Impressions of a Voyage to Panama. 8.10, Sang de Navet—One-Act Comedy (Miguel Zamacois). 8.30, Relay of an Open-Air Concert. In an interval, at 9.30 (approx.) News Bulletin. 10.30 (approx.) Close Down.

BARCELONA

RADIO - BARCELONA; Call EAJI; 349 metres; 8 kW.—8.0 p.m., Trio Concert: Humoresque (Demarec); Fragment from Samson and Delilah (Saint-Saëns); Erotica (Grieg); Selection from The Flying Dutchman (Wagner). 8.30, Exchange Quotations. Request Gramophone Records and News. 10.0, Chimes. Weather Forecast, and Market Prices. 10.5, Concert by the Station Orchestra: March, Germanenblut (Blankenburg); Valse triste (Sibelius). 10.20, Dance Music by the Demon's Jazz Band. 11.0, Talk in Catalan. 11.15, Concert by the Vilalta Sextet, relayed from the Café de la Rambla. 1.0 a.m. (Thursday), Close Down.

BASEL.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.5 kW.—5.0 p.m., Popular Music on Gramophone Records. 6.0, Recital of Yugoslav Songs. 7.25, Time Signal and Programme Announcements. 7.30, Song Recital by Anna Voskresenska; Aria from Cavalleria Rusticana (Mascagni); L'éclat de rire (Auber); Song (Tchaikovsky); Aria from Ernani (Verdi); Song (Rimsky-Korsakov). 8.0, Quartet (Schumann). 8.40, Madame Butterfly—Opera (Puccini) on Gramophone Records. 10.20 (approx.), News Bulletin and Concert by the Station Orchestra.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers, followed by Gramophone Records of the Squire String Octet, and Second Weather for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of Light Music, relayed from Berlin (Witzleben). 3.0, Talk: The Iceland of Today. 3.20, Weather and Exchange. 3.45, Talk for Women: German Wood in German Homes. 4.0, Talk: August Engelien—a German Pedagogue. 4.50, See Hamburg. 5.30, Talk: Modern Parliamentarism and Government. 6.0, Programme to be announced. 6.30, Talk: Notable Speeches. 6.55, Weather for Farmers. 7.0, Advanced English Lesson. 7.20, Talk for Civil Servants, followed by Weather for Farmers. 8.0 till Close Down. See Berlin (Witzleben). 12 Midnight (approx.) Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.30 p.m., Concert of Light Music from the Radio Exhibition: Prelude to Carmen (Bizet); The Nutcracker Suite (Tchaikovsky); Waltz, Künstlerleben (Joh. Strauss); Mazurka (Liszt); Two Slav Dances (Dvorak); Selection from The Maid of the Black Forest (Jessel). 6.0, Talk for Young People: The Growth of the German Colonies. 6.20, Concert of Unpublished Chamber Music by Busoni Soloists: Emil Kornsand (Violin), Carl Dechart (Cello), and Dr. Friedrich Schnepf (Pianoforte); Piece for Cello and Pianoforte; Study in B flat Minor for Pianoforte; Nocturne for Violin and Pianoforte; Andante with Variations and Scherzo for Pianoforte, Violin and Cello. 6.55, The Witzleben Station informs its Listeners. 7.0, Topical Talk. 7.10, Talk: The Youth of Europe and Disarmament. 7.35, Talk: Technical Novelties from the German Radio Exhibition. 8.0, Concert of Classical Operetta Music by the Station Orchestra, the Maximilian Albrecht Choir and Soloists, relayed from the Radio Exhibition; Conductor, Cornelis Bronsgeest. 10.0, Political Review, by Dr. Josef Rüscher. 10.20, Weather, News and Sports Notes. 10.30, Dance Music from Vienna, with Songs by Hans Rotter. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODN.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin and Market Prices. 7.40, Lottery Results. 7.45, Popular Music on Gramophone Records. 8.15, News Bulletin and Weather Forecast. 8.30, Orchestral Concert, conducted by A. Guiraud: Soloists, J. Vignolle (Baritone). After the Concert, Theatre Guide and Time Signal.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW.; and GLEIWITZ, 253 metres.—6.30, Choral Concert: Das Bergwerk (Franky); A Little White Hen (Scandelli); Der Gutzauch (Lemlin); Folk Song, Es blies ein Jäger; Nun schlürz dich, Gretlein (Eccard); Ein Blümlein auserlen (Steuerlein);

WEDNESDAY

AUGUST THE TWENTY-FOURTH.

PRINCIPAL EVENTS OF THE DAY:

	AT HOME
NATIONAL	Organ music. Orchestral concert, from Bourne-mouth. Mr. Gerald Heard: This Surprising World. Vaudeville programme. Promenade concert from Queen's Hall. Dance music.
LONDON REGIONAL	Orchestral concert. Organ recital. Instrumental concert. Military Band concert. "Obsession," a radio play by Dulcima Glasby. Dance music.
MIDLAND REGIONAL	Orchestral concert. Organ recital. Light music.
NORTH REGIONAL	Song recital. London Regional programme.
WEST REGIONAL	Orchestral concert. Mr. J. W. Eves: An account of the Southport Flower Show. Frank A. Terry presents the "Super-Optimists" in their summertime revue, "Pleasure on Parade," from the Floral Pavilion, New Brighton. London Regional Programme.
SCOTTISH REGIONAL	Orchestral concert. Welsh Interlude. National programme.
BELFAST	Orchestral programme of musical comedy. Organ music. National programme.
BRUSSELS (No. 2)	Orchestral concert. National programme.
COPENHAGEN	Concert from Knocke Casino.
PARIS (Poste-Parisien)	Modern Traffic in Word and Tone. "A Dentist"—a Play in One Act.
STRASBOURG	Chamber music, relayed from Radio Coloniale, Paris (25.63 metres).
TURIN	Dance music from Luna Park Lido, Milan.

Folk Song, Mei Schotzla kommt; Mir ist ein feins brauns Midelein (Othmayr); An hellen Tagen (Gastoldi). 7.0, Orchestral Concert, conducted by Franz Marsalek; Entry of the Guests, from Tannhäuser (Wagner); Ballet Suite (Fresco); Waltz, Wiener Bürger (Ziehrer); Paraphrase on Im grünen Wald, dort wo die Drossel singt (Oschel); Selection from Where the Lark sings (Lehar). 7.30 (in an interval), Weather for Farmers. 8.0, See Berlin (Witzleben). 10.0, Time, Weather, News, Sports Notes and Programme Announcements. 10.30, Dance Music from Vienna. 12 Midnight, Close Down.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Concert by Max Alexys and his Orchestra. In the interval at 1.0 p.m., Le Journal Parlé. 5.0, Orchestral Concert, conducted by Jean Kumps: Overture, Titus (Mozart); Hungarian Dances (Brahms); Solveig's Song and Anitra's Dance, from Peer Gynt (Grieg); Gavotte (Gossec); Ballet Music from The Nutcracker Suite (Tchaikovsky). 6.0, Gramophone Records: Scherzo, arranged for Four Saxophones (Rimsky-Korsakov); Waldstein's Camp (d'Indy). 6.15, Talk on Tennis. 6.30, Gramophone Concert: Mascerade (Lacôme); Russian Romance (Alchansky); Souvenir (Drda); Waltz from The Merry Peasant (Fall); Melody, Song of the Isles (King); Waltz (Lincke); Selection from Le Pré aux Clercs (Paradis); Borden (Erkel); Czardas (Erkel). 7.15, Talk: Music and Poetry. 7.30, Medical Report. 8.0, L'Heure Fantaisiste—Monologues, Sketches, and Musical Items. 9.0, Concert from the Kursaal, Ostend: Conductor, M. Toussaint de Sutter: Soloist, José Beckmans (Songs); March from Miada (Rimsky-Korsakov); Carnival Overture (Dvorak); Adagio for Strings (Toussaint de Sutter); Piece (Diaz); Ballet Music from Namouna (Lalo); Aria and Recitative from Boris Godunov (Mussorgsky); Overture, Rienzi (Wagner). After the Concert, Le Journal Parlé and Dance Music from the Kursaal, Ostend. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Orchestral Concert. 1.0, Le Journal Parlé. 1.10, Orchestral Concert (contd.). 5.0, Dance Music from the St. Sauveur Palais de Danse. 6.30, L'Elisir d'Amore (The Love Philtre)—Opera (Donizetti), on Gramophone Records. 7.15, Talk on Economics. 7.30, Review of International Events. 8.0, Gramophone Concert: The Londonderry Air (arr. Hamilton Harty); O Mistress Mine (Quilter); Petite Suite de Concert (Coleridge Taylor); Moon Enchanted (Dowden); Blow, Blow, thou Winter Wind (Quilter); Scherzo from the Irish Symphony (Hamilton Harty). 8.30, The Mother-in-Law—Humorous Sketch (Renaat Grassin). 9.0,

Concert, relayed from the Casino, Knocke: Soloist, Mlle. Marichal (Pianoforte): Symphonic Poem, Renouveau (Schrey); Concerto in D Minor for Pianoforte and Orchestra (Mozart); Suite, Jeux d'enfants (Bizet); Pianoforte Solos: (a) Nocturne (Chopin), (b) Improptu (Chabrier), (c) Scherzo-Valse (Chabrier); Ronde Wallonne (Jongen). After the Concert, Le Journal Parlé and Dance Music from the Casino, Knocke. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Variety Music by the Station Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Orchestral Concert (contd.). 6.0, Educational Programme. 6.40, La Bohème—Opera (Puccini), on Gramophone Records. In the intervals, News Bulletin.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on 210 metres from 7.45 to 12 Midnight. 5.0 p.m., Recital of Hungarian Folk Songs by Zoltan Karrat. 5.40, Talk: The First and Last Lion Hunt of Van der Bink. 6.0, Light Music on Gramophone Records. 7.25, Reading. 7.45, Concert by the Mandita Orchestra: Melody from Les Savoyards (Offenbach); Waltz from The Rose of Stamboul (Fall); Hungarian Song (Perenip); Neapolitan Serenade (Polgar); Lehariana (Hrubý); Après un rêve (Faure); Hungarian Mourning (Losonczy). 8.45, News Bulletin and Sports Notes. 9.0, Concert by the Eugen Farkas Cigány Band. 10.20, Weather Forecast. 10.30 (approx.), Song and Violin Recital. Soloists: Astri Kalseth (Songs), Zoltan Zavadzsky (Songs), and Lang Edith László (Violin); T. Polgar at the Pianoforte: Lohengrin's Farewell from Lohengrin (Wagner); Organ: Prelude and Fugue in A minor (Bach-Liszt); Aria from Il Seraglio (Mozart); Selection from Tristan and Isolde (Wagner); Songs: Three Airs (Kjerulf); Air (Sinding); Pagodes (Debussy); Mouvements (Debussy); Romanian Dance (Bartok); Maria, Marie (di Capua); Air (di Capua); Song (Dienzl); Two Hungarian Songs (Doczy).

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.3 p.m., Weather Forecast. 12.5, String Ensemble Concert, relayed from the Hotel d'Angleterre. 2.0 to 3.0, Interval. 3.0, Orchestral Concert, conducted by Launy Gröndahl: March, Stolte Minner (Moller); A Pastorale in Three Movements (Palmgren); Waltz (Schubert); Melody from Maskarade (Nielsen); Komisk Tappentreg (Fahlbach); Talk for Children; Slav March (Lotter); Over-

ture, Jean de Paris (Boieldieu); Waltz from Frau Luna (Lincke); Berceuse (Gaubert); Melody from Il Trovatore (Verdi); Serenata napoletana (Sgambati); March (di Capua). 5.0, Gramophone Concert: Ninon Vallin and Charles Friant: Duet from Carmen (Bizet); Einer Larson: Sverige (Stenhammar); Alfred Picavet: The Song of Songs (Moysa); Arnold Felder: Caro mio ben (Giordano-Popper); Fred Lustig: Für dich, für dich mein Baby (Rotter); Jack Buchanan: You forgot your gloves; Jack Hyton and his Band: By the Fireside (Noble-Campbell-Connelly). 5.40, Exchange and Fish Market Prices. 5.50, Talk: A Journey to Vienna. 6.20, French Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Agricultural Talk. 8.0, Chimes from the Town Hall. 8.2, Orchestral Concert, conducted by Emil Reesen: Entrance Gavotte (Gillet); Babillage (Gillet); Spanish Dance (Granados); Lullaby (Palmgren); Music of the Spheres (Rubinstein); Melody (Hellmesberger). 8.30, Modern Traffic in Word and Tone: The Station Orchestra, conducted by Emil Reesen; D-OXC (Rüscher); Readings (Bonnyelcke): (a) Transport, (b) The Tram, (c) The Bicycle; Readings (Lyhne): (a) An Indian Motor, (b) On the Night Express; Reading: The Aeroplane (Juel); Pacific 231 (Honegger). 9.5, Talk: Nature Study and Religion. 9.35, Duets by Olgar Roeboe and Ingrid Gesmar: Songs (Malling): (a) Ved Laerkens Konime, (b) Sneedemandens Song, (c) Osterlide, (d) Rastlos Higen; Songs (Liebmann): (a) Nymfernes Sang ved Aetherhavet, (b) Sommerens Tale. 9.55, News Bulletin. 10.10, Modern French Pianoforte Music—Recital by Viktor Fischer: Blues (Harsanyi); Tango des Fratellini (Milhaud); Prelude (Migot); Salut et Danse (Migot). 10.5, Chamber Music by the Gerhard Raft Quartet; String Quartet No. 2 in E. Op. 125 (Schubert). 10.50 (approx.), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and Programme Announcements. 7.35, Radio Journal. 7.45, Answers to Correspondents. 8.0, See Warsaw. 10.25, Talk in Esperanto: The Natural Resources of Poland. 10.40, Sports Notes. 10.50, See Warsaw. 11.30, Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN; 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Stock Report, Weather Forecast, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Talk. 7.45, German Lesson. 8.0, Concert by the Station Orchestra. 9.0, Mezzo-Soprano Solos by Mary Maguire. 9.15, Popular Music on Gramophone Records. 9.45, Selections by the Station Orchestra. 10.0, Popular Music on Gramophone Records. 10.30, Time Signal, News Bulletin, Weather Report and Close Down.

FECAMP

223 metres; 10 kW. 10.0 p.m. to 1.0 a.m. (Thursday), Programme in English by the I.B.C.—10.0 p.m., Dance Music by the Ibolians: Great Day; In a Japanese Garden; You were my Salvation; Selection from Viktoria and her Hussar; The Pick Up; One Night alone with You; There's a good Time coming; Somewhere in old Wyoming; To-day I feel so happy; Song of Happiness; Under the Sweetheart Tree; We're all Good Pals at Last; Without my Girl; Springtime in the Rockies; Changing of the Guard; Around the Corner. 11.0, Concert: Hot Scotch; Haydn Wood Echoes; Wait; Old-fashioned Town; Because; To-day I feel so Happy; Just because I lost my Heart; Floral Dance; Maire my Girl; Song of Songs; You will remember Vienna; Memories of You; Rosalita; I lost my Gal again; I found You. 12 Midnight, Concert of Dance Music by the Ibolians: Faithfully yours; Girl Friend of a Boy Friend; Goodbye to all that; Ho-Hum; I don't know why; For You; I found You; If they ever had an Income Tax on Love; If you were the only Girl; I'm an unemployed Sweetheart; Gipsy Melody; It always starts to rain; A Bench in the Park; You're just the One Girl; Mona Lisa; My Song. 12.57 a.m. (Thursday), I.B.C. Good-night Melody. 1.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—5.0 p.m., Concert from Langenberg. 6.15, Economic Notes. 6.25, Reading (Mörike). 6.50, See Stuttgart. 7.15, Time, Weather, Programme Announcements, and Economic Notes. 7.30, See Stuttgart. 8.0, See Berlin (Witzleben). 10.0, Reading: A Goethe Festival (Peter Huchel). 10.20, Time, Weather, News, and Sports Notes. 10.45, See Munich. 12.0 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

AUGUST 24th **WEDNESDAY** continued.

8.30, News and Weather. 8.40, Fashion Review by Mlle. José. 8.45, Concert with Gramophone Interludes. Soloists: Léon Kartun of Romania (Pianoforte) and Jeanne Haskil (Violin). Pianoforte Solos: (a) Prelude from the Toccata in C (Bach-Busoni), (b) Novelette No. 7 (Schumann), (c) Iberia (Albéniz). Songs on Gramophone Records: (a) Ein Traum (Grieg), (b) Ich liebe dich (Grieg), (c) Cantares (Turina). 9.15, Press Review and News. 9.30, Concert (contd.). Violin Solos (Bloch): (a) Vidui, (b) Nigun. Songs on Gramophone Records: (a) Chanson des Sirènes (Honegger), (b) Berceuse de la Sirène (Honegger), (c) Des Kindes Gebet (Reger); Quintet (Dvorák). Gramophone Records: (a) Two Popular Hungarian Songs (Dozy), (b) Feuilles de maïs humides de Rosée, (c) Hungarian Czardas (Kun), (d) Romanian Dance (Béla-Bartók), (e) Romanian Peasant Dance, Chindia (Mihalovici).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Bulletin. 10.12, Programme Announcements. 10.15, Programme to be announced. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day. 11.6, Teaberry Sport Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, KDKA Kiddies' Klub. 11.30, Westinghouse Watchmen. 11.45 to 1.0 a.m. (Thursday), New York Relay. 11.45, Literary Digest Topics in Brief, by Lowell Thomas. 12.0, Amos 'n' Andy. 12.15 a.m., Royal Vagabonds. 12.30, The Stebbins Boys. 12.45, Billy Jones and Ernie Hare. 1.0, Time Signal and Programme to be announced. 1.15, Programme to be announced. 1.30, Jack Frost Melodies. 2.0 to 3.30, New York Relay. 2.0, The Island Boat Dance Club. 2.30, Canada Dry—George Olsen's Orchestra with Jack Benny. 3.0, The Country Doctor. 3.15, Absorbine, Jr., Footnotes. 3.30, Tish. 3.45, Around the Cracker Barrel. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press' Last-minute News Flashes. 4.20, The Music Box. 4.30, Jack Pettis and his Orchestra. 5.0, Orchestra, from New York. 5.30, Time Signal and Good Night.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.15 p.m., Announcements and News Bulletin. 7.35, See Warsaw. 7.45, Popular Music on Gramophone Records. 7.58, Time Signal. 8.0, See Lwow. 8.35, See Warsaw. 9.55, Time Signal, Sports Notes, and Police Report. 10.15, Dance Music on Gramophone Records. 12.0, Midnight (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE**, 680 metres; and **GENEVA**, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Geneva), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5, Gramophone Records (contd.). 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, Concert by a String Orchestra, conducted by M. Robert Echenard. 6.30 (from Geneva), Popular Music on Gramophone Records. 7.0, Weather Forecast. 7.1, Gramophone Records (contd.). 7.30 (from Lausanne), Talk: The Harvesting and Packing of Fruits. 7.55, News Bulletin. 8.0 (from Geneva), Song Recital by M. Ferrari. 8.30, Concert by the Station Orchestra; Soloist: M. Edouard Moser (Pianoforte). 10.0, News Bulletin and Weather Forecast. 10.15, Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.0 a.m., Weather Report. 5.0 p.m., Weather Report. 8.30, Weather Report. 8.40, Music by the Radio Quartet. 9.0, Chimes and Gramophone Records of Music by Sibelius. 9.30, News Bulletin.

RIGA

325 metres; 15 kW.—5.30 p.m., Humorous Songs. 6.0, Talk on Nietzsche. 6.30, Agricultural Talk. 7.0, Weather Report. 7.3, Concert of Italian Operatic Music. In the intervals at 8.0, News; and at 9.0, Weather Report.

RJKUKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2RO, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Variety Music. 1.0 to 2.15, Sextet Concert. Soloists: Nella Ranieri (Violin), Quartetto vagabondo (Pietri); Potpourri of American Dances, Halo America (Lubbe); Intermezzo and March (Kockert); Violin Solos: (a) Le cygne (Saint-Saëns), (b) Canzonetta (d'Ambrosio), (c) Slav Dance (Dvorák);

Lucciole della notte (Lombardo); Selection from La fille de Madame Angot (Lecocq); La rumba degli apaches (Fragna). In the intervals at 1.15, Giornale Radio, and at 1.30, Time and Announcements. 5.0, Exchange, Report of the Royal Geographical Society, Children's Radio Review, Giornale Radio and Announcements. 5.30, Vocal and Instrumental Concert. Soloists: Vera Nadia Poggioli (Soprano) and Riccardo Spinelli (Tenor). Arioso for Soprano from William Ratcliff (Mascagni); Tenor Solo from Il Trovatore (Verdi); Duet from The Huguenots (Meyerbeer). 5.45, Variety Concert: Overture, Die schöne Galathée (Suppé); Gavotte, La parucea di Geronte (Hainud); Violin and Pianoforte Duets (Sergio Viterbini): (a) Canto orientale, (b) Uccelli; Pianoforte Solo, Tarantella (Martucci); Selection from Le maschere (Mascagni). 7.10 (Naples), Shipping and Sports Notes. 7.15, Agricultural Notes, Announcements and Giornale Radio. 8.0, Time, Announcements and Gramophone Records of Light Music. 8.15, Medical Talk. 8.30, Sports Notes, Announcements and Tourist Report. 8.45, Abraham and Isaac (Belcari). Music by Pizzetti. 10.5 (approx.), Talk on Literature and Art. 10.15 (approx.), Vocal and Instrumental Concert: Bacchanale, Autum (Glazounov); Act 2 of Boris Godounov (Mussorgsky); Announcements; Monologue and Scene from the Second Act of Christopher Columbus (Franchetti). 10.55, News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres; and by W2XAD on 19.56 metres.—9.0 p.m., Song Souvenirs, from New York. 9.30, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15 to 11.0, New York Relay. 10.15, Swane Serenaders. 10.30, Beau Balladeer. 10.40, A.B.C. Thumbnail Sketches. 10.45, Soloist Programme. 11.0, Ma Frasier's Boarding House. 11.15, Health Talk. 11.20, Ollie Yettru (Pianist). 11.30, When Day is Done Programme. 11.55, Baseball Scores. 12.0, Midnight, Intermezzo d'Italia Programme. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Thursday), Chandu, the Magician. 12.30 to 4.15, New York Relay. 12.30, Maxwell Tune Blenders. 12.45, The Goldbergs. 1.0, Big Time. 1.30, Musical Programme. 2.0, Goodyear Programme. 2.30, Mobiloil Concert. 3.0, The Corn Cob Pipe Club of Virginia. 3.30, Echoes of the Palisades. 4.0, Nellie Revell. 4.15, Carmelo Cascio (Pianist). 4.30, Vincent Lopez and his Orchestra from New York. 5.0, Al Stulmaker and his Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE** 244.1 metres; and **BERNE**, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Schumann Concert on Gramophone Records. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Concert by the Small Station Orchestra. 4.30 (from Zurich), Programme for Children. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30, Concert on Little-known Instruments (on Gramophone Records). 7.0, Time Signal, Weather Forecast and Market Prices. 7.10 (from Berne), Book Review. 7.35 (from Berne), Talk: Modern Sculpture. 8.0 (from Zurich), The Tomb of the Unknown Warrior—Play in Three Acts (Raynal), with Musical Interludes by the Station Orchestra. 9.30, Weather Forecast and News Bulletin. 9.45, Late Concert by the Station Orchestra. 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Programme of Country Music and Literature. 5.45, Gramophone Concert of Variety Music. 6.45, Agricultural Programme. 7.15, Weather and News. 7.30, Talk on Dalarne, relayed from Falun, 307 metres. 8.0, Partita No. 3 in E for Violin (Carl Garaguy). 8.20, The Church Mouse—Comedy (Ladislava Fodor). 9.45, Weather and News. 10.0, Dance Music. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light and Classical Music. 12.45 p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Concert, relayed from Bordeaux-Lafayette. 1.50, Light Music on Gramophone Records. 2.0, Interval. 4.45, Talk in French: The Electric Boiler. 5.0, Concert of Dance Music, by the Station Orchestra, conducted by M.

Roskam: Pasodoble, Micaela (Stubbs); Foxtrot, In Indiana (Friend and Caesar); Foxtrot, Golden Sands (Greer and Klages); Waltz, My Song of the Nile (Bryan and Meyer); Foxtrot, Si vous saviez (Wachsmann); You (Maurice and Gilbert); Foxtrot, Red-headed Baby (Coots); Tango, Triste Heulla (Lucchesi); Foxtrot, It looks like love (Freed and Woods); Waltz, Wine, Woman and Song (Joh. Strauss); Foxtrot, Just Friends (Klenner); Foxtrot, Taking Off (Charig); Tango, Deme otra copa (Ghirlanda); Foxtrot, Highway to Heaven (Dubin and Burke); Foxtrot, Since I met you; Mart'nic Biguine (Mateo); Pasodoble, Pontenero (Heymann). 6.0, Talk in French on the Italian Author, Luigi Pirandello. 6.15, Medical Talk in German. 6.30, Concert by the Station Orchestra, conducted by M. Maurice de Villers: Overture, William Tell (Rossini); Ballet Music from The Cid (Massenet); Slav Dances, Nos. 1 and 3 (Dvorak); Selection from La Bohème (Puccini); A Wedding Day on Troldhaugen (Grieg). 7.30, Time Signal. 7.32, News in French and German. 7.45, Orchestral Concert (cont.): Triumphal March (Fauchey); Waltz, Les Patineurs (Waldteufel); Overture, The Bohemian Girl (Balfe); Serenade (Moszkowsky); Selection from The Bird Fancier (Zeller); March, Uncle Samny (Holzmann). 8.30, Concert, relayed from the Casino, Plombières-les-Bains; Overture, Così fan tutte (Mozart); Suite, La Féria (Lacôme); Ballet Music from Hérodiade (Massenet); Chanson de Mai (Dupuis); Impressions d'Italie (Charpentier); Hungarian Rhapsody No. 2 (Liszt); In the Interval, Talk. 10.0, Chamber Music, relayed from Radio Colonial (Paris), 25.63 metres. 11.0, Dance Music from the Savoy Dance Hall. 12.0, Midnight (approx.), Close Down.

STUTTGART

MUHLACKER; 360.5 metres; 60 kW.; and **FREIBURG**, 570 metres.—10.0 a.m., Recital of Swabian Folk Songs. 10.25, Pianoforte Concerto No. 1 in B flat minor (Tchaikovsky), on Gramophone Records. 11.0, Time, News, and Weather Report. 11.15, Sponsored Concerts. 11.55, Weather Forecast. 12.00, Concert from Munich. 1.15 p.m., Time, Weather, News and Programme Announcements. 1.30, See Langenberg. 2.0 to 2.30, Sponsored Concert. 4.0, The Children's Hour on the Danube. 5.0, See Langenberg. 6.15, Time and Weather. 6.25, Talk: A Geographical Excursion through the Abruzzi Provinces. 6.50, Talk: Alsace from without and within. 7.15, Time, Weather, and Agricultural Notes. 7.30, Scusaté, Signor!—Tales from the South, written and read by Jakob Job. 8.0, See Berlin (Witzleben). 9.20, Forgotten Africa—A Radio Sequence (Oscar Ludwig Brandt). 10.20, Time, Weather, News and Programme Announcements. 10.45, See Munich. 12.0, Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Hawaiian Guitar Solos. 5.45, Opera Music: Airs from (a) Iphigenia in Aulis (Gluck), (b) The Huguenots (Meyerbeer). 6.0, Concert: Melodies from (a) Romeo and Juliet (Gounod) and (b) The Barber of Seville (Rossini); Violin Solos: (a) Salut d'amour (Elgar), (b) Danse frivole (Dalcroze), (c) Largo (Handel), (d) Aubade d'amour (Monti), (e) Prino Bacio (Rico). 6.30, Exchange Quotations and Horse Racing Results. 6.35, Concert of Light Music. 7.30, Programme Announcements and News. 7.45, Dance Music. 8.0, Programme by a Viennese Orchestra. 8.15, Sound Film Music. 8.30, Concert: Invitation to the Waltz (Weber); In a Persian Market (Ketilbey); Aubade printanière (Lacombe); Airs (Messenger) from (a) La Basoche and (b) Coups de roulis. 9.0, Accordion Solos. 9.15, Concert: Airs from (a) Lakmé (Delibes), (b) Thais (Massenet), (c) Cavalleria rusticana (Mascagni); Lehariana (Lehar); Au pied d'un lilas (Berti); To Spring (Grieg); Airs from (a) Le Roi d'Ys (Lalo), (b) La Favorita (Donizetti), and (c) The Tales of Hoffmann (Offenbach). 10.0, Solo Selections. 10.15, Light Music. 10.30, North African News. 10.45, Orchestral Music. 11.0, Concert: Si c'est ça l'amour (Hollaender); The Whistler and his Dog (Pryor); Berceuse de Jocelyn (Godard); L'alouette (Cayla); La valse des cols bleus (Marafioti); Overture, Lohengrin (Wagner); Vieni à l'exposition; Le tango des roses (Bottero); Le crédo du paysan (Gouhlier); American March (Souza). 12.0, Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—5.0 p.m., Quintet Concert: Overture, The Daughter of the Regiment (Donizetti); Barcarolle (Toni); In a Persian Market (Ketilbey); El sarao (De Micheli); Spanish Potpourri (Winston); Selection from Il Natale di Pierrot (Monti); Danza lenta (Kuttel); Liebeswalzer (Ziebrer); Momento musicale (Moffa); Clac Bilbao (Muci). 6.35, Giornale Radio and

Agricultural Notes from Turin. 7.0, Quintet Concert: Brigata (Manoni); Se nessuna t'ama (Coroler); The Chinese Story-teller (Dreyer); Ballet Music from Coppélia (Delibes); Sorriso (Catolico); Weber Potpourri (Urbach); Canzone villereccia (de Micheli); L'isola della rumba (Barsizza). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa 312.8 metres; and Florence, 500.8 metres.—7.0 p.m., Concert: Selection from Paganini (Lehar); Salut d'amour (Elgar); Rusticella (Cortopassi). 7.25, Tourist Talk. 7.30, Time and Announcements. 7.35, Popular Music on Gramophone Records. 8.0, Giornale radio, Weather and Light Music on Gramophone Records. 8.30, A Comedy in Three Acts, followed by Dance Music from the Luna Park Lido, Milan. 11.0, Giornale radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—5.0 p.m., Vocal and Instrumental Concert: Three Songs to Verse by Kaitneker (Korngold); Contralto Solos: (a) In einem Rosengarten (Reger), (b) Lied eines Mädchens (Joseph Marx), (c) Tuscan Spring—(Joseph Marx); Pianoforte Solos: (a) Arabesque (Rolf Sieber), (b) Triana (Albeniz), (c) Mazepa (Liszt); Tenor Solos: (a) Siciliana from Cavalleria rusticana (Mascagni), (b) Aria from The Girl from the Golden West (Puccini), (c) Cielo e mar, from La Gioconda (Ponchielli), (d) Mattinata (Leoncavallo); Pianoforte Quartet in E flat (Mozart). 6.10, Talk: Round Africa. 6.30, Talk: Natural History for City Dwellers. 6.50, Talk: In the Studio of a Film Architect. 7.10, Time, Weather and Programme Announcements. 7.20, Talk on Maurice Maeterlinck and his Work, on his Seventieth Birthday. 7.50, The Seven Princesses—Play (Maurice Maeterlinck). 8.45, Coming Sound Films—Quartet and Dance Band Concert with Songs by Dolly Lorenz and Karl Schule: Four Melodies from Der blonde Traum (Werner Heymann); Six-Eight and Slow Foxtrot from Kiki (Reisfeld-Marbot); Song from The Prince of Arcadia (Stolz); Slow Foxtrot and Foxtrot from Das Lied einer Nacht (Spoliansky); Tango and Foxtrot from Das Blaue vom Himmel (Stolz); Slow Foxtrot, English Waltz and Song from Sehnsucht 202 (Fall). 9.55, News Bulletin. 10.10, Dance Music by the Robert Korngold Band, with Vocal Refrains by Hans Rotter. 12.0, Midnight (approx.), Close Down.

WARSAW

1,417 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Gramophone Records (contd.). 2.10, Interval. 3.0, Economic Report. 3.10, Popular Music on Gramophone Records. 3.30, Boy Scouts' Report. 3.35, Naval and Colonial Report. 3.40, Programme for Children. 3.53, Talk for Young People: Migration of Peoples. 4.5, Variety Music on Gramophone Records. 4.35, Announcements. 4.40, Answers to Correspondents. 5.0, Orchestral Concert, conducted by J. Oziminski: Two Melodies (Joh. Strauss), (a) Persian March, (b) Overture, Die Fledermaus; Three Melodies (O. Straus), (a) Waltz from A Waltz Dream, (b) Song, Liebeszauber, (c) Polka from Die Prinzessin von Tragan; Waltz Fesche Geister (E. Strauss); Polka, Feuerfest (Johann Strauss); Polka-Mazurka, Frauenherz (Jos. Strauss); Three Melodies (Joh. Strauss), (a) Waltz, Sphärenkänge, (b) Selection from Eine Nacht in Venedig, (c) March from Simplicius. 6.0, Talk. 6.20, Concert of Light Music and Dance Music from Czechoslovak. 7.15, Miscellaneous Announcements. 7.35, Radio Journal. 7.45, Agricultural Notes. 7.55, Programme Announcements. 8.0, Talk relayed from Lwow. 8.35, Lyrical Programme. 8.50, Recital by Z. Dymek (Pianoforte) and J. Muzika (Violin): Concerto in D (Paganini); Bretislav, Op. 10 (Scewzyk); Nocturne, Op. 72 (Chopin-Muzika); Selection from Carmen (Bizet-Sarasate); Sonata for Violin and Pianoforte in D Minor (Szymanowski). 9.50, Radio Journal. 9.55, Aviation Weather Report. 10.0, Dance Music. 10.25, Talk: Natural Resources of Poland, relayed from Cracow. 10.40, Sports Notes. 10.50, Dance Music (contd.). 11.30 (approx.), Close Down.

WILNO

563 metres; 16 kW.—7.15 p.m., Literary Talk in Lithuanian. 7.30, Programme Announcements. 7.35, See Warsaw. 7.45, Topical Talk. 7.55, Miscellaneous Items. 8.0, See Warsaw. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres, and Kiel, 232.2 metres.—4.30 (from Hanover), Concert from Bad Nenndorf; Suite, Moldavia (Smetana); Waltz, Künstlerblut (Eysler); Selection from Roses of Florida (Fall); Ballet Music from The Demon (Rubinstein); Schönfelder-Marsch (Ziehrer). 5.30 (from Kiel), Haithabu—a Radio Report on the Year's Archeological Excavations at Haithabu. 6.0, Variety Programme. 6.30, Talk: Judges and Law Courts of Other Lands: The Near East—VI. 6.55, Exchange Quotations and Cattle Prices. 7.0, Topical Talk. 7.15 Weather Forecast. 7.20, Birds in Old and New Pianoforte Music; A Recital by Henny Bromberger; Le rappel des oiseaux (Rameau); La poule (Daquin); Le Coucou (Daquin); Die Bird as Prophet (Schumann); Vögelin Etude (Henselt); Die Nachtigall (Liszt); Prédication aux oiseaux (Liszt); The Lark (Glinka-Balakirev). 8.0, Variety Programme: Polonaise in E, No. 2 (Liszt); Adriano's Aria from Rienzi (Wagner); Overture, Ali Baba (Cherubini); Song from The Golden Cross (Brüll); Orchestral Suite, Aus aller Herren Länder (Moszkowsky); Song with Organ Accompaniment, Caro mio ben (Giordano); Tarantella from Masaniello (Auber); Sextet from the Second Act of Lucia di Lammermoor (Donizetti); Serenade from Der Musikant (Bittner); Trio from the Third Act of The Merry Wives of Windsor (Nicolaï); Overture, Der Opehrnball (Heuberger); Madrigal from the Second Act of The Mikado (Sullivan); Mephisto Waltz (Liszt); Agnus Dei from Das Dorf ohne Glocke (Künneke); Song and Dance of the Gipsy in Das Spielzeug ihrer Majestät (Königsberger); Duet from Der Günstling der Zarin (Winterberg); Potpourri of Melodies from The Land of Smiles (Lehar). 10.0, News, Time, Weather, Sports Notes and Announcements. 10.25, Berlin—A Light Concert of Berlin Music by the Small Station Orchestra; March, Mein Berlin from Für dich (Benatzky); Overture, Berliner Luft (Lincke); Berliner Frauenwalzer (Einödshofer); Tone Picture, A Morning in Sans-Souci (Kockert); Potpourri, Berlin at Night (Lincke); Berliner Kreuzpolka (Daase); Rheinländer, Cousinschen (Holländer); Foxrot Potpourri, Das fidele Alt-Berlin (Robrecht); March, Wir haben noch nicht genug (Croc).

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—1.5 to 2.30 p.m., Gramophone Concert Part I, Potpourri of Mozart, Offenbach, Schubert, Weber, Grieg and Waldteufel Music. Part II, Gramophone Records of Artists of the Milan Scala; Gualtier Maldé, Selection from Rigoletto (Verdi); Rosette Pampanini (Soprano) and Gino Vanelli (Baritone), Duet from I Pagliacci (Leoncavallo); Francesco Merli (Tenor), Aria from Il Trovatore (Verdi). 3.20, Talk for the Housewife. 3.30, Programme for Children. 4.0 (from Danzig), Talk for Parents. 4.30, Review of Periodicals. 5.0 (from the Kurgarten, Zoppot), Police Band Concert. Festlicher Marsch (von Schillings); Overture, Mignon (Thomas); Rosenlieder (Eulenberg); Waltz, Wiener Praterleben (Translatour); Selection from Der Kuhreigen (Kienzi); March, Brücker Lager (Kral); Overture, Berliner Luft (Lincke); Tin Soldiers (Kockert); Spanish Rhapsody (Richardy); Selection from Rigoletto (Verdi); March, Frischer Mut, leichtes Blut (Blon). 6.15 (in an interval), Market Prices. 7.0 (from Danzig), Talk by Herr Schröder. 7.30, Reading (Adda von Königsberg). 8.0, Weather Forecast. 8.5, The Dream-Play of the Author Klabund—Radio Play (Johann Luzian). 9.10, Announcements. 9.20, Claude Debussy Concert, by the Königsberg Opera House Orchestra, conducted by Bruno Vondenhoff: Prélude à l'après-midi d'un Faune; Three Symphonic Sketches, La mer. 10.10, Weather, News and Sports Notes, followed by Dance Music Relay. 12.30 a.m. (Thursday), Close Down.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.)—Programme of the Christian Radio Society (N.C.R.V.). 7.40 a.m., Bible Reading. 7.55, Gramophone Records of Light Music. 9.10, Interval. 9.40, Choral Concert. 10.10, Programme for Invalids. 10.40, Recital by M. F. Jurjaanz (Harmonium), Mmes. C. de Jager (Soprano) and R. Mijnhout-Bakkenist (Contralto). 11.40, Police Notes. 11.55, Concert; Soloists, Mme. A. Anderson-Rokker (Mezzo-Soprano), M. P. v.d. Hurk (Flute), W. Clemens (Flute) and Mme. L. Lauenroth (Pianoforte). 1.40 Interval. 2.10, Reading. 2.40, Instrumental Concert; Soloists, A. Kiekens (Oboe), J. de Vents (Flute), A. de Wilde (Clarinet) and W. Gersteling (Pianoforte); Two French Folk Melodies (Smyth); Sous la

AUGUST 24th WEDNESDAY continued.

feuillée (Sandré); Soirée de Vienne (Schubert); Entr'acte Music from Rosamunde (Schubert); Sonata Op. 49 (Janacek); Aubade (Wailly); Berceuse Op. 7 No. 4 (Tatterode); Intermezzo Op. 10 No. 4 (Karganov); Suite (Anberg). 4.40, Programme for Children. 5.40, Talk. 6.10, Talk. 6.40, Gramophone Records of Light Music. 6.55, Talk by A. Stapelkamp. 7.10, Police Notes. 7.25, News Bulletin. 7.40, Talk. 7.55, Symphony Concert, conducted by Fritz Schuurman; Symphony No. 6 (The Pathetic) (Tchaikovsky); Overture, A Waltz Dream (O. Straus); Selection from La Fille de Madame Angot (Lecocq); The Blue Danube (Joh. Strauss); Fantasia on Home Sweet Home (Spies). In the intervals at 8.40, Talk, and at 9.40, News. 10.10, Variety Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM; 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25 a.m., Physical Culture. 7.40, Variety Music on Gramophone Records. 9.40, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55 till Close Down, V.A.R.A.—Programme. 9.55, Septet Concert with Recitations. 11.40, Concert by a Schrammel Quintet. 12.25 p.m., Organ Recital by Johan Jong, with Songs by L. Fuld. 12.55, Quintet Concert (contd.). 1.40 to 1.55, Interval. 1.55, Cookery Hints. 2.40, Programme for Children. 5.30, Gramophone Records of Light Music. 5.40, Address. 5.55, Popular Music on Gramophone Records. 6.10, Talk on Amsterdam, arranged by the People's Radio University. 6.40, Talk. 6.55, Organ Recital by Johan Jong; Triumphal March from Aida (Verdi); Selection from La Traviata (Verdi); The Clock and the Dresden Figures (Ketsch); Waltz, Roses from the South (Joh. Strauss); Selection from The Love Parade (Schertzingler). 7.40, Radio Play (Wouters). 8.0, Orchestral Concert conducted by Hugo de Groot: Overture, La Dame blanche (Boieldieu); Waltz, Perlen der Liebe (Strauss); Selection from The Goldsmith of Toledo (Offenbach); Slav Rhapsody (Friedmann). 8.40, Verdi—Radio Play (Lichtenberg), translated by D. v. d. Linden. 8.55, Concert (contd.): Turkish March from Fatinitza (Suppé); Concert Waltz (Moszkowsky); Hungarian Dances (Kéler-Béla); Breezes from the South (Mjyldtten); Serenade, Napoli (d'Ambrosio); He-la-hop (Laurens). 9.25, Topical Dialogue: The Adventures of Messrs. Wakker and Tropenduit. 9.40, Concert (contd.): Idylle au moulin (Popy); First Waltz (Durand); Song of the Bees (Filippucci); Suite gaie (Gabriel-Marie). 10.10, News Bulletin. 10.25, Concert (contd.): March, Perpetuum mobile (von Blon); Cuban Love Song (Stothart); The Parade of Jack and Jill (Lake); Parade of the Matches (Wehle); Joey the Clown (Reaves); Potpourri, Streiflichter (Morena); March (Winter). 10.55, Popular Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and HELSINKI, 368.1 metres.—6.15 p.m., Programme for Children. 7.0, Sports Notes. 7.20, Recital of Finnish Dances by Frans Hannu (Clarinet) and Verner Koro (Violin). 7.40, Recitations. 8.0, Songs and Duets from Operettas. 8.20, Accordion Solos. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Dance Music from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert—The Berlin Philharmonic Orchestra with Joseph Schmidt (Tenor) and Michael Bohnen (Baritone): Scherzo and March from The Sixth Symphony (Tchaikovsky); Ballet Music from Carmen (Bizet); Duet and Ballet Music from The Bartered Bride (Smetana); Eine Walzer-Redoute—Classical Dance Melodies (Hildebrandt); Two Spanish Dances (Moszkowsky); Polystian Dances from Prince Igor (Borodin). 12 Noon, Relay of the Round Europe Air Race—Calling at Bonn Aerodrome. 12.20 p.m., Concert from Munich. 1.15, Weather, News and Time Signal. 1.30, Verdi Concert by the Station Orchestra, conducted by Kühn; Soloist, Strienz (Bass); Prelude to Aida; Aria from Sicilian Vespers; Selection from A Masked Ball; No! she has never loved me, from Don Carlos; Selection from Othello; Prelude to the Third Act of La Traviata. 2.30 to 2.50, Report from Bonn Aerodrome (on Gramophone Records). 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Nature Talk: The Mystery of Metamorphosis. 4.45, Reading (Wilhelm Kohl). 5.0, Concert conducted by Eysoldt: Overture, Preciosa (Weber);

Suite, Friedemaun Bach (Leuchner); Romantic Intermezzo (Huppertz); Hungarian Rhapsody No. 6 (Liszt); Waltz Fantasia (Rupprecht); Potpourri, Mosaik (Zimmer). 6.10, Talk: The Health of the Community in Times of Crisis. 6.30, Reading of Poems: Niederrhein (Erich Bockemühl). 6.45, Weather, Time, Economic and Sports Notes. 7.0, Review of Books. 7.30, Talk: Modern Traffic Problems—the Question of a Motor Omnibus Monopoly. 7.55, First General News. 8.0, The World on Gramophone Records—In the Sierra Madre (Mexico). 8.30, From A to Z—a Humorous Survey of the Encyclopedia of General Information. 10.5, News, Announcements and Sports Notes. 10.20 (approx.), Modern Poetry set to Music; Ernst Reschke (Recitatives), Hans Wocke (Baritone), Karl Delseit (Accompanist) and Paul Heinrich Gehly (Speaker). 10.45, See Munich. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

250 metres; 2 kW.; and DRESDEN, 319 metres.—4.0 p.m., Programme for Young People. The World Upside Down—Comedy (Herbert Roth), followed by Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blugner: Kinderliedermarsch (Ziehrer); Kinderlieder-Suite (Blech); Andante and Minuet from the Surprise Symphony in G (Haydn); The Children's Scene from Der Evangelinmann (Kienzl); Melodies from Die Puppenfee (Bayer); Waltz (Bayer). 5.50, Economic Notes, followed by Weather and Time. 6.0, Dialogue: Should Parents help their Children with their Homework? 6.30, Talk: German Dances in France. 6.50, The Leipzig Station informs its Listeners . . . 7.0, Talk: The Copper Trade throughout the World. 7.30, Old German Humour—Readings. 8.0, See Hamburg. 10.5, News Bulletin. 10.20 (approx.), See Hamburg. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Quintet Concert. 7.0, Talk: Work in the Garden. 7.30, Talk on Literature. 8.0, Song Recital by Mlle. Perdanova. 9.0, Dance Music from Bled. 10.0, Time Signal and News Bulletin, followed by a Concert of Light Music.

LWOW

381 metres; 16 kW.—7.15 p.m., Miscellaneous Items. 7.35, See Warsaw. 7.45, Literary Talk. 8.0, A Radio Play. 8.35, See Warsaw. 10.20, Song Recital by Karol Bore-Borodin (Tenor). 10.40, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert; Melodies from (a) Samson and Delilah (Saint-Saëns), (b) La Bohème (Puccini), (c) La Juive (Halévy), and (d) La Bohème (Puccini); Reading from Ruy Blas (V. Hugo); Selection from I Pagliacci (Leoncavallo). 7.30, Radio Gazette for Lyons and the South-East. 8.30, Orchestral Concert, conducted by Barthalay. Soloists: Gustave Fellot ('Cello), Edouard Marin (Violin), and Mme. Pyerre (Soprano).

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices, and Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal, and Political Review. 11.15 (approx.), Concert Quartet in E flat (Beethoven); followed by Recitations (Francisco Villaspesa) by Juanita Azorin; and Octet (Schubert). 1.15 a.m. (Thursday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talk in Czech: The Agricultural Labourer in the Soviet Union. 9.0, Talk in Swedish: Travelling Sketches from Karelia and Murmansk. 9.55, Time Signal. 10.0, Review of the Week and Answers to Correspondents, in French.

MOTALA.—See Stockholm.

MÜHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—5.0 p.m., See Langenberg. 6.15, Italian Lesson. 6.35 (from Nürnberg), Talk: The Centenary of the Gustavus Adolphus Society. 6.55, Time Signal, Weather Forecast, and Agricultural Notes. 7.5, Concert by the Station Orchestra. Conductor: Karl List. Soloist: Adele Kern (Coloratura-Soprano). Overture, Iphigenia in Aulis (Gluck); Air from Il Seraglio (Mozart);

Romance and Scherzo (Schumann); Air from Angelina (Rossini); Two Melodies from Coppélia (Delibes); Songs, (a) Mein Herr Marquis, from Die Fledermaus (Joh. Strauss), (b) The Blue Danube (Joh. Strauss); March from Fatinitza (Suppé). 8.10, Talk: A Literary Tour through Swabia. 8.30, King Nikkolo, or Such is Life!—Play (Frank Wedekind). After the Programme, Light Music on Gramophone Records. 10.20, Time Signal, Weather Forecast, News Bulletin, and Sports Notes. 10.45, Concert by the Hugo Weis Orchestra. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres, and Rjukan, 447.1 metres.—6.0 p.m., Pianoforte Recital by Reginald Paul, of London. Part I: Old English Music; Alman (arr. Caxton); The Earl of Salisbury's Pavane (William Byrd); Hornpipe (Purcell); Postludium (Holcombe). Part II: Modern British Music; Dance for Harpsichord (Delius); Serpent Dance (Arnold Bax); The Mediterranean (Arnold Bax); Ragamuffin (John Ireland); The Holy Boy (John Ireland). Part III: Popular Music; Old Irish Melody, The Snowy-breasted Pearl (arr. Moffat); Morris Dance, Shepherd's Hey (arr. Grainger). 6.30, Programme for Boys. 7.0, Announcements, Weather Forecast and News Bulletin. 7.30, Talk: The Sculptor Ola Fladager, on the Centenary of his Birth. 8.0, Time Signal. 8.2, Concert by the Station Orchestra. Conductor: M. Hugo Kramm. 9.30, Agricultural Report. 9.40, Weather Forecast and News Bulletin. 10.0, Topical Talk. 10.15, Recitations. 10.45, Dance Music from Tondheim (493.4 metres). 12 Midnight, Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 to 6.30 p.m., Gramophone Concert of Variety Music. 8.0, Announcements, Tourist Report, Agricultural Notes, and Giornale Radio. 8.30, Time, Announcements and Gramophone Records of Variety Music. 8.45, Variety Concert: Overture, Gli Orazi ed i Curiazi (Cimarosa); Guitar Solos: (a) Barcarolle (Mertz), (b) Les Adieux (Mertz), (c) Pensiero melancolico (Navone), (d) Waltz (Barrica). Soprano Solos: (a) Canzoncina (Bernard), (b) La pastorella (Rossini); Andante from the Fifth Symphony (Tchaikovsky). Soprano Solos: (a) Wedding Song (Confalonieri), (b) Ninna nanna romagnola (Pratella), (c) La fiera di Mastr'Andrea (Meglio); Invitation to the Dance (Weber). Talk. 10.0 (approx.) Variety Music. Soprano Solos: (a) Mammola (Mendes), (b) Nannena (Franco). Tenor Solos: (a) Cubanita (Maraziti), (b) Gran Chaco (Serra). Songs: (a) Bimba senza l'amore (Bixio), (b) Zanzibar (Storaci); Humorous Items. 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (preliminary and 6-dot signals)—6.45, Dramatic Programme. 7.0, Le Journal Parlé. 8.30, Symphony Concert by the Station Orchestra, conducted by M. E. Flament.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—7.0 p.m., News Bulletin and Press Review. 7.15, Light Music on Gramophone Records. 7.30, A Dentist—Play in One Act, by the Amis de Guignol à Paris. 8.0, Talk for Tourists. 8.15, Gramophone Concert (contd.). 8.30, Journal Parlé and News. 8.45, Concert. 10.0, Concert by the Orchestra of the Hotel Chatham. 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records of Popular Music. 8.0, Press Review and Weather. 12 Noon, Talk: Children and Animals. 12.30 p.m., The East in the Eyes of the West—Gramophone Concert: Overture, La Princesse jaune (Saint-Saëns); Aria from Lakmé (Delibes); Aria and Chorus from Aida (Verdi); Romance from The Pearl Fishers (Bizet); Tambourin chinois (Kreisler); Two Arias from Madame Butterfly (Puccini); In a Persian Market (Ketelbey); Airs and Ballet Music from Marouf (Rabaud); Japanese Lantern Dance (Yoshitomo); Four Arias and March from Turandot (Puccini); Suite, Mother Goose (Ravel); In a Chinese Temple Garden (Ketelbey). In the intervals at 1.0, Exchange, News and Weather; and at 1.30 and 2.0, Exchange. 3.45, Exchange and Market Prices. 6.30, Market Prices, Weather, Agricultural Report, Talk and Racing Results. 7.0, Gramophone Concert: Song (Power); Piece (Padilla); El Pelizgro de la Rosa (Arco); Der Rosehochzeitzug (Jessel); A Parthenay (Weckerlin); La Meunière (Weckerlin); La Poupée chérie (de Séverac); Dis-moi (Larrieu); Ce n'est pas vrai (Larrieu); Valse buvette for Violin (Drigo). 7.45, Commercial Prices and News. 8.0, Literary Reading: Tales of the Tropics, by Lafcadio Hearn.

THURSDAY

AUGUST THE TWENTY-FIFTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Organ music. Consecration of the Abbey Church, Buckfast Abbey, Devon. Evensong from Westminster Abbey. Orchestral concert. "Obsession," a radio play by Dulcima Glasby. Mr. Vernon Bartlett: The Way of the World. Dance music.
- LONDON REGIONAL** Orchestral concert. Organ music. Promenade concert from Queen's Hall. Dance music.
- MIDLAND REGIONAL** Organ music. Orchestral concert. London Regional Programme.
- NORTH REGIONAL** Orchestral concert. Running commentary on the Rydal Sheep Dog Trials, relayed from the Vale of Rydal, Westmorland. Band concert. London Regional programme.
- WEST REGIONAL** Organ music. Light music. A Welsh programme. National programme.
- SCOTTISH REGIONAL** Organ music. Light orchestral concert. Dance music. Pianoforte recital. National programme.
- BELFAST** Light orchestral concert. Military Band concert. National programme.
- ABROAD**
- BERO-MUNSTER** Hunting music and songs by Male Voice Choir.
- PARIS (Radio Paris)** Concert from the American Conservatoire, Fontainebleau.
- STRASBOURG** Opéra in Two Acts: "I Pagliacci" (Leoncavallo).
- TOULOUSE (Radiophonie du Midi)** An Hour of Operetta music.
- WARSAW** Evening of light music by Warsaw Philharmonic Orchestra.

ALGIERS
353.3 metres; 13 kW.—7.0 p.m., Market Prices and Exchange Quotations. 7.10, Shipping Notes and Weather Report. 7.15, Talk: Curiousities and Pastimes. 7.30, Accordion and Hawaiian Guitar Recital. 7.45, Chansonnettes. 7.55, News Bulletin and Time Signal. 8.0, Instrumental and Vocal Concert of Modern Operetta Music. 9.0, Concert of Request Music on Gramophone Records.

BARCELONA
RADIO-BARCELONA, Call EAJ1, 349 metres; 8 kW.—8.0 p.m., Trio Concert: Selection from La Bohème (Puccini); Fragment from The Rhinegold (Wagner); Adagio cantabile from the Pathetic Sonata (Beethoven); Serenade (d'Ambrosio). 8.30, Exchange Quotations, Request Gramophone Concert and News. 10.0, Chimes, Weather Forecast, and Market Prices. 10.5, Concert by the Station Orchestra: March, Spiel und Sport (Rossow); Waltz (Strauss); Juegos (Turina); Cordoba en fiesta (Turina). 10.30, Song Recital. 11.0, Concert of Light Music from the Café Español. 1.0 a.m. (Friday), Close Down. **BASLE**.—See Schweizerischer Landessender.

BERLIN
KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers, followed by Gramophone Records of Classical Pianoforte Music, and Second Weather for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Children's Concert on Gramophone Records, relayed from Berlin (Witzleben). 3.0, Talk: Animals as Models—Experiences of a Sculptor at the Zoo. 3.30, Weather and Exchange. 3.40, Talk for Women: Daily Housework as a Beauty Treatment. 4.0, Talk: The Young Teacher. 4.30, See Berlin (Witzleben). 5.30, Review of Periodicals. 6.0, Talk: Contemporary Vocal Music, with Illustrations from Paul Hindemith's Marienleben, Op. 27. 6.30, Advanced Spanish Lesson. 6.55, Weather for Farmers. 7.0, Topical Talk. 7.30, Agricultural Talk, followed by Weather for Farmers. 8.0, See Berlin (Witzleben). 9.0, See Hamburg. 10.0, Weather, News, and Sports Notes. 10.20, Concert from Vienna. 12 Midnight (approx.). Close Down.

BERLIN
WITZLEBEN; 419.5 metres; 1.5 kW.—4.30 p.m., Symphony Concert, conducted by Robert Sondheimer, relayed from the Radio Exhibition: Symphony in C (Bocherini-Sondheimer); Symphony in D (Rigel-Sondheimer); Three Symphonic Movements (Beck-Sondheimer): (a) Allegro con brio, (b) Agitato, (c) Funèbre. 5.30, Talk for Children: Children and Animals in Italy. 5.50, Song Recital on Gramophone Records. 6.30, Talk: How to combat Street Noises. 6.55, The Witzleben Station informs its Listeners. 7.0, Topical Talk. 7.10, Choral Concert: Folk Melody, Ein geistlich Abendlied (arr. Humperdinck); Harmonie (Oelschläger); Kinderwache (Maier); Nachts im Freien (Ecker); Der Lerchenbaum (Hauptmann); Schon gut (Oelschläger). 7.30, Humorous Readings by Karl Zaner. 7.55, Labour Market Report. 8.0, See Vienna. 8.25, Frontier Report. 8.45, News and Sports Notes. 9.0, Concert of Popular Sound Film Music with Renate Müller, Franz Baumann, Paul Heidemann and other Soloists and Oscar Joost's Orchestra, relayed from the Radio Exhibition. Introductory Talk by Gerd Fricke. 10.0, Weather, News and Sports Notes. 10.20, See Hamburg. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.
BEROMUNSTER.—See Schweizerischer Landessender.
BODEN.—See Stockholm.
BODO.—See Oslo.

BORDEAUX-LAFAYETTE
304 metres; 13 kW.—7.30 p.m., News and Exchange Quotations. 7.40, Talk (to be announced). 7.55, Lottery Results and Results of the Cluades Competition. 8.0, Popular Music on Gramophone Records. 8.15, News Bulletin and Weather Forecast. 8.30, Light Music on Gramophone Records. 9.0, Le Bonheur de Jacqueline—Comedy in Three Acts (Paul Gavault), followed by Theatre Guide and Time Signal.
BREMEN.—See Hamburg.

BRESLAU
325 metres; 1.5 kW.; and **GLEIWITZ**, 253 metres.—6.10 p.m., Talk: Through the Cordilleras in a Motor Car. 6.30, Wilhelm Krämer reads from his own Poems. 7.0, Gramophone Concert: The Concertgebouw Orchestra of Amsterdam, conducted by Willem Mengelberg: Overture, Anacreon (Cherubini); Jeanne Gautier (Violin); Meditation from Thais (Massenet); Symphony Orchestra, conducted by Dr. Frieder Weissmann; Selection from Aida (Verdi); Prof. Emil von Sauer (Pianoforte); Gnomenspiel (Liszt); Symphony Orchestra, conducted by Pietro Mascagni: Overture, The Barber of Seville (Rossini); Andreas Weissgerber (Violin); Zigeunerweisen (Sarasate); Symphony Orchestra, conducted by Dr. Frieder Weissmann; Selection from Tiedland (d'Albert); Prof. Emil von Sauer (Violin); Waltz in A flat, Op. 42 (Chopin); The Odeon Orchestra: March, from Carmen (Bizet). 7.30 (in an interval), Weather for Farmers. 8.0, Talk: Art and the Younger Generation. 8.20, Altwelshersommer—Cantata in Silesian Dia-

lect (Karl Szuka). 9.0, News Bulletin. 9.10, Youth tells its Story—the Life of Young People of To-day. 10.35, Time, Weather, News, Sports Notes and Programme Announcements. 11.0, Talk by Günther Klemm: Experiences at the Gliding Competition on the Rhone. 11.15, Esperanto Talk. 11.25 (approx.), Close Down.

BRUSSELS (No. 1)
1. N.R., 509 metres; 15 kW.—12 Noon, Gramophone Concert. 1.0 p.m., Le Journal Parlé. 5.0, Orchestral Concert conducted by Kumps: Overture, The Thieving Magpie (Rossini); Serenade (Glazunov); The Flight of the Bumble Bee (Rimsky-Korsakov); Fables de La Fontaine (Mouton); Petite Marche (Pierné); Loin du bal (Gillet); Ballet (Lugini). 5.45, Programme for Children on Gramophone Records. 6.15, Talk: Women and Administration. 6.30, Gramophone Concert of Instrumental Music: Accordion: The Gnomes of the Mountain (Eilenberg); Violin: Russian Airs (Wieniawski); Accordion: Waltz, Variations (Paulin); Hawaiian Guitar Solos (Perera): (a) March, Kohala, (b) March, Honolulu, Xylophone: Lang, lang ist's her (Dittlich); Violin: Zapateado (Sarasate); Cello: Arlequin (Popper); Bagpipes: Waltz, Santiago (Corbin); Xylophone: Souvenirs (Kriger). 7.15, Talk for Workers. 7.30, Sports Review. 8.0, Orchestral Concert conducted by Franz André: Liberty March (Kostal); Selection from The Desert Song (Romberg); Waltz, Loin du bal (Gillet); Overture, La Chasse du jeune Henri (Méhul); Saxophone Solo: Foxtrot, The Brontosaurus (Sykes); Any time's the time to fall in love (Elsie Janis-Jack King); Tango, Es kann dein Jüek sein (Halperin); Foxtrot, Viva Bamboula (Closset); Marche du Parti Ouvrier (Weyts-François). 8.45, Talk on Finance. 9.0, Concert relayed from the Casino, Knocke. Soloist: M. Wouters (Songs) and M. Cluytens (Pianoforte): Marche solennelle (Lebrun); Symphonic Poem, Charlot (Poot); Song from La Juive (Halévy); Rhapsody in Blue (Gershwin); Songs: (a) Air from The Magic Flute (Mozart), (b) Le pas d'armes du Roi Jean (Saint-Saëns); Italian Caprice (Tchaikovsky). After the Programme, Le Journal Parlé and Gramophone Concert of Dance Music. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)
N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Gramophone Concert of Light Music. In the interval at 1.0, Le Journal Parlé. 5.0, Orchestral Concert: Overture, Morning, Noon, and Night (Suppé); Waltz, Gold and Silver (Lehar); Fantasia on the Works of Padilla; Roses of Picardy (Haydn Wood); The Musical Box (Armandola). 5.45, Programme for Children. 6.30, Gramophone Concert: March from Aida (Verdi); Bolero (Ravel); Humoresque for Cello (Jongen); Three O'Clock in the Morning (Robledo); España (Waldteufel); Pot-

pourri of Viennese Waltzes. 7.10, Announcements. 7.15, Talk. 7.30, Talk for Women. 8.0, Concert by the Station Symphony Orchestra, conducted by Kumps: Suite, Kermesse brabantonne (Sarf); Mennet gothique (Boëllmann); Suite (Massenet); Songs: Persian Dances (Gruaid). 8.45, Talk: The Work of St. Raphael. 9.0, Concert (contd.), Malagena (Moszkovsky); Overture, Le Fila du Mandarin (Cui); Selection from Hansel and Gretel (Humperdinck); Songs; Movement No. 1 from the Unfinished Symphony (Schubert-Wagner); Melody from Rienzi (Wagner). 9.55, Evening Prayer. 10.0, Le Journal Parlé. 10.10, Extracts from The Barber of Seville—Opera (Rossini) on Gramophone Records. 11.0 (approx.), Close Down.

BUCHAREST
394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Romanian Music by the Dinco Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Orchestral—Concert (contd.). 6.0, Educational Programme. 6.40, Popular Music on Gramophone Records. 7.0, Time Signal. 7.1, Concert by the Station Orchestra. Conductor: Carlo Brunetti. Concerto for String Orchestra (Bivaldi); Nocturne (Martucci). 7.30, Talk. 7.45, Song Recital by Mme. M. Kozenn. 8.10, Concert (contd.): Serenade for Strings (Wolf-Ferrari); Petite Suite (Debussy); Tarantella (Castaldi). 8.45, News Bulletin.

BUDAPEST
550 metres; 18.5 kW.—Programme also relayed on 210 metres from 7.30 to 12 Midnight.—4.0 p.m., Light Music on Gramophone Records. 5.15, Reading. 5.45, Orchestral Concert. Conductor: Stefan Bertha. Rhapsody No. 6 (Liszt); Melody from Schön ist die Welt (Lehar); Ruralla Hungarica (Dohnányi); Aforizmen (Szendy); Minuet (Farkas); Song (Szabados); Song (Karpáth); Russian Song and Cossack Dance (Paksy); Fata Morgana (Dienzi). 7.0, Talk: The Age of Napoleon. 7.30, Tarogato Recital of Hungarian Folk Songs by Stefan Lugossy. T. Polgar at the Pianoforte. 8.0, Comedy (Andor Nyary). After the Programme, a Concert of Chamber Music. Soloists: Nikolaus Rozsa (Pianoforte), J. Kerpely (Cello) and T. Polgar (Pianoforte). Duet for Pianoforte and Cello (Rosza); Cello Sonata, Op. 4 (Kolady), followed by Gypsy Music by the Nador Sovanka Orchestra from the Café Baross.

CASSEL.—See Frankfurt.

COPENHAGEN
281 metres; 0.75 kW.; and **KALUNDBORG**, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., Weather Forecast. 12.7, String Ensemble Concert, relayed from the Bellevue Strandhotel. 2.0 to 2.40, Interval. 2.40, Norwegian Songs by Ellen Palle Andersen: Februar-morgen ved Golfen (Alnaes); Dulgt Kaer-

lighed (Lasson); Sövnén (Kjerulf); Venetian Serenade (Svendsen); Der skreg en Fugl (Stinding); Ein Traum (Grieg). 3.0, Orchestral Concert, relayed from the Ritz Restaurant. 5.0, Programme for Boys. 5.40, Exchange and Fish Market Prices. 5.50, Talk: The History of Potatoes. 6.20, English Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.16, Talk in German on Psychology. 7.45, Danish Lesson. 8.10, Orchestral Concert of Old Operetta Music: Overture, Prinz Methusalem (Joh. Strauss); Waltz from Der arme Jonathan (Müllöcker); Selection from Les Brigands (Offenbach); Overture, Le Petit Duc (Lecocq); Selection from The Mikado (Sullivan); Overture, Banditenstreichele (Suppé). 9.10, Danish Songs by Viggo Larsen: Songs (Weyse): (a) Hvor Bølgen larmer højt fra S6, (b) Der er et Land, det Sted er højt mod Norden; Jylland mellem tvend Have (Heise); Langt højere Bjerge saa vide paa (Zinck). 9.25, Reading (Kjerulf). 9.45, News Bulletin. 10.0, Orchestral Concert of Contemporary Danish Music: Symphony No. 2, Hellas (Simonsen); Prelude and Chanson for Flute and Cello (Hye-Knudsen); Sonata Op. 10 in G Minor for Violin and Pianoforte (F. Henriques). 11.0, Dance Music from the Nimb Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (approx.), Close Down.

CORK.—See Dublin.
CRAWOW
312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and Programme Announcements. 7.35, Radio Journal. 7.45, Talk: Fungii. 8.0, Concert: Mme. J. Ilnicka (Songs), Mme. Sacewics (Pianoforte), T. Hofman (Pianoforte), and F. Nerychlo (Oboe). Pianoforte Solo: Toccata and Fugue in D minor (Bach-Busoni); Two Songs (Pergolesi): (a) Ariette, (b) Nina; Rondo for Oboe (Haydn); Two Songs (Scarlatti): (a) O cessate di piagarmi, (b) Le violette. Pianoforte Solos: Four Airs (Schumann). Oboe Solo: Andantino (Kröber). Songs: (a) Serenade (Toselli), (b) Air (Mascagni). Oboe Solos: (a) Romance (Reger), (b) Salut d'amour (Elgar), (c) Romance (Köhler). Songs: (a) Air (Curtis); (b) Musica proibita (Gastaldon). Pianoforte Solos: (a) Conte in B minor (Medtner), (b) Prelude in G minor (Rachmaninov). 9.20, Concert from Warsaw. 9.50, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.
DRESDEN.—See Leipzig.

DUBLIN
Call 2RN, 413 metres, 1.2 kW.; and **CORK**, 224.4 metres.—1.0 to 2.30 p.m., Time Signal Stock Report, Weather Forecast, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, French Dialogue. 7.45, Talk. 8.0, Selections by the Station Sextet. 8.30, Contralto Solos by Ellis Denn. 8.45, The Good Companions. 9.15, Tenor Solos by J. C. Flood. 9.30, Sponsored Programme. 10.30, Time Signal, News Bulletin, Weather Report, and Close Down.

FECAMP
223 metres; 10 kW.—10.0 p.m. to 1.0 a.m., (Friday), Programme in English by the I.B.C. 10.0 p.m., Concert of Dance Music by the Ibcclians; Them there Eyes; Beyond the Blue Horizon; Every Day away from You; My Sweet Virginia; Dreaming of my Indiana Sweetheart; When the Guards are on Parade; Hawaiian Stars are Dreaming; Must it end like this? I apologize; Just you, just me; Memories of You; Just two Hearts; My Marguerita; Wedding of the Birds; Tie a little String; Moonlight Saving Time. 11.0, Variety Music: The Clock is Playing (Blaauw); Deep Blue Sea (Brewer); Hornpipe (Rosse); Devil's Dance (Peterson); Wedding of the Birds (Peterson); Scherzo from Sylvia (Le Thiere); Liebesfreud (Kreiser); Cuckoo Waltz (Jonasson). 11.30, Song Recital: I hear you calling me (Marshall); Ireland, Mother Ireland (Loughborough); Kitty my Love (arr. Hughes); Little Boy Blue (Nevin). 11.45, Accordion Band: Selections from Congress Dances and Carmen. 12 Midnight, Dance Music by the Ibcclians: Under a Texas Moon; Blue is the Night; Love in a Mist; Gunga Din and his Lute; Blue Pacific Moonlight; Maggie's Cold; H'lo Baby; Mother's Smie; I've never seen a Smile like yours; You can't believe your Eyes; Swanee Shuffle; I wonder Why; Crying for the Carolines; The Dancing Tailor; Marianne. 12.57 a.m. (Friday), I.B.C. Goodnight Melody. 1.0, Close Down.

FLENSBURG.—See Hamburg.
FLORENCE.—See Turin.

FRANKFURT
390 metres, 1.5 kW.; and **CASSEL**, 246 metres.—5.0 p.m., Concert from Stuttgart. 6.15, Economic Notes. 6.25, Talk: Amateur Cinematography. 6.50, Talk: The Great German Wireless Stations and the Areas which they serve, with Special Reference to the South German and South-West German Stations. 7.15, Time, Programme Notes, Weather, and Economic Report. 7.30, Josef Stahli Pianoforte Recital. 8.35, Reading from the Lyrics of Rainer Maria Rilke. 8.50, Programme of Sketches from Lungenberg.

10.15, See Stuttgart. 10.55, Time, Weather, News and Sports Notes. 10.35, Silent Night.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha, in Morse, 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—5.55 p.m., Variety Programme. 6.25, Talk on the Building Trade. 6.55, Exchange Quotations. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20 (from Bremen), Military Band Concert: March on Motives from Beethoven's Piano-forte Concerto in E flat (Wiesprecht); Overture, The Hermit's Bell (Maillart); Selection from the Second Act of The Mastersingers (Wagner); Hungarian Rhapsody No. 1 (Liszt); Corouation March from The Prophet (Meyerbeer); Army March No. 182 (Pietke); Im Biwak (Voigt); Suite, Eine Herbstparade. 9.0, Landscape and Character—A Literary Sequence: (a) The Moor (C. E. Uphoff), (b) Waldpflanzen (Heinrich Hauser), (c) The North Sea Islands (Ingwer Paulsen), (d) The Sea (Alfons Paquet). 10.0, Time, Weather, and Announcements. 10.20, Concert of Dance Music by the Small Station Orchestra: March, Mit vereinten Kräften (Joh. Strauss); Mariana Waltz (Joh. Strauss); Foxtrot, Ich bin verliebt (José); Dance Intermezzo, und Pepita tanzt (Gut. reit); Foxtrot (Floyd); Waltz, A Day in Seville (Waldteufel); Rheinländer, from Der lustige Ehemann (Oscar Strauss); Dance from Anno dazumal (Najock); Waltz, Rote Rosen (Döring); Polka-Mazurka, Tit-Bits (Wittenborn); March, Zum Tanz (Kermbach); Künstlerfest-Quadrille (Larzer); Old Vienna in Song and Dance (Pachernegg); Foxtrot, Immer ist es Eine (Benatzky); Tango, Two Sky-blue Eyes (Raymund); Tanz mit mir den Rumbaschritt (Levant); Classical Dance Airs in Modern Settings (Hildebrandt); March, Jugendfrühling (Blankenburg).

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW; and DANZIG, 453.2 metres.—1.5 to 2.30 p.m., Gramophone Concert: Programme of Strauss Music: Overture, Le Bourgeois Gentilhomme (Richard Strauss); John McCormack; Morgen (R. Strauss); Dusolina Giannini (Soprano); Allerseelen (R. Strauss); Lorelei Rhein-klänge (Johann Strauss, Sen.); Waltz, Künstlerleben (Johann Strauss); The Blue Danube (Johann Strauss); Charlotte Vanconti (Soprano) and Richard Tauber (Tenor): Wer uns getraut, from The Gipsy Barou (Johann Strauss); Delirien-Walzer (Josef Strauss); Dorfschwaiben aus Oesterreich (Josef Strauss); Mazurka, Frauenherz (Josef Strauss); Selection from A Waltz Dream (Oscar Strauss); Selection from The Last Waltz (Oscar Strauss). 4.0, Talk for Young People: Through Germany as a Tramp. 4.30, Concert by the Little Orag Orchestra, conducted by Eugen Wilcken. 5.55, Review of Periodicals. 6.15, Market Prices. 6.30, Agricultural Talk: The Agricultural Machine and the East German Fair. 6.55, Königsberg Composers—Concert by the Little Orag Orchestra, conducted by Eugen Wilcken: Ausstellungen-Festmarsch (Richard Kursch); Erotikon-Suite (Adolf Jensen); Rauschen-Lied (Richard Kursch); Marmeladen Lüttchen (Adolf Jensen); Selection from The Merry Wives of Windsor (Nicolai). 7.55, Weather Forecast. 8.0, See Vienna. 9.45, The Animals' Paradise—Animal Poems and Tales by Francis James, Wilhelm Schmidtbonn, Otto Zoff, Adalbert von Chamisso, and Matthias Claudius. 10.15, News Bulletin.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—7.40 to 9.40 a.m., Programme of the Catholic Radio Society (K.R.O.). 7.40, Gramophone Records of Light Music. 8.55, Interval. 9.40 to 10.40, Programme of the Christian Radio Society (N.C.R.V.). 9.40, Gramophone Records of Popular Music. 9.55, Programme for Invalids. 10.25, Gramophone Records (contd.). 10.40 to 1.40, K.R.O. Programme. 10.40, Variety Music on Gramophone Records. 11.10, Religious Address. 11.40, Police Notes. 11.55, Orchestral Concert, conducted by Joh. Gertsen: March, Wilhelmina (Westly); Overture, The Mikado (Sullivan); Waltz, Etincelles (Waldteufel); Wolfgaister (Leuschner); Overture, Felix the Cat (Kark); Suite, Illys (Ganne); Impression de mai (Siep); Selection from Der Bettelstude (Miltzcker); March (Suppé). 1.40 till Close Down, N.C.R.V. Programme. 1.40, Gramophone Records of Variety Music. 2.40, Talk for Women. 3.10, Interval. 3.40, Programme for Invalids. 4.40, Lesson in Handicrafts for Young People. 5.25, Song Recital by M. Plooyer (Tenor). 6.25, Dressmaking Lesson. 6.40, Talk arranged by the Salvation Army. 7.10, Police Notes. 7.25, News Bulletin. 7.40, Choral and Orchestral Concert: N.E.O. March (Maas); Overture, Poet and Peasant (Suppé); Psalm No. 118; Er ruischt langs de wolken (Swijnsberg); Eere zijt God (Swijnsberg); Cantata, De Maccabeen (Wijgebom). 8.40, Talk. 9.10, Concert (contd.); Melody from Elijah (Mendelssohn); Abendlied (Beethoven); O Gulden

AUGUST 25th **THURSDAY** continued.

Hoofd (Bonset); Jerusalem (Bouset); Spanish Suite, La Verbena (Lacóine); Pieces (Völekerling); Gute Nacht (Abt); Met vaste hand (Wilchers). In the interval at 9.40, News Bulletin.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—Programme of the Algemeene Vereniging Radio Omroep (A.V.R.O.). 7.40 a.m., Time Signal. 7.41, Gramophone Records of Variety Music. 8.40, Concert by the Wireless Chamber Orchestra. 9.40, Time Signal. 9.41, The Daily Service. 9.55, Gramophone Records of Popular Music. 10.10, Violin and Piano-forte Recital; Piano-forte Sonata in E Minor (Grieg); Poem for Violin (Chausson). 10.40, Talk. 11.10, Recital (continued); Piano-forte Solos: (a) Arabesque (Debussy), (b) Concert Etude in A (Godard); Violin Solos: (a) Melody from the Suite, Op. 42 (Tchaikovsky), (b) Prelude and Allegro (Pugnani-Kreisler), (c) Melody (Gluck-Kreisler); Allegro appassionato for Piano-forte (Saint-Saëns). 11.40, Time Signal. 11.41, Concert by Kovacs Lajos and his Orchestra; Songs by Bob Scholte. 1.40 to 1.55 p.m., Interval. 1.55, Viola, Flute, and Piano-forte Recital; Die Obrigkeit ist Gottes Gabe (Bach); Viola and Piano-forte Duets: (a) Se Florindo e fedele (Scarlatti), (b) Plaisir d'amour (Martini), (c) Chamber Cantata (Greber); Prelude and Sarabande for Piano-forte (Debussy); Viola and Piano-forte Duets (Debussy): (a) Les Cloches, (b) Romance, (c) Mandoline; Hungarian Fantasia for Flute (Janacek); Three Pieces for Viola, Flute, and Piano-forte (Stürmer). 2.40, Variety Music on Gramophone Records. 3.40, Programme for Hospitals. 4.40, Talk. 5.10, Recital by Pierre Palla (Organ) and Albert de Boof (Songs), relayed from the Kurhaus, Scheveningen. 6.10, Talk on Sports. 6.40, Recital (continued). 7.10, Violin and Piano-forte Recital; Adagio from the Concerto No. 22 (Viotti); Slav Fantasia (Dvorak-Kreisler); Extase (Thomé); Rondo from the Halfner Serenade (Mozart). 7.40, Time Signal. 7.41, Gramophone Records of Light Music. 8.40, Concert of Old Music by the Station Orchestra, conducted by Nico Treep. 9.10, Orchestral Concert, conducted by Nico Treep; March, Stars and Stripes (Souza); Overture, Si j'étais roi (Adam); Xylophone Trio: (a) Piano-forte Pastimes (Denecke), (b) Maple Leaf Rag (Joplin); Selection from La Vie Parisienne (Offenbach); Greenwich Witch (Confrey). 9.40, Weather and News. 9.50, Concert (continued); Selection from The Barber of Seville (Rossini); Waltz, Künstlerleben (Joh. Strauss); March, The Gladiators' Farewell (Blankenburg); Chinese Street Serenade (Lincke); Selection from The Little Dutch Girl (Kálmán); In a Persian Market (Kettelbey); Jungle Drums (Kettelbey); Russian Mazurka, La. Czarlina (Ganne); Grossmütterchen (Lange); Leuchtkäferchens Stelldichein (Siede); Heil Europa (v. Blon). 11.10, Gramophone Records of Light Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW; and HELSINKI, 368.1 metres.—6.15 p.m., Concert by the Station Orchestra: Overture, Le Domino Noir (Auber); Dance of the Hours (Ponchielli); Canzonetta from a Violin Concerto (Tchaikovsky); Minuet (Bolzoni); Hymn to the Sun (Rimsky-Korsakov). 6.45, Talk. 7.10, Piano-forte Recital. 7.35, Recitations. 8.0, Concert by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Dance Music relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert: Symphony Orchestra, conducted by Dr. Weissmann: Slav Rhapsody, Op. 114 (Friedemann); Edith Lorand and her Orchestra: Waltz, Wiener Bürger (Ziehrer). Herbert Ernst Groh: Hoffmann's Song from The Tales of Hoffmann. Emmy Bettendorf (Soprano) and Herbert Ernst Groh (Tenor): Two Duets from The Tales of Hoffmann (Offenbach). The Parlophone Orchestra, conducted by Otto Dobrindt: Waldteufel-eien (Kling); Gitta Alpar (Soprano); Song from Zur goldenen Liebe (Benatzky); Herbert Groh (Tenor): Waltz, Gold'ne Liebe, from Zur goldenen Liebe (Benatzky); Barnabas von Gezy and his Orchestra: (a) Rondino, Mein Glück (Gilbert), (b) Waltz, Ninna Nanna (Micheli); The Parlophone Orchestra, conducted by Otto Dobrindt: Potpourri, Deutsche Marschperlen (Blankenburg). 12 Noon, Concert from Munich. 1.15, Weather, Announcements, and Time. 1.30, Concert, conducted by Eysoldt: Overture, Jocosia (Clemus); Suite campestre (Scasola); Ein Albulblatt (Wagner); Melody from The Queen of Spades (Tchaikovsky); Scherazade (Schmalstich); March of the Grenadiers (Wiedemann). 2.30, Sponsored Gramophone Concert. 3.30, Economic Notes

and Time. 3.50, Programme for Children. 4.20, Review of French Books. 4.40, Talk on the Rhineland Excavations. 5.0, Recital by Hilde Silberbach (Piano-forte), Anton Maria Topitz (Tenor) and Egbert Grape (Accompanist); Piano-forte Solo, Kinderszenen (Schumann); Tenor Solo, Die Bürgschaft (Schubert); Piano-forte Solo, Arabesque (Schumann); Tenor Solo, Der Alpenjäger (Schubert); Piano-forte Solo, Waldszenen (Schumann); Tenor Solos: (a) Frühlingsgruss (Gauby), (b) Der säumige Landsknecht (Reiter), (c) Im Volkston (Sieg), (d) Und Bonn (Redl), (e) Liebesnacht (Schmalstich), and (f) Das ist mein Wien (Deseey, Junr.). 6.20, Talk: Heresies of Our Day—Fame and Success. 6.45, Weather, Time, Economic Notes, and Sports Results. 7.0, Talk on Economics. 7.20, Topical Talk. 7.30, Talk on Manual Labour. 7.55, News Bulletin. 8.0, Concert by the Small Station Orchestra, conducted by Eysoldt: Musikalisches Täuschungen (Schreiner); Musikalische Neckereien (Worsch); Musikalisches Kunterbunt (Schmalstich). 8.30, Tell the World—A Programme of Humorous Sketches: Herr Pirwitz buys a Violin (Albert Engelskamp); What is a Dilemma? (Hans Kafka); A Pleasant Travelling Companion (Avertschenko); What is Economy? (Hans Kafka); Finances (Rösler); Chopin (Lyk); Sketch (Molnar); The Linguists' Circle (Alexander-Einegg-Ophüls); The Confidential Clerk (Lörinz). 10.5, News Bulletin. 10.20, Concert. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW. and DRESDEN, 319 metres.—6.0 p.m., Medical Talk. 6.15, Talk for Taxpayers. 6.50, The Leipzig Station informs its Listeners. . . . 7.0, Talk: The Leipzig Fair. 7.30, Concert by the Leipzig Symphony Orchestra: Ballet Music from Les petits riens (Mozart); Suite in A Minor, Op. 10, for Violin and Orchestra (Sinding); Serenade for Strings in G Minor, Op. 242 (Reinecke); Intermezzo in G, Op. 5 (Schaub); Romance in A for Violin, Op. 14 (Nicodé); Overture, Der Beherrscher der Geister (Weber). 9.0, What they made of it—Songs, Ballads and Romances on One Theme by Various Known and Unknown Authors of the Goethe Period, arranged as a Radio Sequence by Carl Weber. 10.5, News Bulletin. 10.15 (approx.), Silent Night.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Quintet Concert. 7.0, Talk: Wild Life. 7.30, Talk on Academic Professions. 8.0, Popular Music on Gramophone Records. 8.30, Concert by the Grafika Orchestra. 9.30, Song Recital. 10.30, Time Signal and News Bulletin.

LWOW

381 metres; 16 kW.—7.15 p.m., Miscellaneous Items. 7.35, See Warsaw. 7.45, Talk. 8.0, See Warsaw. 11.0, Popular Music on Gramophone Records. 11.30 (approx.), Close Down.

LYONS

LA DOUA; 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert of Light Music. 7.30, Radio Gazette for Lyons and the South-East. 8.20, Les Mousquetaires au Couvent—Operetta in Three Acts (Varney).

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices, and Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal and Political Review. 11.15 (approx.), Song Recital by Alfredo Roy (Tenor), followed by a Concert by the Municipal Band, conducted by Villa, relayed from Rosales. 1.15 a.m. (Friday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Review of the Week and Answers to Correspondents in English. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—5.15 p.m., Talk: Peasant Art in the Palatinate. 6.35, Agricultural Talk. 6.55, Time Signal, Weather Forecast, and Agricultural Talk. 7.5, Concert of Popular Music on Gramophone Records: Saltarello from the Italian Symphony in A (Mendelssohn); Rondino on a Theme by Beethoven (Kreisler); Ave Maria (Schubert); Air from The Mastersingers (Wagner); Ballad from Des Knaben Wunderhorn (Mahler); Air from La Bohème (Puccini); Aria from A Masked Ball (Verdi); Der heilige Franziskus (Loewe); Air from Il Trovatore

(Verdi). 7.40, Talk for Cyclists. 8.0, (from Garmisch), Orchestral Concert. 9.5, Herbert Hassenkamp reads from his own Short Stories. 9.35, Rocco and Crinoline Programme, by Elsa Laura von Walzogen and the Groppe Sisters (Guitar Duets). 10.20, Time Signal, Weather Forecast, News Bulletin, and Sports Notes.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.5 metres; Hamar, 550 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—6.0 p.m., Light Music on Gramophone Records. 6.30, Divine Service. 7.0, Announcements, Weather Forecast and News Bulletin. 7.30, Morther Ringard reads from his own Works. 8.0, Time Signal. 8.2, Agricultural Talk. 8.30, Song and Piano-forte Recital by Mme. Sossen Niegisch (Songs) and M. Ewald Niegisch (Piano-forte); Songs: (a) It was a Dream (Sibelius); (b) La forêt qui dort (Alfven); (c) La mélodie de la jeune fille (Palmgren); (d) Chant d'été (Kjerulf); Suite for Piano-forte, Carnaval des enfants; (E. Niegisch); Four Songs (Niegisch). 9.15, Talk: The Reminiscences of an Oslo Boy. 9.40, Weather Forecast and News Bulletin. 10.0, Topical Talk. 10.15, Concert by the Station Orchestra; Conductor, H. Kramm; Overture, Queen for a Day (Adam); Selection from Les Cloches de Conzeville (Planquette); Cavatina (Raff); Ro'za Czardas (Hubay); Romance d'amour (Arenszy); Sæterjentens Søndag (Ole Bull); Schön Rosmarin (Kreisler); Kleiner Wiener Marsch (Kreisler). 11.15, Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—8.0 p.m., Announcements, Agricultural Report and Giornale Radio. 8.20, Gramophone Records of Variety Music. In the interval at 8.30, Time and Announcements. 8.45, Concert: Overture, The Armourer (Lortzing); Two Blue Eyes (May); Intermezzo from Graziella (Malvezzi); Intermezzo (Casadesu); Wine, Woman and Song (Strauss); Oriental Intermezzo, Ronda bleu (Manno); Selection from La dama verde (Ferrarese); Theatre Notes. 10.0 (approx.), Extract from Madama di Tebe—Opera (Lombardo). 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)—6.45 p.m., Talk. 7.0, Le Journal Parlé. 8.20, Weather Report. 8.30, Orchestral and Vocal Concert; Soloists: M. Brailowsky (Piano-forte), Jack Mirois (Songs), and M. Champeil (Violin). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—7.0 p.m., News Bulletin and Press Review. 7.5, Sponsored Talk. 7.15, Light Music on Gramophone Records. 8.30, Journal Parlé and News. 8.45, Concert: Overture, Morning, Noon, and Night (Suppé); Waltz, Les Roses (Métray); Selection from Les Violettes au couvent (Varney); Minuet (Moszkowsky); Serenade, Granada (Albeniz); March parisienne (Ganne). 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records: Selection from Scaramouche (Messager); Selection from La Navarraise (Massenet); Castilian March (Kries); Sarabande (Furond). 8.0, Press Review and Weather. 12 Noon, Protestant Address. 12.30 p.m., Music interpreted by Children—Gramophone Concert: Choral Selections: (a) Triste est mon âme (Grocé), (b) Allons gay gay Bergères (Costeley); Piano-forte Solos by Giocasta Kusrow Corma: (a) The Harmonious Blacksmith (Handel), (b) Mazurka (Chopin); Old Carol, Bergers, tous à genoux, by La Cantoria Choir; Song from Das Nachtlager in Granada (Kreutzer); by the Hofburg Children's Choir of Vienna; Recitations by Micheline Masson (aged five): (a) Le Poulet et le Renard (Ratisbonne), (b) C'est le vent (Boyer), (c) Pataud (De-lange); Piano-forte Sonata in G (Mozart-Grieg); by Carlos and Giocasta Kusrow Corma; Violin Solos by Jehudi Menuhin: (a) Spanish Song (Samazeuilh), (b) Adagio from the Concerto in G (Mozart), (c) Allegro (Piacco); Choeur des Gamins, from Carmen (Bizet); by the Choir of the Opéra-Comique; Potpourri of Christmas Carols, by the Bakulé Children's Choir. In the intervals at 1.0, Exchange, News, and Weather, and at 1.30, Exchange. 3.45, Exchange and Market Prices. 4.30, Concert relayed from the American Conservatoire, Fontainebleau. 6.30, Market Prices, Weather, Agricultural Report, Talk, and Racing Results. 7.0, Gramophone Concert: Variations (Proch); Aria from Fidelio (Beethoven); Mascarade (Lacóine); Prelude for Piano-forte (Rachmaninov); Les oies de Lauterbourg (Hüe); Humorous Sketch, with Music, La chaîne (Daniderf); Carolina Moon (Burke). 7.45,

AUGUST 25th

THURSDAY

continued.

Commercial Prices and News. 8.0, Happiness—Play (Karen Bramson). In the intervals at 8.30, News, Sports News, Weather, and Review, by Dominique Bonnaud. 9.15, Press Review and News. 9.30, French Opera from 1880-1920, Gramophone Concert: Ballet Music and Arias from *Hérodiade* (Massenet); Aria from Henry VIII (Saint-Saëns); Aria from Le Cid (Massenet); Melodies from Sigurd (Reyer); Cantabile from *Patrie* (Paladilhe); Legend from *Gwendoline* (Chabrier); Aria from Ascanio (Saint-Saëns); Introduction and Aria from Samson and Delilah (Saint-Saëns); Aria from *Thais* (Massenet); Symphonic Entr'acte from *Messidor* (Bruneau); Two Arias from *Grisélide* (Massenet); Ballet Music from *Marouf* (Rabaud).

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.35, Market Reports. 9.45, KDKA Artists Bulletin. 9.47, Programme Announcements. 9.50, David Lawrence Dispatch. 9.55, Teaberry Baseball Scores. 10.0, Silhouettes. 10.30, Singing Lady, from New York. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day. 11.6, Teaberry Sport Review. 11.11, Press News-Reeler. 11.14, Weather Report. 11.15, KDKA Kiddies' Klub. 11.30, Westinghouse Musical Maids. 11.45 to 1.15 a.m. (Friday), New York Relay. 1.15, Today's News, by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Royal Vagabonds. 12.30, The Stebbins Boys. 1.0, Time Signal and Regimentalists. 1.15, Programme to be announced. 1.30, Rin Tin Tin Thrillers, from New York. 1.45, Programme to be announced. 2.30, Thompkins Corner. 3.0 to 4.0, New York Relay. 3.0, The Country Doctor. 3.15, Absorbine, Jr., Footnotes. 3.30, Object Matrimony. 3.45, Jane Froman and her Band. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last-minute News Flashes. 4.20, Songs in French Manner (Diane Laval). 4.30, Jack Pettis and his Orchestra. 5.0, Clyde Morse and his Dance Orchestra, from New York. 5.30, Time Signal and Good Night.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—7.0 p.m., Agricultural Talk. 7.15, Announcements and News Bulletin. 7.35, See Warsaw. Popular Music on Gramophone Records. 7.58, Time Signal. 8.0, Song Recital by Zofia Zmigrod-Fedyckovska (Soprano): Two Arias from *Manon* (Massenet); Two Songs from Turandot (Puccini); Aria from *Faust* (Gounod); Air from *Louise* (Charpentier). 8.30, Pianoforte Recital by Marja Szczerbinka: Prelude in G Minor (Rachmaninov); *Etude* (Pachulski); Pieces (Szczerbinka): (a) Rondo in G, (b) Polonaise. In the intervals, Theatre Guide and Programme Announcements. 8.50, Popular Music on Gramophone Records. 9.20, Concert from Warsaw. 9.50, See Warsaw. 9.55, Time Signal, Sports Notes and Police Report.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Geneva), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5, Variety Programme. 1.20 (from Geneva), Gramophone Records (cont'd.). 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, Concert by a String Orchestra, conducted by M. Robert Echenard. 5.45 (from Geneva), Interlude. 6.15, Concert (cont'd.). 6.45, Programme for Children. 7.0, Weather Forecast. 7.1 (from Lausanne), Film Review. 7.25 (from Lausanne), Report of the Swiss Peasants' Union. 7.30 (from Geneva), Theatre Notes. 8.0 (from Geneva), Variety Programme. 9.0, Concert by the Station Orchestra. 10.0, News Bulletin and Weather Forecast. 10.15, Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.0 a.m., Weather Report. 5.0 p.m.—Weather Report. 8.30, Weather Report. 8.40, Music by the Radio Trio. 9.0, Chimes and Gramophone Records of Music by Mendelssohn. 9.30, News Bulletin.

RIGA

525 metres; 15 kW.—5.30 p.m., Popular Music. 6.0, Talk on Wireless. 6.30, Talk. 7.0, Weather Report. 7.3, Orchestral and Vocal Concert of Czech Music. 8.0, News. 8.20, Concert of Light Music. In the interval, at 9.0, Weather Report. 9.30, Concert of Popular Music. 10.0 (approx.), Close Down.

RJKAN.—See Oslo.

ROME

Call 1R0, 441 metres; 50 kW. Relayed by Naples, 319 metres, and 2R0, 25.4 metres.—8.15 to 8.30 a.m., Giornale radio. 12.30 to 2.15 p.m., Weather and Gramophone Concert of Variety Music. In the intervals at 1.15, Giornale radio, and at 1.30, Time and Announcements. 5.0, Exchange Quotations. 5.5 (Naples), Programme for Children. 5.25, Giornale radio and Announcements. 5.30,

Vocal and Instrumental Concert. Soloist: Cesarina Buonera (Pianoforte), Horosina Fosari (Violin), and Velia Capuano (Soprano). Pianoforte Solos (MacDowell): (a) The Eagle, (b) The Brook, (c) Moonlight, (d) Winter. Soprano Solos: (a) Aria from *Martha* (Flotow), (b) Singing in the Rain (Brown), (c) Arias from *L'étoile du nord* (Meyerbeer). Pianoforte Solos: (a) Tempo di minuetto (Zanella), (b) Punctinello (Rachmaninov). Violin Solos: (a) Sesta (Bossi), (b) Piece in Habanera Form (Ravel). Soprano Solo: Polonaise from Mignon (Thomas). 7.10 (Naples), Shipping and Sports Notes. 7.15, Agricultural Notes, Announcements, and Giornale radio. 8.0, Time, Announcements, and Gramophone Records of Light Music. 8.30, Talk for the Housewife, Sports Notes, Announcements, and Tourist Report. 8.45, Symphony Concert conducted by Rito Selvaggi. In an interval from 9.30 to 10.15, A Comedy.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Musical Comedy Hits from New York. 9.30, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15, Paul Whiteman's Rhythm Boys, from New York. 10.30, Bosco Children's Programme. 10.45, Swanee Serenaders from New York. 11.0, Joe and Eddie. 11.15, Nimble Fingers. 11.30, New Kenmore Orchestra. 11.55, Baseball Scores. 12 Midnight, Cost of State Government Series. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Friday), Chandu, the Magician. 12.30 to 4.15, New York Relay. 12.30, Ray Perkins (Barbasoloist). 12.45, The Goldbergs. 1.0, Fleischman Hour. 2.0, Musical Programme. 2.30, G. Washington Coffee Concert Orchestra. 3.0, Lucky Strike Dance Hour. 4.0, Russ Columbo and his Orchestra. 4.15, Floyd Walter (Organist). 4.45, till Close Down, New York Relay. 4.45, Paul Whiteman's Orchestra. 5.0, Ralph Kirbery (Dream Singer). 5.5, Don Bestor and his Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres, 60 kW.; BASEL, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Songs from Sound Films and Operetta Music on Gramophone Records. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30 (from Zürich), Talk for Women: Autumn Fashions. 4.0, Concert by the Small Station Orchestra. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Basle), Talk: Music from the Five Continents. 7.0, Time Signal, Weather Forecast, and Traffic Report. 7.15 (from Basle), Italian Lesson. 8.0 (from Basle), Concert of Hunting Music and Songs by the Breite Male Voice Choir. 9.30, Weather Forecast and News Bulletin. 9.45, Late Concert by the Station Orchestra. 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 170 metres; and Sundsvall, 542 metres.—5.5 p.m., Service relayed from Gävle, 204 metres. 5.30, Gramophone Records of Light Music. 6.30, Reading. 7.0, Variety Music on Gramophone Records. 7.15, Weather and News. 7.30, Talk: The Herrnhüter, a Branch of the Moravian Brethren. 8.0, Orchestral Concert. Soloist: Gustav Rôdin (Songs); Serenade No. 9 in D (Mozart); Songs (Mozart) from (a) *Così fan tutte*, (b) *The Magic Flute*; Selection from *Aida* (Verdi); Songs (Wagner): (a) Two Songs from *Lohengrin*, (b) Song from *The Valkyries*; *Marche aux flambeaux* (Meyerbeer). 9.15, Talk relayed from Malmö (231 metres). 9.45, Weather and News. 10.0 Organ Recital by David Wikander with Fritz Ahlberg (Violin) and Ebba Höfeldt-Larka (Songs); Warum betrübst du dich, mein Herz (Scheidt); Violin Solos: (a) *Adagio* (Ries), (b) *Berceuse* (Arensky), (c) *Romance* (Wagner-Wilhelm); Three Choral Preludes (Buxtehude): (a) Ach Herr, mich armen Sünder, (b) Vater unser im Himmelreich, (c) Lobt Gott, ihr Christen allzugleich; Songs: (a) *Arioso* (Händel), (b) *Agnes Dei* (Bizet), (c) *Hymn* (Söderman), (d) *Lovoffer* (Josephson); Choral Prelude, *Wer nur den lieben Gott lässt walten* (Bach); *Fugue on The Magnificat* (Bach). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light and Classical Music. 12.45 p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Concert, relayed from Bordeaux-Lafayette. 1.50, Light Music on Gramophone Records. 2.0, Programme for Children. 3.0,

Quintet Concert, relayed from Paris, Radio Colonial (19.68 metres). 4.0 to 4.45, Interval. 4.45, Elocution Lesson in French. 5.0, Orchestral Concert, conducted by M. Roskam: *Marche printanière* (Mouton); Air de ballet (*Overture*); *L'âne blanc* (Hiie); Comedy *Oberture* (Lincke); *Waltz* (Fétras); Selection from *Flup* (Szulc); Dance (Gretchaninov); *Nocturne*, *Un soir sur l'Estérel* (Dorciné); *Puppentanz* (Leopold); Selection from *Là-Haut* (Yvain). 6.0, Talk in French: Automobile Insurance. 6.15, French Lesson in German. 6.30, Light Music on Gramophone Records. 7.30, Time Signal. 7.31, News in French and German. 7.45, Gramophone Concert: Selection from *Lilac Time* (Schubert); *Bonsoir Madame la lune* (Bessière); Song; (Tagliaterra); *On the Lake* (Bories); Dance of the Shadows (Golden); The Women in the Shoe (Freed); *Espanita* (Rosy); Selection from *The Blue Angel* (Holländer); *I'm in the Seventh Heaven* (de Sylva-Brown-Henderson); *Paris qui brille* (Mahieux); *Barcelona* (Warms); *Tes yeux* (Roglioli); *Histoires de Poupées* (Boyer); *Republica* (Napolitano); *Oscar* (Warms). 8.30, I Pagliacci—Opera in Two Acts (Leoncavallo), followed by *La Rose de Saint-Flour*—Operetta in One Act (Offenbach).

STUTTGART

MUHLACKER; 360.5 metres; 60 kW.; and FREIBURG, 570 metres.—10.0 a.m., Gramophone Concert: *Symphony No. 8* (Beethoven); *Concerto in D. No. 4* (Mozart). 11.0, Time, Weather and News. 11.15 to 11.55, Sponsored Concerts. 11.55, Weather Forecast. 12 Noon, Orchestral Concert, conducted by Gustav Görlich. Soloists, Oskar Wolf (Flute), Richard Klönhammer (Flute), and Napoleone Flügel (Flute). *Overture*, Princess Rosina (Lincke); Selection from *The Goldsmith of Toledo* (Offenbach); *Trio for Three Flutes* (Fürstenau); *Potpourri*, *Telefunken* (Morena); *Waltz*, *Hochzeitslieder* (Eduard Strauss); *Intermezzo*, *Rosenzeit* (Manfred); *March*, *Freue Waffengeführten* (Blankenburg). 1.15 p.m., Time, Weather, News, and Programme Announcements. 1.30, Gramophone Concert of Instrumental Music: *Wien bleibt Wien* (Schrammel); *Die guten alten Zeiten* (Josef Strauss); *Auf meiner Liebingsharmonika* (Dietrich); *Waltz from Coppélia* (Delibes); *Two Duets*; *Zugspitz-Ländler*; *Reischhammer Ländler*. 2.0 to 2.30, Sponsored Concert. 3.0, Programme for Young People. 4.0, Concert of Light Modern Music, conducted by Eschrich, relayed from *Widabay*; *Intermezzo*, *In a Monastery Garden* (Keltbey); *Japanische Gesichte—Five Pieces for Orchestra*, after Dauthendey (Fritz Holzward); *Bal paré*—*Waltz Fantasia* after Reznicek (Theo Rupprecht); *Serenade for Harp and Orchestra* (Rypinski); *Scheherazade* (Schmalstich); *Intermezzo*, *Zigeuner* (Königsberger); *Potpourri*, *Fünf Uhr Tee bei Robert Stolz* (Dostal). 5.0, Orchestral Concert, conducted by Gustav Görlich. Soloist, Gertrude Probst (Contralto); *Two Sixteenth Century Intradas* (Hassler); *Prelude*, *Il Giuramento* (Mercadante); *Contralto Solos*: (a) *Tu non sai*, from *Ottone*, (b) *Pena tiranna*, from *Amadigi* (Handel); *Der Kampf der menschlichen Leidenschaften* (von Dittersdorf); *Old Dance Music*. 6.15, Time, Weather, and Agricultural Notes. 6.25, Talk: Matter and Energy. 6.50, Talk: The Grotesque in Music. 7.15, Time and Weather. 7.17 (approx.), (from Mannheim), Report of the South-West German Produce Market. 7.30, Readings from *The Treasure of the Sierra Madre* (Traven). 8.0, Pianoforte Recital from Frankfurt. 8.35, Gramophone Records of Caruso. 8.50, Programme from Langenberg. 10.15, Topical Report: The British Imperial Conference in Ottawa. 10.55, Time, Weather, News, Programme Announcements, and Silent Night for Distant Reception.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI; 385 metres; 8 kW. 5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Dance Music. 5.45, Opera Music: *Airs from* (a) *Prince Igor* (Borodin), (b) *Faust* (Gounod), (c) *Le Jongleur de Notre Dame* (Massenet), (d) *Lohengrin* (Wagner), (e) *I Pagliacci* (Leoncavallo), (f) *Carmen* (Bizet), and (g) *Cavalleria rusticana* (Mascagni). 6.15, Vocal Tangos. 6.30, Exchange Quotations and Horse Racing Results. 6.45, Orchestral Music. 7.0, Light Music. 7.15, Orchestral Concert: *Melody from A Midsummer Night's Dream* (Mendelssohn); *Fête polonaise* (Chabrier); *Waltz Potpourri* (Robrecht); Selection from *Faust* (Gounod); *Waltz*, *Frühlingstimmen* (Joh. Strauss). In the interval at 7.30, News Bulletin. 8.0, Concert: *Airs from* (a) *Werther* (Massenet); (b) *I Pagliacci* (Leoncavallo); (c) *Les Dragons de Villars* (Maillart), and (d) *Lakmé* (Delibes); *Military Music*. 8.30, Accordion Solos. 8.45, Sound Film Music. 9.0, Concert of Operetta Music. *Airs from* (a) *Rip van Winkle* (Planquette), (b) *Véronique* (Messenger), (c) *Les Cloches de Corneville* (Planquette), (d) *The Merry Widow* (Lehar), (e) *Les Noces de Jeannette* (Masset), (f) *La Mascotte* (Audran), (g) *Les Dragons de Villars* (Maillart), (h) *La Basoche* (Messenger), (i) *Ciboulette* (Hahn), and (k) *La Fille de Madame Angot* (Lecocq).

10.0, Dance Music. 10.30, North African News. 10.45, Solo Selections. 11.0, Light Music. 11.30, Mozart Concert: *Eine kleine Nachtmusik*; German Dances. 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.0 p.m., Quintet Concert: *Del Albaicin* (Lucchesi); *Melody* (Marbot); *Russian Airs* (Weninger); *Die guten alten Zeiten* (Strauss); *Air* (Leopold); Selection from *Der Orlov* (Granchstaedten); *Ricordi* (Allegro); *Melody* (Raymond). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.0 p.m., Musical Programme: *Overture*, *The Thieving Magpie* (Rossini); *Il sogno* (Catalani); *Turkish March* (Mozart). 7.20, Time and Announcements. 7.30, Light Music on Gramophone Records. 8.0, Giornale Radio and Weather. 8.20, Talk for Housewives. 8.30, *Anima allegro—Opera in Three Acts* (Vittadini). In the intervals, Talk and Literary Notes; *Giornale radio* after the Opera.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in French. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453 metres; Linz, 246 metres; and Salzburg, 218 metres.—5.55 p.m., Talk: The Vienna Autumn Fair—*Fata Morgana*, or a Promise of a Better Future? 6.5, Talk: Two Thousand Three Hundred Kilometres through the Austrian Alps in a Motor Coach. 6.30, Weekly Microphone Feuilleton—Husbands in the Shade. 7.0, Talk: The German Colony in Bessarabia. 7.25, Time, Weather, and Programme Announcements. 7.35, Erik Wickenburg reads from his own works; Introductory Talk by Erwin Weill. 8.0, The Salzburg Festival, 1932—Ninth Concert by the Vienna Philharmonic Orchestra, relayed from the Festspielhaus; Conductor: Bruno Walter. The Unfinished Symphony (Schubert); The Fifth Symphony in E flat (Bruckner). 9.40, News Bulletin. 10.0, Wind Instrument Concert of Light Music; *March*, *Der Heimat zur Ehr* (Erwin Skrabka); *Overture*, *Banditenstreiche* (Suppe); *Mäthildens-Wasser* (Mühlberger); Selection from the Ballet *Excelsior* (Marengo); *Gavotte*; *Der Weg zum Herzen* (Paul Lincke); *Romance No. 2* (Richter); *Ein Wiener Mädel*, ein Wiener Lied (Victor Flemming); *Potpourri*, *Rund um den Stefansturm* (Hans Kolbe); *Descriptive Piece*, *Frohe Heimkehr* (Robert Starn); *Witches' Chorus* from *Cleopatra* (Ziehrer); *Potpourri*, *Johann Strauss Klänge* (Hans Kliment); *Overture*, *Die Landstreicher* (Ziehrer); *Intermezzo*, *Der kleine Soldat* (Zdenko Bayer); *Waltz*, *Fideles Wien* (Komzak); *Polka*, *Tambour piccolo* (Ludwig); *March*, *Felsenfest* (Rektenwald).

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Gramophone Concert (cont'd.). 2.10, Interval. 3.0, Economic Report. 3.10, Variety Music on Gramophone Records. 3.30, Miscellaneous Announcements. 3.35, Popular Music on Gramophone Records. 4.35, Announcements. 4.40, Book Review. 4.50, Violin and Pianoforte Recital by Vera Neumark (Pianoforte) and St. Frydberg (Violin). Pianoforte Solos: (a) *Sonata in A Minor* (Haesler), (b) *Tocatta* (Paradisi), (c) *Theme with Variations* (W. Fr. Bach). Violin Solos: (a) *Air* (Bach), (b) *Träumerei* (Wagner, arr. Auer), (c) *Nocturne*, Op. 27 (Chopin, arr. Auer), (d) *Fantasia on Themes from Halka* (Moniuszko, arr. Vieuxtemps). Pianoforte Solos: (a) *Four Pieces* (Mendelssohn), (b) *Scènes de Vienne* (Schubert-Liszt), (c) *La cage de cristal* (Ibert), (d) *Le petit âne blanc* (Ibert), (e) *Chanson du soir* (Moniuszko-Meleer). Violin Solos: (a) *Monks' Choir* (Paganini), (b) *The Cuckoo* (Daquin-Manen), (c) *Die Biene* (Schubert). 6.0, Talk: Constructive Industry in Poland. 6.20, Light Music and Dance Music from the Café Adria. 7.15, Miscellaneous Announcements. 7.35, Radio Journal. 7.45, Agricultural Notes. 7.55, Programme Announcements. 8.0, Concert of Light Music by the Warsaw Philharmonic Orchestra. Conductor, Nawrot; *Egyptian March* (Joh. Strauss); *In a Japanese Garden* (Higgs); *Waltz*, *Gold and Silver* (Lehar); *On the Mediterranean* (Jalowicz); *Melody from Queen for a Day* (Adam); *Wedding of the Dragonflies* (Barrow); *Fête à Seville* (Taran); *Waltz*, *Wiener Frauen* (Joh. Strauss); *Mazurka* (Kurpinsky). 9.50, Radio Journal. 9.55, Weather Forecast. 10.0, Dance Music. 11.30 (approx.), Close Down.

WILNO

563 metres; 16 kW.—7.15 p.m., Talk on Music. 7.35, See Warsaw. 7.45, Programme Announcements and Miscellaneous Items. 8.0, See Warsaw. 1.30 (approx.) Close Down.

ZURICH.—See Schweizerischer Landessender.

BARCELONA

RADIO-BARCELONA, Call EA31, 349 metres; 8 kW.—8.0 p.m., Trio Concert: Minuet from *Manon* (Massenet); Chanson d'amour (Buré); Selection from *Hérodiade* (Massenet); March (Blokland). 8.30, Exchange Quotations, Weather Forecast, Request Gramophone Records and News. 10.0, Chimes, Weather Forecast. Talk for Sailors' Families, and Market Prices. 10.10, Concert by the Station Orchestra: March, The Call to Arms (Siede); Selection from *Las dos princesas* (Caballero); Waltz, *Tout Paris* (Waldteufel); Berceuse, *Ma poupée chérie* (de Séverac); Gavotte (Königsberger); Prelude No. 4 (Chopin). 11.0, Literary and Musical Programme, by Angel Pons y Guitart (Readings) and Juan Gibert Camins (Piano-forte): Mazurka, Op. 41, No. 2 (Chopin); Granada (Albeniz); Cants Magics (Mompou); Sonatina (Camins). 11.30, Choral Concert, conducted by Pedro Jorda. 12.30 a.m. (Saturday), Light Music on Gramophone Records. 1.0, Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.5 p.m. (approx.), Gramophone Concert of Stravinsky Music and Songs by Caruso, followed by Second Weather for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Mozart Concert on Gramophone Records, relayed from Berlin (Witzleben). 3.0, Talk for Girls: The Life of Weber. 3.30, Weather and Exchange. 3.40, Talk for Young People on Natural History. 4.0, Review of Educational Books. 4.30, See Leipzig. 5.30, Dialogue on Theatre Reform. 6.0, Illustrated Talk: Old Cello Sonatas. 6.30, Talk: German Forests and German Industry. 6.55, Weather for Farmers. 7.0, Topical Talk. 7.15, Talk for Veterinary Surgeons. 7.35, Talk for Workers: World Forces of the Earth—Gold; followed by Weather for Farmers. 8.0, Programme from Berlin (Witzleben). 9.15, See Frankfurt. 10.30, Weather, News and Sports Notes, followed by Dance Music from Berlin (Witzleben). 12.30 a.m. (Saturday), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.30 p.m., Orchestral Concert, relayed from the Radio Exhibition: March, *Graf Zeppelin* (Teike); Jubel-Ouverture (Flotow); Waltz Gold and Silver (Lehar); Selection from *The Prophet* (Meyerbeer); Mazurka, Ein Leckerbissen (Wittehorn); March, *Manöverbilder* (Wochlert); Selection from *Der Obersteiger* (Zeller). 5.30, Talk: The City and its Inhabitants—the Medieval City Republic. 5.55, Franz Taut reads from his own works. 6.25, Review of New Books. 6.35, Wireless Talk: The Listener and his Set. 6.50, Labour Market Report. 6.55, The Witzleben Station informs its Listeners. . . . 7.0, Topical Talk. 7.10, Talk: Plastic Art. 7.20, Talk: The Provincial Theatre. 7.40, Topical Programme. 7.55, Hints for the Week-end. 8.0, Concert of Folk Music, Instrumental and Choral, by the Berlin Choral Society and the Mandoline and Lute Orchestra, conducted by Willy Wandelt, relayed from the Radio Exhibition: Overture, *The Devil's Plaything* (Machiocci); Selection from *Rigoletto* (Verdi); Suite, *Eine Nacht in Venedig* (Henze, Sen.); Choral Selections: (a) Scottish Folk Song, Robin Adair (arr. Zandl), (b) Süsser Liebe, liebt den Mai (arr. Slicher), (c) Uebermuth (arr. Wohlgenuth), (d) Old Swiss Folk Melody, Uf em Bergli (arr. Hegar), (e) Sixteenth Century Dance Song, Gagliarda (Hasler-Hermann), (f) Spielmanns Wanderfahrt (Neumann); In a Persian Market (Ketelbey); Waltz, *The Blue Danube* (Joh. Strauss). 9.0, Weather, News and Sports Notes. 9.10, Concert by the Strub Quartet: Quartet, Op. 18, No. 6 (Beethoven); Quartet, Op. 51, No. 1 (Brahms). 10.10, Weather, News and Sports Notes. 10.30 (approx.), Dance Music from the Europa Pavilion. 12.30 a.m. (Saturday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODN.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30, News Bulletin and Time Signal. 7.40, Popular Music on Gramophone Records. 8.10, Lottery Results. 8.15, News Bulletin and Weather Forecast. 8.30, Orchestral Concert, conducted by A. Guitraud. After the Concert, Theatre Guide and Time Signal.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW. and GLEIWITZ, 253 metres.—4.25 p.m., Concert by the Station Orchestra, with Songs by Berta Ebner Oswald (Soprano). 5.20, Agricultural Prices. 5.25, Reading: My Brother is Dying (Konrad Kleinert). 5.40, Reading (Herbert Vogt). 6.0, Talk: Music in the Country. 6.30, Programme to be announced. 6.55, Walthor G. Oschilewski reads from his own works. 7.30, Gramophone Concert: Selection from *Lakmé* (Delibes); Polonaise in A Flat (Chopin); Selection from *Boccaccio* (Suppé); Waltz, Wiener Bürger (Ziehrer). 8.0, See Berlin (Witzleben). 9.0,

FRIDAY

AUGUST THE TWENTY-SIXTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Orchestral concert. Organ recital. Promenade concert from Queen's Hall. Military Band concert. Dance music.
- LONDON REGIONAL** Organ music. Orchestral concert. Instrumental concert. "Grand Slam," a Radio Rubber in thirteen quick tricks, by Ashley Sterne and A. A. Thomson. Orchestral concert. Dance music.
- MIDLAND REGIONAL** Organ music. Sir Barry Jackson's Birmingham Repertory Theatre Company present "Shame the Devil," by Philip Johnson. Military Band concert. Orchestral concert. London Regional programme.
- NORTH REGIONAL** Orchestral concert. Rambling: a discussion between Mr. L. du Garde Peach and Mr. Edgar Lustgarten. Concert of chamber music and songs.
- WEST REGIONAL** "Back from the Holidays" orchestral programme. National programme.
- SCOTTISH REGIONAL** Organ music. National programme.
- BELFAST** Organ recital—international programme No. 6. An Irish programme. National programme.
- ABROAD**
- BARCELONA** Midnight choral concert.
- BUCHAREST** Violin, Piano and 'Cello recitals.
- COPENHAGEN** An Hour's Harp music.
- HUIZEN** Symphony concert from the Kurhaus, Scheveningen.
- ROME** A Modern song recital.

News Bulletin. 9.10, See Berlin (Witzleben). 10.0, Time, Weather, News, Sports Notes and Programme Announcements. 10.30, Dance Music relayed from Berlin (Witzleben). 12 Midnight, Close Down.

BRUSSELS (No. 1)

1.N.R., 509 metres; 15 kW.—12 Noon, Orchestral Concert; Soloist: M. Rubeau (Tenor): Overture, Gri-Gri (Lincke); Selection from *Frederica* (Lehar); Waltz from *Gipsy Love* (Lehar); Overture, *Die schöne Galathée* (Suppé); *Aubade from Le Roi d'Ys* (Lalo); Songs: (a) Air from *The Land of Smiles* (Lehar), (b) *Chevauchée à l'aube* (Buenata); *Offenbachiana* (Convanti). 1.0, Le Journal Parlé. 1.10, Concert (contd.): Les gars de la Marine (Heymann); Spanish Waltz, *La Gitana* (Bucalossi); Four Pieces (Fletcher); Melody from *Maitre Pathelin* (Bazin); Songs (Redeghieri): (a) *Je pense à vous quand je m'éveille*, (b) *Mattinata*; *La voix des cloches* (Luigini); Waltz from *La Fauvette du Temple* (Messenger); Melody from *Paganini* (Lehar); *España* (Chabrier-Waldteufel). 3.0, The Seventh Classical Concert, relayed from the Kursaal, Ostend; Conductor: François Rasse; Soloist: Alexandre Borovsky (Piano-forte): Three Preludes from *Oliver le Simple* (Vreuls); Concerto No. 3 for Piano-forte and Orchestra (Prokofiev); Symphony in C Minor for Organ, Piano-forte, and Orchestra (Saint-Saëns). 5.0, Concert by the Station Symphony Orchestra, conducted by M. Kumps: Dances (Grétry-Mottl); Solveig's Song (Grieg); The Nursery Suite (Engelbrecht); *Pavane pour une Infante défunte* (Ravel); Minuet (Ravel); Melody from *The Sleeping Beauty* (Tchaikovsky). 6.0, Gramophone Concert: Melodies from *La Chanson des Contes de Perrault* (Bach-Sisley-Darcieux); Overture, *Britannia* (A. Mackenzie); *La Valse à la viennoise* (Mario Cazes); Folk Dances (arr. Cecil Sharp); Melody (Giazounov); Folk Dance (arr. Cecil Sharp); Waltz Boston, *Jealousy* (Marinkovitch); Scherzo (Borodin); Reverie (Bellenot); Potpourri of Viennese Music, *Vindobona* (Leopold); March (Sinding). In the interval, at 6.15, Talk: Poetry for Children. 7.15, Talk: Excursions in Belgium—Journal. 7.30, Literary Review. 8.0, Albeniz Piano-forte Recital by Mlle Gabrielle Tambuyser: *Evocation*, *Oriente*, *Dragou*, *Cádiz*, *Triana*. 8.15, Three Types—Comedy in Two Acts (Paul Giffier). 9.0, Concert, relayed from the Kursaal, Ostend; Conductor: Toussaint de Sutter; Soloist: Mme. Rose Poicidal (Songs); Overture, *Ruy Blas* (Mendelssohn); *The Nutcracker Suite* (Tchaikovsky); *Sérénade de Torello* (Gillon); Song from *Le Roi d'Ys* (Lalo); Selection from *Hérodiade* (Massenet); Song from *Sappho* (Massenet); Overture, *The Flying Dutchman* (Wagner). After the Programme, *Le Journal Parlé* and Gramophone Records of Light Music. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish.—12 Noon, Gramophone Concert of Light Music. In the interval at 1.0, Le Journal Parlé. 5.0, Concert by the Radio Orchestra: March, *Lynwood* (Hume); Selection from *Fortissimo* (Kálmán); *Au pays du lin* (Vandermeulen); Potpourri of Viennese Operetta Music (Robrecht); Three Dances (Wood); Waltz, *Lastige Brüder* (Volstedt). 5.45, Programme for Children. 6.30, Gramophone Concert: *Die Jagd Mendelssohn*; Gipsy Waltz, *Monte Cristo* (Kotlar); Prelude (Bach); Etude in G Flat (Chopin); Melody from *The Violin-Maker of Cremona* (Hubay); Piece (Kodaly); Toccato (Boellmann); Tyrolienne from *Le Périgord* (Roland); Minuet (Mozart); Bigorre (Abadie); Waltz, *Lascivité* (Borodin); Gipsy Romance, Two Guitars; The Musical Box (Sauer); The Forge in the Forest (Michaëlis); Japanese Mazurka, *La Mousmé* (Ganne). 7.15, Talk. 7.30, Talk on Natural History. 8.0, Concert by the Station Symphony Orchestra, conducted by Kumps: Soloists: Mlle. Yvonne Van Stayen (Soprano); and Franz Schelle (Tenor): Suite No. 1 from *Peer Gynt* (Grieg); Soprano Solos: (a) *Moeder* (Gillon); (b) *Jeugd en Liefde* (F. van der Stucke); (c) *In't Prieeltje* (Blocks); Conte pastoral (Godard); Tenor Solos: (a) *Aria from The Magic Flute* (Mozart); (b) *Aria from The Queen of Sheba* (Gounod); Mandolines (Eilenberg); Goldschmieds Hämmerlein (Eilenberg); Military March (Schubert). 8.45, Talk on Children's Literature. 9.0, Concert, relayed from the Casino, Knocke; Soloist: Ronald Charmy (Violin); Entry of the Gods into Valhalla, from *The Ringgold* (Wagner); Concerto in D for Violin and Orchestra (Brahms); *Le Mort* (Dubois); Violin Solos: (a) *Aria* (Bach); (b) *Caprice No. 24* (Paganini-Auer); (c) Spanish Dance (Fallá); Overture, *Manfred* (Schumann); After the Programme, *Le Journal Parlé* and Gramophone Concert of Light Music. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra: March (Blankenburg); Waltz, *Dorfschwalben aus Oesterreich* (Strauss); Prelude to *Lohengrin* (Wagner); Ballet Suite (Gyldenmark); Potpourri (Benatzky). 5.0, News Bulletin and Time Signal. 5.10, Orchestral Concert (contd.): *Gardejager to Pferde* (Lincke); *Romanian Suite* (Zimmer); Waltz, Op. 34 (Chopin); *Barcarolle* (Tchaikovsky); Puppe und Kobold (Armandoia). 6.0, Educational Programme. 6.40, Popular Music on Gramophone Records. 7.0, Time Signal 7.1, Violin Recital, by Alex. Ghiul; Sonata (Brahms-Schumann-Bilow); *Sarabande and Allegretto* (Corelli-Kreisler); *Idyll* (Inacovici); *Romance* (Beethoven). 7.30, Talk. 7.45, Piano-

forte Recital by Mlle. C. Fotino. 8.15, 'Cello Recital, by Jos. Thalier. 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on 210 metres from 7.0 to 12.0 Midnight.—5.0 p.m., Talk: Franz Erkel's Music Master. 5.30, Concert by the Bela Kiss Cigány Orchestra. 6.30, Talk: Lake Balaton. 7.0, Dance Music by the Balazs Jazz Band. 8.0, Talk on Foreign Affairs. 8.15, Songs and Arias (Albert H. Heideberg and Michael Buzas)—a Recital by Juci Labass and Nikolaus Szedő, H. Heideberg and T. Polgar at the Piano-forte. 9.30, Violin Recital by Johann Konec T. Polgar at the Piano-forte: Sonata in E Minor (Grieg); *Bandiera* (Bach-Manin); Berceuse (Beretvas); *Arietta española* (Manen); *La Favola* (Hüvös); Variations (Tartini-Kreisler). In the interval, Racing Results. 10.15, News Bulletin, Weather Forecast, and Time Signal, followed by Light Music by the Zsiga Ráczy Cigány Orchestra from the Pilsen Restaurant.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., Weather Forecast. 12.7, String Ensemble Concert, relayed from the Hôtel d'Angleterre. 2.0 to 3.0, Interval. 3.0, Orchestral Concert, conducted by Launy Gröndahl: Overture, *Lysistrata* (Lincke); *Gratulations-meuett* (Beethoven); Music from *Coppélia* (Delibes): (a) Introduction and Mazurka, (b) *The Doll's Dance*, (c) *Czardas*, *Sospiri* (Elgar); *Marienwalzer* (Lanner); Prelude to Act Three of *Hérodiade* (Massenet); Reading: March, Stars and Stripes (Souza); Overture, *Silvana* (Weber); A Summer Night's Serenade (Albeniz); Melody for Strings (Oldenburg-Poulsen); Selection from *Le domino noir* (Auber); Polonaise (Giazounov); March from *Der Viceadmiral* (Müllöcker). 5.0, Programme for Children. 5.40, Exchange and Fish Market Prices. 5.50, Talk on Danish Literature—Knut Lyhne Rahbek. 6.20, German Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.32, Talk on Geneva. 8.0, Chimes from the Town Hall. 8.2, Programme by Per Knutzon. 8.10, Humour in Classical Music. The Station Orchestra, conducted by Emil Reesen: Overture, *La Rencontre imprévue* (Gluck); Two Pieces for Strings (Rameau); *Contredanse* (Beethoven); Minuet and Finale from the *Serenade No. 9* in D (Mozart); Melody from *Les Deux Avers* (Grétry); Finale from the *London Symphony* in D (Haydn); Overture, *The Italian Girl in Algiers* (Rossini). 8.50, Talk: A Visit to a Motor Factory. 9.20, Gramophone Concert: The Comedian Harmonists, *Guten Tag, gaudige Frau* (Bootz); *Big Crosby and the Mills Brothers*, *Shine* (Mack-Brown-Dabney); Edmund Fritz's Singing Babies, *My Boy* (Chiarelli); The Three Ginx, *Heartaches* (Klenner-Hoffman); The Comedian Harmonists, *Halt dich an mich* (Greer); The Mills Brothers, *You Rascal, You* (Theard). 9.40, News Bulletin. 9.55, Harp Recital by the Lilly Kajanus-Blenner Harp Quartet: Minuet (Boccherini); *Rondo for Harp Quartet* (Couperin); Minuet (Mozart); Harp Solo, *Improntu* (Pierné); *Preludes* (Tournier); Suite, *Carillons noirs et blancs* (Saint-Quentin); Harp Solos: (a) *Berceuse* (Tournier), (b) *Finnish Folk Melody* (Hannikainen); Invitation to the Dance (Weber). 10.55, Dance Music from the Industri Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Saturday), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items and Programme Announcements. 7.35, Radio Journal. 7.45, Talk: Rumanian Peasant Art. 8.0, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Stock Report, Weather Forecast, and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gardening Talk. 7.45, Talk. 8.0, Music by the Station Orchestra. 8.15, Tenor Solos by S. Whyte. 8.25, Duets by Driscoll and Eira Haise. 8.45, Violin Solos, by A. Franks. 9.0, Music by the Station Orchestra. 9.30, Gramophone Concert. 10.30, Time Signal, News Bulletin, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—10.0 p.m. to 1.0 a.m. (Saturday), Programme in English by the I.B.C. 10.0 p.m., Concert of Dance Music by the Icolians; *Cheerful little Earful*; Always in All Ways; Fire in my Heart; Shake and let us be Friends; Miss Elizabeth Brown; You call it Madness; My Mystery Girl; Lonely Troubadour; You're Lucky to Me; River Stay 'way from my Door; Moonlight on the Colorado; Hurt; When I take my Sugar to Tea; That's Somerset; Parade of the Minutes; When you were the Blossom. 11.0, Song Recital of Negro Spirituals; Peter

AUGUST 26th

FRIDAY

continued.

go ring dem Bells; Go down Moses; Deep River; Swing low, sweet Chariot; Witness: Bye and Bye; I got a Robe; Good News, Chariot's Coming. 11.20, The Two Hawaiians in Traditional Airs; Hawaiian Twilight; Kamschamola; Bone Festa. 11.30, Organ Recital: Songs of Araby (Clay); Sing me to Sleep (Greene); Love's old sweet Song (Molloy); Walking my Baby (Chevalier); Please don't talk about me (Steph); For all Eternity (Mascheroni); Vale (Russell); Drink to me only (Calcott). 12 Midnight, Dance Music by the Icolians; Alice in Wonderland; Good-bye to all that; Cigarette; He loved her; Mysterious Mose; Like a Breath of Springtime; Melancholy; I got to have you; Moscow; If I can't have you; The Love Waltz; Just you, just me; When I see my Sugar; Tondeleyo; Stein. 12.57 a.m. (Saturday), I.B.C. Good-night Melody. 1.0, Close Down.

FLENSBURG.—See Hamburg.
FLORENCE.—See Turin.

FRANKFURT

390 metres, 1.5 kW.; and CASSEL, 246 metres.—5.0 to 6.15 p.m., Concert from Stuttgart. 6.15, Economic Notes. 6.25, Talk: Goethe and Ourselves. 6.50, See Stuttgart. 7.15, Time, Weather, Programme Announcements and Industrial Report. 7.30, See Stuttgart. 9.15, Frankfurt in Goethe's Youth—Radio Picture (Adalbert Brink). 10.30, Time, Weather, News, and Sports Notes. 10.45 (approx.), See Berlin (Witzleben). 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—5.30 p.m., Talk: On the Tracks of Van Gogh in Provence. 5.55, Variety-Programme. 6.20, Programme for Workers: Who'll join us?—A Radio Play in Four Acts (H. and W. Müller). 6.55, Exchange Quotations. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20, Overture, Semiramis (Rossini), on Gramophone Records. 7.35, Otto Bombach reads an Extract from his New Novel, The Gordian Knot. 8.0, The Circus Artist—Operetta in Three Acts (Smigelski). 9.30, Pianoforte Recital by Gerhard Gregor; Fantasia in F Minor (Chopin); La Terrasse des audiences du clair de lune (Debussy); Jardius sous la pluie (Debussy); Fox-trot, Boston, and Shimmy from the Second Dance Suite (Gross). 10.0, Time, Weather, News and Announcements. 10.10, Late Concert, relayed from the Hotel Reichshof.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—1.5 p.m., Concert by the Little Orag Orchestra, conducted by Eugen Wilcken: March, Frühlingskinder (Blankenburg); Overture, Trichoche et Cacolet (Suppé); Suite, Carnival (Schmalstich); Waltz from Die Kaiserin (Fall); Selection from The Pearl Fishers (Bizet); Diavoletta (Lindemann); Japanese Dolls at Play (Yoshitomo); Torch Dance in B Flat (Meyerbeer); March, Nordstern (Grit). 2.30, Sponsored Programme, with Gramophone Records. 4.0, Talk for Women. 4.30, Concert by the Little Orag Orchestra, conducted by Eugen Wilcken: Mareli, Friedensglocken (Urbach); Overture, Le Roi d'Yvetot (Adam); Oriental Suite (Popy); Waltz, Badner Madln (Komzak); Dort wo die Wälder grün (Brodzsky); Légende d'amour (Bece); Selection from L'Africaine (Meyerbeer); Sérénade à Graziele (Desperéz); Aubade provençale (Delvor); Selection from Der Obersteiger (Zeller); Waltz, Herbstweisen (Waldteufel); Overture, Casanova (Lincke). 6.15, Market Prices. 6.30, Talk: Fighting Fires in the Country. 7.0, New Chamber Music: Sonata in F Sharp Minor, Op. 47 (Julius Weismann), by Franz Schifffmann (Violin) and Ernst Rudolph (Pianoforte). 7.30 (from Danzig), Anecdotes by Wilhelm Schäfer. 7.55, Weather Forecast. 8.0, Operatic Concert by the Königsberg Opera House Orchestra, conducted by Erich Seidler; Soloist: Max Mansfeld (Tenor). 9.15, Announcements. 9.20, The History of Aircraft—an Instructive Play (Elizabeth Hauptmann and Emil Hesse-Burri). 10.20, Weather, News, and Sports Notes.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Catholic Radio Society (K.R.O.). 7.40 to 8.55 a.m., Gramophone Concert of Variety Music. 9.40, Gramophone Records of Light Music. 11.10, Programme for Hospitals. 11.40, Police Notes. 11.55 Quintet Concert: Ein deutsches Mädel (Reisfeld); Selection from Werther (Massetet); Waltz, Aus Liebe zur Kunst (Lincke); You (Maurice); Potpourri (Grey); Die goldene Spieluhr (Krome); Teufelsszenen (Morena); Waltz, The South Sea (Lindner); Tout Paris (Waldteufel); Spanish Serenade

(de Micheli); Cartagena (Grit). 1.25 to 1.40 p.m., Interval. 1.40, Gramophone Records of Variety Music. 2.10, Pianoforte Recital by M. Boshart. 2.30, Talk by Mlle. Heringa. 2.45, Gramophone Records of Light Music. 3.5, Pianoforte Recital (contd.). 3.25, Talk by Mlle. Heringa. 3.40, Organ Recital by M. Evert Haak. Soloist: Mme. Jacoba Repelcar van Driel (Contralto). First Part of the Fourth Organ Concerto in F (Handel); Choral from the Seventh Organ Sonata (Guilmant); Four Songs; Allegretto from the Sonata Op. 78 (Schubert); Barcarolle (Rubinstein); Three Songs; After the Summer (Schmidt); Caprice (Jongen); Three Songs; Larghetto (Mozart); Fantasia for Organ (Haak). 4.55, Instrumental Concert, conducted by Piet Lustenhouwer: Overture, Fahrendes Volk (Leuschner); Heimatkänge (Juel-Fredricksen); Three Pieces (Strauss-Morena); Potpourri of Chopin Music (Fetras); Waltz Mazurka (Thomas); Torch Dance of the Brides of Kashmir, from Feramos (Rubinstein). 5.40, Agricultural Talk. 6.10, Concert (contd.): Potpourri, Dividenden (Morena); Salut d'amour (Elgar); Overture to a Comedy (Lincke); Verschneit, verweht (Leuschner); Finale. 6.50, Talk by M. Burg. 7.10, Police Notes. 7.25, Gramophone Records of Light Music. 7.40, Orchestral Concert, conducted by Johan Gerritsen. Soloist: Doda Feldin (Cello). Overture, Titus (Mozart); Concerto in C (Haydn); Overture, Thermidor (Scassola); Mock Morris (Grainger); Irish Tune from County Derry (Grainger); Romanian Rhapsody (Enesco). 8.40, News Bulletin. 8.55, Cello Recital by Doda Feldin: Nocturne Op. 27, No. 2 (Chopin); Serenata napoletana (Sgambati); Butterflies (Harty). 9.25, Concert (contd.): Overture, Les Dragons de Villars (Mallart); Waltz, Wiener Kinder (Strauss); Sketches from Old China (Percy); Ein Melodienraum (Urbach); Max and Moritz (Zimmer); Selection from The Land of Smiles (Lehar). 10.40, Variety Concert on Gramophone Records. 11.40 (approx.), Close Down.

HOBBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25, Physical Culture. 7.40, Variety Music on Gramophone Records. 8.40, Septet Concert. 9.40, Religious Programme arranged by the Liberal Protestant Radio Society (V.P.R.O.). 9.55 to 11.40, V.A.R.A. Programme. 9.55, Recitations. 10.10, Septet Concert. In the interval at 10.40, Recitations. 11.40 to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time Signal. 11.41, Concert by the Small Wireless Orchestra, conducted by Nico Treep: Motor March (Rosey); Ballet Suite, Callirhoë (Chaminade); Serenade (Haydn); Overture, Le Roi l'a dit (Delibes); Songs by a Male Voice Choir; Melody from Gipsy Love (Lehar); Die launische Yvett (Schmalstich); Struzzel (Siede); Selection from Madame Butterfly (Puccini); Pierréte (Bräse); Fest der Zwergé (Noack); Songs by a Male Voice Choir; From Heidelberg to Barcelona (Borchert). 1.40, Light Music on Gramophone Records. 2.10, Concert by Louis Schmidt: Overture, Der Königseutnant (Titl); Campana e Sera (Bili); Malagena (Moszkowsky); Las Hermosas (Morena); Selection from La Gioconda (Ponchielli); Gramophone Records of Variety Music; The Time of Roses (Mannfred); Ein Souper bei Suppé (Morena); Veni pebeta (Rovatti); Requite Montmartroise (Bosc). 3.40 to 7.40, V.A.R.A. Programme. 3.40, Gramophone Records of Light Music. 4.10, Programme for Children. 4.40, Orchestral Concert: Overture, Ruy Blas (Mendelssohn); Suite from The Arabian Nights (Bortkiewicz); Hungarian Rhapsody No. 6 (Liszt). 5.25, Recitations. 5.40, Organ Recital: Coronation March (Meyerbeer); Waltz (Ketelbey); Mighty lak' a Rose (Nevin); Melody from La Gioconda (Ponchielli); Kiss by Kiss (Nicholls). 6.10, Talk. 6.25, Orchestral Concert (contd.): March from Der Sieger (Heymann); Melody from Die Spanische Flieger (Gilbert); Waltz, Estudiantina (Waldteufel); Selection from The Cat and the Fiddle (Kern). 6.50, Gramophone Records of Light Music. 6.55, Organ Recital (contd.): Um das blane Band (Krome). 7.10, Gramophone Records (contd.). 7.15, Orchestral Concert (contd.): Overture, Tantalusquälen (Suppé); Ballet russe (Luigin). 7.40, V.P.R.O. Programme. News Bulletin. 7.55 to 9.40, A.V.R.O. Programme. 7.55, Symphony Concert, relayed from the Kurhaus, Scheveningen. The Hague Orchestra, conducted by Carl Schiericht. Soloist: Piet Veenstra (Horn); Overture, Figaro (Mozart); Concerto for Horn and Orchestra (Mozart); Variety Music on Gramophone Records; Symphony No. 6 (Tchaikovsky). In the interval at 8.40, Talk. 9.55 (approx.), V.P.R.O. Programme. Exchange Quotations. 10.40, V.A.R.A. Programme: Gramophone Records of Light Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and HELSINKI, 363.1 metres. Programme in Swedish. 6.40 p.m., Talk. 7.5 (from Helsinki), Violin Recital. 7.30, A Sketch. 7.55 (from Helsinki), Orchestral Concert. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Dance Music relayed from the Kappeli Restaurant. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—10.5 a.m., Running Commentary on the Round Europe Air Race, from the Dortmund Aerodrome. 10.30, Talk for the Unemployed: Men and the World. 11.15, Gramophone Report on the Round Europe Air Race. 11.45, Sponsored Programme. 12 Noon, Gramophone Concert; The New York Philharmonic Symphony Orchestra conducted by Willem Mengelberg: Overture, The Flying Dutchman (Wagner); Invitation to the Dance (Weber); Elisabeth Schumann (Soprano): Two Songs from Figaro (Mozart); Marek Weber and his Orchestra: Ballet Music from Undine (Lortzing); March and Ballet Music from Robert le Diable (Meyerbeer); Erik Wirl (Tenor): Two Songs from Tiefand (D'Albert); (a) Abschied von dem Bergen, (b) Wolfserzählung; Salome's Dance from Salome (R. Strauss); Amelita Gallucci (Soprano): Solveig's Song from Peer Gynt (Grieg); The New York Philharmonic Symphony Orchestra, conducted by Arturo Toscanini: Prelude to Act 3 of La Traviata (Verdi); Entry March from The Queen of Sheba (Goldmark). 1.15 p.m., Economic Notes, Time and Announcements. 1.30, Concert conducted by Eysoldt: Overture, In the Well (Blodek); Javanese Rhapsody (Seelig); Melodies from Der Freischütz (Weber); Liebesfeier (Weingartner); Was Blumen träumen (Translatour); Furiant from Böhmische Musikanten (Grün). 2.30, Sponsored Gramophone Records. 2.45, Sponsored Programme. 3.30, Economic Notes and Time. 3.50, Programme for Children. 5.0, See Stuttgart. 6.20, Talk for Women: Famous Women of History. 6.45, Weather, Time, Economic Notes, and Sports Report. 7.0, Round the World on Gramophonic Records. 7.20, Talk: The Communal Workers' Dwellings at Kemper. 7.55, News and Announcements. 8.0, Talk: From the Flute to the Kettledrum. 8.30, Carl Loewe Concert. The Station Orchestra and Choir conducted by Zimmermann. Soloists: Hansen (Soprano), Guermanova (Contralto), Aramesco (Tenor), Wocke (Baritone), Strienz (Bass), Probst (Speaker), Delselt (Pianoforte), and Hilgers (Organ). Commentary by Paul Gehly. 10.5, News and Announcements. 10.30, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW.; and DRESDEN, 319 metres.—4.30 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer: Overture, Idra (Plotow); North German Folk Dances (Holzner); Côte d'Azur (Felber); Fest - Walzer (Lampe); Country Dance (Lampe); Overture, Nachklänge aus Ossian Op. 1 (Gade); Lyric Suite Op. 54 (Grieg); Waltz, Nachtschwärmer (Ziehrer); Herjheimel Polka (Joh. Strauss); Melodies from Der Opernball (Heuberger). 5.50, Economic Notes, Weather Forecast and Time Signal. 6.10, Review of Books on Goethe and his World. 6.30, Talk: The Child's Belief in Fairies and Magic. 7.0, Literary Talk: E. T. A. Hoffmann. 7.40, Talk on Economic Questions of the Day. 8.0, See Heilsberg. 9.15, Readings from the Works of Gryphilus, Weckerlin, and other Forgotten German Authors, arranged for Radio by Rudolf Maczurat. 10.5, News Bulletin. 10.15 (approx.), Old Pianoforte Programme Music—Talk and Recital by Dr. Hans Gantz: Two Pieces (Couperin); Two Pieces (Rameau); The King's Hunt (John Bull); The Church Bells (Byrd); Capriccio über das Henner und Hanneigeschrey (Poglietti); David and Goliath. Bible Story No. 1 (Kuhnau); Caprice on the Departure of a Much-loved Brother (J. S. Bach). 11.30, Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Quintet Concert. 7.0, Talk for Parents. 7.30, Programme for Women. 8.0, Popular Music on Gramophone Records. 8.30, Programme relayed from Belgrade. 10.30, Time Signal and News Bulletin.

LWOW

381 metres; 16 kW.—7.15 p.m., Miscellaneous Items. 7.35, See Warsaw. 7.45, Educational Talk. 8.0, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 456.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert: Danse macabre (Saint-Saëns); Messe Solennelle de St. Hubert (arr. Blondiau); Hungarian Dance (Brahms); Agnus Dei (Bizet); Ave Maria (Gounod); Cigany Song, The Two Guitars; Selection

from Hans the Flute-player (Ganne). 7.30, Radio Gazette for Lyons and the South-East. 8.30, Literary Programme.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices, and Request Music on Gramophone Records. 9.15, News Bulletin and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal, and Political Review. 11.15 (approx.), Symphony Concert on Gramophone Records: Overture, Romeo and Juliet (Tchaikovsky); Escapes, Nos. 1—3 (Ibert); The Unfinished Symphony (Schubert); Passacaglia (Bach); Music from The Three-Cornered Hat (Fallá). 1.15 a.m. (Saturday), News Bulletin and Programme Announcements. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talk in Swedish: Travelling Sketches from Karelia and Murmansk. 9.0, Talk in French: The Architecture of Moscow. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—5.0 p.m., See Stuttgart. 6.15, Talk: Road Maps. 6.35, Talk: The Organisation of the State Railways. 6.55, Time Signal, Weather Forecast, and Agricultural Notes. 7.5, Report on New Inventions. 7.30, Variety Programme. 8.40, Review of Foreign Affairs. 9.0, Reger Symphony Concert by the Station Orchestra; Conductor: Hermann Scherchen; Soloist: Irma Drummer (Contralto); Variation and Fugue on a Theme by Beethoven, Op. 86; Song, An die Hoffnung, Op. 124; A Romantic Suite (after Eichendorff), Op. 125. 10.20, Time Signal, Weather Forecast, News Bulletin, Sports Notes, and Traffic Report.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Bjukan, 447.1 metres.—6.0 p.m., Light Music on Gramophone Records. 6.45, Talk: The Influence of Civilisation on the Eskimos. 7.0, Announcements, News Bulletin, and Weather Forecast. 7.30, Reading. 8.0, Time Signal. 8.2, Talk: The Agricultural School at Ostfold. 8.30, Illustrated Talk on Neapolitan Songs; Soloist: Mme. Borghild Mose Johnsen. 9.10, Illustrated Talk on the Persian Poet Sa'di. 9.40, Weather Forecast and News Bulletin. 10.0, Topical Talk. 10.15, Variety Programme. 11.15 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 to 6.30 p.m., Gramophone Records of Variety Music. 8.0, Announcements, Tourist Report, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Gramophone Records of Light Music. In the intervals at 8.30, Time and Announcements. 8.45, L'Amico-Fritz (Friend Fritz)—Opera in Three Acts (Mascagni); Conductor, Fortunato Russo. In the intervals, Talk: Mountainside Villas, and News Bulletin. News after the Programme.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals, on 2,650 metres, at 10.26 a.m. and 11.26 p.m. (preliminary and 6-dot Signals)—6.45 p.m., Dramatic Programme. 7.0, Le Journal Paris. 8.20, Weather Report. 8.30, Symphony Concert by the Station Orchestra, conducted by M. Flament. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 328.2 metres; 60 kW.—7.0 p.m., News Bulletin and Press Review. 7.5, Light Music on Gramophone Records. 8.0, Topical Talk. 8.20, Theatre Notes. 8.30, Journal Paris and News Bulletin. 8.45, Concert. Soloist: Mme. Jane Kirsch (Songs); Songs: (a) Air from La Vivandière (Godard), (b) Still wie die Nacht (Bohmy), (c) Chère Unit (Bachelet), (d) Good-bye (Tosti); Overture, Kosiki (Lecocq); Waltz, Pluie de diamants (Waldteufel); Selection from Cocorico (Ganne); Prelude, Recitative and Variations for Flute, Viola and Pianoforte (Durnillé); Première Suite murcienne (Jaquet); Intermezzo, Temptation (Delmas); Selection from Peplita Jimenez (Albeniz); The Murmuring of the Brook (Schreiner); Selection from La Fiancée du Scaphandrier (Terrasse); Ballade (Debussy); Danse japonaise (Hugnet); Marche des esclaves (Flippuel).

PARIS

RADIO PARIS; Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.).

AUGUST 26th

FRIDAY

continued.

7.45, Gramophone Records; Fantasia (Toscanini); Circus Memories (Peter); Rondel (Hussomere); Le Coucou (Daquin); 8.0, Press Review and Weather; 12 Noon, Concert of Modern Chamber Music; Le Printemps (Milhaud); Concerto (Milhaud); Chant populaire hébraïque (Milhaud); Five Short Preludes for Pianoforte (Harsanyi); Le galant Jardinier (Delannoy); Marine (Debussy); Piece in C Sharp Minor No. 3 for Cello (Boulanger); Rondo and Adagio etto for Pianoforte from Les Biches (Poulenc); Poems (Honegger); Pastoral for Pianoforte (Tausiut); Pastorale Scherzo from the Sonata for Oboe and Pianoforte (Mihalovic); In the intervals at 1.0, Exchange, News and Weather; At 1.30, Exchange, and at 2.0, Exchange and Announcements. 3.45, Exchange and Market Prices. 6.30, Market Prices, Weather, Agricultural Report, Talk and Racing Results. 7.0, Gramophone Concert; Siegfried Idyll (Wagner); Lohengrin's Narrative from Lohengrin (Wagner); Selection from Les Saltimbanques (Ganne); L'âme des violons (Lawrence and de Buxeuil); Humorous Sketch, Les deux Sourds (Poupon); Rhapsody in Blue (Gershwin). 7.45, Commercial Prices and News. 8.0, La Traviata—Opera (Verdi) on Gramophone Records, by the Cast of the Scala, Milan; In the intervals at 8.30, News, Weather and Review by Paul Reboux, and at 9.35, Press Review and News. 10.20, Gramophone Concert; Overture, Die Fledermaus (Johann Strauss); Romance and Waltz from The Desert Song (Romberg); Selection from A Waltz Dream (O. Strauss); Selection from La Bohème (Puccini).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XX on 48.86 metres and 25.67 metres.—9.0 p.m., Teaberry Baseball Scores 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.33, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Bulletin. 10.12, Programme Announcements. 10.15, Programme to be announced. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day. 11.6, Teaberry Sport Review. 11.11, Press News-Reeler. 11.14, Weather Report. 11.15, KDKA Kiddies' Klub. 11.30, KDKA Orchestra. 11.45 to 4.0 a.m. (Saturday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n Andy. 12.15 a.m. (Saturday), Royal Vagabonds. 12.30, Stebbins Boys. 12.45, Billy Jones and Ernie Hare. 1.0, Time Signal and Nestlé's Programme. 1.30, Candle Lighting Time. 1.45, Sisters of the Skillet. 2.0, Friendship Town. 2.30, Armour Programme. 3.0, The Country Doctor. 3.15, Song Fellows. 3.30, Object Matrimony. 3.45, Jane Froman and her Band. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, The Music Box. 4.30, Jack Pettis and his Orchestra. 5.0, Cotton Club Orchestra, from New York. 5.15, Time Signal and Goodnight. PORSGRUND.—See Oslo.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW; LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Geneva), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5, Gramophone Records (contd.). 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, (from Geneva), Programme for Women: (a) Talk on Fashion. (b) Kuitting Lesson. (c) Household Hints. 5.45, Concert by a String Orchestra, conducted by M. Robert Echenard. 7.0, Weather Forecast. 7.1, (from Geneva), Sports Talk. 7.20, (from Lausanne), Report of the Swiss Automobile Club. 7.30 (from Geneva), Topical Talk: Through the World. 8.0, (from Lausanne), Dramatic Programme. 8.45, (from Tramelan), Extracts from the Beehive Festival (Emile Tauber); (Text by Mlle. de Rougemont), arranged by the United Societies of Tramelan. 10.0, News Bulletin and Weather Forecast. 10.15, Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.0 a.m., Weather Report. 5.0 p.m., Weather Report. 8.30, Weather Report. 8.40, Gramophone Records of Light Music. 9.0, Chimes and Gramophone Records of Music by Wagner and Saint-Saëns. 9.30, News Bulletin.

RIGA

525 metres; 15 kW.—5.30 p.m., Talk. 6.0, Humorous Items 6.30, Talk. 7.0, Weather Report. 7.3, Orchestral Concert of Ballet Music, conducted by Janis Modins. 8.0, News Bulletin. 8.20, Song and Pianoforte Recital. 9.0, Weather Report. 9.5, Variety Music. 10.0 (approx.), Close Down. RJUKAN.—See Oslo.

ROME

Call 190; 441 metres; 50 kW. Relayed by Naples, 319 metres, and 290, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio and An-

nouncements. 12.30 p.m., Weather and Gramophone Records of Light Music. 1.0 to 2.15, Sextet Concert. Soloist: Enrico Mari (Pianoforte); Talisman (Mignone); Per gli occhi tuoi (Adducci); Selection from La Cenerentola (Massenet); Syncopated Music for Pianoforte; Rapsodia lombarda (Cerr); Selection from The Duchess of Chicago (Kalmán); Frugolina (Adducci); In the intervals at 1.15, Giornale Radio, and at 1.30, Time and Announcements. 4.45 (Naples), Talk for Women. 5.0, Exchange, Children's Radio Review, Giornale Radio and Announcements. 5.30, Instrumental Concert; Concerto in F for Bassoon and Pianoforte (Weber); Soprano Solos: (a) Aria from Olimpiade (Pergolesi), (b) Aria from Othello (Rossini), (c) Aria from Betty (Donizetti); Pianoforte Solos: (a) Gavotte (Gluck-Brahms), (b) Ballata (Bajardi), (c) Jeux d'eau (Ravel); Aria for Soprano from Crispino e la Comare (Ricci). 7.10 (Naples), Shipping and Sports Notes. 7.15, Agricultural Notes, Announcements, Giornale Radio and Gramophone Records of Variety Music. 8.0, Time and Announcements. 8.5, Report of the International Institute of Agriculture (in Italian, French, English, German and Spanish). 8.30, Sports Notes, Announcements and Tourist Report. 8.45, Variety Concert. Soloists: Germano Arnaldi (Pianoforte), Francesco Antonioni (Violin), Antonio Saldarelli (Cello), Linda Cannetti (Soprano), Trio in G for Pianoforte, Violin and Cello (Haydn); Soprano Solos: (a) Aria from Aida (Verdi), (b) Aria from Loreley (Catalani), (c) Two Arias from La rondine (Puccini); Three Nocturnes for Pianoforte, Violin and Cello (Bloch). 9.30, Buffoonery—Comedy in One Act (Meilhac, Translation by Lovatelli). 10.0, Recital of Modern Songs by Franco Perulli (Tenor), followed by Gramophone Records of Light Music. 10.55, News Bulletin, followed by Dance Music from the Casanova. 12 Midnight, Close Down. SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 60 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—9.0 p.m., Musical Programme (from New York). 9.15, Business and Professional Women's Club. 9.30, Ollie Yettra (Pianist). 9.35, News Items. 9.45, Stock Reports and Police Notices. 10.0, Rice String Quartet (from New York). 10.30, Echoes of Erin (from New York). 11.0, Ma Frasier's Boarding House. 11.15, Waldorf Astoria Orchestra (from New York). 11.25, Baseball Scores. 11.30, With Gray McClintock in the Canadian North-west. 11.35, Song and Story Man. 12 Midnight, General Electric Programme. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Saturday), Chandu, the Magician. 12.30 to 1.30, New York Relay. 12.30, Maxwell Tune Blenders. 12.45, The Goldbergs. 1.0, Cities Service Concert. 1.30, WGY Farm Forum. 2.0 to 4.0, New York Relay. 2.0, Cliquot Club Eskimos. 2.30, Pond's Programme. 3.0, Paul Whiteman's Chieftains. 3.30, RKO Programme. 3.45, Musical Programme. 4.0, Al Stulmaker and his Orchestra. 4.30, Close Down—New York Relay. 4.30, Don Bestor and his Orchestra. 5.0, Ralph Kirby (Dream Singer). 5.5, Joe Moss and his Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres; 60 kW; BASEL, 244.1 metres; and BERNE, 246 metres.—42.25 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather and News Bulletin. 12.40, Concert by the Station Orchestra. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Variety Concert on Gramophone Records. 4.30 (from Berne), Programme for Children. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Berne), Talk: Pisciculture. 7.0, Time Signal, Weather Forecast, Market Prices, Tourist Report, and Sports Notes. 7.15 (from Berne), Talk: A Swiss Sport. 7.30, Folk Music on Gramophone Records. 7.50 (from Berne), Talk: Agriculture and the Economic Crisis. 8.20 (from Berne), Introductory Talk to the following Transmission. 8.25 (from Berne), First Act of The Valkyries—Opera (Wagner). 9.30 (approx.), Weather Forecast and News Bulletin. 9.45, Concert by the Station Orchestra, conducted by H. Henze. Soloist, G. Wiessner (Soprano). 10.30 (approx.), Close Down. SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Accordion Music. 5.30, Talk. 6.0, Gramophone Records of Light Music. 7.0, Talk on Potatoes. 7.15, Weather and News. 7.30, Report on the Round Europe Air Race, from the Torsholma Aerodrome, Göteborg. 8.30, Talk: Democracy and Dictatorship in Europe. 9.0, Violin and Pianoforte Recital by Charles Barker (Violin), and W. Witkovsky (Pianoforte); Sonata No. 1 for Violin and Pianoforte (Milhaud); Piano-

forte Solos (Chopin): (a) Impromptu in F sharp, (b) Mazurka in B flat minor, Op. 17, (c) Trois Ecossaises, (d) Waltz in E minor; Violin Solos (Palmgren): (a) Chanson élégiaque, (b) Valse capriccio, (c) Pastorale Caprice. 9.45, Weather and News. 10.0, Orchestral Concert: Melody (Lundberg), Say Goodnight to Me (Ray), Pesther-Walzer (Lanner); Selection from L'Africain (Meyerbeer), Tango (Freeman), Potpourri (Morena). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Light Classical Music. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.2, Exchange Quotations. 1.40, Popular Music on Gramophone Records. 1.50, Orchestral Concert, relayed from Toulouse (P.T.T.); 255 metres, 2.15 to 4.30, Interval. 4.30, Trio Concert, relayed from Lille; 265.4 metres. 5.30, Literary Talk in French: The Triumph of the Romantics. 5.45, Light Music on Gramophone Records. 6.0, Topical Talk in German. 6.15, Legal Talk in German. 6.30, Gringoire—Play (Théodore de Banville). 7.30, Time Signal. 7.31, News in French and German. 7.45, Gramophone Records: Overture, Le Maschere (Mascagni); Air from Mamselle Nitouche (Hervé); Delphine (Moretti); Si vous saviez (Barnaby); Selection from The Dreigroschenoper (Weill); Two Airs (Barnaby); Almira (Pippo-Racine); Alla en el bazo (Lucchesi); Two Viennese Airs. 8.30, Concert by the Station Orchestra, conducted by M. de Villers: Overture, The Flying Dutchman (Wagner); Concert Piece for Pianoforte and Orchestra (Weber); Symphonic Variations for Cello and Orchestra (Boëllmann); Orchestral Suite, Aphrodite (Février); Rhapsody for Clarinet and Orchestra (Debussy); La Nuit persane, for Voices (Saint-Saëns).

STUTTGART

MUHLACKER, 360.5 metres; 60 kW, and FREIBURG, 570 metres.—10.0 a.m., Song Recital by Maria Geiger; Three Songs (Reger): (a) Glück, (b) Viola d'amore, (c) Vorbeimarsch; Four Songs (Rudi Stephan): (a) Cythere, (b) Pantherlied, (c) Abendfrieden, (d) In Nachbars Garten; Songs (Hugo Wolf). 10.30 (from Mannheim), Talk for Schools: Village Life and the Work of the Peasants. 11.0, Time, News and Weather. 11.15 to 11.55, Sponsored Programmes. 11.55, Weather Forecast. 12 Noon, Gramophone Concert of Light Music; Overture, Si j'étais roi (Adam); Songs: (a) Song from Der Wildschütz (Lortzing), (b) Soldatenart (Abt); Prelude to The Huguenots (Meyerbeer); Ballet Music from The Huguenots (Meyerbeer); Duet from The Bartered Bride (Smetana); Hungarian Rhapsody No. 4 (Liszt); Turkish Suite (Gauwin); Waltz, Wieuer Blut (Johann Strauss); Potpourri of Popular Melodies, Si hören jetzt! (Dostal). 1.15 p.m., Time, Weather, News and Programme Announcements. 1.30, See Langenberg. 2.0 to 2.30, Sponsored Concert. 4.0 (from Freudenstadt), Orchestral Concert; Overture, The Force of Destiny (Verdi); Waltz, Blonde or Brunette (Waldteufel); Romance in F (Grünfeld); Potpourri of Russian Folk Songs, Eishlumen (Leuschner); Kol Nidrei (Bruch). 5.0, Orchestral Concert conducted by Gustav Göricke. Soloist: André Kruchauff (Tenor); Overture, Fienabras (Schubert); Two Songs (Schubert): (a) Du bist die Ruh, (b) Im Abendrot; Four Pieces from the Musik zu einem Bitterballiet (Beethoven); Aria from The Magic Flute (Mozart); Selection from The Pearl Fishers (Bizet); Dance of the Sylphs and Aria from The Damnation of Faust (Berlioz); Prelude to The Third Act of Carmen (Bizet); Overture, The Nuremberg Doll (Adam). 6.15, Time, Weather and Agricultural Notes. 6.25, Legal Talk. 6.50, Talk: Obesity—its Prevention and Cure. 7.15, Time, Weather and Programme Announcements in Esperanto for the Coming Week. 7.30, Two Women on the Tracks of Odysseus—A Discussion. 8.10, National Dance Melodies—Concert by the Stuttgart Philharmonic Orchestra, conducted by Emil Kahn. 9.15, See Frankfurt. 10.30, Time, Weather, News, Programme Announcements and Sports Note. 10.55, Dance Music from Berlin (Witzleben). 12.30 a.m. (Saturday), Close Down. SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Concert: Bells across the Meadow (Kettelbey); Potpourri of Der Bettelstudent (Müllbacher-Winkler); Rendez-vous Lehar (Lehar); Airs from Encore cinquante centimes (Yvain). 6.0, Dance Music. 6.15, Orchestral Music. 6.30, Exchange Quotations and Horse Racing Results. 6.45, Concert: Chanson d'automne (Zouhalov); Les deux ménestriers (Durand); Simple avenu (Thomé); Un soir d'amour (Cazes); Cello Solos: (a) Air from Fortunio (Messager), (b) Zigeunerweisen (Sarasate), (c) Agnus Dei (Bizet), (d) Nocturne in E flat (Chopin), (e) Air from La Cinquantaine (Gabriel Murie). 7.45, Military Music. 7.30, Programme Announcements and News. 7.45, Chansonettes. 8.0, Accor-

dion Solos. 8.15, Concert: Overture, The Daughter of the Regiment (Donizetti); Overture, Si j'étais Roi (Adam); Airs from (a) Sigurd (Reyer), (b) Le Jongleur de Notre-Dame (Massenet), (c) L'Attaque du Moulin (Bruneau), (d) The Valkyries (Wagner). 8.45, Programme by an Argentine Orchestra. 9.0, Light Music. 9.30, Concert: Airs from (a) Mireille (Gounod), (b) Rigoletto (Verdi), (c) Werther (Massenet), (d) Il Trovatore (Verdi), (e) William Tell (Rossini), (f) Nina Rosa (Romberg), and (g) Coups de Roulis (Messager). 10.15, Dance Music. 10.30, North African News. 10.45, Orchestral Music: Selection from The Mikado (Sullivan); By the Blue Hawaiian Waters (Kettelbey); The Doll's Dance (Hagen). 11.0, Light Music. 11.30, Airs from (a) Die Fledermaus (Joh. Strauss), and (b) Countess Maritza (Kálmán). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.0 p.m., Quintet Concert: Prelude in Memoriam (De Micheli); Selection from Madi (Stolz); Violins and Clarinets (Frederiksen); L'antenna di Adriana (Leopoldi); The Secret of the Night (Herbert); Selection from The Last Waltz (O. Strauss); Ave Maria (Caccudi); Ameri (Dick). 8.0 till Close Down, see Turin. TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.0 p.m., Concert Selection from The Geisha (Jones); Black Eyes (Ferraris); American Patrol (Meacham). 7.25, Tourist Talk. 7.30, Time and Announcements. 8.0, Giornale radio, Weather, and Popular Music on Gramophone Records. 8.40, Wireless Notes. 8.45, Symphony Concert, conducted by Bruno Pizzetti; Symphony No. 28 in C (Mozart); Rondo veneziano (Pizzetti); Symphony No. 5 in C minor (Beethoven). Talk in the interval. 11.0, Giornale radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in German. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—6.15 p.m., Tourist and Traffic Report. 6.20, Talk: Trips into the Mountains in the Autumn. 6.45, Weekly Gymnastic Report. 7.0, Talk on Psychology. 7.30, Time, Weather, and Programme Announcements. 7.40, Violin and Cello Recital of Lower Austrian Peasant Music: March; Minuet; Thernberger Hochzeitstüchel; German Dances; Flux uni; Ländler; March. 8.10, Popular Songs of Yesterday and Today—Recital by Ernst Davis: Die Schöne von allen (Holländer); Ich brauch Zigaretten, ich brauch rotes Licht (Braude); Alles für euch, ihr schönen Frau'n (Rotter-Grothe); Die eine Frau (Strauss-Korngold); Two Melodies (Rotter-Kaper-Jurmann). (a) Schade, dass Liebe ein Märchen ist, (b) Es war einmal ein Baby; Küssen sich zwei Victor Fleming). 8.35, Gramophone Records of Famous Artists: Bronislav Huberman (Violin) and the Berlin State Opera House Orchestra: Violin Concerto in D, Op. 35 (Tchaikovsky); Alexander Brailovsky (Pianoforte) and the Berlin Philharmonic Orchestra: Pianoforte Concerto in E Minor, Op. 11 (Chopin); Rudolf Hindemith (Cello) and the Berlin Symphony Orchestra: Cello Concerto in D (Tartini). 9.0, News Bulletin. 10.15, Dance Music from the Café Westminster.

WARSAW

1,414 metres; 120 kW.—11.55 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Gramophone Records (contd.). 2.10, Interval. 3.0, Economic Report. 3.10, Variety Music on Gramophone Records. 4.35, Announcements. 4.40, Talk: Immortality, relayed from Cracow. 5.0, Concert by a Wind Instrument Orchestra, conducted by André Bronke: Overture, Martinella (Fück); Waltz, from The Arabian Nights (Johann Strauss); Sérénade napolitaine (Riveli); Ballet from Pan Twardowski (Lewandowski); Selection from The Countess (Moniuszko); Mosaic (Gevaer); Intermezzo, Gnomonparade (Rhode); Mazurka, Couiavienne (Senkowski). 6.0, Talk. 6.20, Light Music and Dance Music from the Café Gastronomica. 7.45, Miscellaneous Announcements. 7.35, Radio Journal. 7.45, Agricultural Press Review, relayed from Wilno (563 metres). 7.55, Programme Announcements. 8.0, Symphony Concert by the Philharmonic Orchestra. Conductor, Fitelberg. Soloist, Niemczyk (Violin). Overture, Anacreon (Cherubini); Concerto for Violin and Orchestra (Beethoven). 9.0, Talk on Music. 9.15, Concert (contd.): Overture, In the Tatra Mountains (Zelenski); Czech Dances (Weinberger); Ballet Suite from Mlada (Rimsky-Korsakov). 9.50, Radio Journal. 9.55, Aviation Weather Forecast. 10.0, Dance Music. 10.40, Sports Notes. 10.50, Dance Music (contd.). ZURICH.—See Schweizerischer Landessender.

SATURDAY

AUGUST THE TWENTY-SEVENTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Orchestral concert. Organ music. Song recital. "Grand Slam," a Radio Rubber in thirteen quick tricks, by Ashley Sterne and A. A. Thomson. Dance music.
- LONDON REGIONAL** Zigeuner orchestral concert. Promenade concert from Queen's Hall. Dance music.
- MIDLAND REGIONAL** Dance music. Military Band concert. London Regional programme.
- NORTH REGIONAL** Orchestral concert: "His Magnum Opus," a domestic play by J. Logan-Darra. London Regional programme.
- WEST REGIONAL** Orchestral concert: "King Carnival" orchestral programme. Ronald Frankau and his Frankau-Optimists, relayed from Grove Park Pavilion, Weston-super-Mare. National programme.
- SCOTTISH REGIONAL BELFAST** Band concert. Dance music. National programme.
- BRUSSELS (No. 2)** Light music. Operatic programme. National programme.
- COPENHAGEN** Concert from Ostend Kursaal.
- LANGENBERG** Radio Ball for the Older Generation. (From 8.30 p.m. to midnight.)
- MUNICH** "Into the Land of Pleasure," orchestral and choral concert.
- PARIS (Radio Paris)** Gustavus Adolphus Memorial Programme from Nürnberg. (Chimes, Bugle Calls, Battle Hymns, etc.) Chopin recital.

ABROAD

about Nothing (Korngold); Im Wogenden Ahrenfeld (Drausmann); Overture, Morning, Noon and Night (Suppé); Catalonian Love Idyll (Dreyer); Zirkusvolk (Kark); 5.30, Talk on University Life by Dr. Kurt Flemming. 5.55, Talk: The Position of the Apprenticed Artisan in the Economic Crisis. 6.15, Talk on Astronomy. 6.40, Programme to be announced. 7.0, Concert by the Station Orchestra: Waltz, The Good Old Times (Joh. Strauss); Melody from Sylvia (Delibes-Rhode); Overture, Kuslan und Ludmilla (Glinka); Potpourri of Dance-Melodies (Kienzi); Melodies from The Dularhy (Millocker-Mackeben). In an interval at 7.30, Weather Forecast. 8.0, Gustavus Adolphus Centenary Festival, from Munich. 8.50, Cabaret Programme from Berlin (Witzleben). 10.0, Time, Weather, News, Sports Notes and Programme Announcements. 10.30, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

BRUSSELS (No. 1)

(No. 1) I.N.R., 509 metres; 15 kW.—12 Noon, Orchestral Concert. 1.0, Le Journal Parlé. 1.10, Concert (contd.). 5.0, Orchestral Concert, conducted by Franz André; Marche des Poilus (Ackermans); Memories of Chopin (Retras); Trumpet Solo; Humoresque (Dvorak); Bassoon Solo; Suite, The Crown of India (Elgar); Waltz, Coucou (Jouasson); Melody from Le Petit Faust (Hervé); My heart is where the Mohawk flows to-night (Robinson). 6.0, Gramophone Concert; Quand on s'en va (Borel-Clerc); Mes souvenirs pour moi sont des richesses (Oberfeld); Je suis coiffeur (Pingault); Melody from Dédé (Christiné). 6.15, Talk. 6.30, Gramophone Concert (contd.); Ave Maria (Schubert); Symphony No. 2 (Brahms). 7.15, Talk: The National Society of Decorative and Industrial Art. 7.30, Review of International Events. 8.0, Orchestral Concert, conducted by Franz André; Soloist: Mme. Cévine (Songs); One-step on Old French Airs; Lisette (Courquin); Overture, Orpheus in the Underworld (Offenbach); Potpourri, Hallo 1830 (Borchert); Songs; Rhapsody, España (Chabrier). 8.45, Poems dedicated to Gourmands; Readings from the Works of Richepin, Poydenot, Monselet, Bergerat, and Guillot de Saix. 9.0, Concert (contd.); March from Le Tribut de Zamora (Gounod); Volupté (Guillaume); Pieces for Violin and Orchestra (Léonard); A Fantasia; Songs; Put that sun back (Kahal); Too late (Sam Lewis); Waltz, Dolores (Waldteufel); Hungarian March (Berlioz). 10.9, Le Journal Parlé. 10.10, Concert, relayed from the Memline Hall, Antwerp. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Orchestral Concert: Symphony in B Flat (Schubert); Sonata for Violin and Orchestra (Bach); Dorfmusikanten (Mozart). 1.0 p.m., Le Journal Parlé. 1.10

Concert (contd.): Overture, Boccaccio (Suppé); Melody from Le Roi Pausole (Honneger); Songs; Melody from Les Saltimbanques (Ganne); Songs; March of the Grenadiers (Schertzing); 5.0, Concert by the Symphony Orchestra, conducted by Kumps: Overture, Phäeton (Saint-Saëns); Petite Suite (Debussy); Melody from William Tell (Rossini); Aspiration (L. du Bois); Rustic Suite (Gilson); In the Steppes of Central Asia (Borodin); Dances from Prince Igor (Borodin). 6.0, Gramophone Concert: Rhapsody for Saxophone and Orchestra (Debussy); Melody from Boris Godunov (Moussorgsky). 6.15, Talk: The Failure of Commercial Films. 6.30, Gramophone Concert (contd.): Réve (D'Ambrosio); La Craquette (Clérice); La Prière d'une Vierge (Badarzewska); The Little Elves (Eilenberg); Scherzo (Dittersdorf); Si mes vers avaient des ailes (Hahn); Impressions d'Italie (Charpentier). 7.15, Talk: A Journey to Luxembourg. 7.30, Talk on Horticulture and Agriculture. 8.0, Trio Concert: Marche fantastique (Gilson); Melody from Alessandro Stradella (Flotow); Humoresque (Dvorak); Two Melodies (Leemans); Selection from Gipsy Love (Lehar); Two Pieces for Violin (Callémien); Cello Solo: Berceuse slave (Neruda); Melody from Mam'zelle Sourire (Lachaux); A Naples (Darimont). 8.45, Reading. 9.0, Concert relayed from the Kursaal, Ostend; Soloists, Georges Thill (Songs); M. Bouquet (Cello); and Hector Clökens (Violin); Midsommarvaka (Alfven); 'Cello Solo: Le Cygne (Saint-Saëns); A Musical Snuff-Box (Ljadov); Wolin Solo from Picochito (Guinard); Legend of the Graal from Lohengrin (Wagner); Melody from Aida (Verdi); Song from I Pagliacci (Leoncavallo); Overture, The Mastersingers (Wagner). After the Concert, Le Journal Parlé and Dance Music, relayed from the Kursaal, Ostend. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Romanian Music by the Sibiceano Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Orchestral Concert (contd.). 6.0, Educational Programme. 6.40, Popular Music on Gramophone Records. 7.0, Concert of Chamber Music. 7.30, Variety Items. 7.45, Concert of Romanian Music by the Fania Luca Orchestra. 8.45, News Bulletin.

BUDAPEST

550 metres; 12 kW.—Programme also relayed on 210 metres from 8.0 to 12 Midnight.—5.0 p.m., Sponsored Literary Programme. 6.0, Concert by the Weidinger Orchestra; Overture, La Juive (Balévy); Oriental Song (Lindemann); Hungarian Dance (Perényi); Song of Jazz (Damith); Jazz Serenade (Damith); Waltz (Kreessanyi); Tenco (Bachmann); Waltz, Springtime (Brodszky); Rumba, Mexico (Brodszky); Selection from Die Bajadere (Kalman). 7.15, Answers to Correspondents. 8.0, Concert by the Budapest Concert Orchestra; Conductor:

Wilhelm Roubal, Jr.; Soloists: Irène Mikogly, (Songs) and F. Helfai (Violin); Selection from Wilhelm Tell (Rossini); Variations on a Hungarian Dance (Moinar); Violin Solo: Danse macabre (Saint-Saëns); Petite Suite (Debussy); Aria from Mignon (Thomas); Waltz from Der Rosenkavalier (Strauss); Song: Aria from Lakmé (Delibes); Scottish Symphony (Mendelssohn); Overture; Rienzi (Wagner). In the interval at 9.15, Time Signal, News Bulletin, and Weather Forecast. After the Programme, Light Music by the Toll Orchestra from the Kovacevics Restaurant.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1.153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.2 p.m., Weather Forecast. 12.5, String Ensemble Concert relayed from the Wivex Restaurant. 2.0 to 2.30, Interval. 2.30, Gramophone Concert: Adele Kern: Aria from Il Seraglio (Mozart); Rudolf Laubenthal: Song from Siegfried (Wagner); Karin Branzell: Weylas-Gesang (H. Wolf); Jehudi Menuhin: La Folia (Corelli); The Swedish Choir: Hör oss! Svea (Wennerberg); Willy Fritsch: Was ist denn dabei, wenn man sich verliebt (Samek); Ernst Rolf: Hem, hem, hem (Lundberg); Jack Hylton and his Band: Foxtrot, Lovely little Silhouette (Gay). 3.0, Programme for Children. 3.30, Concert by Carl Rydahl's Instrumental Ensemble. Soloist: Elga Gaspari (Pianoforte). Overture, La Sonnambula (Bellini); Waltz, Sirenenzauber (Waldteufel); Selection from Martha (Flotow); Sorg (F. Henriques); Bornholmer Suite (Prenn); Pianoforte Solos (Schütt); (a) Etude mignonne, (b) Carnaval mignon; Hungarian Comedy Overture (Kéler-Béla); Waltz, Krolls Balklange (Lumbye); Selection from Les Brigands (Offenbach); Valse sérieuse (Hansen); Vuggevis (Danning); March, Berliner Luft (Lincke). 5.40, Exchange and Fish Market Prices. 5.50, Talk on Denmark. 6.20, French Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk: What are Politics? 8.0, Chimes from the Town Hall. 8.2, Reading. 8.30 to 12 Midnight, A Radio Ball for the Older Generation. The Station Orchestra conducted by Launy Grondahl. Soloists: Erna Schröder (Songs) and Viktor Fischer (Pianoforte). March, Kongemode (Jespersen); Waltz, Hesperus (Lumbye); Mazurka, Labra Coralline (Becucci); Polka, I lystigt Lag (Fahrbach); Waltz, Nights of Gladness (C. Ahliff); Quadrille from Jordan rundt (Lumbye); Songs (Heiberg); (a) Frederik og Clara, (b) Claras Ensomhed, (c) Clara og hendes Søster, (d) Den Frivillige i Indkvartering, (e) Soldaten paa Hjemvandring; Pieces (Lumbye): (a) King Christian IX. March, (b) Polka, Hostblomsten; Pieces (Möller): (a) Len-gamle Vais (b) Mazurka, Hoftheater-Masque-Ball; Melody (Hansen); Polka, Trøndalshuus (Ivanovic); Polka, Amalie (Jensen); Mazurka, Skaersliber (Jespersen); Polka—Reinländer; Schottische, Tivoli (Gottschalksen); Den toppede Hone; Trippelys (Nielsen); Polka, Untor Donner und Blitz (Joh. Strauss); Pianoforte Solos: (a) Waltz, Johanne, and (b) Polka, Helsen til gamle Venner (Nielsen), (c) Waltz, Fyr; Polka-Mazurka, Natalia (Horneman); The Handicap March (Rosey); Waltz, Mein Lebenslauf ist Lieb und Lust (Jos. Strauss); Mazurka, Violetta; Polka, Gourmand (Waldteufel); Kontrasejre (Nielsen); Waltz, Sohre las oas (Rosas); Mazurka, Petra (Jensen); Tyrolese Waltz and Hopsa; Polka, Alle NF (Lumbye); Galop, Jerbane (Lumbye). In the interval at 10.50, News. 12 Midnight, Time and Chimes from the Town Hall.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items, Programme Announcements and Radio Journal. 7.45, Review of Foreign Politics. 8.0, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Stock Report, Weather Forecast and Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Talk. 7.45, Gaelic Talk. 8.0, Concert by the Augmented Station Orchestra. 8.30, Sketches and Songs by S. Jameson and D. Casey. 9.0, 'Cello Solos by Miss Stewart. 9.15, Soprano Solos by K. McCully. 9.30, Popular Music on Gramophone Records. 10.0, The Old Timers. 10.30, Time Signal, News Bulletin, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW. 11.0 p.m. to 3.9 a.m. (Sunday), Programme in English by the I.B.C.—11.0 p.m., Concert of Scottish Music: Gems of Robbie Burns; Duncan Grey; The Piper of Dundee; Angus Macdonald; Caller Herrin; Loch Lomond; Annie Laurie; The Glasgow Highlanders; Highland Strathspeys; March of the Cameron Men; Mary Morrison;

ALGIERS

363.3 metres; 13 kW.—7.10 p.m., Shipping Notes and Weather Forecast. 7.15, Dance Music. 7.45, Songs from Operettas. 7.55, News Bulletin and Time Signal. 8.0, Concert of Request Gramophone Records. 8.30, Relay of an Open-Air Concert. In an interval at 9.30, News Bulletin. 10.30, (approx.), Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJJ, 349 metres; 8 kW.—8.0 p.m., Trio Concert: Serenade (Ross); El caballero sin nombre (Granados); Cantares (Esteve); Minuetto a Sylvia (Albeniz); Caprice, Recuerdo a Jaen (Peralta); 8.30, Exchange Quotations, Request Gramophone Records and News. 10.0, Chimes, Weather Forecast and Market Prices. 10.5, Concert of Sardanas: Riallera (Ruera); Cataluna avant! (Cassals); La rosa de Sant Jordi (Serrat); En Cintet (Serra); Records d'Olot (Morera); Recordant (Garrera). 10.50, Selection from Luisa Fernanda (F. Morena Torroba), by the Station Orchestra. 11.0, Nena Teruel—Comedy in Two Acts (Serafin and Joaquin Alvarez Quintero). 1.0 a.m. (Sunday); Close Down.

BASLE.—See Schweizerischer Landessender.

BELGRADE

430.4 metres; 2.5 kW.—5.0 p.m., Request Music on Gramophone Records. 6.0, Violin Recital. 7.25, Time Signal and Programme Announcements. 7.30, Popular Music on Gramophone Records. 7.50, Song Recital by D. Petrovic. 8.20, Talk on Wireless. 9.0, Military Band Concert: Prelude (Widor); Three Dances from The Swan Lake (Tchaikovsky); Yugoslav Dance No. 6 (Urban); Waltz, Le Pas des fleurs (Delibes); Overture, William Tell (Rossini); Melody (Mokranjac); Song from Little Floray (Tijardovic); Serbian Fantasia (Rimsky-Korsakov). 10.30, News Bulletin, followed by Dance Music from the Gradjevinska Kasina Restaurant.

BERLIN

KONIGS WUSTERHAUSEN, 1.635 metres; 60 kW.—12 Noon, Weather for Farmers, followed by Gramophone Concert of Popular Operatic Music and Second Weather for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Gramophone Records of Dance Music, relayed from Berlin (Witzleben). 3.0, Handwork for Children. 3.30, Weather and Exchange. 3.45, Programme for Women: 4.0, Talk: Fairy Tales, Ghosts and Superstitions of the Sea. 4.30, See Hamburg. 5.30, Dialogue on Health. 5.50, Talk: The Mountainous District of Hessa. 6.5, Music Review. 6.30, Talk: The Eternal Harlequin—with Dramatic Illustrations. 6.55, Weather for Farmers. 7.0, Elementary English Lesson. 7.30, Talk: The Politician. 7.50, See Munich. 8.45, See Langenberg. 10.15, Weather, News and Sports Notes, followed by Dance Music from Berlin (Witzleben). 12.30 a.m. (Sunday), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.5 p.m., Orchestral Concert, relayed from the Radio Exhibition: Overture, Preciosa (Weber); Prelude to Act Three of Lohengrin (Wagner); Suite from Der Rosenkavalier (R. Strauss); Selection from Martha (Flotow); Talk on Films; Overture, Meerestille und glückliche Fahrt (Mendelssohn); Legend No. 4 (Dvorak); Fifth Movement from the Symphony; Ländlerische Hochzeit (Goldmark); Scènes poétiques (Godard); Polonaise from Eugene Onegin (Tchaikovsky). 6.0, The Narrative of the Week. 6.25, Talk for Workers. 6.55, The Witzleben Station informs its Listeners. 7.0, Topical Talk. 7.10, Labour Market Report. 7.15, Song Recital by Paul Lohmann (Bass); Songs (Mattiesen): (a) Schicksal, (b) Heimgang in der Frühe, (c) Ständchen; Songs (Mus-sorgsky): (a) Lullaby, (b) Song, (c) The Song of the Flea; Songs (Loewe): (a) Edward, (b) Fridericus Rex. 7.50, Sports Notes. 8.0, Cabaret, relayed from the Radio Exhibition. 10.0, Weather, News and Sports Notes. 10.15 (approx.), Dance Music. 12.30 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

104 metres; 13 kW.—6.30 p.m., Radio Journal. 8.0, News Bulletin, Exchange Quotations, and Lottery Results. 8.5, Sports Notes. 8.10, Popular Music on Gramophone Records. 8.25, News Bulletin. 8.30, Gramophone Records (contd.). 9.0, Dramatic Programme, (a) Un Caprice—One Act Comedy (Alfred de Musset), (b) Qui a bu, boira—Play in One Act (J. H. Louwyck), and (c) La part du rêve—One Act Comedy (Paul Baudouin). After the Programme, Theatre Guide and Time Signal.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW.; and GLEIWITZ, 253 metres.—4.30 p.m., Concert of Light Music by the Station Orchestra: Selection from Aida (Verdi-Weninger); Suite from Much Ado

AUGUST 27th

SATURDAY

continued.

Lord Lovat's Lament; John Anderson my Jo; Logie o' Buchan; Lea Rigs; Meg Merrilies. 12 Midnight, Concert: I'm betting the Roll on Roamer; Try to Forget; You Rascal, You; A new Love is Old; When we're Alone; I'm for you a Hundred per Cent.; Maudie; The Queen was in the Parlour; Three little Times; Goopy Geer; I got Rhythm; Gone for Ever; Put that Sun back in the Sky; Auf Wiedersehen, my Dear. 1.0 a.m. (Sunday), Variety Music: Irish Melody; Scottish Reels; Egyptian Ella; Tally Ho; Cliff Hornpipe; Impersonations; Toothache; Laird o' Dunblane; Macleod Reel; Inglenook Memories; They'll all be there but me; Apple Blossom Time. 2.0, Dance Music by the Iboliana; Building a Home for You; Farewell Blues; You're the One I care for; Mood Indigo; Hello, Beautiful; Just a Gigolo; A little Love Song; Lady of Spain; Same as we used to do; The Peanut Vendor; Out of Nowhere; Laughing at Life; Mad about You; Poor Kid; Two Hearts. 2.57, I.B.C. Good-night Melody. 3.0 (approx.), Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—5.0 p.m., Concert from Munich. 6.15, Economic Report. 6.25, Talk: The Author Jakob Kneip, a Lover of Nature. 6.50, The Younger Generation—an Interview with a Young Artisan. 7.15, Time, Weather, Programme Announcements and Economic Report. 7.30 to 10.10, See Stuttgart. 10.10, Time, News, Weather and Sports Notes. 10.45, Concert from Langenberg. 12-Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

CLEWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha, in Morse, 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—4.30 p.m., Concert relayed from the Uhlenhorst Fährhaus. 5.30, Talk: A Trip round the North Mark. 5.55, Look Out, Get In, and Away we go!—a Holiday Sequence by Werner Schumann. 6.35, Talk: Manchuria's Principal Product, the Soya Bean. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20, Cabaret Concert by the Small Station Orchestra, conducted by Fritz Gartz: Fantaisie orientale (Lange); Violin Solo: Romance (Schmalstieg); Hungarian (Black); Cello Solo: Der Traum (Popper); Slav Dance No. 10 (Dvorak); Flute and Bassoon: Der Zwickelwurf (Rob. Strauss); Ensemble, Mississippi Suite (Grafé). 8.0, Gustavus Adolphus Memorial Programme from Munich. 8.40, See Berlin (Witzleben). 10.0, Time, Weather, News, Sports Notes and Announcements. 10.20, Dance Music from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—11.30 a.m., Concert by the Königsberg Opera House Orchestra, conducted by Karl Hrubetz; March, Jugend voran (Translater); Overture, La dame blanche (Boieldieu); Waltz, Wiener Bürger (Ziehrer); Selection from Eva (Lehar); Hungarian Comedy Overture (Kéler-Béla); Waltz, Estudiantina (Waldteufel); Opera Melodies (Weber); Der Rose Hochzeitstag (Jessel); Waltz, Wild Roses (Ganglberger); March, Die Regimentskinder (Fucik). 1.20 p.m., News Bulletin. 1.30 to 2.30, Gramophone Concert of Operatic Music; Selection from Aida (Verdi); Selection from The Tales of Hoffmann (Offenbach); Selection from Tieland (d'Albert); Galli-Curci (Soprano) and Giuseppe de Luca (Baritone); Duet from Rigoletto (Verdi); Aureliano Pertile (Tenor); (a) Aria from Luisa Miller (Verdi); (b) Aria from Manon Lescaut (Puccini); Ballet Music from Undine (Lortzing). 3.20, Programme for Young People. 4.0, Orchestral Concert, conducted by Eugen Wilcken: Trara-Marsch (Morawetz); Overture, Der Triazzo (Czibulka); Idylle orientale (Bortkiewicz); Waltz, Coquette (Zdenko Bayer); Selection from Carmen (Bizet); Waltz from Extrazug nach Nizza (Weiss); Malaguena and Spanish Dance No. 1 in G (Moszkowsky); Selection from Der Mann mit den drei Frauen (Lehar); Overture, Fräulein Loreley (Lincke); March, Stahl und Eisen (Spary). 5.0 (in an interval), Film Review from Danzig. 6.0, Programme Announcements for the Coming Week. 6.10, Programme Intelligence in Esperanto. 6.15, Agricultural Prices. 6.30, World Market Report. 6.35, Talk: Germans in the Balkans. 7.0 (from Danzig), Pianoforte Recital by Maria Donski; Fantasiestücke, Op. 12 (Schumann); (a) Des Abends, (b) Aufschwung, (c) Warum?, (d) Grillen in der Nacht, (e) Fabel, (f) Traumesswären, (g) Das Ende vom Lied: Scherzo in B flat Minor, Op. 31 (Chopin). 7.25, Review of the Month. 7.55, Weather Forecast. 8.0 till Close Down. See Berlin (Witzleben). 12.30 a.m. (Sunday), Close Down.

HILVERSUM

Announced HUIZEN; 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Catholic Radio Society (K.R.O.). 7.40 a.m., Gramophone Records of Variety Music. 8.55 to 9.40, Interval. 9.40, Trio Concert. 11.10, Religious Address. 11.40, Police Notes. 11.55, Sextet Concert: Quick Step (Lindner); Die Nacht von Saragossa (Frey); Swabian Peasant Waltz (Krome); Leuz (Hildach); Potpourri (Golwyn); Waltz from Der Sieger (Heymann); Selection from The Gipsy Princess (Kalman); Morgenständchen (Lincke); Waltz, The Skaters (Waldteufel); March (Maas). 1.25 to 1.40 p.m., Interval. 1.40, Gramophone Records of Light Music. 2.10, Programme for Children. 3.40, Gramophone Records of Variety Music. 4.40, Esperanto Notes. 4.25, Gramophone Records of Variety Music. 4.55, Recital of Negro Spirituals. 5.10, Gramophone Records of Light Music. 6.0, Press Review. 6.20, Gramophone Records of Light Music. 6.50, Talk by Prof. Gelissen. 7.10, Police Notes. 7.25, Sports Talk. 7.40, Variety Concert; The Station Orchestra conducted by M. van t' Woud; Soloist, Mme. Mida Dorel (Songs); Selection from Erlenhügel (Kuhliau); Waltz from Eine Ballnacht (Strauss); Two Songs from Wenn die kleinen Veilchen blühen (Stolz); Two Songs from Sunshine Susie (Abraham); Song from Zwei glückliche Herzen (Abraham); Liebesliederwalzer (Moszkowsky); Colombine (Dufort); Russian Mazurka, The Czarina (Ganne) Songs; Waltz, Vogelstimmen (Waldteufel); Ballet Music from Coppélia (Delibes); Fantasia on Offenbach's La Vie parisienne (Petras); Song from White Horse Inn (Benatzky); Waltz, Traumideale (Fucik); Selection from Der Bettelstudent (Müllöcker); March, Blaze Away (Holzmann); March, Uncle Sammy (Holzmann). 10.40, Gramophone Records of Variety Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

(Announced HILVERSUM), 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25, Physical Culture. 7.40, Light Music on Gramophone Records. 8.40, Trio Concert. 9.40, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55, till Close Down. V.A.R.A. Programme. 9.55, Trio Concert with Dramatic Items and Recitations. 11.40, Septet Concert: March, Perpetuum mobile (von Blon); Waltz, Sirenenzauber (Waldteufel); Tango, Camilla (Hajos); Selection from The Bird Fancier (Zeller); Variety Music on Gramophone Records; Selection from La Traviata (Verdi-Alder); Tango, Fabelhaft siehst du heute wieder aus (Meisel); Waltz, Dort wo die Donau fließt (Translater); Variety Music on Gramophone Records; So küsst man nur in Wien (Abraham); Ein hischen Liebe für mich (Abraham); Einmal kommt der Tag (Benatzky); Raindrops (Myers); Bluebells (Myers); Waltz, A Thousand Kisses (Joyce); Minuet (Paderewsky); Heut bin ich gut aufgelegt (Jurmant). 1.25, Interval. 1.40, Talk for Young Socialists. 1.55, Organ Recital by Joh. Jong: Rocco Serenade (Meyer-Helmund); Selection from Les Dragons de Villars (Maillart); Day by Day (Nicholls). 2.10, Sports Talk. 2.25, Organ Recital (continued); Selection from The Geisha (Jones). 2.40, Groningen Programme: Songs, Address and Recitations. 4.10, Trio Concert: Tarantella, Napoli (Mezzacapo); Overture, Fingal's Cave (Mendelssohn); Waltz, Transaktionen (Strauss); Selection from Coppélia (Delibes). 4.40, Topical Talk. 4.55, Concert (continued); Ballet Music from Faust (Gounod); Le Cygne (Saint-Saëns); Schön Rosmarin (Kreisler); Scènes pittoresques (Massenet). 5.25, Literary Talk. 5.55, Songs of the Nations, by Edwin Doorens. 6.10, Programme for Children. 7.10, Songs (cont.). 7.25, Address. 7.40, Variety Concert: Overture to a Revue (Lincke); Waltz, Die Werber (Lanner); Hungarian Rhapsody No. 2 (Liszt); Potpourri, Lasst Schlinger sprechen (Dostal); Song by a Male Voice Double Quartet; Variety Items: Kirschblüte (Albert); Memories of Capri (Beccé); Dance (Petras); Madrid (Borchert); Song by a Male Voice Double Quartet; Wien bei Nacht (Kozak); In the Interval, Radio Play (Herman Heyermans); After the Programme, News, Organ Recital and Gramophone Records of Light Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and HELSINKI, 368.1 metres.—6.40 p.m., Selection from La Bohème (Puccini). 7.0, A Sketch. 7.25, Song Recital. 7.50, Humorous Items. 8.40, Strauss Concert by the Station Orchestra; Overture, Die Fledermaus; Lagunen-Walzer;

Czardas; Egyptian March. 8.45, News in Finnish. 9.0, News in Swedish. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert: The Paris Conservatoire Orchestra, conducted by Philippe Gaubert; Le Roi d'Ys (Lalo); The German Symphony Orchestra, conducted by Bruno Walter; Waltz, Tales from the Vienna Woods (Joh. Strauss); Squire's Celeste Octet; Opera Fantasia (arr. Squire); Alexander Kipnis (Basa); Traum durch die Dämmerung (R. Strauss); Symphony Orchestra, conducted by Sir Henry Wood: Prelude (Järnefeldt); Melodies from Die Fledermaus (Joh. Strauss). 12 Noon, Variety Music on Gramophone Records. 1.15 p.m., Weather, Announcements and Time. 1.30, See Stuttgart. 2.35, Gramophone Concert of Popular Music. 3.30, Economic Notes and Time. 3.50, Programme for Children. 4.20, Talk. 4.40, Talk for Women: Essen, the Town of the Great Abbesses. 5.0, See Munich. 6.20, Talk on Book-keeping. 6.45, Weather, Time, Economic Notes and Sports Report. 7.0, Talk: Nature and Intellect in Literature. 7.20, Wireless Hints. 7.30, Legal Talk. 7.55, News Bulletin. 8.0, Gustavus Adolphus Memorial Programme from Munich. 8.45, Into the Land of Pleasure—Programme by the Small Station Orchestra, a Choir and Soloists. 10.15, News and Sports Notes. 10.35, Concert, conducted by Eysoldt. 12 Midnight, Dance Music. 1.0 a.m. (Sunday), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW.; and DRESDEN, 319 metres.—6.0 p.m., Wireless Hints. 6.50, A Modern Dictionary. 7.0, Talk: An Exploration of the Universe. 7.30, Mandoline Concert by the Children's Choir of the German Workers' Mandoline League: Das Wandern ist des Müllers Lust (Zöller); Swabian Folk Song, Muss i denn zum Städtele hinaus, Lieb' Heimatland ade; Am Brunnen vor dem Tore (Schubert); Ein Sträusschen am Hute; Die Mühle am Wiesenhalm (Schmidt); Jetzt gang i ans Brünnele (Folk Song); Drunten im Unterland (Folk Song); Kuckuck-Kuckuck; Wenn der Auerhahn balzt; Alle Vögel sind schon da; Ein Vöglein sang im Lindenbaum (Eberle); Das stille Tal (Folk Song); Frohe Heimkehr (Schmidt); Munter durch die Welt (arr. Kahle); Ländler (Schmidt); March, Durch Wald und Flur (Schmidt). 8.0, Gustavus Adolphus Centenary Festival from Munich. 8.55, Report from the Lantern Festival in Halle. 9.15, Vocal and Instrumental Concert: La Folia, for Violin and Pianoforte (Corelli); Three Baritone Solos (Schumann); (a) Talismane, (b) Auf das Trinkglas eines verstorbenen Freundes, (c) Provencal Song; Dance Humoresque, Op. 35, No. 1 (Palmgren); Finnish Lullaby, Op. 35, No. 1 (Palmgren); Pianoforte Solo; Duet in A for Violin and Pianoforte (Schubert); Four Baritone Solos (Hugo Wolf); (a) Der Freund, (b) Verschwigene Liebe; (c) Selbstgeandnis, (d) Gesellenlied; Romantische Tanzbilder, Op. 10 (Raphael). 10.20, News Bulletin, followed by Dance Music. 12 Midnight (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Quintet Concert. 7.0, Physical Culture. 7.30, Humorous Programme. 8.0, Violin Recital by Herma Studeny. 9.0, Concert of Dance Music, relayed from Bled. 10.0, Time and News Bulletin, followed by Light Music.

LWOW

381 metres; 16 kW.—7.15 p.m., Miscellaneous Items. 7.45, Answers to Correspondents. 8.0, See Warsaw. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA; 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert of Light Music. 7.30, Radio Gazette for Lyons and the South-East. 8.30, La Pépiche—Opéra-Comique (Offenbach), relayed from Paris (Ecole Supérieure) (447.1 metres).

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—8.0 p.m., Chimes, Market Prices and Request Music on Gramophone Records. 9.15, News Bulletin. 9.30 to 11.0, Interval. 11.0, Chimes and Time Signal. 11.15 (approx.), Excerpts from (a) Bohemios—Musical Play (Vives), (b) Los Claveles—Musical Play (Serrano). 1.15 a.m. (Sunday), News Bulletin. 4.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—6.10 p.m., Musical Programme. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 8.0, Talk in Spanish: The Revolution of 1905. 9.0, Talk in English: Lenin. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—5.0 p.m., Concert by the Lorenz Jais Orchestra; Overture, Egmont (Beethoven); Andante from the Fifth Symphony in E flat minor (Tchaikovsky); Selection from Czardas and Carpenter (Lortzing); Indian Intermezzo (Ketebeby); Waltz, Auf Glückes Wogen (Waldteufel); Potpourri of A Waltz Dream (O. Strauss); Serenade, A Love Affair (Clarke). 6.15, Programme for Young People. 7.0, Programme to be announced. 7.45, Wireless Notes. 7.50, Memorial Programme in Connection with the Gustavus Adolphus Centenary in Nürnberg; Chimes from St. Sebald and St. Lorenz; Swedish Cavalry Bugle-Calls; Hymn, Wacht auf, ruft uns die Stimme; Address by the Rev. Johannes Lindgren; Battle Hymn of Gustavus Adolphus; Address by the Dean of Nürnberg; Hymn, Herr, unser Gott, du bist die Stärk; Hymn, Nun danket alle Gott! 8.45, Military Band Concert; Conductor: Georg Fürst; March (Fürst); Overture, Oberon (Weber); Selection from The Rheingold (Wagner); Prince Eugène—Folk Song with Variations (arr. Kremser); Ballet Music from The Prophet (Meyerbeer); Potpourri of his own Works (Fürst). 9.45, Fritz Hofmann at the Microphone. 10.20, Time Signal, Weather Forecast, News Bulletin, and Sports Notes. 10.45, Concert from Langenberg. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Bjakan, 447.1 metres.—5.0 p.m., Light Music on Gramophone Records. 5.45, Children's Corner. 6.15, Concert of Folk Music. 6.45, Economic Report. 7.0, Announcements, Weather Forecast, and News Bulletin. 7.30, Talk: The Death of Wallenstein, relayed from Christiansand, 235.5 metres. 8.0, Time Signal. 8.2, Concert by the Station Orchestra, conducted by Hugo Kramm; Overture, William Tell (Rossini); Selection from Lohengrin (Wagner); Devil's Dance (Kuula); Elverhøj (Sandby); Amoroso (Bayer); Bohemian Dance (Bayer); Caro mio ben (Giordano); Potpourri, Musical Memories (Lindemann); Waltz (Benno Moe); Melody (Joh. Halvorsen); Intermezzo lyrique (Gustavson); Popular French Melodies (arr. Leopold); Melody (Svendsen). 9.40, Weather Forecast and News Bulletin. 10.0, Topical Talk. 10.15, Weekly Review. 10.45, Dance Music on Gramophone Records. 12 Midnight, Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—8.0 p.m., Announcements, Tourist Report, Agricultural Notes and Giornale Radio. 8.20, Gramophone Records of Light Music. In the interval at 8.45, Time Signal and Announcements. 8.50, Sports Review. 8.50 (approx.), L'amante nuova—Operetta in Three Acts (Ostali). In the intervals, Talk and Announcements. News after the Programme.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6 dot Signals).—6.45 p.m., Dramatic Programme. 7.0, Le Journal Parlé. 8.20, Weather Report. 8.30, Variety Programme: (a) Mam'selle T.S.F.—Sketch, (b) La Partie de Dames—One-Act Comedy (Octave Feuillet), (c) Le Secret de Polichinelle—Dialogue (Jean Richepin), (d) La double imposture—One-Act Play (Henri Picard). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—7.0 p.m., News Bulletin and Press Review. 7.5, Light Music on Gramophone Records. 7.45, Talk: The Event of the Week. 8.0, Gramophone Concert (contd.). 8.15, Les Suites d'un premier lit—Play (Labiche). 9.0, Concert of French Songs by Music Hall Artists. 10.0, Gramophone Dance Music. 12 Midnight, Close Down.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Concert of Light Music. 8.0, Press Review and Weather. 12 Noon, Gramophone Concert: Aubade printanière (Lacombe) Au revoir Paris (Boyer); La Lettre de Manon (Gillet); The Fox and the Crow (Zoubalov); Moonlight on the Alster (Fétras); Le petit rentier (Piercé); Waltz, Les Patineurs (Waldteufel); Song, Blonde amie (Carcel); Conchita (Parès-Van Parès); The Forge in the Forest (Eilenberg); Griserie (Bosc); Minuit, Place Pigalle (Edwin); Selection from La Vagabonde; Vieux airs limousins (Rouchaud); Partir avec vous from La Vagabonde; Impression de Damas (Konguelli); Chéri (Monteux-Wilwite); Happy Days are here again (Milton). In the intervals, News and Weather. 6.30, Market Prices, Weather, Agricultural Report, Talk, and Racing Results. 7.0, Talk arranged by the Union des Grandes Associations françaises. 7.40, Gramophone Concert: T'amo

AUGUST 27th **SATURDAY** continued.

(Silesu); Mon coeur est pour toi (Silesu); Russian Potpourri (Sorokin); Melody for Cello (Rubinstein); Dis-moi (Larrieu); Ce n'est pas vrai (Larrieu); Les Myrtes sont fétrés (Fauré); Ma Normandie (Béart); Ballet Music from Les Millions d'Arlequin (Drigo). 7.45, Commercial Prices and News. 8.0, Literary Readings by Denis d'Ines. 8.30, News and Sports Notes. 8.40, Review by Jean Rieux. 8.45, Chopin Pianoforte Recital by Léon Kartun, of Romania: Nocturne No. 13; Impromptus Nos. 2 and 3; Mazurka; Three Etudes; Scherzo in B flat. 9.30, Gramophone Concert: Part I, Humorous Programme: Un chasseur comme moi (Devilliers); Un pêcheur comme moi (Devilliers); Les chapeaux du premier Janvier (Nohain); Le pore épïc (Nohain); Une locomotive regarde une vache en passant (Nohain); Le sonnet d'Arvers à l'envers (Donnay); A propos de clous (Bach and Laverne); Grock in his Music-Hall Sketch. Part II, Offenbach Programme: Overture, Orpheus in the Underworld; Selection from La Boulangère a des écus; Song from La Pêricôle; Song from The Grand Duchess of Gerolstein; Selection from Blue Beard; Songs from La Belle Hélène; Duet from Madame l'Archiduc; Songs from The Tales of Hoffmann.

PITTSBURGH

WESTINGHOUSE ELECTRIC (WKKA), 306 metres; 25 kW. Relayed by W2XK on 48.86 metres and 25.27 metres.—9.0 p.m., Saturday Matinée, from New York. 9.30, Concert Favourites, from New York. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, WKKA Artist Bulletin. 10.12, Programme Announcements. 10.15, Talk: Health through Recreation. 10.30, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie. 10.50, Temperature Report. 10.51, Weather Report. 11.0, Little German Band. 11.30, Time Signal. 11.31, Temperature Report. 11.32, Teaberry Sport Review. 11.37, Press News Reeler. 11.44, Weather Report. 11.45, Programme to be announced. 11.59, Time Signal. 12 Midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Sunday), Terrace Gardens Orchestra, from New York. 12.30, Sacred Songs. 1.0 to 3.0, New York Relay. 1.0, The Play's the Thing. 1.30, Dance with Countess D'Orsay. 2.0, Porto-Rican American Coffee—Eltoro Week-end Review, with Gus Van, the Pickens Sisters, and Vic Arden's Orchestra. 2.30, The First Nighter. 3.0, Homey and Old Fashioned. 3.30, Object Matrimony, from New York. 3.45, Twenty Fingers of Harmony, from New York. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last-minute News Flashes. 4.20, Messages to the Far North. 5.0, Jack Pettis and his Orchestra. 5.30, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.0 kW.—7.15 p.m., Announcements and News Bulletin. 7.35, See Warsaw. 7.45, Popular Music on Gramophone Records. 7.58, Time Signal. 8.0, See Warsaw. 9.55, Time Signal, Sports Notes and Police Report. 10.5, See Warsaw. 10.40, News Bulletin. 10.50, Dance Music from the Polonia Café.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW; LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Geneva), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5, Gramophone Records (contd.). 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, Concert by a String Orchestra. 6.30 (from Geneva), Dance Music on Gramophone Records. 7.0 (from Geneva), Chimes from St. Peter's Cathedral, followed by Weather Forecast. 7.10 (from Geneva), Dance Music (contd.). 7.30 (from Lausanne), Talk: The Week in Foreign Politics. 8.0, Concert by the Station Orchestra. 9.5 (from Lausanne), Concert by the Liège Trio: M. L. Degraux (Pianoforte), M. L. Lardinois (Violin), and M. N. Nicolaj (Cello). 10.0, News Bulletin and Weather Forecast. 10.10 (from Montreux), Dance Music from Le Perroquet. 11.0, Close Down.

RJUKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW. Relayed by Naples, 319 metres, and 2RO, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Light Music. 1.0 to 2.15, Sextet Concert: Loreley (Johann Strauss); Canto per voi, Signora (Aru); Yarnari (Pant); Selection from Madame Chrysanthe (Messager); Cello Solos: (a) Erotica (Grieg), (b) Minuet (Becker), (c) Butterflies (Popper); Selection from Frederica (Lehar); Selection from Sigismund (Gilbert). In the intervals at 1.15, Giornale Radio, and at 1.30, Time and Announcements. 5.0, Exchange, Report of the Royal Geographical Society, Giornale Radio and Announcements. 5.15, Reading. 5.30, Vocal and Instrumental Concert: Soloists, Luisa Carlevarini (Violin), O. Parisini (Soprano), and I. Yervolino (Tenor); Violin Solos: Three Hebrew Melodies (Kirman-Dushkin); Duet for Soprano and Tenor from Act I of Madame Butterfly (Puccini); Violin Solos from Scheherazade (Rimsky-Korsakov): (a) Persian Song, (b) Oriental Dance; Tenor Solo

from The Force of Destiny (Verdi); Duet for Soprano and Tenor from Cavalleria rusticana (Mascagni). 7.10 (Naples), Shipping and Sports Notes. 7.15, Atmospheric Signals, Giornale Radio, and Agricultural Notes. 8.0, Time, Announcements, and Gramophone Records of Variety Music. 8.30, Sports Notes, Announcements, and Tourist Report. 8.45, Sicilian Vespers—Opera in Five Acts (Verdi). In the intervals, Two Talks and Announcements. News after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—7.0 to 9.45 p.m., New York Relay. 7.0, Jack Miles' Orchestra. 7.30, Symphonic Matinée. 8.0, Merry Madcaps. 8.45, Matinée Programme. 9.30, Soloist. 9.45, Studio Ensemble. 10.15, Paul Whiteman's Rhythm Boys, from New York. 10.30, Melodic Gems Quartet, from New York. 11.0, Joe and Eddie. 11.15, Waldorf-Astoria Orchestra, from New York. 11.30, American Trio. 11.45, Baseball Scores. 12 Midnight, Swimming Lesson. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Sunday), Billy Rose (Tenor). 12.30, Musical Programme from New York. 12.45, The Goldbergs, from New York. 1.0, Lady Fingers. 1.15, Bernard Silberg (Cellist). 1.30 to 5.30, New York Relay. 1.30, K-7, Secret Service Spy Story. 2.0, Cuckoo. 2.30, Balkan Mountain Men. 3.0, Lucky Strike Dance Hour. 4.0, Russ Columbo and his Orchestra. 4.15, Talk by Merle Thorpe. 4.30, Paul Whiteman's Orchestra. 5.0, Ralph Kirbery (Dream Singer). 5.5, Buddy Rogers and his California Cavaliers. 5.30, New Kenmore Orchestra. 6.0 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres; 60 kW; BASEL, 244.1 metres, and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Variety Programme on Gramophone Records. 1.50, Weather Forecast and Exchange Quotations. 2.0 to 3.30, Interval. 3.30, Choral Concert on Gramophone Records. 4.0 (from Basle), Programme for Workers. 4.30 (from Basle), Accordion Solos by R. Burkhalter. 5.0 (from Basle), Medical Talk by Dr. G. Mattmüller. 5.30, Weather Forecast. 5.32 to 6.30, Interval. 6.30 (from Zürich), Talk: The Graf Zeppelin's Flight to Brazil. 7.0 (from Zürich), Chimes from Zürich Churches, followed by Market Prices. 7.15, Listeners' Quarter Hour. 7.30, Popular Music on Gramophone Records. 8.0 (from Basle), Concert by the Basle Orchestral Society, relayed from the Conservatoire Concert Hall: Conductor, G. Becker; Soloists, Salvatore Salvati (Tenor) and Mme. Tschachtli (Cello). 9.30, Weather Forecast and News Bulletin. 9.45, Dance Music with Cabaret Items on Gramophone Records. 11.0, Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.0 p.m., Concert of Light Music for Strings; Suite (Coleridge-Taylor); Liebeswalzer (Johann Strauss); Cradle Song and Irish Melody (Svanfeldt); Selection from Die Dreigroschenoper (Kurt Weill); Ein spanischer Tango und ein Mädel wie Du (Rotter-Jurmann); Hungarian Dances Nos. 1 and 4 (Brahms); Potpourri, Mosaic (Zimmer). 5.5, Reading. 5.30, Gramophone Records of Variety Music. 6.30, Concert of Light Music relayed from Falun (307 metres): Songs and Pianoforte and Accordion Solos. 7.0, Song Recital. 7.15, Weather and News. 7.30 (from Uppsala), Talk: Poems in Swedish Dialect. 8.0, Gustavus Adolphus Centenary Festival from Munich. 8.45 (from Göteborg), Programme of Old Time Dance Music. 9.45, Weather and News. 10.0, Dance Music. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Light and Classical Music on Gramophone Records. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.2, Concert relayed from Bordeaux-Lafayette. 1.50, Variety Music on Gramophone Records. 2.0, Talk in French for Workers. 2.15, Gramophone Dance Music. 3.45, Talk in French, with Musical Illustrations: Schumann's Papillons. 4.0, Dance Music on Gramophone Records. 4.45, Legal Talk in French. 5.0, Concert by the Station Orchestra: March (Wesly); Waltz, Soirée d'été (Waldteufel); Sérénade (Fauche); Overture, Les cent Vierges (Lecocq); Three Spanish Dances (Moszkowsky); Selection from The Geisha (Jones); Waltz, Rote Rosen (Lehar); March (Benoit). 6.0, Talk in French for Tourists. 6.15, Agricultural Talk in French. 6.30, Concert by the Station Orchestra, conducted by Roskam: Overture, Alessandro Stradella (Flotow); Selection from The Tales of

Hoffmann (Offenbach); Ballet Music from Isolde (Messager); Träumerei (Schumann); Abendlied (Schumann); Selection from Manon-Lescaut (Puccini); March, Hail to the Spirit of Liberty (Souza). 7.30, Time Signal. 7.31, News in French and German. 7.45, Concert by the Station Orchestra: Ballet Music from Cinq-Mars (Gounod); Suite variée (Pierné); Waltz (Filippucci); Selection from the Maid of the Black Forest (Jesse); Wireless March (Pischeck). 8.30, Concert relayed from Thionville. Conductor: M. F. Klein. Marche, Old Comrades (Feike); Overture, Zampa (Hérold-Bouchel); Ma Normandie—Vocal Trio with Orchestral Accompaniment (Béart); Ballet Suite (Popy); Waltz, Très jolie (Waldteufel); Cornet Solo: Polka, Après la Guerre; Overture, William Tell (Rossini); Song for Four Male Voices (Häfer); Potpourri (Hause); Marche lorraine (Ganne). 10.30, Dance Music by André Vallée and his Melody Kings from the Savoy Restaurant. 12 Midnight, Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW; and FREIBURG, 570 metres.—10.0 a.m., Song Recital by Gusti Sauter (Soprano): Five Songs (Brahms): (a) Blauer Himmel, (b) Muss es eine Trennung geben, (c) Sandmännchen, (d) Dein beaues Auge, (e) Serenade; Three Songs (Josef Haas): (a) Stilles, kleines Kämmelchen, (b) Warte, wenn wieder das Veilchen blüht, (c) Königin Jugend. 10.20 (from Karlsruhe), Recital of Eighteenth Century Oboe Music: Sonata in G Minor for Oboe and Pianoforte (Telemann); Concerto for Oboe and Pianoforte (Handel); Adagio for Oboe and Pianoforte (Grazioli). 11.0, Time, News and Weather. 11.15 to 12 Noon, Sponsored Concerts. 12 Noon, Weather Forecast. 12.5 p.m., Sponsored Music. 12.20, Song Recital by Karl Jautz (Tenor) and Karl Jentsch (Bari-tone); The Stars were shining, from Tosca (Puccini); Aria from Manon Lescaut (Puccini); Letzter Frühling (Grieg); Erotica (Grieg); Duet from Bellisario (Donizetti). 12.50, Trio Concert: March, Immer vorwärts; Waltz, Gondolier; Turkish Serenade, Ben Akiba; Ländler, Bauernstolz; March, Gordon Bennett. 1.15, Time, Weather, News and Programme Announcements. 1.30, Concert of Marches and Waltzes from Operetta—by the Station Orchestra, conducted by Gustav Görlich: March from Boccaccio (Suppé); Waltz from Das verwunschene Schloss (Müllöcker); March from The Merry Peasant (Fall); Waltz from The Gipsy Baron (Johann Strauss); March from The Mikado (Sullivan); Waltz from Die sieben Schwaben (Müllöcker); March from Der Probekuss (Müllöcker); Waltz from The Geisha (Jones). 2.30, Concert from the Café Königshof: Foxtrot (Henderson); Slow Foxtrot, Two little white hands (Nicholls); Tango, Adieu (Valerio); Waltz (Coods); Pianoforte Solo: Liebestraum (Liszt); Foxtrot, Mona Lisa (V. H. Sullivan); Waltz, A Song of Cuba (Hughes); Slow Foxtrot (Bob Henders); Foxtrot, Song of Happiness (Nicholls). 3.10, Mandoline Concert: Waltz, Wellenspiel (Ritter); Scherzo (Ritter); Ballet, Brahma (Monplaisir); Lombard Serenade (Monti). 3.30, Programme for Young People, relayed from Frankfurt. 4.30, Choral Concert: Das stille Tal (Nagel); Ein Stündlein wohl vor Tag (Moldenhauer); Nun leb wohl du kleine Gasse (Silcher); O wie herbe ist das Scheiden (Silcher); Morgen im Walde (Hegar); Jetzt gang i aus Brünnele (Silcher); Untrene (Silcher); Am Brunnen vor dem Tore (Schubert); Einkehr (Zöllner); Erste Rose (Zöllner). 5.0, Concert from Munich. 6.15, Time, Weather and Sports Notes. 6.30, Talk: Wood and Steel in the Building of the Small House. 7.0, Lörrach—A Report (on Gramophone Records) on the Two Hundred and Fiftieth Jubilee of the Town of Lörrach. 7.30, Concert of Swabian Folk Music by the Station Orchestra, conducted by Gustav Görlich. Soloist: Hans Hofele (Baritone). 8.0, Gustavus Adolphus Festival from Munich. 8.50, Cabaret Programme from Berlin (Witzleben). 10.20, Time, Weather, News and Programme Announcements. 10.45, Concert from Langenberg. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Orchestral Music. 5.45, Concert: Airs from (a) Philémon et Baucis (Gounod), (b) Aida (Verdi), (c) Boris Godunov (Mussorgsky), (d) Countess Maritza (Kálmán), and (e) La Basoche (Messager). 6.15, Music by an Argentine Orchestra. 6.30, Horse Racing Results. 6.45, Concert: Airs from (a) Hansel and Gretel (Humperdinck), (b) The Tales of Hoffmann (Offenbach), (c) La Favorita (Donizetti), and (d) Sigurd (Reyer). 7.15, Accordion Solos. 7.30, Programme Announcements and News. 7.45, Military Music. 8.0, Concert: Airs from (a) Si j'étais Roi (Adam), (b) Don Quichotte (Massenet), (c) Le grand Mogol (Audran), (d) François les bas bleus (Messager), (e) Les Cloches de Corneville (Planquette), (f) Madame Pompadour (Fall), (g) Atlantis (Chantier), (h) La fin du monde (Levine). 8.45, Light Music. 9.0, Concert: Melodies from Mignon (Thomas); Les réves sent des bulles de savon (Hermite); Moon-

light on the Danube (Gay); Kaiserwalzer (Strauss); Dorfschwalben aus Oesterreich (Jos. Strauss). 10.0, Military Music. 10.15, Humorous Sketches. 10.30, North African News. 10.45, Light Music. 11.0, Concert: Adieu mein kleiner Garde-Offizier (Stolz); Air from Manon (Massenet); A la foire (Bach-Laverne); Les deux gendarmes (Nadanda); Sound Film Melody; Spanish Rhapsody (Ravel); Souvenir (Drda); Souvenir de moisson (Vacher); March (Wagner); Vers toi je reviens; Donauwellen (Ivanovici). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.0 p.m., Quintet Concert; Peru (Donati); Melody (Siede); Old Russia (Leuschner); Il piccolo soldato (De Micheli); Melody (Michaelov); Selection from The Bayadere (Kálmán); Annamite Dance (Hamud); Mildred (Consiglio). 8.0 till Close Down, see Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—7.0 p.m., Concert: Selection from The Blue Mazurka (Lehar); The Phantom Brigade (Myddleton); Posillipo (Cortopassi). 7.25, Tourist Talk. 7.30, Time and Announcements. 8.0, Giornale radio, Weather and Popular Music on Gramophone Records. 8.30, Talk: Events and Problems. 8.45, Variety Concert. Review of New Books in the interval. 10.0, Dance Music from the Luna Park Lido, Milan. 11.55, News Bulletin.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—5.10 p.m., Orchestral Concert: Overture, The Hermit's Bell (Maillart); Waltz, Ganz allerliebste (Waldteufel); Selection from The Tales of Hoffmann (Offenbach); Viennese Song, Im Hehental (August Schemel); Selection from Gipsy Love (Lehar); Potpourri of Marches (Komzak); Idyll, The Forge in the Forest (Eilenberg); Potpourri, Musikalische Täuschungen (Moravetz); March, Kranenbitter (Heckel). 6.40, Topical Talk. 7.10, Time, Weather, Sports Notes and Programme Announcements. 7.20, Songs and Arias—a Recital by Maria Gerhart: Constance's Aria from Il Seraglio (Mozart); Aria of the Queen of the Night, from The Magic Flute (Mozart); Siciliana from Sicilian Vespers (Verdi); Page's Aria from A Masked Ball (Verdi); Three Songs (Hugo Wolf): (a) Der Gärtner, (b) Nixe Binsenfluss, (c) Er ist's; Recitative and Aria from Ariadne auf Naxos (Richard Strauss); Waltz, Parla (Arditi). 8.0, See Berlin (Witzleben). 10.0, News Bulletin. 10.20, Dance Music from Berlin (Witzleben).

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Gramophone Records (contd.). 2.10, Interval. 3.0, Economic Report. 3.10, Variety Music on Gramophone Records. 3.30, Military Report. 3.40, Talk for Young People: The Shores of the Baltic. 4.5, Popular Music on Gramophone Records. 4.35, Announcements. 4.40, Review of Periodicals. 5.0, Orchestral Concert, conducted by Oziminski: Overture, Flotte Bursche (Suppé); Danse des marins (Ebonet); Sérénade espagnole (Bizet); Oriental Dance (Lubomirski); Marienwalzer (Lanner); Foxtrot Overture (Strasser); Indian Suite (Luling); Norwegian Rhapsody (Svendsen). 6.0, Talk, relayed from Lwow. 6.20, Report from the Mint. 6.45, Light Music and Dance Music from the Cristal Restaurant. 7.15, Miscellaneous Announcements. 7.35, Radio Journal. 7.45, Agricultural Notes. 7.55, Programme Announcements. 8.0, Concert by the Warsaw Philharmonic Orchestra, conducted by Nawrot: Soloist: Poplawski (Tenor); L. Urstein at the Pianoforte; Overture to a Revue (Lincke); Waltz from Eva (Lehar); Polka, Piccolo (Strauss); Perpetuum mobile (Joh. Strauss); Song: (a) Air from Where the Brak sings (Lehar), (b) Soldier's Air from Bruder Sträubinger (Eysler), (c) Air from Herbstmanöver (Kálmán); Czarevitch Potpourri (Lehar). 8.55, Feuilleton: On the Horizon. 9.10, Concert (contd.): Songs; Orchestra, Sérénade à la lune (Moret); Fête florentine (Mignan); Waltz from Gipsy Love (Lehar); Polka, Hélène (Wronsky); Cracovienne (Noskowski); Mazurka, The Cyclist (Lewandowsky). 9.50, Radio Journal. 9.55, Aviation Weather Forecast. 10.0, Interval. 10.5, Chopin Recital by J. Smidowicz; Fantasia in F Minor; Two Waltzes: (a) A la flat, Op. 42, and (b) in C sharp minor, Op. 64, Nocturne in F sharp minor; Polonaise in A flat. 10.40, Sports Notes. 10.50, Dance Music. 12 Midnight, Close Down.

ZURICH.—See Schweizerischer Landessender.

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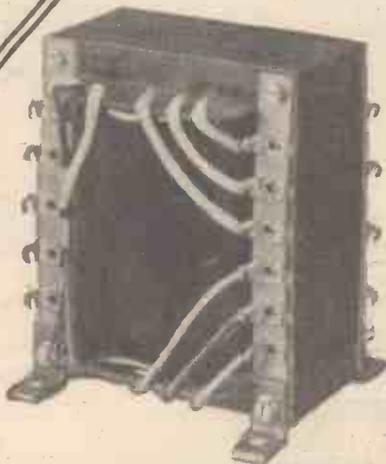
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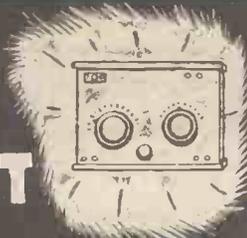
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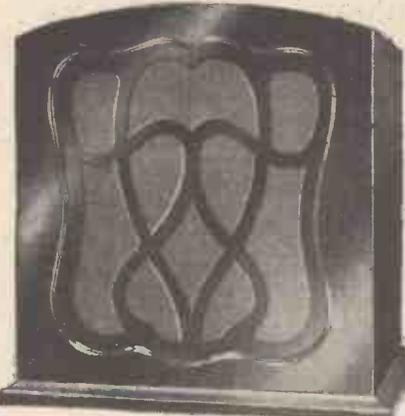
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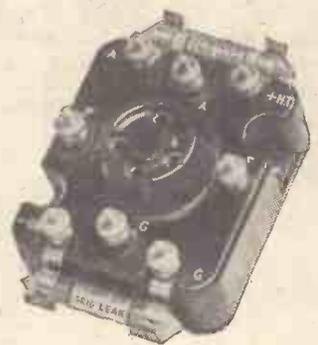
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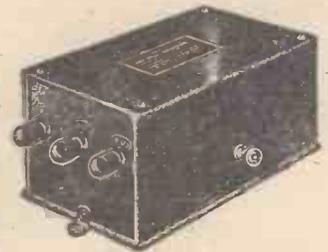
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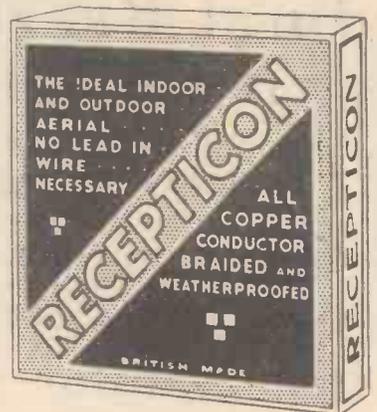
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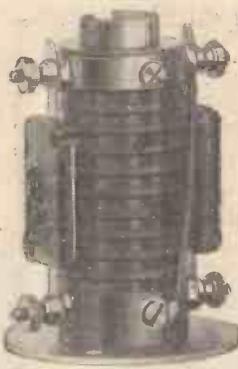
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The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

RECEIVERS FOR SALE.

HIRE a McMichael Portable Set, 3/6 daily, or from 15/- weekly.—Alexander Black, Wireless Consultant, 55, Ebury St., S.W.1. Slope 1655. [0328]

MARCONI 42 Model A.C. All-mains; £14, cost £21.—Evenings after 8 o'clock, 11, Sandringham Av., Meriton Park, S.W.20. [9137]

RADIO HOUSE, 198, Finchley Rd., Hampstead, London, N.W.5 (opposite Finchley Rd. L.M.S. Station and within a few minutes of Oxford St.). Fine premises for fine radio in a fine quarter! Appleby's new premises! [9165]

McMICHAEL 4-valve Super Screen Grid Portable, completely overhauled by makers April, new valves; cost 22 guineas, sell 10 guineas, or near offer.—O., 100, Woodvale, Forest Hill, S.E.23. [9138]

3/19/6, c.o.d., without valves; with valves, £5/19/6; Ediswan D.C. electric set, Power Pentode Three model, original packing, unused; list £21.—Kay, 287, City Rd., Islington, E.C.1. [8093]

MAJESTIC Table Model 52 7-valve Superhet., moving coil loud-speaker built in, all-mains A.C. 200-230, absolutely perfect in performance and appearance; only reason for selling removed to D.C. district; tested London or Brighton by arrangement; cost £25, best offer over £12 secures a great bargain.—Bennett, 19, Cambridge Rd., Hove, Brighton. [9175]

PHILIPS Super Inductance Five, as new, £15, cost 24 guineas; also 5-valve, all waves, 16-60/200-600-800-2,000 meters, £16, cost over £40.—Noel, 3, Grenville St., Brunswick Sq., W.C.1. [9173]

HAYNES A.C. Single Dial Super, valves, revised model, Haynes tested, less eliminator and speaker, also transformer and choke for same; offers—45, Woodland Lane, Leeds. [9151]

H.M.V. Diagram, model 521, A.C. mains, as new; 30 guineas.—107, Great Portland St., W.1.—Langham 2662. [9150]

EKCO 3-valve Console, 200-250 volts, A.C., nearly new; £10/15.—Dickens, 15, The Hayes, Lye, Stourbridge. [9148]

SUPER Selective Six, exact to specification, perfect, recently made; £15, or near offer; complete with valves; first cheque secures.—Halton, "Fairhaven," Rotherwick Av., Chorley, Lancs. [9162]

CHARGERS AND ELIMINATORS.

TANTALUM for A.C. Rectifiers; blue prints for inexperienced, H.T. and L.T. chargers.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [7583]

GILBERT INDUSTRIES Offer More Bargains. See Components column before you order. [0377]

SOUND SALES Again Specified by the Experts, for aluminium clamps and bobbins; price 6/9 per set, with bolts as supplied to "Wireless World" for their transformer described June 29th, 1932.

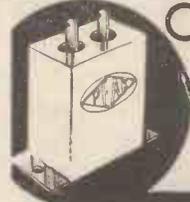
SOUND SALES Can Supply Everything necessary to construct the "Wireless World" H.T.8 Mains Transformer, wire, Stalloy stampings, etc.

SOUND SALES Have Further Extended Their Premises and Installed Additional Machinery.

SOUND SALES' Latest Illustrated Catalogue is Now Released, and includes details of 30 different transformers and chokes, etc.—Sound Sales, Ltd., Tremlett Grove Works, Junction Rd., Highgate, N.19. Phone: Archway 3871. [0366]

PHILIPS H.T. Eliminator, No. 372, 220-volt A.C., as new; £2.—Shepherd, 21, Br. Oaks Rd., Solihull. [9141]

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BRITISH MADE
INDUCTANCE NEUTRALISED

1,500 Volts D.C. Test.
1 mfd. Terminals 2/8
2 " " " 3/9
4 " " " 6/9
Special Buffer Type 2,000.

Non-inductive 750v. A.C. working .01 + .01—, Terminals 3/3, Tag 2/9.

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For all "Wireless World" designs—
Especially suitable for modern
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ENTIRELY BRITISH.

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MAINS DEPARTMENT MANAGER,
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For the convenience of private advertisers, letters may be addressed to numbers at "The Wireless World" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge which must include the words Box 000, c/o "The Wireless World." Only the number will appear in the advertisement. All replies should be addressed to No. 000, c/o "The Wireless World," Dorset House, Tudor Street, London, E.C.4. Readers who reply to Box No. advertisements are warned against sending remittance charge which must be in registered envelopes; in all such cases the use of the Deposit System is recommended, and the envelope should be clearly marked "Deposit Department."

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Readers who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50, 3/-. All deposit matters are dealt with at Dorset House, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Lilfife & Sons Limited.

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Chargers and Eliminators.—Contd.

ALL-POWER Components are Better and Cheaper, stampings, bobbins and clamps, write for lists.

ALL-POWER Transformers, tapped primaries, 200-250, 250+250v, 50 m.a., 4v. 2 amp. c.t., 4v. 2-3 amp. c.t.: 25/-

320+320v, 50 m.a., 4v. 2 amp. c.t., 4v. 2-3 amp. c.t.; 28/-; many other models, write your requirements, lists ready shortly.

ALL-POWER Chokes, 30h. 50 m.a., 10/6; 20h. 100 m.a., 14/-; other models.

ALL-POWER TRANSFORMERS, Ltd., 8a, Gladstone Rd., Wimbledon, S.W.19. Tel.: Wimbledon 3303. [9164]

SERADIX Super Transformers, guaranteed 3 years, primaries tapped 200-230-250 volts, 40-100 cycles.

SPECIAL for Baby Superhet., described in this issue, for H.T.9 rectifier, with 4-volt L.T., £1/15; stripped type, £1/1.

LISTS of Full Range of Seradix Eliminator Components, chargers, meters, resistances, etc., for stamp.

SERADIX Super Transformer for H.T.11, with 2-0-2 volts 4 amp. and 2-0-2 volts 2 amp.; £2/5.

ARE You On Our Mailing List? If not send stamp for latest lists.—Pepper, Wakegreen Rd., Birmingham. [9161]

DYNAMOS, ETC.

ROTARY Convertors, D.C. to A.C., 50 to 250 volts D.C. input to 220 volts A.C., 1-phase, 50 cycles output, approximately 1/2 K.W., all ball bearing machines, unused and guaranteed; cheap—Milo Engineering Works, Mill Rd., East Dulwich, S.E.22. Sydenham 4422. [9095]

CONVERTERS, 12 volts D.C. to 230 volts A.C., price £4 to £12; 12 volts D.C. to 500 volts D.C., 120 m.a., price £5/10; 100 volts D.C. input, 230 volts A.C. output; 230 volts D.C. input, 230 volts A.C. output; sizes 40, 75, 100 and 120 watts in stock; prices from £2/10.—Freeman's Electrical Repairs, Tresham St., Kettering. [9084]

DOUBLE Current D.C. Generators, 2 comms. ball bearing, 80-watt L.T., 6-8-volt, 3-5-amp. H.T., 300-600v, 100 m.a., 3-4,000 revs., weight 18lb.; cost £15 R.A.F. sale, 25/-, carriage paid.—Electradix Radios, 218, Upper Thames St., E.C.4. [0382]

LOUD-SPEAKERS.

BAKER'S SELHURST RADIO 36-page Booklet, "Sound Advice is Yours for the Asking"; write now for new edition. See displayed advertisement on page 80. [0231]

ROLA Type S M.C. Speakers, 6 1/2 in. diaphragm, 4,800 ohms field, with input transformer, 17/6; carriage paid; any M.C. speaker repaired or reconditioned.—Munro, 3, Parliament Hill, Hampstead, N.W.3. [9167]

GOODMAN'S Permanent Magnet Moving Coil Loud-speaker with Output Transformer; list price 47/6; brand new and perfect; 22/6, c.o.d., carriage paid.

ROLA J.90, complete with output transformer, brand new and perfect; 22/6, c.o.d., carriage paid.

ROLLS Multi Ratio Output Transformer, 6 ratios; from 14/1 to 67/1 brand new, 8/6, c.o.d., carriage paid.

ROLLS Conversion Transformer, 100 up to 240 volts or 240 down to 100 volts, 100 watts type, brand new and perfect; 16/-, c.o.d., postage paid.—Philip Kay, Ltd., 287, City Rd., Islington, E.C.1. Clerkenwell 4520. [9023]

35/-.—B.T.H. R.K. moving coil speakers, 6in. ribbed cone, new and unused, guaranteed; these speakers are the type as used in cinema sound equipment, weigh 30lb., and are vastly superior to the cheap speakers now on the market; 100 volts, 150 volts, and 200 volts D.C., 6 volts D.C., 200-250 volts A.C. type, £2/15; carriage paid.—Wrd, 12, Tredgar Rd., Bow, E.3. [9131]

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PILOT HOUSE, STOKE NEWINGTON, LONDON, N.16 Telephone: Clissold 6287/8.

VALVES.

MARCONI Valves, H210 and H.L.210, 4/-; super power, 5/-; c.o.d., postage paid.—Melba Radio Co., 60, Stoke Newington Rd., N.16. [0385]

THE Following Valves are Guaranteed Unused and Perfect: M.S.G./L.A.s, M.S.G./H.A.s, P.M.24B.s, M.S.4s (metallised), M.S.4B.s, A.C. S.G.s, 10/-; A.C. H.L.s, A.C. 2H.L.s, 8/-; 354V.s, 7/6; D.W.3.s, 9/-; cash with order, or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [9150]

P.P.5/400s, boxed, 17/6; A.C./S.G.s, 9/3; 354V.s, 6/11; latest 41M.P.s, 10/11; A.C./Pentodes, 12/6; P.460, 7/9; D.W.2.s, D.W.3.s, 8/6; guaranteed perfect.—Below.

WESTINGHOUSE H.T.7, 9/6; Polar (standard encased tub) 3-gang, 15/-; Igramic G7-1, 6/9; postage extra; callers invited.—R. A. Arnell, 8, Fishponds Rd., S.W.17. [9135]

PEPPER Offers the Following Unused Valves, under usual guarantee; postage 6d. extra.

A.C./S.G., 41M.S.G., M.S.4, M.S.4b, S.4V.a, P.M.24a, A.C./P1, 41M.X.P., 9/11; A.C./P, 41M.P., 8/11; 354V, M.H.L.4, S.G.215, 7/11.

FOLLOWING Used Test but O.K., U8, 12/6; L.S.6a, 15/-; P.M.4, P.M.6, P.M.255, 2/11; lists of other goods for stamp.—Trevor Pepper, Wakegreen Rd., Birmingham. [9160]

COMPONENTS, ETC., FOR SALE.

BROWN and SALTER Have for Disposal the Following Brand New Guaranteed Goods:—

VORTEXION Mains Transformers, all 200, 220, 240 input, 250-0-250 60 m.a., 4v. 3a., 4v. 2a.; 9/6 unshrouded, 11/6 shrouded.

350-0-350 120 m.a., 4v. 3a., 4v. 3a., 4v. 2a.; 12/6 unshrouded, 13/6 shrouded.

450-0-450 and 500-0-500, 120 m.a., 4v. 3a., 4v. 3a., 4v. 2a.; 15/-.

50h. 30 m.a. Chokes, 5/6; W.W. Straight Five chokes, specified, 8/6; 20h. 250 m.a. shrouded chokes, 9/6.

A.F.4c Power Intervalve Transformers, 6/6; 400v. working, 20.4 mfd. Helsby condenser block, 444-1-1 111211-1-1, 7/6 each; 500 working 4 mfd., 4/6 each.

PARAFEED Transformers, manufacturers' type, 2/- each; call and inspect our stock of miscellaneous goods at knock-out prices.—Brown and Salter, 182, The Broadway, Wimbledon. [9115]

RADIO HOUSE, 198, Finchley Rd, Hampstead, London, N.W.3 (opposite Finchley Rd. L.M.S. Station and within a few minutes of Oxford St.). Fine premises for fine radio in a fine quarter! Appleby's new premises! [9166]

BELLING-LEE Publication Fully Describes the most efficient fuseholders and fuses and all types of radio connections, literature post free.—Belling and Lee, Ltd., Queensway Works, Ponders End, Middlesex. Phone: Enfield 3322. [0018]

WESTON Moving Coil Milli-ammeters (301), 0-15 milliamps upwards, 22/6; Turner ditto, 17/6; various makes, 0.50, 10/6; Weston and Turner thermo couple ammeters, 0-1.5, 25/-; R.A.F. transmitters, less meters, 7/6; meter repairs a speciality.—The Victoria Electrical Co., 47, High St., S.W.11. [0355]

GILBERT INDUSTRIES Offer More Guaranteed Bargains, all post paid

HEAYBERD Chokes, type 757, 50h. 150 m.a., brand new, 15/-; R.I. transformers, input 105, 210, 230, 250, output 2v.+2v. 3 amps., 2v.+2v. 1 amp., 250+250 at 50 m.a., brand new, 15/-; R.I. Dux chokes, 25h. 50 m.a., brand new, 6/-; tapped 2 ratio pentode chokes, heavy, 6/-; 20h. 10 m.a. eliminator chokes, 3/6.

3-GANG 0.0005, by Polar, end vane trimmers, continuous slow motion, 10/6; special mains transformers, input 210, 230, 250, output 2v.-2v. 4 amps., 4v. 2 amps., 325-0-325 at 85 m.a., 15/-; Polymet 8 mfd., 435 working, 3/-; number 5 stalloy stampings, 3/6 gross pairs; bobbins, moulded, 6d.

GILBERT INDUSTRIES, 519, London Rd., Westcliff-on-Sea, Essex. [0378]

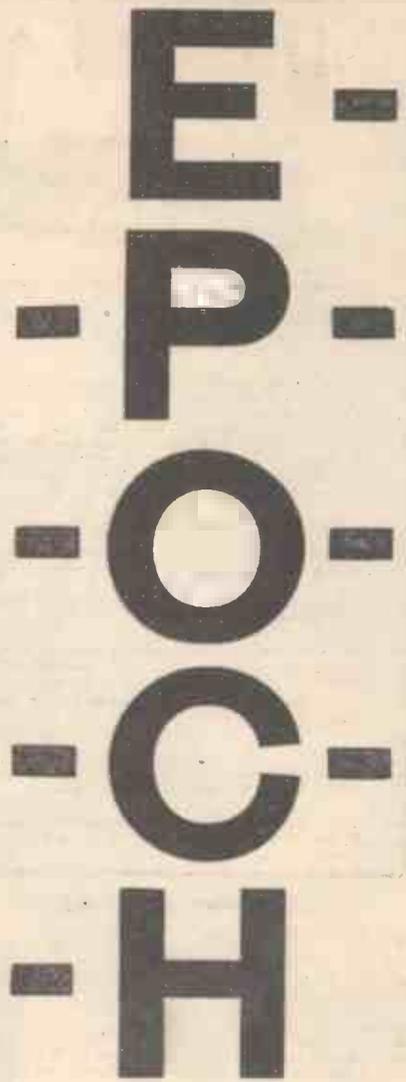
A.C. Charging Boards (new), capacity 35-40 cells; cost £15, £6/15, c.o.d.—Jersey, 24, Wytham St., Oxford. [9111]

TRANSFORMER, G.E.C., input 100-250v. 40-60 cycles, output 275-0-275 40 milliamps, list £2/12/6, original packing unopened; 8/6, c.o.d., carriage paid.—Kay, 287, City Rd., Islington, E.C.1. [8965]

EXPERIMENTER'S Surplus, valves, etc., send stamp for list; also E.K. speaker, complete with baffle, £3; Elstree Six, complete with valves, no batteries or speaker, what offers?—Seen at 238, High Rd., Wealdstone. [9134]

COSSOR 3-valve Set, 1929, with valves, perfect condition, as 22, ditto, 1930, £3, as new; B.T.H. cone speakers, list 50/-, our price £1, as new; Lamplugh inductor speaker, cost 70/-, our price 15/-; Wufa chassis and unit, 45/-, our price 25/-; Pye 20 henry choke, 7/-; Pye pentode choke, 10/-; Forno Triple Wave Three kit, 65/-, our price 30/-, as new.—Radio-Gramo Services, Hurst Hill, Bilston. [9143]

NEWTN'S MAYFAIR RADIO Offer Brand New Surplus Transformers: 500-0-500 at 120 m.a., 4 volts 2 amps., 4 volts 5 amps., 27/-; 400-0-400 at 120 m.a., 4 volts 2 amps., 4 volts 6 amps., 4 volts 2 amps., 29/-; 350-0-350 at 120 m.a., 4 volts 2 amps., 4 volts 5 amps., 21/-; 250-0-250 at 60 m.a., 4 volts 1 amp., 4 volts 3 amps., 14/-; for H.T.8 rectifier, 215 volts at 80 m.a., 4 volts 4.5-amps., 12/-; Smoothing chokes: 120 m.a. 40 henries, 18/-; 60 m.a. 50 henries, 8/-; Condensers, G.P.O.: 1 mfd. 1,000 test, 9d. each, 8/- doz.; static 800 test, 1 mfd. 1/-; 1+1 mfd. 1/6, 2 mfd. 1/6; Bakelite Siemens, 800 test, 4 mfd., 2/6; Murphy blocks, 4-2+2+2+1+0.9 mfd., 400 a.c. working, 6/-; sundry 0.1, 0.002, etc., 8d. each. Variable condensers: Polar tub 3-gang with trimmers, fitted disc drive, 13/- (used); Polar 3-gang Ekco type, slotted vanes, 0.0005, completes low motion drive, 8/-; Telsen 3 constructor's kits, sealed (20N.I.7), 29/-; Mul-lard Ferracore transformer (used), 11/-; E.L. resistance complex, 7/6; intervalve transformers, S.G. Brown, ratios 4-1, 6.75-1, 6-1, 7-1, list 30/-, 11/- each. Potentiometers: 1/2 meg. and on and off switch, 3/3; small 760 and 5,000 ohms, 1/3 each. Moving coil speakers: Amplion, as incorporated Amplion 6, 90 volts, 2,500 ohms res., 15/-; 200-240, same price. Few only slightly damaged frames, 7/6 each; Magnavox, X core (U.S.A.), gold, 8in. cone, 90 volts, res. 2,500 ohms, speech coil 8 ohms, transformer 35-1, list 110/-, 22/-; 6-volt and 200-240 volts, same price; Senior models, silver, 27/-; Jensen Concert, handle 12 wafers, characteristics as Magnavox, 28/-; 11in. cones; enquires invited; few new A.C. receivers at 60% off list; all carriage paid; call or c.o.d.—Mayfair Radio, 31, George St., Hanover Sq., London, W.1. [9153]



CALL AT OLYMPIA STAND 41

and see the Finest Range of

Moving Coil Speakers

ever displayed under one roof also

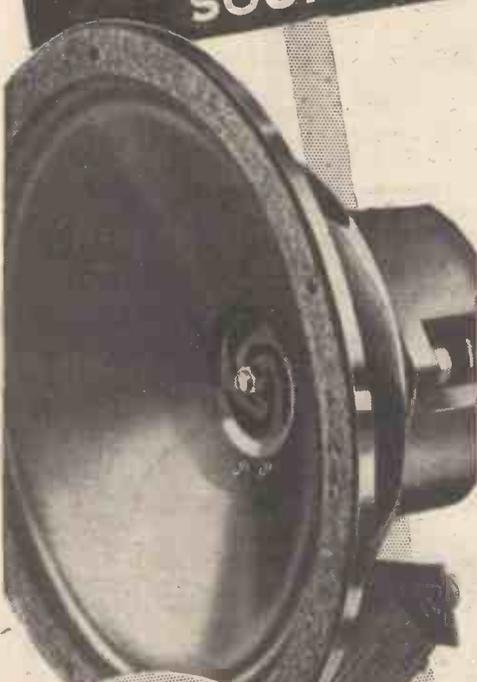
The New Epoch 3 Valve Set

which will be the talk of the Show. If you cannot call at Olympia call at our demonstration room or write for particulars.

EPOCH RADIO MANUFACTURING CO., LTD. Exmouth House, Exmouth Street, London, E.C.1 At the Junction of Rosebery Avenue and Farringdon Rd. Phone: Clerkenwell 6666 (4 lines)

PPM

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27¹/₆

INCLUDING TRANSFORMER

This chassis is unique where economy of space is an important factor. Although small in size—the diameter is only 6⁵/₈—the volume and tone are truly remarkable. The "Soundex" gives an amazing selectivity. A universal tapped transformer is built on to the chassis. Look where you will, at 27¹/₆ greater value is unobtainable. See and hear the full Celestion range at Olympia. Stand No. 127. Demonstration Room No. 9.

CELESTION

The Very Soul of Music

Celestion Ltd., London Road, Kingston-on-Thames.
London Showroom: 106, Victoria Street, S.W.1

Components, etc., for Sale.—Contd.

PREMIER SUPPLY STORES Offer the Following Goods at a Fraction of the Original Price, all goods guaranteed perfect; carriage paid over 5/-, under 5/- postage 6d. extra (Ireland carriage forward).

EDISON Bell Power Chokes, 150 m.a.; 12/6.

MAINS Transformers; primary 200-240v., secondary 350-0-350 at 90 m.a., 4v. 3A.C.T., 4v. 2A.C.T.; 12/6.

LEWCOS 3-28 silk covered wire, 144yds., ideal for frame or concealed aeriads; 2/-.

ROTOROHM, 5,000 ohms variable Resistances carry 14 m.a.; 1/9.

WESTERN ELECTRIC 1 mf. Condensers, 500v. test, 6d.; 1,000v. test, 1/-; 0.5 4d.

IGRANIC Transformers, input 100v. to 250 volts, output 135v. at 80 m.a., for voltage doubling or single wave. 8/6; Westinghouse rectifier, output 180v. at 30 m.a., for above, 8/6.

IGRANIC Transformer, input 100v. to 250v., output 180v.-0-180v. 40 m.a.; 6/6.

PREMIER Chokes, 30 m.a. 25h., 3/6; 65 m.a. 30h., 6/-; 150 m.a. 30h., 10/6; Pentode output chokes, C.T., 7/6; L.T. chokes, 1 ohm. 1 amp., 5/-.

VALVES.—All the following have been used for test purposes only, all are tested and guaranteed; callers only, P.625, P.M.14, 41M.R.C., P.M.4D.X., 5/- each; B.12, 6/-; S.4V, P.M.22, 7/6; P.P.3/425, 8/6.

KOLSTER-BRANDES Auditorium Moving Coil Speakers, with output transformer, 6-volt fields 25/-.

TURNER 0.5 m.a. Moving Coil Meters; 12/6.

T.C.C. 4M.F., 400 working; 4/-.

LOTUS Mains Transformers, input 200-250 volts, output 250+250v., 60 m.a., 4v. 2 C.T., 4v. 5, C.T., 15/-; Lotus 60 m.a. chokes, 6/-.

R.I. Heavy Duty Smoothing Chokes, carry 200 m.a., variable inductance, 23-40 henrys; 15/- each.

T.C.C. Condenser Blocks, working voltage 375v., 1+1+0.1+0.1+0.1+0.1+0.1+1 mfd.; 2/- each.

MAINS Transformers, input 200/250v., output 150v.+150v., 35 m.a., 4v. 1a. C.T., 4v. 1.5a. C.T., 8/-.

PARMEKO Transformers, input 200/250v., output 250-0-250v., 60 m.a., 4v. 1a., 4v. 1a., 12/6.

HELSEBY 4M.F. 250 D.C. working, 3/-; 250 A.C., 4/-.

FERRANTI A.F.6, 15/-; Ferranti, A.F.5, 15/-; Pye 110 henry tapped chokes, 4/-.

TWO-VALVE K.B., all electric, £4, shop soiled; 5-valve Columbia portable, £6, shop soiled; 4-valve, all electric Columbia receiver, 1932 model, £15, shop soiled; H.M.V. 1932 3v., all electric, £13.

EDISON Bell Mains Transformers, 200-250v. input, 160-0-160v. 40 m.a., 4v. 1a., 4v. 4a.; 10/6.

WESTINGHOUSE H.T.B., with transformer, for 200-250v. mains, with 4v. 4 amp. C.T., L.T.; 27/6.

PREMIER H.T. Eliminators, input 200-250v.-50 cycle A.C., output 80v., 100v., 120v., at 20 m.a., incorporating Westinghouse rectifier, 27/6; with L.T. charger incorporated, 35/-.

RESISTANCES, carry 12 watts, with 4 tapping clips, all values, from 600-500,000 ohms; 1/9 each.

ACCUMULATOR Chargers, charge 6-volt batteries at 3 amps., incorporating Igranic Elkon metal rectifiers, 25/-; charge 2v. at 1/4a., 8/6.

AMPLION Transformers, 350+350v., 120 m.a., 4v. 5a., 4v. 2a., 6v. 1a., input 100-250v.; 17/6.

WESTINGHOUSE Rectifiers, 8v. 1a.; style A.9, 10/-; 120v. 20 m.a., 6/6; 180v. 30 m.a., 8/6.

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AMPLION Block Condensers, 250v. working, 9x0.5 mfd. (4.5 mfd.), 2/6; 6x0.5 mfd. (3 mfd.), 2/-.

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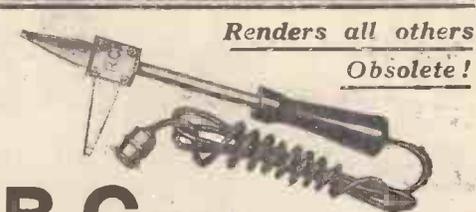
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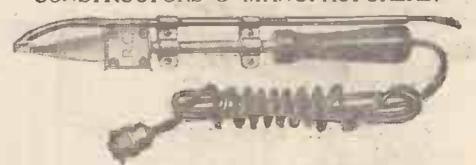
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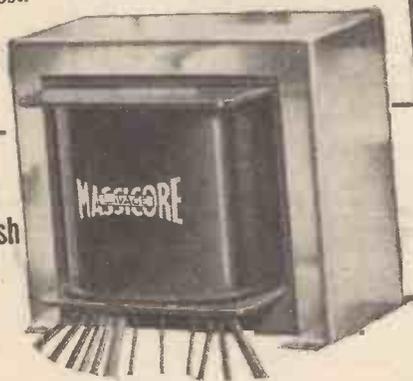
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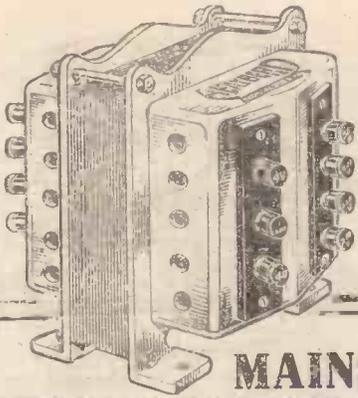
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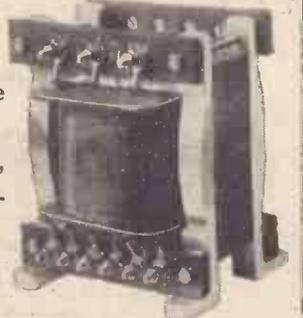
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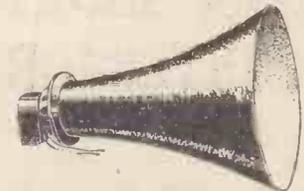
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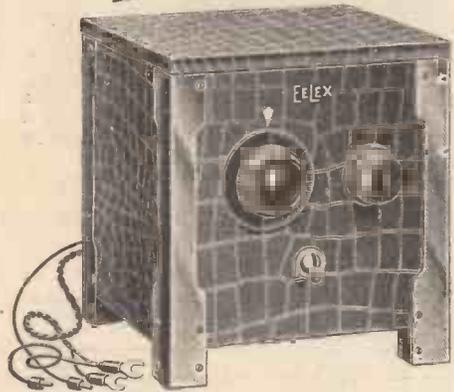
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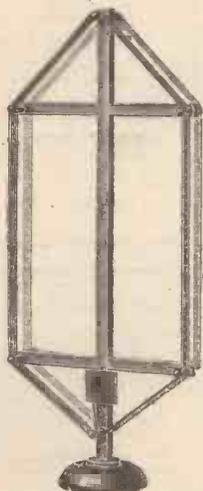
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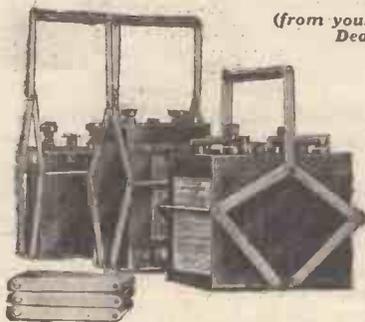
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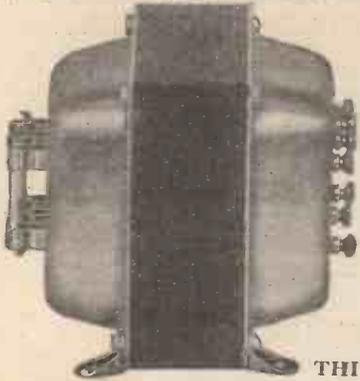
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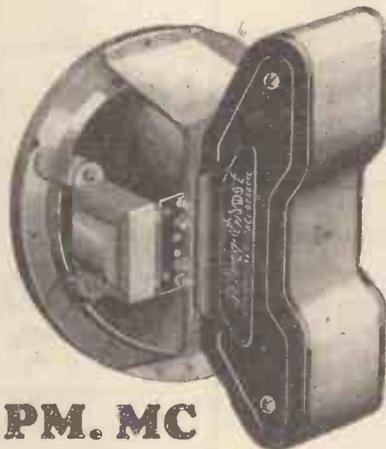
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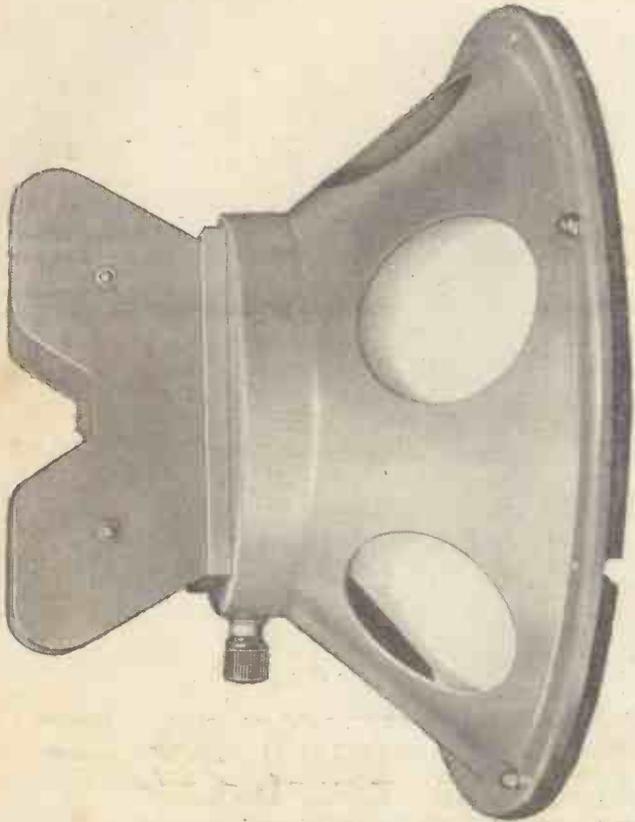
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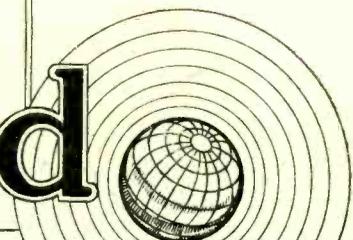
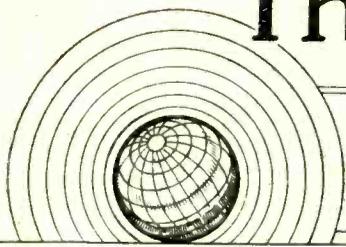
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*As many of the circuits and apparatus described in these
pages are covered by patents, readers are advised, before
making use of them, to satisfy themselves that they would not
be infringing patents.*

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EDITORIAL COMMENT.

Influences at Olympia.

A "Value-for-Money" Season.

IT is always of interest when visiting the Wireless Show year by year to look for outstanding changes in fashion or indications of particular technical developments which have played a prominent part in influencing the new designs.

This year, although fashion does not seem to have played much part, yet technical changes have had their share of influence in deciding what the manufacturers would produce. Perhaps the outstanding direction in which progress has been made has been in the matter of selectivity, rendered necessary, first, because stations can no longer be separated from one another with an unselective set, and, secondly, for the reason that the public to-day demands a receiver which is capable of giving at least a fair choice of foreign stations.

It is no doubt for this reason that the superheterodyne receiver, the popularity of which was revived in this country largely through the recommendations of this journal, is in evidence in some form on the stands of almost every manufacturer of prominence. Next in order of importance we would put the fact that no mains receiver of to-day is regarded by the public as complete unless provision is made for the set to be used in conjunction with a pick-up for reproduction of gramophone records. There is no doubt that the public expects to be able to listen to both wireless and the record at will, and the experience of manufacturers in the past has been that wherever gramophone reproduction was not provided for the popularity of the receiver suffered in consequence.

Band-pass tuning, or some equivalent method of obtaining selectivity with quality, has been adopted in the design of straight sets including the simplest types as a result of the need for selectivity even for home listening where stations under the alternative programme regional scheme had to be adequately separated.

There are innumerable directions in which improvement and progress is in evidence, and this is nowhere better revealed than by an examination of the quality of many of the new components. These it will be found have been designed and produced with a degree of precision quite unknown even at the highest prices a year or two ago, and yet prices to-day are generally lower.

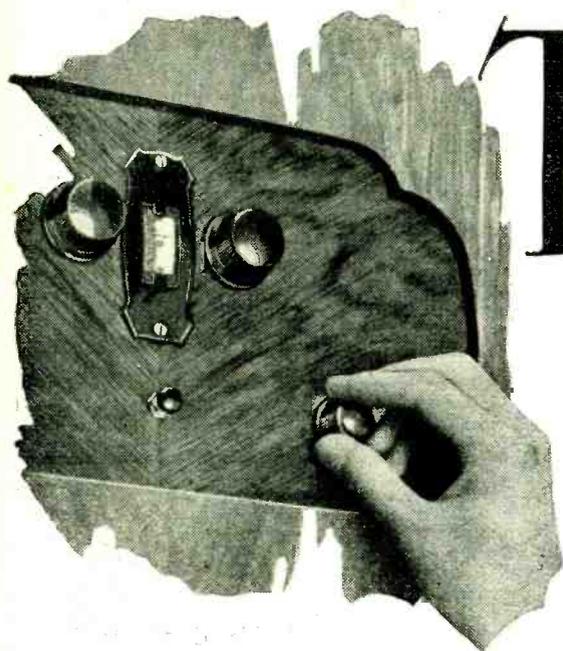
The outstanding impression of this year's products is the extraordinarily high value which is given at prices certainly no more exalted than those which were asked a year or two ago for products which were little less than shoddy by comparison.

The Second-hand Set.

Making Way for New Models.

THERE has probably never been a wireless exhibition in this country when the temptation to the public to buy new receivers was so great as it is this season, not only because of the attractiveness of the new receivers themselves, but also because reception conditions have changed so much during the past year that many sets at present in use are insufficiently selective and have, consequently, become obsolete—very often long before they have actually begun to show signs of wear. How ever tempted one may be to buy a new receiver, there is always a natural disinclination to do so unless something can be realised by the sale of the receiver which it is to replace.

There would seem to be room in the industry for organisations undertaking to purchase second-hand sets with a view to modifying them to meet present-day conditions, and to resell them amongst those members of the public who may not at the time feel justified in the outlay necessary for the purchase of a new receiver. The problem of what to do with the old set is probably more pronounced to-day than it is likely to be in the future, because sets of to-day are, we believe, designed to be sufficiently selective and robust to render them unlikely to become obsolete in the near future, and they are likely to go on giving good service for a number of years.



Tone Correction Explained

A Brief Summary of the Properties of Selective Tone-corrected Circuits.

THE term "tone correction" is to a certain extent self-explanatory. As a general principle it has been in common use ever since broadcasting began and embraces all cases where the amplification characteristic of audio-frequency stages has been modified to cor-

rection is employed to increase range and sharpen tuning, the distortion may be so great as to render speech quite unintelligible and music a travesty of the original.

Selectivity and Quality.

In the early days of broadcasting the obvious remedy of employing only flatly tuned circuits could be advocated with confidence, and the corresponding lack of selectivity could be tolerated with impunity. The subsequent increase in the number of European broadcasting stations, however, has forced upon us the necessity of providing knife-edge selectivity, and the struggle to preserve quality of reproduction in face of this essential selectivity has been one of the most difficult problems with which the designer has had to contend.

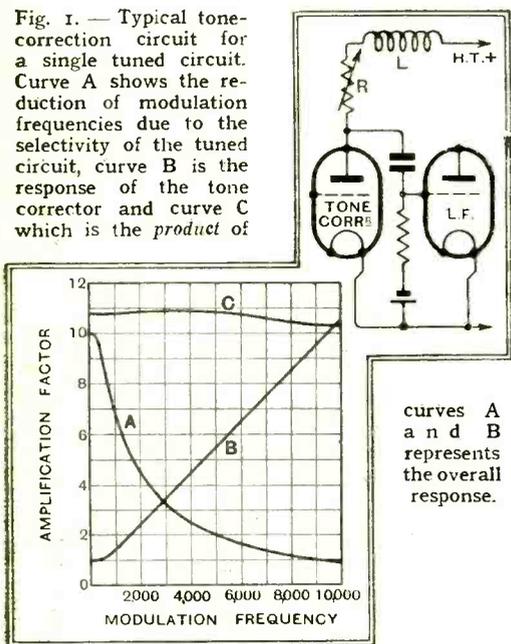
The band-pass filter offers a solution which has found wide acceptance. This is a special type of coupled tuning circuit which gives a flat-topped resonance curve instead of the sharp peak usually associated with a single tuned circuit. The sides of the resonance curve are, however, steep, thus providing the requisite selectivity, while the flat top ensures that all the side bands of the transmission essential to good quality of reproduction are passed on with equal strength. The success of band-pass tuning depends to a large extent on the accurate

THE principle of tone correction applied to highly selective circuits is one which is likely to exercise an important influence on future receiver design. The object of this article is to put the beginner in possession of the essential features of the system in its present state of development.

but it is more difficult to preserve the correct shape and band-width of the resonance curve over the range of wavelengths covered by a straight receiver circuit.

With tone correction, on the other hand, no attempt is made to prevent loss of high notes in the tuning circuits; they are given the highest possible selectivity without regard

to quality, with the result that the output from the detector may be quite unintelligible. The balance is then restored by one of the L.F. stages which is specially designed to give greater amplification of the high than of the low frequencies. The beauty of this system is that the degree of correction can be very easily adjusted between wide limits by a variable resistance, so that in a straight receiver any variation in selectivity at different points of the waverange is readily compensated, and the operator can adjust the quality by ear to suit his own individual taste.



curves A and B represents the overall response.

rect distortion arising in other parts of the apparatus. The circuits associated with the early Round magnetic microphone used by the B.B.C. and the McLachlan "Novotone" pick-up correcting device may be cited as typical examples.

More recently tone correction has come to be associated almost exclusively with the special case of loss of high notes due to highly selective tuning circuits. It is a matter of practical experience that when the transmission from a broadcasting station is passed through a tuned circuit followed by a detector, the resulting audio-frequency output is distorted. Provided the circuit is tuned exactly to the carrier wave of the station, the distortion is always of the same type and is characterised by strengthening of the low tones and attenuation of the high tones. The sharper the tuning the greater the distortion, and where a high degree of

adjustment of the coupling and the ganging of the tuning condensers. This is easily accomplished for a single fixed setting as in the intermediate stages of a superheterodyne,

There is evidence that a higher figure of merit in the matter of selectivity combined with quality is ultimately to be obtained from tone-compensated circuits, but at the

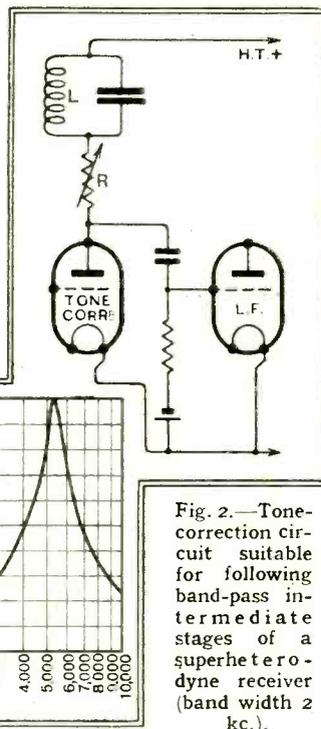


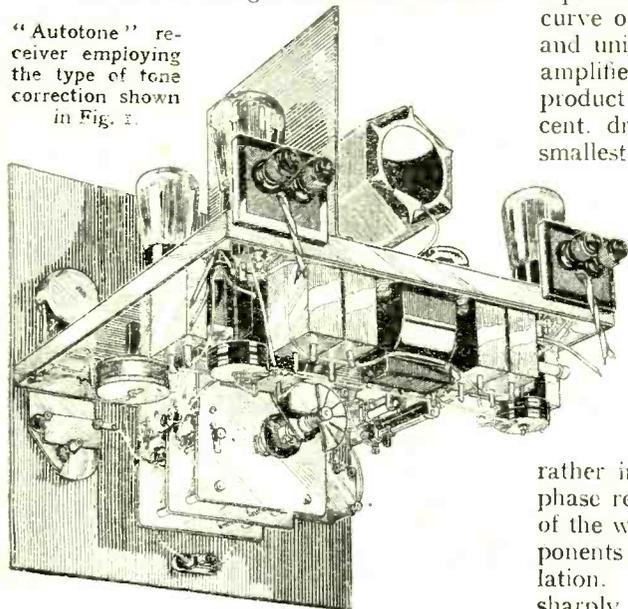
Fig. 2.—Tone-correction circuit suitable for following band-pass intermediate stages of a superheterodyne receiver (band width 2 kc.).

Tone Correction Explained.—

moment it is on account of their inherent flexibility and ease of adjustment that they offer so attractive an alternative to the band-pass filter.

It must not be thought that tone correction

"Autotone" receiver employing the type of tone correction shown in Fig. 1.



as an idea post-dates the band-pass filter. As long ago as 1923-24 it formed the subject of patents by H. J. Round and P. W. Williams, but it is only recently that full recognition has been accorded to advantages of the system. While Dr. Robinson's "Stenode" receiver and *The Wireless World* "Autotone" were giving practical proof of the high performance that may be expected, the theoretical aspects of the principle have been the subject of a keen controversy to which most of the leading authorities have contributed. The fundamental principles have now been firmly established, and for the benefit of new readers it is proposed to run through the salient features in order that they may be in a position to appreciate further developments of this most promising system.

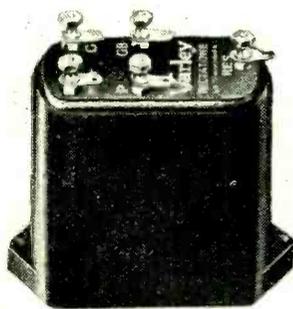
Exact Compensation.

The fundamental simplicity of the tone-correction circuit will be apparent from the circuit of Fig. 1. Curve A represents the reduction of modulation with frequency due to a circuit with a coil magnification of 500—quite a usual figure when making use of reaction. The tone-correction stage required

to restore the tonal balance is represented by an inductance and resistance in series in the anode circuit of the valve. By assigning suitable values to the constants of this circuit we obtain an amplification characteristic represented by B. The overall response curve of the set, assuming a linear detector and uniform amplification elsewhere in the amplifier is given by C which represents the product of curves A and B. There is a 5 per cent. drop at 10,000 cycles, but since the smallest difference which would be noticed by the ear is of the order of 20-25 per cent., the correction is perfect for all practical purposes.

The Detector.

A question which is frequently asked is why the tone-correction stage does not restore also the unwanted modulation of adjacent stations. The explanation is rather involved, and is concerned with the phase relationship between the carrier wave of the wanted station and the sideband components of the wanted and unwanted modulation. Theory and practice agree in that sharply tuned circuits with symmetrical resonance curves followed by tone correction of the type shown in Fig. 1 are capable of giving immunity from the modulation of



Varley "Rectatone" low-frequency transformer.

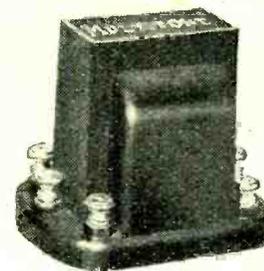
stations on neighbouring channels while restoring completely the attenuation of high notes due to the sharpness of tuning of the circuit. The system does not, however, give immunity from heterodyne whistles due to interaction of the carrier waves though the strength of the whistles may be reduced by the well-known effect of demodulation of a weak by a strong signal.

This effect can take place only with a linear detector such as a diode, power grid or leaky grid (with small inputs). For other very good reasons a linear detector is absolutely essential to the success of tone-corrected circuits. Any detector, such as anode bend, which introduces harmonics in its output, must be avoided like the plague. Followed by a tone-correcting stage which favours the high frequencies all such spurious frequencies will be over-emphasised, and the reproduction will be unnaturally strident.

So far we have been dealing with the ideal case of a single tuned circuit of high selectivity, and we have seen that with a linear detector and a tone corrector comprising an inductance and resistance in series in the anode circuit of a valve, exact compensation for high-note loss is provided. There are, however, other applications of tone correction in which a uniform rise of amplification with frequency is not required. In the intermediate amplifier of a superheterodyne receiver, for instance, in which band-pass coupling is

employed, it may be convenient, in order to obtain maximum selectivity, to legislate for a flat-topped response over 2 kilocycles to give reasonable stability. This will give a uniform audio response up to 1,000 cycles and tone correction can then be employed for frequencies above 1,000 cycles. A tuned corrector circuit of the type shown in Fig. 2 will give the desired response, and has the added advantage of a high-frequency cut-off which helps to reduce carrier heterodyne interference. A similar principle is involved in the recently introduced Varley "Rectatone" low-frequency transformer.

For the experimenter who wishes to try out the principles of tone control in connection with gramophone as well as radio circuits, the "Multitone" transformer is a component which will provide all the scope he is likely to require, since it

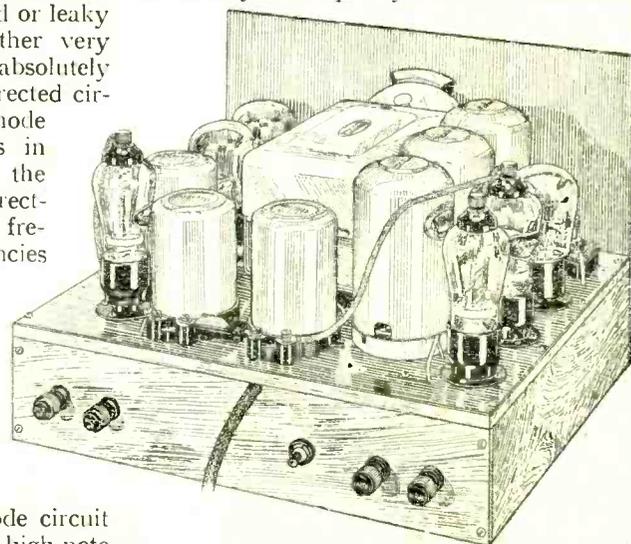


"Multitone" type "Toco 4" tone-control transformer.

is capable of giving a falling as well as a rising characteristic, and for an intermediate position of the tone control gives practically straight-line amplification.

The distortion of the modulation from a broadcasting station due to the selectivity of a single tuned circuit, can be exactly compensated by tone correction in the low-frequency stages following the detector, provided that the detector is linear and does not introduce harmonics. If the selectivity is made very high, as in the "Stenode" principle, the resulting output will not contain any trace of sideband interference from stations on adjacent channels, although carrier heterodyne whistles will remain.

When means are found of ensuring the stability of highly selective circuits with reaction, this system of reception, in conjunction with tone correction, will provide an unrivalled performance in the matter of selectivity and quality. In the meantime,

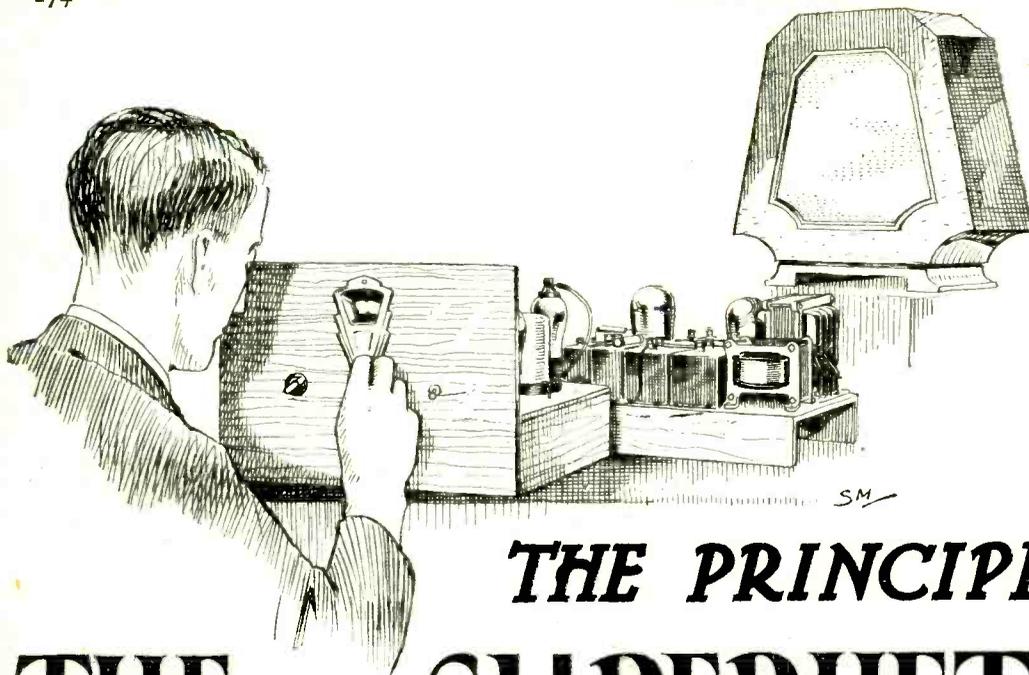


"The Monodial" superheterodyne receiver incorporates a tone-correction circuit of the type shown in Fig. 2.

tone correction is likely to find wide application in the intermediate stages of superheterodyne receivers.

RECENT ARTICLES ON TONE CORRECTION.

- "The Wireless World."
 - Band Pass or Tone Correction. F. M. Colebrook. Sept. 2nd, 1931.
 - Selectivity and Tone Correction. F. M. Colebrook. Dec. 30th, 1931; Jan. 6th, 1932.
 - Correspondence. Feb. 3rd, 1932; Feb. 17th, 1932.
 - Putting Back the High Notes. W. T. Cocking. May 17th, 1932.
 - Tone Correction and Distortion. N. W. McLachlan. June 8th, 1932.
- "The Wireless Engineer."
 - Apparent Demodulation of a Weak Station by a Strong One. F. M. Colebrook. Aug., 1931.
 - Editorial. Aug., 1931.
 - Amplifier Tone-control Circuits. M. G. Scroggie. Jan., 1932.
 - Editorial. April, 1932.
 - Apparent Demodulation. E. Mallett. May, 1932.



THE PRINCIPLE OF THE SUPERHETERODYNE

The Basic Difference Between Straight and Frequency-changing Receivers.

ALTHOUGH the superheterodyne is now very old, as age is reckoned in radio, it is only within the last two or three years that it has been successfully employed for the high quality reproduction of broadcasting. The application of the band-pass principle to it has been responsible, perhaps more than any other single development, for its extraordinarily rapid rise to popularity,—a popularity which bids fair completely to oust the straight multi-stage receiver. Until band-pass filters were employed, the simultaneous attainment of selectivity and quality was unknown and the receiver was useless for satisfactory broadcast reception. The benefits conferred by this step towards the modern superheterodyne cannot be too highly stressed, since for the first time it permitted the retention of its inherently high selectivity, while making it capable of giving quality of reproduction second to that of no other receiver.

Subsequent development proceeded apace, and took the form chiefly of removing a number of special forms of interference, of simplifying the operation, of reducing the number of valves, and of eliminating background noise. It should be mentioned at this point that the principle of tone correction has now made the use of band-pass filters no longer essential, and the view is expressed by some that they are, in fact, undesirable. It is generally held, however, that the band-pass filter is preferable to any extreme form of tone-correction as it is known to-day. Perhaps the most satisfactory scheme of all is a judicious combination of the two methods, in which the filters are designed to pass only a comparatively narrow band of frequencies, and tone correction is relied upon to restore only the highest notes. In this way, all the advantages of the band-pass filter are retained, with most of those

of tone correction, and the inherent disadvantages of the latter are absent. This particular method was adopted in the design of the Monodial A.C. Super¹, and proved so successful that the principle has

THE development of the superheterodyne has been so rapid and so much attention has been focused upon the details of design that the fundamental principles are often apt to be overlooked. In this article will be found a description of the basis upon which all superheterodynes function, whatever be their type, and the essential difference from the straight set is clearly defined.

been adhered to in *The Wireless World* Baby Super².

The great strides forward in superheterodyne design, starting with the introduction of the band-pass filter³ and culminating in the development of a single-valve frequency changer⁴, have all been described in the

pages of this journal. When discussing new developments, however, it is rarely practicable to recapitulate more than a few of the most important details of earlier work, and it is usually assumed that the reader has some prior knowledge of the subject. Many articles on the superheterodyne, therefore, must, in the absence of such knowledge, have been incompletely understood; it is fitting, therefore, at this present time, to present afresh a description of the basic principles of this receiver, and to point out just wherein it differs from the familiar straight set.

The essential difference between the two receiver types lies in the method of tuning from one station to another. In the straight set, every tuned circuit throughout the receiver is tuned to the frequency of the incoming signal, and when changing from one station to another, it is necessary to change the resonance frequency of each circuit by adjusting the variable condensers. Now the amplifier portion of a superheterodyne is very similar, and consists of valves coupled by coils and condensers which form resonant circuits tuned all to the same frequency. No provision, however, is made in this amplifier for varying the tuning; the amplifier is fixed, and designed to function at only one frequency. In order to make use of it, therefore, it is preceded by a piece of apparatus whose purpose it is to change the frequency of the desired station to that of the amplifier. Instead of tuning by adjusting the amplifier to operate upon the signal frequency, as in a straight set, we work the other way round, and alter the frequency of the signal to conform to the requirements of the amplifier.

The fact that the amplifier, or as it is usually termed, the intermediate frequency amplifier, is required to work only upon one frequency leads to a number of important

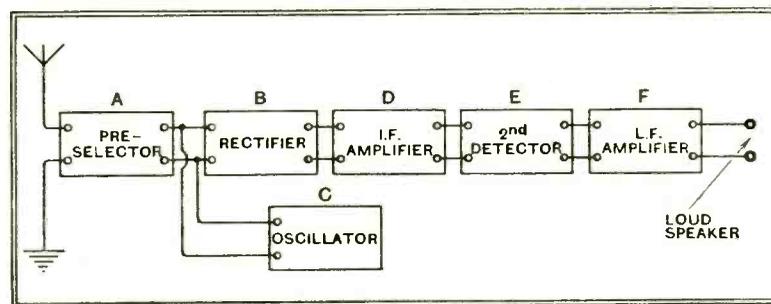


Fig. 1.—The schematic diagram of a superheterodyne demonstrating the various fundamental parts.

¹ *The Wireless World*, April 13th, 20th and 27th, 1932.
² *The Wireless World*, Aug. 19th, 1932.
³ *The Wireless World*, Nov. 5th and 12th, 1930.
⁴ *The Wireless World*, July 29th and Aug. 5th, 1932.

The Principle of the Superheterodyne.—

points. Provided that the frequency-changing process be carried out with constant efficiency, neither the sensitivity nor the selectivity of the receiver will vary over its tuning range, and the quality of reproduction will also be unaffected by the frequency of the signal. Furthermore, we have the opportunity of using special types of circuit in the amplifier. Perhaps the chief point, however, is that within limits we can choose the particular frequency upon which the amplifier is to operate.

With ordinary tuning circuits, the lower the frequency the higher the selectivity and the greater the amplification which can be obtained. The intermediate frequency, therefore, is nearly always chosen to be considerably lower than that of the incoming signal. The actual frequency used, however, is limited by other considerations arising out of the frequency-changing process, and it may be said here that the optimum frequency for conditions in this country has been found to be 110 kc., corresponding to a wavelength of 2,725 metres.

The part of the superheterodyne which at first appears most incomprehensible, however, is the frequency-changing process. It should be understood that, strictly speaking, the frequency of the incoming signal is not changed, it is merely used to produce another frequency of any desired value. This other frequency is produced simply by mixing a locally generated oscillation of different frequency with the incoming signal and rectifying the mixture; the output of the rectifier will be found to contain the desired new frequency.

The Frequency Changer.

The matter may be made simpler by a reference to Fig. 1, which shows the various superheterodyne stages schematically. The signal picked up by the aerial passes through a number of tuned circuits A, which are tuned to its frequency, and which may

The output of this amplifier is then passed to the second detector E from which the signal emerges in the usual low frequency form, and passes through any ordinary type L.F. amplifier F to the loud speaker.

It will be seen that frequency changing is essentially the rectification of the combina-

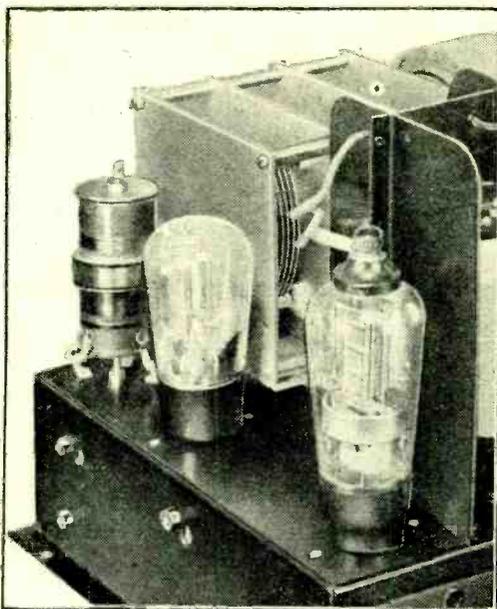
either 2,110 kc. or 110 kc., therefore, it will select that frequency and amplify it just as if it were transmitted from the broadcasting station at that frequency. In practice, the high frequency resulting from the sum of the incoming and locally generated oscillations is rarely used, because of the difficulties attendant upon attaining adequate selectivity from tuned circuits resonating at a high frequency. It is the difference frequency which is always used.

Now it will be observed that there are two local oscillator frequencies which will beat with the incoming signal to produce the intermediate frequency. In the above example, the oscillator was set to 1,110 kc. to beat with 1,000 kc., but if it be set to 890 kc., it will also produce an I.F. of 110 kc. This factor was apt to prove a little disconcerting with old-type superheterodynes, for every station could be received at two settings of the oscillator dial. With modern single-control receivers, however, it is not evident, for the pre-selector circuits, having only one dial setting for any station, tend to prevent the formation of repeat points.

Second Channel Interference.

It will have been noticed, however, that as there are two oscillator frequencies for any desired station, so there are two stations for any oscillator setting which may be converted to the intermediate frequency. Thus, with the oscillator set at 1,110 kc. to receive a station on 1,000 kc., a station working with a frequency of 1,220 kc. will also produce the 110 kc. beat frequency. It is the purpose of the pre-selector circuits to prevent any such signal from reaching the grid of the first detector, and upon their efficiency depends almost entirely the degree of freedom from this effect which can be obtained in practice.

The station producing this effect, which is known as second channel interference, is always spaced from the desired station by twice the intermediate frequency, and it will



The essential components for the frequency-changing process in a typical modern superheterodyne.

tion of two different frequencies. The output of the first detector contains the two original frequencies, and also two others whose numerical values are equal to the sum and difference of the two original frequencies. Thus, if the incoming signal has a frequency of 1,000 kc., corresponding to a wavelength of 300 metres, and the local oscillator is set to generate a frequency of 1,110 kc., there will still be these two frequencies in the rectifier output. There will also be, however, a frequency of 2,110 kc.,

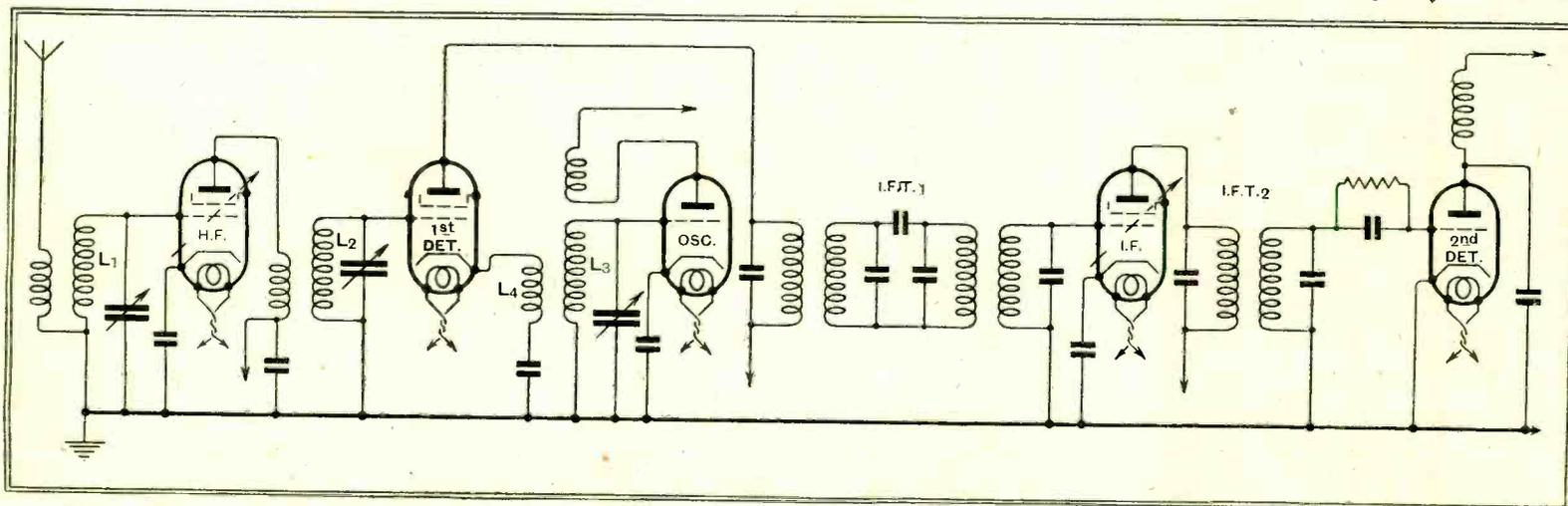


Fig. 2.—The skeleton circuit diagram of a modern superheterodyne showing the details of the pre-selector, oscillator and I.F. tuning systems.

or may not be associated with a valve amplifier, and it is then applied to the input of the rectifier, or first detector, B. A local oscillator is provided at C to supply a current at any desired frequency to the rectifier. The output of the rectifier contains, among other frequencies, the desired beat frequency which is selected and amplified by the intermediate frequency amplifier D.

corresponding to the sum of, and one of 110 kc., corresponding to the difference between, the two original frequencies. In the practical case, the rectifier produces harmonics, so that there will also be multiples of these frequencies, as well as others due to signals on wavelengths adjacent to that of the desired station.

If the intermediate frequency be tuned to

be obvious, therefore, that the higher the intermediate frequency, the more effective will be the input circuits in preventing it. It is this which prevents the general use of a very low intermediate frequency, at which the maximum adjacent channel selectivity can be obtained. Experience has shown that with the standard frequency of 110 kc. two tuned circuits in the pre-selector will

The Principle of the Superheterodyne.—

afford complete freedom from second channel interference, except when receiving a station spaced by 220 kc. from a local.

With an ordinary superheterodyne used near Brookmans Park, for example, interference is to be expected on 623 kc. due to the London Regional, and on 927 kc. due to the London National. Since only two stations are affected by this, it is not serious, but it can always be prevented by the use of more selective pre-selector circuits, and three tuned circuits will render second channel interference negligible even on a local. There are a number of other possibilities of interference of a similar nature which were discussed in detail in an earlier article². They are not so serious as second-channel interference, however, and their elimination depends entirely upon the use of pre-selector with screening of all circuits preceding the I.F. amplifier.

Notes on the Circuit.

The skeleton circuit diagram of a practical superheterodyne is given in Fig. 2, and it will be seen that two tuned circuits, L_1 and L_2 form the pre-selector and are coupled by a stage of variable-mu H.F. amplification. It might be thought that the adoption of signal frequency amplification was vitiating the superheterodyne principle of using a fixed frequency amplifier. In one sense it is, for it does tend to introduce one drawback of the straight set, namely, less constant amplification over the tuning range. The attainment of the total amplification upon two different frequencies, however, almost entirely eliminates troubles from instability, it reduces very considerably background noise, it greatly simplifies the design of the volume control, and it leads to rather greater efficiency. Its use, therefore, is amply justified where a high degree of amplification is required.

Returning to Fig. 2, the first detector is an anode bend detector employing a screen grid valve, and the oscillator L_3 is coupled into its grid circuit through the medium of the coupling L_4 included in the cathode lead. The output of the detector contains among many other frequencies the desired intermediate frequency which is passed to the I.F. amplifier through a special filter I.F.T.1. The process is now exactly comparable with that of any straight set, and after amplification by the variable-mu I.F. valve and passing through the second filter I.F.T.2, the signal is applied to the grid of the second detector which is of the power-grid type.

It will be seen, therefore, that it is only in regard to the frequency-changing process that the theory of the superheterodyne is in any way different from that of the straight set. The pre-selector, the intermediate frequency amplifier, the second detector, and the low-frequency circuits all follow exactly the same laws. Any differences which may be found in practice are due to slight differences in the nature of the work which the apparatus is called upon to perform. The I.F. amplifier, for instance, is only different from a straight H.F. amplifier because it need work upon a single fixed frequency of low value.

AMATEURS TO CO-OPERATE WITH H.M. FORCES.

Formation of the Royal Naval Wireless Auxiliary Reserve.

AT last British wireless amateurs are to be given an opportunity to assist His Majesty's Forces. The following important official statement outlines a scheme which will be welcomed by a large section of the amateur community:—

1. *The Secretary of the Admiralty announces the institution of a Royal Naval Wireless Auxiliary Reserve (R.N.W.A.R.) in Great Britain and Northern Ireland, to be recruited largely from Wireless Amateurs owning transmitting sets.*
2. *The object of the Reserve is to provide a reserve of operators trained in Naval procedure, for Naval Service afloat or ashore in war or emergency.*
3. *The Country will be divided into Areas, Districts, Sections, and Units. Units will consist of small groups up to a maximum of five transmitting stations.*
4. *Organised training will be arranged commencing with unit training. Inter-unit and section training will follow, with the aim of providing a network of R.N.W.A.R. stations linking up districts, and finally areas themselves. These W/T Stations would be exercised at handling W/T traffic according to Naval practice.*
5. *Exercise transmissions will be given either by Naval W/T Stations or from selected R.N.W.A.R. stations.*
6. *The Reserve will be under the orders of the Admiralty through the Admiral Commanding Reserves.*
7. *The internal administration of the Reserve will be conducted through the machinery of a Committee termed the Royal Naval Wireless Auxiliary Reserve Committee. The President of this Committee will be the Admiral Commanding Reserves or his representatives.*
8. *The members of the Committee will normally consist of officers or honorary officers of the R.N.W.A.R., who will be appointed annually by the Admiralty.*
9. *In drawing up the scheme and in framing the Regulations for the Reserve, the Admiralty have had the benefit of the advice of the following gentlemen:*
Mr. H. Bevan Swift.
Mr. J. Clarricoats.
Major W. H. Oates.
Captain H. S. Pocock.
Mr. A. E. Watts.
These gentlemen have consented to continue their good offices by serving on the first R.N.W.A.R. Committee with Admiralty representatives until February, 1933, when it is expected that a regularly constituted Committee can be appointed.
10. *Those interested are requested to apply for further particulars by post to:—*
The Admiral Commanding Reserves,
Queen Anne's Chambers,
Tot Hill Street,
London, S.W.1.

opportunities to serve in times of national emergency and on occasions when the official means of communication to isolated spots have broken down. Such services have, by the terms of their licences, been beyond the scope of amateurs in this country, however great their enthusiasm for good causes. The institution of a Royal Naval Wireless Auxiliary Reserve, which gives amateurs a real opportunity of serving their country, is the result of painstaking work on the part of officials at the Admiralty in conference with representatives of amateur interests, including the Radio Society of Great Britain.

Difficulties Overcome.

The idea of such a scheme has been broached on more than one occasion in recent years, but again and again difficulties have been encountered; it was, therefore, extremely gratifying to the Radio Society to be approached on the question in January last, when the Admiralty asked whether the Society would be prepared to give its support to a Naval Reserve scheme.

We understand that training for positions in the R.N.W.A.R. will be decentralised as far as possible, taking the form of instructional classes organised by a Unit Petty Officer. There will be two types of training (a) for Operators; (b) for Watchers. Periodical proficiency tests will be arranged and handbooks of instruction issued by the Admiralty. Test transmissions on special wavelengths and using Naval call-signs will be given at pre-determined intervals.

Candidates will be enrolled as Watcher 1st or 2nd class, or as Operator 2nd class, advancement being made as a result of periodical ability tests. Candidates must be over 18 years of age and of British parentage. Enrolment is not open to men serving with H.M. Forces, or to members of any police force.

Watchers, 1st and 2nd Class.

Watchers 2nd class will not be required to pass a test, but must carry out the conditions of service as laid down in the special Admiralty Handbook and they will be given one year in which to qualify as Watcher 1st class. Watchers 1st class must possess receiving apparatus capable of use on all amateur and Naval high-frequency bands. They must be capable of receiving plain language English sent for 5 minutes, 4-letter code for 3 minutes and 4-figure cypher for 3 minutes, in each case at 10 words per minute.

It is understood that fuller particulars regarding allowances, uniform, mobilisation arrangements and general instructions—to be published in the special handbook—are to be outlined at the Convention tomorrow (Saturday) of the Incorporated Radio Society of Great Britain.

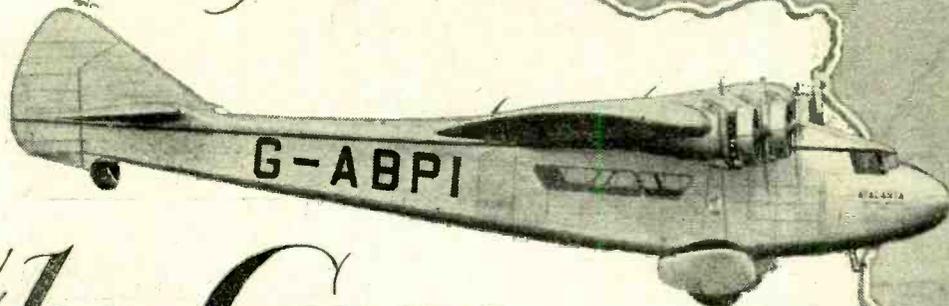
² Why the Whistles? *The Wireless World*, March 2nd, 1929

For many years British amateurs have envied amateurs in America their frequent

From Croydon

To

The Cape



The Wireless Chain on the New Empire Air Route.

By FLIGHT-LIEUTENANT R. F. DURRANT, A.F.C., R.A.F.O.

AS the hands of the clock on the Control Tower of Croydon near 12.30 p.m. every Wednesday the four engines of the 42-seater Handley Page aircraft of Imperial Airways start up and with propellers "ticking over" the passengers for Athens, Egypt, the Sudan, Central and South Africa embark.

After landing at Le Bourget they entrain for Brindisi and from this point the wireless organisation commences.

The stage Brindisi—Athens—Crete—Alexandria is accomplished in a four-engine "Short" flying boat equipped with the Marconi A.D.18.A. transmitting and receiving apparatus giving a two-way range in flight up to 400 miles.

The wavelength at present in use for the entire route from Croydon to Cape Town is 333 kc/s—900 metres.

Across the Mediterranean.

Brindisi Airport wireless ILI was the first station worked on 900 metres on our flight to Athens. After one hour's flying communication was also established with SVK Corfu, a W/T station erected by the Air Orient Air Line.

Flying steadily across the Mediterranean, communication is maintained with the s.y. "Imperia," call sign GLYV and Alexandria Aviation Radio SUH. The yacht "Imperia" is equipped with a Marconi $\frac{1}{2}$ kW. transmitter C.W. and I.C.W. and Bellini Tosi D/F equipment for giving D/F bearings to all aircraft flying over the Mediterranean.

On arrival at Alexandria I was able to inspect the very efficient transmitting station at Raz-El-Tin. Three transmitters are constantly working on 600, 900, and 2,100 metres remotely controlled from the radio receiving room situated over the main railway station building at Alexandria. A short train journey to Cairo is made and the flight through Africa proper commences from Heliopolis Aerodrome, Cairo.

The aeroplane in which the writer made the flight from Cairo to Cape Town was a De Havilland 66 (Hercules type) interna-

tional marking and call sign GAARY. This was the first three-engine commercial aircraft to be flown over the route. The personnel on board included Air Commodore A. Fletcher, C.M.G., Ground Services Manager, Imperial Airways; Major H. G. Brackley,

D.S.O., the Air Superintendent; and Mr. Francis Ellis, Imperial Airways Senior W/T operator. The wireless apparatus installed was the Marconi A.D.6 combined transmitter and receiver aircraft equipment, placed behind the centre engine bulkhead, the W/T operator sitting alongside the pilot.

Atmospheric conditions are, on the whole, good from dawn until 11 a.m. local time throughout Africa. After that hour static gradually increases and on most days two-way communication is difficult after midday. With the advent of short wave, which will soon be installed, this difficulty will be overcome.

Each administration on this 7,000-mile Empire air route has co-operated in supplying the necessary ground wireless organisation in order that the machines carrying the air mail are in constant communication with the aerodrome stations of arrival and departure.

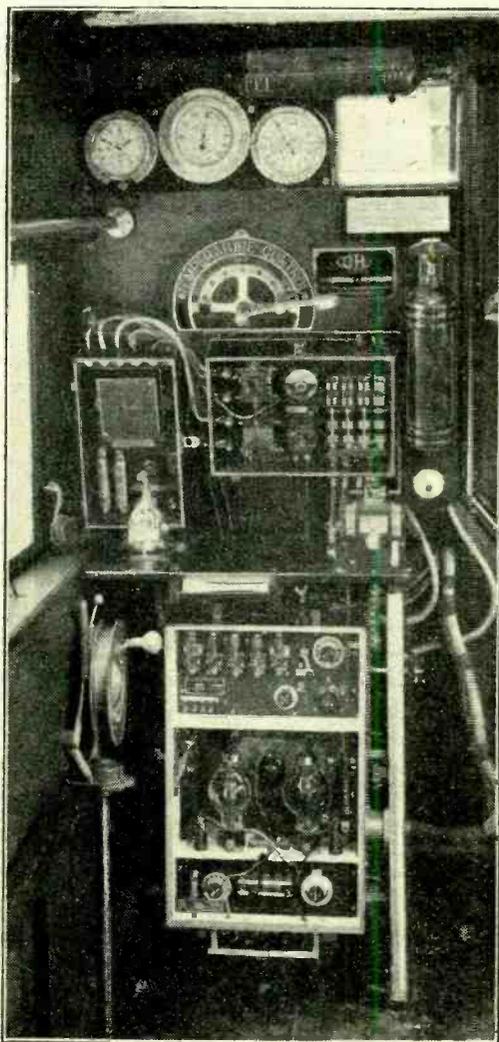
A "Dead" Zone.

When flying south from Cairo it was possible to maintain good communication with Heliopolis until nearing Assuit. The aircraft then worked Assuan, although a "dead" zone approximately twenty-five miles long was noticed when over the "Valley of the Kings" north of Luxor.

In the heat of the afternoon atmospherics became extremely fierce.

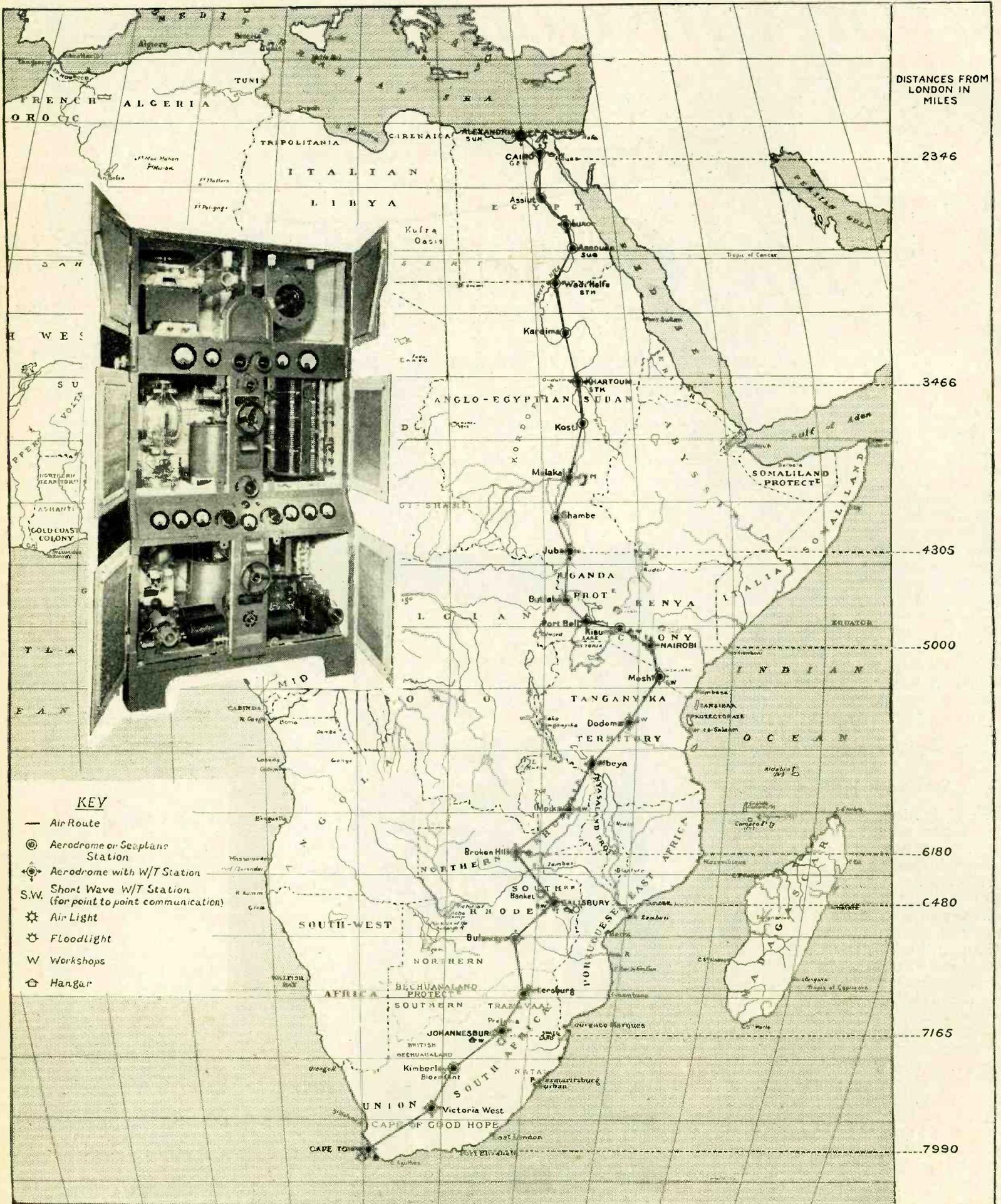
The next main wireless station is in the Sudan at Wadi Halfa where the station consists of a 450 watt (input) transmitter showing an aerial current of 5 amps. The transmitter is supplied with H.T. and L.T. either from a motor or a $1\frac{1}{2}$ -h.p. Petter engine together with a double voltage D.C. generator. The tuning arrangement provides for eight frequencies on a stud switch. This equipment is practically standard throughout the Sudan and is equipped for continuous wave telegraphy only. The receiver employs a simple oscillator detector with a wave range of 400-3,000 metres. A single stage of low frequency amplification is included.

After Khartoum, where aircraft reception



The compact Marconi A.D.6 transmitter and receiver on the De Havilland 66 plane, in which the author recently participated in the first direct civil flight from Cairo to Cape Town.

HOW THE TRANS-AFRICAN AIR ROUTE IS ORGANISED.



No fewer than sixteen radio-equipped aerodromes maintain touch with the Imperial Airways 'planes between the time of their leaving Cairo or Cape Town and their arrival at the other end of Africa. *Inset.* — A TA4A Marconi transmitter (medium wave) of the type installed at Kampala, Nairobi, Mbeya, Broken Hill, Salisbury and Bulawayo.

From Croydon to the Cape.—

is carried out in the General Post Office with a remotely controlled transmitter, a stop was made at Malakal, a typical small Sudanese town whose wireless station was also remotely controlled, reception being done at the Post Office.

From Malakal, flying south to Juba, we had to "reel in" the 200 feet of trailing aerial several times owing to severe atmospheric conditions and the approach of a "line squall," which was successfully circumvented.

From Juba the course is south to Kampala (Uganda) and here the first of a series of medium power long-and-short wave stations has been specially erected for African civil aviation. Kampala W/T station has been erected on an exceptionally fine site, its exact location being Kululo Hill. The long-wave transmitter here is the Marconi T.A.2 with an input power of 2.2 kilowatts—the short wave T.N.7 having an input of 1 kilowatt. The station, in addition to working aircraft north and south bound, communicates with Juba and Nairobi.

Transporting Gear by Air.

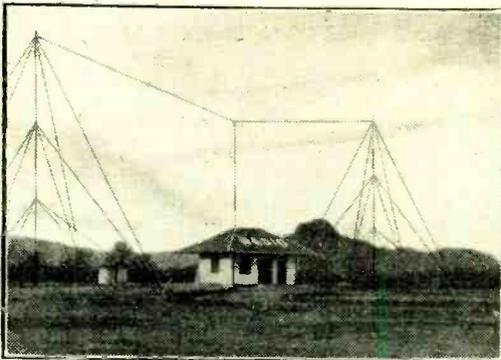
The next main step was Nairobi, where the 900-metre transmitter is located alongside the "beam" transmitter of the International Communications Company. The 900-metre antenna is supported from a triatic above the "beam" aeriels.

Flying south through Tanganyika the aircraft worked Nairobi until in touch with Mbeya; two intermediate refuelling aerodromes (Moshi and Dodoma) are equipped with short-wave transmission and reception for point-to-point working, and a long-wave receiver is also used at Dodoma.

The night stop was Mbeya, which is normally reached by road 400 miles from the nearest railway. The road is impassable from October to March, and as all wireless equipment had to be transported from Dar-es-Salaam, together with six months' fuel

supply, the erection and installation reflects great credit on all concerned, and proves the immense value of air transport in these regions.

From Mbeya to Mpika, the next stop, we flew over dense bush, and after losing



The radio station at Dodoma aerodrome, one of the refuelling points.

Mbeya's signals communicated ahead with Broken Hill. Leaving Mpika the following day in good weather we approached to within 100 miles of Broken Hill.

Suddenly, the weather changed rapidly, visibility became very bad, and we were forced to turn back and make a landing on an emergency landing ground some 150 miles north of Broken Hill.

An Obliging Native.

When we landed an agile native who suddenly appeared from space, climbed a nearby tree and secured our aerial, while a big-game hunter who had witnessed our descent from his camp came up and greeted us. In the course of conversation he informed us that the nearest telegraph office was 170 miles distant! Broken Hill were informed of our position. For emergency working the propeller from the wind-driven generator is removed and the generator is motored by means of a small 2-stroke petrol engine which is normally used as a "gas starter" for the main engines.

The humidity, combined with tropical rain, made it essential for us to dry out the radio apparatus before taking the air the following day.

On arrival at Broken Hill we began to feel that we should shortly be entering civilisation again. Bulawayo was the next long-wave centre to be worked (the first halt, Salisbury, had short-wave transmission only) and followed our progress with a long-wave receiver.

Shortly after leaving Bulawayo we heard

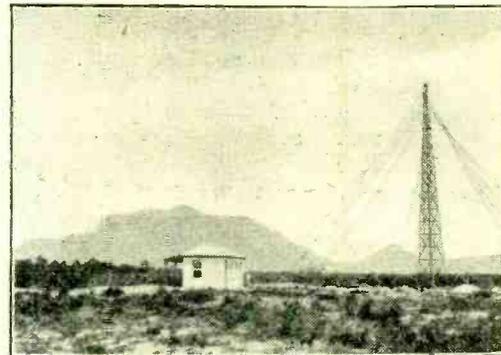
the new aero W/T station at Germiston, Johannesburg, and two-way working took place at 350 miles. Germiston is also fitted with Bellini-Tosi direction finding and transmitted several very useful bearings to us.

The W/T stations in the Union of South Africa, viz., Germiston, Victoria West and Cape Town, have all been erected under the supervision of Captain Kos, of the Post Office Engineering Department, Pretoria.

From Johannesburg south we left the atmospheric-laden ether, and the 1,000-mile flight from the City of the Goldfields to Cape Town was made in one day, with excellent service from the wireless stations at Victoria West and on 600 metres from Slangkop, Cape Town.

First Civil Wireless Flight.

The extremely variable meteorological conditions which prevail over the Hex River mountains and adjoining district has necessitated the erection by the Union Government of special weather reporting stations at Beaufort West, Matroosberg Rail, Worcester, Tulbagh, and Cape Town, which are linked by telephone.



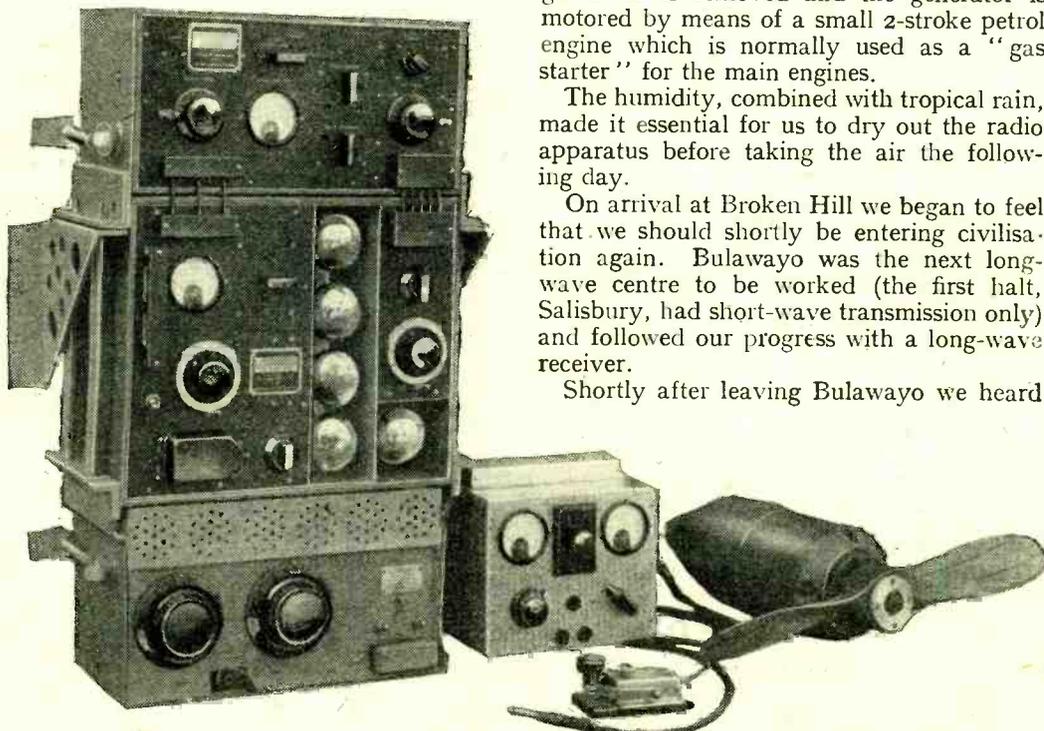
Just outside Cape Town is Wingfield airport. The wireless station is seen in the photograph.

On sighting Table Bay mountain we reeled in our aerial with a final "GB. CU." to all concerned, having accomplished the first direct civil wireless flight through the dark Continent.

"Wing Coil" direction finding will prove a valuable aid to aerial navigation over sections of the route where the absence of distinguishing land marks renders navigation difficult, and all aircraft are now fitted with this apparatus.

"WIRELESS AND SHIPPING"

THE August 17th issue of our esteemed contemporary, "The Shipping World," holds special interest for all to whom maritime wireless telegraphy and telephony make a strong appeal. This "Wireless and Shipping" number contains several articles by authorities in their respective spheres concerning the influence which wireless, the direction finder and the echo-sounding devices are exercising in safeguarding life and property at sea. The principal article is by Marchese Marconi, who gives his personal recollections of 38 years of progressive research. Other contributors include Sir Archibald Hurd, Messrs. W. A. Souter and J. Herbert Scrutton, both members of the Council of the Chamber of Shipping, M. Auguste Hubert, president of the Comité International Radio-Maritime, Dr. S. H. Long, and Messrs. R. Ferguson, G. Nevill, W. Platt, and J. Lewis.



The specially designed "Empire Airways Equipment" manufactured by Standard Telephones and Cables, Ltd., for use on the African air route. It will be fitted on the new "Atalanta" machines of the type shown in the title picture. The units include a combined long- and short-wave transmitter and their accompanying receivers.

Radiolympressions.

By Free Grid.

ALTHOUGH I was quite tired out from the previous day's exertions, 11 a.m. last Friday found me on the doorstep of Olympia, together with a great many other people. A bad start was made, I fear, as the doors were over two minutes late in opening, and my consequent demand for something off the price of my admission ticket only led to an insolent retort. I was greatly impressed by the vast size of the exhibition, and at once saw that I should be unable to do the rounds of even the stands in one day, still less visit all the demonstration theatres in the annexe, or try the new dance floor in the National Hall.



Led to an insolent retort.

Immediately after bursting into the main hall I received quite an unpleasant shock, and for the moment thought that the exhibition was no improvement on that of last year. Things quickly improved, however, and by lunch-time everything was normal, every stand being ready to receive visitors.

A New Stunt.

The first thing that caught my eye, or rather my ear, was an entirely new stunt that has been adopted this year by certain stand-holders who desire to avoid answering technical questions, and that is to create such an unearthly din with the loud speakers on their respective stands that any would-be enquirer soon tired of screeching his questions and eventually melted away, completely baffled by the loud speaker. (No pun intended.)

I had happened to notice an individual with a hopeful look on his face attempting to get an assistant to read his hands as he went through the motions of the deaf and dumb alphabet. Thinking that this was a genuine case, and knowing the alphabet myself, I at once gave him the D.C. signal (see International Maritime code of signals) and came to his assistance. After extracting his question from him I attempted to shout at the assistant, but with no success, and so I tore a leaf out of my notebook and wrote the question. The apparently deaf man followed my example, and after much tedious

work with pencil and paper all the information that we were able to get was that the technical man had gone to tea.

It was only after we left the stand that I discovered that my new-found friend was possessed of perfectly normal "earsight."

Suspicious Confirmed.

After refreshment I returned to this particular stand. I happened to drop the pencil with which I had just written my query and it promptly rolled under the booth. Diving down to pick it up, I nearly electrocuted myself by placing my hand on the secondary terminals of the mains transformer of a large L.F. amplifier which was standing just behind the curtain which hung down from the edge of the stand. Even then I should not have suspected anything had not the assistant's face turned a dull brick-red.

I was about to ask why the amplifier was there when suddenly a shrewd suspicion flashed through my mind, and, dropping on my knees, I rent the curtain asunder, and made a swift examination. Unhappily, I found that my worst suspicions were confirmed. The input leads from the B.B.C. amplifier, instead of being coupled up to the loud speakers on the stand, were joined to the primary of a special "line" transformer, and thus fed into the amplifier.

I must say that I considered that the Exhibition authorities had done all in their power for the comfort of visitors, but I hardly expected them to provide, gratis, professional dancing partners on the floor of the National Hall. Such a gracious act showed the height of hospitality.

The *matinée* idols, whose presence I forecast last week, were there in great numbers, draping themselves tastefully around the



Should have dismissed the matter from my mind.

various stands in the manner of the languid young men you see at the Motor Show. I was quite wrong, however, when I prophesied the disappearance of the band-box beauties, who were there in full force distributing the usual improving literature.

There was a strange incident, or, rather, series of incidents, which at first I was totally



They were there.

unable to account for. On several occasions as I approached a stand an important-looking individual—apparently the manager—hurried forward and handed me a component, bidding me examine it carefully. Each time I happened to notice that the component was one having a highly polished surface either of metal or of moulded insulating material. Furthermore, after a brief examination I was entreated to remove my gloves in order to examine the component better. It all seemed to me to savour rather of the stationer's shop at Christmas time, when you are usually requested to remove your gloves in order not to damage the Christmas cards. Not seeing that any harm was likely to come from keeping my gloves on, or that I could examine the component any better by taking them off, I did not yield to the entreaties. This seemed to cause some disappointment.

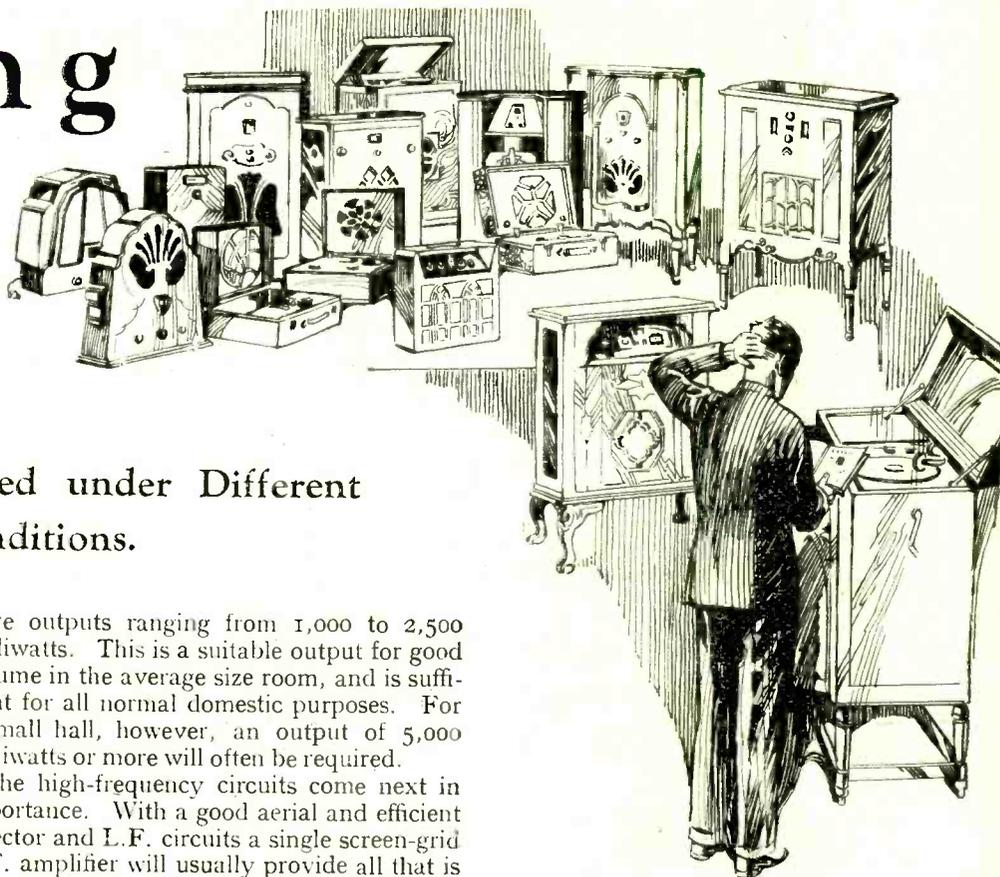
A Stranger's Generosity.

On another day, as I made one of my many subsequent tours, the same thing happened on the first stand I visited, only on this occasion I was requested by the manager to join him in a light lunch. I must confess that I felt a little peckish, and although such generosity from a complete stranger seemed rather suspicious, I assented. As we rose to go after our meal I observed money and a few whispers passing between my host and the attendant handmaiden. I should have dismissed the matter from my mind had I not noticed my host empty the dregs of my glass on to the carpet, and wrap it (the glass I mean, not the carpet) carefully in his handkerchief and pocket it, apparently with the full cognizance and approval of the aforementioned handmaiden.

We parted company and I moved off, thinking charitably that it takes all sorts to make a world, when suddenly, as I approached another stand, the same thing happened, namely, an invitation to a light lunch. Needless to say, I at once smelt a rat, and angrily demanded an explanation. After much equivocation and prevarication I eventually found out that the whole ridiculous procedure was an attempt to identify me by obtaining my right-hand thumb print in order to compare it with the one published in my notes last week.

Unfortunately for the gentleman who stood me the lunch I am naturally left-handed, and consequently did not hold my glass of ginger beer in my right hand. Either he was so unobservant that he did not notice it, or he was so lacking in knowledge that he did not know that the left-hand thumb print is entirely dissimilar to that of the right.

Choosing a Set.



The Performance Required under Different Listening Conditions.

THE task of selecting a wireless receiver is often a matter of considerable difficulty, not because the choice is in any way restricted, but because it is so wide that the prospective purchaser is apt to become lost in unimportant byways. He will, unless he be of cool and careful temperament, become involved in a mental controversy over the respective merits of, say, the different forms of detection, to the exclusion of the more fundamental and important properties of selectivity, quality, and sensitivity.

Before one can choose a receiver it is necessary to have some idea of the performance which will be required, and of the conditions under which it is to be used. It is obviously wasteful to buy an ultra-sensitive, ultra-selective superheterodyne solely for local reception; it is just as unsatisfactory to buy an unselective type of two- or three-valve receiver for receiving Continental programmes when the set is to be used within sight of the aerials of a modern twin-wave transmitter.

The output stage is the first point to be considered, for upon this depends the maximum undistorted volume which can be obtained. In the case of a battery receiver the output is always limited by considerations of economy in upkeep, and it is rare for it to exceed 1,000 milliwatts. A more usual figure would be 350 milliwatts, and this may be taken as satisfactory for moderate volume in a small room. In the case of a mains set there is far less restriction, and most receivers

have outputs ranging from 1,000 to 2,500 milliwatts. This is a suitable output for good volume in the average size room, and is sufficient for all normal domestic purposes. For a small hall, however, an output of 5,000 milliwatts or more will often be required.

The high-frequency circuits come next in importance. With a good aerial and efficient detector and L.F. circuits a single screen-grid H.F. amplifier will usually provide all that is required in the way of Continental reception, particularly if reaction be fitted. With a poor aerial, however, or where foreign stations are considered of great importance, two H.F. stages are usually advisable.

Selectivity.

So much for mere amplification; nowadays, selectivity is of at least equal importance, and the degree necessary depends not only upon the presence or otherwise of a powerful local station, but also upon the sensitivity of the set. Two tuned circuits are normally sufficient completely to separate two locals, but do not allow much scope for foreign reception in their vicinity. Three tuned circuits are included in most single H.F. sets, and a number of the more important Continental programmes can then be received in spite of the presence of a local. The four tuned circuits fitted to many two H.F. sets, however, are obviously better, and so the advantages to be gained from this type of receiver are not merely increased sensitivity but also greater freedom from interference.

If great use is to be made of foreign programmes, however, there is no doubt that the superheterodyne offers a considerably improved performance, for it is inherently more selective than the straight set. It is usually more sensitive also, but that is incidental, since straight sets are obtainable with sufficient amplification for any purpose. Many types of superheterodyne are to be found; some employ only four or five valves and give moderate sensitivity with high selectivity; others have ten or more valves, and aim at the highest useable sensitivity and selectivity. The majority, however, include six or seven valves and are sensitive enough to receive most worth-while stations on quite a poor aerial, while their selectivity is usually sufficient to permit reception of any station spaced by more than 18 kc. from the local, so that

its blanketing effect is almost completely removed.

Turning now to quality of reception, it may safely be assumed that most modern receivers have L.F. circuits giving substantially even amplification of all important musical frequencies. Where the selectivity is not very high, therefore, the overall frequency response may often be taken for granted, for few three- and four-valve sets are selective enough to give serious sideband cutting. The matter is entirely different with the superheterodyne, however, for it is then only too easy to obtain a large loss in the upper register. It is important to see, therefore, that the set includes either band-pass filters in the I.F. circuits or tone correction in the L.F. amplifier. One of these methods, or a combination of both, is an essential to good quality reproduction with a superheterodyne.

Volume Control.

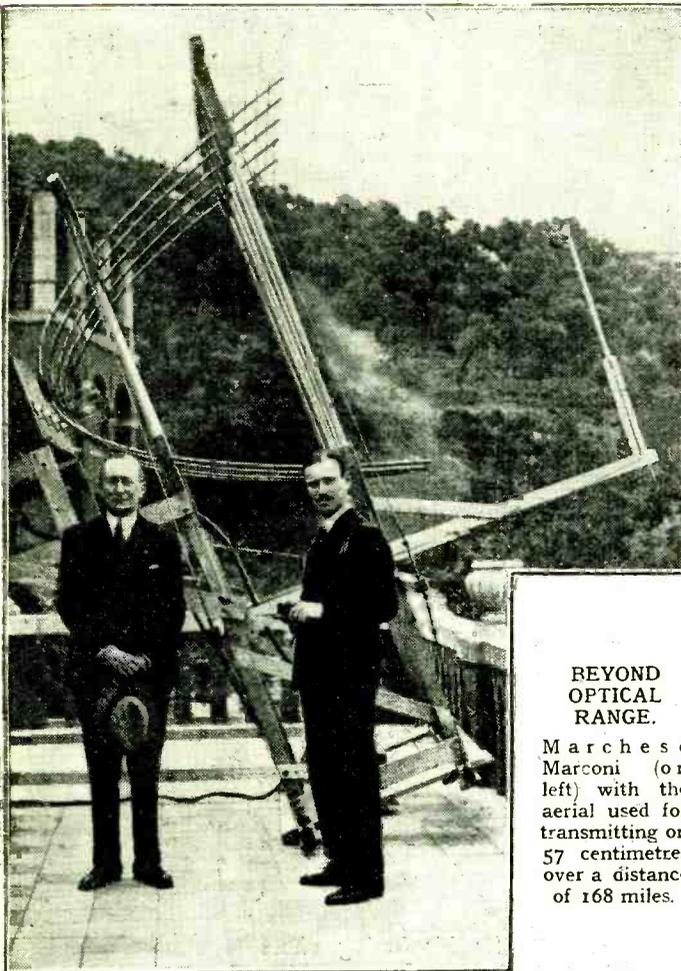
When satisfied about these important and fundamental features of the receiver, attention should be paid to the details of the design upon which so much depends. Many of these make chiefly for ease of operation, and are so obvious that they need no mention here. The volume control should not be overlooked, however, particularly if the set is to be used near a local station, and it is wise to make sure not only that it is of a type giving a sufficiently wide range of control, but that it is distortionless throughout its range.

When a decision has been reached upon technical grounds as to the most suitable receiver, a demonstration should be arranged. When all is said and done it is results which count, and one can never be quite certain that the most perfect receiver theoretically will fulfil its promise in a practical test.

WITH the enormous number of wireless sets now on the market it becomes increasingly difficult to discriminate between the multitudinous claims of each. The number of valves is but one of the factors which must be considered along with the rival claims of the superhet. and the ambitious straight set. This article, couched in non-technical terms, sets forth the essential points which must be looked for in the light of varying listening conditions.

News of the Week.

Current Events in Brief Review.



BEYOND OPTICAL RANGE.

MARCHESE Marconi (on left) with the aerial used for transmitting on 57 centimetres over a distance of 168 miles.

Ultra-short-wave Feat.

MARCHESE MARCONI offered the world a new thrill last week, when he succeeded in transmitting on the ultra-short wavelength of 57 centimetres over a distance of 168 statute miles. Telegraphy and telephony messages were sent from Rocca di Papa, near Rome, to Cape Figari, Sardinia. By covering a distance so far in excess of the optical range it would seem that the Marchese has opened up fresh possibilities for research into the behaviour of waves of very high frequency.

Prizes for Olympia Visitors.

THE radio competition organised by the *Evening Standard* has attracted considerable attention. Each visitor to the Olympia Radio Show is handed a card giving full particulars. A word such as "Radiolympia" is given and competitors are asked to compose a sentence about wireless of words of which the initial letters, in order, make up the given word, which is changed each day.

Prizes consisting of up-to-date radio sets of the leading makes are awarded to competitors who, in the opinion of the Editor of the *Evening Standard*, send in the best sentences. Competitors must get their cards stamped at the *Evening Standard* stand in the National Hall. This will be done at any time within the hours that the Exhibition is open for any competitor who is carrying a copy of the *Evening Standard* of that day. The prizes include British Blue Spot, Clarke's Atlas, Mullard, Zetovox, Ekco, Cossor, Phillips, and Lotus products.

Broadcasting from Bristol.

A SOUND-PROOF broadcasting studio is to be erected in the Colston Hall, Bristol, next month for the Bristol Radio Exhibition, from which various programmes during the Exhibition week will be broadcasting throughout the Western Region.

We learn that every available stand has been booked by exhibitors.

Italy's Radio Show.

ITALY'S National Radio Show is to be held this year from September 10th to 20th in the Palace of the Society of Fine Arts, at Milan. The exhibition has the support of the Italian Broadcasting authorities, and will be thoroughly representative of all phases of wireless activity.

Rival Radio Shows in Paris.

AT least 160 firms have taken stands at the official wireless show, which is being held in Paris from September 8th to the 18th next. This show, organised by the French Radio Traders' Association, will be held in the Grand Palais, Avenue des Champs-Élysées. There is, of course, to be a rival show, described as an International Wireless Exhibition, to be opened on September 3rd at 31, Boulevard des Italiens.

Distress in I.F.S.

GRAVE concern is being felt by the radio trade of the Irish Free State in connection with the development of the "Tariff War." According to the *Irish Radio News*, dealers find themselves practically at a standstill. A number of the large firms had stocks sufficient to last a few months, and are still selling these stocks at the old prices. It is the small retailer and service man depending upon the regular sale of apparatus for a living who is feeling the pinch.

"Those of us," writes our contemporary, "who have devoted any time or labour to the development of radio in the Free State view the matter with concern. It is hard to dissociate the position from politics, but we must attempt to do so."

"On September 19th the Dublin Radio and Gramophone Exhibition is billed to open at the Mansion House. At the time of writing we cannot see how this exhibition can be held."

New Television Development.

THE movie camera is coming to the aid of German television. The German Fernseh A-G, with which the British Baird Company is associated, are demonstrating a new television transmitter for outdoor scenes in which the cinematograph film plays a leading part. Instead of directly scanning the event, the new apparatus photographs the scene on an ordinary film, which is developed in ten seconds and then passed to a television transmitter which immediately broadcasts it. The ten-second lag is regarded as negligible, and the process considerably improves the quality of the reproduced image.

Raid on Austrian Licence Money?

TROUBLE has arisen in Austria on a little question of thirty millions of schillings. According to a correspondent, the Postmaster-General is this amount short on the year's working, and the Finance Minister considers

he should make up the deficit from his own pocket.

It is but a step from the Post Office to the radio cash box, and fears are general among listeners that the Postmaster-General, who is also Chief of the Austrian Broadcasting Co., will use listeners' money in order to fill the breach. Listeners are protesting, but the fund is in danger.

"Prom." Devotees in France.

M. PAUL BERCHE, a Paris radio critic, after launching an attack on the French broadcasting programmes, concludes with the reflection: "Happily we have the foreign concerts, particularly those relayed by London from the Queen's Hall."

The Silly Season.

AN instrument called a "Radiesthesia" has been evolved by Father Tremoulet, who, according to our Paris correspondent, caused a sensation recently at Toulouse. While lecturing on his invention, which consists of a rod sensitive to radiations from the human body, the Rev. Father asked one of his audience to test its efficacy. One man asked the lecturer to find out how much gold he had in his purse. The rod recorded 17 to 18 vibrations, which apparently corresponded to a 20-franc piece. And this was the coin the man had in his pocket!

Next week: the Sea Serpent.

Pilot Authors Kits.

THE popularity of the Pilot Authors Kit service, which was inaugurated by Messrs. Peto Scott, Ltd., at the last radio exhibition, has become so pronounced that the company has had to make other arrangements for the wholesale distribution of these kits to ensure that adequate stocks are at all times available to home constructors.

The solution has been found in the appointment of the British Radio Gramophone Co., Ltd., as wholesale distributors. Their address is "Pilot House," Church Street, Stoke Newington, London, N.17.

Four-in-one Record.

THE "Four-in-One" gramophone record which has just been issued by the British Homophone Company provides the public, as its name suggests, with four tunes on a 10-inch record. This alone would not constitute an extraordinary feature, there being no arbitrary ruling as to the length of a "tune." What the company offers, however, is a record in which each side plays for six minutes instead of three, with the result that it is possible to accommodate on one side two dance tunes or other selections, each of a length which just fills the ordinary 10-inch record, playing for three minutes a side. The result is achieved by the use of a narrower groove than is usual, but the inventor, Mr. W. D. Sternberg, claims that this can be carried out without unduly sacrificing the bass register.

The records are issued by the Victoria Music Publishing Co., Ltd.

Telefunken Gramophone Records.

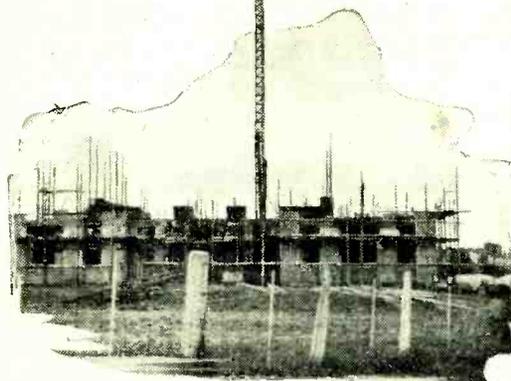
THE well-known German firm Telefunken has now entered the gramophone business and is producing records bearing the title "Telefunken."

THE WAVELENGTH PROBLEM.

Part 2.—The Limitations of 9 Kilocycle Separation.

By NOEL ASHBRIDGE, B.Sc., Chief Engineer, B.B.C.

The Western Regional station near Williton, Somerset, in course of construction.



IN the first instalment of this article, which appeared last week, consideration was given to the problem of frequency separation and interference and certain conclusions were reached. First, it was pointed out that there was little to be gained at the transmitting end by cutting off at 5,000 cycles, and secondly, if there is to be freedom from interference at the limit of the service area the reproduction of frequencies above some 4,000 cycles cannot be obtained.

Dealing with the first point, if we assume that it is desirable in a receiver to reproduce faithfully frequencies up to 6,000 cycles per second, then one would have to cut off in the unwanted transmitter at 3,000 cycles per second, which is, of course, a contradiction. In fact, to get complete freedom from interference at the limit of the service area we should have to cut off in both transmitter and receiver on a theoretical basis at 4,500 cycles per second, but practically at about 4,000 cycles per second, thus robbing all listeners living in areas of strong field-strength of any hope of first-class reproduction.

Service Area.

With regard to the second point, we ought to consider what is meant exactly by service area. Supposing we take the limit of the service area as 5 m/v per metre (it used to be $2\frac{1}{2}$ m/v per metre in the days of low-power stations), then in the case of two stations of 50 kW we shall, of course, have 5 m/v per metre from the wanted station, and after dark we must expect to have a mean of somewhere about 2 m/v per metre from its neighbours, even if they are very distant stations, and the peaks may come up to as much as 5 m/v per metre. In some cases even higher readings than this have been recorded. This means that on an average we get jamming unless we cut off in the receiver at about 4,000 cycles, and even then we shall find that we get interfer-

ence on the occasions when the field-strength of the unwanted station rises appreciably above its average value, unless the transmitters also cut off at about 4,000 cycles per second. Fig. 5 gives a curve which shows the peak values of down-coming ray at different distances from a station. From this it will be seen that interference from a station is by no means proportional to one's distance from it outside a range of about 150 kilometres, and that the peak values of the indirect ray occur at distances of the order of 400 to 800 kilometres. This curve has been taken from a series of international tests which have been carried out during the past 18 months.

The Necessary L.F. Response.

We now come to the highly controversial question of what audio-frequency range it is necessary to reproduce for full appreciation of a programme. It has been said that response up to 4,000 cycles is sufficient for most purposes and that, therefore, the interference problem does not exist. However, it is my opinion that for really good quality one must reproduce in the receiver at least something up to 6,000 or 7,000 cycles. So far as the transmitter is concerned the response should be better than this when conditions such as the response of the cable circuits to the station permit; this,

*I*N the second and concluding instalment of this article by the Chief Engineer of the B.B.C. it is shown how the frequency separation of broadcasting stations is limited by the band of audio-frequencies which it is necessary to cover to give full effect to the programmes. There are two alternatives for the future: to retain the 9 kc. separation and to ensure good quality reproduction for those living in areas of high field strength, or to have a wider separation and reduce the number of stations in Europe.

of course, is for the benefit of those living in areas where the field strength exceeds, say, 10 m/v per metre. It would seem from practical results that it is not altogether essential to reproduce the upper frequencies strictly in their true relationship. That is to say, if one begins to cut off at 4,000 cycles, and there is still some appreciable response left in the receiver up to 6,000 or 7,000 cycles, a sufficiently good effect is obtained from the point of view of plain,

straightforward listening. On the other hand, if one cuts off completely at 4,000 cycles per second, then the deficiency is very marked.

Views on this question are very divergent, and there is still a school who say that it is essential to reproduce practically everything which is produced in the studio. In this case we should have to go up to at least 10,000 cycles per second, and even considerably beyond, which is seldom possible either in the transmitter or receiver. However, in dealing with the difficult problems of broadcasting, compromise is, as usual, unavoidable, and the figures given above certainly do give satisfactory broadcasting so far as practically every ordinary type of listener is concerned. On the other hand, as an argument against those people who think that broadcasting would not be spoiled artistically by a cut-off at 4,000 cycles per second, we must compare broadcasting with the gramophone. A gramophone record reproduces something appreciable up to and a little beyond 5,000 cycles per second, and yet the lack of upper frequencies is noticeable to the critical ear. We also have to consider the future, and it may be that with new methods of recording, such as that known as "hill and dale," there will be good response considerably above 5,000 cycles, and no broadcaster wishes to see a state of affairs which will prevent broadcasting ever giving such good quality as can be obtained from an ordinary commercial gramophone record. This, of course, is what would happen if we came to an international agreement to cut off in the transmitter sharply at a frequency equivalent to half the separation between stations.

Importance of Harmonics.

It seems possible that the divergent views concerning the band of audio-frequencies which must be reproduced may be partly due to a difference of opinion as to what type of programme is the most important. Thus, if nothing but plain speech were ever transmitted, it would not be at all unreasonable to consider a sharp cut-off at 4,000 cycles, although, of course, the natural characteristics of individual voices would be lost to some extent. If, however, one considers the problem from the music point of view, then we have to consider not only the fundamental frequencies of the notes, because the harmonics are almost as important as the fundamentals. Again, if one considers radio plays, it is very difficult indeed to get realistic reproduction of certain effects with a very limited frequency band, because "noises" of various kinds contain important harmonic components.

Sunning up, we find that the separation of broadcasting stations is really limited by

The Wavelength Problem.—

the band of audio-frequencies which it is necessary to cover in order to give full effect to the programmes. It is not merely a question of how close two broadcasting stations may approach in order to avoid interference from the point of view of the selectivity of the receivers; in fact, we can assume that in future there is no limit to the selectivity of receivers other than the limit just mentioned, namely, the band of frequencies which it is necessary to reproduce. There seems no reason to suppose that the receiver of the future cannot be made far more selective than is permissible for good quality, but the fact always remains that we cannot separate overlapping sidebands from each other unless the strength of the wanted ones is several times greater than that of the unwanted. However, this does not mean that very highly selective receivers cannot be used with advantage in circumstances where it is preferable to sacrifice high quality than to suffer interference.

Opinion Abroad.

At this stage it will be interesting to consider what is the general opinion amongst European broadcasters concerning these problems. I can say straight away that there is no difference of opinion on the fundamental technical considerations, but there are different ways of looking at the problem from the purely practical point of view. In many countries there is a tendency towards the opinion that it is better to say that receivers must cut off completely at even 4,000 cycles per second than to consider the political difficulties of increasing the separation between stations. At the same time the opinion has been expressed that in future we must only consider that broadcasting is reliable when high field strengths of the order of, say, 10 m/v per metre and upwards are available. This means, if we assume that there is to be no deliberate cutting off of modulation frequencies in the transmission, that there are two alternatives to consider for the future, viz. :—

(1) To stick to the separation of 9 kc/s and say that those living in areas of high field strength can always get good quality, while those living in areas of comparatively weak field strength must be prepared to cut off below the limit of frequency which gives really good reproduction.

(2) To have a wider separation and to reduce slightly the number of stations in Europe as a whole.

Bearing these two alternatives in mind, the whole problem becomes entirely one of policy in relation to the existing state of affairs in each country. No one has ever pressed for a larger separation than 11 kc/s, but from experiments which we have made at Tatsfield we have computed that the range for good reproduction can be increased by 50 per cent. by this means. There is little doubt that if all countries in Europe were just starting broadcasting, and no large stations were yet in existence, a larger separation would be advantageous, purely from the point of view of giving the best service to the largest number of people.

However, plans for the future, as already stated, depend on the results of the Madrid

Conference, which takes place in September and will probably last until some time in November. After that, in the early part of next year, it is anticipated that there will be a meeting of the U.I.R. It will then become a question as to whether a re-arrangement of wavelengths is necessary,

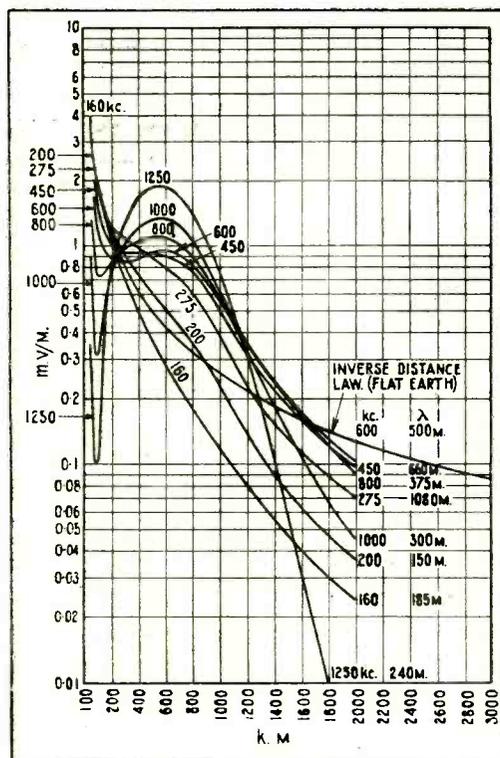


Fig. 5.—A series of international tests gives these mean peak values (m.v./M) of the down-coming ray at different distances from the transmitter. It will be seen that interference is not proportional to the distance (k.m.) that a receiver is located from the transmitter.

and whether there should be a meeting of Post Office Administrations. This will depend partly on whether additional wavebands are obtained for broadcasting at Madrid. In any case, however, it is not impossible that an attempt will be made to re-arrange stations in such a way as to reduce mutual interference, using the knowledge which has been obtained from the

many international tests as a guide to the geographical placing of stations which are neighbours in the waveband. There is also the question as to how many international common waves should be retained, and, last but not least, what is to happen on a permanent basis to those stations which are at present working on more than the standard channel spacing and, of course, those which as a result are working at less than the standard spacing. In these latter cases, the reduced separation has been possible because the stations involved are on low power, but at any time the power of these stations may be raised.

Limitation of Power.

Then, of course, there is the vexed question of limitation of power. At first sight it would seem to be logical to agree to limit the power of broadcasting stations in such a way as to be of mutual benefit to everyone concerned. Agreement on this point, however, is not likely to be obtained without difficulty, the trouble being always that the exact conditions existing for each station are not the same. Actually there are some stations where the authorities in charge do not consider that the limit of the service area must be taken as the fading limit—in fact, their whole object is to cover as big an area as possible by day or by night, including indirect ray reception as part of their normal objective. For this object the limitation of power is much less attractive than when an attempt is made to give a service of a more reliable character, because if one can tolerate a "service" which neglects the effect of fading, actually one can probably also neglect the effect of frequencies above 4,000 cycles per second. One thing, however, is certain, and that is that broadcasting has become so important to the inhabitants of nearly every country in Europe that some kind of solution is bound to be found to almost any difficulty which may arise, but it may take time. In the meanwhile it is impossible to plan definitely for the future, or to decide on possible modifications of the transmitting system not already adopted.

The Wireless World INFORMATION BUREAU.

Conditions of the Service.

(1) THE service is intended primarily for readers meeting with difficulties in the construction, adjustment, operation, or maintenance of wireless receivers described in *The Wireless World*, or those of commercial design which from time to time are reviewed in the pages of *The Wireless World*. Every endeavour will be made to deal with queries on all wireless matters, provided that they are of such a nature that they can be dealt with satisfactorily in a letter.

(2) Communications should be addressed to *The Wireless World* Information Bureau, Dorset House, Tudor Street, E.C.4, and must be accompanied by a remittance of 5s. to cover the cost of the service. The enquirer's name and address should be written in block letters at the top of all communications.

(3) The fee of 5s. covers the reply to any wireless technical difficulty, but in special cases, where the enquiry may involve a considerable amount of investigation, an increased fee may

be necessary. In such cases a special quotation will be made.

(4) Questions should be clearly written and concisely worded in order to avoid delay. Where enquiries relate to trouble experienced in receivers built to specifications in *The Wireless World* a complete account should be given of the trouble, and especially the symptoms.

(5) Where reference is made to published articles or descriptions of apparatus, the title of the article, the date of publication in *The Wireless World*, and the page reference number should be given, in order to facilitate reply.

(6) Full circuit diagrams, constructional details of apparatus, or values of components for home-designed receivers cannot normally be supplied, but circuit diagrams sent in with queries will be checked and criticised.

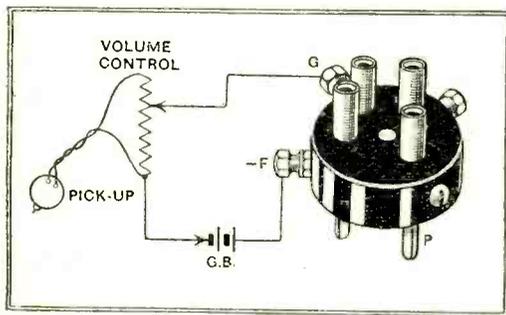
(7) Particular makes of components cannot, in general, be recommended, but advice will be given as to the suitability of an individual component for a particular purpose specified by the enquirer.

HINTS and TIPS.

THE careful set constructor generally checks the trimming condenser adjustment of a newly-built receiver at a number of tuning points. This is all to the good, but there is sometimes a tendency to work up from the bottom to the top of the wavelength scale, and then to leave the adjustment made at the highest wavelength as final.

Ganging.

In ninety-nine cases out of a hundred this is wrong. Trimming condensers are bound to be more effective at the lower end of the wavelength scale, where the tuning condensers are at minimum capacity. Consequently, trimming adjustments at this end of the scale are much more critical, and it is much easier to determine the correct setting either by aural or visual means.



An adaptor for isolating the grid of a valve from the receiver circuits. Connections for a gramophone pick-up are shown. Both the adaptors illustrated on this page are Bulgin products.

IT is generally accepted that the broadcast wave band embraces wavelengths between about 200 and 550 metres; present tendencies in design make it increasingly difficult to cover this band with one sweep of the tuning condenser. So far as wavelength range cover is concerned, the limit is determined by the value of stray capacities across the tuned circuits, and so no effort should be spared to reduce them. Incidentally, with regard to multi-circuit "ganged" sets, with which we are here mainly concerned, it must be remembered that the chain is no stronger than its weakest link, and so there is little point in attempting to reduce "strays" in several circuits if the value associated with any one circuit in the chain is inevitably fixed at a high value.

Stray Capacities.

The amateur who is following a complete receiver design more or less in its entirety can do very little to reduce the value of stray capacity, but he should remember the need for care in making high-potential grid circuit connections. These leads should be short, and, moreover, should not run in close proximity to earthed metal work. Further, indiscriminate use of screened wire in the H.F. circuits is to be avoided, as it is bound to increase the shunt capacity.

With regard to the detector valve, it is worth while to bear in mind that an anode circuit choke has an effect on the tuning of the grid circuit of the valve. When it appears that the minimum wavelength to which

PRACTICAL AIDS TO BETTER RECEPTION.



the detector grid circuit may be tuned is unduly high, it is worth while going to the trouble of substituting another type of choke.

IT would seem that valve adaptors are hardly appreciated as they deserve to be. These handy little gadgets, in their most usual form, consist of a plug-and-socket device for interposing between a valve and its holder; terminals are fitted in such a

Valve Adaptors.

way that the circuit between the anode pin and its socket is interrupted. The primary object of this interruption is to allow the insertion of an anode current milliammeter, but the adaptor has other applications. For instance, it can be used in making an experimental substitution of some other form of intervalve coupling in place of that included in the set, thus reducing the number of internal alterations necessary. Similarly, it enables the user of a self-contained set to substitute another type of loud speaker without any other change, except, perhaps, a single short-circuiting connection.

For stage-by-stage tests, an adaptor is equally useful, as it renders the operation of connecting a pair of headphones in the detector or intermediate L.F. anode circuit merely a matter of a minute or so. Generally speaking the adaptor can be joined in any L.F. circuit with the assurance that it is most unlikely to be responsible for instability or any other untoward happening. There is some possibility that in the detector anode circuit it may cause trouble, but this may generally be avoided by connecting a simple filter circuit to the adaptor anode terminals.

Another type of adaptor is primarily intended for the connection of a pick-up to a receiver in which provision for this addition has not been included. The device consists of an ebonite disc carrying four valve sockets; filament and plate sockets are connected internally to corresponding pins on the underside, but the grid socket is left entirely free. On interposing the adaptor between a valve and

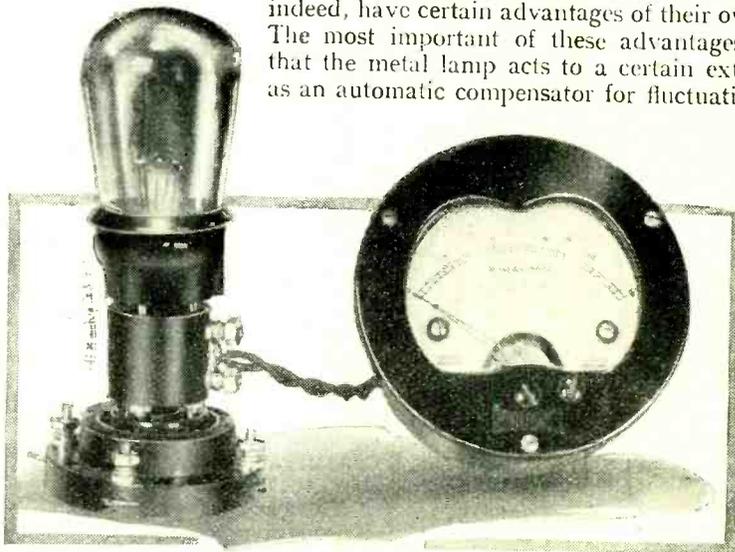
its holder, the grid is completely disconnected from the internal wiring of the receiver, and so any external additions to the grid circuit may be made without trouble.

Apart from its use for radio-gramophone conversion, this grid adaptor is useful for applying test voltages, and for checking the operation of self-bias systems by the temporary use of a battery.

IN a modern D.C. mains set, it is always necessary to insert a resistance in series with the valve heaters to absorb surplus voltage. The amount of energy dissipated here is a good deal greater than that with which we are generally accustomed to deal in wireless receivers, and so discrimination must be used in choosing a suitable absorbing resistance.

Lamp Resistances.

Either wire resistances or lamps are generally favoured for this purpose. Carbon lamps were at one time preferred to those of the metal filament type, but an authoritative article, published some time ago in *The Wireless World*, showed that the latter are quite suitable to use, and, indeed, have certain advantages of their own. The most important of these advantages is that the metal lamp acts to a certain extent as an automatic compensator for fluctuations



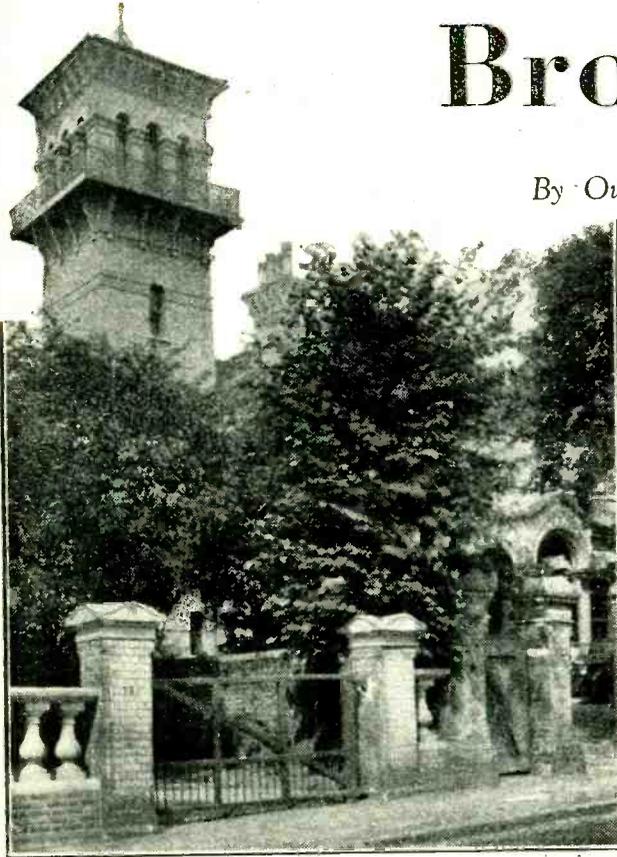
A convenient connection point for an anode milliammeter: an adaptor interposed between a valve and its holder.

in mains voltage; this is due to the special filament characteristics of which the resistance increases with a rise of temperature.

It is not always easy to find exactly the right lamp to use in all circumstances, and sometimes it becomes necessary to connect in series a small additional resistance of the wire-wound type; this can conveniently be in the form of a rheostat, in order that precise adjustment of heating current may be made with the help of a meter.

Broadcast Brevities.

By Our Special Correspondent.



There is a check "visor," as the B.B.C. engineers call it, behind the transmitter, consisting of a mirror drum giving a picture 8in. by 3in.

Who Will Be Organist?

WITH the B.B.C.'s interesting decision to erect the first British organ intended solely for broadcasting purposes, there arises the question of the appointment of an official organist. Organ virtuosi are rather more common in this country than really first-class soloists on other instruments; for entertainment on the pianoforte and violin we still resort to the long-haired continental variety.

It is quite likely, I learn, that

A RESEARCH "RETREAT." In the leafy quietness of this former Jewish Home of Rest in Nightingale Lane, B.B.C. engineers carry out tests with new apparatus. The building is the latest acquisition of the B.B.C.

Ultra-short-wave Vans.

THE licence figures may take an upward leap in West London during the next few weeks when the B.B.C.'s ultra-short-wave test vans begin to roam the streets on the track of the elusive 7.75-metre transmissions from the roof of Broadcasting House. Not that the engineers will try to arouse suspicion, but the public no longer associates plain vans solely with furniture on the uneasy payment system; more usually the P.M.G. sleuths are suggested, and few people have the courage to confirm their fears by asking the driver.

Mr. Noel Ashbridge and the Tests.

Twelve ultra-short-wave receivers are about to leave the B.B.C. work benches at Clapham and will be put to use almost immediately. At present Mr. Noel Ashbridge, who is taking a personal part in the tests, is unwilling to publish a regular schedule, and amateur interlopers are, frankly, not welcomed. But later on, I am assured, the keen radio man will be invited to assist.

Before then, however, the ultra-short waves will have been used for the television transmissions.

B.B.C. Drama by Television.

MR. VAL GIELGUD is treading very warily in the organisation of television programmes. The items already broadcast show the type of display which must be expected for the next few weeks, but I understand that when technical improvements or the size of clientele justify it, the Productions Department may essay to give us a taste of drama.

Getting in the Harp.

The television lens will be taking a big "eye-ful" on Tuesday, August 30th, when a harpist and her instrument will both be accommodated in the picture. Accompanists at present sit at their piano in the dim recesses of studio "B.B.," behind the reflector screen, and pick out their notes with the aid of a candle.

Checking the Image.

The actual television transmitter is located in the silence cabinet, the artiste being close up to it in the studio, so that the image is actually picked up through the sound-proof window.

the B.B.C.'s choice of organist will fall on Berkeley Mason, who is well known for his masterly performances on the Queen's Hall organ.

Broadcasting House.

NO one can blame the B.B.C. for making NO capital out of Broadcasting House. The move from the old headquarters into the revolutionary building in Portland Place has been stage-managed in a way which kills any suggestion that the Corporation is slow to seize an opportunity. The Press of the world has eagerly published photographs of the outside and inside, and lest any one should have missed these pictures, the Corporation has added to them with noble reproductions in its own periodical publications.

All the pictures that could conceivably have been taken are now collected in a vermilion-covered volume selling at the price of one crown; and the B.B.C. will clinch matters in September by the publication of a book describing "B.H." from a technical viewpoint.

"A Present from Portland Place."

Next Christmas I expect our Aunts will be presenting us with Broadcasting House paperweights, and in the following summer cousins from the country will, no doubt, be taking home the new Val Myer mugs.

Well, it's good for trade.

Carl Rosa Again.

THE reappearance of the Carl Rosa Operatic Company in the programmes this autumn marks the healing of a breach which has lasted since 1929, when the Carl Rosa people and the B.B.C. broke off relations on the question of the opera subsidy.

Under the new arrangement two operas will be broadcast from each B.B.C. region which the Carl Rosa Company visits in the course of its tours between September and next February.

Touring the Regions.

There will be eight Carl Rosa operas broadcast, the first being from Bristol during the week beginning on September 26th. Later,

the opera company will visit towns in the Midlands, North and Scottish regions. In each case one or two acts will be broadcast.

Empire Tests Next Month.

THE latest news regarding the Empire short-wave station is that the transmitter is "on the way." Parts of the gear have already arrived at Daventry.

It is probable that the first unmodulated transmissions will be made at about the end of September.

The Winter Symphony Concerts.

THE promenade concert season is only a few days old, but already plans for the season of B.B.C. Symphony Concerts which starts on October 19th are well advanced. Artistes already engaged are: Backhaus, Harriet Cohen, Cortot, Myra Hess, Huberman, Lamond, Harold Samuel, Schnabel, Adolph Busch, Casals, Arthur Catterall, Mischa Elman, Albert Sammons, Muriel Brunskill, Elena Gerhardt, Elisabeth Schumann, Elsie Suddaby, Arthur Cranmer, Roy Henderson, Dennis Noble, and Walter Widdop.

The B.B.C. Symphony Orchestra, led by Arthur Catterall, will play at each concert, and Adrian Boult will conduct rather more than half of each series. Sir Henry Wood, Sir Landon Ronald, and Ernest Ansermet will also conduct during the season.

In Honour of Elgar.

The last three concerts before Christmas, November 30th, December 7th, and December 14th, will be devoted to the works of Elgar to commemorate his seventy-fifth year.

Those Fat Stock Prices.

THE B.B.C. is concentrating its attention on the farming industry with a view to discovering in what way the microphone can be of assistance in promoting farmers' interests. As a preliminary step farmers throughout the country are being asked a series of questions the answers to which will furnish the B.B.C. with some guidance in framing its future activities on behalf of the industry. An attempt is also being made to find out if the present time of farming talks (7.0 p.m. on Wednesdays) suits the farmers, whether they make any use or not of the Fat Stock Prices broadcast at 6.0 p.m., if the present timing of the weather reports is suitable, and if a weather report at 6.30 in the morning would be of any value.

The Scott Centenary.

IN commemoration of Sir Walter Scott, the centenary of whose death occurs this year, a play will be broadcast in the National and Scottish Regional programmes on September 20th, and a tribute to Scotland's greatest novelist will be paid by Colonel John Buchan, M.P., in a talk on September 21st.

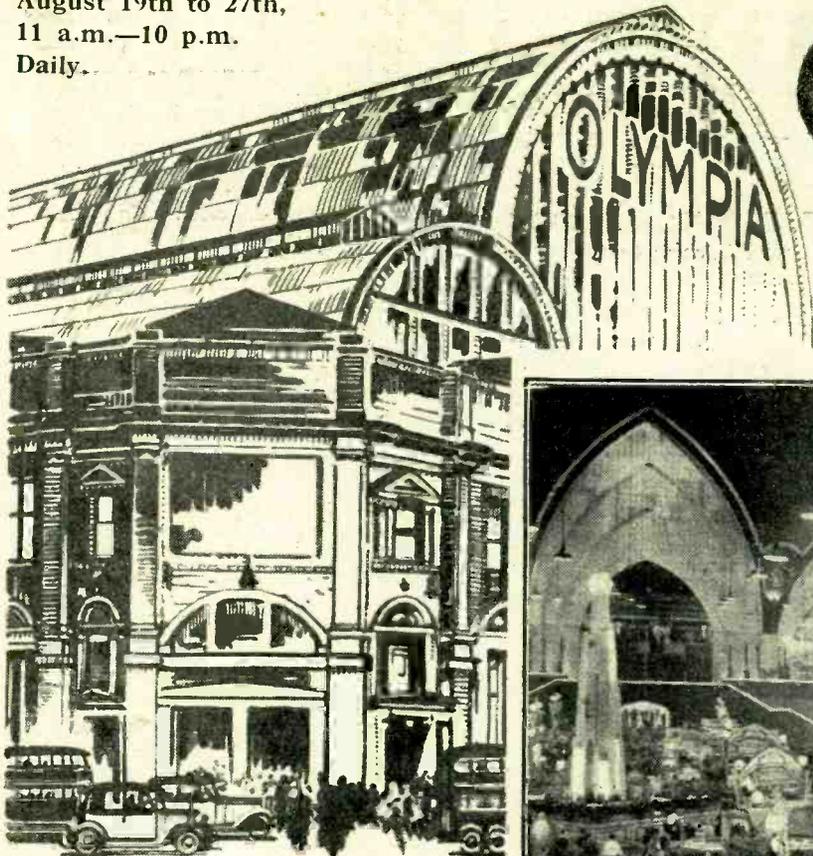
An Express Programme.

NON-STOP variety will be outdistanced by a John Watt show which is to be broadcast nationally on September 10th. "Crescendo," a vaudeville programme, will not even recognise the meaning of the word stop, for all the items, singers, dance bands, orchestra, organ, pianos, etc., will follow one another at breathless speed from beginning to end of the programme. There will be no announcements and everything will be done from one studio.

Are They Downhearted?

TONIGHT (Friday), West Regional provides an orchestral concert entitled "Back from the Holidays"!

August 19th to 27th,
11 a.m.—10 p.m.
Daily.



OLYMPIA 1932



AD-A-GRAMS. (116)

As its name implies, this accessory is an adaptor for converting an existing wireless receiver into what is, in effect, a radio-gramophone. A turntable, rotated by an induction motor, is housed in a shallow polished hardwood box, on top of which practically any receiver may be placed. The unit, which is complete with pick-up, auto-



Ad-a-grams radio-gramophone adaptor.

matic stop mechanism, and volume control, slides forward when it is put into operation.

Ad-A-Grams, Carlton House, Regent Street, S.W.1.

ADEY. (259)

The Adey Baby portable is a particularly fine example of a complete four-valve self-contained receiver in miniature form. Including H.T. and L.T. batteries, the overall size is 14in. x 14in. x 6in., and it weighs about 12 lb. The price complete, including a travelling cover and a spare L.T. accumulator, is £15 15s.

Adey Portable Radio, 99, Mortimer Street, W.1.

ALBA. (128)

A range of receivers and radio-gramophones of advanced design constitutes the principal exhibit of this firm. Described as the Alba series, there are battery models

STAND- TO-STAND REPORT.

IN this Stand-to-stand report of the Tenth Annual Radio Show the technical staff of *The Wireless World* have endeavoured to present to our readers a comprehensive account of the Exhibition, commenting upon items of special interest shown at every stand visited.

Although our report has been prepared with sufficient precision to make it fully representative of the Show, yet no descriptive account, however complete, can take the place of a personal visit, so that we hope any readers who have not yet seen Olympia will make an endeavour to do so before the Show closes tomorrow, Saturday, at 10 p.m.

Next week's issue will contain a special account of the Show from the point of view of general tendencies in design and a more detailed description of all that the Show has revealed in the way of new developments.

as well as a wide selection of D.C. and A.C. receivers and radio-gramophones.

Attention is directed to a "Stenode" radio-gramophone embodying a seven-valve receiver chassis. Two models are shown. One priced at 70 guineas includes an automatic record changer.

A. J. Balcombe, Ltd., 52, Tabernacle Street, E.C.2.



Adey light-weight Baby portable.

Olympia 1932.—

ALLIANCE. (19)

On this stand an interesting A.C.3 receiver is shown; three tuned circuits are employed with a variable-mu H.F. valve, and ganged potentiometers are used for the volume control. A moving-coil loud speaker is fitted, and the price is 14 guineas. A screen-grid portable is also shown.

Alliance Radio, Ltd., Burleigh Parade, London Road, Sutton, Surrey.

AMPLION. (68)

The principal Amplion exhibit is a permanent-magnet moving-coil loud speaker chassis, with the popular two-claw magnet and a "doped" ribbed cone. This instrument is stated to be capable of dealing with an input of over 5 watts, and is fitted with a "Universal" transformer, which is also centre-tapped so that it may be used in push-pull circuits. The price is only 39s. 6d.

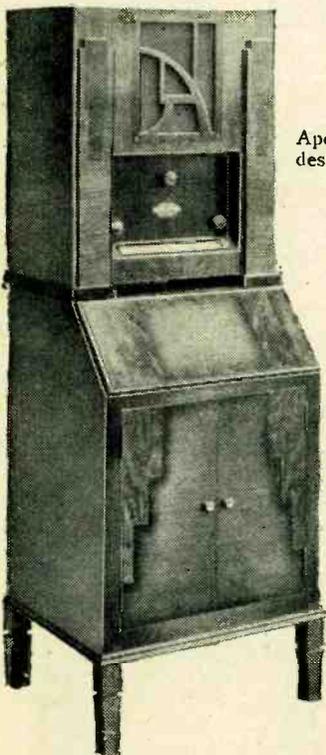
The other new Amplion product is a pick-up, mounted on a moulded bakelite arm, and supplied complete with a built-in volume-control potentiometer. Judging by the output curve, this accessory should be exceptionally satisfactory for all-round use; there are marked rises at each end of



The new Amplion pick-up.

the frequency scale, with a fairly rapid cut-off after the 4,000-cycle mark.

Amplion (1932), Ltd., 82-84, Rosoman Street, E.C.1.



Apollo playing desk and record cupboard.

APOLLO. (214)

In addition to a wide selection of the well-known manufacturers' products, there is shown on this stand a playing desk combined with a record cupboard, the feature

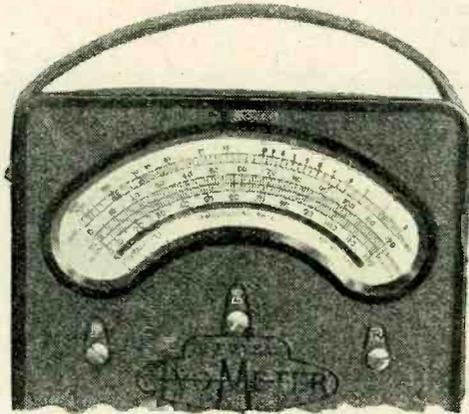
of the design being that it forms a base for a cabinet-type receiver. Fitted with an electric gramophone motor, pick-up, and volume control, the price is £8 8s.

There is a table model available for mains operation, or it can be supplied fitted with a spring motor.

Apollo Gramophone Co., Ltd., 4, Bunhill Row, E.C.1.

AUTOMATIC COIL WINDER. (206)

Two items of special interest to the experimenter are to be seen on this stand.



New "Universal" Avometer with A.C. scale.

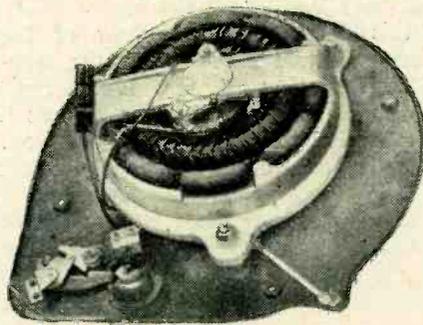
First, there is the new "Universal" Avometer, which, in addition to the standard D.C. ranges, has now been adapted, by means of a built-in Westinghouse rectifier, to measure A.C. volts and amps. in the following ranges: 0-1.2, 0-12, 0-120, and 0-1,200 volts; 0-0.12, 0-1.2, and 4-12 amps. The price is 12 guineas, and a calibrated fuse is fitted as in the Standard Avometer.

Secondly, there is the Avodapter—a valve-testing unit incorporating a plug adjustable for 4- or 5-pin valve holders—at 25s. The plug with a 6-way lead is obtainable separately for 7s. 6d.

Automatic Coil Winder and Electrical Equipment Co., Ltd., Winder House, Douglas Street, S.W.1.

B.T.-H. (119)

Two important additions have been made to the B.T.-H. range of gramophone motors. The "Truspeed" is probably unique in that it combines the advantages of self-start-



B.T.-H. slow-speed "Universal" motor.

ing with constant-speed synchronous running. A two-pole machined and balanced rotor is employed, and is geared to give 78 r.p.m. on 50-cycle mains. The motor is fitted with a very simple type of fully automatic switch, and the price is 49s. 6d.

The same type of stop is supplied with the new "Universal" motor, which is also of unconventional design. It is an eight-pole motor fitted with a shallow large-diameter

rotor running at turntable speed. The commutator has forty-two segments, and the governor, which runs at high speed, is placed accessibly in a slot below the turntable. The price, including external regulating resistance, is £5 10s.

The prices of existing models have been reduced as follows: "Golden Disc," £3 7s. 6d.; "Small Universal," £2 17s. 6d.; "Synchro Blue," £1 12s. 6d.

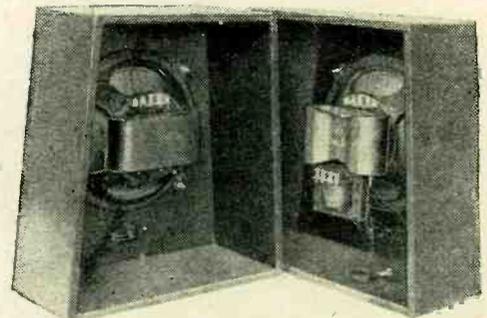
British Thomson-Houston Co., Ltd., Rugby.

BAKER'S "SELHURST." (83)

The Permag and Elomag series of moving-coil loud speakers are quite new, and although small in size should be very efficient. In the Permag models a two-claw magnet is used, while the Elomag is an energised-type companion model, which is available either with a 2,500-ohm field or for use on D.C. supplies of 100-150 and 200-250 volts. Special rectifiers are listed for use on A.C. Variable-ratio input transformers are fitted and in cabinet form the Permag model costs 47s. and the Elomag type 34s.

There are two other models known as the Permag Minor and the Elomag Minor. They embody smaller magnet systems and modified input transformers, the prices being 37s. and 34s. respectively as cabinet models.

Since the characteristics of the senior and junior models of each type are somewhat dissimilar, they have been embodied into a dual compensated assembly, and each is housed in a separate cabinet but supplied from a single input transformer. In this form the Permag dual compensated loud speaker unit, complete, costs £4 10s., and the price of the Elomag, or energised type, is £4.



Baker's Permag senior and junior models arranged as a dual compensated loud speaker.

Forming a suitable background for the new models is an extensive range of moving-coil loud speakers varying in size and price to suit every requirement.

Baker's Selhurst Radio, 89, Selhurst Road, S.E.25.

BECOL. (2)

In addition to panels, ribbed ebonite formers for high-grade tuning coils and H.F. chokes are the principal exhibits.

Manufacturers will be interested in the wide variety of extruded rods for switch rotors and many other purposes.

British Ebonite Co., Ltd., Nightingale Road, Hanwell, W.7.

BEETHOVEN. (49)

One of the main exhibits on this stand is the All-Electric Three, a three-valve set in which a screen-grid valve is used as a detector. Ganged tuning is fitted, together with a frame aerial, and there is a pentode output of 2 watts to the M.C. speaker; the price is 14 guineas.

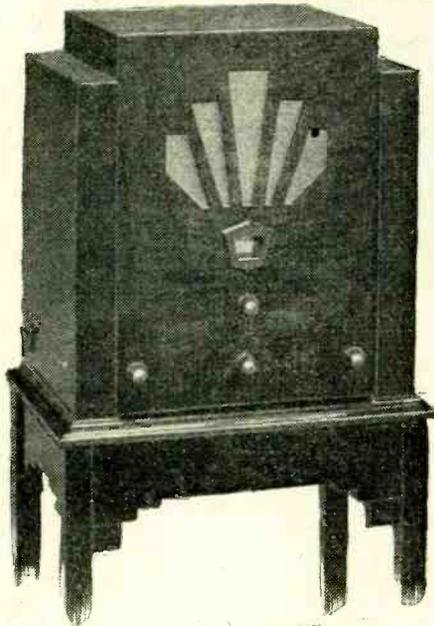
Olympia 1932.

The Beethoven portable sets are also shown, and the S.G.4 model at 10 guineas should not be overlooked.

Montague Radio Inventions and Development Co., Ltd., Beethoven Works, 24, Great College Street, N.W.1.

BELL PIANO CO. (3)

The receivers produced by this firm are of the three-valve S.G.-det.-L.F. type, and are substantially built in a cadmium-plated steel



"European Three" A.C. set (Bell Piano Co.).

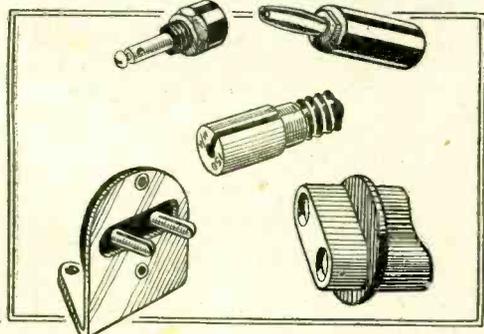
chassis. Band-pass input tuning is standard, as also is the provision of a tone control which functions both on radio and gramophone.

The radio-gramophone model, which includes a Bowyer-Lowe Mark III pick-up and Collaro motor, is available in two styles of cabinet, and costs 27 guineas. Alternative cabinets are also provided for the table model, which is known as the "European Three," and is priced at 16 guineas.

Bell Piano Co., Ltd., The Hyde, Hendon, N.W.9.

BELLING-LEE. (154)

On this stand there is a very wide range of indicating terminals, plugs, sockets, and fuses, the finish of which is beyond reproach. Of new additions for the coming season, mention must be made of the "Scrufuse," which, as its name implies, screws into a socket and is intended to take the place of the bulb type of fuse. There are a number of advantages claimed; one of them is that the length of the fuse is much greater, and another that colour-coding is easily



New Belling-Lee flush plug, Scrufuse and mains connector.

achieved for the different values of fuse. There are five different ratings, from 60 mA. upwards, and the price in each case is 6d.

Another innovation of considerable interest now that metal chassis have become so popular, is a flush mounting socket for standard plugs; it is self-bushing, and does not require separate insulators.

An extremely useful fitting selling at 1d. is a "Twin Tap" battery plug which makes it possible to take two connections from one battery socket.

There is an interesting demonstration being given on the stand showing the manufacture of 60 mA. fuses using a phosphor bronze wire 1-25th the diameter of the average human hair.

Belling and Lee, Ltd., Cambridge Arterial Road, Enfield, Middlesex.

BENJAMIN. (40)

The Transfeeda intervalve coupling is the principal exhibit, and an exceptionally good frequency characteristic is claimed. It consists of a transformer with a primary inductance of 85H., a parallel-feed resistance, and coupling condenser all contained within one case, and it is priced at 11s. 6d.

The well-known range of valveholders is also shown, together with a number of switches, and the prices of many have been reduced.

Benjamin Electric, Ltd., Brantwood Works, Tariff Road, N.17.

BLUE SPOT. (35)

In addition to the WS400 receiver, which is continued, there are two new four-valve battery sets with two variable-mu screen



Blue Spot type K252 battery receiver.

grid H.F. stages, detector, and alternative triode and pentode output circuit. The K252 with inductor loud speaker is priced at 12 guineas, and the R336 with the new 99PM moving coil at 16 guineas.

The 99PM moving-coil chassis is a substantial job fitted with a large two-claw permanent magnet and costs 59s. 6d.

The 100U inductor is continued, but a new balanced-armature unit—the 66K at 15s., or with cone chassis at 19s. 9d.—has been introduced to supplement the more elaborate 66R unit.

A special feature is made of these units in a variety of soundly made and attractive cabinets.

British Blue Spot Co., Ltd., 94-96, Rosoman Street, E.C.1.

BOWYER-LOWE & A.E.D. (156)

The Mark III pick-up is the outstanding exhibit on this stand. Its characteristic has been developed to avoid the shortcomings of the average small moving-coil loud speaker, which generally has a bass resonance at 100-150 cycles and a high-frequency resonance at about 3,500 cycles. The latter peak is avoided in the Bowyer-Lowe pick-up by placing the armature resonance at 4,500 cycles. Between 100 and 150 cycles there is a slight dip, and below 100 cycles a rising characteristic is obtained by tone-arm resonance. The price of this model is 30s., and a smaller model, known as the Beta, is available at 25s.



Bowyer-Lowe & A.E.D. record playing unit.

A neat self-contained playing desk incorporating the Mark III pick-up, a range of wire-wound volume controls and a new parallel-feed L.F. transformer complete the display on this stand.

Bowyer-Lowe and A.E.D., Ltd., Coombe Road, Brighton, Sussex.

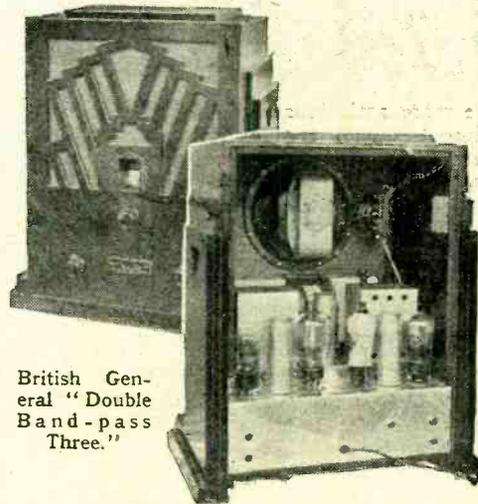
BRITISH G.W.Z. CO. (282)

This firm is showing a wide range of dry batteries for all purposes, and in particular has a range of H.T. batteries of "standard" and "power" types at very moderate price.

British G.W.Z. Co., Ltd., 205, Bedford Avenue, Trading Estate, Slough, Bucks.

BRITISH GENERAL. (29)

This firm has re-entered the receiver market with a range of five new sets. The principal model is the Double Band-pass Three at 18 guineas, which incorporates band-pass filters in the H.F. as well as the aerial circuit. A Rola P.M. speaker is fitted, and in the radio-gramophone version dual unit loud speakers have been adopted. A battery version with permanent-magnet moving-coil loud speaker is also available.



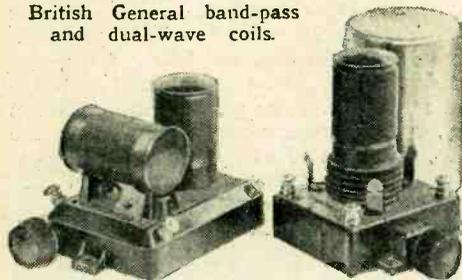
British General "Double Band-pass Three."

Olympia 1932.—

Additions to the list of components include a new band-pass unit with a band width of 3 to 4 kc., and screened dual-wave coils matched to work with the above. The price of both types is 9s. 6d.

British General Manufacturing Co., Ltd., Brockley Works, Brockley, S.E.4.

British General band-pass and dual-wave coils.



BRITISH GOLDRING PRODUCTS. (20)

Pick-ups form the chief exhibit on this stand, and these are obtainable at 32s. 6d. complete with built-in volume control. A swivel head is fitted, and an adjustable spring counterbalance. A large variety of automatic needle cups is also to be found.

British Goldring Products, Ltd., 119, Finsbury Pavement, E.C.2.

BRITISH HARD RUBBER CO. (220)

A material that will not discolour, even when exposed to strong sunlight, and known as Permol ebonite, forms the principal exhibit of this firm. It is available finished polished black, mahogany, and walnut at very reasonable prices.

In addition there is a wide selection of ebonite tube and rod, also extruded material, including ribbed coil formers.

British Hard Rubber Co., Ltd., Wharf Road Works, Ponders End, Middlesex.

BRITISH IDEAL PATENTS. (72)

Three different receiver chassis, fitting into cabinets of various styles, are shown by this firm. Two of the sets are for battery feed,



The half-guinea Dapticon pick-up.

the more ambitious model including a permanent-magnet moving-coil loud speaker. Both have variable-mu valves and single-knob tuning.

A pick-up at the exceptionally low price of 10s. 6d. (the "Dapticon Junior") is also shown.

British Ideal Patents, Ltd., Green Street, Brimsdown, Middlesex.

BRITISH N.S.F. CO. (18)

Dry electrolytic condensers are shown on this stand; the capacity is 8 mfd. and they are rated for 450 volts peak working. A range of tubular-type paper condensers of various voltage ratings, and of both the inductive and non-inductive type, is also

exhibited; the capacity values range from 50 mmfd. to 0.25 mfd.

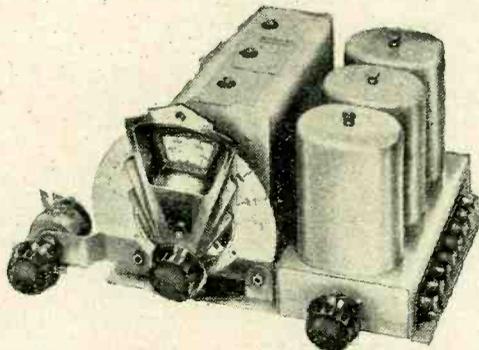
Wire-wound resistances of from 100 ohms to 10,000 ohms, in ratings from 1 watt to 6 watts, and composition types with values between 1,000 ohms and 10 megohms and ratings from 1/2 watt to 3 watts form an interesting section.

Volume controls with or without a combined switch are available in values up to 20,000 ohms in the wire-wound type, and in values of from 5,000 ohms to 10 megohms with a composition resistance element.

British N.S.F. Co., Ltd., Waddon Factory Estate, Waddon, Surrey.

BRITISH RADIOPHONE. (93)

What may be described as a complete band-pass tuning unit, sold under the trade name of "Radiopak," has just been introduced. The unit, which is really the nucleus of a modern H.F.-det.-L.F. three-valve set,



"Radiopak" band-pass tuning unit.

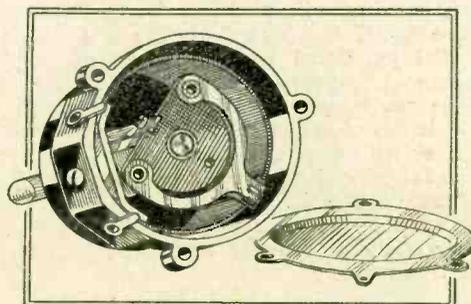
comprises three coils and wave-range switches, a three-element Radiophone condenser with dial, and a combined on-off switch and volume-control potentiometer. All these components are mounted on a metal chassis, and the three control knobs are symmetrically disposed. Reaction may be applied.

It is stated that both coils and condensers are matched within the closest limits. An unusual feature is observed with regard to the filter, in which sensibly constant band width is obtained by a "mixed" coupling; instead of interposing these circuits between the aerial and the first valve they are made to serve as an intervalve coupling.

The "Radiopak" measures some 6in. in length by about 6in. in width, and so a set built around it may be extremely compact.

Other Radiophone exhibits include wire-wound potentiometers, with a novel form of insulated double contact brush devised to minimise wear on the resistance element; connection to the brush is made through a rubbing contact on the metal cover plate and not through the spindle. A new pick-up, with adjustment for damping and centring, is shown, while the well-known ganged condensers have been improved in detail.

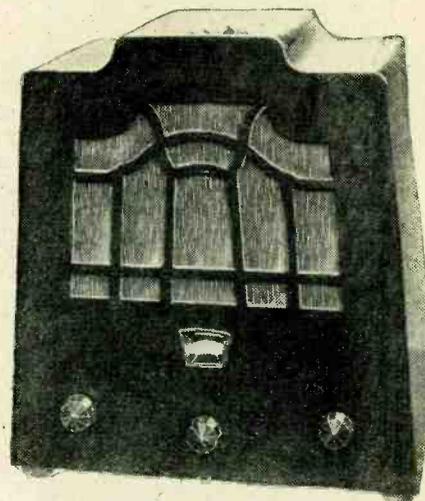
British Radiophone, Ltd., Aldwych House, Aldwych, W.C.2.



Radiophone potentiometer contact brush.

BROWNIE. (62)

Extremely good value for money is to be found in the four new receivers which form the 1933 programme of this company. There is a two-valve battery set which sells at the



Brownie Dominion two-valve mains set.

extraordinarily low figure of £3 to include cabinet, valves, royalties, a built-in moving-iron speaker, and a neatly designed all-steel chassis. The circuit comprises a regenerative-detector valve coupled by a transformer to a two-volt power valve. Another two-valve set, in this case designed for A.C. mains operation, is being marketed, and is styled the Dominion Two-valve Mains Receiver, selling at 9 guineas complete. The circuit contains a detector transformer coupled to a pentode, and the set is built as an all-steel chassis housed in a figured oak cabinet. Mains rectification is effected by a valve, and there is provision for a gramophone pick-up. A moving-coil speaker is built in.

In addition to these there is a three-valve screen-grid mains receiver with ganged control and built-in moving-coil loud speaker selling at 15 guineas, also a four-valve battery set selling at £12 10s. known as the



Brownie Dominion Battery S.G.4 set.

Dominion Battery S.G.4, with two transformer-coupled low-frequency stages.

Brownie Wireless Co. of Great Britain, Ltd., Nelson Street Works, Mornington Crescent, N.W.1.

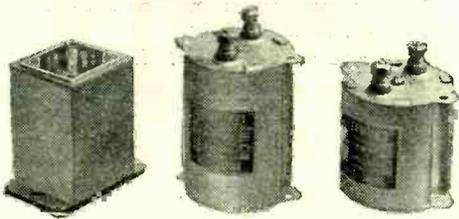
BULGIN. (151)

A number of additions have been made to this firm's already immense range of small

Olympia 1932.—

components. Leaving on one side the innumerable plugs, jacks, terminals, indicating lights, and other parts that are additions to a set rather than components integral with it, we were interested in the range of high-frequency chokes. These are available with inductances of 500,000, 250,000, and 198,000 microhenrys (the first is for superheterodynes), and there is also a dual choke capable of carrying $\frac{1}{2}$ ampere for use in series with the mains on D.C.-driven sets.

There is a full range of L.F. chokes ranging in price from 10s. 6d. to 15s. 6d., and a choke-filter output unit including both choke and condenser in one case. Two models of a small nickel-iron transformer for parallel-feed connection are available; one has terminals, the other, tags contained in the space of a rim circle for mounting through a metal chassis.



Two Bulgin H.F. chokes and a nickel-iron transformer.

A whistle-filter, intended to be connected between set and loud speaker, is available in two models, one cutting at 3,250 cycles and one at 4,750 cycles. The latter will also find application as scratch-filter for gramophone work.

An emission-tester for valves, based on the use of an oscillating circuit, which ensures even a low-consumption valve giving a fairly high anode current, is offered at 35s.



The Bulgin emission-tester.

Having discussed about one-thousandth of the lines offered, we suggest that the visitor should apply for a catalogue.

A. F. Bulgin and Co., Ltd., Abbey Road, Barking, Essex.

BURGOYNE. (98)

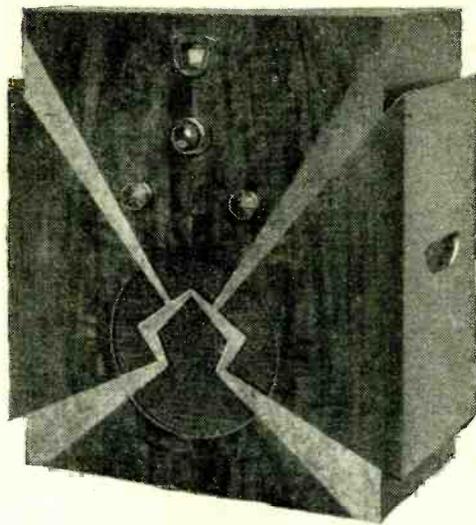
Self-contained sets at extremely low prices are exhibited here. As an example, there is a five-valve portable at £5 19s. 6d., and a three-valve H.F.-det.-L.F. battery set, complete with a moving-coil loud speaker, at 10 guineas. Ganged tuning is included.

Burgoyne Wireless (1930), Ltd., 34a, York Road, King's Cross, N.1.

BURNDEPT. (46)

The Wandering Minstrel Band-Pass Three is shown on this stand. The specification includes a variable- μ H.F. valve, detector, and pentode output stage. A spot light tuning system is fitted, and a universal mains transformer for voltages between 100 volts and 250 volts. The price is £16 19s. 6d.

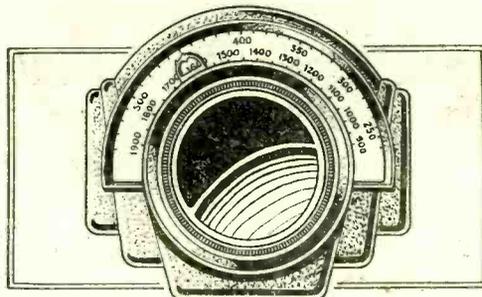
The Merryvox cone loud speaker at £1 in a walnut cabinet should not be overlooked,



Burgoyne three-valve receiver.

nor the range of Merrymaker battery and mains sets.

A selection of the well-known Burndept components is shown, and includes H.F. chokes, variable condensers, and the Etho-



Burndept Ethovernier dial.

vernier dial. This last is now available in a flush-mounting form with a considerably improved appearance.

Burndept, Ltd., 51-53, Church Street, S.E.10.

BURTON. (1)

The new S.G.P. all-electric three-valve receiver incorporates an all-metal chassis designed on thoroughly up-to-date lines. An inductively coupled band-pass tuner precedes the screen-grid H.F. amplifier, which



Burton S.G.P. radio-gramophone.

is tuned-grid coupled to a power-grid detector followed by a power pentode feeding a B.T.H. loud speaker of the energised type. The volume control combines reaction with pre-H.F. volume control, and there is provision for a pick-up as well as a mains aerial. In the standard table cabinet the price is 16 guineas, and a bureau console model is available at 19 guineas. The cabinet of the latter model is similar in design to the S.G.P. radio-gramophone, but a sloping desk, complete with inkwells, takes the place of the motor board. The desk is easily detached should the purchaser desire later to convert to a radio-gram.

The S.G.P. radio-gram, which is priced at 26 guineas, is housed in a well-proportioned cabinet, and has side compartments for records. It is fitted with a 2½-watt output valve and B.T.H. pick-up and motor.

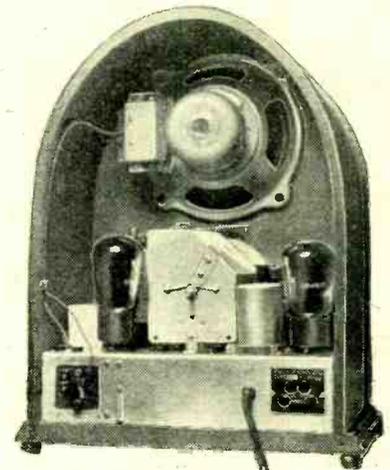
To the existing comprehensive range of Burton components has been added a new super-type rotary switch at 6s. This is a four-position switch capable of switching three coils for long and short waves, changing from radio to gramophone, and is fitted with a toggle make-and-break switch designed for mains voltages.

Other items justifying a visit to this stand include a new valveholder at the remarkably low price of 4½d., a new trickle charger, and a universal cone chassis.

C. F. and H. Burton, Bernard Street, Walsall.

BUSH RADIO. (110)

On this stand a single set, priced at 17 guineas, is on view. It is an A.C.-driven three-valve set with a band-pass input, one



Bush Radio three-valve set.

H.F. stage, and a screen-grid detector resistance-coupled to a pentode giving 3 watts output to the moving-coil speaker. A choke-filter output is used, the speaker-field serving as smoothing choke. Volume control is obtained by variation of screen volts.

Bush Radio, Ltd., Film House, Wardour Street, W.1.

C.A.C. (249)

The C.A.C. low-frequency coupler, an arrangement of linked wire-wound resistance coils, is used in the ambitious radio-gramophone kit set which is sponsored by this firm. A two-unit system of construction is adopted, the power supply components being separately mounted.

Konductite, which is aluminium-coated paper with many applications for screening purposes, is also shown, together with power transformers and heavy-duty L.F. chokes.

City Accumulator Co., 7, Angel Court, Strand, W.C.2.

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C.A.V. (246)

Many of the C.A.V. low-tension batteries have been redesigned or improved in detail. For instance, the glass-cased cells are fitted with moulded lids, irreversible terminals,

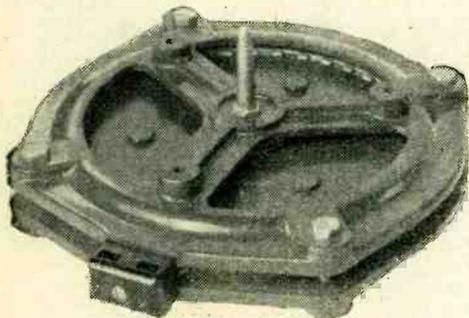
C.A.V. dry battery and the new mass cell with writing panel.



and gravity indicators. One side of the container has a sand-blasted panel, on which the name of the owner and dates of charging may be written. This latter feature is also embodied in the mass-type slow-discharge cells.

Dry high-tension batteries, in standard and triple capacities and the usual voltages, have just been introduced. Jelly-electrolyte cells for almost every type of portable form a prominent exhibit.

The well-known M.L. converters, for the supply of H.T. from L.T. accumulators, are also exhibited; new models, designed for easy connection to many well-known short-wave sets, should do much to solve the H.T. supply problem for overseas listeners. Mains



M.L. synchronous gramophone motor.

transformers have just been introduced by the M.L. firm, which also makes bakelite mouldings for the radio trade.

C. A. Vandervell, Ltd., Well Street, Birmingham.

CAMCO. (123)

The cabinets displayed on this stand are notable on account of their excellent finish and reasonable price. The models available are too numerous to describe individually, but the "Melodee" loud speaker No. 2 cabinet merits special mention, as it has been endorsed by a leading manufacturer for use with their dual-unit moving-coil loud speakers.

The "Empire" cabinet used in the "Wireless World" Baby Super is on view, and there is a beautifully grained "Grosvenor" pedestal cabinet constructed entirely of Empire-grown wood.

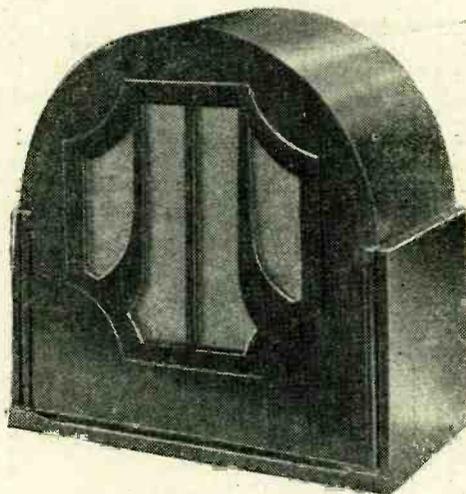
Carrington Manufacturing Co., Ltd., 24, Hatton Garden, E.C.1.

CELESTION. (127)

The special feature of the Celestion exhibit this year is the PPM range of small permanent-magnet moving-coil loud speakers.

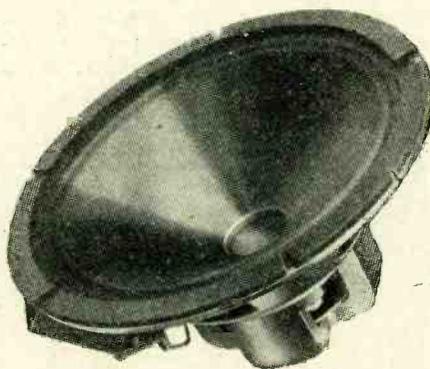
First introduced by the PPM (Standard) model, the range has been extended and now affords a wide choice either in the form of chassis or as cabinet models. The cabinet design has been given careful attention so that good acoustic properties are combined with a handsome appearance.

The special "Hyflex" moulded diaphragm is fitted to the new models, of which the PPM Soundex is the smallest. Mounted in a well-made walnut cabinet it costs but 50s. The PPM₀ chassis is an intermediate size measuring 8½ in. in diameter overall. In common with each other model in the range it embodies a universal-type tapped input transformer providing a suitable ratio for all valves in common use to-day, and the price is 35s.



Celestion cabinet permanent-magnet loud speaker, the PPM59 model.

The same general form of construction and all the attributes of the PPM type are found in the new series of energised models. The D.C. Soundex is an inexpensive chassis, for its price is 30s. only, which includes the input transformer. It is obtainable as stock type fitted with field windings of 2,500 ohms, 4,700 ohms, or 6,600 ohms, and an adequate flux density can be obtained with a 4-watt dissipation, the normal working range being between 4 and 8 watts.



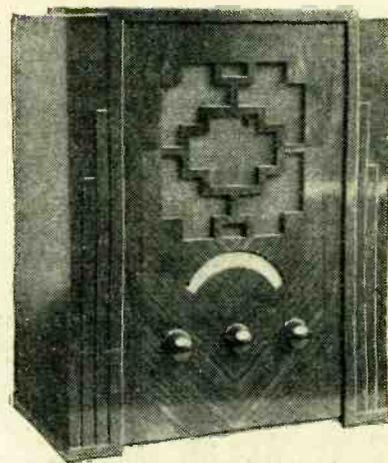
Celestion PPM29 chassis embodying new "Hyflex" diaphragm.

The D.C.8 is a larger model, and its price is 35s. in chassis form.

Celestion, Ltd., London Road, Kingston-on-Thames.

CELLGRAVE. (290)

The chief exhibit on this stand is the Excalibur Three receiver, manufactured by Walker, Fuller, and Ellis; it is a battery set with detector and two low-frequency stages. Automatic grid bias is arranged, and the price of the set, includ-



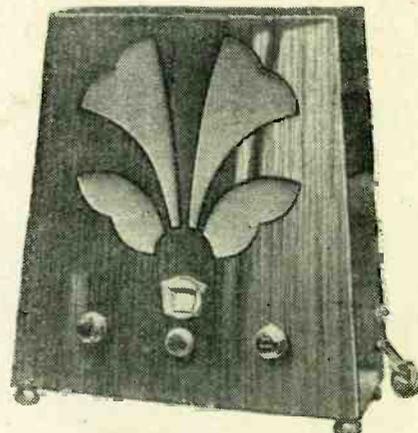
Cellgrave self-contained receiver.

ing built-in permanent magnetic moving-coil speaker, is 10 guineas.

Cellgrave Co., 6-8, Kent House Lane, S.E.26.

CHAKOPHONE. (38)

A two-valve A.C. set at 9 guineas is one of the most prominent exhibits of this firm; a triode output valve is fitted with a metal rectifier for the H.T. supply. Another set, the Selective Two, includes a pentode output valve and a moving-coil speaker, and is available for either A.C. or D.C. mains at 13 guineas.



The Chakophone Junior A.C. Two.

Two- and three-valve battery sets and a complete range of moving-coil loud speakers will also be found on this stand.

Eagle Engineering Co., Ltd., Eagle Works, Warwick.

CIFEL PRODUCTS. (285)

This stand shows a two-valve set, either for A.C. or D.C. mains, intended to provide high-quality reproduction from the local station. In each set a pentode output valve feeds a moving-coil speaker, an indirectly heated D.C. pentode being used for the D.C. version.

A band-pass three-valve set for A.C. mains only is also shown.

Cifel Products, Ltd., 134, Pentonville Road, N.1.

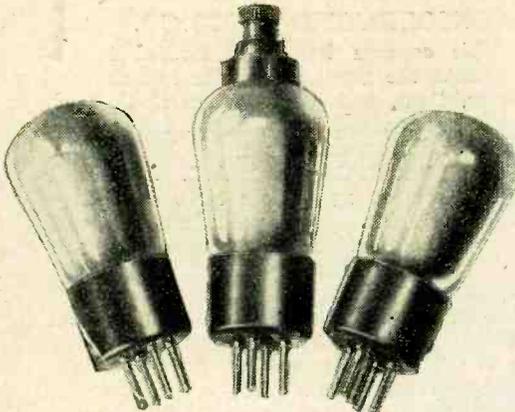
CLARION RADIO VALVE CO. (120)

The new series of British-made Clarion valves include battery, indirectly heated A.C., and D.C. mains types, as well as screen grid H.F. amplifiers. As an example, the P.X.2 two-volt output valve, with a 2-volt filament consuming 0.2 amp., has an A.C. resistance of 1,850 ohms and a con-

Olympia 1932.—

ductance of 1.5. Prices are lower than those usually ruling, this particular valve costing 8s. 6d.

Clarion Radio Valve Co., 7, Duke Street, Adelphi, W.C.2.

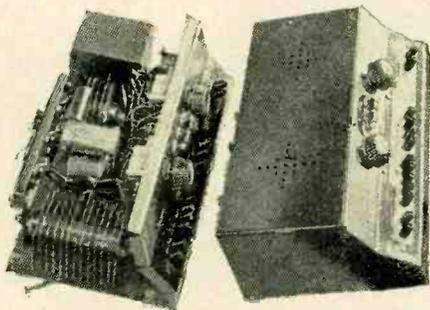


Representative Clarion valves.

CLARKE'S ATLAS. (91)

A new venture on the part of this firm, hitherto best known for their mains equipment, is the introduction of self-contained two-valve sets for A.C., D.C., or battery feed. These det.-L.F. receivers are fitted with the new Atlas moving-coil loud speakers, the permanent-magnet model being used, of course, in the battery-fed set. The loud speakers, which are available in chassis or cabinet form, have a two-claw permanent magnet.

Many of the eliminator units are retained, but one of the most popular models of last season has been redesigned; now known as Type A.C.300, it includes the valuable—and, we believe, exclusive—feature of a limiting resistance, arranged to prevent that sometimes dangerous rise of voltage which normally occurs when an eliminator is connected to a set which imposes an abnormally light load. Tappings on this resistance are led out to a number of sockets, marked to correspond with various output currents; all the user has to do is to estimate roughly the total anode con-



Clarke's Atlas new A.C. eliminator, with and without cover.

sumption of his set, and then to insert a plug in the appropriate socket.

The maximum output of the A.C.300 unit is 25 mA. at 150 volts; it includes a Westinghouse metal rectifier, a ½-amp. trickle charger, and grid bias tappings. There are two variable voltage outputs, and the price is £6 10s.

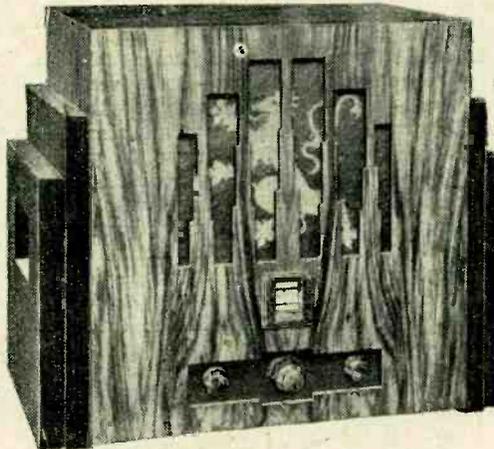
H. Clarke and Co. (M/C), Ltd., Eastnor Street, Old Trafford, Manchester.

CLIMAX. (81)

The Climax model A.C.3 is a complete radio-gramophone in miniature and oper-

ates entirely from the A.C. mains. It employs an H.F.-det.-L.F. circuit, a band-pass input filter, and a tuned grid H.F. coupling. Following a power grid detector is an L.F. transformer, and finally a pentode output valve. Other items of the equipment include a Collaro electric gramophone motor, an energised moving-coil loud speaker, and a special felt-lined lid to eliminate mechanical noises emanating from the pick-up. The A.C.3 is contained in a well-made cabinet finished in figured walnut, and the price is 24 guineas, including valves and royalties.

There is a companion model in which the gramophone side has been omitted, but otherwise it embodies all the features of



Climax "Balanced" Band-Pass Three receiver.

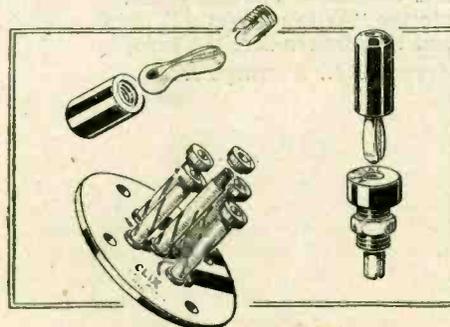
the A.C.3. This is known as the "Balanced" Band-Pass Three and costs 16 guineas.

Climax Radio Electric, Ltd., Haverstock Works, Parkhill Road, Hampstead, N.W.3.

CLIX. (225)

That a loose wire could be connected to a fixed point in so many different ways would be inconceivable were it not for the variety of plugs, sockets, terminals, and connectors included in the Clix range. The "Master" plug is one of the newest models, and is designed to make a perfect contact when inserted in the sockets of any make of dry battery. There are two models available, but the price is the same in both cases, namely, 1½d., which includes engraving.

The Clix chassis mounting valve holder is now available fitted with small terminals on the ends of the socket. The form of



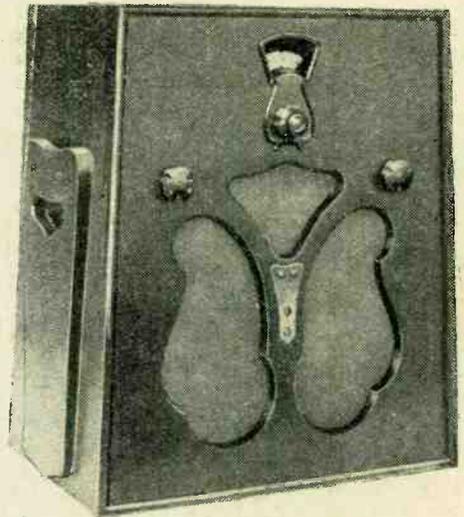
Some Clix specialties.

construction is the same as in the earlier models, and a five-pin type costs 9d.

Lectro Linx, Ltd., 254, Vauxhall Bridge Road, S.W.1.

COLUMBIA. (86)

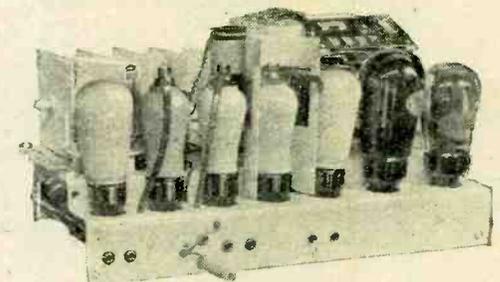
The Columbia range of receivers and radio-gramophones has been extended considerably this year, and now there are no



Self-contained three-valve battery receiver the Columbia Model 354.

fewer than nine different receivers at prices from £4 7s. 6d. to 24 guineas, and six radio-gramophones ranging in price from 28 to 90 guineas. The least expensive of the sets is a two-valve self-contained battery model, which has been carried forward from last season at a reduced price. A new addition to this class is the Model 354. It employs a three-valve circuit—H.F.-Det.-L.F.—and includes an inductively coupled band-pass input filter. Complete with speaker and batteries, the price is £9 17s. 6d.

Passing over the intermediate models we find at the other end of the scale a seven-valve, including rectifier, A.C. superheterodyne receiver, described as the Model 356. The circuit consists of a band-pass input filter, a predetector H.F. amplifier, oscillator, a screen-grid first detector, one I.F. amplifier employing band-pass tuning, and a



Columbia seven-valve A.C. superheterodyne chassis.

second detector transformer coupled to a PX4 output valve. Included is an energised moving-coil loud speaker, and the scale is calibrated in wavelengths; separate scales are brought into view by the wave-change switch for each range.

This chassis is built into the model 631 radio-gramophone, the additional equipment consisting of an electric gramophone motor and an automatic record changer holding eight 10in. or 12in. records. In this case the chassis is mounted on end with the tuning control and illuminated scale in the gramophone compartment. Provision is made for the use of an external loud speaker, and the price is 52 guineas.

The Model 640 is the highest-priced instrument in the Columbia range, yet, con-

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Considering its specification, it represents very good value, even at 90 guineas. The circuit consists of a band-pass input filter, a pre-detector H.F. amplifier, oscillator, screen-grid first detector, two band-pass coupled L.F. amplifiers, anode bend second detector, and two L.F. stages. The output is provided by two P.X.4 valves working in push-pull. Other items in the equipment



Columbia Model 640 A.C. radio-gramophone.

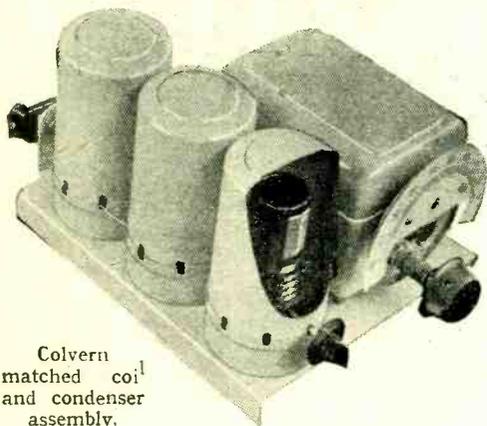
consist of an automatic record changer playing eight 10in. or 12in. records, moving-coil loud speaker, and an electric motor. There is ample power to operate four extra loud speakers if required.

Mention must be made here of the excellence of the Columbia cabinet work.

Columbia Graphophone Co., Ltd., 92, Clerkenwell Road, E.C.1.

COLVERN. (245)

There are a number of new additions to the well-known range of Colvern tuning coils. Special interest attaches to the improved intermediate-frequency amplifier coils for superheterodyne receivers. The Colverdine DO.110 belonging to this type is an important new component to follow a combined detector oscillator, and type K.63 is a new oscillator coil for use in the

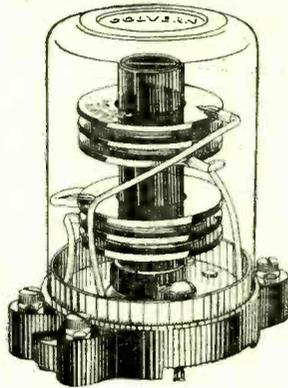


Colvern matched coil and condenser assembly.

construction of a single-dial superhet.; the inductance on the two wavebands is 126.9 and 1,056 microhenrys when screened. The Link band-pass filter, with slight modification, is retained for the coming season. The properties of this component are now well known and provide a means of maintaining practically constant selectivity and sensitivity over the waveband by the judicious use of common capacity and negative mutual inductance coupling.

In the comprehensive range of tuning coils available there are H.F. transformers, tuned-grid inductances, and various band-pass filters, all of which are totally screened and incorporate waveband switching within the base, so that the ganging of a number of members is easily achieved. It is interesting to note that the inductance of these coils when screened has been standardised at 157 and 2,190 microhenrys for the medium and long waves respectively. No keen student of superheterodyne technique can fail to be deeply interested in the well-explained treatise on single-control tuning of the superheterodyne as given in the new Colvern pamphlet. A fund of information is given as an appendix showing the mathematics involved in calculating the constants of the oscillator circuit so as to obtain the minimum ganging error on both wave ranges.

In addition to coils, this firm specialises in wire-wound resistances—both variable and fixed—known as Colverstats. In the variable potentiometer series all standard values are available from 1,000 to 50,000 ohms in the 10-watt rating, while there is a miniature model measuring only 1½in. in diameter rated at 3 watts, having resistance values from 25 to 25,000 ohms. The wire-wound strip resistances made in 23 different values between 10 and 50,000 ohms are made of uniform length, are rated to



Colverdine band-pass intermediate coil (Colvern).

dissipate 5 watts, and can be assembled side by side in the form of a pack, for which purpose special mounting collets are fitted.

A ganged triple condenser assembly, together with three coils, is being shown for the first time in which the balancing of capacity and inductance has been so carefully carried out that constructors can rest assured of simultaneous resonance in the three circuits when the unit is incorporated in a receiver.

Amateurs will find a large number of constructional sets containing Colvern components assembled on this stand. These include the "Wireless World" Baby Superhet and the Modern Straight Five.

Colvern, Ltd., Mawneys Road, Romford, Essex.

CONCORDIA. (208)

In addition to standard instrument wires and flexible cables, etc., this firm are showing a number of special conductors for radio purposes. One of the most interesting innovations is "Slip Quik" connecting wire for internal wiring; the insulation consists of double cotton, rubber, and braiding, the whole being paraffined and arranged so that sufficient of the covering may be slipped back from the end to expose the conductor with a minimum of effort. The perfect internal connecting wire has yet to be devised, but this appears to be a notable advance.

Other important products are Reception stranded and insulated weatherproof aerial wire, screened pick-up leads, and screened sleeving for H.F. work.

Concordia Electric Wire Co., Ltd., New Swaley, near Nottingham.

CONSOLIDATED RADIO CO. (34)

This concern has been formed to coordinate the resources of the former Rees Mace, Cam, and Rolls-Caydon Companies, and a series of self-contained attractive table-model receivers are shown.

The "Rolls-Caydon" A.C. and D.C. Three sets at 15 guineas have an S.G.—power grid det.—power pentode circuit, and cost 15 guineas. The same chassis is used in the "Rees Mace" table radio-gram. at 24 guineas, which, in spite of its compact design, plays 12-inch records with the lid closed.

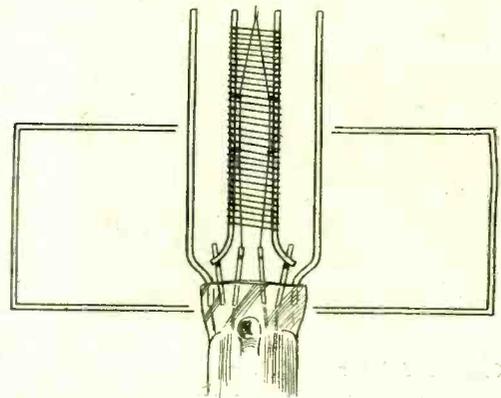
The "Cam" five-valve superhet., a battery-operated set including automatic grid bias, and the "Rolls-Caydon" S.G. Transportable Four, represent excellent value in view of their quality at 15 guineas and 12 guineas respectively.

Consolidated Radio Co., Ltd., 75, Kilburn Lane, W.19.

COSSOR. (60)

The well-known range of valves has been considerably augmented, and the electrode assemblies of all types have been strengthened, with the result that microphonic noise is now almost non-existent. Last season saw the demand for heavy-duty pentodes with directly heated filaments, and to meet this two valves of this type have now made their appearance. There is the P.T.41B, rated for 400 volts on the anode and 300 volts on the screen. The mutual conductance is 2.25 mA/volt. The second valve, styled P.T.41, has a higher mutual conductance of 3.0, and is rated for 250 volts on the anode and 200 on the screen.

To the battery range has been added the 220H.P.T., a highly sensitive pentode which will give a remarkable output when the anode current is as low as 2.8 mA. The variable-mu screen-grid valves for battery



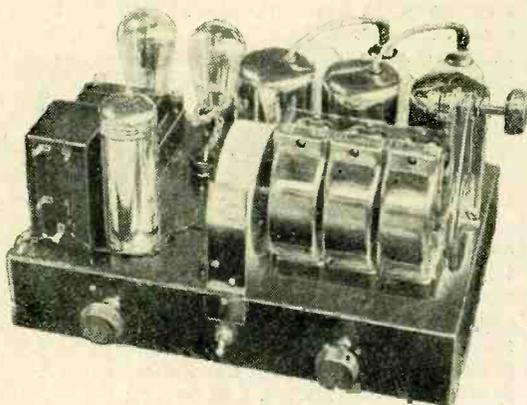
Electrodes of the Cossor 210H.F. valve. Note the 7-point suspension.

and mains operation should be examined with interest as this type of valve is fast superseding the ordinary screen-grid valve. Its properties are such that an ideal volume control can be arranged without in any way upsetting the ganging of a receiver, and the dangers of rectification in the H.F. amplifier are avoided.

Among the sets exhibited, the 533A is an interesting model with two variable-mu stages. The aerial, although linked by a single tuned circuit, is so loosely coupled

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that adequate selectivity is obtained. The layout is exceptionally clean, and the metal chassis is of massive construction. The well-known Cossor Melody Maker (models



Cossor 553A chassis.

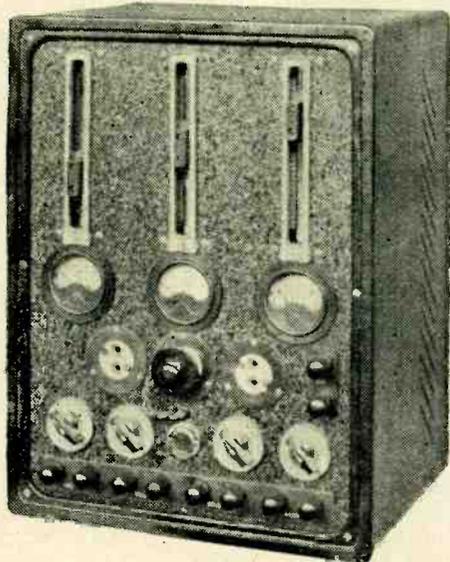
334 and 335), selling at £6 7s. 6d. and £7 17s. 6d. respectively, have been considerably improved since last year, and are now built on a new all-metal chassis and variable-mu valves are incorporated, which ensure an even better degree of selectivity.

There are two interesting cathode ray demonstrations on this stand, one of which enables visitors to see the waveform of their voices, while the other shows the characteristics, both static and dynamic, of any valve, arrangements being made to demonstrate the effect of a change in load.

A. C. Cossor, Ltd., Cossor House, Highbury Grove, N.5.

CRYPTO. (111)

This firm specialises in the production of battery-chargers of all types for A.C. mains,



Three circuit Crypto battery-charger using valve rectification.

both series charging and the constant potential system being allowed for. Valve-chargers range in price from £6 15s. to £22, while a constant potential charging equipment using a rotating commutator rectifier and giving an output up to 50 amperes at 8 volts can be had for £34.

Lancashire Dynamo and Crypto, Ltd., 94, Petty France, S.W.1.

CYLDON. (158)

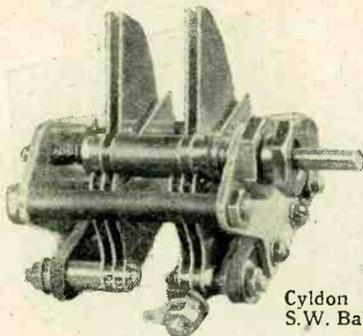
The well-known Cyldon variable condensers are displayed on this stand, and the range has been extended by the addition of a special model for the 5-metre waveband.

This is of the series gap type with two sets of fixed and moving plates, and the connections are made only to the fixed plates. The difficulty of making a good non-inductive contact to a rotating element is thus avoided by using what are virtually two condensers in series. The minimum capacity is 3 mfd., and the maximum 25 mfd., and the price is 8s. 6d.

An intermediate frequency transformer resonating at 110 kc. has been introduced, and it is provided with external adjustments. It is listed at 9s. 6d.

A large portion of the stand is devoted to special apparatus, among which is an oil-immersed variable condenser of the type used on the Polar Expedition; it is rated for working at 5,000 volts R.M.S.

Sydney S. Bird and Sons, Ltd., Sarnesfield Road, Enfield, Middlesex.



Cyldon 5-metre S.W. Babe series-gap condenser.

DAGENITE. (244)

This exhibit consists of high-tension and low-tension accumulators. There are two distinct types, one of which is fitted with a tell-tale device consisting of coloured floating hydrometer beads giving an indication of the stage of charge. There are three coloured balls operating in separate channels, and these rise or fall according to the specific gravity of the acid. A number of the portable L.T. batteries contain jellied acid, and a new feature in the mass type of battery is the lid, in which the usual method of fixing the pillar with a rubber washer and lead nut is obviated. With the new method it is claimed that acid leakage is impossible, and that the plates will not become twisted when the terminals are screwed or unscrewed.

National Accumulator Co., Ltd., 50, Grosvenor Gardens, S.W.1.

DANIPAD. (113)

Although the business of this firm is mainly connected with ebonite, a number of complete receivers are also exhibited. These range from a simple two-valve self-contained mains set, with a moving-coil loud speaker, to a five-valve model with band-pass tuning.

There is also a comprehensive show of components and accessories.

Danipad Rubber Co., Ltd., 5-7, Market Street, Finsbury, E.C.2.

DARWINS. (70)

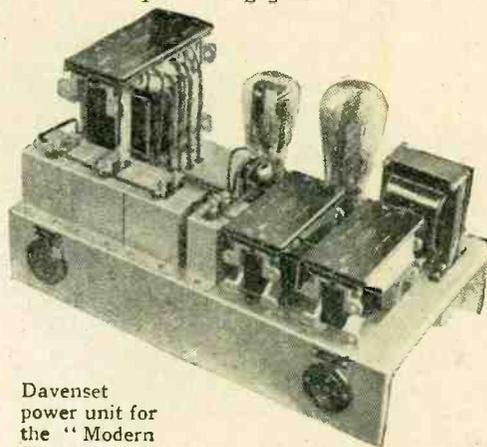
Permanent magnets of every type are shown on this stand, and prominence is given to examples of the latest form of "two-claw" construction.

Darwins, Ltd., Fitzwilliam Works, Sheffield.

DAVENSET. (159)

One of the most prominent exhibits on this stand is a range of mains transformers and smoothing chokes for which special efficiency is claimed. They are characterised by a particularly neat appearance with concealed and protected terminals.

The power unit of the "Wireless World" Modern Straight Five, built with Davenset mains components on a steel chassis, is on view; it is priced at £15.



Davenset power unit for the "Modern Straight Five."

A large portion of this stand is occupied by a display of battery chargers ranging from small models for charging car accumulators to large equipment for accumulator charging stations.

Partridge, Wilson, and Co., Davenset Works, Evington Valley Road, Leicester.

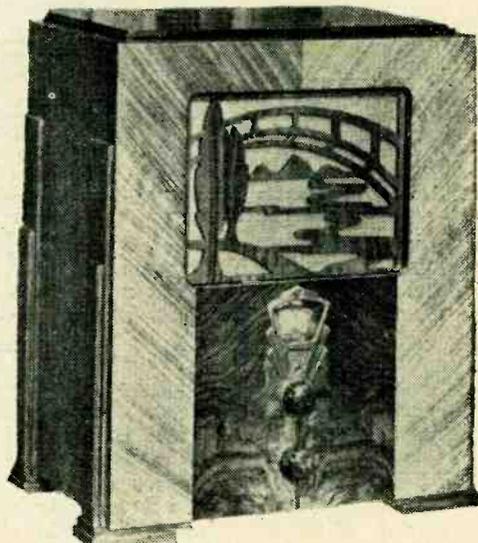
DE LA RUE. (227)

This stand is devoted to a comprehensive display of bakelite mouldings primarily of interest to manufacturers.

Thos. De La Rue and Co., Ltd., 90, Shernhall Street, E.17.

DIBBEN. (77)

Two receivers, the "Cromwell" and the "Monarch," form the chief exhibits of this firm. Of these receivers, the former uses two variable-mu stages of amplification, followed by a screen-grid valve arranged as an anode-bend detector, this being resistance-coupled to a PM24M output pentode. There are three tuned circuits in all. There is only one knob in addition to that con-



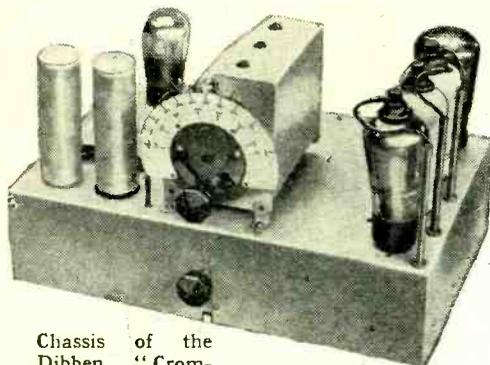
The "Cromwell" four-valve all-mains set made by Dibben & Sons.

trolling the tuning; it is a combined on-off switch and volume control, the knob also switching over to long waves when pulled out. As a radio-gramophone, in which the motor and pick-up are housed in a drawer below the set at a height convenient for access when sitting down, the price is 26 guineas, the set alone costing 18 guineas.

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In addition the "Monarch" three-valve set is available either for battery or mains operation.

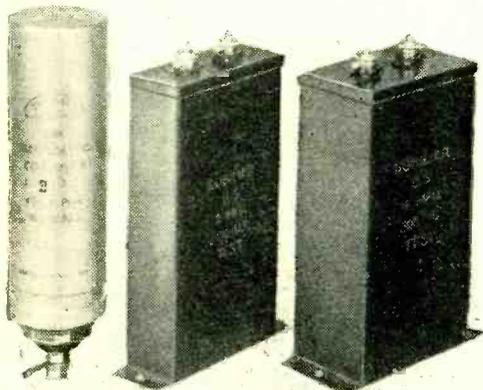
Wm. Dibben and Sons, Ltd., Antelope Buildings, St. Mary's Road, Southampton.



Chassis of the Dibben "Cromwell" receiver.

DUBILIER. (84)

The high-voltage dry electrolytic condensers which hitherto were reserved for manufacturers' use are now available to the home constructor in 4-, 6-, and 8-mfd. sizes. The prices are most reasonable, being 4s. 6d., 5s., and 5s. 6d. respectively. These models are rated at 450 volts D.C. working and are suitable for use in D.C. circuits only. The well-known 610 and 620 types now include a new series ranging from 0.0001 mfd. to 0.0005 mfd. fitted with grid leak clips, while other modifications to existing models take the form of an increase



Dubilier dry electrolytic and new style B.S. condensers.

in the voltage at which they are tested. Since the working potential has not been changed, these condensers show a higher safety factor than formerly.

A slight change has been effected in the construction of the L.S.A. type, and these are now mounted in tall boxes. They are tested at 1,000 volts D.C., and the sizes range from 0.5 mfd. to 10 mfd. Rated at 400 volts D.C. working, a 4-mfd. size costs 8s. A new addition is a 500-volt working condenser styled the Type L.E.C. Made in five different capacities and tested at 1,250 volts D.C., the price is 12s. 6d. for 4 mfd.

A wire-wound resistance known as the "Spirohm," and rated at 10 watts, is another new Dubilier product. The values range from 200 ohms to 50,000 ohms, and the price is 2s. for 1,000-ohm size and 5s. for one of 50,000 ohms.

Dubilier Condenser Co. (1925), Ltd., Ducon Works, Victoria Road, N. Acton, W.3.

DULCETTO-POLYPHON. (235)

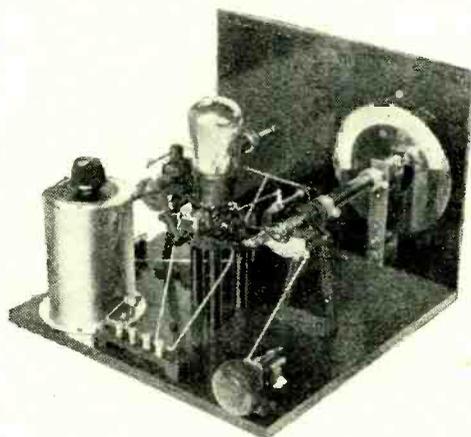
This is now primarily a wholesale business, but the Dulcetto "Double-bank" portable amplifier for public address work is a product exclusive to this firm.

Dulcetto-Polyphon, Ltd., 2-3, Newman Street, W.1.

EDDYSTONE. (23)

Short waves are the keynote of this exhibit, which includes a new range of coils for 13.5/550 metres. An ultra short-wave choke for the 5/10 metres range is priced at 1s. 6d., and a series of substantially built variable condensers with maximum capacities ranging from 15 mmfd. to 100 mmfd. are listed from 4s. 6d. upwards.

A 7-metre superheterodyne converter is shown, and the kit of parts is priced at



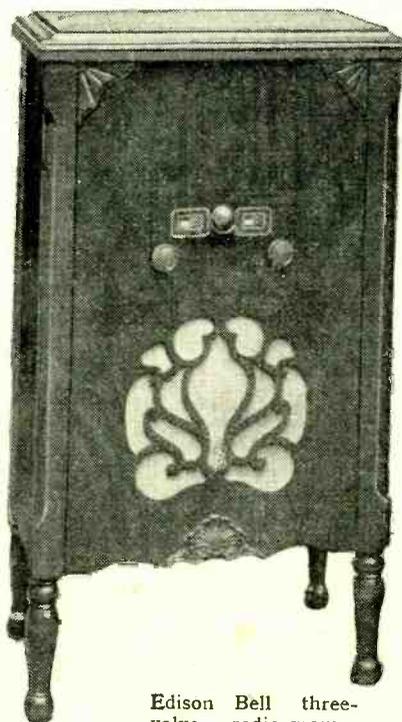
Eddystone 7-metre superheterodyne converter.

£2 11s.; only a single valve is used. The All Wave Four has a range of 12/2,000 metres, and is provided with automatic grid bias.

Stratton and Co., Ltd., Balmoral Works, Bromsgrove Street, Birmingham.

EDISON BELL. (27)

The 1933 receiver programme of this firm is unusually comprehensive, and covers a wide range of types. There is a five-valve



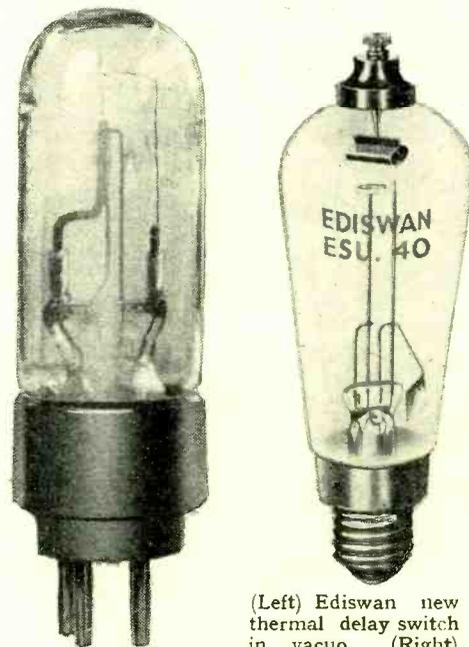
Edison Bell three-valve radio-gramophone.

superheterodyne in which it is claimed that second channel interference has been completely eliminated. One H.F. stage at fundamental frequency is embodied, and a single-valve frequency changer consisting of a screen-grid valve follows. This set in the form of a chassis is built into various ambitious cabinets. A radio-gramophone having a straight circuit with three valves is also being shown. In it there is band-pass tuning followed by a variable-mu amplifier with bias volume control, and this is coupled by the parallel-fed method. A particularly ingenious tuning control is used, consisting of two concentric discs, one for short and the other for long waves, and there are two windows, each exposing a different waveband. By this means the reading of the dials, which are calibrated to show fifty stations, is made simple. An inexpensive permanent magnetic moving-coil loud speaker is being shown, and sells at 50s.

Edison Bell, Ltd., Glengall Road, S.E.15.

EDISWAN. (75 & 230)

Of the various exhibits on this stand the amateur will probably find the range of Mazda valves the most interesting. New additions include four variable-mu valves, one for battery sets, two for A.C. mains, and one for D.C. mains. The last mentioned, designated the DC/2SG.VM, is indirectly heated, and passes 0.1 amp. at 20 volts; its slope is 2.2. Other new valves include two



(Left) Edison new thermal delay switch in vacuo. (Right) Hot cathode mercury vapour rectifier.

D.C. series, one in which the heaters consume 0.5 amp. at 6 or 8 volts and the other where the consumption is 0.1 amp. at 20 to 35 volts. In the directly heated output class there is a newcomer called the PP3/250, the filament of which consumes 1 amp. at 4 volts. The slope is 6.5, and the maximum watts dissipation 12.

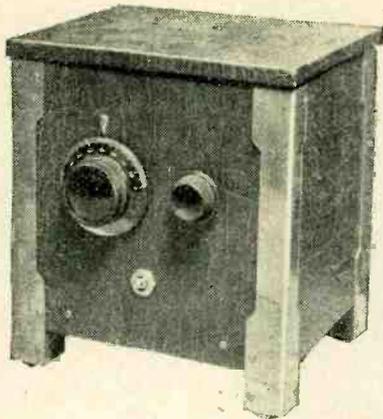
An important new component is a thermal delay switch in which the bi-metal strip is mounted in vacuo, and is thus not affected by outside atmospheric conditions. The small model handling up to 200 mA. will probably be sold at 7s. 6d. There will be a second model handling up to 5 amperes. The use of hot cathode mercury vapour rectifiers in heavy power amplifier equipment is becoming more important, and therefore the range of these accessories being shown should prove of interest.

Olympia 1932.—

There are a number of R.K. speakers exhibited, including the Senior model with both energised and permanent-magnet fields. The minor R.K. speaker is now marketed in a fumed oak or walnut cabinet complete with multi-ratio transformer.

Of the B.T.-H. pick-ups mention should be made of the "Minor" with embodied volume control which gives an output of ½ volt at about 1,000 cycles. There is a large range of Edison dry cell H.T. batteries of a new type being shown.

Edison Swan Electric Co., Ltd., 123-125, Queen Victoria Street, E.C.4.



The "Ealex" short-wave converter.

EELEX. (239)

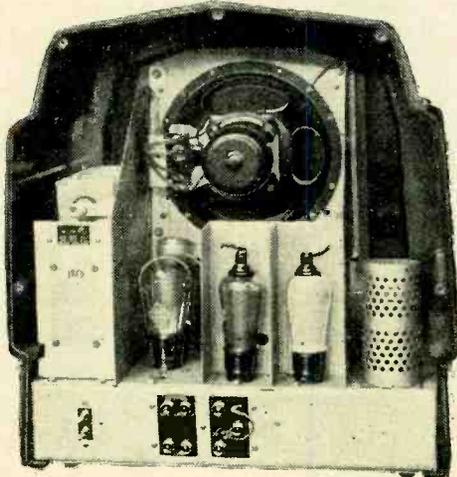
An interesting feature of this stand is the short-wave converter, available both for battery and A.C. mains drive. The single valve operates as an autodyne frequency-changer, the receiver to which it is attached being used as intermediate amplifier of a superheterodyne. In the two-valve model the autodyne valve is preceded by a stage of amplification at the received frequency. Prices range from £3 to £5 17s. 6d., complete with valves.

The exhibit, apart from the wholesale section, is completed by a centre-tapped dual-range frame aerial, spring-loaded testing prods, and an infinity of sockets, plugs, and terminals. The latter are now available in a pattern with interchangeable name-plates.

J. J. Eastick and Sons, 118, Bunhill Row, E.C.1.

EKCO. (25 & 65)

The new five-valve superheterodyne is one of the chief exhibits on this stand, and it is available for either A.C. or D.C. mains. A two-valve frequency changer with a single variable-mu I.F. stage is used. An I.F.



The Ekco S.H.25 superheterodyne.

rejector circuit is connected in the aerial lead, and a special point is made of a novel method of eliminating second-channel interference. The usual band-pass pre-selector is used, but a small condenser is connected between the aerial and the grid of the first valve to form, in conjunction with other circuits, a rejector at the second-channel frequency. A heterodyne whistle filter is fitted and a "local-distance" switch, and the model S.H.25 is priced at 24 guineas.

A three-valve set at 17 guineas, the Console M23, is shown; two tuned circuits are employed, and the valves are arranged as S.G. H.F. stage, detector, and pentode output. A moving-coil loud speaker is fitted as a matter of course.

A wide range of mains units is on view, and it is claimed that most models are suitable for fitting to portable receivers.

E. K. Cole, Ltd., Ekco Works, Southend-on-Sea.

ELDECO. (47)

Superheterodynes are prominent on this stand, and the model S.H.6 portable has six valves with two stages of I.F. amplification and triode output to the built-in loud speaker. Band-pass I.F. circuits are fitted, and are adjusted to have a pass-band of 9,000 cycles. The price is 21 guineas. An all-mains superheterodyne is also being exhibited, and in this variable-mu valves are fitted, and the pentode output valve feeds a moving-coil loud speaker.

Multitone, Ltd., are showing on this stand the Multitone tone-correction transformer, with which it is possible to obtain almost any desired type of response curve. The adjustment of a single potentiometer allows of characteristics rising from low frequencies to the very high frequencies, a flat curve, or a considerable attenuation of the upper frequencies to be obtained. An ingenious arrangement of a cinematograph on the stand shows the resonance curve obtained with any particular setting of the tone control.

Electrical Devices Co., 62, Conduit Street, W.1.

ELECTRICAL & GENERAL DISTRIBUTORS. (278a)

The policy of this firm, as distributors, is to concentrate on a few outstanding products, and the receivers and components represented on this stand include Hart-Collins radio-gramophones and receivers, H.S.P. portables, Tekade "Motor" loud speakers, and Everett Edgcombe synchronous clocks.

Electrical and General Distributors, Ltd., 154, King's Cross Road, W.C.1.

ELECTRICAL & RADIO PRODUCTS (33)

The "Mayfair" 7-valve superhet. radio-gramophone is the star set in the E.R.P. range. Variable-mu valves are used in the pre-detector H.F. and I.F. stages, and the price is 36 guineas.

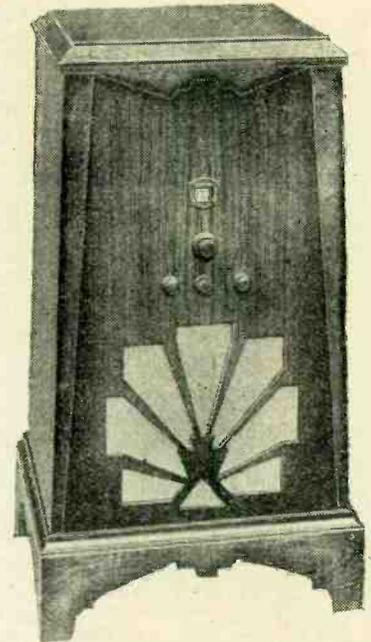
The "Gainsborough" models are four-valve receivers with two variable-mu H.F. stages, a screen-grid detector and a triode power valve. The table model costs 18 guineas, and in console radio-gramophone form the price is 30 guineas.

A three-valve S.G.-det.-pentode set—the "Marlborough"—is made for both D.C. and A.C. mains and costs 14 guineas, while the price of the "Clarendon" detector-pentode set for both types of supply is 10 guineas.

All the above are fitted with energised moving-coil loud speakers.

The "Claremont" S.G. battery trans-portable, with balanced-armature speaker, costs 10 guineas, and the "Belgrave" portable is to be continued at 9 guineas.

Electrical and Radio Products, Ltd., 90, Regent Street, W.1.



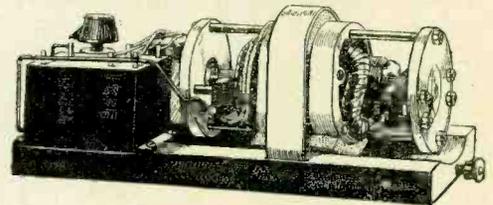
Hart-Collins "Passport IV" radio-gram. (Elec. & Gen. Distributors.)

ELECTRO-DYNAMIC CONSTRUCTION CO. (157)

The exceptionally good balance and silent running of the rotary converters produced by this firm is demonstrated on this stand.

A new D.C. to A.C. converter for badly fluctuating supplies has been produced with a guaranteed fluctuation of not more than 5 per cent. A.C. output for D.C. input variations up to 35 per cent.

For those who wish to derive H.T. (150 volts) from their 2-volt L.T. supply, a new converter has been produced with the remarkably high efficiency of 49 per cent. in the 15 mA. model and 50 per cent. in the



Electro-Dynamic 2-volt H.T. converter.

30 mA. model. A special filter has been developed to prevent H.F. entering the L.T. circuit. The price complete is £8 10s.

Electro-Dynamic Construction Co., Ltd., Devonshire Grove, S.E.15.

ELECTRON. (48)

A special display of Superial aerial wire is made on this stand, together with a number of useful aerial accessories. A copper gauze earth plate is also shown, and with 25ft. of insulated wire is priced at 2s. 6d.

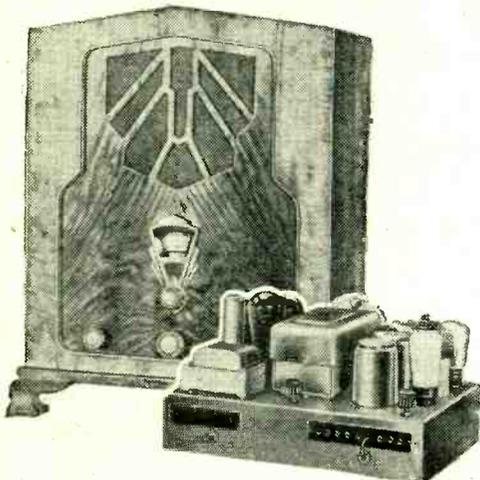
New London Electron Works, Ltd., East Ham, E.6.

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EPOCH. (41)

A special feature is being made of a new permanent-magnet moving-coil speaker which is priced at 27s. 6d.; this includes a 5-ratio transformer, and the instrument is stated to be capable of handling an input of 5 watts. A similar speaker of greater sensitivity is the 20th Century P.M., which sells at 35s. A range of energised speakers is also shown, and humbucking can be fitted to these at an extra charge; these types range from midget models to those intended for cinema work.

A three-valve set, the F.M.3, is shown, and includes a variable-mu H.F. stage with three tuned circuits, detector and pentode output stage. A tone control is included,



The Epoch three valve receiver.

and the general mechanical finish reaches a high standard.

Epoch Radio Manufacturing Co., Ltd., Exmouth House, Exmouth Street, E.C.1.

ERIE. (4)

Carbon resistor elements for the set manufacturer, marked in accordance with the R.M.A. colour code and ranging from 100 ohms to 4 megohms at rating of $\frac{1}{4}$ to 3 watts, are the speciality of this firm.

Erie Resistor, Ltd., Waterloo Road, Cricklewood, N.W.2.

EVER READY. (63)

Dry batteries for all wireless purposes are to be found on this stand, and a special feature is being made of H.T. batteries for the new portable-set types.

A complete range of accumulators is also displayed.

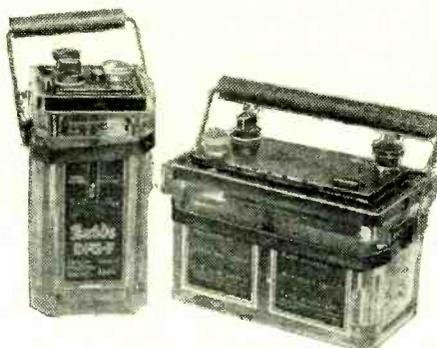
Ever Ready Co. (G.B.), Ltd., Hercules Place, Holloway, N.7.

EXIDE & DRYDEX. (61)

The popularity of the D series of L.T. accumulators of the mass type has been sufficiently well marked for the manufacturers to have increased the range. There is now a DXG 2-volt cell of the squat type having an ampere-hour capacity of 35 at the 100-hour rate, and, if discharged slowly, 58 ampere hours can be obtained. A feature of interest is a small identification plate on which the owner's name can be written. The cell is so shaped that it is extremely unlikely that it will ever be inadvertently upset.

On this stand there is every conceivable type of accumulator, as well as a range of Drydex dry-cell H.T. batteries; the latter are colour-coded as follows: Red Triangle for low-power receivers, Green Triangle for

slightly greater discharges, Orange Triangle representing triple capacity where the H.T. current is 10 mA. upwards, Brown Triangle—a new series—for discharges from 10 to



New Exide cells. (Left) Hydrometer bead pattern. (Right) D.X.G. type.

30 mA., Blue and Yellow Triangle for portable sets having a limited space for the H.T. battery.

Cells with coloured hydrometer beads showing the state of discharge are being shown for the first time.

Chloride Electrical Storage Co., Ltd., Clifton Junction, near Manchester.

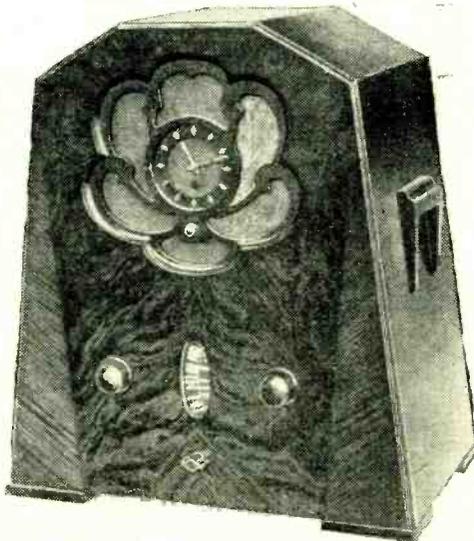
FAY HOME RECORDERS. (255)

Various types of home recorders are shown on this stand. The usual practice of employing aluminium alloy discs is adhered to, and one model is priced at 1 $\frac{1}{2}$ guineas. The No. 4 model, however, is electrically driven and includes a loud speaker; it is priced at 15 guineas.

Fay Home Recorders, Ltd., 121, Victoria Street, S.W.1.

FERRANTI. (78)

The most outstanding item on this stand is undoubtedly the new superheterodyne, the circuit of which incorporates a variable-mu H.F. stage followed by a screen-grid first detector and separate oscillator, one variable-mu I.F. stage working at 135 kilocycles, a triode second detector, and a triode output valve capable of delivering 1,000 undistorted milliwatts to the moving-coil speaker. The whole, with a scale calibrated in wavelengths, sells at 22 guineas complete with valves, while for one guinea more a scale calibrated with station names may be had. The addition of a Ferranti electric clock in the speaker grille increases the price to 25 guineas. There is a tone control

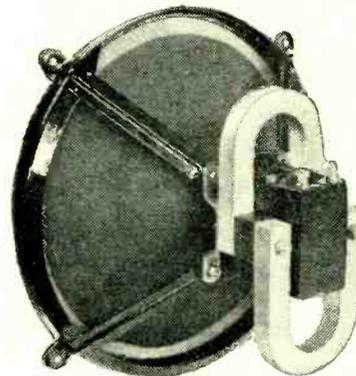


Ferranti 7-valve superheterodyne with station-scale and clock.

which allows a condenser to be switched across the output transformer if desired.

In addition to this completed receiver a wide range of kit sets of high quality is offered, both battery and mains users being very fully catered for. The A.C. kit, without valves, but otherwise complete, costs £12 8s. 6d., the battery kit selling at £9 4s. 6d. Both models use band-pass tuning with coils of exceptionally high efficiency. More ambitious kits for the critical listener are the AC6a and the AC12, which are capable of delivering 6 and 12 watts respectively to the loud speaker. In these an intermediate L.F. valve is used between detector and output stage. The L.F.-output part of these kits is also supplied separately as a gramophone amplifier, and may be attached to the detector of any set.

The new Inductor loud speaker, with an impedance at mean speech frequencies of about 5,000 ohms, is offered at 30s.; it will deal with A.C. inputs up to 2 watts without distress. There is a full range of permanent-magnet moving-coil speakers, from the M1 with 100,000 lines in the gap at £8 18s. 6d., to the M4 with 35,000 lines in the gap, which sells, complete with multi-ratio output transformer, for the modest sum of £2 15s. In addition there is the energised moving-coil speaker, available with field windings for either 100 or 200 volts, which costs, with three-ratio output transformer, only £2 10s.



Ferranti new inductor loud speaker.

Low-frequency transformers at all prices, ranging from the AF7 at 30s., with a primary inductance of 400 to 100 henrys at 0 to 10 milliamps, down to the AF10 at 6s. 6d., with an inductance of 35 to 20 henrys at 0 to 6 milliamps., are available for every possible purpose. The new smoothing choke, Bro, combining an inductance of 50 to 30 henrys at 0 to 50 milliamps. with the moderate D.C. resistance of 600 ohms, is good value at 11s.

Mains transformers and eliminator kits to suit all sets are also on view.

Ferranti, Ltd., Hollinwood, Lancs.

FILM INDUSTRIES. (261)

This firm is showing the moving-coil horn-type loud-speaker unit which attracted so much attention when first introduced. They have recently developed two new models fitted with 7in. cone diaphragms and described as the types P.A.C.1 and P.A.C.2 respectively. A permanent magnet is employed giving a high flux density, and the working impedance of the coil is 8 ohms in both models. The price of the P.A.C.1, which will handle 3 watts, is 45s., including transformer. The P.A.C.2 embodies a larger magnet system, handles 5 watts, and costs £4 15s., also with transformer.

Film Industries, Ltd., 60, Paddington Street, W.1.

Olympia 1932.—

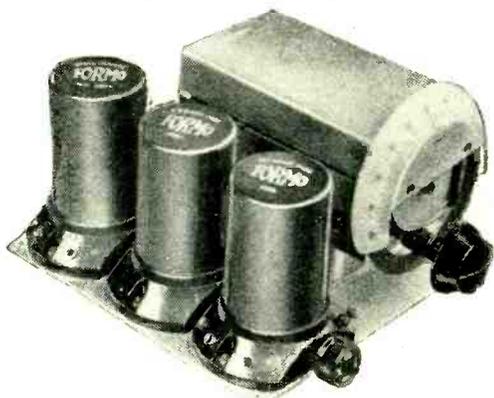
FIVE POINT PRODUCTS. (252)

This firm is showing the Five Point, a differential condenser for insertion in the aerial circuit of sets to give increased selectivity and provide volume control. When fully rotated to the minimum position it earths the aerial.

Five Point Products, 8a, Cross Street, Islington, N.1.

FORMO. (100)

Screened-ganged condensers, in dual or triple form, are one of the most important of the many new Formo products. Of



A tuning unit with the new Formo coils and gang condenser.

unusually compact dimensions, and with all desirable modern features, these components are sold at exceptionally low prices. The trimmers, mounted internally and operated by star wheels, are less liable to derangement than in the usual position.

Screened coils for nearly every purpose are included in the new Formo programme; they are neat and compact, and their windings would appear to be well devised in relation to their size. A colour scheme of identification has been standardised, and, as an additional convenience, each coil bears a disc with a printed circuit diagram showing the external connections of the windings.

The Formo Multicoupler differs from other parallel-fed transformer units in that all the terminal points are accessible externally, with the result that it may be used as a plain



Terminal identification diagram on Formo coil.

resistance-fed transformer, as a resistance-fed auto-transformer, or, with the addition of a by-pass condenser, as a similar coupling unit with self-contained decoupling resistance; with this object, the built-in resistance is tapped. By making the appropriate external connections, various ratios of transformation are available. Data relating to the unit shows high and constant amplification between 50 and 5,000 cycles.

Among other interesting new products is the Nigen L.F. transformer, costing only

8s. 6d., and housed in a double screening container of cylindrical form.

Formo Co., Crown Works, Southmill Road, Shirley, Southampton.

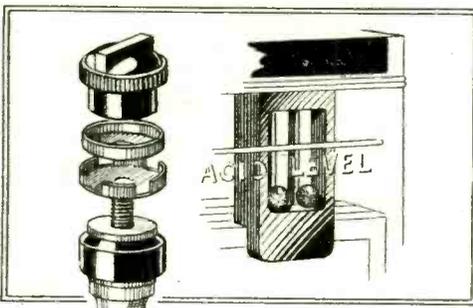
FRASER RADIO. (253)

This firm is showing a D.C. mains two-valve set, which is priced at 10 guineas. A pentode output valve is fitted, and a lamp resistance is used for breaking down the main voltage. The A.C. model at the same price includes a metal rectifier, and both are fitted with moving-coil loud speakers.

Fraser Radio, Ltd., 38, Crawley Road, N.22.

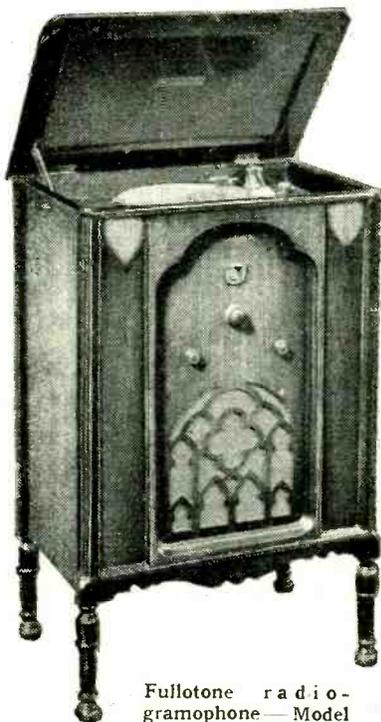
FULLER. (76)

The exhibits on this stand consist entirely of the well-known range of accumulators and dry batteries, to which a number of new lines have been added for the present season. The slow-discharge "Mammoth" cells are available in capacities from 22 to 120 ampere-hours at prices from 4s. 6d. to 14s. in glass boxes, while the "Standard"



Terminal and charge-indicator of Fuller accumulator.

cells, including a gravity-indicator, can be had in glass, celluloid, or ebohite cases. Both types have a double-grease-cup terminal with a special grip for connector pins. There are also many non-spill accumulators for portable sets. High-tension accumulators



Fullotone radio-gramophone—Model 260.

of three different capacities are also being shown.

Fuller Accumulator Co. (1926), Ltd., Woodland Works, Chadwell Heath, Essex.

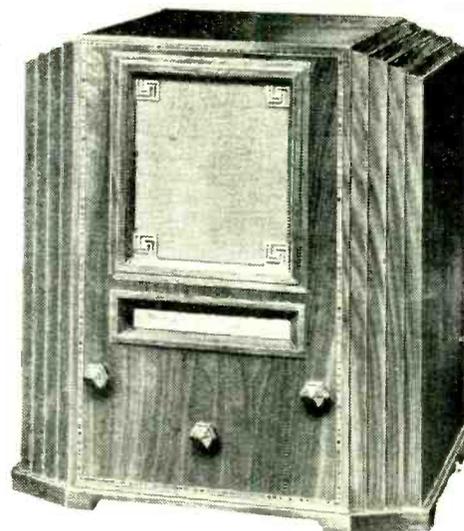
FULLOTONE. (203)

There are no fewer than eight different receivers being shown by this firm. The all-electric three-valve radio-gramophone for A.C. mains selling, complete with electric gramophone motor, pick-up, and moving-coil speaker, at 16 guineas is undoubtedly good value for money. The H.F. amplifier contains a variable-mu valve, and the grid detector is followed by a power pentode. Another set of interest is an all-mains three-valve model at 14 guineas, containing band-pass tuning and variable-mu amplification, with bias volume control.

Fullotone, Ltd., 73, Camden Road, N.W.1.

G.E.C. (105 & 109)

The G.E.C. has introduced for the coming season six new receivers, of which one is the Osram Thirty-Three Music Magnet, four are A.C. models, and there is one D.C. set. More than usual interest will attach to these models, for in every case a screen-grid valve is employed as a detector, and in the majority this is followed by a resistance-fed L.F. transformer. The inclusion of a heterodyne filter with a cut-off at about 9,000 cycles should go a long way towards rendering the new G.E.C. sets immune from this annoying type of interference.



G.E.C. five-valve A.C. superheterodyne.

One of the new models takes the form of a three-valve radio-gramophone employing an H.F.-det.-L.F. circuit and A.C. operated. Described as the Carnival model and housed in a conventional pedestal-type cabinet finished in walnut, the price is 30 guineas. It includes a Magnet electric motor with automatic stop, an energised moving-coil loud speaker, and is station calibrated.

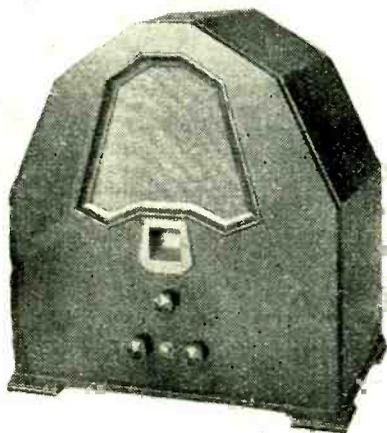
The specification of the new A.C. Superheterodyne is attractive. It has five valves plus a mains rectifier, band-pass tuning of both input and I.F. circuits, with a variable-mu valve in the latter position, built-in moving-coil loud speaker, and a heterodyne filter, to mention but a few of its salient features. The price is 26 guineas.

The Osram Thirty-Three Music Magnet builds up into a self-contained three-valve (H.F.-Det.-L.F.) receiver, the loud speaker, and the batteries, being housed in the finely moulded bakelite case. This is finished in grained walnut and the kit, complete with three Osram valves, costs 9 guineas.

So far as accessories are concerned, the additions include an induction-type gramophone motor for A.C. supplies and fitted

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with automatic stop the list price of which is £4 15s., and a new permanent-magnet moving-coil loud speaker.



Cecophone Nomad four-valve D.C. receiver, a G.E.C. product

On a separate stand is a unique display of Osram valves, including all the latest types. There are two new variable-mu tetrodes, the V.S.2 for battery use, fitted with a 2-volt filament, and the V.D.S., which is an indirectly heated D.C. type. The last-mentioned conforms with the other valves in this series, the heater being designed to operate at 16 volts, and it requires 0.25 amp. The V.M.S.4 now has better characteristics than heretofore, while the same applies to the P.X.4 and the P.T.4.

The power valve class has been extended and includes two 25-watt output valves, P.X.25 and the P.T.25, these being a triode and a pentode respectively.

General Electric Co., Ltd., Magnet House, Kingsway, W.C.2.

GAMBRELL. (21)

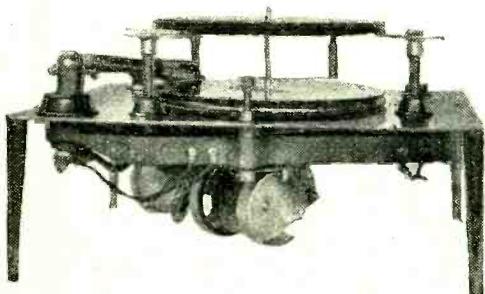
The Gambrell-Halford superheterodyne is shown on this stand; an H.F. stage now precedes the frequency changer and only a single I.F. valve is used. Push-pull pentodes are employed in the output stage, and are claimed to deliver 4½ watts to the loud speaker. Provision is made by means of a socket at the rear of the chassis for the connection of a short-wave converter. Two valves are used in the converter, which is priced at 9½ guineas, and the range of 15-60 metres is covered in two steps.

The well-known Novotone tone corrector for gramophone reproduction is being shown, as are plug-in coils and volume controls.

Gambrell Radio, Ltd., Merton Road, Southfields, S.W.18.

GARRARD. (122)

In view of the fundamental soundness of design of the spring and electric gramophone motors made by this firm it is not surprising to find that no detail changes have been made to any of the models in the already comprehensive range.



Garrard record changer unit.

The main interest in this stand centres round the new Garrard record-changer, which, in chassis form complete with pick-up, costs £10. There are three record supports fitted with spring selector blades, and the unit will play eight 10- or 12-inch records. The mechanism is controlled by a single cam drum driven through a clutch from the induction-type turntable motor. "Reject" and "Repeat" controls are fitted, and the motor stops automatically at the end of the last record.

Garrard Engineering and Manufacturing Co., Ltd., Newcastle Street, Swindon.

GILBERT. (232)

The record-changer fitted to the Gilbert Four-valve Radio-gram is unique, in that it



Record changer in the Gilbert radio-gram.

turns each record over and plays both sides. The time taken for each operation is approximately eighteen seconds, and the magazine holds twelve records. This is one of the most interesting designs in the show.

C. Gilbert and Co., Ltd., Arundel Street, Sheffield.

GODWINEX. (57)

Eliminators and mains components are the chief products of this firm, and a new series of mains transformers and chokes of generous design, including a special model for the "Monodial Super," are shown. Special metal rectifiers for running existing D.C. sets from A.C. mains have been developed, and the "Airmax" short-wave

up to 20,000 ohms, and at 4s. 6d. for higher resistances.

The Gard lightning arrester is shown, but a special feature is being made in this exhibit of the Filt earth. This consists of a copper cup containing a chemical substance with the aid of which it is claimed that a highly efficient earth contact can be secured.

Graham Farish, Ltd., Masons Hill, Bromley, Kent.

GRESLEY RADIO. (276)

This firm is showing a well-made three-valve A.C. set incorporating an energised moving-coil loud speaker, and selling for 14 guineas. It is known as the Model 144 Band-Pass 3, and, as the name implies, a band-pass input filter precedes the S.G.

high-frequency amplifier, which is followed by a detector and power pentode.

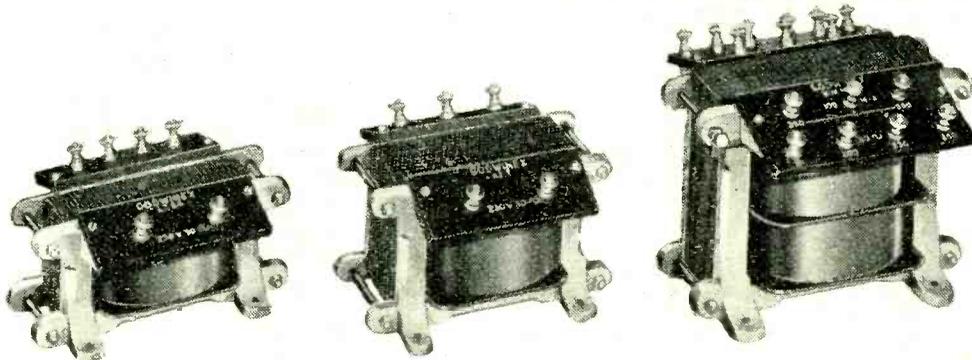
The No. 99 battery model follows the same design, but a low-consumption pentode and permanent-magnet moving-coil are employed. A well-finished table, with quartered walnut front, is available for either of the above models at 1 guinea.

Battery eliminators and trickle chargers for A.C. mains are also made by this firm.

Gresley Radio, Ltd., Ordsall Lane, Salford, Manchester.

GRIPSO. (226)

Indicating switches are shown in various forms, one model in particular having been



Godwinex mains transformers and smoothing chokes.

coils and H.F. chokes are being continued.

J. Dyson and Co. (Works), Ltd., 5, Godwin Street, Bradford.

GRAHAM FARISH. (50)

A useful range of components, including fixed and variable condensers, grid leaks, and Ohmite resistances, is shown on this stand. A potentiometer-type volume control in which the resistance wire is embedded in bakelite is available at 3s. 6d. for values

designed to combine the dual functions of wave-band and battery switching. There is a wide range of connectors, also two very useful easy-to-fix clips, by means of which a good earth connection can be made to a pipe or to a tube buried in the ground.

Gripsco Co., 32, Victoria Street, S.W.1.

GROSVENOR. (42)

A large range of dry batteries for all wireless purposes is on view on this stand. H.T.

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batteries are available in all voltages and capacity ratings, and, in addition, a display is made of electric torch cells.

Grosvenor Electric Batteries, Ltd., 2-3, White Street, E.C.2.

GUTTA PERCHA. (257)

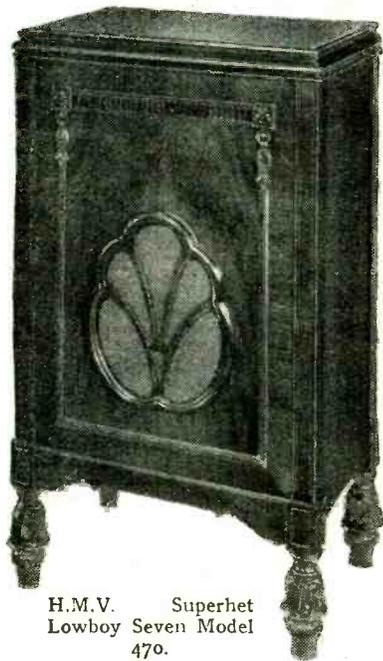
The new damp-proof "Telconite" and the firm's Mu-metal, Radio-metal, and Pyromic alloys are the principal exhibits on this stand. Expert technical information regarding these products is obtainable on the spot.

Gutta Percha Co. (Telegraph Construction and Maintenance Co., Ltd.), 18, Wharf Road, City Road, N.1.

H.M.V. (THE GRAMOPHONE CO.) (55)

The whole of the available space on this stand is taken up by a series of efficiently illuminated bays, each containing a different model in cabinet and chassis form.

The three new models this year are all superhets. The new "Superhet Ten Autoradiogram," at 80 guineas, heads the list, and a special model built into an all-glass cabinet clearly reveals the high standard of workmanship which is typical of all H.M.V. models. The circuit is based on last year's Model 531, but numerous refinements, including variable-mu valves, have been included. A new type of record-changer has



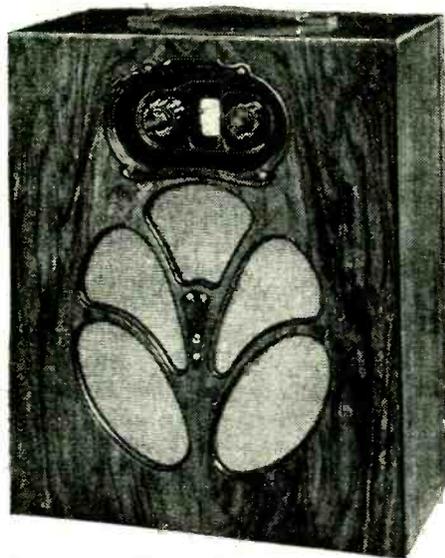
H.M.V. Superhet Lowboy Seven Model 470.

been adopted, in which a three-position knob takes the place of the selector dial in the original design. The first position cuts out the automatic mechanism and the instrument can be used as an ordinary gramophone, the second position gives automatic record changing up to a maximum of eight records, while the third position enables any record to be repeated indefinitely. Another improvement is the provision of a spring-loaded turntable spindle, which ensures a positive drive even with slightly warped records.

The second new model is known as the "Superhet Radiogram Seven," and costs 50 guineas. It is available also as a radio receiver known as the "Superhet Lowboy Seven" at 32 guineas. As in the ten-valve model, the seven valves include the power

rectifier. Again a predetector variable-mu H.F. stage with band-pass input is employed, but there is only one I.F. amplifier, and the second detector is coupled through a 7:1 transformer directly to the single PX4 output valve. The power output to the energised moving-coil loud speaker is 2½ watts.

The last, but by no means the least important, of the new receivers is the "Superhet Portable Six." It is contained in a walnut cabinet no larger than the average portable, weighs 34 lb., and has an H.T. current consumption of only 10 mA. The circuit comprises a predetector H.F. stage, first detector, oscillator, band-pass I.F. amplifier, leaky grid second detector, and a pentode output valve working into a balanced armature loud speaker. For a portable the performance should be exceptionally good, and the price of 17 guineas is very attractive.

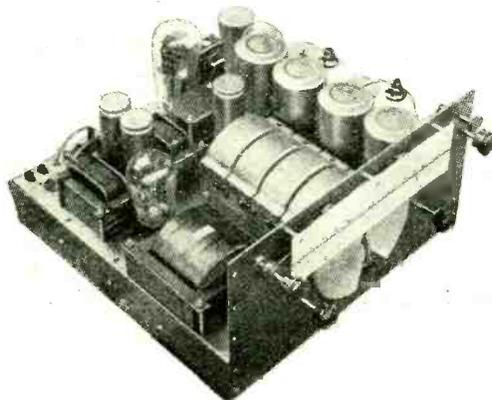


H.M.V. Superhet Portable Six Model 459.

The new models are well supported by many well-tried H.M.V. receivers and radiograms. The models 521, 522, and 531 continue as before, but the model 501 will in future be known as the "Transportable Radiogram," and the price has been reduced to 25 guineas. The model 435 now costs 17 guineas, and will be known as the "de luxe Radio Four."

Another important price reduction concerns the "Auto Record Player," which, with the original type of record-changing mechanism, will now be available at 12 guineas.

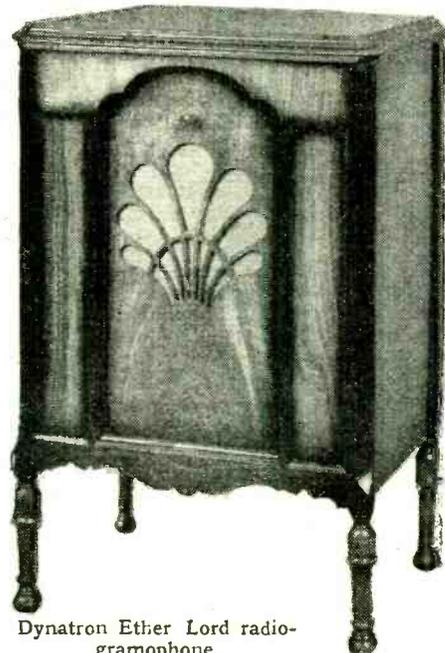
The Gramophone Co., Ltd., 363-367, Oxford Street, W.1.



Dynatron Ether King chassis.

HACKER. (37)

Straight receivers are found to be favoured on this stand, and the Ether King at 60 guineas has two variable-mu H.F. stages



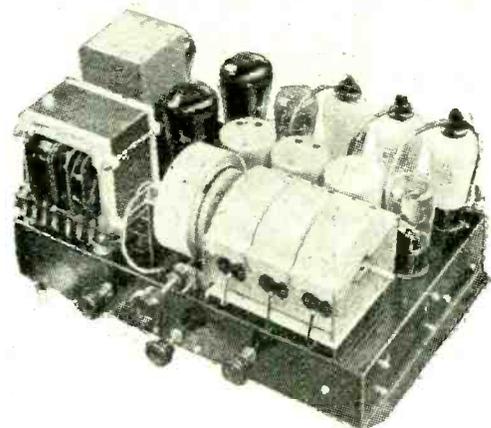
Dynatron Ether Lord radio-gramophone.

with four tuned circuits, a power grid detector, and push-pull P.P.5/400 output valves. Dual loud speakers are employed, and for the station selector a horizontal scale is fitted.

A three-valve set is available at 19 guineas for A.C. or D.C. mains, and the favourite valve combination of screen-grid H.F., detector, and pentode output is used.

A special feature is made of receivers which are suitable for use without appreciable modification on either type of supply mains.

H. Hacker and Sons, Perfecta Works, Ray Lea Road, Maidenhead.



Gambrell-Halford superheterodyne chassis.

HALFORD. (117)

The Gambrell-Halford superheterodyne chassis, favourably reviewed in "The Wireless World" some months ago, has been improved in several respects, a signal-frequency H.F. stage having been added, and variable-mu valves having been substituted. Provision for the use of a mains aerial, and also of a short-wave adaptor unit (which is shown), has been made in the new model.

It is worth while noting that this set is available in chassis form, as well as in various cabinets, including a radio-gramophone with automatic record changing.

Another model, entirely new, is planned on very ambitious lines and includes a total

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of ten valves. Short waves are receivable without additional apparatus, the bands covered being 15-60, 200-1,000, and 1,000-2,000 metres. The apparatus is housed in a large and exceptionally handsome radio-gramophone cabinet, with automatic record changer and space for 150 records.

Halford Radio, Ltd., 39, Sackville Street, W.1.

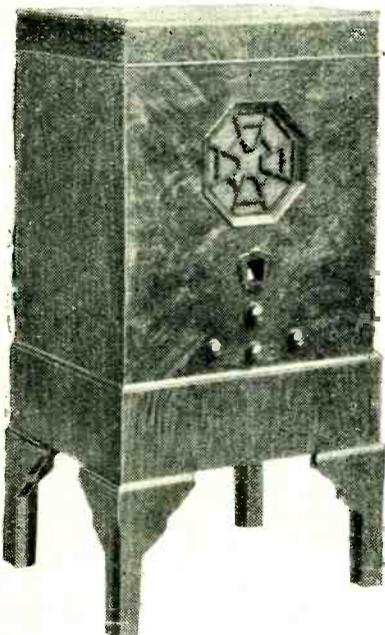
HAMBLING. (224)

One of the chief products of this firm is an all-wave tuning unit described as the Autokoil. This covers a wave-range of from 200 to 2,000 metres, giving continuous tuning throughout, and it can be fitted either in an aerial circuit or employed as an H.F. intervalve coupling coil using the tuned grid circuit. A variable reaction coil is embodied, also a small variable coupling condenser, and the price is 12s. 6d.

A. W. Hambling, Ltd., 15-16, Alfred Place, W.C.1.

HAMPTON RADIO. (12)

This firm is showing a six-valve radio-gramophone at 38 guineas; it includes band-pass tuning with two variable-mu H.F. stages and push-pull pentode output to the M.C. speaker. A D.C. mains model is available at 41 guineas.



The Hampton console radio-gramophone.

A smaller set, the Cantor, is of the H.F., det., pentode type, but this also includes a moving-coil speaker and is priced at 16 guineas for A.C. or D.C. mains.

Hampton Radio, Ltd., 1-3, Vicarage Road, Hampton Wick.

HARLIE. (31)

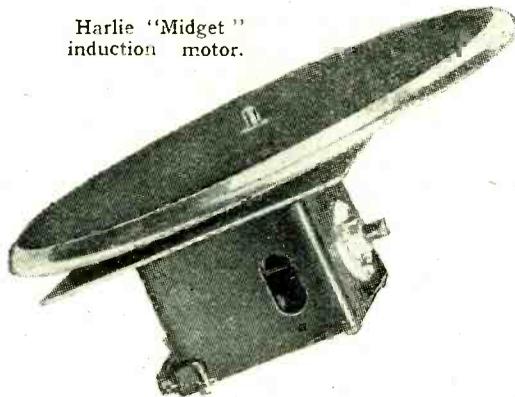
The Harlie de Luxe pick-up No. 36 has been improved and will retail at 27s. 6d. with integral volume control. A new standard model, No. 65, with fixed head, has been introduced at 22s. 6d., but the tone arm is hinged vertically to facilitate needle changing.

Three entirely new induction-type gramophone motors of compact design have been developed, the model 61 "Midget" at 39s., a model 63 two-pole motor at 45s., and a de Luxe model 62 at 55s. The latter motor is supplied complete with the model 36 pick-up and automatic stop for £4 5s.

The range of gramophone accessories, including the Harlie Tone Selector at 4s. 6d., is continued.

Harlie, Ltd., Cambridge Arterial Road, Enfield, Middlesex.

Harlie "Midget" induction motor.

**HARWELL. (261a)**

The main exhibit of this firm is a range of wire-wound potentiometers, some of which comprise two separate resistance elements in series: by this plan exceptionally high resistance values may be attained without loss of mechanical strength or undue increase in overall size.

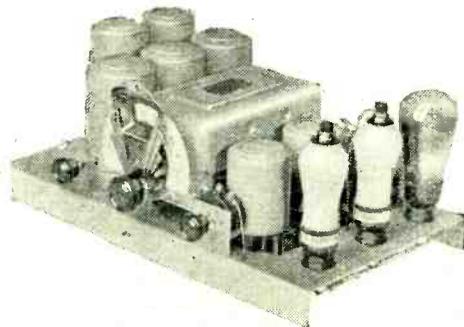
There are also exhibited on this stand the new British-made Hydra condensers in all capacities.

Harwell, Ltd., Sessions House, Clerkenwell Green, E.C.1.

HAYNES RADIO. (17)

The principal exhibit on this stand is a Quality Receiver; a single variable-mu valve is used, and the three tuned circuits include a link-coupled band-pass filter. A power grid detector feeds the L.F. circuits, in which resistance-capacity coupling is used throughout, and the output stage is capable of delivering 6 watts to the moving-coil loud speaker. Provision is made in the mains equipment for the field supply of additional speakers, and dry electrolytic condensers are employed in the smoothing circuits. The apparatus is built in two units, and is available as a radio-gramophone at £35 17. 6d. A kit of parts for building this receiver can be obtained for 19 guineas, including five valves and loud speaker.

This firm's A.C. Single Dial Superheterodyne is also being shown, and has been redesigned to obtain greater accuracy of ganging. It is claimed that tracking errors on the medium waveband do not exceed 0.2 per cent., and on the long waveband 0.4 per cent.; this has been accomplished by the adoption of a circuit involving four padding



Haynes Radio A.C. single dial superhet.

condensers. In other respects the circuit is substantially the same as that of the previous model, and a two-valve frequency changer is followed by a single variable-mu

I.F. amplifier. Screen-grid anode bend second detection is used, and the pentode output valve is rated to deliver 2 watts to the moving-coil loud speaker. The complete receiver is priced at £21 10s. complete, but is also available in kit form at 18 guineas, including valves, moving-coil loud speaker, and metal chassis.

Haynes Radio, 57, Halton Garden, E.C.1.

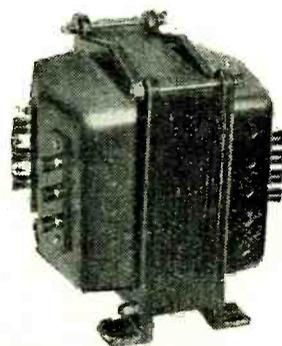
HELLESENS. (221)

A wide selection of dry and wet electrolytic condensers in many different capacities and for various operating voltages, as well as a complete range of Hellekens dry-cell H.T. batteries, form the main items of interest in this exhibit.

Hellekens, Ltd., Morden Road, S. Wimbledon, S.W.19.

HEYBERD. (13)

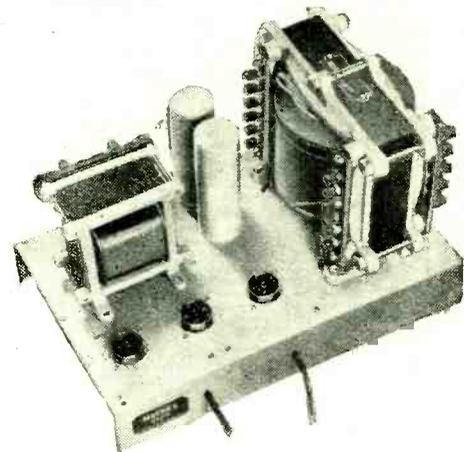
Mains equipment forms the principal exhibit of this firm, and a number of eliminators, many of which are also available in kit form, are prominently displayed. A special feature is made of an eliminator for portable sets, which is priced at 85s



The Heyberd W. 33 mains transformer.

Mains transformers and smoothing chokes of all types are well in evidence.

F. C. Heyberd and Co., 10, Finsbury Street, E.C.2.



The power unit of the Haynes Radio quality amplifier.

HENLEY'S. (16)

This firm is showing a comprehensive display of materials for soldering, and a special feature is made of the Solon electric soldering iron. Resin-cored solder is also on view.

W. T. Henley's Telegraph Works Co., Ltd., Holborn Viaduct, E.C.1.

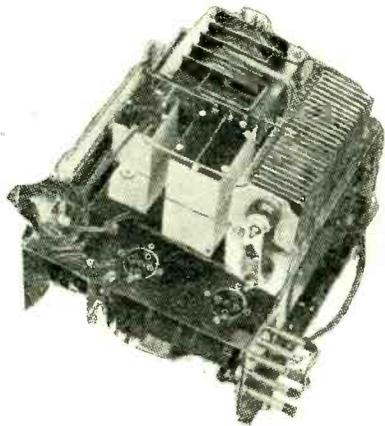
HUSTLER, SIMPSON & WEBB. (30)

A neat table radio-gram. receiver is the principal exhibit on this stand. The three-valve chassis is in two sections, and the controls are neatly distributed on the loud-speaker fret. A variable-mu S.G. stage is followed by a power grid detector and a directly heated pentode. With Garrard or Collaro motor the price is £22 10s.

The "A.C. Two" is a detector-pentode

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set with Westinghouse rectifier and Rola energised loud speaker. In the "D.C. Two" the speaker field (120 ohms) forms part of



Set (right) and chassis (left) of the Hustler, Simpson & Webb "Aerodyne A.C. Two."

the mains potential divider, which is of the vitreous wire-wound type. Both these models are of exceptionally robust design, and the tuning coils are designed to eliminate break-through on long waves. The price is 10 guineas in each case.

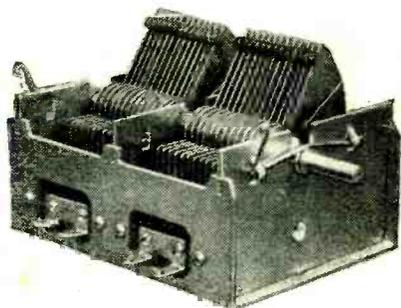
There is also an S.G. battery receiver with P.M. moving coil at 9 guineas.

Hustler, Simpson and Webb, Ltd., 317, Hoe Street, Walthamstow, E.17.

IGRANIC. (36)

So many new components have been introduced this year by the Igranic Electric Co. that a brief mention only can be made to a small selection, of which the type T.24B L.F. transformer is by no means the least interesting. It is a general-purpose model made in two ratios, viz., 1:3 and 1:5, and the primary winding is capable of carrying up to 10 mA. of D.C. and yet maintain an adequate inductance. It costs 5s. 6d. in either ratio.

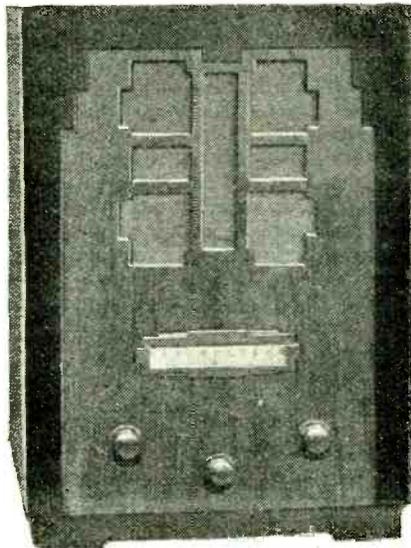
The new dual-range screened coils follow present-day practice in that they are very compact and embody wave-band switches. Provision is made for linking the switches when two or more coils are used. Igranic gang condensers are available in two- and three-gang types; the sections are accurately matched and fitted with small trimmers. Others items of interest include a binocular H.F. choke priced at 3s. 9d., a range of small- and large-capacity fixed condensers, an illuminated drum dial, and a new L.F. choke. Known as the C.H.2 model, this choke is wound in two sections, which can be joined either in parallel or in series. With the series connection the choke has a constant inductance of 40 henrys with any value of D.C. flowing up to 40 mA. Joined in parallel, the inductance becomes 10



Igranic screened gang condenser with dust cover removed.

henrys, but then it will carry up to 80 mA., and the price is 9s. 6d.

The new permanent-magnet loud speaker has a diameter of 9in., and the price is



32s. 6d., which includes a three-ratio input transformer.

Igranic Electric Co., Ltd., 147, Queen Victoria Street, E.C.4.

Inexpensive L.F. transformer: the Igranic model T.24.B.



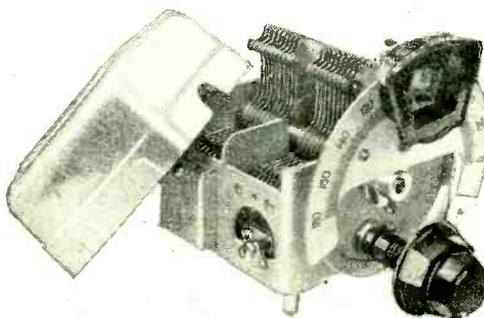
ITONIA. (216)

In addition to a comprehensive range of proprietary receivers, radio-gramophones, and accessories, this firm is featuring a compact valve-testing panel designed for dealer's use, and the price is 10 guineas assembled, or 8 guineas in kit form.

Itonia, Ltd., 58, City Road, E.C.1.

J.B. (204)

The latest J.B. condensers are the "Nugang" semi- and fully-screened models



J.B. Type A. "Nugang" condenser.

with from 2 to 4 sections matched to 1/2 mmfd. within 1/2 per cent. The new "Unitune" model is a two-gang condenser with a concentric trimming control for the front section, and is sold for 27s.

The special short-wave condenser has been redesigned and is now fitted with insulated bearings to eliminate contact noises and a screened pigtail to avoid closed loop

effects. There is a choice of five capacities and the price is 5s. 9d.

Jackson Bros., 72, St. Thomas Street, S.E.1.

JACKSON-BELL. (11)

This firm is showing a two-valve A.C. mains receiver in which a screen grid valve is used as a detector. A pentode output valve, delivering some 2 watts to the loud speaker, is employed and electrolytic condensers are used in the smoothing circuit. The price is 12 guineas. A similar set is also available as a radio-gramophone.

Jackson-Bell Distributors, Ltd., 68, Victoria Street, S.W.1.

JUNIT. (39)

Electric clocks occupy a prominent position on this stand, and are available in a number of different styles. Radio components are also shown, and a feature is made of the H.T.9 rectifier transformer for the "Wireless World" Baby Superhet.

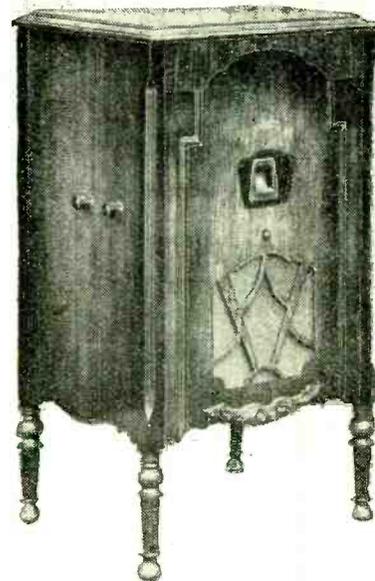
Junit Manufacturing Co., Ltd., Junit Works, Steele Road, W.3.

KABILOK. (101)

This firm's activities are restricted entirely to the production of cabinets for loud speakers, receivers, and radio-gramophones. The "Super Magna-Four" and the "Magna-Gram" have been specially designed to take the Osram "Music-Magnet" kit, together with batteries and loud speaker, either as a receiver only or with gramophone motor and pick-up added.

In addition to the many standard lines, cabinets can be built for any special purposes on request.

W. and T. Lock, Ltd., St. Peter's Works, Bath.



"Magna-Gram" radio-gramophone cabinet by Kabilok.

KALISKY. (236)

This firm offers a bead hydrometer at 6d., and is featuring its "Sopranist" high-tension battery (standard size only).

Apart from these lines the stand is given over to a comprehensive display of sets and components for the convenience of the trader.

S. Kalisky (Aldgate), Ltd., 146, Theobalds Road, W.C.1.

KENWELL. (121)

The principal receiver introduced by Kenwell Radio is an H.F.-det.-L.F. combination for mains operation. An energised

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moving-coil loud speaker, a Westinghouse rectifier, and a two-position tone-control switch for either speech or music are included. The tuning dial, marked on an arbitrary scale, is exceptionally clear, and there is a vernier scale, by means of which very close readings may be made.

Kenwell Radio, Ltd., 200, City Road, E.C.1.

KOLSTER-BRANDES. (54)

Although hardly to be described as spectacular, the new Kolster-Brandes sets are in some ways as interesting a collection as is to be found at Olympia. Almost every circuit



The Kolster-Brandes "all-wave" superheterodyne.

arrangement is represented, and price is uniformly rather below that prevailing for apparatus of similar specification. An examination of the sets shows that this economy has not been effected by cheese-paring, but by the legitimate methods open to a large firm with an efficient design department working in conjunction with a well-organised factory.

There are over a dozen sets, so it is impossible to describe them all. The Model K.-B.321 three-valve A.C. set is a representative example, and embodies two ganged tuned circuits and an H.F.-det.-L.F. arrangement, with a pentode giving about 2½ watts. This set, costing £14 17s. 6d., has the unusual feature of provision for short-wave (25-75 metres) reception in addition to the normal broadcast band. Reception of short waves is effected by plugging in a special short-wave coil, which is joined in shunt with the detector grid coil assembly; the H.F. stage then gives a pass-on effect, but no amplification. A moving-coil loud speaker is, of course, included in this set.

Another typical receiver is the "2H.F." model, No. K.-B.320, which is similar, and in which provision for short-wave reception is made in the same way. This set competes with the normal three-valve band-pass type of set, at about the same price, and should be more sensitive.

The six-valve superheterodyne, which again covers short waves, is the most ambitious Kolster-Brandes set, and at the other

end of the scale there is a little self-contained two-valve battery set at £3 15s. complete.

Kolster-Brandes, Ltd., Cray Works, Sidcup, Kent.

LAMPLUGH. (99)

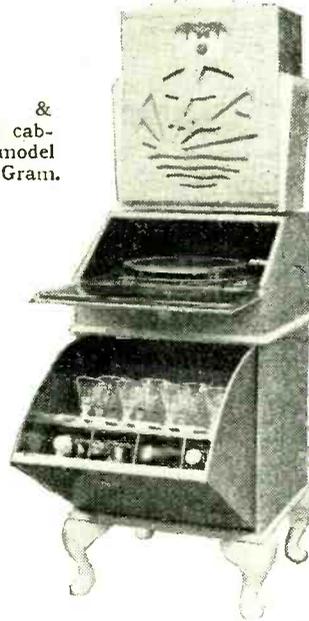
The "Silver Ghost" permanent-magnet moving-coil loud speaker at 42s. is the star exhibit of this firm. The magnet is of exceptionally generous proportions, and a large-scale model showing the construction occupies a prominent position on the stand. An energised version, known as the Lektro-Mag, at 34s. is also shown. These prices include a three-ratio output transformer, and special matched pairs are available at £3 10s.

Another new model is the "Junior" P.M.M.C. at the competitive price of 29s. 6d., and the Lamplugh inductor chassis is being continued at £2 10s.

S. A. Lamplugh, Ltd., 89, Little Park Street, Coventry.

LAWSON & RAPHAEL. (270)

This stand is devoted exclusively to special pedestals for converting the popular type of self-contained all-electric set to a radio-gramophone. B.T.H. pick-ups and Garrard motors are standardised, and the cabinet work is of high quality. There are three main types, the Table model at £8 15s., the Standard model at 10 guineas, and the Cabriole at 13 guineas. The latter, with the



Lawson & Raphael cabriole model Bureau-Gram.

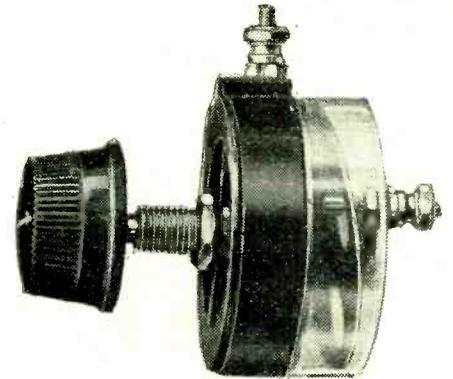
Garrard record-changer, costs 22 guineas, and for 6 guineas extra may be fitted with a cocktail set of good English glass.

Lawson and Raphael, 137, Regent Street, W.1.

LEWCOS. (153)

An extremely interesting new product on this stand is a wire-wound potentiometer, with an ingenious eccentric rocking plate action, in which no sliding contact on the resistance element is made. As a result absolute silence in operation is claimed, and the wear is negligible. This component is made in values of 100,000, 150,000, 200,000, and 250,000 ohms, and sells at 4s. 6d., with a track of constant increment, whilst the log. law type costs 5s. 6d. On all models there is a fireproof transparent dust cover, and much credit is due to the manufacturers for having wound 500 feet of wire (in the case of the 250,000-ohm model) in so small a space. This is the first wire-wound potentiometer of ¼ megohm placed on the wireless market.

There is a new type of high-voltage Glazite wire subjected to a 15,000-volt test. It will not burn or discolour when subjected to high



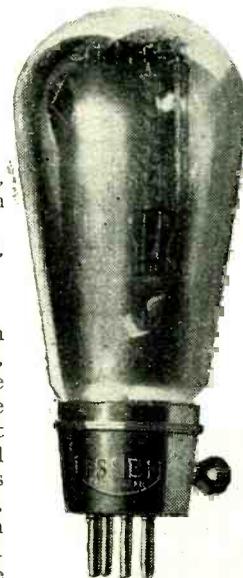
Lewcos potentiometer with rocking plate contact.

temperatures. There are also two new low-frequency transformers of 6 to 1 and 4 to 1 ratios.

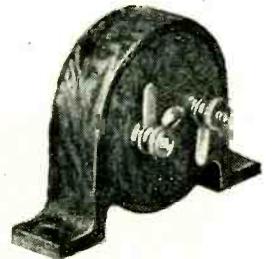
London Electric Wire Co. and Smiths, Ltd., Church Road, Leyton, E.10.

LISSEN. (59)

So large is the range of components shown by this firm that mention can only be made of a few outstanding new products. The anti-break-through choke should be found extremely valuable in the more modest type of receiver installed close to a powerful transmitter. Interference is often experienced on the long-wave range from medium-wave stations, but by interposing the choke in series with the aerial no such trouble is met. The break-through choke must be short-circuited on the medium waveband. There is available this season a centre-tapped output feed choke selling at the modest price of 7s. 6d. for coupling pentode and triode valves to medium-impedance loud speakers; it can also be used for push-pull. Other components of interest are two-ganged and three-ganged shielded coils, complete with wave-change switches. There are a number of new Lissen receivers, and one which should prove popular at 17 guineas is the Band-Pass Mains Three, with moving-coil loud speaker and a power pentode in the output stage.



Lissen AC/PT and anti-break-through choke.



The new Lissen valves include variable-mu models for both A.C. mains and batteries. A three-valve kit called the Skyscraper Three is being exhibited, and sells at 89s. 6d., complete with valves.

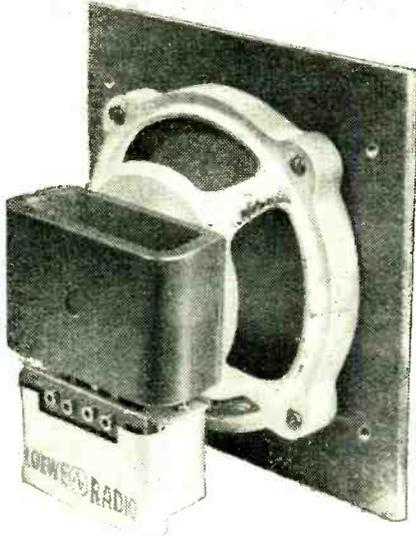
Lissen, Ltd., Worple Road, Isleworth, Middlesex.

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LOEWE. (223)

A complete range of the high-vacuum type resistances which have for long been linked with the name Loewe are shown in addition to two new loud speakers. The PML200 is a permanent-magnet type, fitted with a 6½in. diaphragm, and embodies a three-ratio transformer. In chassis form the price is 47s. 6d.

The other model is described as the "Varitone," for it offers the choice of three different impedance values. Fitted with a reed-type movement and a three-position



Loewe P.M.L. 200 loud speaker chassis.

switch to afford quick changes in the coil impedance, the price is 39s. 6d. in a cabinet.

Loewe Radio Co., Ltd., 4, Fountayne Road, Tottenham, N.15.



Lissen band pass three mains set.

LOTUS. (64)

This firm is showing the Lotus four-valve de Luxe set, which has two variable- μ H.F. stages with three tuned circuits, detector, and pentode output. A metal rectifier is used for the H.T. supply, and electrolytic condensers are employed in the smoothing circuits. A moving-coil loud speaker and a tone control are fitted, and separate dial lights are used for the two wavebands, both coming into action when the switch is set for gramophone. The price is 20 guineas.

A battery three-valve set at 14 guineas includes a moving-coil speaker and the dual dial-lighting feature, while a two-valve mains set is available at 10 guineas, again with M.C. speaker.

A wide range of components is on view, and the completely screened gang condensers, the three-gang model of which sells



The Lotus four valve de luxe receiver.

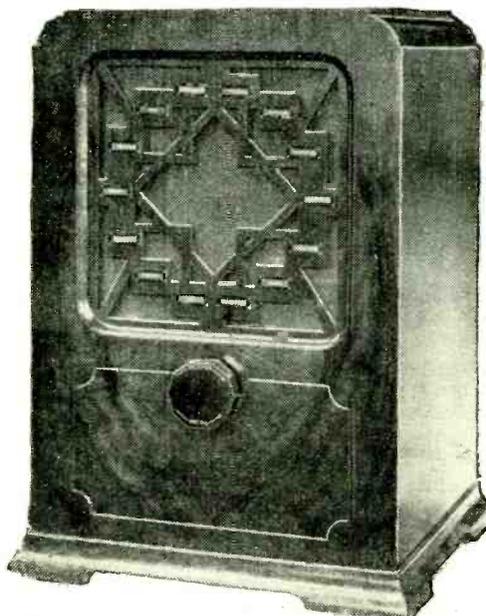
for 29s. 6d., including disc dial, should not be overlooked.

Lotus Radio, Ltd., Mill Lane, Old Swan, Liverpool.

M.P.A. (95)

As illustrative of a tendency that is bound to become more pronounced in the course of time, the M.P.A. Ethatropé is in some respects one of the most interesting sets at Olympia. The basic circuit arrangement may be dismissed in a word by saying that it is a fairly conventional H.F.-det.-2-L.F. arrangement, with an S.G. detector and band-pass input. Interest centres around the tuning system, which is controlled by a multiple switch, reminiscent of automatic telephone practice, which throws across each tuned circuit the appropriate amount of capacity required for any one of twelve pre-determined wavelengths. The condenser, of the air-dielectric type, is tapped, and there is no relative movement of its vanes during the process of selecting a station.

But this is only half the story. The knob which controls the switch, when once set to close the appropriate set of contacts for a desired wavelength, may be rotated to a limited extent in either direction to con-



Automatic station selection: the M.P.A. Ethatropé.

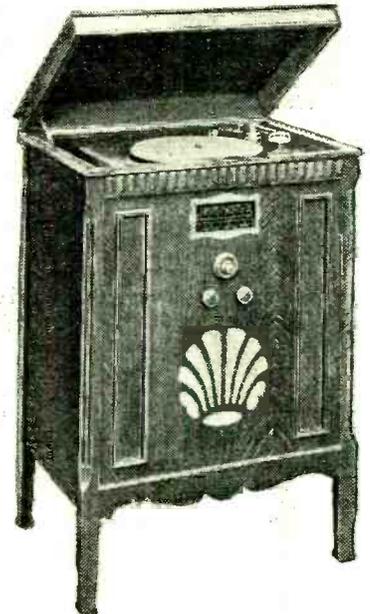
trol volume by altering bias; as clockwise rotation is further increased, reaction comes into play. In fact, every operation is effected by this single knob, which also combines the functions of an on-off, radio-gramophone, and wave-range switch.

M.P.A. Wireless (1930), Ltd., 62, Conduit Street, W.1.

M.R.G. (102)

The range of receivers offered on this stand is based entirely upon two chassis, one using three valves and one using four, both being mains-driven. The three-valve chassis has a variable- μ H.F. stage, controlled by a twin-gang condenser, followed by a power detector resistance-coupled to a pentode. A trimmer is provided on the back of the set for adjusting the aerial capacity to that required for correct ganging.

In the four-valve chassis there is a band-pass input, followed by two variable- μ stages, power detector, and pentode, the whole making a powerful and sensitive receiver.



M.R.G. "Console-Three" radio-gramophone.

As table models, the sets are priced at 14 and 22 guineas respectively, but are also available as radio-gramophones or with an electric or ordinary clock in a vertical cabinet of "grandfather" type. The 4-valve set is made for D.C. or A.C. mains.

Mains Radio Gramophones, Ltd., Vaughan Street, Bradford.

McMICHAEL. (58)

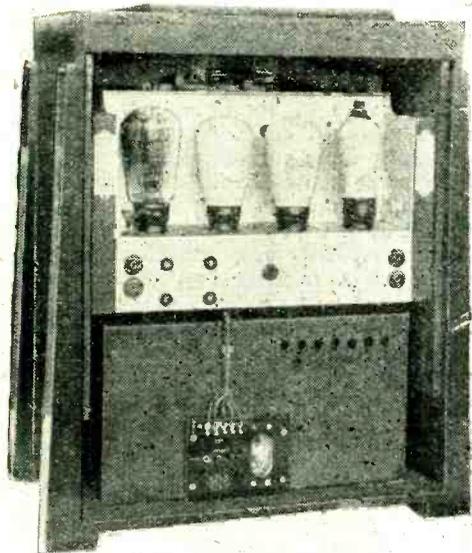
All the new McMichael sets are fitted with the Duplex type of radial tuning scale calibrated in wavelengths. The indicating pointer is coupled to the wave-range switch, and is automatically lifted to the appropriate scale when the switch is operated.

The latest addition to the Duplex range is the "Mains Transportable Four." This receiver has two H.F. stages, the first a tuned screen-grid and the second an aperiodic triode followed by a detector and pentode output valve. The cabinet is of modern design, and is fitted with a frame aerial and a ball-bearing turntable in the base. The loud speaker is of the energised moving-coil type, and the price is 22 guineas.

The enviable reputation enjoyed by this firm for the production of high-grade portables will be upheld by the suitcase and cabinet type Duplex portables which now incorporate automatic grid bias, and are both priced at 17 guineas.

Olympia 1932.—

The latest McMichael radio-gramophone is fitted with a synchronous motor and Magnavox dual loud speakers; the price is 48 guineas.



McMichael Duplex Mains Four.

For D.C. mains the McMichael Mains Three is being continued, and may be obtained with moving-coil loud speaker for 24 guineas, or without for 20 guineas. The "Battery Three" will also be available at 14 guineas, and the Colonial Supersonic short-wave set with interchangeable coils is continued at £15.

All the above sets are notable for the clean appearance of the interior, and the standard of workmanship is better than ever.

The only component on view is the binocular H.F. choke at 4s.

L. McMichael, Ltd., Wexham Road, Slough, Bucks.



McMichael Type C cabinet portable.

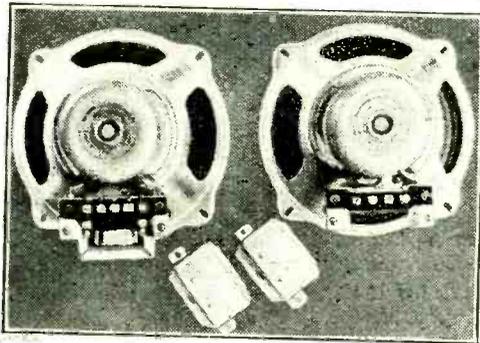
MAGNAVOX. (24)

The outstanding exhibit is the dual-compensated speaker assembly, which is undoubtedly an important contribution to the technique of faithful reproduction. The advantages of mounting two loud speakers of slightly dissimilar characteristics close together on the same baffle board are manifold, the most important of which are as follows: There is an increased efficiency in bass and middle registers; better quality results from levelling the peaks and valleys in the upper register, and an improved power-handling capacity is achieved due to the mutual shunting of speech coils in

parallel. The dual assembly containing two DC144 speakers sells, complete with transformer, at the modest price of £3 12s. 6d., and is capable of handling without distress up to 12 watts A.C.

There are a number of single speakers being shown, notably the DC142 type L with a field resistance of 2,500 ohms, selling at £2 15s. A slightly smaller speaker with a 7in. cone, called the DC144, retails at £2 10s., with a field winding of 2,500 ohms, while the price of the 7,500-ohm model is priced at £2 12s. 6d. All Magnavox loud speakers are supplied with a hum-bucking coil wired in series with the speech coil.

Magnavox (G.B.), Ltd., 89, Kingsway, W.C.2.



Magnavox dual-compensated speakers.

MANUFACTURERS' ACCESSORIES CO. (237)

The "Maco" dry-charged accumulator cells, of 20- and 45-ampere-hour capacity (intermittent rate) are offered here at 3s. 4d. and 6s. 6d. respectively with metal carriers. "Standard" capacity H.T. batteries are also offered at attractive prices.

The firm is primarily a wholesaler, and shows a wide range of sets and components by all makers.

Manufacturers' Accessories Co. (1928), Ltd., 85, Great Eastern Street, E.C.2.

MARCONIPHONE. (74)

Although some of last year's sets are retained, the Marconiphone exhibit for this season may be regarded as almost entirely new. The three-valve general-purpose A.C. set, for instance, bears little resemblance to its earlier prototype, and it is stated that the performance has been greatly improved; this is probably due to the use of more efficient coils. The set has band-pass input, and is of the popular self-contained type with a moving-coil speaker and an MPT.4 pentode output valve. An indicating pointer is automatically transferred to the appropriate section of the illuminated wavelength scale by operation of the change-over switch.

The superheterodyne portable is an entirely self-contained set with a frame aerial and a built-in balanced armature loud speaker. The six valves function as: signal frequency H.F. amplifiers; first detector; oscillator; I.F. amplifier; second detector; output. The last-mentioned valve is a P.T.2 high-efficiency pentode, which accounts for the low total anode consumption of 10 mA. There is automatic bias and complete decoupling, with the result that the set is said to be capable of continuing to function stably, but at reduced volume, even when the H.T. battery voltage has dropped to less than half its initial value.

Another interesting battery set, which

should do much to appease those without mains who claim that they have been neglected, is the new three-valve battery set with an H.F.-det.-L.F. circuit with band-pass gauged tuning.

The most ambitious Marconiphone chassis, a six-valve superheterodyne, is available either as a cabinet set or in radio-gramophone form, with automatic record changing. In the order given, the valves are: variable-mu H.F. amplifier; screen grid detector; triode oscillator; variable-mu I.F. amplifier; triode second detector; triode (P.X.4) output. A variable tone control operates by attenuating the upper register, and so is particularly suited for the elimination of heterodyne interference or needle scratch. The record changer has been improved since last year, and now plays any number of records up to the maximum of eight without an initial setting.

The Marconiphone pick-up is sensibly as before, but screened connecting leads have wisely been substituted in place of the original terminals.



Marconiphone table model superheterodyne.

Marconi valves have been generally improved to give greater consistency, and in some cases higher efficiency. New valves comprise the V.S.2, a 2-volt battery-fed variable-mu H.F. valve; the P.X.25, a high-power output valve with a 2 amp. 4-volt filament for direct heating, an anode dissipation of 25 watts, and a mutual conductance of 7.5; lastly, there is a new high-power pentode of corresponding type.

Marconiphone Co., Ltd., 210-212, Tottenham Court Road, W.1.



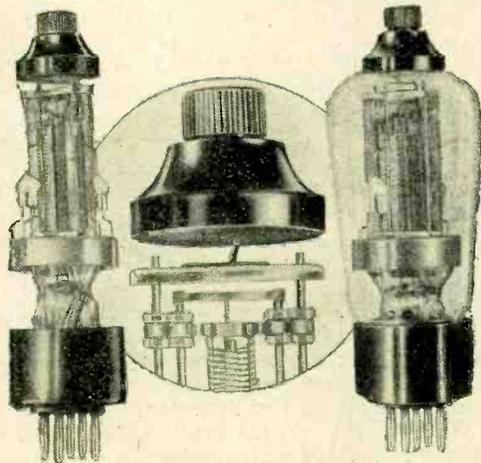
Marconiphone automatic radio-gramophone.

Olympia 1932.—

MULLARD. (79 & 248)

This stand is entirely devoted to valves, the large range of which has been added to this season. Research has been directed towards the elimination of all microphonic noise by a form of rigid unit construction now being embodied in nearly all the valves manufactured. There are a number of large-scale models of electrode assemblies being shown which clearly demonstrate the ingenious bonding of anode, grid and filament.

A new screen grid valve styled the P.M.12A has been developed especially for portable sets where the size of the H.T. battery is perforce somewhat limited. This valve will give a satisfactory account of itself with an anode voltage of 100, a screen voltage of 70, and zero grid bias. The PM1.HL, which has gained for itself a high reputation as a detector, has been redesigned, and is capable of giving a good rectified output with only 20 volts H.T. The Mullard Radio Valve Company were early in the field with variable-mu valves; interest therefore attaches to the VM4V—a newcomer in this class with a mutual conductance of 1.2 mA/volt. There is another valve of this type designated the MM4V, which has a considerably higher slope and is especially useful in receivers with only one stage of H.F. amplification. A low consumption pentode—the PM22A—makes its appearance this season, and should put up an excellent performance in portable and other receivers where only 100 volts H.T. is available. It is capable of giving a large undistorted output when the anode current is but 4½ mA. The keen student of design will welcome the new 904V, which has lately been reviewed in *The Wireless World*. As a detector it imposes a negligible low load on the preceding tuned circuit owing to the exceptionally low interelectrode capacity between anode and grid. Another valve which is already being adopted as standard by a number of set manufacturers is the directly heated pentode called the PM24M. A voltage of 250 can be applied to both anode and screen, and the satisfactory output of 3 watts A.C. for 7½ watts D.C. anode dissipation is



Showing the new rigid unit construction of Mullard valves.

obtainable. There is a new battery variable-mu valve for 2-volt sets called the PM12V, which should provide an efficient form of volume control with economy of components.

Mullard Wireless Service Co., Ltd., Mullard House, Charing Cross Road, W.C.2.

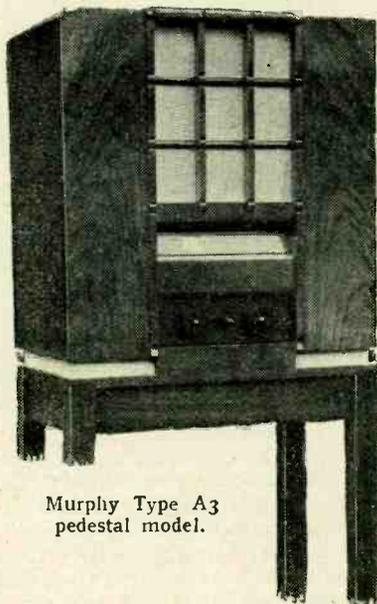
MURPHY. (28)

In accordance with the conservative policy of this firm the existing A3 all-electric

receiver and the type B4 battery portable are being continued with minor modifications. The portable costs 15 guineas, and is now supplied in a cabinet of more modern design, while the standard A3 has been reduced in price to 17 guineas.

A de luxe version of the A3, to be known as the Pedestal A3, is supplied with a wider cabinet and a neat pedestal stand. The chassis in this model has been improved in detail—notably in the design of the band-pass tuning circuits—and the price is 19 guineas.

The new type A8 superheterodyne completes the range of Murphy receivers. It is housed in a modern cabinet of pleasing proportions, with the controls at the front and the tuning scale window let into the top of the cabinet. The circuit comprises eight valves, plus a rectifier, and there are no less



Murphy Type A3 pedestal model.

than ten tuned circuits. An outstanding feature is the employment of a double-diode second detector in conjunction with automatic volume control. The circuit is arranged as follows: S.G. pre-detector H.F.—S.G. first det.—two S.G. I.F. stages, with band-pass coupling—double-diode second detector, with volume control to pre-detector H.F. and I.F. stages—S.G. first L.F.—power pentode output. Variable-mu type valves are used in all S.G. stages. The mounting of the gang condenser on rubber to prevent microphonic effects is typical of the thought which has been put into the development of this set. The price will be 30 guineas.

Murphy Radio, Ltd., Broadwater Road, Welwyn Garden City, Herts.

NATIONAL RADIO SERVICE. (200)

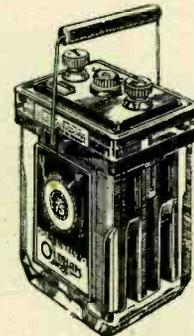
This is a specially organised central repair depot, the scope of operations of which will be confined to the repair or reconstruction of all types of receivers and radio-gramophones, to the assembly of kits of parts which have been purchased by private individuals, and to the giving of technical advice. Repairs to loud speakers, meters, and pick-ups, as well as other delicate instruments, are undertaken.

National Radio Service Co., 15-16, Alfred Place, W.C.1.

OLDHAM. (85)

Slight changes have been effected in the design of the "Lively O" series of L.T. cells. A new moulded lid is now fitted, on which is provided a card for the owner's

name as an aid to identification at the charging station. The inclusion of a small captive float is a useful feature, since this gives visual indication of the state of charge in the cell.



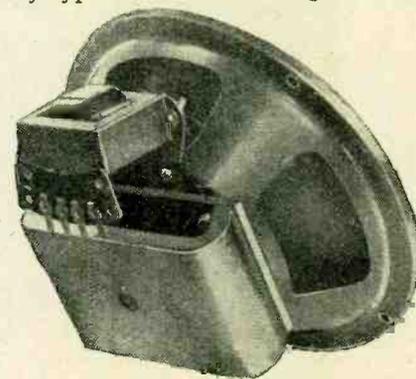
Oldham slow discharge cell embodying a small captive float.

H.T. accumulators form an attractive source of anode current when there are facilities for charging, and as an alternative there is, of course, the "Lively O" dry cell.

Oldham and Son, Ltd., Denton, Manchester.

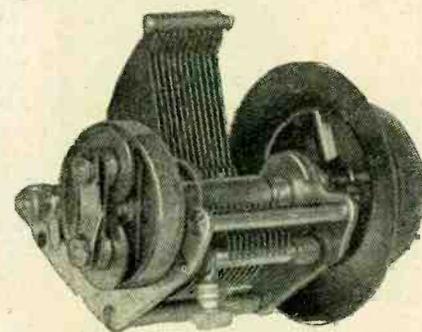
ORMOND. (87)

A range of components covering a large proportion of the needs of the set-builder is on view at this stand. The logging drum dial illustrated in last week's issue, with which station names can be written as found in a space at the side of the scale, is likely to find many users. Tuning condensers of many types are offered, among which is an



Ormond permanent-magnet moving-coil speaker Model R/475.

improved model of the No. 6 multi-gang condenser and a small brass-vane condenser bearing a slow-motion drive, of ratio 55 to 1, of the type formerly used on this firm's well-known square-law condenser introduced some half-dozen years ago. This sells at the modest price of 7s. 6d. complete with dial, or without slow-motion drive at 4s.



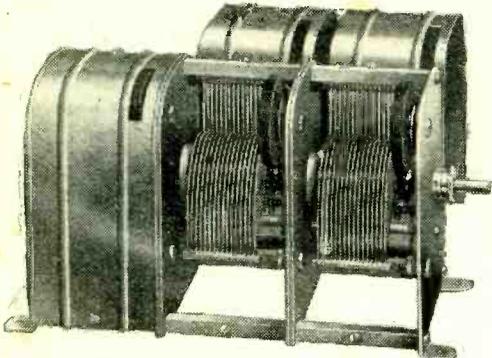
New Ormond condenser with 55 to 1 reduction gear.

Several moving-iron speaker units can be had, and attention is especially drawn to Model R/450 Z, which is wound to match the modern low-consumption high-efficiency pentode. This at 12s. 6d., with a cone and chassis at 5s. or 9s. added, makes a very

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satisfactory instrument at a very moderate price.

Small moving-coil speakers are also offered, there being a permanent-magnet model at 38s. 6d., and an energised model at 30s.,



Ormond No. 6 three-gang condenser.

the price in both cases including input transformer.

Solid-dielectric condensers of all capacities, with both semi-circular and long-lam vanes, can be had for less than half-a-crown each, while for circuits in which critical control of reaction is required there is a differential condenser of solid dielectric type to which is fitted a slow-motion drive of ratio 9 to 1.

Ormond Engineering Co., Ltd., Ormond House, Rosebery Avenue, E.C.1.

OSBORN. (32)

All the cabinets made by this firm are supplied either machined ready to assemble, assembled ready to finish, or assembled and polished. Part of the stand is set off as a cabinet-maker's shop to demonstrate the ease with which the machined parts can be put together by the amateur.

Chas. A. Osborn, The Regent Works, Arlington Street, N.1.

OVERSEAS TRADING CORPORATION. (291)

The chief exhibit on this stand is a playing desk called the "Adapt-o-Gram," which consists of an electric gramophone motor with pick-up suitably housed in a cabinet. The instrument affords a means of converting an A.C. mains receiver to a radio-gramophone without any constructional alteration, and the price is 8 guineas, or, in a more ambitious form to hold a number of records, 10 guineas.

This company also acts as sole wireless distributors of Young accumulators.

Overseas Trading Corporation, 18, Ganton Street, W.1.

PAREX. (238)

A wide range of screens and screening-boxes for all purposes is shown on this stand. In addition the "Nuvolion" energised moving-coil speaker is on view, a special feature of this being that the speech coil and the cone are moulded in one piece.

A range of three 2-volt valves, made by the "All-British Valve Company," and offered at 5s. 6d. in H.F., L.F., and power types, can also be seen here.

E. Paroussi, 10, Featherstone Buildings, W.C.1.

PARMEKO. (67)

"From watts to kilowatts" is the easiest way to describe the comprehensive exhibit of power transformers which are produced by this firm. A study of the list issued shows that almost every conceivable requirement of the wireless and allied trades, as well

as of the radio amateur, is adequately met. Nor must we forget L.F. chokes; although the name of Parmeko is perhaps best known in connection with heavy-duty types, small components for the less-ambitious receiver are also made.

A kit of parts for a two-stage 5-watt amplifier (25 watts dissipation) has recently been introduced. The output stage includes a P.P.5/400 valve, which is coupled by means of a transformer.

Another amplifier, supplied only as a complete unit, which strikes one as particularly serviceable and workmanlike, is the 50-watt type, with four stages, which is suitable for dance halls or cinemas. Suitable public address loud speakers for these amplifiers, including a moving-coil horn model, are now available.

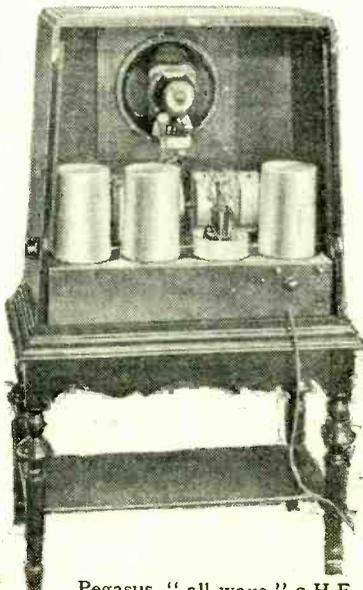
Partridge and Mee, Ltd., 74, New Oxford Street, W.C.1.



Parmeko amplifier kit assembled.

PEGASUS. (94)

Provision for short-wave reception, combined with a thoroughly up-to-date circuit arrangement, makes the Pegasus four-valve A.C. model an exceptionally interesting set. Including the band-pass input filter, there are four ganged tuned circuits, two variable-mu H.F. valves, a power grid detector, and a pentode output valve. The set, of the



Pegasus "all-wave" 2 H.F. set.

self-contained type, covers wave-ranges of 15-50, 200-600, and 750-2,000 metres, and embodies a Westinghouse rectifier and moving-coil speaker.

Pegasus, Ltd., Low Mills, Lower Wortley, Leeds.

PERTRIX. (126)

Several new lines have been added to the already extensive range of dry batteries made by this firm, among them being a 99-

volt and a 108-volt standard capacity (7 to 10 milliamps) battery in the "Yellow Carton" series; these are priced at 9s. and



Petrix accumulator with ball-type charge indicator.

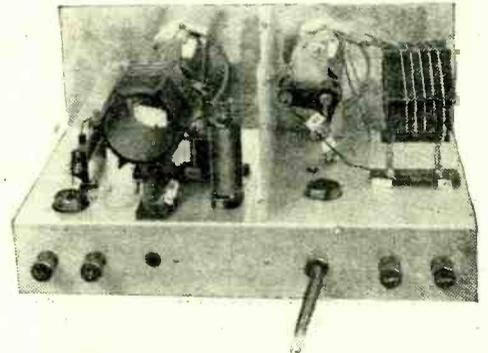
10s. respectively. Prices of older lines have in one or two cases been reduced.

The range of accumulator cells, some of which include a charge indicator, has been extended.

Britannia Batteries, Ltd., 233, Shaftesbury Avenue, W.C.2.

PETO-SCOTT. (247)

It is hardly necessary to record the fact that this firm are specialists in the supply



Peto-Scott 3-valve short-wave kit.

of kits of parts for receivers described in the technical press. A prominent feature is the new "Wireless World" Baby Superhet, which is being shown in course of construction.

Besides these sets, a series of short-wave receiver kits is being sponsored by the Peto Scott firm. Four models, ranging from a simple detector-L.F. combination to an H.F.-det.-L.F. set, are fully described in a booklet available on the stand. In view of the imminent inauguration of the new B.B.C. short-wave service, these sets should attract a great deal of attention.

With regard to the normal broadcast wavebands, three constructional envelopes (and kits of parts) are issued. What will probably be the most popular model is an H.F.-det.-L.F. three-valve set for mains operation, with a moving-coil loud speaker and a horizontal tuning scale.

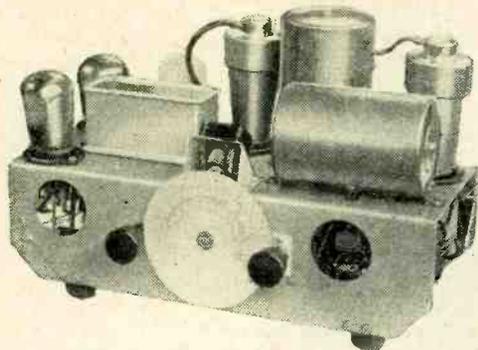
Peto-Scott Co., Ltd., 77, City Road, E.C.1.

PHILIPS. (104)

There are many features of outstanding interest in the Philips sets introduced this season. In all models a new type of screened coil known as a Super-inductance is em-

Olympia 1932.—

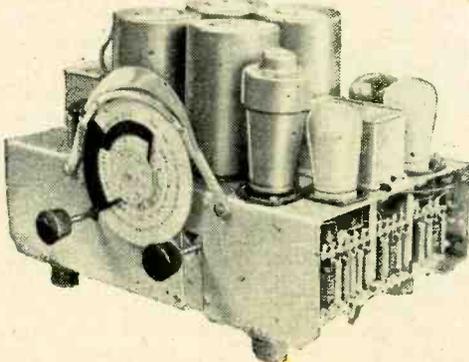
bodied, comprising a glass former having a winding of wire containing fifteen strands. These inductances are tuned by a ganged condenser of diminutive proportions in which each unit is no larger than a match box and the air gap between rotor and stator vanes is only one-fifth of a millimeter. It is claimed that the dynamic resistance of 500,000 ohms is so high that the selectivity equals that of a superheterodyne. The range of receivers includes a series known as 830, with a model for A.C., D.C., and batteries; there is also a radio-gramophone for A.C. mains, using the 830 chassis, called the 870A. The battery receiver has an entirely new feature which should make for strict economy in H.T. current. There are



Philips 830A receiver chassis for A.C. mains.

four valves functioning in the normal way in the receiver and a fifth—acting as a diode detector across the speaker—so biases the pentode output valve that when no modulation of the carrier wave is taking place the current is limited to 5 mA. With deep modulation the current may rise momentarily to 15 mA.

A remarkable performance, as regards selectivity and sensitivity, is claimed for the 630A receiver, for not only is the aerial coupled to the first screen-grid valve by band-pass filter, but also the same type of coupling is used to the second screen-grid valve. The third coupling, which directly precedes the detector, is semi-aperiodic, and arranged to peak at 600 metres and 2,000 metres on the medium and long waves respectively. By this means a compensation is effected for the natural drop in dynamic resistance which takes place at the upper end of the waveband. An extremely ingenious tuning control has been devised for this receiver. There is an illuminated micrometer dial with two separate scales; one is calibrated in wavelengths and is sub-divided into ten equal divisions, each indicated by a separate letter. A second scale is sub-divided into 100 equal parts and is so geared that the wavelength scale is virtually divided into a thousand parts, with the result that the tuning dial has an equivalent length of 5 feet. On this dial the trans-



Philips 630A chassis showing micrometer dial.

missions of London Regional and Mühlacker become tuned no fewer than 10° apart. The waveband change is effected by pulling out the tuning dial and a shutter is arranged to obscure the band not in use. This set, which should prove one of the most interesting at the Show, is self-contained with moving-coil loud speaker, and retails at 23 guineas.

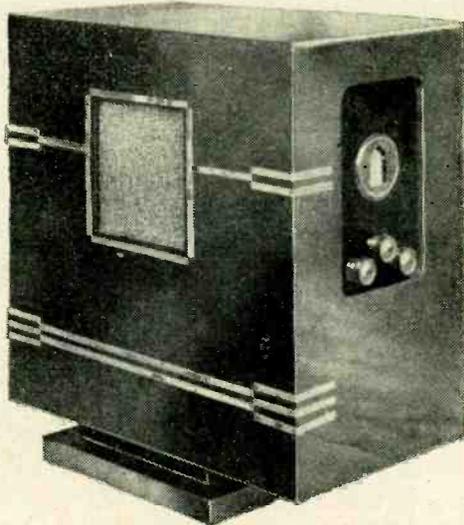
A comprehensive range of mains rectifying valves is being exhibited.

Philips Lamps, Ltd., 145, Charing Cross Road, W.C.2.

PHILOMEL. (279)

This firm exhibits a three-valve chassis, available as a simple set in either of two types of cabinet, or as a radio-gramophone. The circuit is of the screen-grid-detector-pentode type, tuning being carried out by a twin-gang condenser. In the radio-gramophone the screen-volts control is ganged to a potentiometer across the pick-up, so that the same knob serves as volume control both for radio and gramophone.

Philomel Radio Equipment, Pickering Street, Loose, Maidstone.



Philomel three-valve set in modern type of cabinet.

PIX. (43)

A range of valves, both battery and mains types, will be found on this stand, in addition to a number of components. One of the most useful of the latter is the Invisible Aerial for indoor use.

The Pix-Crossley seven-valve superheterodyne is also being shown, and is listed at 20 guineas.

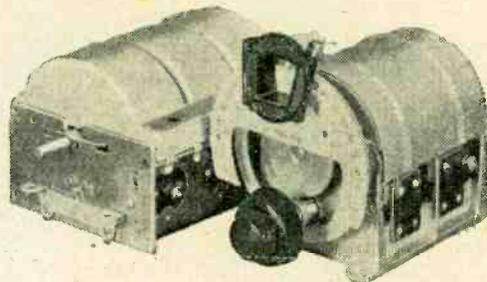
British Pix Co., Ltd., 118, Southwark Street, S.E.1.

POLAR. (129)

The Uniknob two-gang condenser introduced on this occasion last year has been slightly modified, and in its new form is fitted with a dust cover and a mica dielectric trimming condenser across the front section, this being adjusted from the panel as before. The price has been reduced, and is now 19s.

A new range, known as the "Star" series, makes its appearance for the first time. These are assembled in cadmium-plated steel frames with each section fully screened and fitted with a separate cover. The small trimmers are mounted so that adjustments can be made from the top, and the individual sections are matched to within very close limits. Fitted with three 0.0005 mfd. condensers, the price is 25s. 6d., and a four-gang model costs 34s.

The "Star" series includes also a superheterodyne model in which the stator of one section is fitted with plates shaped to give correct tracking with the pre-selector circuits when used with a 110 kc. I.F. amplifier. The price of this model is 27s. 6d.



Polar Star three-gang condenser and Uniknob fitted with dust cover.

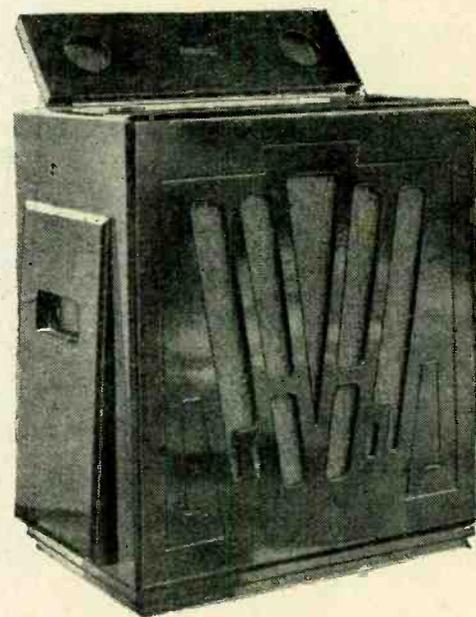
It will be noticed that a new drum drive fitted with a moulded escutcheon and a small lamp bracket is now available at the price of 7s. 6d., and that certain models in the Polar range have been omitted this year. But the more popular types are continued without change.

Wingrove and Rogers, Ltd., Mill Lane, Old Swan, Liverpool.

PORTADYNE. (56)

This firm is concentrating on three cabinet-type self-contained receivers and a suitcase portable. The latter is known as the "Atlantic," and employs a four-valve circuit with one S.G. H.F. stage, the price being 12 guineas.

The model A.C.3 mains receiver with a straightforward S.G.-det.-pentode circuit and energised moving-coil loud speaker costs 17 guineas. The "Challenger" and Model B.M.C. receivers are battery-operated and are priced at £12 17s. 6d. and 14 guineas respectively. Both employ S.G.-det. 2 L.F. circuits, but the B.M.C. is fitted with a pentode output valve and moving-coil loud speaker.



Portadyne model B.M.C. battery receiver.

All the above models are fitted with the Portadyne instantaneous tuning device.

Portadyne Radio, Ltd., Gorst Road, North Acton, N.W.10.

POWERTONE PRODUCTS. (229)

Two well-finished suitcase portables—the Powertone Screen Grid Four at 8 guineas

Olympia 1932.—

and the Super Selective Five at £6 19s. 6d. —are the principal products of this firm. A portable gramophone-playing desk with Garrard spring motor and Harlie pick-up at £3 19s. 6d. is also shown.

Powertone Products, 88, Cromer Street, W.C.1.

PRIMUSTATIC. (15)

In addition to the well-known standard Primustatic loud speaker, a new "Super" model also working on the electrostatic principle is shown, the price being 3 guineas. The foil electrode is divided into two halves, and in one type, provided with uniform holes, the loud speaker may be used after a push-pull output.

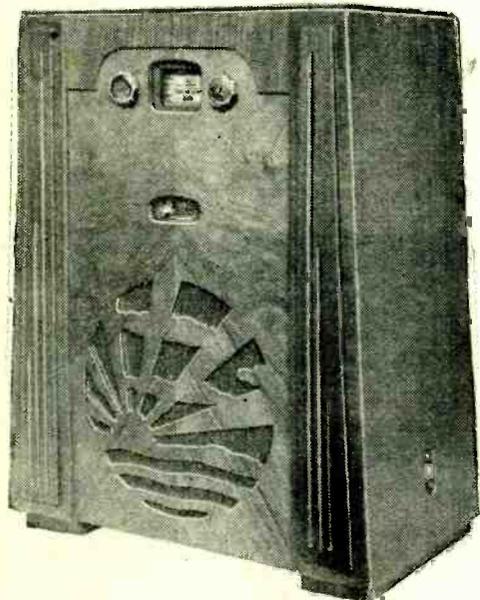
The "Dynamostatic" loud speaker mentioned in the forecast is not yet ready, but information regarding the combination of the Primustatic with existing moving coils is available.

The remainder of the stand is devoted to a display of Koh-i-Noor H.T. batteries.

Primus Manufacturing Co., Primus House, Willow Street, E.C.2.

PYE. (80)

In addition to the Model G receiver, anent some details were given in our Olympia Show Guide last week, there are three other new receivers now included in the Pye range. One is a six-valve superheterodyne, in which the screen grid first detector is preceded by an H.F. stage, and an inductively coupled band-pass input filter. Variable-mu valves are used in the predetector H.F., as well as in the I.F. amplifier, and a pentode valve provides a



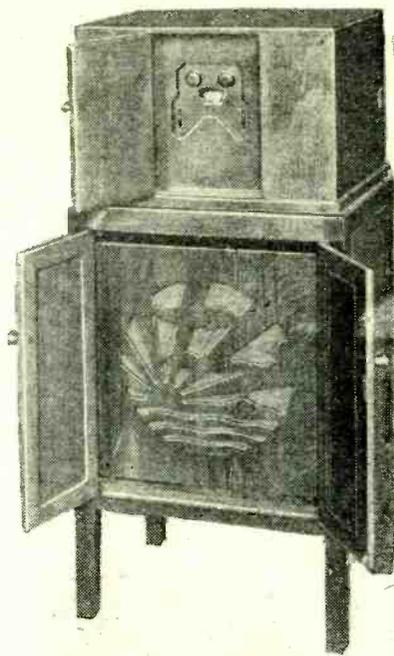
Pye six-valve superheterodyne for A.C. mains operation.

generous output for the built-in moving-coil loud speaker. Compensation is applied to the L.F. amplifier.

The controls are neatly arranged and few in number, while tuning is facilitated by calibrating the dial in wavelengths as well as with the names of the principal broadcasting stations. Provision is made for using a gramophone pick-up, and, housed in a cabinet designed and finished in the manner distinctive to all Pye products, the price is 27 guineas.

A particularly useful feature of the "Schools Receiver" is that it can be closed and locked to prevent unauthorised persons tampering with the controls or obtaining access to any part of the set. It is mains

operated and employs four valves, two of which are H.F. amplifiers. The permanent-magnet-type moving-coil loud speaker is mounted in a separate case, housed nor-



Pye "Schools Receiver," in which the loud speaker is a separate unit.

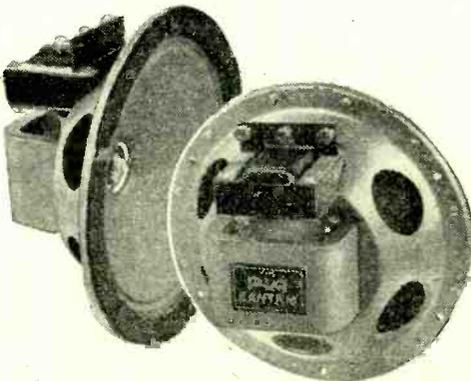
mally in a special compartment in the lower portion of the cabinet, so that it can be removed and placed in a more convenient position if necessary. The price of this model is £37 10s.

There is a compact two-valve A.C. mains set, the Model K, embodying a det.-L.F. circuit, and costing 12 guineas complete. It is quite up to date in design and includes a band-pass filter.

Pye Radio, Ltd., Paris House, Oxford Circus, W.1.

R. & A. (69)

Two new permanent-magnet moving coils are shown by this firm. The "Victor" is a de Luxe model of unusually rigid construction, fitted with a double frame and an artistic protective metal grille. An unusually wide range of matching is provided by the six-ratio transformer, which gives effective loads from 850 to 15,000 ohms. The price is 70s.



R. & A. "Bantam" P.M. moving coil.

The new "Bantam" is a competitive model which sells at 27s. 6d. complete with three-ratio transformer.

The well-known "Challenger" moving coil and the type 40 and 50 differential armature reproducers are continued.

Reproducers and Amplifiers, Ltd., Frederick Street, Wolverhampton.

R.C. RADIO-ELECTRIC. (222)

A new hand-type microphone, with an adjustment for sensitivity, is the most recent addition to this firm's range of useful accessories. Other items of interest comprise electric soldering irons and cage aerials.

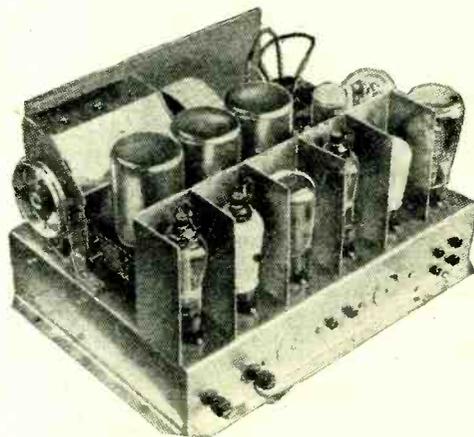
R.C. Radio-Electric, Ltd., 51, Whitcombe Street, W.C.2.

R.G.D. (92)

Although the R.G.D. sets retain their individuality from year to year, subtle changes and minor improvements are always being introduced, with the result that we have come to expect, almost as a right, new features of outstanding merit.

The new Type 701 chassis seems to be even more intriguing than its more ambitious companion; excluding the rectifier, there are a total of six valves, arranged as follows: variable-mu signal-frequency amplifier; S.G. first detector; oscillator; variable-mu I.F. amplifier; anode bend second detector; output valve. On the radio side, the volume control functions by changing the bias of H.F. and I.F. valves simultaneously.

This instrument, unlike the model 901, functions with a single loud speaker, and here we come to the most interesting feature of the design: tone correction for the inevitable falling-off, even in the best of



Chassis of the R.G.D. Model 701.

loud speakers, at each end of the frequency scale. To compensate for this the upper register is "boosted" by the insertion of an air-cored choke in series with the resistance which serves to couple the second detector to the output valve. Similarly, accentuation of the bass is provided by using an iron-cored choke in place of a grid leak for the output valve; this choke is tuned to resonate at a frequency just above the natural periodicity of the cabinet.

The net result of this double correction is an output curve which rises at each end; the extent of the rise is determined to suit the characteristics of the loud speaker. This scheme of correction has nothing in common with the system in which deliberate side-band cutting in the H.F. amplifier is corrected in the L.F. amplifier; it is devised mainly to overcome the natural limitations of loud speakers.

With regard to other details, it may be stated briefly that the oscillator is tuned by a shaped-plate section of the gang condenser, padding being introduced on the long waves. An output of about 3 watts is provided by a P.P.3/250 valve.

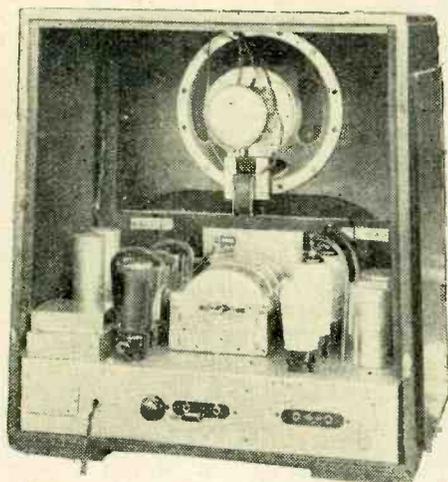
Lack of space prevents a complete description of the Type 901 chassis, of which the push-pull output stage delivers some 6 or 7 watts to a pair of compensated loud

Olympia 1932.

speakers; as the combined characteristics of these two instruments are arranged to avoid the weakness of a single speaker, no correction is needed in the L.F. amplifier. All R.G.D. sets have a manual tone control.

Finally, there is an extraordinarily ambitious 12-valve superheterodyne, which includes the purely "radio" section of the model 701.

Radio Gramophone Development Co., Ltd., 18-20, Frederick Street, Birmingham.



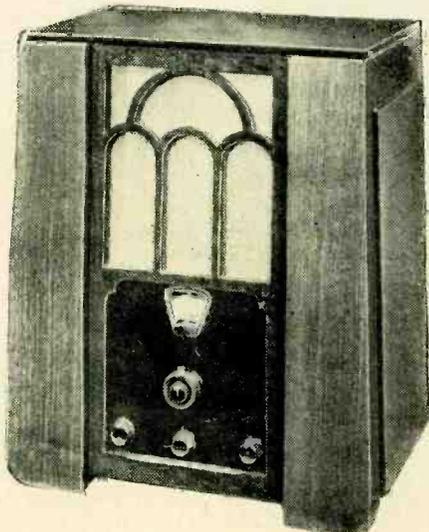
Chassis of the R.I. six-valve superheterodyne.

R.I. (90)

Prominent on this stand is a five-valve superheterodyne, employing a two-valve frequency-changer, one variable- μ I.F. stage, and a triode second detector transformer-coupled to a pentode output valve. A band-pass input circuit is used, and to prevent overloading the second tuned circuit is progressively damped as the bias voltage on the intermediate amplifier is increased. By this means the local station can be received at short distances on a large aerial without deterioration of quality. This receiver sells for 25 guineas complete for connection to A.C. mains.

For 17 guineas can be purchased the Madrigal A.C.3 receiver, which contains one H.F. stage followed by detector and pentode, the coupling between these being parallel-fed transformer. A permanent-magnet moving-coil speaker is used. Tuning is by a twin-gang condenser.

The Anti-nodal short-wave adaptor incorporates several novel features. It consists of a reacting detector circuit, the

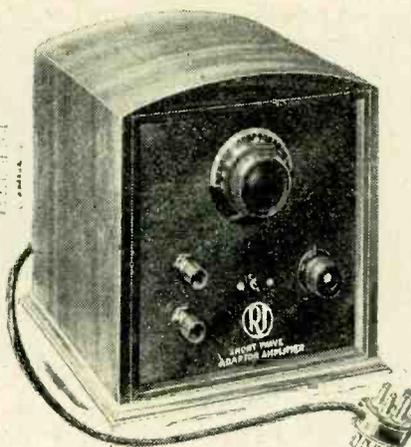


The new R.I. Madrigal receiver.

detector being followed by a parallel-fed transformer, the secondary of which is connected to a special adaptor. This is inserted into the detector valve-holder of the normal set, and the detector valve of that set is then plugged into the adaptor. In this way an extra low-frequency stage is added to the receiver when short waves are being received.

The special short-wave coil used in this adaptor can also be purchased separately; it covers without gaps the range from 12 to 80 metres, and has a special loading coil in the aerial circuit which can be switched in or out as desired. By this means the tuning of the aerial is altered, and the familiar "dead spots" can be avoided.

The "Parafeed" transformer can now be obtained embodied in a complete unit containing also two coupling resistances and a coupling condenser. By making only a minimum of permanent connections within the case the unit has been left adaptable to a large number of different circuit combinations.



Radio Instruments short-wave adaptor-amplifier.

In addition to these novelties, the older components with which the name of R.I. is associated are still available.

Radio Instruments, Ltd., Purley Way, Croydon.

RADIALADDIN. (277)

This firm offers "new sets for old," accepting a second-hand set in part payment for a new one of any make. A small subscription pays for membership of the Radialaddin Club.

Radialaddin, Ltd., 47, Berners Street, W.1.

RADIO SOCIETY OF GT. BRITAIN (242)

On this stand the short-wave enthusiast will find much to interest him, for the latest developments in receiver and transmitter technique are shown. There is a single-valve pentode detector battery set for short waves, also a transmitter with a pentode crystal oscillator giving up to 50 watts and built up entirely of receiver components.

Radio Society of Great Britain, 53, Victoria Street, S.W.1.

RATCLIFF (METALS) LTD. (258)

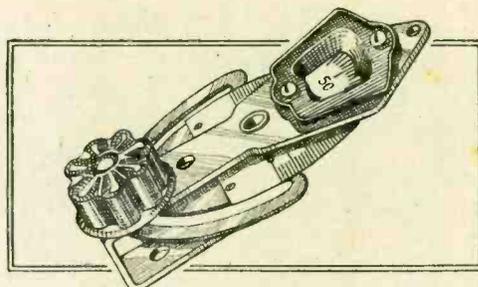
The interest in this stand is confined chiefly to receiver and other manufacturers, since the exhibit consists of a display of metals of all kinds.

J. F. Ratcliff (Metals), Ltd., 21-31, New Summer Street, Birmingham.

READY RADIO. (106)

In addition to an extensive range of small components, of which the new illuminated

disc drive, costing 4s., and an L.F. transformer, priced at 8s. 6d., are especially good examples, this firm is showing two kit sets, the "303" and the "Meteor S.G.3." The "303," priced at 70s., is an exceedingly simple set to build, as there are four components only to assemble, and five wires to connect.



Ready Radio slow-motion condenser drive.

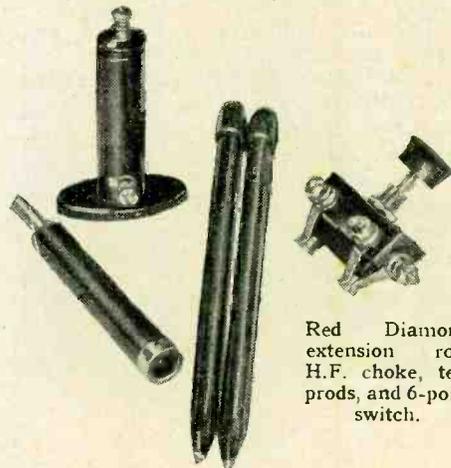
Slightly more ambitious is the Meteor S.G.3 (H.F.-det.-L.F.). Plug-in coils are provided, and it will cover, with suitable coils, the short, medium, and long wavelengths. The constructional work has been simplified by thoughtful design, and the price, complete with valves, is £5 7s. 6d.

Ready Radio, Ltd., Eastnor House, Blackheath, S.E.3.

RED DIAMOND. (97)

A very useful assortment of small turned ebonite fittings are shown on this stand. Among new products are ebonite test prods with metal points and convenient connecting terminals for the test leads; also extension rods for fitting to existing tuning condensers, particularly for short-wave work. Ebonite bushes in a variety of sizes are manufactured, together with lead-in tubes, insulated connectors, and wall plugs.

Jewel Pen Co., Ltd., 21-22, Great Sutton Street, E.C.1.



Red Diamond extension rod, H.F. choke, test prods, and 6-point switch.

REDFERN. (124)

Ebonite in every form is to be seen on this stand. Ribbed coil-formers, slotted or plain, ebonite tubes and rods of all diameters, and slotted formers, complete on bases with terminals, intended for the reception of H.F. choke windings, are the items of most immediate interest to the home constructor and home designer of sets.

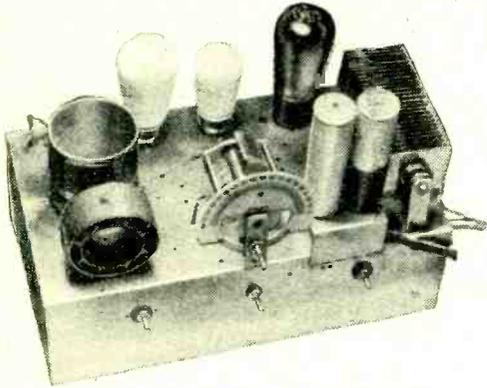
The "Twoside" panel, one side of which is finished in plain glossy black, while the other has a mahogany finish, is a new introduction which should arouse interest, while additions making the total up to twenty have been made to the range of coil-formers.

Redfern's Rubber Works, Ltd., Hyde, Cheshire.

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REGENTONE. (51)

A range of mains receivers is shown on this stand. The Super Three at 16 guineas is a good example of modern design, and the specification includes a variable-mu H.F. stage, detector, and pentode output



The Regentone Straight Three chassis.

to the moving-coil loud speaker. A metal rectifier is used for the H.T. supply, and the whole apparatus is contained in a walnut cabinet. Another three-valve set, the Straight Three, of similar specification, but with the valves arranged as a detector with two L.F. stages, is available at £12. Both sets include provision for using the mains as an aerial. A simple two-valve mains set is listed at £6 15s.

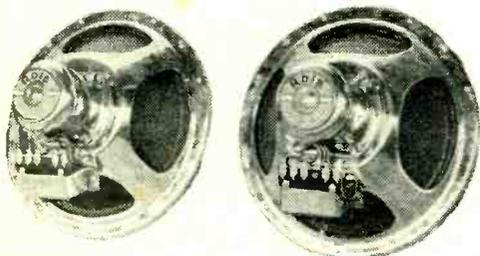
A wide range of mains units is also exhibited, and there are models for both A.C. and D.C. mains. All types have seven voltage tappings, and the output of the model W1A is 150 volts at 30 mA.; it is priced at £3 17s. 6d. A similar unit, but with an L.T. charger supplying ½ ampere at 2, 4, or 6 volts, is available at 5 guineas.

Regentone, Ltd., Regentone Works, Worton Road, Isleworth, Middlesex.

ROBERTS. (272)

Dealers interested in battery charging will find on this stand a new type of unit switch-board, which has many advantages over the conventional type.

John Roberts, 1-3, Bridgwater Viaduct, Knott Mill, Manchester.



British Rola dual matched loud speakers.

ROLA. (45)

A wide range of moving-coil loud speakers is shown on this stand. The type F.5 is fitted with a 6in. cone and priced at 27s. 6d. for the energised models, but at 32s. 6d. for the permanent-magnet type. The F.6 has a 7½in. cone, and is listed at 35s. for the energised types.

A 9in. cone model is now available at 47s. 6d., and 60s. for the permanent-magnet type. All models include a tapped transformer, and the standard field windings have resistances of 8 ohms, 2,000 ohms, 4,700 ohms, and 6,500 ohms.

A special feature is being made of dual matched loud speakers, and these are available in two types. Two matched type F.6

models can be obtained at £3 10s., or a matched pair consisting of one type F.6 and one type F.7 at £4 5s., and greatly improved response is claimed for these.

British Rola Co., Ltd., 179, High Road, Kilburn, N.W.6.

SELFRIDGE. (274)

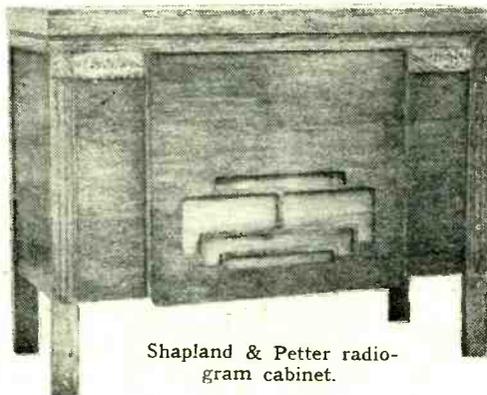
This exhibit exemplifies the service offered to the buying public by the radio department of this well-known store.

Selfridge and Co., Ltd., Oxford Street, W.1.

SHAPLAND & PETTER. (287)

The principal business of this firm is cabinet-making, and the type 167 radio-gramophone cabinet specially designed for dual-unit loud speakers is a very fine example of their work.

The high-grade "Aylesbury-Trouton" moving-iron loud-speaker units are also available for inspection on this stand.



Shapland & Petter radio-gram cabinet.

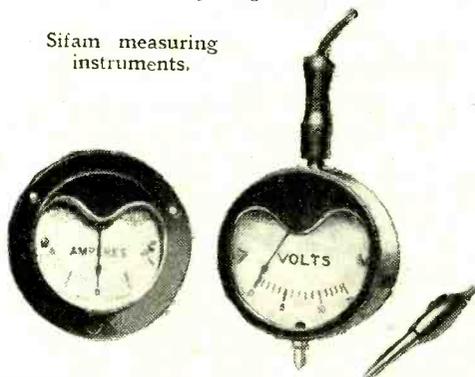
Another attractive exhibit is the type 117 loud speaker incorporating a synchronous clock and a permanent-magnet moving-coil unit.

Shapland and Petter, Ltd., Raleigh Works, Barnstaple.

SIEMENS. (88)

The display on this stand consists almost exclusively of dry batteries and accumulators, the special feature being the "Full-o-Power" H.T. batteries. The construction of this battery is unusual in that the zinc container, which is seamless, has packed into it an exceptionally large amount of the de-

Sifam measuring instruments.



polarising compound on which the life of the battery largely depends.

The "Cadet" and "Standard" batteries are suitable for discharges up to 10 milliamps at most, the "Power" battery may be expected to have a good life when discharged at up to 20 milliamps., while for currents over this and up to 30 milliamps the big "Super-Radio" battery is recommended.

In the latter battery square cells are used so that no space is wasted.

Siemens Electric Lamps and Supplies, Ltd., 38-39, Upper Thames Street, E.C.4.

SIFAM. (289)

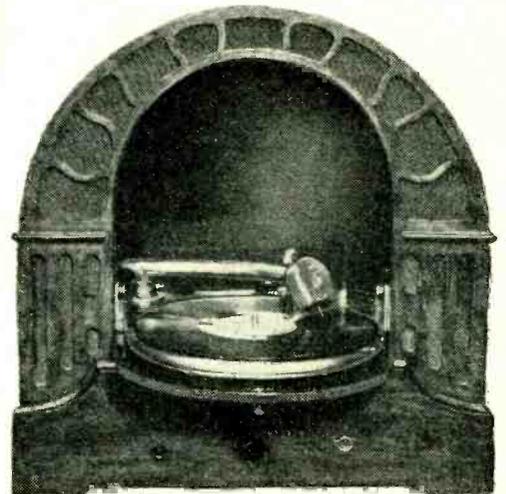
The claim by this firm that they make a meter for every radio-measuring requirement appears to be justified. The portable meters are the most likely to attract the radio enthusiast, for not only are the ranges well chosen, but the prices will undoubtedly suit the slender pocket. For somewhat inaccessible contacts in a receiver an extension testing prod 8in. long with universal connection for any standard plug is being marketed.

There are moving-coil and moving-iron meters for both D.C. and A.C. circuits, and a complete range of fuses, together with single and double-type fuse holders. Various testing sets which are chiefly of interest to the service man are exhibited.

Sifam Electrical Instrument Co., Ltd., York Works, Browning Street, S.E.17.

SIMPSON'S ELECTRICAL. (71)

This stand is devoted almost entirely to the Simpsons Electric Turntable. This is unusual in that the motor is contained within the turntable itself; an extremely compact design of a radio-gramophone is thus possible, for there is nothing to project below



Micro Perophone and Chromogram radio-gramophone cabinet.

the motor board into the cabinet. The turntable is available with either 12in. or 10in. diameter, and the price is 39s. 6d.

The Micro Perophone and Chromogram radio-gramophone cabinet is also shown on this stand. This is of most unusual design, for the gramophone equipment, which includes a Simpsons turntable, is fitted to the drop front.

Simpson's Electrical, Grange Road, Leyton, E.10.

SINCLAIR. (277a)

The outstanding exhibit here is a range of small energised moving-coil speakers, available with four different field windings and with input transformer wound either for a single power valve, for two in push-pull, or for a pentode. All models cost 25s. A permanent-magnet model with input transformer is offered at 39s. 6d.

A three-valve A.C. set, with band-pass input, variable-mu stage, and triode detector coupled to a pentode output valve by a transformer, is priced at £17 17s., including

Olympia 1932—
twin moving-coil speakers and a synchronous electric clock.

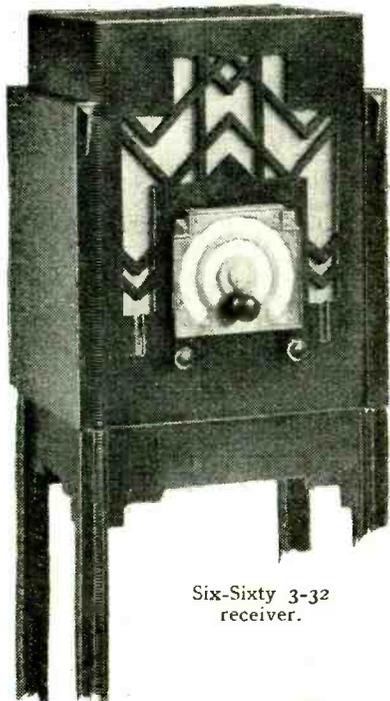
Stafford Sinclair, 21, Kenwyn Drive, N.W.2.



Selections from the range of Stafford Sinclair speakers.

SIX-SIXTY. (52)

A receiver housed in a striking cabinet which at once attracts attention on visiting this stand is the Six-Sixty 3-32 "Chassisset," which is a three-valve battery receiver embodying the latest technique. There is band-pass tuning before the screen-grid valve, which is the new S.S. 218SG. The output valve—the new S.S. 220 Pen, is capable of giving a large undistorted output with quite a small negative bias. An interesting feature is the inclusion of automatic grid bias, which obviates the danger of a damaged output valve when the replacement of a bias battery is forgotten.



Six-Sixty 3-32 receiver.

The volume control is unconventional and comprises a reaction condenser mechanically linked to a variable resistance connected between aerial and earth. The tuning dial is calibrated in stations, wavelengths, and kilocycles, and, instead of a pointer, a narrow beam of light indicates the resonance point.

There is a particularly comprehensive range of Six-Sixty valves on this stand, also

a useful valve tester containing a number of measuring instruments.

Six-Sixty Radio Co., Ltd., 17-18, Rathbone Place, W.1.

SLEKTUN. (205)

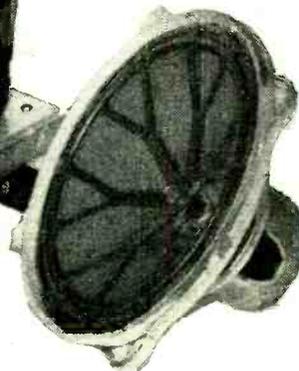
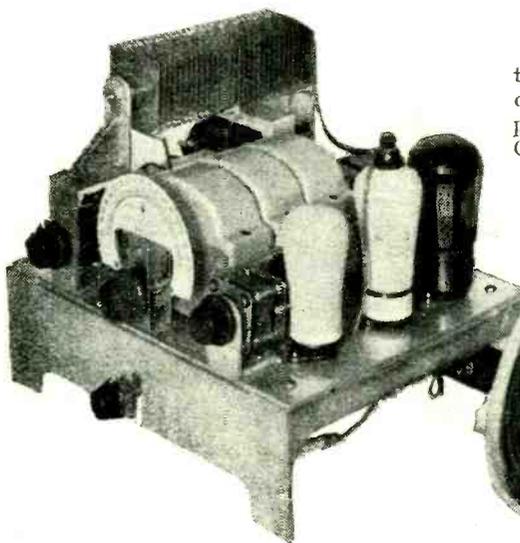
The items of chief interest in the range of components carrying this name are mains transformers, H.F. chokes, and two L.F. transformers at very reasonable prices. The "Super" transformer costs 8s. 6d., and the "Colt" 4s. 9d., and both may be obtained with four alternative ratios.

The recently introduced Hartley-Turner moving-coil loud speaker is also to be seen on this stand.

Slektun Products, 21, Douglas Street, S.W.1.

SMITH RADIO. (251)

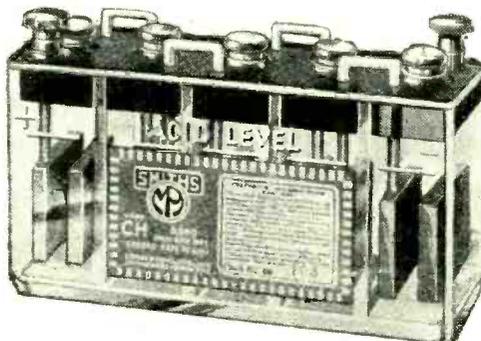
The Loradsa receivers are the feature of this stand, and range from a three-valve straight set to an eight-valve superhetero-



The Smith Radio Loradsa A.C. Three chassis.

dyne. The A.C. Three includes band-pass tuning, power grid detection, and a pentode output of 2½ watts, and is priced at £17 5s. The superheterodyne is of the Stenode type, with variable- μ valves and an output of 5½ watts to the M.C. speaker. An overall frequency response up to 6,000 cycles is claimed, and this Sherborne receiver is priced at 80 guineas.

Arthur Smith (Radio), Ltd., 56, Hazel Road, Kensal Rise, N.W.10.



S. Smith & Sons' 10-volt H.T. unit, type CH.

S. SMITH & SONS. (130)

Although the entry of this firm into the radio field is a recent event, there is a very extensive range of L.T. cells and an adequate selection of H.T. accumulators available. The unspillable range of L.T. cells is particularly interesting, as a special preparation of jelly acid electrolyte is used in conjunction with a novel spray trap. Non-

interchangeable terminals are fitted throughout.

The H.T. batteries are made in 10-volt units, and in 5,000-mA.-hour capacity; known as the CH type, the price of a unit is 6s. 3d.

S. Smith and Sons (Motor Accessories), Ltd., Cricklewood Works, N.W.2.



The Smurthwaite Gramadaptor.

SMURTHWAITE. (22)

This firm specialises in making receivers to special order, and a number of examples of its work are exhibited. A small gramophone record playing desk, known as the Gramadaptor and priced at £6 15s., is shown,

and is of particular interest on account of its very small dimensions.

The Howe box baffle for loud speakers is also on view.

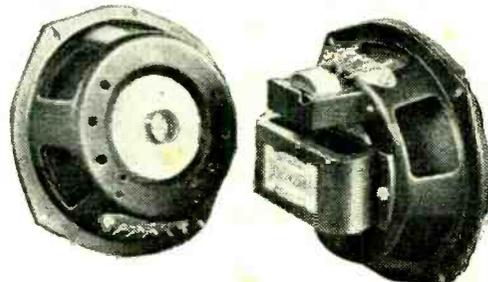
F. W. Smurthwaite, 15a, Onslow Gardens, Wallington, Surrey.

SONOCHORDE. (262)

The moving-coil loud speakers shown on this stand are fitted with an ingenious centring device consisting of a flexible corrugated diaphragm mounted behind the cone apex. Permanent-magnet and energised models are available, and dual-matched speakers of both types.

Other exhibits which will make a visit to this stand worth while are the vertical electric clock cabinets incorporating dual-unit loud speakers and a record changer unit which plays through a set of records on one side, turns them over and then plays the opposite sides in the reverse sequence.

Sonochorde Reproducers, Ltd., 1, Willesden Lane, N.W.10.

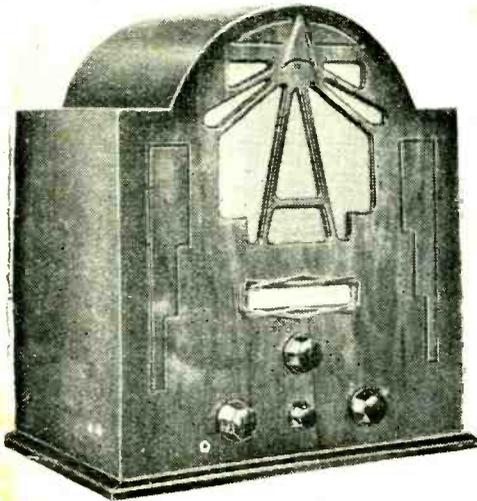


Sonochorde permanent-magnet moving coil.

Olympia 1932.—

SOVEREIGN. (152)

The chief new component offered here is the "Vario-Choke," which consist of an H.F. choke with a pre-set condenser in series with it. Many applications of this combination are suggested.



The Sovereign "Doric" three-valve battery receiver.

The receivers are all intended for battery operation, the "Doric," a screen-grid detector pentode combination with permanent-magnet moving-coil speaker, being offered at 10 guineas. The other receivers are of the detector-L.F.-output type.

Sovereign Products, Ltd., 52-54, Rosebery Avenue, E.C.1.

SPENCER RADIO. (14)

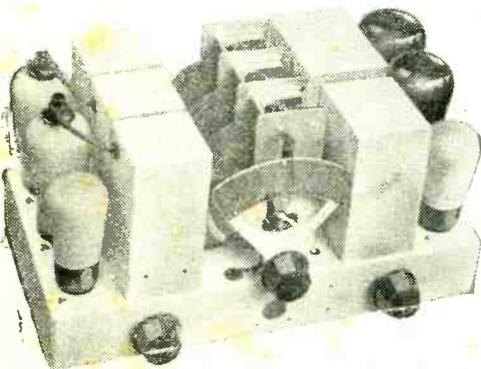
Portable receivers form the chief exhibit on this stand, and the Screen-Grid IV Midget Portable has its valves arranged as an H.F. stage, detector, and two L.F. amplifiers. It is of the suitcase type, and priced at 11½ guineas. A four-valve A.C. set, with a built-in electric clock, is also shown.

Spencer Radio, Ltd., 136, Clerkenwell Road, E.C.1.

STANDARD BATTERY. (26)

In addition to a range of wet H.T. batteries, this firm is showing the Futura 6, a five-valve receiver for A.C. or D.C. mains. Two variable-mu H.F. stages are fitted with three tuned circuits, power detector, and two L.F. stages, and the chassis is characterised by a particularly clean layout.

Rotary converters are shown, the 80 watts model being priced at £11, and the 180 watts at £13 5s., especial stress being laid upon



The Standard Battery Co. Futura 6 chassis.

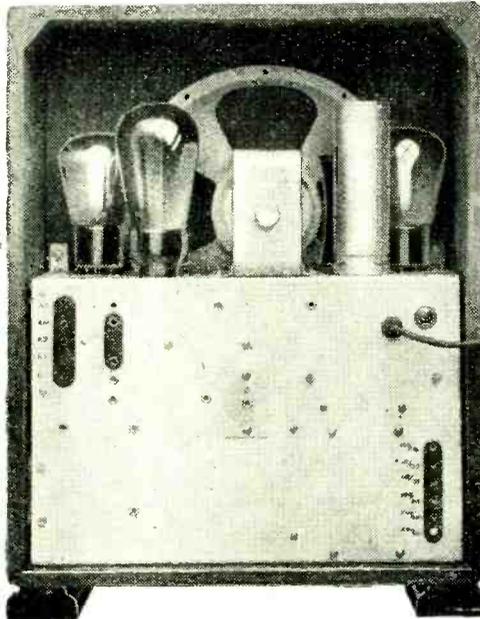
their silence in operation. The well-known Wates meters are to be seen, and a moving-

iron type milliammeter can be obtained for as little as 7s.

Standard Battery Co., 184-188, Shaftesbury Avenue, W.C.2.

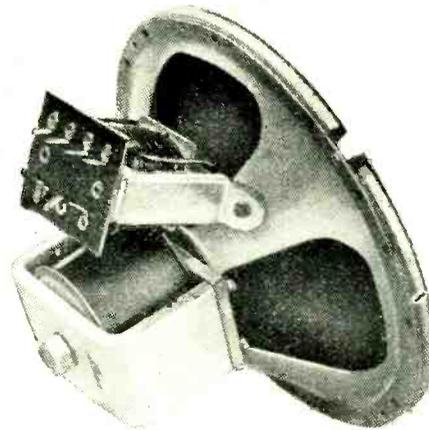
STANDARD TELEPHONES & CABLES. (107)

More than usual interest attaches to the exhibit of this firm in view of their long association with the radio industry. The programme as arranged at present allows for the introduction of four receivers, of which three are available for inspection, a range of moving-coil loud speakers, and the new Micromesh valves.



Chassis of Standard Telephones and Cables' 2-valve A.C. receiver.

The main feature of the two-valve A.C. model is that it covers short, medium, and long broadcast wavebands, but for the short waves a special plug-in coil is required. This can be obtained at a small extra charge.



Standard Telephones and Cables' electromagnetic moving-coil loud speaker chassis.

The circuit employed is a det.-L.F. combination with a pentode in the output stage. H.T. is derived from a full-wave valve rectifier, a moving-coil loud speaker is embodied, and provision is made for gramophone reproduction. It is chassis-built, and the price is £9 10s. complete in a well-made cabinet of pleasing design.

The permanent-magnet loud speaker costs 41s. 6d., and embodies a three-ratio input transformer. Built as an energised model it is available with field windings suitable for 6-volt, 100-150-volt, and 200-250-volt

supplies. The last mentioned costs 37s. 6d.

Micromesh valves are characterised by their exceptionally good mutual conductance values, obtained by very close spacing between the electrodes and the nature of the assembly in general. Detector, power, and mains rectifier types are shown. Attention is directed to the short time taken for the cathode to attain the normal operating temperature, for fifteen seconds only elapse after switching on, and not fifty as stated in error recently in these pages.

Standard Telephones and Cables, Ltd., St. Chad's Place, 364, Gray's Inn Road, W.C.1.

STENIBAC. (256)

This firm is showing a range of cabinets for all wireless purposes. Of particular interest is a radio-gramophone cabinet of by no means small dimensions at the price of only £5; the wood employed is walnut.

Stenibac, Ltd., 303, Essex Road, Islington, N.1.

SUNCO. (231)

Wholesale suppliers to the trade who are showing, in addition to all the well-known receivers, the "Radio-Aid" acoustic amplifier for the deaf.

Sun Electrical Co., Ltd., 118-120, Churing Cross Road, W.C.2.

SWIFT-LEVICK. (112)

A comprehensive exhibit of permanent magnets for moving-iron and coil-drive speakers is shown on this stand. All sizes of magnet, from the large ones that first made the reputation of the permanent-magnet moving-coil speaker down to the tiny magnets that appear to be favoured by most manufacturers to-day can be inspected. In addition, a monster magnet weighing 60 lb. and having 225,000 total lines in the gap is shown, not for sale, but as a technical achievement.

Swift-Levick and Sons, Ltd., Clarence Steel Works, Sheffield.

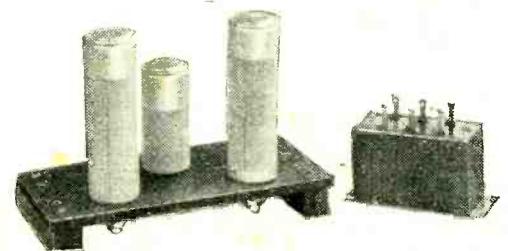
SYLVEX. (260)

A special display is made here of a range of Clarion A.C.-operated receivers and radio-gramophones. The same four-valve chassis, which includes two variable-mu H.F. amplifiers, a screen grid detector and a pentode output stage, is used throughout. Other items in the equipment comprise an energised moving-coil loud speaker, a novel style of illuminated dial, and in the case of one radio-gramophone there is an automatic record changer. The price of this model is 40 guineas.

Sylvex, Ltd., 144, Theobald's Road, W.C.1.

T.C.C. (53)

Sub-divided block condensers which have hitherto only been available to manufacturers are for the first time being marketed



T.C.C. aqueous electrolytic and block condensers.

Olympia 1932.—

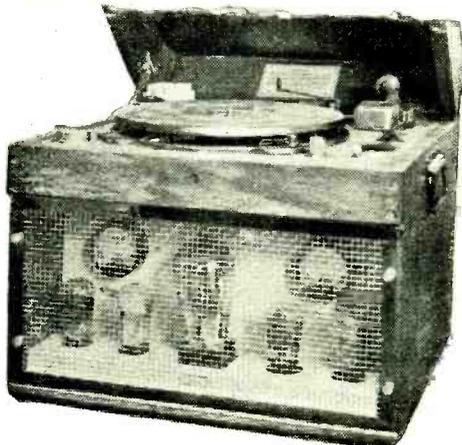
generally by this firm. These condensers effect an economy of space and also considerably simplify the wiring in a mains unit. One model contains 12 mfd. sub-divided into 1 mfd., and a smaller capacity of 0.01 mfd. plus 0.01 mfd., the latter combination being suitable for the elimination of modulation hum.

Every conceivable type and capacity-value of condenser is being shown, and particular interest attaches to the dry and aqueous types of electrolytic condenser. One example of the dry type, for instance, with a capacity of 8 mfd., which may be mounted in any position, has a working voltage of 500 V.D.C. and a peak voltage of 600, whilst the leakage current is less than 0.25 mA. The price is 9s. Extreme compactness and low cost are the chief features of the "M" or "Postage Stamp" type of small mica condenser, which is primarily intended to be suspended in the wiring. This series of condensers has had a well-deserved popularity during the past season, and the capacities available range from 0.0005 mfd. to 0.01 mfd., and the price of the smaller values is 1s.

Telegraph Condenser Co., Ltd., Wales Farm Road, N. Acton, W.3.

TANNOY. (44)

The Standard Radiogram employs a super-heterodyne chassis, with variable-mu H.F. and I.F. valves and band-pass tuning, and is priced at 45 guineas.



The Tannoy G.A.60 amplifier.

The Senior Superheterodyne Radio-Gramophone is a ten-valve instrument, with nine tuned circuits. Three wavelength ranges are included, namely, 15/70 metres, 200/600 metres, and 800/2,000 metres, and automatic volume control is fitted in an endeavour to overcome fading. Dual loud speakers are employed and fitted in a compartment specially designed to avoid box resonance, and on the gramophone side an automatic record changer can be fitted if desired. The prices range from 60 guineas.

A range of high-power amplifiers for gramophone and other work is also on view.

Tannoy Products, 1-7, Dalton Street, S.E.27.

TECALEMIT RADIO. (263)

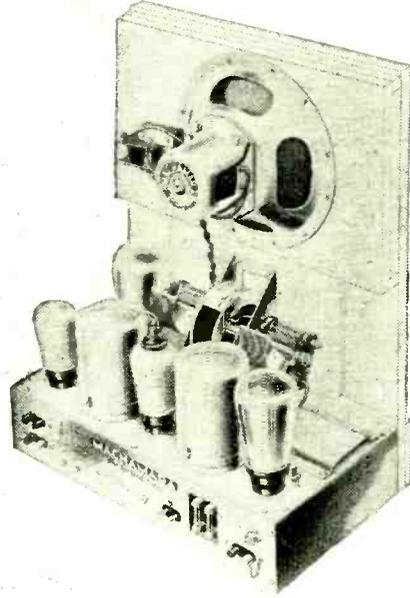
The resources of this firm are devoted to the production of a single model A.C. receiver. The three-valve circuit includes one H.F. amplifying stage, which is preceded by a single tuned input circuit provided with a variable aerial coupling, in the form of a swinging coil, which is controlled from the panel. It is chassis-built, embodies an

energised moving-coil loud speaker, and the price is 16 guineas.

Tecalemit Radio Co., Great West Road, Brentford, Middlesex.

TELSEN. (66)

This firm is showing a range of receivers, including the Macnamara Golden Voice Electric Radio. The model S.91, however, is interesting as an example of unusual design,



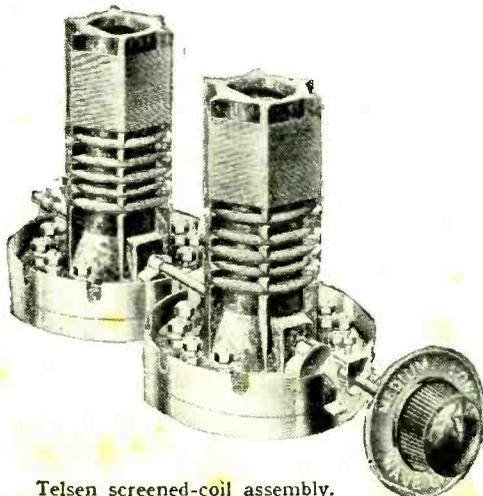
The Telsen Macnamara Golden Voice receiver.

for the controls are grouped round the centrally disposed loud speaker. It is a three-valve battery set, and all batteries are housed within the moulded bakelite cabinet. At first glance there appear to be two tuning controls, but an investigation reveals that one is a volume control. The price is 5 guineas.

Components of all types are shown, including a new range of screened coils with built-in waveband switching. The windings are carried on ribbed formers, and they are available in matched ganged assemblies. A new drum dial at 8s. 6d. is characterised by very smooth operation. A cord drive is used and a small knob arranged concentrically with the main control permits the stator of a condenser fitted to one side of the dial to be rocked over a few degrees. A high order of precision in circuit matching is thus unnecessary.

Midget fixed condensers, grid leaks, transformers, R.C. coupling units, dials, and variable condensers represent only a few of the varied assortment of components displayed.

Telsen Electric Co., Ltd., Aston, Birmingham.



Telsen screened-coil assembly.

TERRYTONE. (268)

Designed on quite up-to-date lines and embodying in some cases such modern features as band-pass tuning and variable-mu H.F. amplifiers, these receivers and radio-gramophones form a most attractive display. The Model B.P. 3004 is an excellent example of condensing a complete A.C.-operated radio-gramophone into a table-type cabinet of reasonable dimensions.

Terrytone Radio Products Co., Ltd., 33, Crouch Hill, N.4.

THOMPSON, DIAMOND & BUTCHER (207)

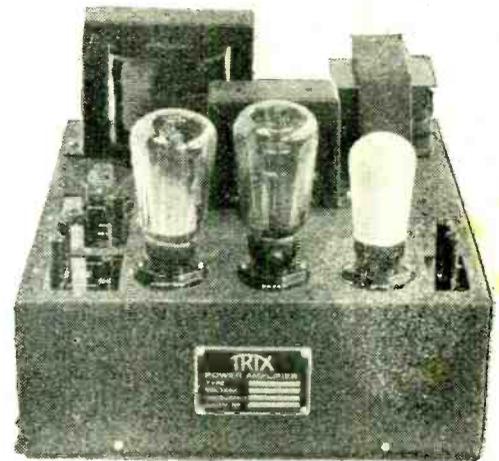
The activities of this wholesale firm are mainly concerned with the distribution of well-known products, but it also markets its own apparatus, under the trade name of "National Band." Two inexpensive cabinet-type moving-iron loud speakers are shown, and there is also a permanent-magnet moving-coil model.

Gramophone adaptor units, both with spring-driven and electric motors, are leading exhibits. One of the most interesting models—a portable—combines provision for acoustic and electrical reproduction of records.

Thompson, Diamond and Butcher, 34, Farringdon Road, E.C.1.

TRIX. (262a)

This firm has for long specialised in the production of power amplifiers, mains transformers, and L.F. chokes, so that these com-



Trix model T110 A.C. power amplifier.

stitute the main feature of their exhibit. There has been introduced this year a neat all-mains two-valve receiver, A.C. and D.C. models of which are shown, and the price is 9 guineas in each case. An energised moving-coil loud speaker is included, also a valve rectifier for the H.T. supply.

There is a range of small components, which include wire-wound volume controls and a very neat H.F. choke priced at 2s., the whole forming a most attractive display.

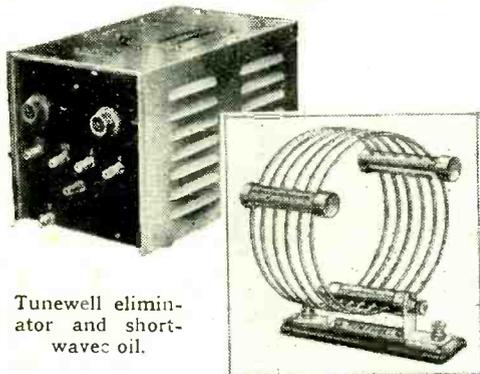
Eric J. Lever (Trix), Ltd., 8-9, Clerkenwell Green, E.C.1.

TUNEWELL. (96)

For this year's show the leading exhibit of Tunewell Radio is a three-valve A.C. radio-gramophone with an H.F.-det.-L.F. circuit arrangement. The input H.F. filter elements are coupled by the double-capacity

Olympia 1932.—

method in order to obtain sensibly constant band-width and an output of over 2½ watts is obtained by the use of one of the new P.M.24M. pentodes. It is stated that



Tunewell eliminator and short-wave coil.

output in the upper register is well maintained even up to 10,000 cycles, but a manual tone control is provided so that heterodyne whistles—and needle scratch—may be eliminated when necessary by sacrificing a certain amount of brilliancy. Considering the generous specification of this instrument, its price (27 guineas) is as low as that of anything in the exhibition.



Tunewell receiver chassis and power unit.

Among the new Tunewell components, the screened hand-pass coils, which were recently so favourably reviewed in these pages, will probably be considered the most interesting exhibits. Although rather larger than is strictly fashionable nowadays, the coils are not cumbersome and are distinctly above the average in efficiency.

Tunewell Radio, Ltd., 54, Station Road, New Southgate, N.11.

TYRELA. (283)

There are two types of receiver chassis being manufactured by this firm. Each is shown housed in a range of highly attractive and somewhat unorthodox cabinets. The superheterodyne set for the new season contains six valves, including a variable- μ amplifier and a power pentode output valve. Interesting refinements are the inclusion of a local-distance switch, mains aerial, illuminated dual wave track with station indicator, line voltage regulator, and an energised moving-coil speaker.

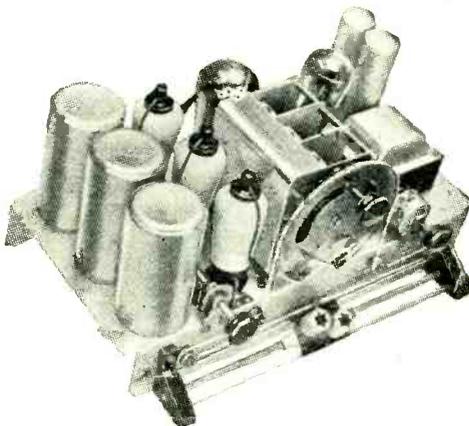
Of the many cabinets shown, the "Radio Chest" appeals as something quite new in radio furniture, and sells complete with the superhet. chassis at 22 guineas.

The second receiver chassis contains straight tuned radio frequency circuits.

Tyrela Electric, Ltd., 21, East Road, N.1.

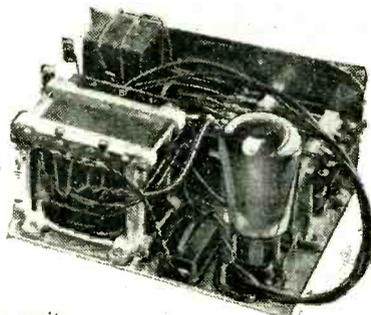
ULTRA. (73)

The four-valve "Panther" mains-operated chassis, available in several types of cabinet, is a good example of clean, modern design, plus several exclusive features of its own. The basic circuit arrangement comprises 2 H.F. stages and a



Ultra four-valve Panther chassis.

screen-grid detector valve, resistance-coupled to a pentode. There are three ganged tuned circuits. With regard to the



detector, it will be recalled that this firm adopted a screen-grid valve several years ago, long before it became common practice.

The station-calibrated indicator scale, mounted horizontally, and of exceptional length, is particularly interesting and, apparently, highly effective. Instead of the usual cursor, the scale is traversed by a narrow beam of light derived from moving pilot lamps. This beam appears on the scale in the centre of a coloured star which identifies the waveband for which the set is switched; red for medium waves and green for long waves.

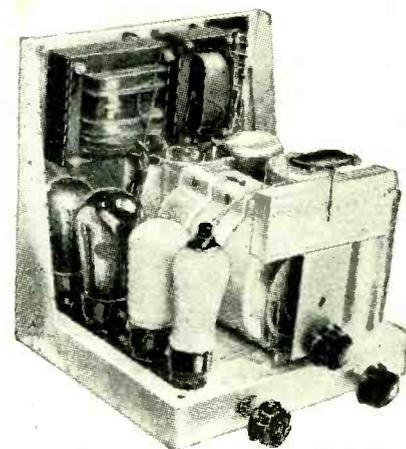
Another chassis, built on somewhat similar lines, is the "Tiger" model, with one H.F. stage, but, as an input filter is included, with the same number of tuned circuits. Both these sets are fitted with Ultra moving-coil loud speakers, which, in both permanent-magnet and energised types, are sold separately as accessories.

Ultra Electric, Ltd., Erskine Road, Chalk Farm, N.W.3.

UMELLO. (125)

One chassis, of band-pass three-valve type, in which a parallel-fed high-ratio transformer feeds the pentode output valve,

is used in both models of this firm's set. An unusual feature of the smaller set is the arrangement of the moving-coil speaker,



Umello three-valve chassis.

which faces upwards through a grille on the top of the cabinet. This prevents the microphonic trouble which is otherwise liable to arise in so small and compact a receiver.

The "Paratrap" is an absorption wavemeter intended for use with portable sets, to which it is "connected" merely by being placed near the frame.

Umello, Ltd., 55, Great Marlborough Street, W.1.

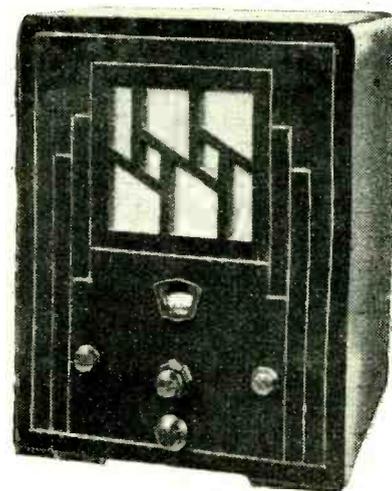
UNICFON. (250)

This firm is showing a four-valve radio-gramophone which is designed for use on either A.C. or D.C. mains supplies; the price for either instrument is 16 guineas. A four-valve A.C. set is available at 10 guineas, and there is a three-valve set at only 8 guineas.

Unicfon, Ltd., 23, City Road, E.C.1.

UNITED RADIO MANUFACTURERS (155)

A number of "Radio for the Million" kit sets are on view, notably the "Master Super," comprising a superheterodyne circuit with five valves for A.C. mains working. There is a separate oscillator valve, and the



Radio for the Million mains Stationmaster three receiver. (United Radio Manufacturers.)

second detector works on the anode-bend principle, otherwise the circuit conforms to modern practice. Another set which is

Olympia 1932.—

somewhat less ambitious is the Station-master Three—battery model—built on to a cadmium-plated steel chassis. The circuit consists of a screened-grid H.F. amplifier coupled by tapped tuned anode to a regenerative grid detector, which in turn is followed by a transformer-coupled triode. There is also a three-valve set for A.C. mains.

United Radio Manufacturers, Ltd., 63, Lincoln's Inn Fields, W.C.1.

UNIVOLT. (115)

The device sold under this trade-name may be described as a complete record-playing unit for connection to an existing radio receiver. An induction motor is built into a moulded bakelite base, on an ex-



Univolt radio-gramophone adaptor.

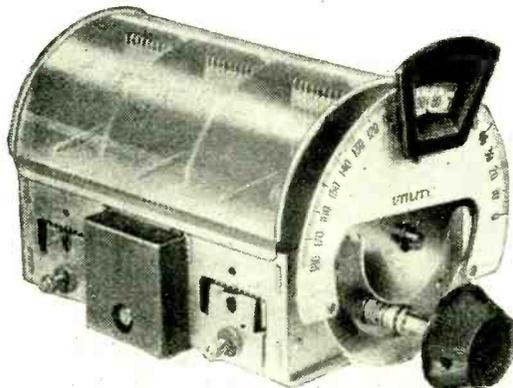
tension of which is mounted a pick-up arm with terminals, automatic stop gear, and a volume control. The whole is exceptionally compact, neat, and workmanlike.

Published characteristics relating to the Univolt pick-up, which is included in this gramophone adaptor, show a rather unusual "droop" in the middle register, which would be an advantage with the average receiver. There is a fairly early cut-off at the upper end of the frequency range.

Univolt Electric, Ltd., 119, Finsbury Pavement, E.C.2.

UTILITY. (118)

Although the earlier Utility ganged condenser was not lacking in robustness, the present model is even more rigid, being now



Steel-framed Utility condenser.

assembled in a frame of heavy-gauge pressed steel. Not only should it be possible to ensure accurate matching of units in the first instance, but adjustments should be maintained indefinitely. The spindle, which rotates in ball bearings, is exceptionally heavy, and all the desirable modern features, such as inter-unit earthing connectors and easily adjusted trimmers, are included. External finish, too, has been improved by the use of lacquered cadmium

plating, and alternative methods of mounting are provided. Two-, three-, and four-unit condensers are being produced.

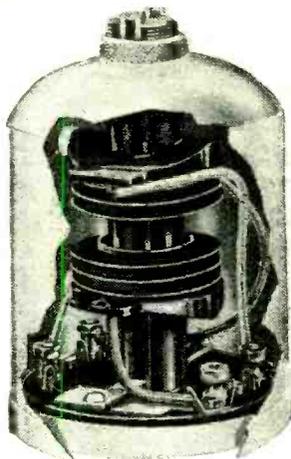
A conventional semi-circular dial is available, but there is also a new straight-line horizontal scale which lends itself particularly well to direct calibration. This latter scale is, of course, illuminated, the lamp being enclosed in a reflector box.

Most of the other well-known Utility components are retained for the present season, some of them having been slightly modified. Variable condensers naturally head the list, but we must not forget the low-capacity switches and slow-motion dials, which are particularly adapted for short-wave work.

Wilkins and Wright, Ltd., Utility Works, Holyhead Road, Birmingham.

VARLEY. (160)

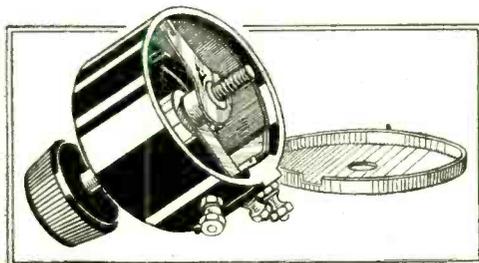
This firm is showing a transformer specially designed for use in tone-correction circuits; it is known as the Rectatone, and is priced at 15s. It is claimed that a flat characteristic is obtained for frequencies up to 1,000 cycles, after which the response curve rises rapidly to a maximum at 4,500 cycles. It consists of a 7-1 ratio transformer and a 0.13H. choke, and the exact characteristic obtained can be controlled by the addition of an external resistance.



Varley I.F. transformer.

Another new component is a screened intermediate-frequency transformer peaking at 110 kc. It is of the band-pass type, and the adjustment of both trimmers and the coupling can be carried out without removing the can. It is priced at 9s. 6d. Other superheterodyne components include pre-selector and oscillator coil assemblies with built-in waveband switching.

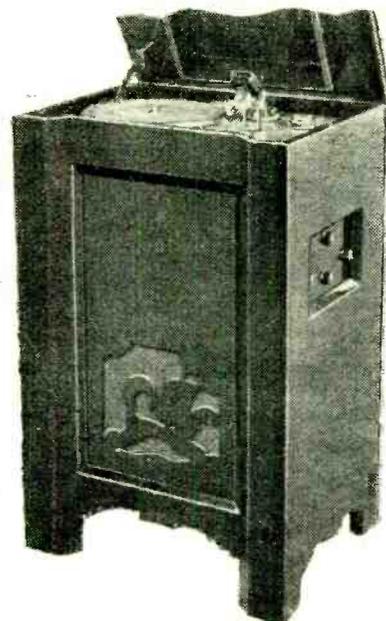
The well-known range of resistances and potentiometers is on view, and has been extended by the addition of a wire-wound volume-control potentiometer. This has a tapered resistance element, and is rated for 3 watts; it is totally enclosed, and the



Varley wire wound volume control.

spindle extends at the rear for easy ganging.

Low-frequency transformers, push-pull transformers, chokes, and mains transformers for every purpose are to be seen, while H.F. chokes, R.C. coupling units, and a gramophone pick-up represent the chief of the remaining components.



Varley superheterodyne Model A.P. 40.

Among receivers, a five-valve superheterodyne makes its appearance, and it is of an exceptionally compact type. Two valves are used as a frequency changer, and are preceded by a band-pass pre-selector; a variable- μ I.F. stage is employed and functions at 110 kc., the remaining valves being completed by the detector and output stages. A moving-coil speaker is fitted, and electrolytic condensers are used for smoothing. It is priced at 26 guineas, or as a radio-gramophone at 48 guineas.

The Square Peak Three, which was recently reviewed, is also shown. The cabinet styles are very similar, but the valves are arranged as a screen-grid H.F. stage, detector, and pentode output to a moving-coil loud speaker. There are three tuned circuits with single control operation, and electrolytic condensers are used for smoothing. Valve rectification is employed for the H.T. supply. The price is 17 guineas.

Varley (Oliver Pell Control, Ltd.), 103, Kingsway, W.C.2.

WADE. (276a)

The three-valve "Decee-Acee" mains receiver has been designed to work indiscriminately off D.C. or A.C. supplies. No adjustments whatever are necessary should the supply be changed. On A.C. the filaments are supplied through a voltage-dropping resistance, and H.T. is derived through a half-wave Westinghouse rectifier in series with the anode supply. The rectifier offers a low series resistance to D.C. when connected with the correct polarity, and a very high resistance if reversed, thus affording protection for the electrolytic smoothing condensers. The current consumption is 55 watts.

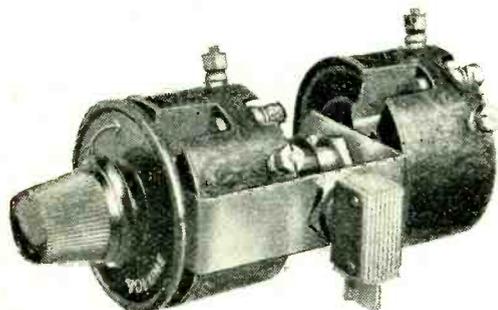
The radio circuit is of the S.G.-det.-pentode type, and includes band-pass tuning. An energised moving coil is standard, and the price is 18 guineas.

A. Wade and Co., 9, Carlton Road, Burnley, Lancs.

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WATMEL. (273)

The resources of this firm are now concentrated principally on the production of wire-wound potentiometers and variable resistances in moulded cases. Type No. 1, which is a straight resistance, costs 5s. 6d., and is available in stock values ranging from 1,000 to 50,000 ohms. A mains switch is fitted to either type for 2s. extra.



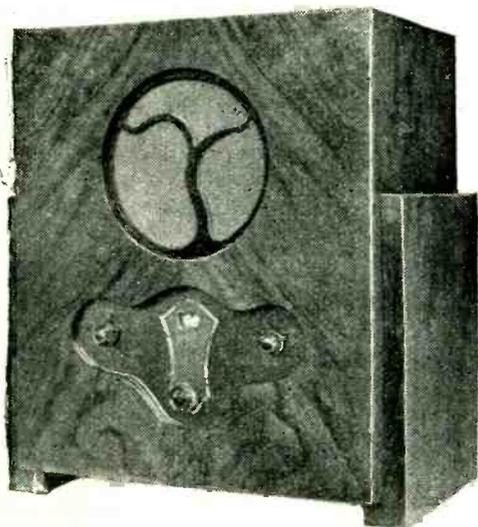
Wadmel MS5 dual potentiometer.

Type No. 3 has a high resistance element with embedded wire contact, and is obtainable in values from 10,000 ohms to 5 megohms for 4s. 6d. Ganged volume controls are also a speciality.

Wadmel Wireless Co., Ltd., Imperial Works, High Street, Edgware, Middlesex.

W.B. (108)

The new W.B. three-valve battery kit set is probably unique, for there are three units only to assemble and five connections to make, and the result is a complete det.-zL.F. receiver with self-contained P.M. moving-coil loud speaker mounted in a cabinet of pleasing design. The price is 7 guineas, which includes a well-made walnut cabinet.



W.B. three-valve kit set.

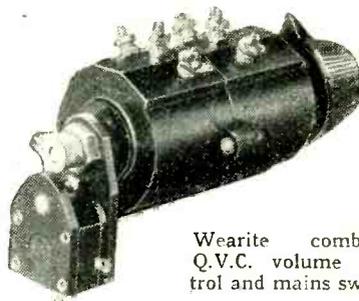
There are two models of permanent-magnet loud speaker. The P.M.4 chassis costs 42s., which includes an input transformer, and the other model is described as the Mansfield Junior, and in chassis form it can be purchased for 27s. 6d. with a transformer.

Whiteley Electrical Radio Co., Ltd., Nottingham Road, Mansfield.

WEARITE. (82)

One of the most interesting of the many new components now included in the Wearite

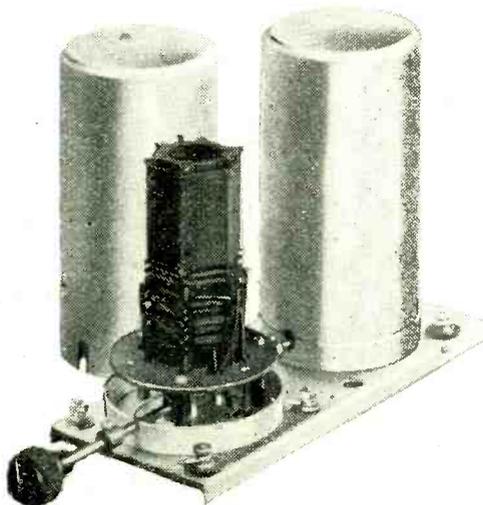
range is the Q.V.C. wire-wound series of volume controls. In addition to adopting a mechanical movement which imposes very little stress on the fine resistance wire, these



Wearite combined Q.V.C. volume control and mains switch.

models assemble into very compact ganged units in which can be included a mains switch if required. A three-member assembly, comprising any two Q.V.C. volume controls not exceeding 50,000 ohms each and a mains switch, costs 9s. 6d., but if one is over 50,000 ohms the price is slightly higher.

There is now a new range of screened coils with wave-band switches built in. They are supplied either as complete ganged units



Wearite dual-range screened coils.

mounted on an aluminium base in sets of two or three or as separate units; a set of three coils costs 25s. There are two models of screened H.F. chokes, a new 110 kc. band-pass I.F. transformer, and a host of small items in the form of resistances, switches, and the like.

The opportunity should be taken to examine the range of mains transformers and L.F. chokes, as there are many interesting models.

Wright and Weaire, Ltd., 740, High Road, Tottenham, N.17.

WEGO. (284)

This firm specialises in rolled-foil paper condensers, which are available in a range to suit all purposes. Attention is specially drawn to the very convenient tubular condensers with wire ends, which can be supported in a set by the connecting wires, and also to the HV and HS ranges of extremely compact condensers rated at 500 and 600 volts D.C. working.

In addition to these, condensers with terminals in bakelite cases are also offered, and there are high-voltage smoothing condensers useful for transmitters and for builders of the more ambitious type of powerful receiver.

Wego Condenser Co., Ltd., Spencer House, South Place, E.C.1.

WESTINGHOUSE. (89)

As one would anticipate, the main feature of this company's display is a very full range of metal rectifiers for both high- and low-tension use. There is a new series of low-tension rectifiers suitable for use in battery chargers or for the field-supply to moving-coil speakers, the smallest delivering $\frac{1}{2}$ amp. at 6 volts and the largest 1 amp. at 12 volts, the prices ranging from 10s. 6d. to 15s. New H.T. units include the HT9, giving 60 milliamps at 300 volts and priced at 21s., and the HT10, giving 100 milliamps at 200 volts at the same price. For larger sets the HT11 at 35s. delivers 120 milliamps at 500 volts or 150 milliamps at 400 volts.



Westinghouse metal rectifiers and photoelectric cell.

For the trader who undertakes the charging of accumulators there are available complete battery chargers in a number of patterns suitable for all normal needs. The larger chargers have several circuits, so that several different currents may be supplied at one time to different banks of cells, these being sorted out according to their correct charging rates. The necessary rectification is in all cases carried out by Westinghouse metal rectifiers.

In addition to their more obvious wireless uses, metal rectifiers are employed in bridge form in connection with meters reading alternating current. Small rectifier assemblies of this type are exhibited.

A further application of the copper oxide disc is found in the manufacture of photoelectric cells. One of these is arranged in



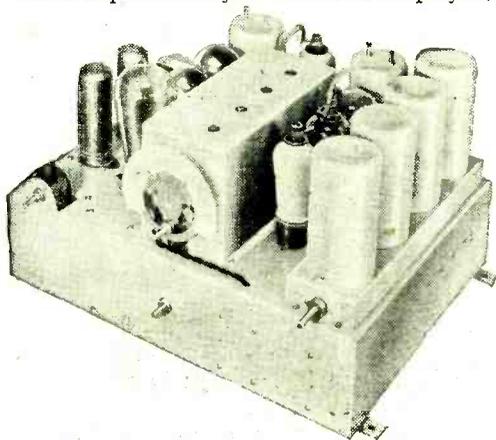
Westinghouse three-circuit battery-charger using metal rectifiers.

an apparatus which delivers a catalogue into the hand when this is placed in such a position as to interrupt a beam light.

Westinghouse Brake and Saxby Signal Co., Ltd., 82, York Road, King's Cross, N.1.

WHITELEYS. (267)

The outstanding feature here is a very fine example of an A.C.-operated "Stenode" radio-gramophone. A seven-valve superheterodyne circuit is employed,



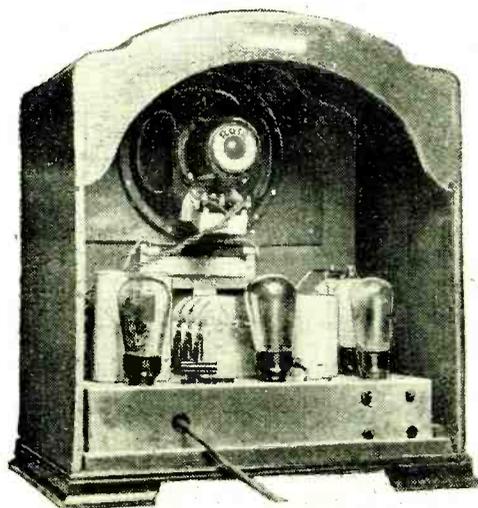
Whiteley's "Stenode" radio-gramophone superheterodyne chassis.

and the I.F. amplifier is adjusted to provide a very high order of selectivity, while a corrected L.F. amplifier restores the quality. In the present case the band width of the sharply tuned circuits is such that stations with a separation of but 5 kc. can be received free from mutual interference. Housed in a handsome pedestal cabinet, the price is £93.

Wm. Whiteley, Ltd., Westbourne Grove, W.2.

YAGERPHONE. (286)

A three-valve battery set and a four-valve mains set are offered on this stand, each being made either as a simple set or as a complete radio-gramophone.



Yagerphone four-valve A.C. receiver.

The battery set, which has a conventional type of circuit, is sold at 12 guineas with moving-coil speaker, or 17 guineas as radio-gramophone.

The mains set has two variable-mu stages, detector, and pentode output, and sells at 18 guineas as a set only. In radio-gramophone form, with dual compensated moving-coil speakers, it costs 28 guineas.

Yagerphone, Ltd., Charlotte Cabinet Works, Ponders End, Middlesex.

"THE WIRELESS WORLD." (5)

In addition to "The Wireless World" and "The Wireless Engineer," technical wireless books of all kinds can be seen on this stand. "The Wireless World" is also showing sets

for home construction which have been described recently, including "The Monodial A.C. Super," "The Modern Straight Five," "The Autotone Portable," and the new "Baby Superhet."

Iliffe and Sons Ltd., Dorset House, Tudor Street, E.C.4.

ZEITLIN. (275)

The speciality of this firm of factors is the handling of clearance lines of manufacturers' samples and obsolete receivers and components.

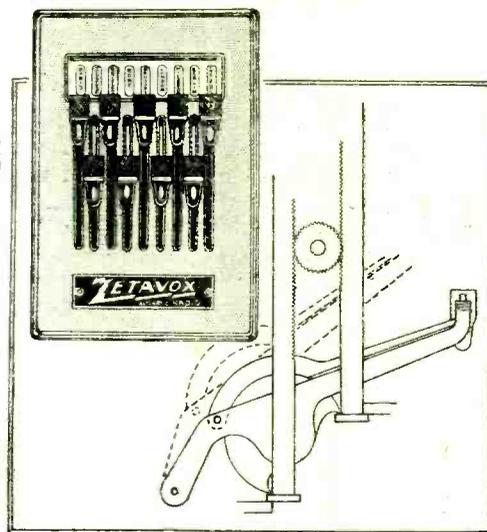
V. Zeitlin and Sons, Ltd., 54, Lamb's Conduit Street, W.C.1.

ZETAVOX. (103)

Automatic press-button tuning is the novelty which is attracting the greatest interest on this stand. The control is mechanical, and operates by rotating the tuning condenser to a predetermined point. The stations to be tuned-in in this way are found by tuning on the dial in the ordinary way, after which the knob on the end of one of the nine setting levers is unscrewed, the lever is depressed as far as it will go, and the knob tightened again. Depression of that lever will now always turn the tuning condenser back to its original setting, though the ordinary manual tuning is also available at all times.

This automatic tuning is applied to two chassis, which form the basis of all sets and radio-gramophones. The first of these

is a straight receiver with two variable-mu stages and a pentode output valve, while the second is a superheterodyne. This more elaborate receiver has a band-pass input to its preliminary H.F. stage, and uses a screen-grid valve (anode bend) as second detector. An automatic volume-control valve is used, controlling the bias to the variable-mu H.F. and I.F. valves. In addition, there is a manual volume control on

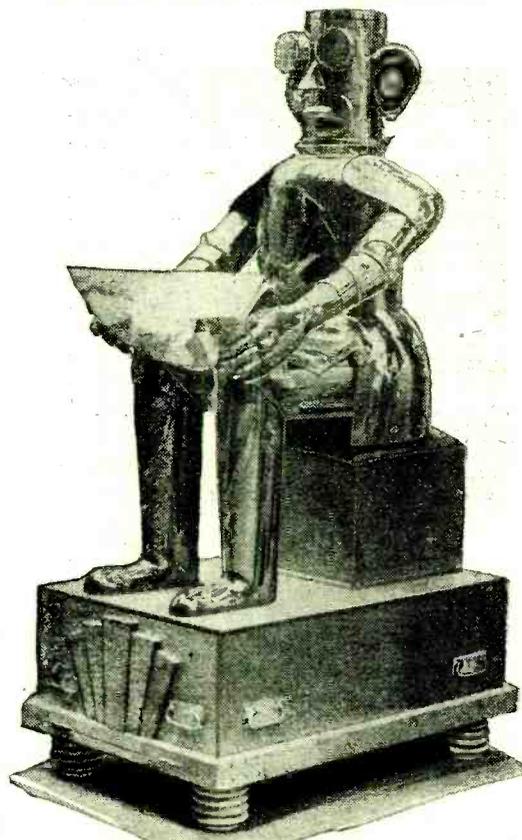


Zetavox automatic tuning mechanism, with tuning panel inset.

the L.F. side. Prices range from 19 guineas for the straight set and 25 guineas for the superheterodyne in their simplest form, without automatic tuning.

Zetavox Radio and Television, Ltd., Coles Green Road, Cricklewood, N.W.2.

A TWO-TON FRANKENSTEIN.



This steel Robot is "at home" on the Mullard Stand, No. 248, and is one of the most important personalities at Olympia. Operating by means of photo-electric cells scanning a sound record, he can "read" and tell the time. A newspaper thrust into his hands adds a touch of verisimilitude.

NEXT WEEK'S ISSUE

The Trend of Progress.

A carefully considered commentary on the general trend of technical progress as exemplified in the exhibits at Olympia. This account, which will be fully illustrated, is now being prepared by the technical staff of "The Wireless World."

The "Baby" Superhet.

Constructional details and final instructions for building this new four-valve superheterodyne receiver, the description of which was commenced in our last issue.

An Oscillator for Ganging.

Description of how to construct and use a simple oscillator for the purpose of correct ganging of modern selective receivers.

MANY OTHER SPECIAL FEATURES.

ON SALE FRIDAY, SEPT. 2

WIRELESS ENCYCLOPEDIA. No. 24.

MAGNETISM may be divided into two categories, namely, *permanent magnetism* and *electromagnetism*.

The former is produced by a permanent magnet, such as a magnetised steel bar and the latter by a current of electricity flowing in a suitable circuit, in particular a coil or solenoid.

The simplest artificial permanent magnet consists of a straight bar of special steel or steel alloy. If such a magnet is laid flat on a piece of paper, lines of magnetic force can be detected and traced out with the aid of a miniature magnetic compass of the type once fashionably worn on watch-chains. The lines of force are found to issue from one end of the magnet and enter at the other in the manner shown by Fig. 1. The points at the two ends of the magnet, from which the lines of magnetic influence emanate and converge, are called the "poles" of the magnet and are designated "north" and "south" respectively, the two poles exhibiting different characteristics. For instance, if there are two magnets the N pole of one is found to attract the S pole of the other, whereas the two N poles repel each other and so do the S poles. A brief explanation of this is given below.

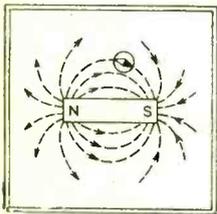


Fig. 1.—Showing the nature of the field surrounding a simple bar magnet.

The earth itself is a large permanent magnet whose field extends over the whole surface of the globe and whose magnetic poles are near the geographical poles. The so-called north pole of each permanent magnet is attracted towards the earth's north pole, and the south pole of every magnet is attracted towards the south pole of the earth. So, to be strictly accurate, the poles of a magnet should be called the "north-seeking pole" and the "south-seeking pole" respectively. The terms "north" and "south" are used for brevity.

The Pole of Unit Strength.

The force of attraction or repulsion between two magnetic poles is proportional to the strength of each and inversely proportional to the square of the distance between them. For instance, if m_1 and m_2 are the strengths of the two poles expressed in arbitrary units, and r is the distance apart, the force acting between them is proportional to $\frac{m_1 m_2}{r^2}$. Now in the C.G.S. (Centimetre, Gram, Second) system of electromagnetic units a pole of unit strength is defined as that which would exert a force of one dyne (the unit of force) on an equal pole placed one centimetre away. [One dyne is that force which, applied to a mass of one gram, causes its velocity to increase by one centimetre per second every second.

Brief Definitions with Expanded Explanations.

MAGNETIC FIELD. *The region (usually in the vicinity of a magnet or a coil carrying a current of electricity) where magnetic forces can be detected, that is, where lines of magnetic force are present.*

MAGNETIC FIELD STRENGTH. *The intensity of a magnetic field at any point, being defined numerically as the force in dynes exerted on a unit magnetic pole placed at that point, the C.G.S. unit of field strength being the gauss.*

A gram weight at the earth's surface is attracted by a gravitational force of 981 dynes.] The C.G.S. unit of pole strength is called the *weber*.

Field Strength.

The intensity or strength of a magnetic field at any given point is defined as the force in dynes which would be exerted on a unit magnetic pole if placed at that point. The field strength is not usually expressed in dynes but in *gauss*. The field may exist whether the imaginary unit pole cited for the purpose of our definition is present or not, and so the unit of force is not entirely satisfactory as a unit of field strength. The field strength is very frequently expressed by engineers in "lines per square centimetre." This is a very convenient expression, used before the name "gauss" was adopted, and possesses the advantage of conveying an idea of the nature of the quantity whose numerical value it represents.

It is, of course, impossible in practice to obtain an isolated magnetic pole, either north or south—they always occur in pairs of one N and one S. However, with a long magnet, such as a magnetised steel knitting needle, the poles are sufficiently separated to enable experiments to be made on one of them without undue influence from the other. If a pole could be isolated the lines of force would emanate from it radially and uniformly in all directions.

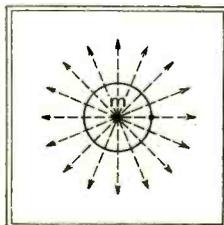


Fig. 2.—Diagram showing that $4\pi m$ maxwells or lines of force emanate from a north pole of strength m webers.

Imagine a pole of strength m webers to be situated at the centre of a spherical shell of r centimetre radius as shown in Fig. 2. Then if a pole of unit strength (one weber) were to be placed on the surface of the sphere, the force exerted on it would be,

according to the above formula, $f = \frac{m \times 1}{r^2} = m$

dynes; and so the field strength at the surface of the sphere is m gauss (or lines per sq. cm.). But the surface of a sphere r cm. in radius is $4\pi r^2$ sq. cms. (the area of a sphere being $4\pi r^2$ sq. cms.) and so the total number of lines of force, expressed in *maxwells*, issuing from the pole m at the centre, must be $4\pi m$. Thus the total *magnetic flux* emanating from a unit pole is 4π maxwells. This quantity 4π occurs very frequently in electromagnetic theory and this is its origin.

A line of force in a magnetic field may be conceived as the path a north pole would take if it were free always to move in the direction of the force acting upon it. It would move round a closed loop, arriving again at the point from which it started. So every line of magnetic force is a closed loop, and its nature is such that it is apparently in a state of tension, trying to contract to a point and vanish. The loops of magnetic force in a field are maintained by what is termed the *magnetomotive force* of the

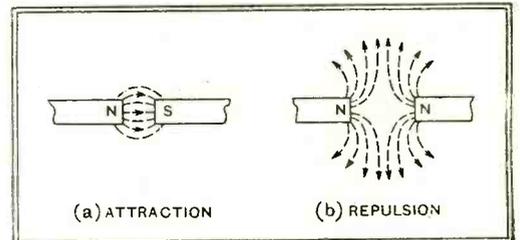


Fig 3.—(a) Attraction between dissimilar poles and (b) repulsion between similar poles.

magnet or coil responsible for the field. When the magnetomotive force is removed the loops of force comprising the field contract on themselves and vanish. The conclusion is that every line of force is in a state of tension and so any lines of force extending between the north pole of one magnet and the south pole of another tend to draw those poles together, the effect being shown in Fig. 3 (a).

Property of Magnetic Field.

Another important property of a magnetic field is that the lines of force comprising it repel each other and so tend to spread the field out to occupy as large a space as possible. This property is in keeping with the fact that two similar poles repel each other. The nature of the field between two similar poles is indicated in Fig. 3 (b).

A uniform field is one in which all the lines of force are parallel. A piece of iron placed in a uniform field does not experience any force, but in a non-uniform field the iron is attracted towards the point where the field is most intense, for example, towards the pole of a magnet or the centre of a solenoid.

Next Week's Set Review:

THE STENODE

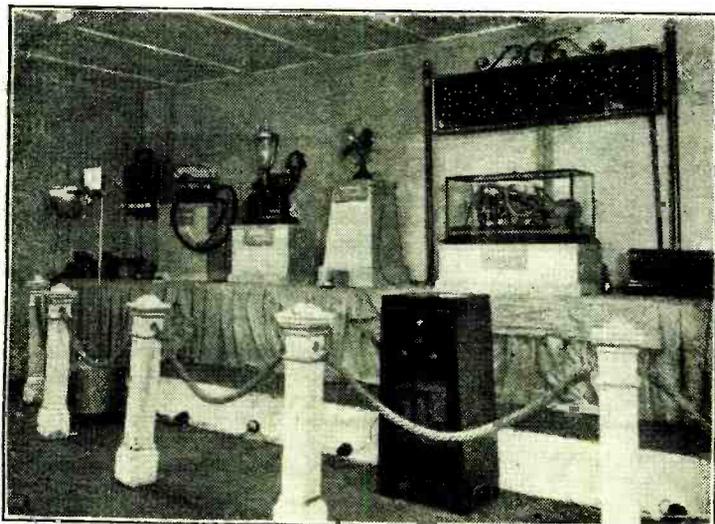
A commercial Radio-Gramophone embodying the new "Stenode Principle."

ROUND THE DEMONSTRATION ROOMS.

Triumphs of Showmanship at Olympia.

THE old reproach, which dogged exhibitors of ten years ago, that radio is an unpromising subject for display—too "dead," in fact, to appeal to a public that demands to see the wheels go round—was never more effectually disposed of than at Olympia to-day. And the reason is not far to seek. The radio industry, besides setting practically all other industries in the shade in the matter of vigorous, progressive research, and its practical application to the needs of the consumer, has taught itself the art of showmanship. The visitor to the 1932 Show, threading his way through the maze of glittering stands, might well be excused for asking whether this radio of to-day really is of the same root and branch as the unsophisticated pastime which sought, almost timidly, for public approbation in 1922. While "good wine needs no bush," it gains nothing from false modesty, and we may well rejoice that the British radio trade has made Olympia, 1932, the occasion for consummate showmanship. This probably finds its peak in the demonstration rooms in the annexe, though we must not forget that trump card, the Mullard Robot, in the gallery.

One of the most attractive displays in the annexe is that of E. K. Cole, Ltd., who are making the daring experiment of permitting the public to compare Ekco reproduction with the performance of the living artist. Visitors first hear popular records on an Ekco radiogram. Next the celebrities step out from the wax, as it were, and are heard "by radio," being seen simultaneously at the microphone in a sound-proof studio. To complete the feature, the artists walk out from the studio and give an extra turn on



The Post Office campaign against man-made static is effectively illustrated at Olympia. Some notable offenders are seen together with the radio receiver on which the P.O. interference eliminators are demonstrated.

the platform. The whole display is extraordinarily effective, and, needless to say, the Ekco apparatus survives the test. Among the artists "billed" are Elsie and Doris Waters, Tommy Handley, Clapham and

Dwyer, and Rudy Starita.

At least three exhibitors show their faith in the technical intelligence of the public by displaying films descriptive of manufacturing processes. The Gramophone Company, in association with New Era Productions, Ltd., have produced an impressionistic reel entitled "The Voice of the World," in which the manufacture and testing of radio-gramophones at the Hayes factory is palatably presented along with brief glimpses of celebrated recording and broadcasting artistes—Peter Dawson, Mabel Constanduros, Ambrose and his Orchestra, and others—actually performing at the microphone. With a few clever and humorous touches we are also shown various types of listener tuning in these celebrities on their own H.M.V. receivers, in some cases with startling reactions.

Two other firms, Ultra Electric, Ltd., and Varley (Oliver Pell Control Ltd.) give film displays which no visitor should miss.

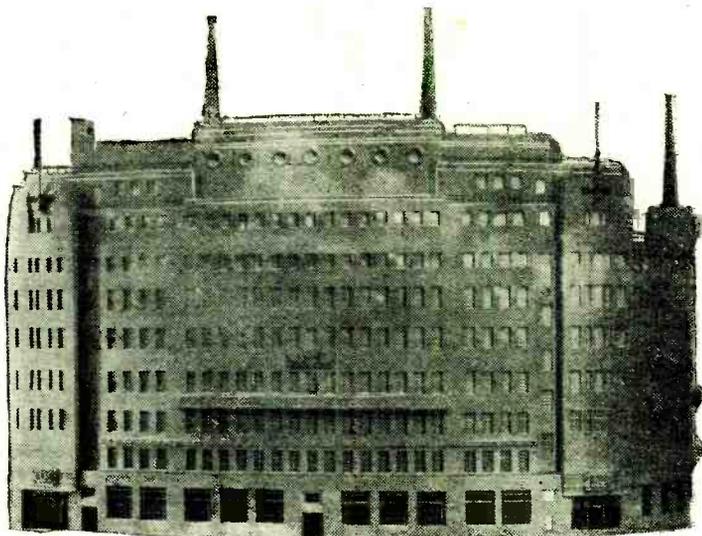
Legitimate Eavesdropping.

As might be expected, the Marconiphone Company provides an original entertainment this year in the form of legitimate eavesdropping. The listener overhears a seemingly impromptu outbreak of music and fun in a country cottage. Need it be added that Marconiphone reproduction is responsible for some happy deception.

Mr. John Macdonell, of B.B.C. "Surprise Item" fame, is among a distinguished company sponsoring the demonstration in the Columbia Graphophone theatre. On a miniature stage equipped with coloured lighting effects, the De Luxe 640 and other radiograms are giving complete concerts covering every class of music. An interesting feature is the new "introductory" record, intended to assist dealers and prospective purchasers of records. In the space of three or four minutes the record gives excerpts from

the month's releases, each selection being faded into the next with a few explanatory remarks by an announcer.

The miniature stage method of presentation is also effectively adopted by Lotus



The £500 model of Broadcasting House which is being shown on the B.B.C. stand in the mezzanine gallery. The scale is 1/4 in. to the foot.

Radio, Ltd., for demonstrating their new Band Pass Three.

To help visitors in the choice of loud speaker the Celestion Company range their models side by side in a step-like formation, linking them up to a common output. By means of a switching arrangement each speaker is connected in turn and is illuminated at the moment of playing.

Chromium-plated exhibition models with rotatable chassis mounted in glass make an original and pleasing display in the Cosser demonstration room.

The tableau method has been effectively exploited by the General Electric Company. Round the demonstration room practically every G.E.C. receiver, from the home constructor's kit set to the most elaborate A.C. cabinet instrument, is to be found in an appropriate setting. The display shows more than any other in the Show how far the modern radio receiver has progressed as a tasteful article of furniture.

Among manufacturers who consider that the radio receiver is best demonstrated in a comfortable lounge are McMichael, Ltd., Lissen, Ltd., and the Radio Gramophone Development Company. The Kolster Brandes' display is, in effect, an enclosed exhibition stand, at which all models are on view and can be demonstrated without the restrictions imposed (fortunately!) on the stands in the main hall.

Baffles.

The British Blue Spot Company's demonstration room is a paradise for the loud-speaker enthusiast, who can literally look at the question from all angles and hear the effect of large and small baffles. He will also be attracted to the Lamplugh demonstration room, where the Silver Ghost dynamic speaker is enthroned in baffles of a startling hue. F. W. Smurthwaite effectively demonstrates the "Howe" baffle.

A word of advice to the Olympia visitor. Do not let the hours slip by in the Main Hall before you visit the annexe. First make sure that you can secure admission to the demonstration rooms. In some cases a ticket must first be obtained from the demonstrator's stand in the Show; in practically every case a queue waits.

READERS' PROBLEMS.

THESE columns are reserved for the publication of matter of general interest arising out of problems submitted by our readers. Readers requiring an individual reply to their technical questions by post are referred to "The Wireless World" Information Bureau, of which particulars, with the fee charged, are to be found on page 184.

Decoupling Anode Bend Detectors.

IN many popular sets of three or four years ago, an anode bend detector, coupled to the succeeding L.F. stage by a resistance of 250,000 ohms or so, was employed. When an attempt is made to operate receivers of this type from an eliminator, there is occasionally a tendency towards "motor-boating," and so the present-day precaution of inserting anode-circuit decoupling resistance and by-pass condensers should be adopted.

Generally speaking, the sets that we have in mind provided greater overall L.F. magnification than that of a modern receiver, and so conventional values of decoupling components are not always effective. This seems to account for the failure of a reader to obtain entire freedom from L.F. instability with a set that has been converted for use with an H.T. eliminator. We suggest that a decoupling resistance of at least 50,000 ohms should be employed for the detector anode circuit; as the current consumed in this circuit amounts to microamps. rather than milliamps., the loss of voltage will be small.

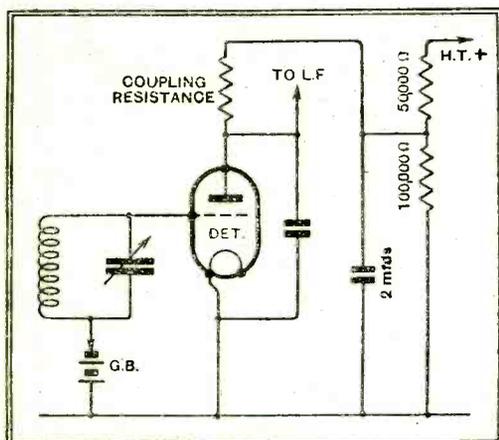


Fig. 1.—Decoupling and feed potentiometer combined: an arrangement specially suitable for an anode bend detector.

The only drawback to the use of a high value of decoupling resistance is associated with the fact that the applied voltage supply will not be well regulated, and so, if possible, we recommend the use of a potentiometer arranged as shown in Fig. 1. The values assigned to the two limbs of the potentiometer should be about right for an H.T. supply of 200 volts.

A Specialised "Monodial."

A READER who has the handicap of living within about two miles of a twin regional station asks whether the "Monodial Superheterodyne" would be likely to put up a satisfactory performance under his rather adverse receiving conditions, and also whether we would recommend any alterations to the original circuit arrangement in order to obtain greater immunity from interference than is necessary in more favourable circumstances.

It is undeniable that in spite of the high selectivity of the "Monodial," our correspondent will be able to receive fewer stations than if he

were more favourably situated, although we do not anticipate any very serious restriction in his choice of programmes.

Those stations which operate in the frequency channels immediately adjacent to the local transmitter will certainly suffer from interference, and it is just possible that a little interference on the long-wave band will be brought about by the frequency difference between the local stations. There is a further possibility that a slight amount of interference, in the form of a whistle, might be found on wavelengths spaced by 110 and 55 kilocycles on either side of the local stations.

The selectivity of the "Monodial" receiver is already so high that it could not be improved without introducing great complications, but we think that extra special care should be taken to ensure accurate ganging, and also to avoid direct signal pick-up by the internal wiring. Provision might also be made for optional reduction of efficiency of the aerial (by fitting a series condenser) and, as a refinement, an accessible trimming control for the input circuit might be provided. We suggest this in order that full use may be made of an efficient aerial at times and on wavelengths where local interference is not prevalent.

More Rectified Current.

A READER, who proposes to alter his set by fitting a push-pull output stage, enquires whether it would be possible to obtain extra anode current (which will be made necessary by this alteration) by fitting a second rectifying valve of the same type as that in use at present. The additional valve would of course be wired in parallel, and it is hoped that the output will be doubled.

If it were possible to ensure that the A.C. voltage applied to the rectifier were maintained at a constant value, all would be well. But, unless the power transformer happens to be exceptionally well-regulated, there will be a considerable voltage drop in its H.T. secondary; as a result, the rectified output would not be increased to the extent anticipated. There is the further possibility that the winding will be overheated.

Without full details of the power transformer, we can hardly assume the responsibility of recommending this scheme and suggest that our correspondent should consult the transformer makers before trying it.

Free Current for an Extra Speaker.

A QUERIST who wishes to operate two moving-coil loud speakers from the "Modern Straight Five" receiver asks for suggestions as to how field current for the second instrument might be derived from the power supply circuits.

It happens that, so far as this particular receiver is concerned, there is the simplest possible solution to the problem. The circuit diagram published with the description of the set shows that a voltage-absorbing resistance (R_{22}) of 2,500 ohms is in series with the existing loud speaker field winding; all that need be done is to replace this resistance by the field

winding of the second loud speaker, which must, of course, have the same ohmic value. The voltage distribution throughout the receiver will obviously not be affected in any way, and, indeed, this is one of the few cases where we can get "something for nothing."

Given field windings of the correct resistance—2,500 ohms each—this simple arrangement should also satisfy the requirements of another querist who intends to use Magnavox "Dual Compensated" loud speakers with the "Modern Straight Five." He should omit the limiting resistance and connect the two fields in series.

Short-lived Rectifiers.

A READER who has been unfortunate enough to have to replace his rectifying valve twice in rapid succession, asks us to examine the diagram which he submits, and to say whether there is anything in his circuit arrangement which would account for this un-

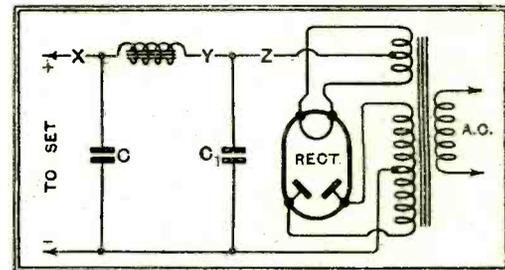


Fig. 2.—Testing for a partial short-circuit: positions in which a milliammeter may be connected.

satisfactory state of affairs. It is stated that the total current consumed by the set is well under the maximum that might be anticipated. Further, the various A.C. voltages across the secondaries of the power transformer have been carefully checked.

The circuit is normal, and so it is logical to suspect that the trouble here is probably due to a partial short-circuit across the rectifier output; the most obvious place for it is in one of the smoothing condensers.

We suggest that current readings should be taken at points X, Y, and Z, as shown in Fig. 2, which represents the conventional rectifier-smoothing circuit. If current is appreciably greater at Y than at X, it is to be concluded that the condenser C is leaky; if greater at Y than at Z, the reservoir condenser C_1 will be defective in a similar way.

FOREIGN BROADCAST GUIDE.

BELGRADE

(Yugoslavia).

Geographical position: 44° 48' N.; 20° 37' E.

Approximate air line from London: 1,055 miles.

Wavelength: 430.4 m. Frequency: 697 kcs. Power: 2.5 kw.

Time: Central European (coincides with B.S.T.).

Standard Daily Transmissions.

09.00 B.S.T.; Sacred service (Sun.); 12.00, gramophone records, news, etc.; 19.25, talks; 20.00, main evening entertainment; 22.00, final news bulletin; relay of concert or dance music (outside broadcast).

(Belgrade frequently relays Vienna and the International European concerts transmitted by Germany, Hungary, Czecho-Slovakia, and Poland. Also exchanges programmes with Ljubljana and Zagreb.)

Woman announcer.

Call: *Ovde Radio Beograd.*

Interval Signal: Metronome (one beat per second).

Closes down with full call and the words: *Zelislavimajim slusaoima laku noc* (Radio Belgrade wishes a good night to all its listeners) *Ne zaboravite da spojite antenu sa Zemljom.* (Do not forget to earth your aerial), followed by the National Anthem (gramophone record).

**HAVE YOU JOINED THE
BETTER RADIO BRIGADE?**



*We are exhibiting on Stand No. 79 at the
National Radio Exhibition at Olympia.*

Mullard

THE · MASTER · VALVE

Advt. The Mullard Wireless Service Co., Ltd., Mullard House, Charing Cross Road, London, W.C.2

Advertisements for "The Wireless World" are only accepted from firms we believe to be thoroughly reliable,

Arks

FACTS YOU SHOULD KNOW ABOUT THE MAZDA D.C. MAINS RANGE...



The Mazda D.C. mains valves are the only completely satisfactory solution to D.C. mains receiver operation. They overcome all the disadvantages of high running cost and low efficiency previously associated with D.C. receivers.

The new Mazda indirectly heated 0.1 amp. valves enable D.C. users to enjoy, at last, the range and quality given by A.C. receivers. No other D.C. mains valves are so economical.

The Range comprises:—

THE DC 2/SGVM a variable-mu screened grid valve giving results fully equal to its A.C. counterpart.

THE DC 2/SG is for those who wish to use an ordinary screened grid valve.

THE DC 3/HL for the detector stage.

THE DC 2/P or DC 2/Pe for the output stage.

Full details of these and other useful Mazda types will be found in the Mazda catalogue, sent FREE on request.

Mazda valves are fitted by all the leading receiver manufacturers. All good radio dealers stock them.

LOOK
FOR "EDDY"
IN YOUR
DEALER'S
WINDOW

The amazing

MAZDA
THE
BRITISH
VALVES

STAND
Nos. 75 & 230
RADIOLYMPIA

(Aug. 19-27)

EDISWAN RADIO

100% BRITISH—Designed by British Engineers

The Edison Swan Electric Co. Ltd.



155 Charing Cross Rd. London. W.C.2

Mazda Radio Valves are manufactured for The British

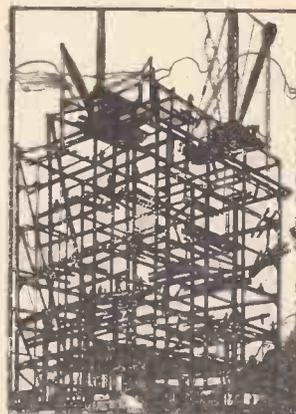
Thomson-Houston Co. Ltd., London and Rugby.

V.165.

Mention of "The Wireless World," when writing to advertisers, will ensure prompt attention.

MOVING COIL SPEAKERS *for* QUALITY REPRODUCTION

LISTEN to any one of these Dominion 1933 models and you will agree that never before have you heard such vivid and natural reproduction. For the moving coil speakers incorporated in these sets have been chosen only after careful experiments for their very high efficiency. Another very important feature of these Receivers is their ALL-STEEL CHASSIS—the latest development of radio science. The components employed are subjected to stringent tests before being incorporated in the Receiver, and each complete Receiver is aerial tested to ensure absolute satisfaction, before it is allowed to leave our factory.



Beautifully grained timber is used for the cabinets which are of attractive design. Examples of the finest modern craftsmanship.



DOMINION 2 VALVE A.C. MAINS RECEIVER

Attractive solid figured oak cabinet . . . ALL-STEEL CHASSIS . . . built-in moving coil speaker giving vivid and natural reproduction . . . British Detector, Pentode and Rectifying mains valves . . . illuminated slow motion control . . . three aerial tappings . . . provision for gramophone pick-up and external loud speaker. Fitted with mains switch. For Continental as well as British reception. Complete including valves and royalty £9.9.0 or 16/9 down and 12 monthly payments of 16/9.

£9.9.0

BROWNIE WIRELESS Co. (G.B.) LTD., NELSON

STREET WORKS, MORNINGTON CRESCENT, N.W.1



DOMINION BATTERY S.G.4 RECEIVER

Beautiful figured walnut cabinet . . . ALL-STEEL CHASSIS . . . built-in moving coil speaker for highest standard reproduction . . . British Screened Grid, H.F., L.F., and Super-Power valves . . . High Power 147v. H.T. grid bias batteries and L.T. accumulator . . . illuminated slow motion control. Powerful circuit employed offers a great choice of British and Foreign Broadcast Programmes. Complete, including valves and royalty and all batteries, £12.10.0 or 22/3 down and 12 monthly payments of 22/3.

£12.10.0



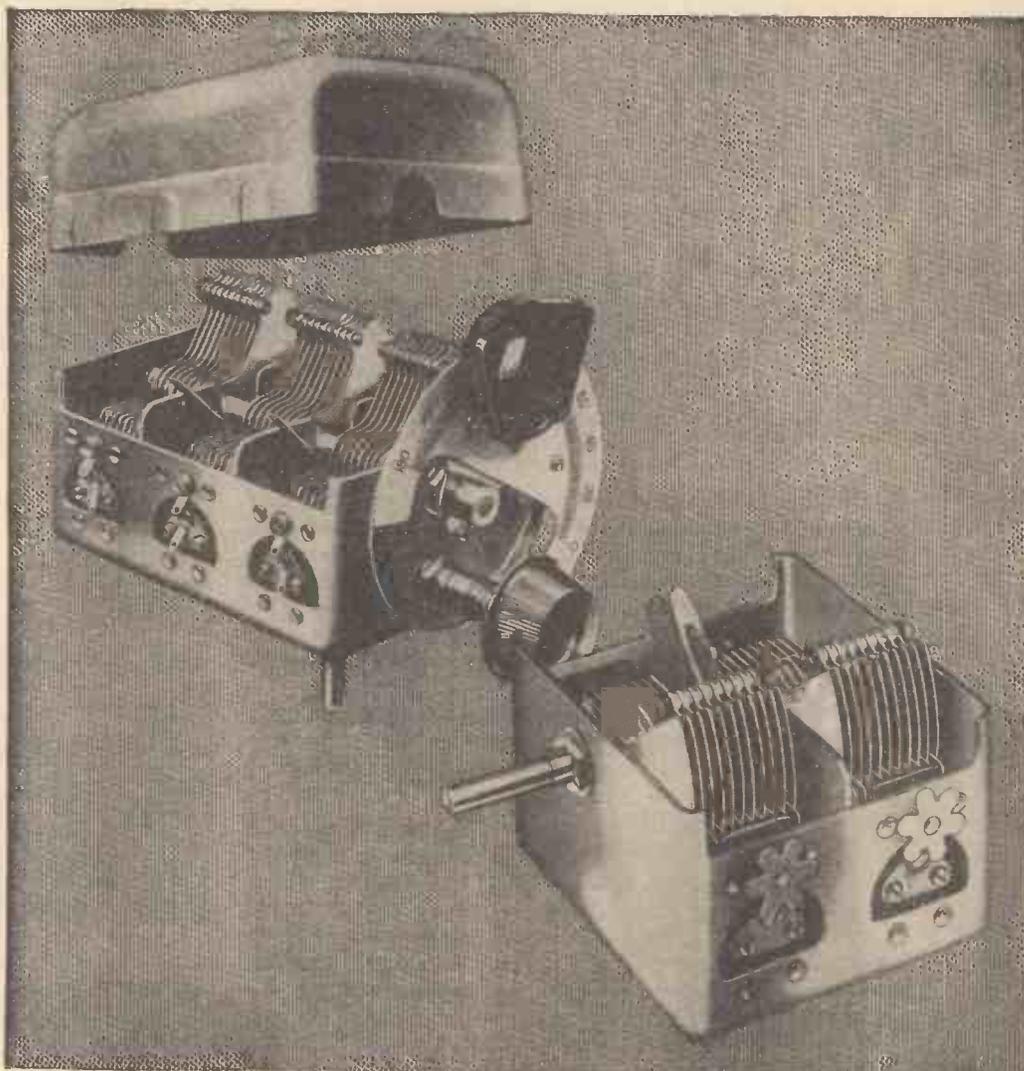
DOMINION A.C. MAINS S.G.P.3 RECEIVER

Figured walnut cabinet, handsome appearance and beauty of design . . . ALL-STEEL CHASSIS . . . built-in moving coil speaker, a revelation of quality with wonderful volume . . . British Screened-Grid, Detector, Pentode and Rectifying mains valves . . . illuminated slow motion control . . . selectivity and volume control . . . ganged condensers . . . matched screened coils . . . three aerial tappings . . . provision for gramophone pick-up and external loud speaker . . . fitted with mains switch. Provides a wide range of British and Continental stations. Complete, £15.15.0, including valves & royalty or 28/- down and 12 monthly payments of 28/-.

£15.15.0

DOMINION

ALL-STEEL CHASSIS SETS WITH MOVING COIL SPEAKERS

**NUGANG****Semi-screened:**

2-gang	...	14/-
3-gang	...	21/-
4-gang	...	28/-

Fully-screened:

2-gang	...	16/-
3-gang	...	23/6
4-gang	...	31/-

NUGANG Type "A." Complete with Disc Drive.**Semi-screened:**

2-gang	...	16/6
3-gang	...	24/6
4-gang	...	31/6

Fully-screened:

2-gang	...	18/6
3-gang	...	27/-
4-gang	...	34/6

Capacity without trimmers:

Minimum	...	20 m.m.f.
Maximum	...	520 m.m.f.

Capacity of trimmers:

70 m.m.f.

Dimensions (Nugang):

4 in. wide by 3½ in. high by 1 7/8 in. per stage + 1/8 in.

Some **J.B. NUGANG** models

A rigid chassis that is all one piece—not merely a framework bolted together. A one-piece chassis so strong that there can never be the slightest distortion in use . . . this is the chassis of the J. B. NUGANG, a condenser of extreme and lasting accuracy for use in modern sharp-tuned circuits.

Trimmers to each stage inside the chassis are operated by external starwheels. Construction is robust throughout. Vanes wide spaced and of heavy gauge. Special rotor bearings ensure *permanent* accuracy and give remarkably free movement.

Finally, *each condenser is matched to within ½ per cent. + ½ m.m.f.*

Supplied in four types as illustrated—semi or fully screened, with or without Disc Drive. Capacity '0005.

Write for catalogue.



Advertisement of Jackson Bros., 72 St. Thomas' Street, London, S.E.1.

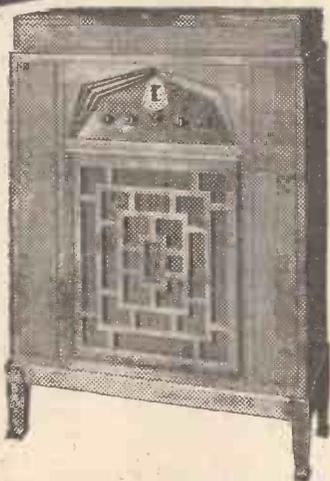
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ROLA & R.G.D. FIRST with DUAL BALANCED PAIRS OF SPEAKERS

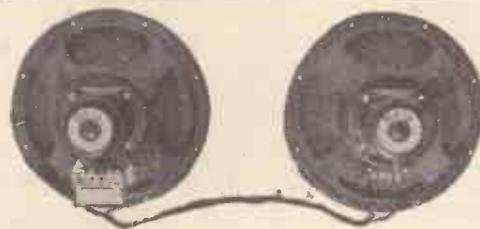
**R.G.D.
MODEL
9 0 1**



R.G.D. MODEL 901

This beautifully finished R.G.D. Radiogram is but one example from a range of instruments which have long occupied the supreme place amongst radio gramophones. The Super-Sonic Model illustrated herewith is a combined super-het receiver and record reproducer, priced at 80 Gns.

WHEN the first R.G.D. Radio Gramophone was designed it was with the fixed intention of producing the most perfect instrument that Radio had ever known. It was natural, therefore, that R.G.D. should be the first firm in this country to employ DUAL BALANCED PAIRS OF SPEAKERS and inevitable that they should select ROLA units. For several months Rola have been supplying R.G.D. with specially compensated pairs of speakers arranged so that the inherent frequencies and resonant points balance out, resulting in almost perfect reproduction over the whole harmonic scale and securing a degree of tonal fidelity unachieved by any single speaker. Rola and R.G.D. may justly claim the proud title of being pioneers in perfection.



**ROLA
DUAL
BALANCED
PAIRS**

The pairs consist of two F5 (6" Cone) Speakers of 8 ohms. (6 volts), 2000 ohms (110v.-175v.), 4700 ohms. (150v.-200v.), 6500 ohms. (200v.-250v.) £2-16-6 the pair, or two F5 (6" Cone) Permanent Magnet Models £3-7-6 the pair, or two F6 (7½" Cone) Field Excited Speakers at £3-10-0 the pair, or one F6 (7½" Cone) and one F7 (9" Cone) Speaker, both Field Excited at £4-5-0 the pair, or a balanced pair of Permanent Magnet Speakers (7½" Cone) at £5-2-6. All pairs are complete with Multi-Ratio Input Transformer suitable for triode, or pentode valve. Insist on ROLA the World's Finest Reproducers.

**ROLA
SPEAKERS**

for better
Radio Reception



For particulars of **ROLA**
Speakers write to :

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Brondesbury Wks., 179, High Rd., Kilburn, N.W.6

'Phone : Maida Vale 5017-8-9.

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Radiograms write to :

RADIO GRAMOPHONE DEVELOPMENT CO., LTD.,

17-20, Frederick Street, Birmingham,
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Manchester 'Phone : Blackfriars 1951

SEE WHAT THE PRESS SAYS ABOUT..

PERTRIX

"EVENING STANDARD" — JULY 1, 1932
 When taken off discharge for recuperation it showed good recuperative quality... Voltage distribution throughout was very even... After test the Battery was broken open... the zincs were in good condition... No apparent sign of bursting or corrosion.

"WIRELESS TRADER" — JULY 9, 1932
 ... a watt hour capacity of 1.73 for a cell of this size under the condition of test is very good, particularly in view of the fact that the price of the battery is very low. The Pertrix is very well made and can be recommended as very good value for money.

"POPULAR WIRELESS" — MAY 21, 1932
 A GOOD BATTERY This new Pertrix H.T. Battery is passing its P.W. tests in an admirable manner. Batteries are first class. We have used many Pertrix Batteries in our Research Dept., and so far not one has ever let us down... very good value for money.

"THE BROADCASTER" — MAY 28, 1932
 The zincs were found to be in perfect condition... The battery is excellently designed while the ingredients are well graded and mixed... the battery should give a consistent performance. We can recommend it as an attractive proposition at the reasonable price.

"AMATEUR WIRELESS" — JUNE 18, 1932
 Very competitive price... attractive performance... Really very good for so cheap a battery... Well in excess of our arbitrary standard... They are well up to Pertrix Standard.

"MUSIC SELLER" — JUNE, 1932
 The battery has good staying power... it has been carefully designed to provide that extra output which makes for Sales Records... The battery is well constructed and high class materials have been used. The zincs were found to be quite free from corrosion... It represents very good value for money and has the Music Seller O.K.

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H.T. BATTERIES from 5/6.

L.T. ACCUMULATORS from 4/6.

SEE THEM AT RADIOLYMPIA.

STAND No. 126.

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THE WORLD-FAMOUS HOUSE FOR GENUINE BARGAINS.



Fig. A.



Fig. B.

MOVING COIL SPEAKERS. Whatever your receiver or amplifier, big or small, you are bound to get glorious results from any of these highest grade moving coil speakers. **ROLA! ROLA!** The last few of the famous American J.40 Model, list price 96s. Offered complete with correct matching transformer. D.C. any voltage 22/6, carriage 1/6, A.C. 200/250 volts (Westinghouse rectified), 38/6, carriage 1/9. The new show model **ROTHERMEL**, Westinghouse rectified for A.C. 200/250 volts (as illustrated -A) with matching transformer 42/6, carriage 1/3. **PEERLESS 8-Guinea** model in expensive Walnut Gothic cabinet massive construction, weight 34 lb. complete for any A.C. Mains (suited to power outputs only). Last few, 57/6, part carriage 2/- **ELIMINATORS**, all brand new and guaranteed. Special bargain offer for A.C. Mains 200/250 volts (as illustrated -B) outputs 2 pos. (1 variable), 150 volts 25 mA (Westinghouse rectified), 30/-, post 1/- . Also our new super model for A.C. Mains 200/250 volts, outputs 3 positive (S.G. 1 variable), 160/180 volts 30/40 mA (Westinghouse rectified) in handsome metal case with cast ends, size 9 x 6 1/2 x 5 1/2 in. 47/6 (post 1/6). **METRO-VICK** for D.C. Mains 100/250, 28 model, output up to 240 volts 40 mA and G.B. up to 20 volts, really fine bargain, 25/-, post 1/6. Also our famous cheap models—thousands in use—for any D.C. Mains, output up to 160 volts, 30 mA, 2 pos. (1 variable), 15/-, post 1/- . **MAINS TRANSFORMERS**, all high grade goods by famous makers. All for 200/250 volts input (tapped primary). Outputs 325-0-325, 60 mA, 4 volts, 4 amp. and 4 volts 2 amp., 16/6 (post 1/-). Outputs 250-0-250 50 mA, 4 volts 3 amp., 4 volts 2 amp., 12/6 (post 1/-). Output 150 volts 25 milliamps, 6/6, post 6d. Filament Transformers, output 4 volts 4 amp., 7/6 (post 9d.). Voltage Changers, 65 watt, 200/250 to 100/120 (or vice versa), 18/6, post 9d. Also 10 watt for eliminator conversion 200/250 to 100/120 or vice versa, 7/6 (post 9d.). Transformers for chargers, model railways, etc., 200/250 volt input, outputs 7, 11 and 15 volts at 2 amps., 10/-, post 9d. Bell Transformers (also suitable for Trickle Chargers, lights, etc.), outputs 3, 5 and 8 volt, 1 amp., 5/6 (post 6d.), 2 amps., 7/6, post 9d. **CHOKES** Special offer of B.T.K. Chokes for eliminators or choke output, 30 henrys 75 mA, low D.C. resistance, 6/6 (post 6d.). We have 3,000 of these—trade enquiries invited. Also 40 henrys (C.I.) 75 mA, 8/6 (post 9d.). Also 30 henrys at 100 mA (C.I.), 12/6 (post 9d.). **CHARGERS.** The famous Tungar (B.T.H.) chargers, brand new complete with Tungar valves (please state A.C. mains voltage and cycles) 35/- model, charging 2, 4 and 6 volts at 3 amps., 12/6, post 1/3. Also H.T. and L.T. 75/- model, charging 2, 4 and 6 volts at 8 amp. and 120 volts at 100 mA, 79/6 (post 1/3). Big output type, metal rectified, charging 2, 4 and 6 volts at 1 1/2 amps., also useful for speaker fields, etc. 22/6 (post 1/3). **RECTIFIERS.** Last few, brand new Igranite copper sulphide rectifiers, delivering 6 7/8 volt 2 1/2 amps. All tested before despatch and guaranteed, 7/6, post 6d. Also 3 amp., 2/6 and 75 amp., 3/6, post 4d. Here is your great opportunity to make a trickle charger. **H.T. RECTIFIERS (IGRANITE)**, 120 volt 20 milliamps, 5/-, post 3d. **ELECTRIC CLOCKS.** Special announcement. We have entered this field with remarkable offers of these indispensable time pieces, any A.C. Mains, 50 cycles only. Large enamelled type 1 1/2 in. dial, various colours, raised numerals, with central seconds hand, 22/6, post 1/- . Bijou type, 2 1/2 in. dial, in mahogany finished barrel case, with central seconds hand and flex and plug, 22/6, post 9d. High grade Dacre movements only, with central seconds hand, easily fitted to any clock, 18/6, post 6d. Get Greenwich time to the tick all the year round at practically no cost (consumption 1 1/2 and 2 watt only) with these noiseless clocks. **CONDENSERS.** Polymet 8 m.f., 435 peak voltage, electrolytic, 3/- (post 3d.). Dubilier 6 m.f., 400 volt, 6d. each, 2/6 half dozen, post 4d. Dubilier 1 x 1 x 1 1/2 (3 m.f.), 500 volt, 1/0, 3 for 4/6 (post 6d.). Amphon 9 x 5 (4 1/2 m.f.), 500 volt, 2/6 (post 3d.). Clarke's "Atlas" .001 and .002, 2/- half dozen (post 4d.). Twin Gang all brass variable condensers, K.B., .0001, great clearance offer, 1/6 each, post 4d. **WESTERN ELECTRIC AMPLIFIERS.** A few more of these remarkable 2-valve amplifiers (listed £8) to be cleared at the absurd price of 12/6, post 1/3. **WESTERN ELECTRIC PHONES.** 2,000 ohms, brand new, 9d. each or 1/3 pair. Headbands for these, 9d. set, post on complete set, 6d. **ELECTRAMONIC PICK-UPS.** 2-gn. model, wonderful response curve, standard fitting, 10/6, post 4d. **LEAD COVERED CABLE.** Twin .044 very special offer coil lots only, 50 yard coils, 12/6. **METAL CASES** for eliminators, chargers, and other mains gear, strongly made with base-plate, size 10 1/2 x 6 x 5 1/2 in., 8/- each (post 3d.). Special quotations for quantities. All of the above items are of the highest grade and can be ordered with the utmost confidence of complete satisfaction.

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YOU ONLY NEED TO HEAR KENWELL POWER-PACK



MODEL A-C/U £8.15.0 H.T. L.T. G.B. AND MOVING COIL SPEAKER

EVERY BATTERY MAN CUTS COSTS AND CURSING WITH THIS COMPLETE MAINS UNIT AND MOVING COIL SPEAKER



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TURN YOUR BATTERY SET INTO AN ALL-MAINS MOVING COIL RECEIVER

Hundreds of Battery Set users who visited our Stand at Radiolympia discovered that the Kenwell Power Pack was just the unit they required to bring their Set up to date. And then—it is so economical in current consumption that its complete cost can be written off out of savings in the first 18 months!

DONT SCRAP YOUR BATTERY SET —it has always been a good friend to you.

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SPECIFICATION OF AC/U MODEL

H.T. 80 v. and 150 v. (fixed)
0-100 v. (variable) 25 m/a.
L.T. Trickle Charger at 25 amp.
G.B. 5 Tappings: 1 1/2, 3, 4 1/2, 9 and 15 v.
Mains energised moving coil speaker.
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KENWELL RADIO LTD.
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The degree of compensation is variable and may be suited to the particular tuned circuits in use or employed to correct deficiencies due to the loud-speaker or to the acoustics of the room. RECTATONE is thus the ideal L.F. coupling for *all* selective sets—particularly useful for those using a pick-up or for radio-gramophones, since the tone control, so valuable on radio, can be cut out on "gramophone" where it is usually unnecessary.

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Compensation is controlled by a variable resistance connected externally between two of the transformer terminals. *If this resistance be omitted or put out of circuit RECTATONE becomes a normal straight-line transformer giving high and even amplification.*

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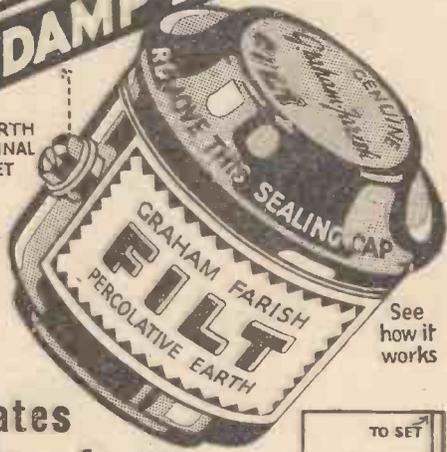
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A Sensational
Radio
Discovery

**PERMANENT-EFFICIENT
EVER-DAMP EARTHING**

TO EARTH
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OF SET



See
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works

Rejuvenates
the heart of your
receiver

Get the maximum power and purity from your receiver—stop crackling and minimise oscillation by fitting the most efficient earthing system ever invented—the new FILT percolative Chemical Earth. **FAULTY EARTHING CAUSES MORE RECEPTION TROUBLES THAN ANY OTHER SINGLE DEFECT OF A SET.** When you use FILT you know that your earth is SOUND.



**Wonderful New Percolative Chemical
makes even DRY soil permanently
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The active portion of FILT is a wonderful new chemical which when buried in the earth at once begins to spread and percolate, attracting moisture and forming a highly conductive network of channels spreading outwards and downwards to a depth of several feet. In ANY soil, in ANY weather, FILT makes a perfect, permanently damp earth of the highest efficiency, ensuring the best results from any kind of receiver.

How FILT works and what it does

Anybody can fix a FILT successfully. Merely bury the copper container, half filled with FILT chemical, about a foot below ground. The penetrating action begins at once, and very soon a PERMANENT, highly conductive network of chemical moisture is formed which makes your earthing system as effective as it can be. Your reception will improve, your set will be more selective, easier to control, less liable to oscillate or crackle, giving you the *best* all the time. Get a FILT to-day.

GRAHAM FARISH **FILT** PERCOLATIVE CHEMICAL EARTH
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Obtain FILT from your nearest radio dealer or order it direct (post free) from the sole manufacturers

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2/6
COMPLETE

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Though they are the smallest components in a Wireless Set, grid leaks and resistances are as vital as the largest part. It pays, therefore, to exercise the same care in their selection—the performance of your Set depends on their performance. You run no risks when you choose the new Dubilier Grid Leaks and the now well-known Dubilier Metallized Resistances. Millions are now in use. They have been proved by critical technicians to be unmatched in their performance—and absolutely reliable. Yet they cost no more than components of less repute. You can buy the new Dubilier Grid Leak for only 1/-, while the Dubilier Metallized Resistances cost only 1/- per watt.

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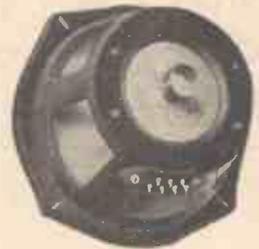
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SONOCHORDE

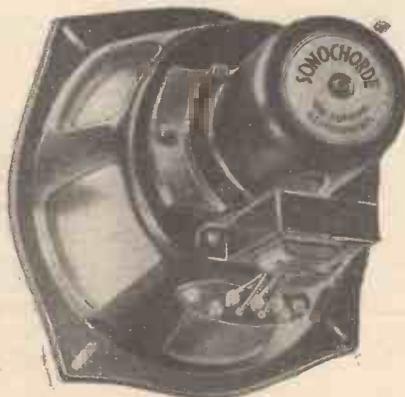
STAND 262
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the only Moving Coil
Speaker with a
Permanently Aligned
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Sonochorde embodies in its design the only outstanding improvement in moving coil speakers during the last three years. The new concentric disc suspension ensures—PERMANENT ALIGNMENT OF THE SPEECH COIL.—ADDED SENSITIVITY.—A BETTER OVERALL FREQUENCY RESPONSE. In addition to these features it should be remembered that each Sonochorde Speaker is equipped with a universal input speech Transformer for either power or pentode output valve. This Transformer is equipped with Terminals for ease in connecting to receiver or amplifier. Sonochorde moving coil speakers are available in both Permanent Magnet and Mains Energised types or in dual matched pairs at attractive prices.



PERMANENT MAGNET MODEL 7" CONE	- - - -	Complete
D.C. MAINS ENERGISED MODELS 2500-4700-6500 7" CONE		32/6
PERMANENT MAGNET DUAL MATCHED UNITS, per pair		25/-
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"MANSFIELD" PERMANENT MAGNET Moving-Coil Speakers



"MANSFIELD" SENIOR P.M.4
42/-
COMPLETE
With 3-ratio Transformer

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COMPLETE
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Write for the complete illustrated list of the new P.M.4 Energised M.C. speakers, valveholders and switches, and the new W.B. 3-valve kit, complete with moving-coil speaker.

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Tunes down to 12 metres and is adaptable up to 2,000 metres, incorporates S.G. H.F. amplification, absolutely no hand capacity, perfectly smooth reaction, one dial tuning, has been designed by short-wave specialists and praised by leading short-wave critics. It is supplied complete ready for any home constructor to assemble easily or the individual components are obtainable separately.

Total cost of all parts, with blueprints; leads, grid battery, coils for 12.5/85 metres, not including valves, **£6 17s. 6d.**

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THE
KILODYNE 4



EDDYSTONE

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After eight years' service

to true radio reproduction, the FERRANTI AF3 TRANSFORMER remains still without any equivalent at its price . . . and in the identical form which so upset all existing conceptions in transformer amplification in 1924.

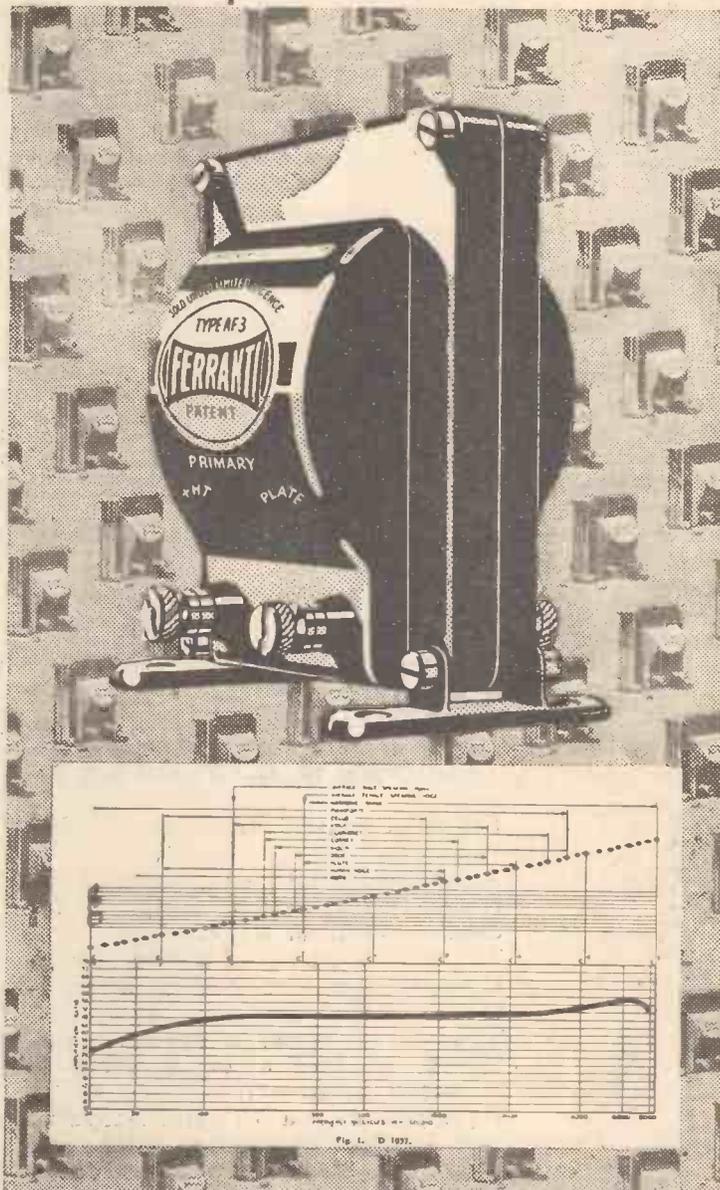
A Good Transformer must give not only uniform amplification in the laboratory but also in the set—to-day, to-morrow; year in, year out.

Ferranti Transformers have proved this characteristic—their freedom from breakdown is a by-word amongst Radio Engineers and Constructors all over the world.

The reproduction of your set will be greatly improved if you fit an AF3 . . . (unless you are already using an AF5).

PRICE 25/- Ratio 1/3.5
Inductance 70/110 Henries

Every Ferranti Transformer is guaranteed to give a performance within 5% of the published curve, AND within 5% of every other Ferranti Transformer of the same type. Ferranti are the only transformers so guaranteed.



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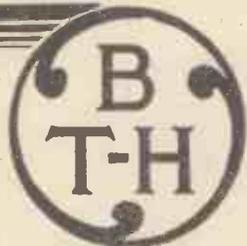
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LONDON: Bush House, Aldwych, W.C.2.

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Now the



"Show" is over..

Did you see the new B.T.H. electric gramophone Motors?

Shown for the first time at the National Radio Exhibition, Olympia—these latest products of B.T.H. research are NEW in every sense of the word. Of entirely NEW and patented design—manufactured under the most modern conditions—they represent a real achievement.—Fuller particulars will be gladly sent on application.

'Truspeed'

Speed is electrically controlled and cannot vary with the heaviest recording.

Automatic stop operates instantly and is adjustable for any make of tone arm.

Current consumption is almost negligible—being only 6 to 8 watts.

Beautifully finished in florentine bronze with mounting plate and 12" plush-covered turn-table.

Price - £2.9.6

'Universal'

For A.C. or D.C. supplies, 100-250 volts.

A heavy duty motor of exceptionally robust construction designed for continuous hard work.

The driving unit is of ample dimensions, its armature rotating at turn-table speed.

The correct speed is always maintained by means of a perfectly balanced governor.

Equipped with a 12" plush-covered turn-table, mounting plate and automatic stop, there is no doubt that this machine is far in advance of any universal motor yet produced.

Price - £5.10.0

**The British Thomson-Houston Co., Ltd.,
Head Office and Works RUGBY**

A1274N

Another TRIUMPH for "ATLAS" SUPER MAINS UNITS



THE NEW A.C. 300

The first unit to give true output voltage regulation

... Experts said it could not be done. But just as "ATLAS" last year improved the Olympia Ballot Winner of 1930, so have they improved the 1931 Ballot Winner: adding amongst other refinements, the new "ATLAS" regulated output to ensure correct voltages irrespective of the milliamps consumed. And all without any increase in price.

This new "ATLAS" Model A.C.300 is emphatically the last word in mains unit design and most probably will remain the standard for years to come.

See it at Olympia. Test it for yourself. Ask your dealer for a demonstration to-day. There's no comparison with "ATLAS."

Post the coupon now for full details of "ATLAS" Mains Units for every set, and "ATLAS" Guaranteed Components.

CLARKE'S "ATLAS" MAINS UNITS

H. CLARKE & CO. (M/CR) LIMITED,
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TAPPED OUTPUT
12, 18 & 25 m/A at 150V.

H.T. TAPPINGS
0/100 and 0/120V. Variable. 150V. Fixed.

G.B. TAPPINGS
1½, 3, 9, 16V.

L.T. TRICKLE CHARGER
for 2, 4, and 6V. Accumulators.

TAPPED INPUT
for 100/125 and 200/250V. A.C. Mains 40/120 Cycles.

WESTINGHOUSE RECTIFIERS
Size 10½" x 6" x 3½".

Fully guaranteed for 12 months.

CASH PRICE
£6-10

POST THIS COUPON TO-DAY!

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Please send full details of "ATLAS" Mains Units and Components.

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BURTON

AGAIN SETS THE PACE IN RADIO PROGRESS . . .



A RADIO-GRAM FOR 26 GNS.

This dual-purpose instrument establishes an entirely new Standard of Value in Radio. Never before has such a striking achievement been accomplished between one season and another. The Chassis of the BurTon Four Valve All-Electric, described opposite, forms the basis of this model, except that it is fitted with a 2½ watt output valve. It is also equipped with B.T.H. pick-up, and Motor with fully automatic stop, and Moving Coil Loud Speaker. Controls have been reduced to the bare minimum and operation simplified to the utmost. The Cabinet, which is a very substantial and handsome piece of Craftsmanship in Oak, has compartments at either side for the storage of records.

The above model is also made for Radio only in the shape of a writing bureau. The Cabinet is almost identical in design and includes two side cupboards, in itself forming a handsome piece of furniture PRICE COMPLETE 19 GNS.

All previous records of Radio progress go by the board with the introduction of the new BurTon models for 1933. If you are coming to the Radio Exhibition at OLYMPIA, make STAND No. 1 your first call, otherwise write NOW for latest literature, illustrating and describing Receivers, Radio-Gram, Speakers, Components, All-Mains units, etc.



THE BURTON FOUR-VALVE ALL-ELECTRIC WITH MOVING COIL LOUD SPEAKER 16 GNS.

Here is the new BurTon SGP. All-Electric Receiver, fitted with four valves including rectifier.

Single dial band pass tuning gives highest standard of selectivity, so essential under present day conditions, without impairing tonal quality.

A power Pentode Valve, tone compensated, giving an output of 2 watts to a B.T.H. Moving Coil Speaker, ensures superb quality of reproduction.

Three controls only, rendering manipulation simplicity itself and extremes of volume obtainable as desired. There are absolutely no exposed "live" parts in this set, which completely eliminates risk of shock.

No Mains Hum. A mains Aerial is provided which enables set to be used without outside Aerial.

BURTON ALL-MAINS UNITS



Give more efficient, smooth and silent power supply. No fragile valve or liquid rectifiers. Compact in size. No modulation hum. D.C. models from £1-8-6. A.C. models from £2-12-6.

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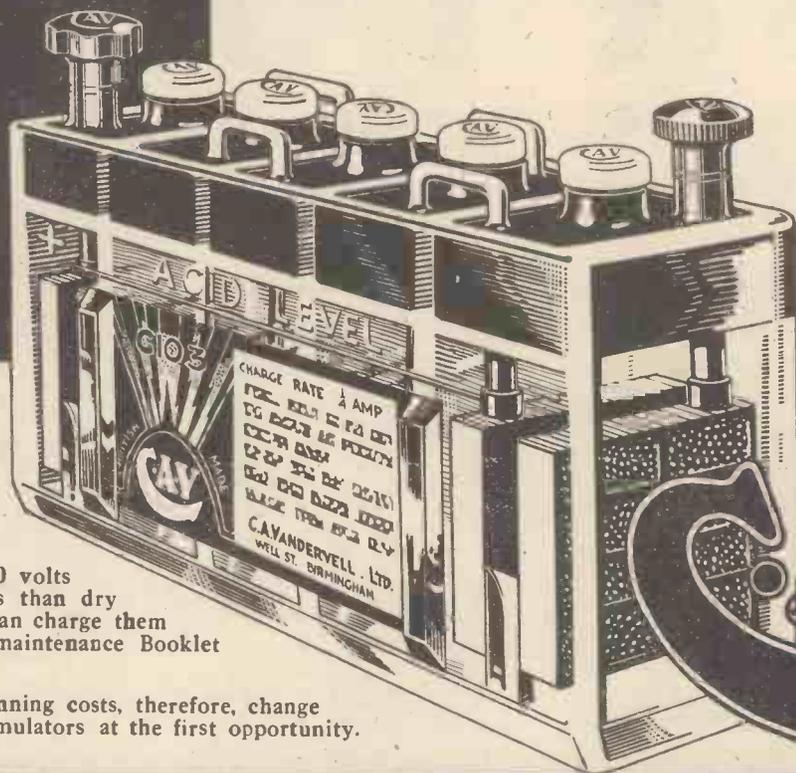


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and
Cheaper than dry batteries



Send for free maintenance Booklet containing charging circuit diagrams and useful information on the charging and care of C.A.V. Radio Accumulators. Send a post-card to

Department
C. A. VANDERVELL LTD.,
WELL STREET, BIRMINGHAM.

Available to all in town or country, C.A.V. Rechargeable High-Tension Accumulators provide the most perfect form of H.T. obtainable. They are quite silent in operation and produce none of the annoying crackling and humming noises so common with dry batteries and mains.

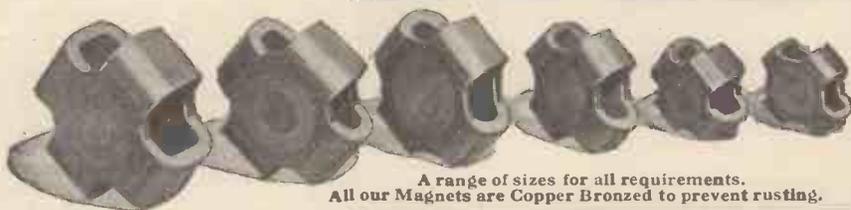
With recharging costing about 3/- per 120 volts three times a year, they actually cost less than dry batteries and if you have D.C. mains you can charge them yourself at a fraction of this cost. Our maintenance Booklet shows you how to do it.

To greatly improve reception and reduce running costs, therefore, change over to C.A.V. Rechargeable H.T. Accumulators at the first opportunity.

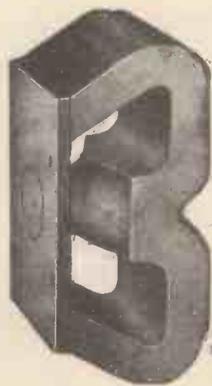


RECHARGEABLE H.T. ACCUMULATORS

• SWIFT-LEVICK •



A range of sizes for all requirements. All our Magnets are Copper Bronzed to prevent rusting.



As pioneer Manufacturers of Permanent Magnets in this country, we naturally took the lead in Wireless design and made the Permanent Magnet Moving Coil Speaker a practical economic possibility.

PERMANENT MAGNETS

SWIFT-LEVICK & SONS Ltd. Clarence Steel Works SHEFFIELD

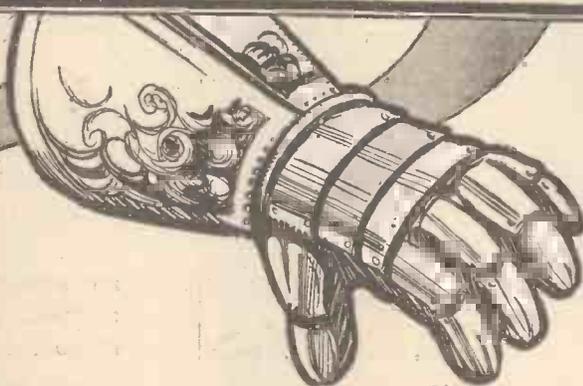
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New Edition — 20 Century Model

EPOCH

P.M.M.C. LOUDSPEAKERS

A CHALLENGE



HEAVERY Cobalt Steel Magnet with very high flux density — Aluminium frame (copper plated) holding 8½ in. diaphragm which is made in one piece and impregnated. Resistance of speech coil 5.50. 5-ratio matchings of input transformer ensure fine matching with power, super-power, or pentode output valve. Perfectly even reproduction between 50 and 6,000 cycles.

With
5-RATIO INPUT TRANSFORMER
READY FOR USE.

35/-

Fitted in handsome Oak Cabinet, as illustrated. Type "20 c.c."

47'6

WE, the undersigned, the pioneers of the modern Permanent Magnet Moving Coil Speaker, the manufacturers of the greatest range of the finest moving coil speakers in the world, claim for the New Edition 20th Century Model, priced at 35/-, that it has no peer in its class in or out of the British market. We claim for it Sensitivity, Brilliance, Body, Bass, sharpness and clearness of Speech and Music, Handling Power, Sturdiness and Reliability *unrivalled* by many moving coil speakers (energised or permanent magnet) selling at much higher prices.

(Signed) Epoch Radio Manufacturing Co., Ltd.

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Ask your dealer for it and don't be put off with "Just-as-good's" —

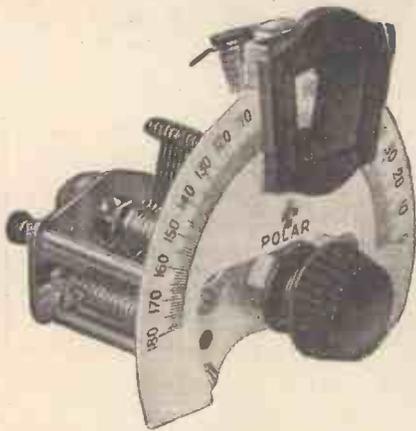
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Send for particulars or call for a comparative demonstration.

EPOCH RADIO MANUFACTURING CO., LTD., Exmouth House, Exmouth Street, London, E.C.1 (at the junction of Rosebery Avenue and Farringdon Road). Phone: Clerkenwell 6666.

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Polar condensers do not 'follow the crowd.' In design and construction Polar condensers are distinctive. They embody those original points which make them different and much more desirable to the man who realises the importance of the variable condenser in his 'scheme of things.'



THE POLAR 'APERTURE'

A Slow Motion condenser of unique design providing a most convenient method of control. Operation is by small knob at the base, the scale being actually part of the condenser itself. Simple fitting—one hole only being required for escutcheon.

Built of aluminium. Of extremely efficient design and construction. Lamp holder for scale illumination.

.0005
.00035
.0003 **7/6**



THE POLAR 'No. 2'

Owing to its precise workmanship and amazingly low price, it has proved itself the outstanding condenser of its type.

Its popular features include fast and slow motion, ball-bearing spindle, positive pigtail connection, one-hole fixing. It follows mid-line law, and is made in hard aluminium with brass pillars for rigidity.

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STAND 129 OLYMPIA
POLAIR
CONDENSERS

Catalogue of complete range—free

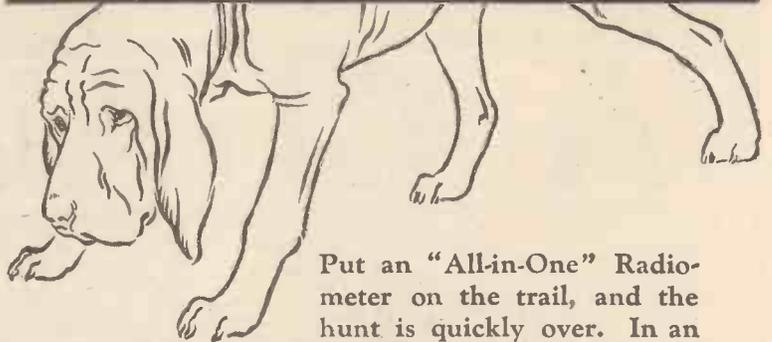
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Representative for France: W. A. Swift, 6, Rue Dequerry, Paris, XI.



Wingrove & Rogers Ltd., 188-9, Strand, London, W.C.2.

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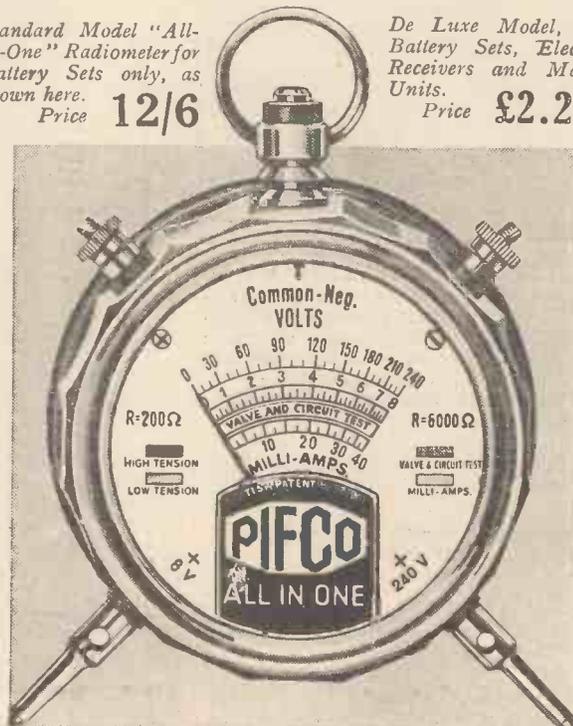
Put an "All-in-One" Radiometer on the trail, and the hunt is quickly over. In an amazingly short time this marvellous instrument will track down the trouble.

There is no other instrument in the world like the "All-in-One" Radiometer. It works with an accuracy that must be seen to be fully appreciated. Every single component of any radio set can be tested swiftly and surely.

Ask to see it at your Radio Dealer's or Electrician's. If in any difficulty, write direct to PIFCO Ltd., High St., MANCHESTER.

Standard Model "All-in-One" Radiometer for Battery Sets only, as shown here.
Price **12/6**

De Luxe Model, for Battery Sets, Electric Receivers and Mains Units.
Price **£2.2.0**



PIFCO
ALL IN ONE
RADIOMETER

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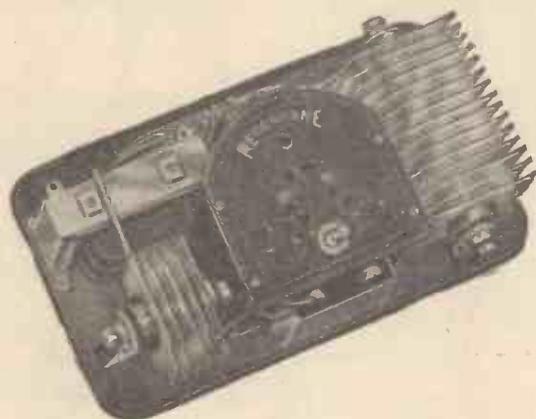
THE NEW RANGE OF REGENTONE MAINS UNITS



5

STAR FEATURES

ONLY ON REGENTONE



The incomparable range of Regentone Mains Units entirely redesigned. Each Mains Unit now incorporates these five star features :

Each model is housed in a solid drawn steel case, of most attractive design having a Florentine bronze finish.

Each and every model is provided with tappings divided into three main groups; SCREEN GRID, DETECTOR AND POWER. The Screen grid and detector supply each have high, medium and low outputs. The power supply has one output only. SEVEN VOLTAGE TAPPINGS ARE COMMON TO ALL MODELS. All mains units incorporate a LINE VOLTAGE REGULATOR, by means of which voltage fluctuations in the main supply line can be compensated.

The Line Voltage Regulator and voltage tappings are carried by a specially moulded distributing block; the sockets carrying voltage are sunk into the insulating medium.

For supply and voltage as follows: 200/250 volts, 100/120 volts, at 40/100 cycles. Dual frequency 25/50 cycles at an extra charge of 10/-. Prices from 39/6 or 8/- down.

**Change from battery to mains
but change with Regentone
—and follow the experts**

If you have a battery operated receiver, make it all-electric with one of the new Regentone Mains Units. Regentone Mains Units are specified by famous set manufacturers for their sets; experts choose them for 3 star circuits, the Press pays tribute to their efficiency and reliability. Choose Regentone — the one the experts all recommend.



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Motor leads the loudspeaker field for both moving coil and balanced armature types. Write for descriptive pamphlet to:—

Full, rich tone—super sensitivity—startling realism—these are but three of the outstanding features of the unique S.40 Motor Unit.

All who hear it have nothing but praise for its amazing performance—the secret of which lies in the **PATENT COMPENSATING ARMATURE**—the greatest advance yet made towards perfect loud-speaker reproduction.

Judge for yourself—come and hear it under fair working conditions at our special demonstration showrooms opposite Olympia.

The full range of MoTor speakers is on view, and there is one amongst them that will suit **YOUR** set—**AND** your pocket.



YORK A graceful walnut cabinet with S.40 Unit, as illustrated. **52/6**

BRITISH
MADE



MOTOR

S.40 UNIT

as illustrated, with Patent compensating armature **27/6**

C.400 Complete chassis assembly, with S.40 Unit and Cone **39/-**

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OPPOSITE EMPIRE HALL
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RADIO POWER PLANT MACHINES FOR EVERY NEED

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STAND 246
RADIO EXHIBITION
OLYMPIA

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Models for All Purposes! D.C. to D.C. Models for supplying H.T. Current to Large Public Address Amplifiers, etc. D.C. to A.C. Models for operating A.C. Receivers and Radiogramophones from D.C. Mains.

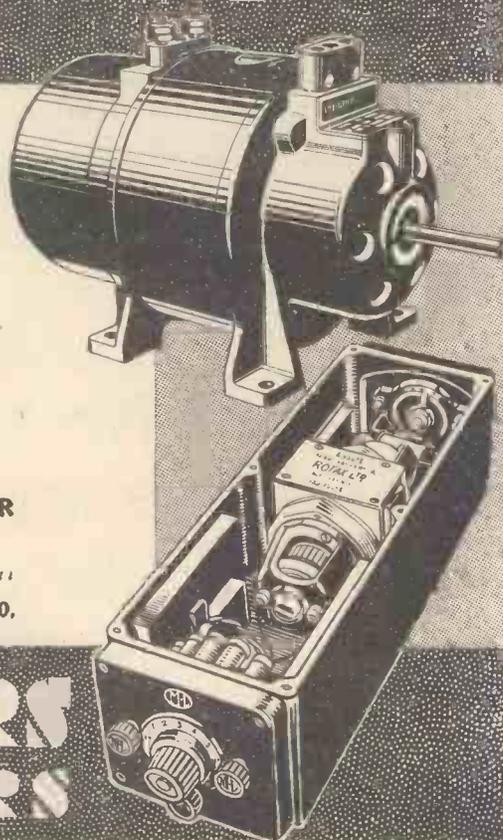
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Give H.T. from L.T. Battery! Special Models for: McMichael, Philips, Eddystone and G.E.C. Short-Wave Receivers.

LOOK FOR

THE NEW SYNCHRONOUS GRAMOPHONE MOTOR
THE NEW MAINS TRANSFORMER

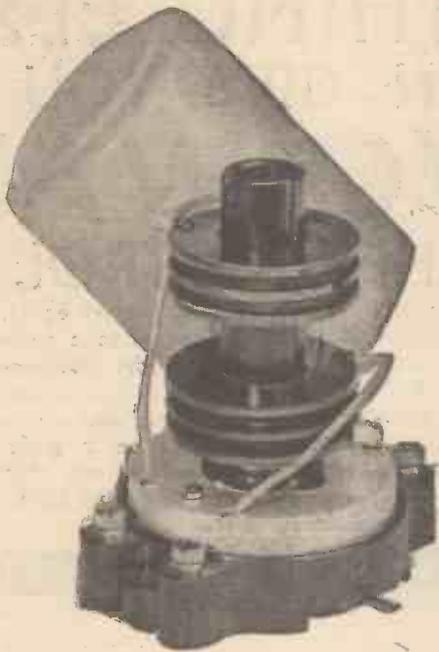
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—FOR YOUR—
“BABY SUPER”



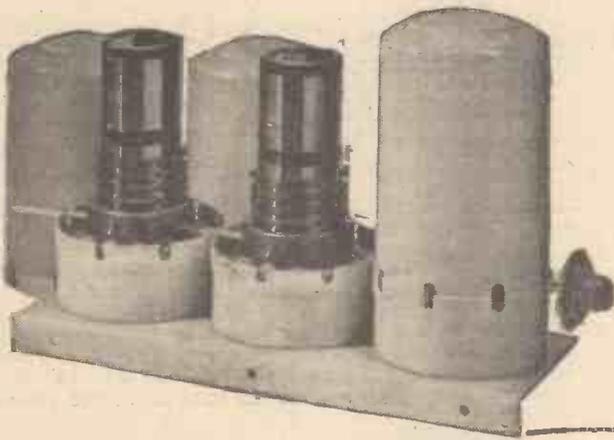
**COLVERDYNE
 INTERMEDIATES**

Maximum efficiency will be obtained by the use of Colverdyne Intermediates.

They are designed to work

**IN CONJUNCTION WITH
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‘K’ TYPE COILS



In receivers of outstanding design Colvern Coils are incorporated ... Colvern Screened Coils are accurate and reliable, their inductance being guaranteed to be within 1/2% Appearance and finish are beyond reproach.

**STAND No.
 245**

**RADIO
 EXHIBITION
 OLYMPIA
 19-27th AUGUST.**

For the “BABY SUPER”	
1 set Baby Super Coils =	30/- set
1 Colverdyne, Type 110 =	12/6 ea.
1 Colverdyne, Type DO.110 =	12/6 „
1 Valve Screen, Type VS. =	2/9 „

Send for Radio List No. 10.

COLVERN LIMITED, MAWNEYS RD., ROMFORD, ESSEX.

MODERN RECEIVER DESIGN DEMANDS WEGO SMOOTHING CONDENSERS



Wego Condensers are essential to the efficient functioning of modern radio receivers because of their low power factor, their high dielectric strength, their ability to withstand their rated voltages for an unlimited period of continuous running and their small dimensions.

These are the reasons why more and more important manufacturers are turning to Wego . . . why constructors insist upon them. And they only have to buy Wego ONCE!

SEE THEM
ON STAND
No. 284
AT THE RADIO
EXHIBITION

WRITE FOR FULLY
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THE WEGO CONDENSER Co. Ltd.,
SPENCER HOUSE, SOUTH PLACE,
E.G.2

Phone: National 4800.
Works: Perivale, Greenford, Middlesex.

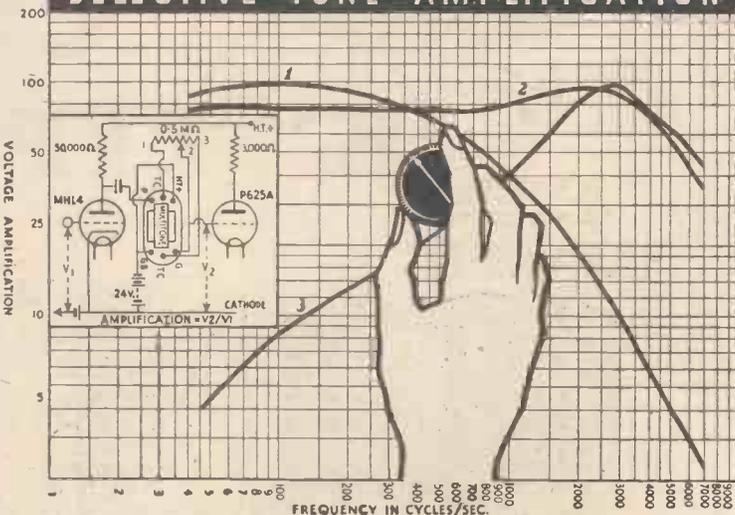


TRUE TONE CONTROL

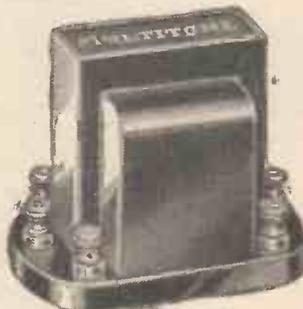
NOTHING ELSE CAN GIVE YOU TWO-WAY TONE CONTROL

The Multitone Tone Control Transformer has no equal, but it has many imitations. No other method of tone control can claim to do what it has been proved the Multitone most definitely does. By means of a Multitone Transformer you can amplify low notes or high notes at will, that is, you have "two-way tone control" which has never before been available and which cannot be obtained from any other form of tone control. The Multitone will correct the tone of any radio set or radiogramophone.

SELECTIVE TONE AMPLIFICATION



By changing the setting of the Potentiometer, the response-curve of the Multitone Transformer is progressively altered from a falling (1) through a level (2), to a rising characteristic (3). The limiting responses, and an intermediate level-response are shown by these curves. When the response is level the transformer ratio is 4.1. True Two-way Tone Control is immediately at your disposal on any set. In use all that is necessary is to turn the Potentiometer until the desired overall response is obtained.



Any good Potentiometer exceeding 0.5 megohms can be used with the Tone Control Transformer but the best results are obtained with the Multitone Graded Potentiometer (price 3s. 6d.) which has been specially designed for this purpose.

17'6

Our Booklet on
Tone Control will
be sent post free
on receipt of a
postcard.

MULTITONE TONE CONTROL L.F. TRANSFORMER

MULTITONE ELECTRIC CO. LTD.,
95-98, WHITE LION ST., LONDON, N.1 Phone: NORTH 5063.

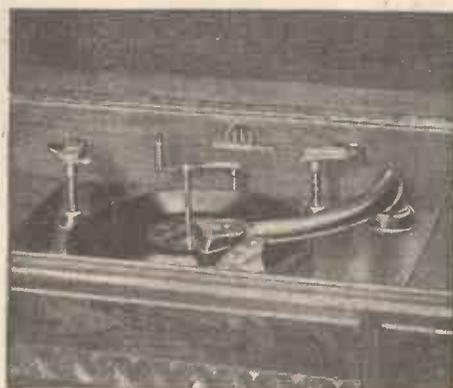
M.C.16

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The Better Times

of interest to all listeners

BIG 901... AND LITTLE 701 NEW R.G.D. PROGRAMME



Above is illustrated an entirely new design of Garrard Automatic Record Changer which can be fitted to all R.G.D. Models at an extra cost of 15 guineas. It plays eight 10 or 12 inch records, any of which can be repeated or rejected.



LITTLE BROTHER SEVEN-O-ONE MAKES HIS BOW!

In view of the outstanding success of our type 901 Supersonic Radio Gramophone during the past season, we have been encouraged to produce a model having a similar performance but at a lower price. Type 701 Radio Gramophone is really a smaller edition of big brother 901, the ultimate outcome of very intensive experimental work combined with R.G.D.'s reputation of

only building the highest quality Radio Gramophones, and we confidently introduce this little brother of the Supersonic as the very best at its price. The radio is amply selective for all modern needs and trouble from interfering stations is reduced to a minimum. Gramophone reproduction on all R.G.D. instruments has always been unsurpassed and the type 701 upholds this tradition.

**901 Prices range from 80 gns.
701 Prices range from 48 gns.**

STOP PRESS

If you have been unable to visit Stand 92* during the Exhibition, take an early opportunity of hearing these remarkable instruments at your dealers or IN YOUR OWN HOME—no obligation whatever.

There is still time if you hurry.

To RADIO GRAMPHONE DEVELOPMENT Co., Ltd.

17-20, Frederick Street, Birmingham
Phone: Cent. 6272-3.

And at 17, Bridge Street, Manchester
Phone: Blackfriars 1951.

Name

Address

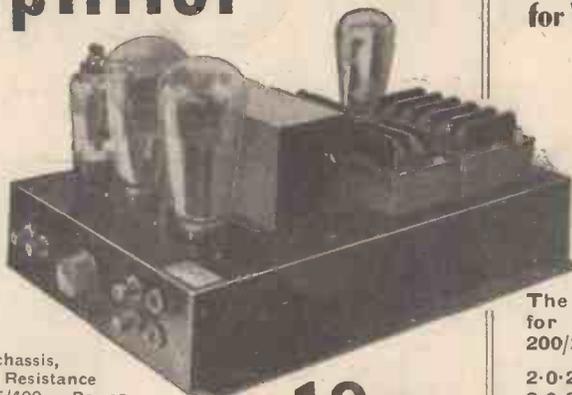
The **BSR** 50 Watt
ALL MAINS
Power Amplifier

for Pick-up, Radio
and Public Address

Designed by, and manufactured
under the personal supervision
of Mr. D. McDonald, B.Sc. (Hons.),
Assoc. I.R.E., the originator of
Screened Grid Low Frequency
Amplification.

Specification includes enamelled steel chassis,
Screened Grid L.F. Amplification, Resistance
Capacity Coupling, and 2 PP5/400 Power
Valves. A 3-ratio Output Transformer is incorporated,
also volume control. Two input tappings are provided
for Radio and Gram. Pick-up, and three tappings for
operation on mains of from 190/210, 210/230 and
230/250 v. cycles. Plugs for supplying H.T. and L.T.
A.C. to radio chassis are also incorporated. Dimensions:
10 ins. by 16 ins. by 9 ins.

This Amplifier gives a practically flat characteristic
from 50 to 8000 cycles, with power sufficient to feed
at least 6 m.c. speakers. Write for full particulars.



19 GNS.
(VALVES EXTRA).

The B.S.R.
RADIO CHASSIS

for use with this Amplifier,
is available.
Write for details.

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**Mains
Transformers**
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Output Transformers & Chokes

B.S.R. Products are absolutely safe for mains
work, and guaranteed immune from breakdown.
The various voltages are guaranteed to within a
very close degree of accuracy, and all our
products satisfy the most critical requirements
of electrical and mechanical efficiency.

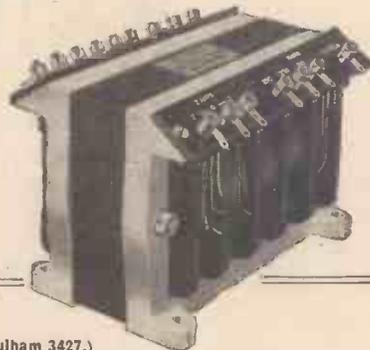
Transformers to specification from
50 to 1500 watts.

The TYPE P5a Mains Transformer illustrated, is
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200/220/240 v. 50 cycles. 500.0-500 v. 120 m.a.

2.0-2 v. 1-3 amps.
2.0-2 v. 1-5 amps.
2.0-2 v. 1-5 amps.
or
3.0-3 v. 1-4 amps.

Price 55/-

Write for Lists of
Transformers and
Chokes. Post Free.



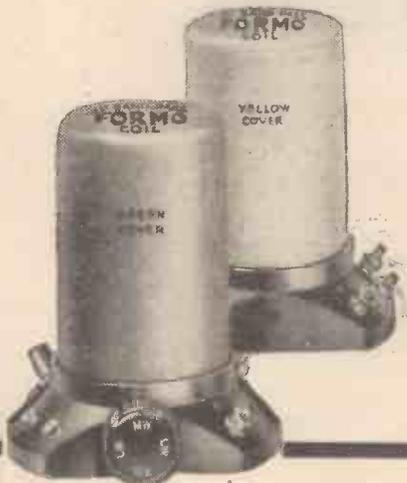
FORMO Provides
Constructors
with a **NEW SIMPLICITY**

The new FORMO Dual Range Coils offer
the simplest possible means of identi-
fication. Each coil screen has its own
distinguishing colour—Red for the Aerial,
Blue for H.F., Green and Yellow for first
and second Band-Pass coils. In addition,
each coil has a permanently fixed connecting
chart in its own distinctive colour. Thus
you can easily see where to place each coil
when building or re-wiring your set.
The scientific care with which each FORMO
Coil is made and matched ensures maximum
efficiency. Furthermore, a high de-
gree of selectivity has been obtained
over a large wavelength range.

If unable to obtain Formo Components locally,
write to:

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FORMO CO
Crown Works, Regents Park,
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Telephone: Gerrard 2088.

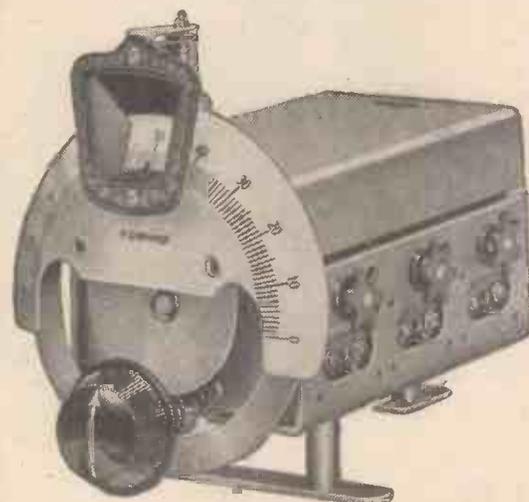


FORMO DUAL RANGE COILS

Aerial, H.F., 1st and 2nd Band Pass:

Pair of matched Aerial and H.F. Coils mounted on aluminium base, with ganged switching 16/-
Pair of Band-Pass Coils and H.F. Coil, similarly mounted and switch-ganged 23/6

7/6
EACH



**FORMO GANGED
CONDENSERS**

Perfectly matched with Formo Dual Range Coils—
DUAL GANG 16/6
TRIPLE GANG 21/6

Complete with dial and Escutcheon as illustrated.
Formo Dual and Triple Gang Condensers can be
supplied mounted on a base plate with either two or
three Dual Range Coils. These complete assemblies are
carefully matched and all switches are ganged.

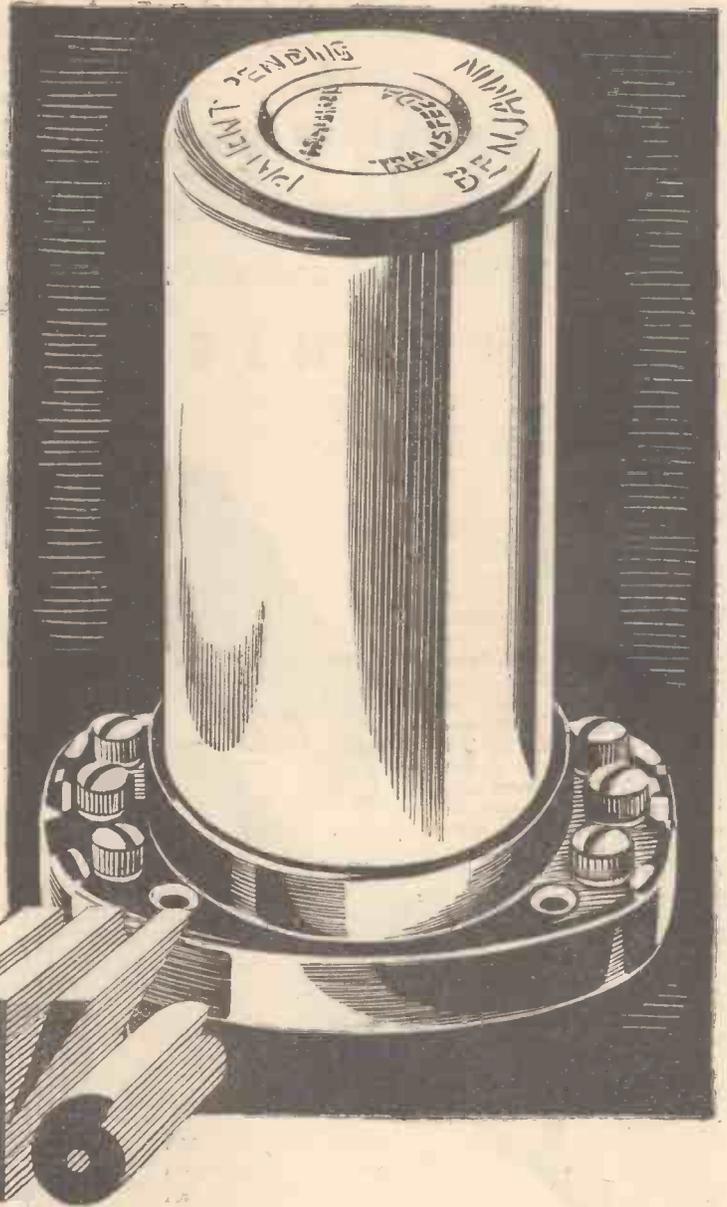
For fuller information on the im-
provements in these and other
modern and moderately priced
FORMO components, see the new
Formo Catalogue.

Get your copy quickly, to-day.
Olympia Stand 100

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"Say TRANSFEEDA"

Wherever a Low Frequency transformer is in use in your present set, or indicated in the set you are thinking of building put in a BENJAMIN TRANSFEEDA and take advantage of this latest development in L.F. amplification. All prominent set designers are now specifying resistance fed transformer units and the great majority have preferred the BENJAMIN TRANSFEEDA on account of its outstanding superiority in design and performance. Follow their lead and ensure for your set the purity and volume of reproduction that only the Transfeeda can give. See the TRANSFEEDA at STAND 40 or let us forward you List 1292 which describes it fully and gives circuits and diagrams.



**STAND
40**

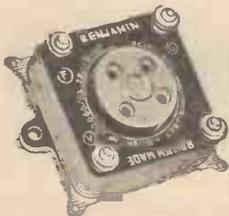
BENJAMIN

THE BENJAMIN ELECTRIC LTD.
TARIFF ROAD, TOTTENHAM, N.17.



Note these reduced prices

CLEARERTONE



~~2/6~~ 1/6d

PUSH-PULL SWITCH



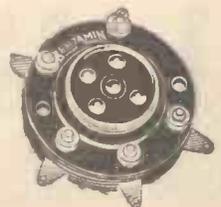
~~1/6~~ 9d

VIBROLDER



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FIVE-PIN



~~1/9~~ 1/3d

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COMPACTNESS,
EFFICIENCY and
PRICE COUNT . . .

USE

DUBILIER
TYPES 665 and 670

CONDENSERS

In every respect save size and price—Dubilier type 665 and 670 are big condensers. The same high-grade materials, the same irreproachable finish and workmanship, the same exhaustive testing are all features of the 665's and 670's just as they are the characteristics of the more bulky Dubilier Condenser. The type 665 and 670 are designed to fill the bill where chassis space is at a premium, where smallness of size must go with efficiency and utter dependability.



Dubilier type 665 and 670 condensers are available in all popular capacities at prices ranging from 6d. to 1/6.



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CONDENSER
CO. (1925) LTD.**

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N. Acton, London, W.3

RADIOPAK
(REGISTERED)
THE ONLY COMPLETE BAND-PASS TUNER



PRICE
£3
COMPLETE

RADIOLYMPIA
Stand No. 93

MATCHED PERFECTION

Revolutionising Set Construction

THE British Radiophone Radiopak unit has been specially produced to bring perfect Band-pass tuning within reach of all constructors.

The unit consists of the necessary coils; the gang condenser with illuminated slow motion escutcheon and disc drive calibrated in wavelengths; a wave change switch; and a wire wound volume control complete with on-off Q.M.B. power switch. The switching arrangement is the best yet devised for any radio component, and the combined volume control and switch is one of the famous Radiophone standard types needing no further recommendation. Owing to the high degree of accuracy in the matching of the coils and condensers, this unit will REVOLUTIONISE modern set construction. Write for full descriptive particulars to Dept. W.W.

THE BRITISH RADIOPHONE LTD.

ALDWYCH HOUSE, ALDWYCH, W.C.2

Telephone: Holborn 6744.

THE SEASON'S GREATEST ADVANCES in RELIABLE RADIO

SETS THAT COVER EVERY
MODERN RADIO DEVELOPMENT



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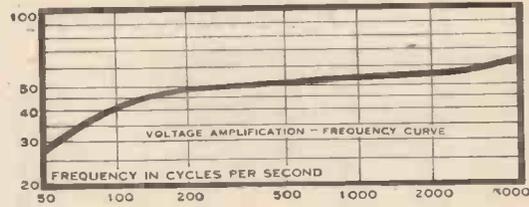
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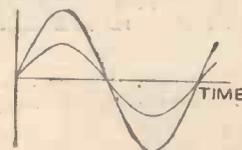
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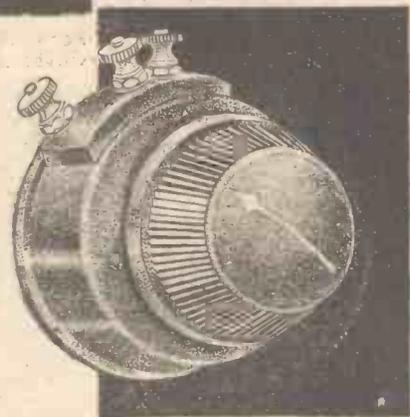
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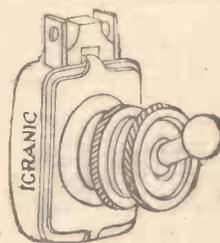
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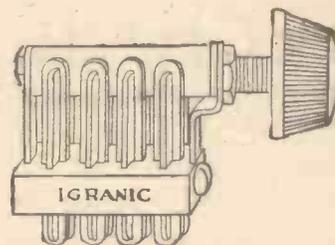
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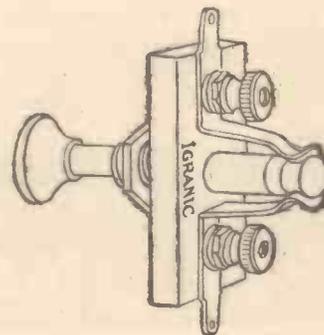


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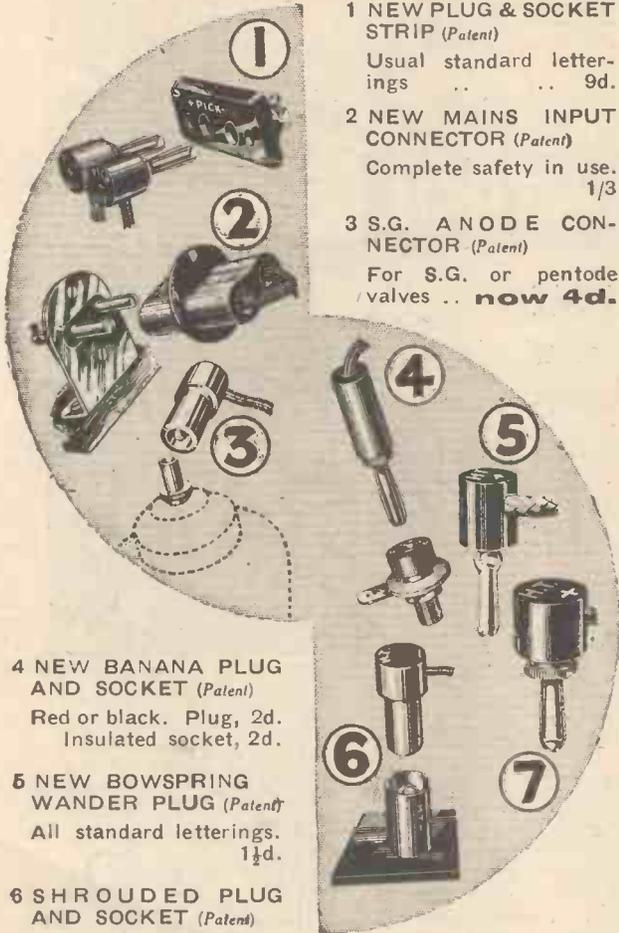


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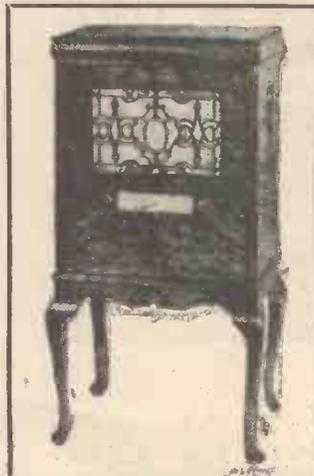
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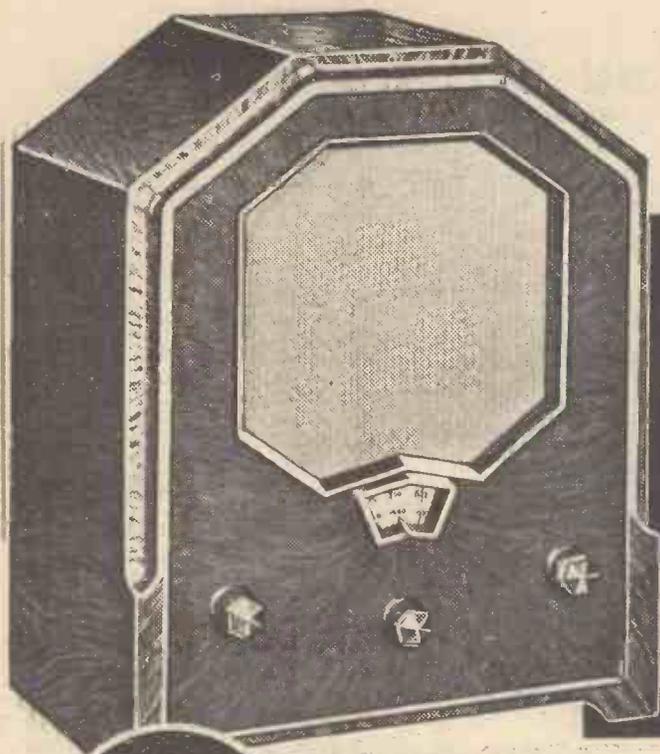
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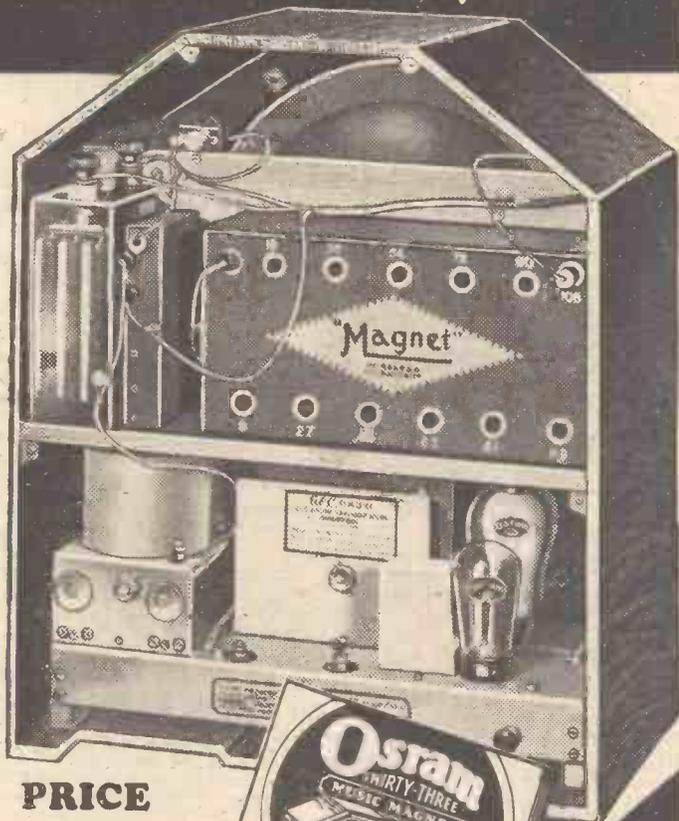
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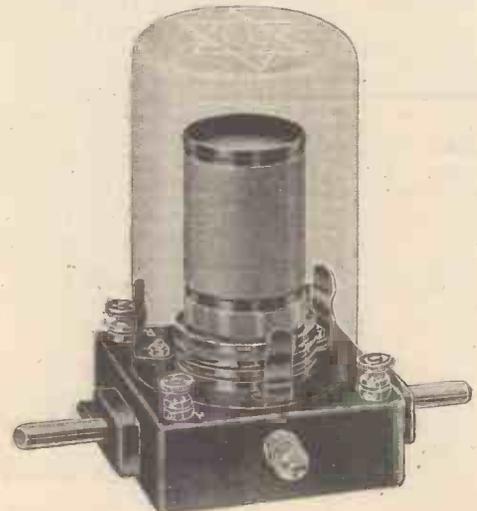
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0 — .12 "	0 — .012 "	0 — 0.12 "	0 — 0.012 "
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0 — 12 "	0 — 1.2 "	0 — 12 "	0 — 1.2 "
0 — .12 "	0 — .012 "	0 — 1.2 "	0 — .12 "
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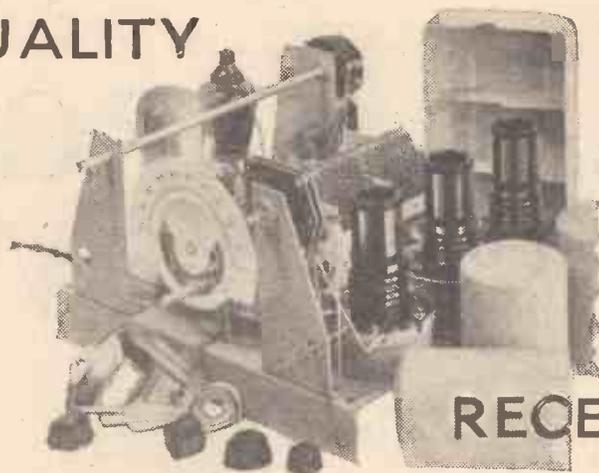
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ep x 7in high Amplifier chassis, 13in front x 8in deep x 8 1/2 high

Set Serviced and Guaranteed

57 HATTON GARDEN, LONDON, E.C.1.
Chancery 8023

A.C. SINGLE DIAL



SUPERHETERODYNE

SPECIFICATION:

Single Dial six valve superheterodyne for A.C.
supply.

Wave range, 200/580 metres, 800/2,200 metres.

Accurately ganged mixed input link filter.

Inductive filter, pre-first detector H.F. amplifier
or pentode combined detector, oscillator
available if required.

Accurate oscillator tracking.

Variable mu intermediate.

Combined variable-mu and aerial distortionless
volume control

Screen grid second detector with partlat
automatic volume control.

Resistance L.F. coupling
Intermediate frequency 110 Kc

Pentode output giving 2,000 milliwatts.

Moving coil loud speaker.

Tooled out metal baseplates.

All components finished in uniform style, blue-
grey cellulose

Control knobs similar in style

Set serviced and guaranteed.

Full scale blue print.
price: 1/6

HAYNES RADIO, 57 HATTON GARDEN, LONDON, E.C.1.
Chancery 8023.

Have You ?

Free, and post free

or at

Stand 17, Olympia.

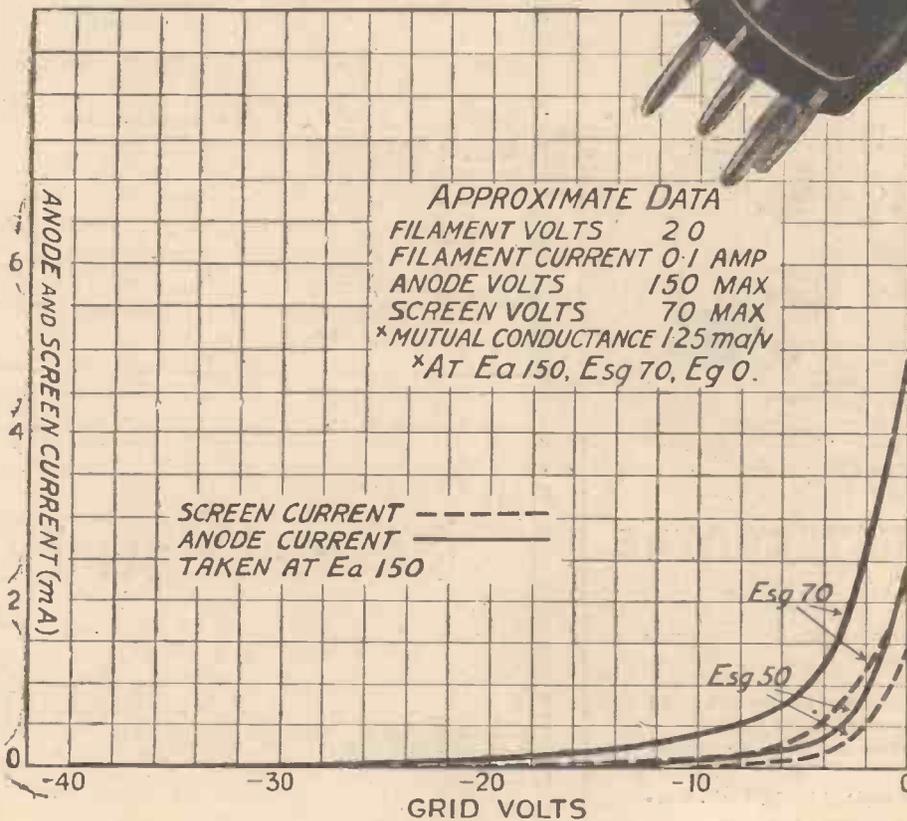
HAYNES RADIO,
57, Hatton Garden, London, E.C.1
Chancery 8023.

And Now MARCONI

A new Variable-MU Valve for Battery Receivers V.S.2

VS2 is the latest link in the long chain of Marconi developments in valve technique. It combines the high mutual conductance of 1.25 MA per volt with the typical advantages of the Variable-Mu valve, providing long range, improved selectivity and quality of reproduction and, if desired, a smooth and entirely distortionless control of volume.

If your receiver was designed for an ordinary S.G. valve, Marconi VS2 will give a far better all-round performance. If you are building a new set incorporate VS2 and the necessary grid bias circuit from the start and obtain the perfect volume control **Price** which only a Variable-Mu valve will give. **16/6**



THE MARCONI 2-VOLT RANGE

- *VS2 Variable-Mu Screen Grid 16'6
- *S22 Screen Grid (Single stages) 16'6
- *S21 Screen Grid (Multi stages) 16'6
- *H2 High Magnification . . . 7'-
- *HL2 Medium Magnification . . 7'-
- HL210 Medium Magnification . . 7'-
- LP2 Power 8'9
- P2 Super Power 12'-
- PT2 Pentode 17'6
- DG2 Double Grid 20'-

* Available metallized if desired

MARCONI VALVES

THE MARCONIPHONE COMPANY LTD. 210-212 TOTTENHAM COURT ROAD, LONDON, W.1

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"HIS MASTER'S VOICE" at Olympia, STAND NO 55 (GRAND HALL)

In addition to the four new instruments illustrated, "His Master's Voice" will show at Olympia, the following range of models for the new season:—

	PRICE
MODEL 501 Transportable Radiogram	25 guineas
MODEL 435 De Luxe Radio Four	17 guineas
MODEL 174 Super-Power Speaker	£7. 10. 0
MODEL LS7 Universal Speaker	£4. 15. 0
MODEL 116 Record Player	7 guineas
MODEL 117 Auto Record-Player	12 guineas
MODEL 553 Auto-Electrogram	42 guineas

Current models which have proved so enormously popular during the past season, and which have established a new standard in the reproduction of broadcast and recorded music, will also be continued.

Visit the "His Master's Voice" Stand—see and hear these instruments . . . examine the many improvements in the range. And whatever else you do, you must see the pre-release showing of the most wonderful industrial 'talkie' yet made — Demonstration Room D18. Free tickets will be obtainable at Stand No. 55.



Superhet
Portable Six
7 gns.
Model 459

Superhet
Lecobay Seven
32 gns.
Model 470



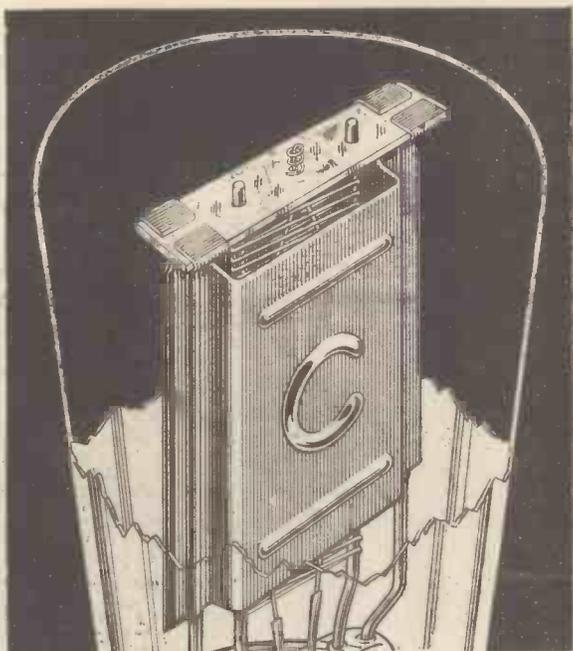
Superhet
Ten Auto-
radiogram
80 gns.
Model 532

Superhet
Radiogram Seven
50 gns.
Model 523

His Master's Voice RADIO — "True to Life"



The Gramophone Co. Ltd., London, W.1.



SUMMER RADIO PROBLEMS SOLVED



A copy of the 40 page Cossor Wireless Book "B17" will be sent you free on application to A. C. Cossor Ltd., Melody Dept., Highbury Grove, London, N.5.

Get one of the new Cossor Station Charts price 2d. Ask your dealer for a copy of this useful novelty or write to us enclosing 2d. stamp.

SUMMER Radio conditions are difficult. Distant stations are harder to bring in. To ensure enjoyable Radio your Receiver must work at its maximum efficiency. And its efficiency depends largely on the valves you use. Due to the use of the famous Mica Bridge, Multi-point Filament Suspension, and other important constructional features, the efficiency of Cossor Valves is so high that their use ensures a marked improvement in the performance of any well designed Receiver.

WITH
COSSOR
 ALL-BRITISH
VALVES

FITTED WITH THE FAMOUS MICA BRIDGE CONSTRUCTION

A. C. Cossor Ltd., Highbury Grove, London. N.5.

Depots at Birmingham, Bristol, Glasgow, Leeds, Liverpool, Manchester, Newcastle, Sheffield and Dublin.

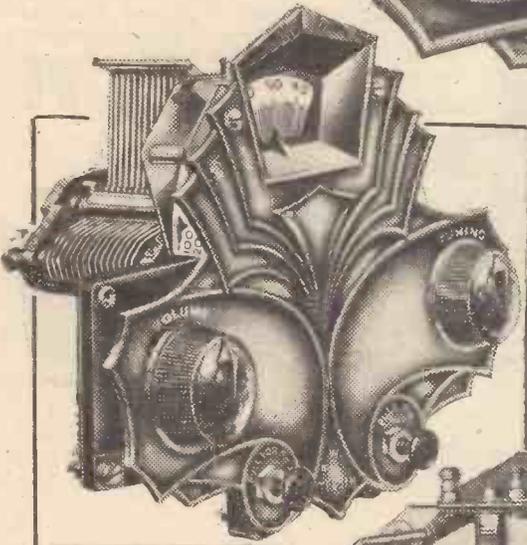
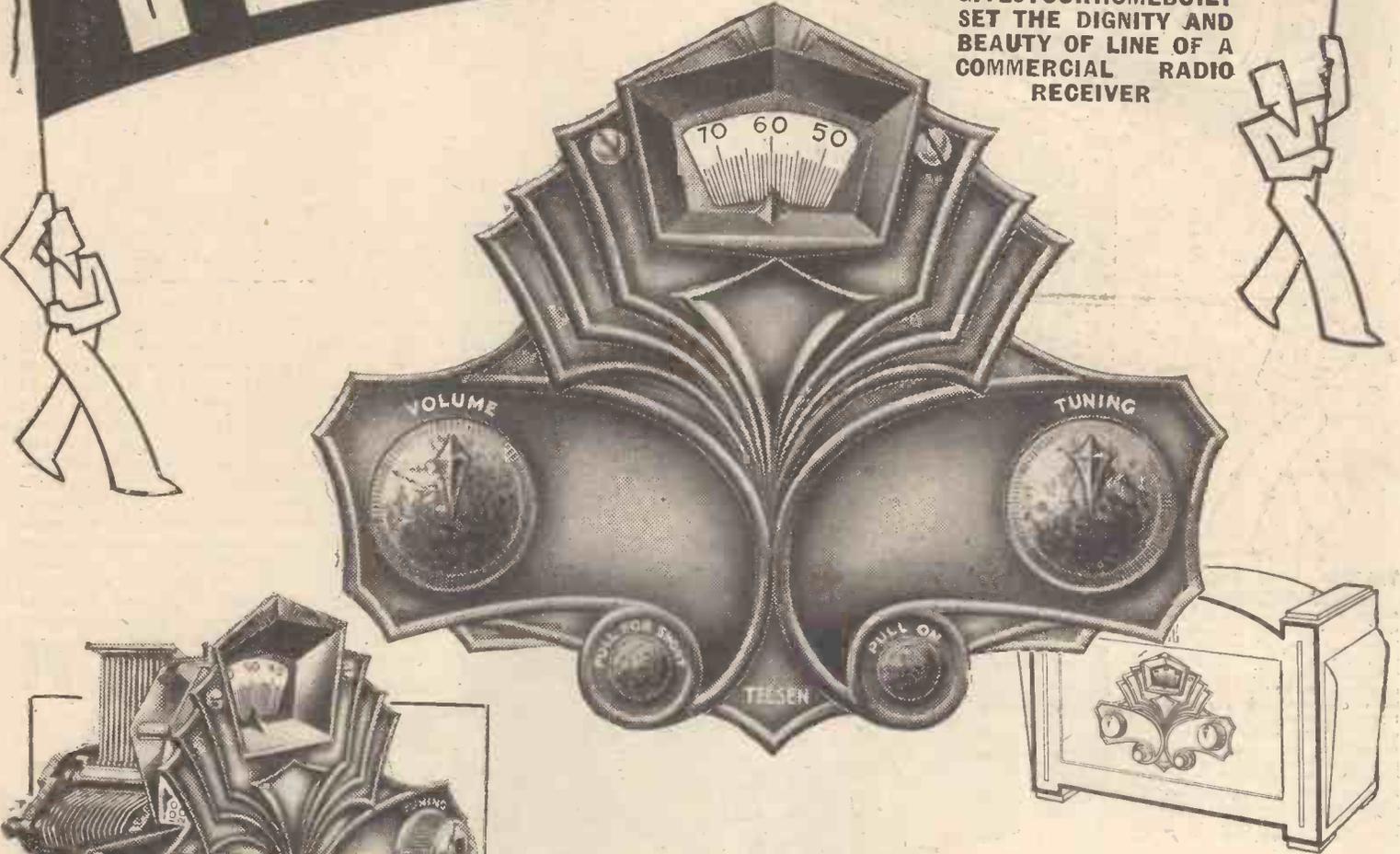
79 ♥ 1003

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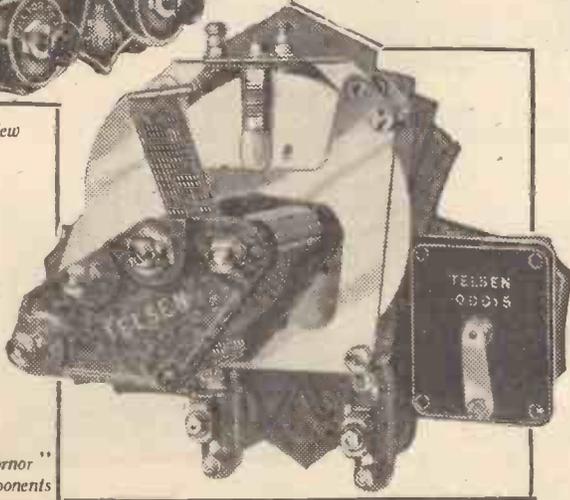
TELSEN

TELORNOR

GIVES YOUR HOME BUILT SET THE DIGNITY AND BEAUTY OF LINE OF A COMMERCIAL RADIO RECEIVER



Three-quarter front view of the "Telornor."



Back view of the "Telornor" showing how the components can be mounted.

GIVE your home-built set the dignity of an expensive commercial radio receiver with the new Telsen **TELORNOR**. It makes better sets easy to build! The handsome silver oxidised escutcheon plate, embodying an illuminated variable ratio slow-motion Disc Drive, adds immensely to the "good looks" of your set and permits, with the minimum of trouble, a very effective grouping of your Volume, Tuning, Push-Pull and On-Off controls. Ask your dealer to show you a **TELORNOR**. It will make your set a set to be proud of—in appearance as well as in performance.

No. W.206.

7'6

TELSEN

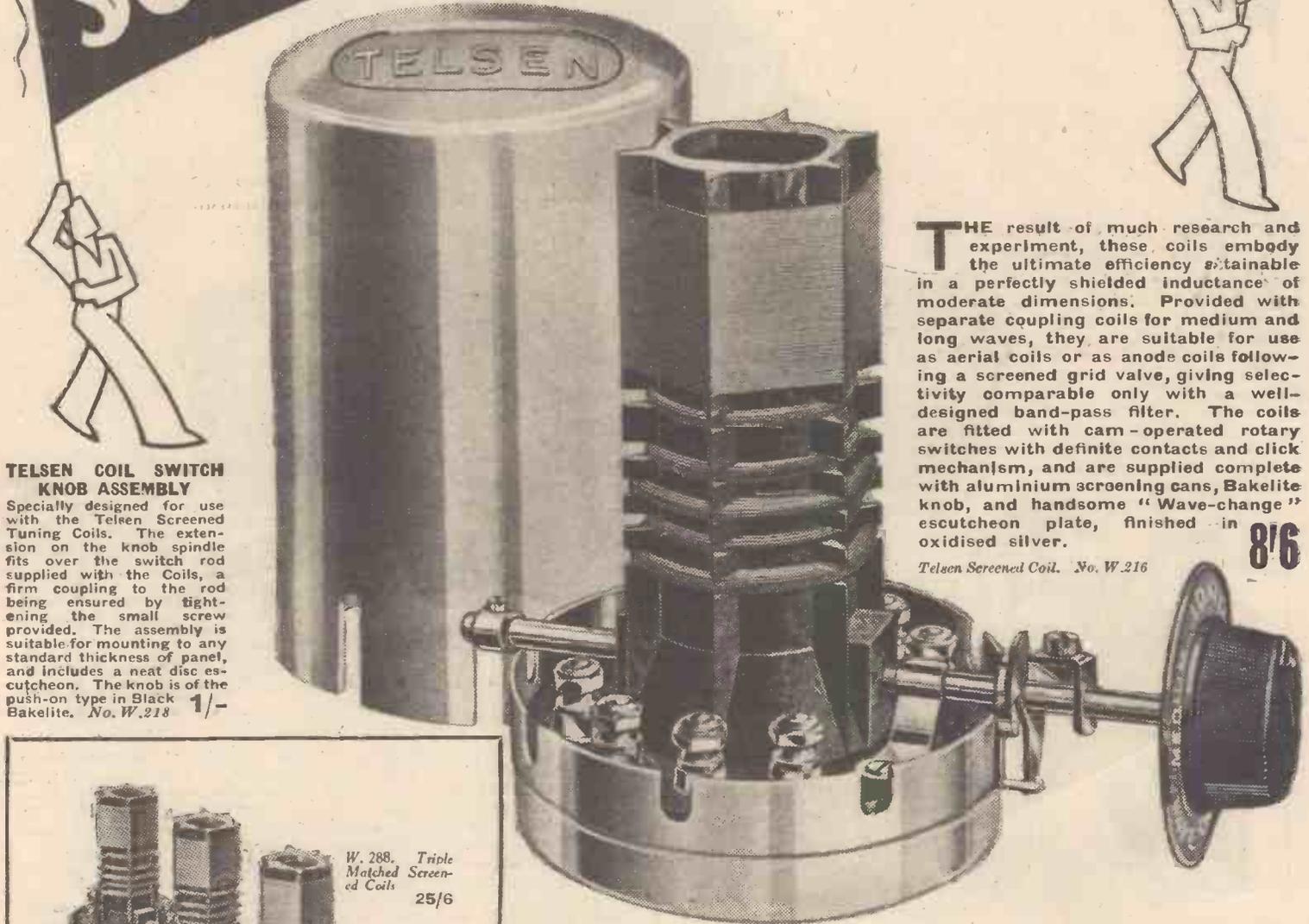
RADIO COMPONENTS

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ANNOUNCEMENT OF THE TELSEN ELECTRIC CO., LTD., ASTON, BIRMINGHAM

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TELSEN SCREENED TUNING COILS

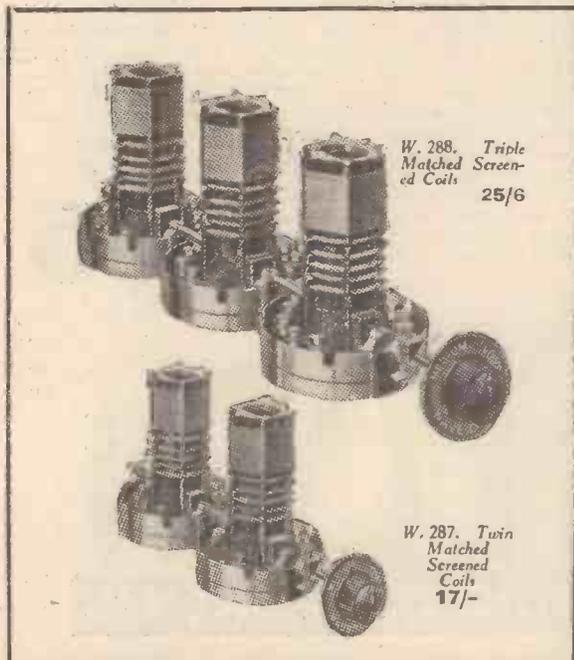


THE result of much research and experiment, these coils embody the ultimate efficiency obtainable in a perfectly shielded inductance of moderate dimensions. Provided with separate coupling coils for medium and long waves, they are suitable for use as aerial coils or as anode coils following a screened grid valve, giving selectivity comparable only with a well-designed band-pass filter. The coils are fitted with cam-operated rotary switches with definite contacts and click mechanism, and are supplied complete with aluminium screening cans, Bakelite knob, and handsome "Wave-change" escutcheon plate, finished in oxidised silver.

Telsen Screened Coil. No. W.216

TELSEN COIL SWITCH KNOB ASSEMBLY

Specially designed for use with the Telsen Screened Tuning Coils. The extension on the knob spindle fits over the switch rod supplied with the Coils, a firm coupling to the rod being ensured by tightening the small screw provided. The assembly is suitable for mounting to any standard thickness of panel, and includes a neat disc escutcheon. The knob is of the push-on type in Black Bakelite. No. W.218 1/-



TELSEN COIL SWITCH COUPLING ASSEMBLY

When it is desired to mount two or more of the Telsen Screened Coils in a line parallel to the panel, and to control the wave-change switching by a single knob on the panel, this switch coupling assembly will be found indispensable. The link arms of the coupler are fitted over the switch rods of the coils, and adjusting slots are provided in the link bar to allow for the spacing of the coils varying from 3 in. to 6 1/2 in. The whole assembly has a neat nickel-plated finish, is perfectly smooth and positive in action, and free from backlash. No. W.217 6d.

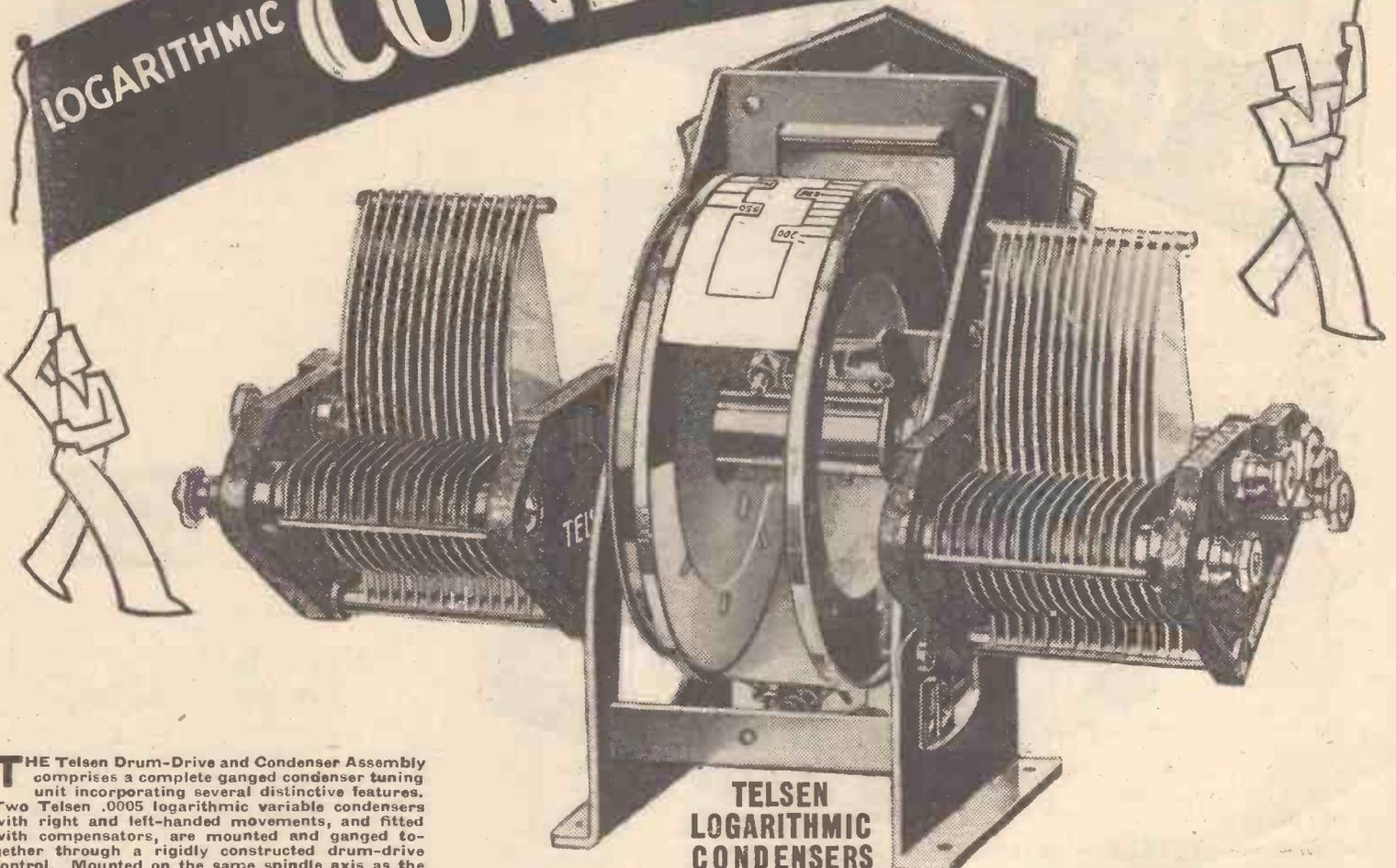
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TELSEN LOGARITHMIC CONDENSERS and DRUM-DRIVE



THE Telsen Drum-Drive and Condenser Assembly comprises a complete ganged condenser tuning unit incorporating several distinctive features. Two Telsen .0005 logarithmic variable condensers with right and left-handed movements, and fitted with compensators, are mounted and ganged together through a rigidly constructed drum-drive control. Mounted on the same spindle axis as the main tuning drive is a trimmer, giving a swinging movement of about 20° to the stator vanes of the right-hand variable condenser, thereby enabling perfect matching of the condensers to be maintained throughout the Tuning Range. Two scales are supplied with the unit, one marked in wavelengths and one in graduations from 0-100. The Scale is illuminated and has the additional advantage of being easily removable when it is desired to fit one of special calibration. The escutcheon is handsomely finished in oxidised silver, and knobs of the push-on type are fitted. Provision is made for panel and baseboard mounting and a double-ended spanner is supplied free with the unit for fitting the variable condensers. Full instructions for mounting are included with every unit.

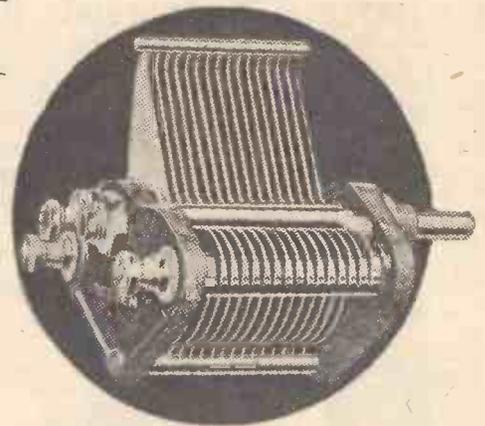
17/6

No. W.262. Price

TELSEN LOGARITHMIC CONDENSERS

The Frame is braced by three solid pillars, and the effective clamping of the vanes, each held at three points, makes distortion impossible. The rotor is also built into a rigid unit, the vanes being held at both ends. Generous bearings obviate backlash or end-plate. Models No. 260 and 261 (left hand and right hand movements respectively) incorporate a compensator (max. cap. 60 micro-microhenries) for balancing out stray capacities, thus greatly facilitating ganging.

Model	Cap.	Price
No. 130	.00025	4/6
No. 131	.00035	4/6
No. 132	.0005	4/6
No. 260 (Left hand movement with trimmer)	.0005	5/-
No. 261 (Right hand movement with trimmer)	.0005	5/-

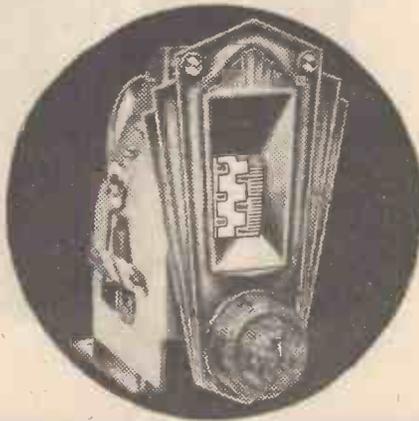


TELSEN DRUM DRIVE

Follows standard practice generally, but embodies several detail refinements, among which may be instanced the cord drive, arranged to reduce wear to a minimum and to prevent over-run, and the rocking stator trimmer, which gives a variation of 20°, and visual indication of setting. For use with Telsen screened coils, an extra scale, marked in wavelengths, is supplied free of charge. Illustration shows escutcheon, handsomely finished in oxidised silver.

Price **8/6**

TELSEN
RADIO COMPONENTS



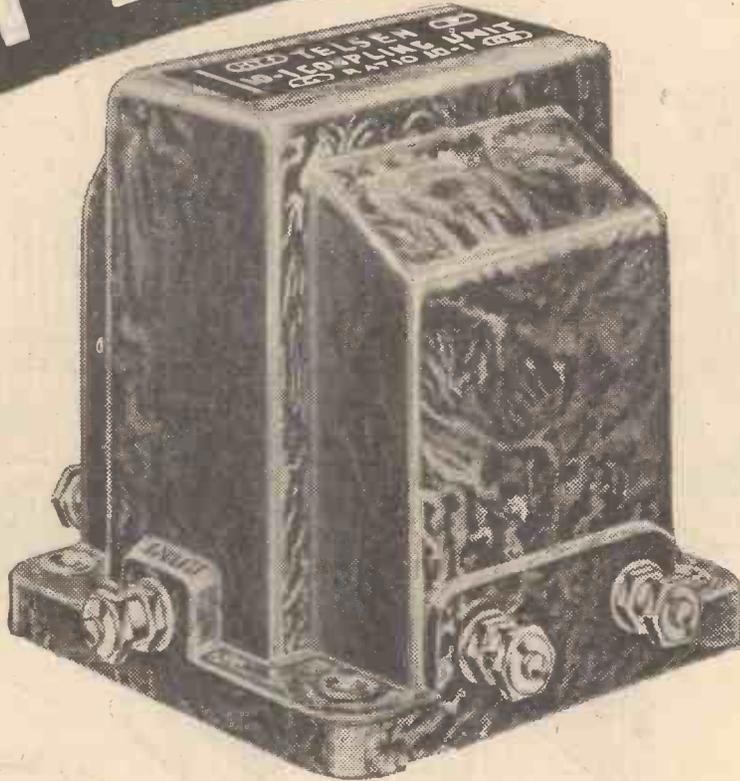
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TELSEN

10-1 COUPLING UNIT & 1-1 COUPLING UNIT



TELSEN 10-1 INTERVALVE COUPLING UNIT

This is a filter-fed transformer using a high permeability nickel alloy core, which enables a 10-1 voltage step-up to be attained while preserving an exceptionally good frequency characteristic. The response is compensated in the higher frequencies for use with a pentode valve, this combination giving an amplification greater than anything previously achieved, equal to two ordinary L.F. stages, but with better quality of reproduction.

No. W.215

12'6



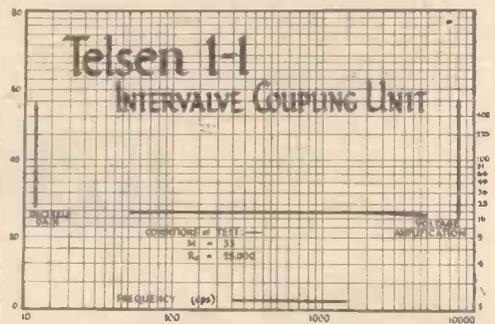
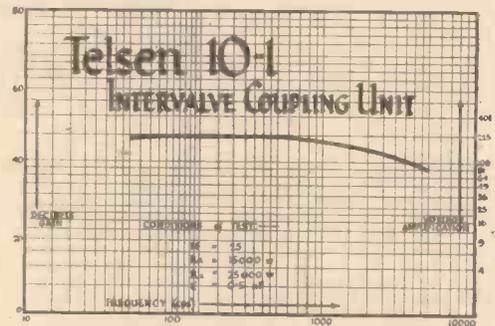
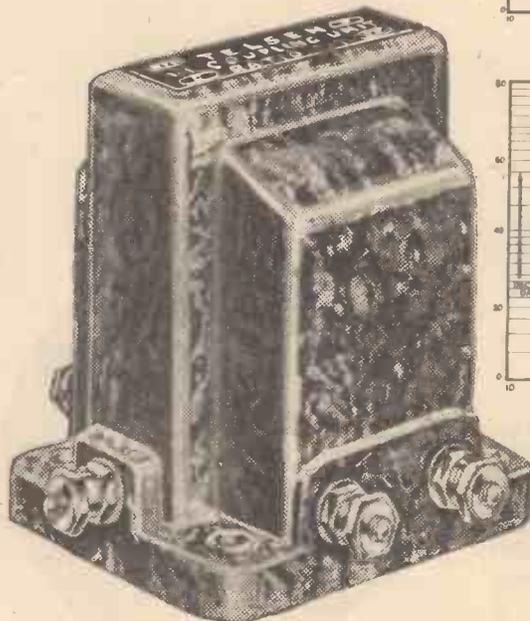
TELSEN

1-1 INTERVALVE COUPLING UNIT

This is a modern development of the one time deservedly popular R.C. units. It incorporates a low pass filter feed in its anode circuit, thus effectively preventing "motor-boating," "threshold howl," and other forms of instability arising out of common couplings in eliminator and battery circuits. Used with an H.L. type valve it will give an amplification of about 20 and a perfect frequency response, at the same time consuming negligible H.T. current.

No. W.214.

7'6



TELSEN

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TELSEN CONDENSERS

BAKELITE DIELECTRIC



TELSEN BAKELITE DIELECTRIC TUNING CONDENSERS

Redesigned on an entirely new principle, giving great rigidity with compactness and high efficiency. May be used with confidence where space is limited. The well-braced vanes are interleaved with a minimum of highest quality solid dielectric, ensuring complete accuracy of tuning. Supplied complete with knob.

Capacity	No.
.0005	W.193
.0003	W.194

2 1/6

TELSEN AERIAL SERIES CONDENSER

The ideal volume and selectivity control. The internal construction permits of an extremely low minimum capacity. Keyed externally on the spindle is a switch arm which connects with a contact on the fixed vanes when rotated to maximum position. This short circuits the condenser for maximum volume. The rotor movement is limited by definite stops. The vanes are interleaved with the finest quality solid dielectric. Supplied complete with knob.

Capacity .0003 W.205

2 1/3

TELSEN DIFFERENTIAL CONDENSERS

Improved type, of great rigidity and precise construction. The Rotor Vanes are keyed to the spindle, and fitted with definite stops. The vanes are interleaved with finest quality solid dielectric. A strong nickel silver contact makes connection to the rotor, and a positive connection is made to the stator vanes. Supplied complete with knob.

Capacity	No.
.0003	W.185
.00015	W.186
.0001	W.187

2 1/6

TELSEN REACTION CONDENSERS

Capacity	No.	W.
.0003	W.188	
.00015	W.189	
.0001	W.190	
.00075	W.191	
.0005	W.192	

2 1/4

2 1/6

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RADIO COMPONENTS

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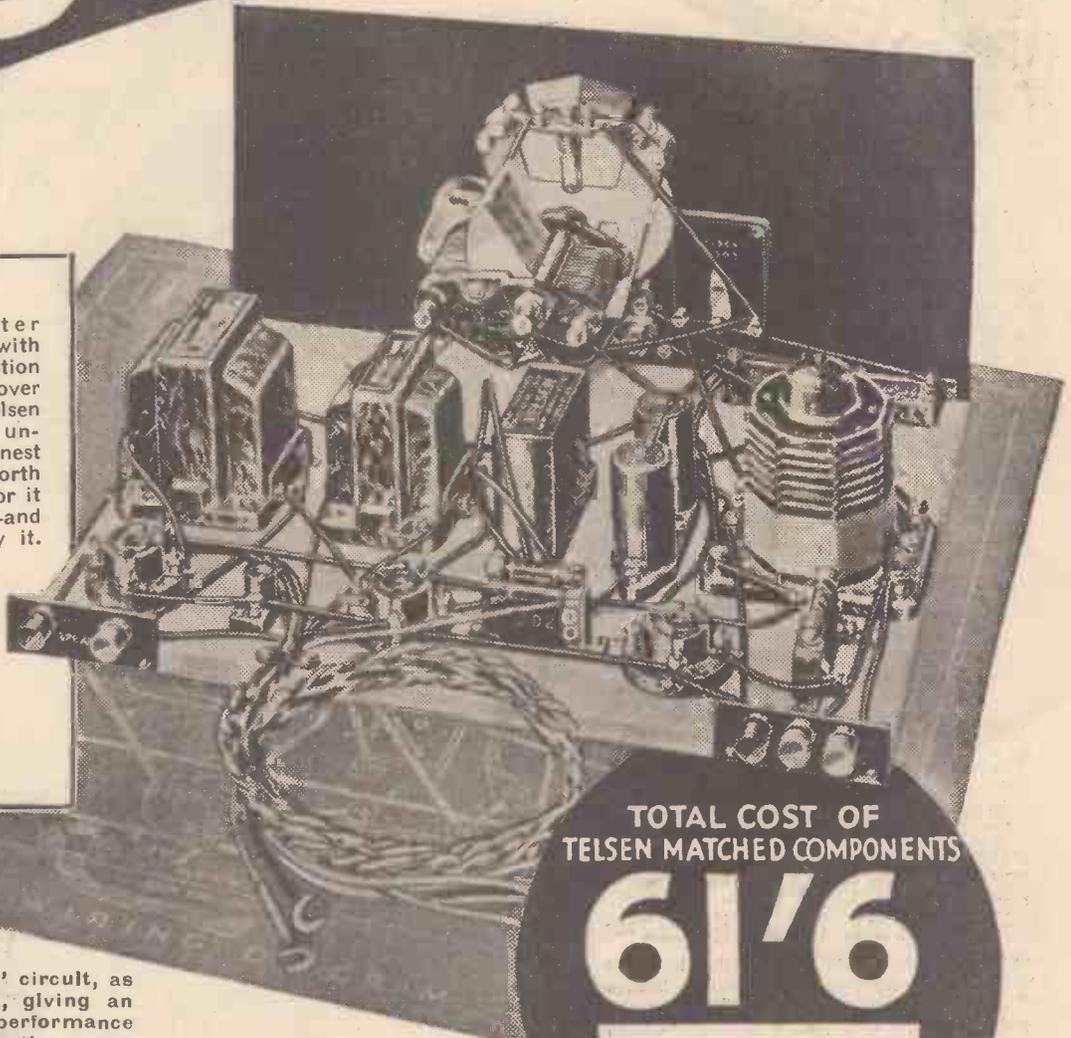
The TELSEN

AJAX 3



Bigger... better... packed with valuable information from cover to cover—the new Telsen Radiomag is undoubtedly the finest radio sixpennyworth ever offered. For it appeals to all—and all can profit by it. In simple language, illustrated by photographs and diagrams, and complete with three full-size 1s. blueprints, it tells you how to build the latest circuits... how to modernise your existing set... how to rectify little faults... how to get the best out of your set in every way. Get a copy NOW!

Free full-size 1s. blueprint, together with full constructional details, are contained in the new issue of the Telsen Radiomag, which also gives full particulars of the improved and now all-embracing range of Telsen Radio Components at the still lower prices made possible by Telsen's enormous sale. Now on sale at all radio dealers and newsagents. Price 6d.



TOTAL COST OF
TELSEN MATCHED COMPONENTS

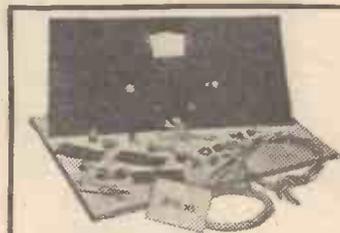
61'6

For building the "Ajax 3," including panel, baseboard, terminals, battery cords and all accessories.

A HIGHLY efficient "Straight Three" circuit, as easy to operate as it is to build, giving an exceptionally brilliant all-round performance with a low initial and upkeep cost, the range, power, selectivity and general quality of reproduction setting a new standard for receivers of this type. Free full-size 1s. blueprint, together with full constructional details, are contained in the new issue of the Telsen Radiomag, which also gives full particulars of the improved and now all-embracing range of Telsen Radio Components at the still lower prices made possible by Telsen's enormous sale. Now on sale at all radio dealers and newsagents. Price 6d.

TELSEN

RADIO COMPONENTS



"TELORNOR" CONSTRUCTORS OUTFIT

Contains all the sundry requirements for the construction of any type of receiver Circuits using the Telornor. Of these, the Telsen "Triple 3," the "Ajax 3," and the "Nimrod 2," are excellent examples. All are supplied neatly packed in a carton with instructions.

Cat. No. 220

3'6

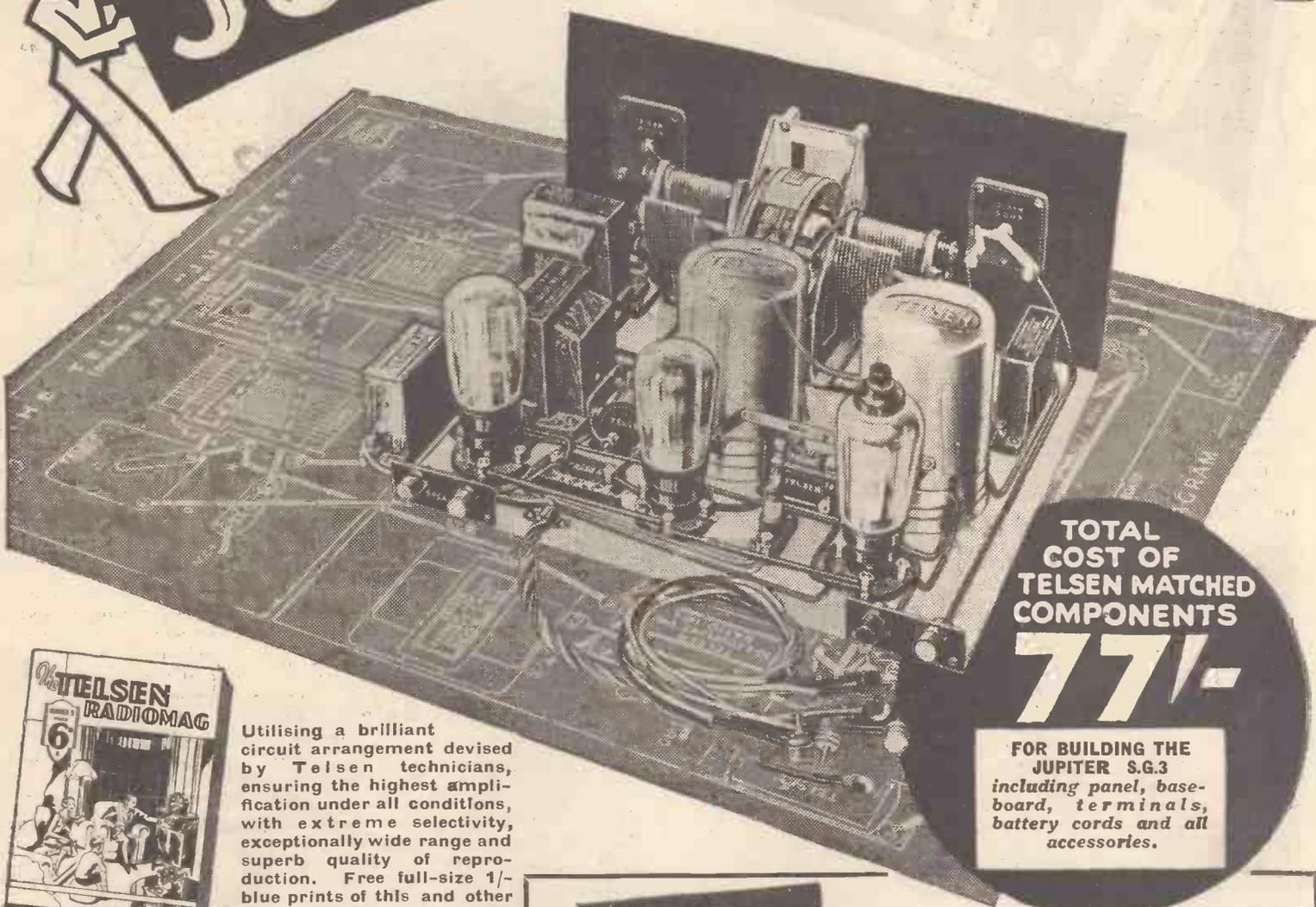
Included in the Outfit are the following components:

- Specially cut and drilled crystalline finish panel. 14 in. by 10 in. Baseboard.
- Eight-way Battery Cord.
- Complete set of Wander Plugs suitably engraved, and Spade Terminals.
- Terminals for Aerial, Earth and Loud-speaker.
- Engraved Terminal Strips.
- An ample supply of 22S.W.G. Tinned Copper Wire and necessary Sleeving for wiring up the set.
- A double-ended Spanner for mounting the single-hole fixing components.
- A four-way Spanner for tightening up all terminal nuts. All the Wood Screws and sundry other small accessories contributing to the complete assembly of the finished Receiver.

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The TELSEN JUPITER S.G.3



TOTAL COST OF TELSEN MATCHED COMPONENTS
77/-

FOR BUILDING THE JUPITER S.G.3
including panel, base-board, terminals, battery cords and all accessories.

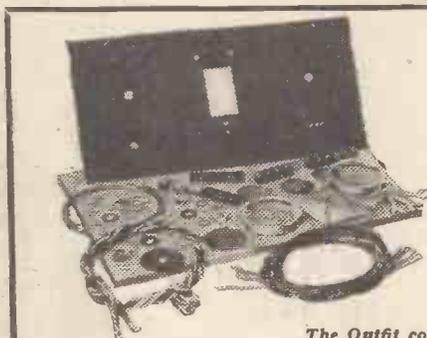


Utilising a brilliant circuit arrangement devised by Telsen technicians, ensuring the highest amplification under all conditions, with extreme selectivity, exceptionally wide range and superb quality of reproduction. Free full-size 1/- blue prints of this and other Telsen circuits, together with full instructions and a wealth

of interesting and valuable information, including particulars of the improved and now all-embracing range of Telsen Radio Components at the still lower prices, made possible by Telsen's enormous sale, are contained in the new, bigger and better issue of the Telsen Radlomag. Get a copy NOW—price 6d. from your radio dealer or newsagent.

TELSSEN

RADIO COMPONENTS



DRUM DRIVE CONSTRUCTORS' OUTFIT

This Outfit contains all the necessary requirements for the construction of the TELSEN "JUPITER S.G.3," but the constructor will find the Outfit of great value in the building up of any receiver circuit employing the drum drive condenser assembly. No. 219

3/6

The Outfit contains the following:—

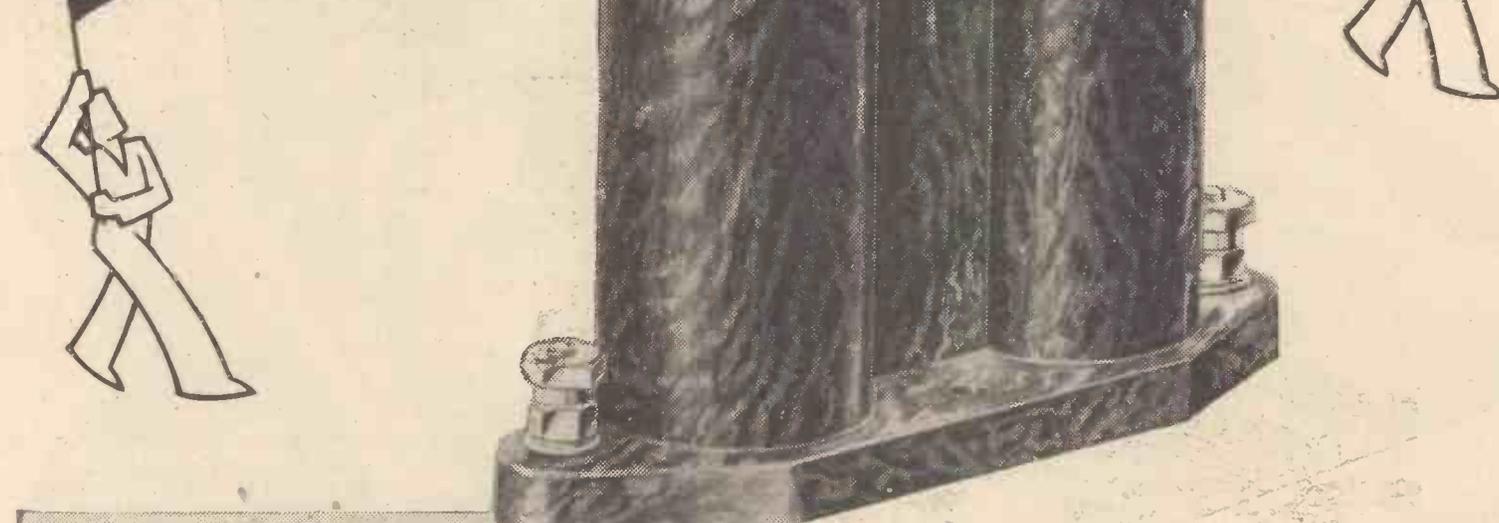
- 1 Metal panel with attractive crystalline finish, specially cut and drilled for mounting the Telsen Drum Drive, and other panel mounted components normally required in a ganged condenser receiver.
- 1 Baseboard 14in. x 10in.
- 1 Aerial and earth terminal strip.
- 1 Loudspeaker terminal strip.
- 2 Red terminals complete and mounted in holder.
- 2 Black terminals complete and mounted in holder.
- 7 Wander plugs mounted in holder.
- 2 Spade tags.
- 1 8-way battery cord.
- 1 Cord clip.
- 2 Large insulating washers.
- 1 Small thick insulating bush.
- 1 Small thin insulating bush.
- 2 Spacing nuts for the reaction and aerial series condensers.
- 2 Spacing nuts for the "On-Off" Switch.
- 1 Wave change escutcheon with two screws and nuts.
- 1 Separator escutcheon.
- 1 Volume escutcheon.
- 1 "On-Off" escutcheon.
- 2 Height plinths for the matched screened coils.
- 2in. of 3 mm. sleeving (black).
- 1 1/2in. of 3 mm. sleeving (red).
- 20 feet of 1 1/2 mm. sleeving (green).
- 21 feet of 22 S.W.G. tinned copper wire.
- 1 Double-ended spanner for locknuts.
- 1 Four-way spanner.
- Assortment of 1/16in., 1/8in., 1/4in., 3/8in. and 1/2in. wood screws.

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TELSEN

H.F. CHOKES



 A smaller, single-section choke with a base. The top is labeled 'BRITISH MADE', 'TELSEN H.F. CHOKES', 'G.D. DESIGN', 'No. 157722', and 'TELSEN ELECTRIC CO. LTD. ENG.'

TELSEN STANDARD H.F. CHOKES

The Telsen Standard H.F. Choke utilises the minimum baseboard space. It is designed to cover the whole broadcast band, has very low self-capacity, and is highly suitable for reaction circuits. The inductance is 150,000 microhenrys and the resistance 400 ohms. It has proved very popular and has been incorporated by set designers in many of the leading circuits.

2/-

No. W.75

TELSEN BINOCULAR H.F. CHOKES

In H.F. amplification the performance of a choke is of supreme importance. The Telsen binocular H.F. Choke is called for wherever the highest efficiency is required. It has a high inductance of 250,000 microhenrys, low self-capacity, and a negligible external field, due to the binocular formation, making it the ideal choke for a high-class circuit.

5/-

No. W. 74

TELSEN

RADIO COMPONENTS

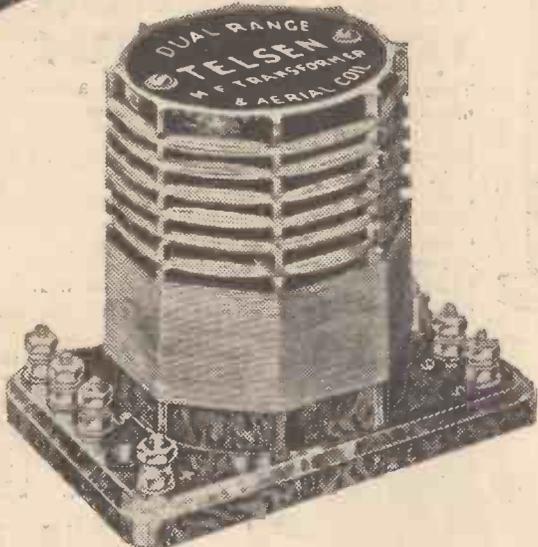
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TELSEN

DUAL-RANGE AERIAL COILS

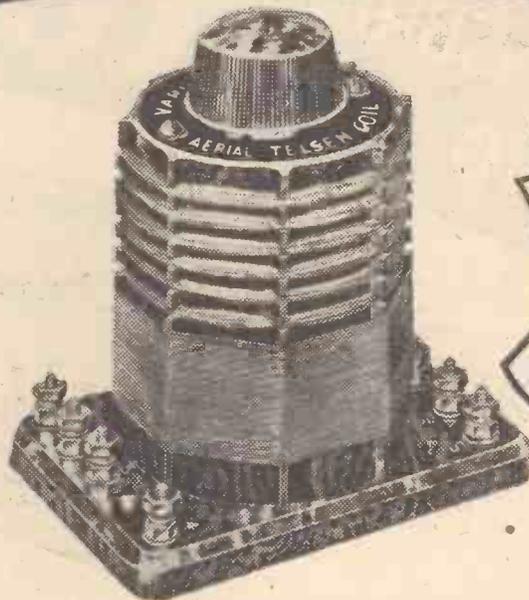


THE TELSEN H.F. COIL

May be used for H.F. amplification with Screened-Grid Valve, either as an H.F. Transformer, or alternatively as a tuned grid or tuned anode coil. It also makes a highly efficient aerial coil where the adjustable selectivity feature is not required.

5/6

No. W.154



TELSEN DUAL-RANGE AERIAL COIL

Incorporates a variable selectivity device, making the coil suitable for widely varying reception conditions. This adjustment also acts as an excellent volume control, and is equally effective on long and short waves. The wave-band change is effected by means of a three-point switch and a reaction winding is included.

7/6

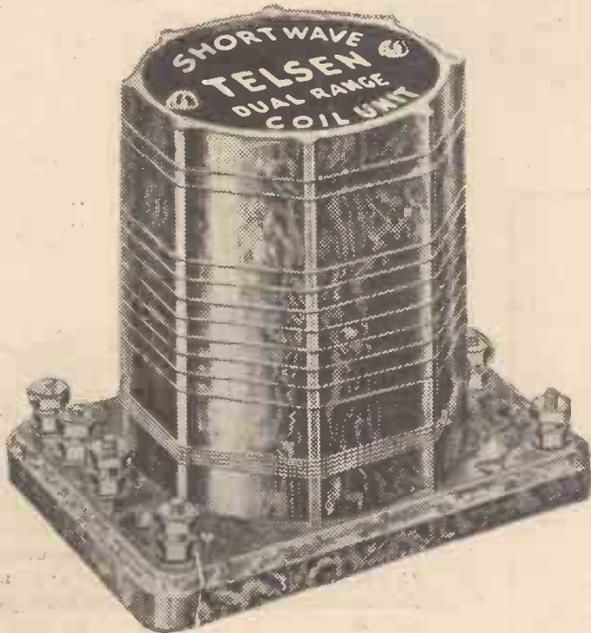
No. W.76

TELSEN COMBINED DUAL-RANGE SHORT-WAVE COIL UNIT

This unit, for the first time, brings the construction of short-wave receivers into line with the simplicity of modern practice. When tuned by a Telsen .00025 Condenser, a wave range of 20 to 80 metres can be covered by the operation of a switch, as in ordinary broadcast practice. The unit incorporates windings for aerial, tuning and reaction circuits, all coils being wound with stranded wire. The coil is also suitable for use with sets covering all wave-bands with a .0005 Tuning Condenser. In this case the Dual-range feature is not employed.

4/6

No. W.174



TELSEN

RADIO COMPONENTS

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TELSEN

MANSBRIDGE
AND MICA

CONDENSERS

TELSEN MANSBRIDGE TYPE CONDENSERS

These are made by the most advanced processes from the finest materials it is possible to obtain, and subjected during manufacture to a series of stringent tests under laboratory conditions. They are of the true Mansbridge type, self-sealing, non-inductive and hermetically sealed. They are offered in two types, the capacities from .01 to 2 Mfd. in Bakelite cases, and in blocks of 4, 6, and 8 Mfd. in metal cases with soldering tags.



CAP. MFD.	500 Volt Test NO.	1,000 Volt Test NO.	PRICE
.01	W.232	1/6	W.239 2/6
.04	W.230	1/9	W.237 2/9
.1	W.231	1/9	W.238 2/9
.25	W.229	2/-	W.236 3/-
.5	W.228	2/3	W.235 3/3
1.	W.227	2/3	W.234 3/6
2.	W.226	3/-	W.233 5/-

TELSEN MANSBRIDGE BLOCK CONDENSERS

These are contained in metal cases finished in brown and with fixing holes. As with the other types of Telsen Mansbridge Condensers, they are self-sealing, non-inductive and hermetically sealed. Three types, each made having total capacities of 4, 6, and 8 mfd., each type being divided into 2-mfd. sections, so that several arrangements of capacity may be obtained. Neat and substantial soldering tags are provided for each section.

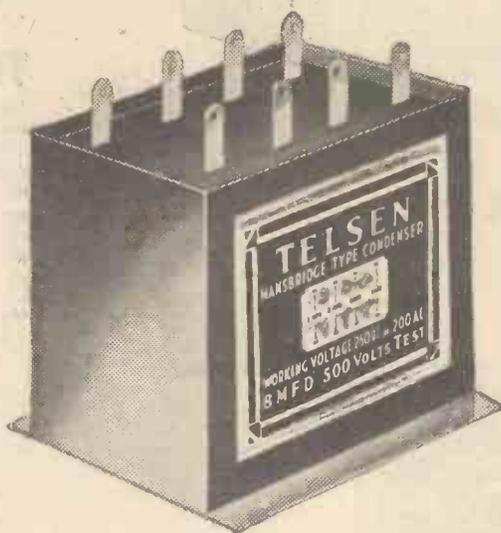
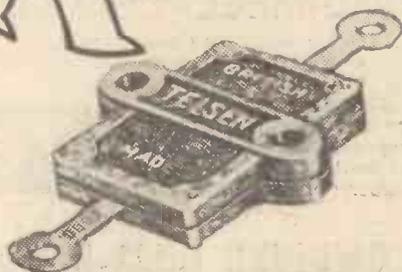
CAP. MFD.	500 Volt Test CAT. NO.	PRICE
4	W.175	5/6
6	W.176	8/-
8	W.177	10/6

CAT. NO.	1,000 Volt Test	PRICE
W.178	..	9/6
W.179	..	14/6

TELSEN TAG CONDENSERS

This type is of extremely compact and sturdy construction. It may be mounted on either insulated or metal panels by utilising the two baseboard screw holes in the neatly designed moulded casing. The tags enable the condenser to be connected to any other component, either directly or by soldering. H.F. losses are negligible. The capacity is stamped on the soldering tag.

CAPACITY.	NO.
.0001	W.207
.0002	W.208
.0003	W.209
.0004	W.210
.0005	W.211
.001	W.212
.002	W.213



TELSEN "MICA" CONDENSERS

The New Telsen "Mica" Condensers represent an important advance in technique: H.F. losses have been practically eliminated even in the larger capacities. In order to distinguish them from the earlier type, now to be discontinued, the new condensers are enclosed in a re-designed case, which, while possessing all the adaptability of the previous one as to flat and vertical mounting, is of more attractive appearance. Grid-leak clips may, as heretofore, be mounted in series or in shunt and are supplied at no extra charge with capacities .0001, .0002, and .0003 mfd.



CAP. MFD.	NO.	PRICE.
.0001	W.240	1/6
.0002	W.241	
.0003	W.242	
.0004	W.243	
.0005	W.244	
.001	W.245	
.002	W.246	
.006	W.247	1/3



TELSEN PRE-SET CONDENSERS

Very low minimum capacity, giving a wide range of selectivity adjustment when used in aerial circuit. Substantially made, easily adjusted and provided with locking ring. High insulation and low loss.

MAX. CAP. MFD.	MIN. CAP. MFD.	NO.
.002	.00025	W.149
.001	.000052	W.150
.0003	.000016	W.151
.0001	.000005	W.152



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SUNDAY

AUGUST THE TWENTY-EIGHTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL	Organ recital from Queen's Hall. Orchestral concert. Gramophone records of Madrigals and instrumental music. Light orchestral concert. Orchestral concert. Violoncello recital. Service from Hove Parish Church. Orchestral concert from Eastbourne.
LONDON REGIONAL	National programme. Military Band concert. Chamber music.
MIDLAND REGIONAL	Band concert. Pianoforte recital of the music of Gabriel Faure. National programme. London Regional programme.
NORTH REGIONAL	National programme. Orchestral concert. London Regional programme. National programme. Band concert. Choral programme.
WEST REGIONAL	National programme. Orchestral concert.
SCOTTISH REGIONAL	National programme. Orchestral concert. National programme.
BELFAST	National programme.
ABROAD	
HAMBURG	Goethe Birthday Concert.
PARIS (Poste Parisien)	Experimental transmission of Givellet-Couplex (thermionic) organ.
ROME	Operetta: "The Merry Widow" (Lehar).
STRASBOURG	Concert at gathering of War Veterans at Mulhouse.
WARSAW	Harvest Celebrations from Lowicz.

(Gade); Five Pieces from the Music to Once upon a Time (Lange-Müller) 8.45, Illustrated Talk: Danish Songs. 9.35, Sonata for Flute and Pianoforte (Gaubert). 9.50, News Bulletin. 10.0, Orchestral Concert, conducted by Launy Gröndahl: Overture, Raymond (Thomas); Waltz, Neu Wien (Johann Strauss); Perpetuum mobile (Johann Strauss); Two American Folk Songs (arranged for Strings by Carl Busch, (a) My Old Kentucky Home, (b) Old Folks at Home; Selection from La Traviata (Verdi); Morisca (Granados); Tarantella from Napoli (Pavilli). 10.50, Dance Music from the Wivex Restaurant. 12 Midnight (in an interval), Town Hall Chimes. 12.30 a.m. (Monday), Close Down.

CORK.—See Dublin.
DANZIG.—See Heilsberg.
DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW. and **CORK**, 224.4 metres.—8.30 p.m., Time Signal. 8.35, Mai Vize's Instrumental Trio. 8.45, Soprano Solos by May Doyle. 9.0, Play by the Studio Players. 9.30, Violin Solos by Madalene Mooney. 9.45, Instrumental Trio. 10.0, Gramophone Concert. 11.0, Time Signal, News, Weather Report and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Radio Gazette. 12.30 p.m., News, Bulletin. 12.45, Sponsored Orchestral Concert. 6.0 to 8.0, Programme in English by the I.B.C. 6.0, Programme for Children. 6.30, Military Band Concert: War March of the Priests from Athalie (Mendelssohn); By the Blue Hawaiian Waters (Ketelbey); Selection from Cavalcade (Coward); March from Tannhäuser (Wagner); Selection from The Three Musketeers (Friml); Changing of the Guard (Flotsam and Jetsam). 7.0, The Chatsworth Octet: Song without Words (Tchaikovsky); Meditation from Thais (Massenet); Serenade (Schubert); Gavotte from Mignon (Thomas); Intermezzo from Cavalleria Rusticana (Mascagni); Cavatina (Raff); Barcarolle from The Tales of Hoffmann (Offenbach). 7.30, Dance Music by the Renis Revellers: By the Sycamore Tree; An Evening in Caroline; Now's the Time to fall in Love; It ain't no Fault of Mine; Echo of a Song; Lovable; Foolish over you. 8.0 to 9.0, Programme in French: Variety Concert. 9.0 till Close Down, Programme in English by the I.B.C. 9.0, Pianoforte Recital: Absent (Metcalfe); Thank God for a Garden (del Rio); I did not know (Trotiere); Until (Sanderson); Last Rose of Summer (Moore); Little Grey Home in the West (Lohr); Two Eyes of Grey (McGeoch); Because (d'Hardelet). 9.30, Vocal and Orchestral Selections: Orchestra: Les Trésors de Colombine (Drigo-Goossens); Songs: (a) The Gay Highway (Drummond); (b) Stonecracker John (Coates); Orchestra: Selection from Cavalleria Rusticana (Mascagni); Songs: (a) The Drum Major (Newton), (b) The Wheel-tapper's Song (Walseley Charles); Orchestra: Liebestraum (Liszt-Somers). 10.0, Orchestral Music: Overture, Midsummer Night's Dream (Mendelssohn); Life in the Vienna Prater (Translatour); Straussiana (arr. English); Danube Waves (Ivanovici); Suite Americana (Thurbaui). 10.30, Excerpts from Musical Comedy. Orchestra: Melody from Frederica (Lehar); Songs: (a) Alice Blue Gown, from Irene (Tierney), (b) Indian Love Call from Rose Marie (Friml); Orchestra: Melodies from (a) The Gipsy Princess (Kálmán), (b) The Merry Widow (Lehar); Songs: (a) Love will find a way, from Maid of the Mountains (Fraser), (b) Why did you kiss my Heart, from Frederica (Lehar); Orchestra: Melody from The Country Girl (Monckton). 11.0, Mexican Band Concert: Cueva Indiana; Lagrimas Tango de duques; Estivilla; Mananita. 11.30, Vocal Duets with Pianoforte Accompaniment: I ain't gonna tell (Strachan); I'm following you (Dreyer); Sitting by a Window (Conrad); In an Old World Garden (Pepper); I'm sailing on a Sunbeam (MacDonald); She can't make up her Mind (Castling); I may be wrong (Ruskin); When you've gone (Werner). 12 Midnight, Accordion Solos: Marche Joyeuse (Cuvelier); La Tourterelle (Damare); Annette (Phillips); Restless Fingers (Cuvelier). 12.15 a.m. (Monday), Music by the Hawaiian Trio: Julien (Denata); Song of the Islands (King); Makin' Wicky Wacky; Aloha (Bowers). 12.30, Variety Concert; Rappickers' Party; Barracky Bert the Soldier; If you can't sing, whistle; Ace of Clubs; Crystal Gazing; Fun on the Phone; Moonshine; Marionette; Oh how he looks at me; Please Percy, don't do it now; Happy Interludes; The Happy Song; Stein! Stein! Stein!; Ups and Downs; Balls, Picnic and Parties; She jumped on her Pushbike and pedalled away; Looping the Loop; Haircut or Shave, Sir?; The Fire Alarm; The Old Geyser; The Washer on the Tap. 2.0, Concert of Dance Music by the Icolians: Taint no Sin; My Sweetest than Sweet; Why can't you; Wouldn't it be Wonderful; Peace of Mind; Carolina Moon; Long Ago; That's you, Baby; Rolling Along; How about me; My Fate is in your Hands; When the Circus comes to Town; One Kiss; Sleepy Valley; Little Pal; I'll be getting along. 2.57, I.B.C. Good-night Melody. 3.0, Close Down.

FLORENCE.—See Hamburg.

BARCELONA
RADIO-BARCELONA; Call **EAJI**, 349 metres; 8 kW.—2.0 p.m., Popular Music on Gramophone Records; In an interval at 2.30, Theatre Guide. 3.0, Film Review, followed by a Sextet Concert. 4.0, Programme for Hospitals, with Gramophone Records. 5.0 to 6.30, Interval. 6.30, Popular Music on Gramophone Records. 7.0, Orchestral Concert. 7.30, Song Recital by Pascual Albero (Tenor). 8.0, Agricultural Talk in Catalan. 8.10, Vocal and Orchestral Concert. 9.0, Dance Music by the Melody Boys Orchestra, relayed from the Excelsior Dance Hall. 10.0, Programme for Women. 10.15, Dance Music on Gramophone Records. 11.45, Chess Lesson. 12 Midnight, Close Down.

BASLE.—See Schweizerischer Landessender.
BERLIN
KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—11.0 a.m., See Frankfurt. 12.30 to 2.30 p.m., See Berlin (Witzleben). 2.30, Hans Wolfgang Emler reads from his own Works. 3.0, Talk: The German Peasant's Garden. 3.30 to 6.0, See Berlin (Witzleben). 6.0, See Leipzig. 6.30, New Songs from the New Song Book by Father Kempff. 7.0, See Heilsberg. 8.0 to 10.0, See Frankfurt. 10.0, News, Weather, and Sports Notes. 10.30, See Frankfurt. 12 Midnight (approx.), Close Down.

BERLIN
WITZLEBEN, 419.5 metres; 1.5 kW.—11.0 a.m., See Frankfurt. 12.30 p.m., Concert by the German Concert Orchestra, conducted by Prof. Gustav Havemann: Overture, Manfred (Schumann); Four Tone Poems by Arnold Böcklin, Op. 128 (Reger); (a) Der geigende Eremit, (b) Im Spiel der Wellen, (c) Die Toteninsel, (d) Bacchanal; Symphonic Poem, Fatum (Tchaikovsky); Overture, Oberon (Weber); Symphonic Poem, Orpheus (Liszt); Kaiser-Walzer (Johann Strauss). 2.0, Talk for Parents. 2.30, Concert for Children. 3.0, Gottfried Kölvel reads from his own Works. 3.30, Band Concert from the Kroll Garden; Topical Programme in the interval. 4.30, Concert of Light Music from the Radio Exhibition. In the interval: Arrival of the Competitors in the International Round Europe Air Race. 6.0, Talk: Car Driver, Cyclist and Pedestrian. 6.25, Pianoforte Recital by Siegfried Schultze. 6.55, Literary Programme in commemoration of the Birth of Goethe. 7.50, Sports Notes. 8.0, Wind Instrument Concert, conducted by Carl Woitschach, relayed from the Radio Exhibition. 8.30, News and Sports Notes. 8.40, Concert of Music from Plays by Goethe. The Berlin Radio Orchestra, conducted by Bruno Seidler-Winkler, Gertrud Baumann (Soprano), Margarethe Roll (Mezzo-Soprano), Fred Drissen (Baritone), Julius Bürger (Pianoforte), and Fritz Neumayer (Harpsichord). 10.0, News and Dance Music. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.
BEROMUNSTER.—See Schweizerischer Landessender.
BODEN.—See Stockholm.
BODO.—See Oslo.

BORDEAUX-LAFAYETTE
304 metres; 13 kW.—12 Noon, Relay from Paris (Ecole Supérieure), 671 kc/s. (447.1 metres). 2.0 p.m., Relay from Paris or Relay of a Local Celebration. 6.15 (approx.), Radio Journal. 7.55, Lottery Results. 8.0, Popular Music on Gramophone Records. 8.30, Variety Programme.

BRATISLAVA
279 metres; 14 kW.—6.0 p.m., Popular Slovak Melodies. 7.0, See Brno. 7.50, See Prague. 10.20, Programme Announcements. 10.25, Concert by a Cigány Orchestra.

BREMEN.—See Hamburg.
BRESLAU
325 metres; 1.5 kW. and **GLEIWITZ**, 253 metres.—10.0 a.m., Catholic Service. 11.0, See Frankfurt. 12.30 p.m., Radio Report of the Riesengebirge Automobile Races, 1932. 1.0, Concert from Berlin (Witzleben). 2.0, News Bulletin. 2.10, Agricultural Programme. 3.0, Relay from Pohlidorf of the Opening of the Pohlidorf School and the Unveiling of a Memorial. 3.45, Programme for Children. 4.15, Orchestral Concert conducted by Franz Marszalek. 5.15, Talk: Interviews with Notable Men. 5.30, Concert (contd.). 6.15, The Growing Pains of Genius—Goethe before and after his Italian Journey—Radio Sequence (Nettie Sutor). 7.15, Concert by the Silesian Philharmonic Orchestra, conducted by Dr. Johannes Brockt. 7.55, Weather for Farmers, and Sports Notes. 8.0, Talk: The History of East Prussia. 8.30, Goethe Programme by the Silesian Philharmonic Orchestra, conducted by Hermann Behr, with Hans Bachmann, (Baritone) and Prof. Dr. Eugen Kühnemann (Speaker): Panegyric; A Faust Overture (Wagner); Pandora—A Play (Goethe); Orchestral Melodies on Goethe's Lieder (Hugo Wolf): (a) Anakreons Grab, (b) Mignon, (c) Prometheus, (d) Der Rattenfänger. 10.0, Time, Weather, News, Sports Notes and Programme Announcements. 10.30, See Frankfurt. 12 Midnight (approx.), Close Down.

BRNO
342 metres; 35 kW.—6.0 p.m., German transmission: Viennese Music. 6.45, Talk: Czechoslovak Automobile Racing. 7.0, Music by a Jazz Orchestra from Zemsky-Dum. 7.50, See Prague. 9.15, I love, You love, He loves—

Musical Programme. 10.0, See Prague. 10.15, News Bulletin. 10.26, Light Music on Gramophone Records.

BRUSSELS (No. 1)
I.N.R., 509 metres; 15 kW.—5.30 a.m. and at hourly intervals throughout the day, Pigeon Flying Report. 12 Noon, Orchestral Concert. 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert of Light Music. 1.45, Memorial Programme for Dr. Poppe at Moerzeka. 5.0, Dance Music from the Kursaal, Ostend. 6.0, Gramophone Concert: Sonata Op. 36 for 'Cello and Pianoforte (Grieg); Le Marchand de Masques (Wolf). 6.30, The Clowns, Miki and Polino. 6.45, Gramophone Concert (continued): Old Dances; Melody for Russian Choir; Serenade (Moszkovsky); Symphonic Dances (Grieg). 7.30, Concert by the Radio Orchestra, conducted by M. Walpot: Overture, Correspondence (Berger); Waltz, Mon rêve (Waldeufel); Selection from Piccolino (Gairaud); Fleurs jetées (Massenet); Dolce menuet (Drdla); Suite orientale (Popy). 8.45, Gramophone-Records of Walloon Songs. 9.0, Concert relayed from the Kursaal, Ostend. Conductor: François Rasse. Soloist: Clara Clairbert (Songs): Entrée Triomphale (Rasse); Prelude to Lohengrin (Wagner); Le petit âne blanc (Ibert); The Flight of the Bumble Bee (Rimsky-Korsakov); Song, Waltz from Dvorak (Meyerbeer); Suite No. 1 from Peer Gynt (Grieg); Song from La Traviata (Verdi); 1812 Overture (Tchaikovsky). After the Programme, Le Journal Parlé and Concert relayed from the Meminc Hall, Antwerp. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)
N.I.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Concert relayed from the Grand Hotel Café, Antwerp. 1.0 p.m., Le Journal Parlé. 1.10, Concert (contd.). 5.0, Concert by the Radio Orchestra: Melody from Le domino noir (Auber); Moonlight on the Alster (Fetras); Air from the Gipsy Baron (Joh. Strauss); Mazurka No. 2 (Godard); Sérénade de Gilottin (Joncieros); Une fête à Trianon (Popy); Melody (Morena); Hungarian Scenes (Maquet). 6.0, Cavalleria Rusticana, Opera (Mascagni), on Gramophone Records. 7.15, Religious Address. 7.30, Le Journal Parlé. 8.0, See Brussels No. 1. 8.45, Reading. 9.0, Orchestral Concert (Harpisichord) relayed from the Casino, Knocke. Soloist: Rosane Van Neste: Suite in D (Bach); Orchestra and Harpsichord, Concerto in D (Haydn); Symphonic Suite (Rosane Van Neste); Concerto in G Minor (Saint-Saëns); The Ride of the Valkyries (Wagner). After the Programme, Le Journal Parlé, and Concert of Light Music from Antwerp. 11.0 (approx.), Close Down.

BUCHAREST
394 metres; 12 kW.—9.15 a.m., Programme for Children. 9.30, Choral Selections of Sacred Music. 9.45, Religious Address. 10.0,

Concert by Jean Dumitresco's Orchestra. 11.0, Popular Music on Gramophone Records. 11.45, News Bulletin and Time Signal. 12 Noon, Popular Music on Gramophone Records (contd.). 3.0 p.m., Programme for Peasants. 4.0, Dance Music by the Willy Marx Jazz Band; In an interval at 5.0, News Bulletin and Time Signal. 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records. 7.0, An Operetta (to be announced); In the intervals, News.

BUDAPEST
550 metres; 18.5 kW. Programme also relayed on 210 metres from 5.45 to 12 Midnight. 9.0 a.m., Press Review and Beauty Culture. 10.0, Catholic Service. 11.15, Evangelical Service, followed by Time Signal and Weather Forecast. 12.0 (approx.), Concert by the Royal Hungarian Opera House Orchestra. Conductor: Wilhelm Komor. Soloist: Josef Somlo (Songs): Symphony in D (Schubert); Songs: (a) Aria from The Magic Flute (Mozart), (b) Aria from L'elisir d'amore (Donizetti); Scènes alsaciennes (Massenet); Songs: (a) Air from Fra Diavolo (Auber); (b) Aria from Manon Lescaut (Puccini); Overture, Tannhäuser (Wagner). 2.0, Light Music on Gramophone Records. 3.0, Agricultural Talk. 3.45, Concert by the Eugen Farkas Cigány Band. 5.0, Concert relayed from the Plattensee. 5.45, Orchestral Concert. 7.0, Reading. 7.30, Pianoforte Recital by Eugen Kaliv: Partita in B (Bach); Ständchen (Schubert-Liszt); Melody (Chopin); Liebeslied (Schumann-Liszt); Capriccio in B minor, Op. 2, No. 4 (Dohnányi). 8.0, Sports Notes and Racing Results. 8.20, Dramatic Programme. 10.10, Announcements, followed by Cigány Music.

CASSEL.—See Frankfurt.

COPENHAGEN
281 metres; 0.75 kW.; and **KALUNDBORG**, 1,153 metres; 7.5 kW.—10.0 a.m., Divine Service relay. 11.30, Weather and News. 12 Noon, Town Hall Chimes. 12.2 p.m., Orchestral Concert, conducted by Launy Gröndahl: Overture, Rodelinda (Handel); Ballet Music from Orpheus and Eurydice (Gluck); Minuet and Finale from the Military Symphony (Haydn); Overture, Così fan tutte (Mozart); Nocturne and Dance from the Music to A Midsummer Night's Dream (Mendelssohn); Overture, William Tell (Rossini). 1.0, Language Lessons. 2.0, Divine Service from the Garrison Church. 3.30 to 5.30, Concert of Light Music from the Zoological Gardens in the interval, Reading (from the Axelborg Studio). 5.50, Programme for Children. 6.20, Talk: Artists and Personality. 6.50, Weather and News. 7.15, Time and Sports Notes. 7.30 (from the Aalborg Studio), Talk. 8.0, Town Hall Chimes. 8.2, Concert of Danish Music by the Radio Orchestra, conducted by Launy Gröndahl: Overture, Little Christie (Hartmann); First Movement from Symphony No. 1 in C minor

FRANKFURT

390 metres, 1.5 kW.; and CASSEL, 246 metres. —11.0 a.m., Goethe Memorial Celebrations, relayed from St. Paul's Church. The Municipal Orchestra, conducted by Hans Wilhelm Steinberg. Introduction with Fanfares and Carillon; March of the Priests from The Magic Flute (Mozart); Addresses by the Mayor, the Minister of the Interior, and Gerhard Hauptmann; Final Chorus from The Mastersingers (Wagner). 12.30 p.m., Concert from Berlin (Witzleben). 2.0, What Goethe means to us—Lecture-Recital of Goethe Songs. 3.0, Fairyland—Musical Play in Four Acts with Music (Agnes Gevecke-Berg). 4.0, See Stuttgart. 6.0, Five and Twenty Minutes' Variety. 6.25, Talk: European Thinkers. 6.50, Weather for Farmers, Sports Notes and Shooting Contest Report. 7.0, See Heilsberg. 8.0, Introduction to the following transmission. 8.15, Iphigenie auf Tauris—A Play (Goethe). 10.0, Time, News, Weather and Sports Notes. 10.30, Concert of Light Music. 12 Midnight (approx.). Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 213 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—11.0 a.m., Goethe Memorial Celebration, relayed from Frankfurt. 12.30 p.m., Time Signal and Weather Forecast. 12.35, Concert from Heilsberg. 2.0, Three Fairy Tales by Felicia de Witt, read by Trude Meinz. 2.30 (from Kiel), Concert of Light Music by the Wellingsdorf Double Quartet. 3.0, Running Commentary on the Great Motor Cycle Hill-climbing Trials from Teterow. 3.30 (from Bremen), Concert of Wind Instrument Music. 5.0, The Weser—A Radio Sequence of History and Legend in Four Scenes (Lerbs-Lindemann), by the Station Choir, the Small Station Orchestra, and Soloists. 6.0 (from Hanover), Cabaret Concert. 7.0, Talk: Interesting Characters in Old Altona. 7.30, With the Microphone at a Football "Exchange"—A Radio Report by Karl Lerbs. 7.40, Sports Review. 7.55, Weather Forecast. 8.0, Goethe (born 28th August, 1749)—Birth-day Concert by the Station Choir, Orchestra, and Soloists: Cantata, Meeresstille, und glückliche Fahrt (Beethoven), for Mixed Choir and Orchestra; Two Letters from Goethe's Mother to her Son; Wieland's Picture of Goethe in 1776; Symphonic Poem, Tasso (Liszt); Goethe and Tasso, A Prologue (Otto Ernst); Baritone Solos: (a) Prometheus (Schubert), (b) Grenzen der Menschheit (Schubert); Talk on the Goethe Exhibition; Choral Piece König in Thule (Zelter); Amboss oder Hammer (Erdlen), for Mixed Choir and Chamber Orchestra; Reading: Goethe in Rome (Rud. Presber); Rhapsody, founded on a Fragment of Goethe's Harzreise im Winter, for Contralto, Male Voice Choir, and Orchestra (Brahms); Reading from Das Goethehaus in Weimar (P. Heyse); Songs: (a) Das Veilchen (Mozart), (b) Blumenruss (Paul Graener); Reading: A Visit to Goethe (Heinrich Luden); Songs: (a) Behandelt die Frauen mit Nachsicht (Graener), (b) Gegenwart (Graener), Goethe's Jubiläumsmorgen (Schleich); Choir: Bundeslied (Zelter); Overture, Reinecke Fuchs (Bleyle). 10.0, Time, Weather, News, and Announcements. 10.20, Topical Talk. 10.35, Dance Music from Berlin (Witzleben).

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW. and DANZIG, 453.2 metres.—12.30 p.m., Concert, relayed from Berlin (Witzleben). 2.0, Chess Lesson. 2.30, Talk for Children: On the Tracks of Wild Beasts with Rifle and Camera. 3.0, Children's Hour. 3.30, Talk: D1089. 4.0, Concert by the Small Station Orchestra, conducted by Eugen Wilcken: March, Friedensglocken (Urbach); Overture, The Land of Smiles (Lehár); Waltz and Czardas from Coppélia (Delibes); Potpourri of Bizet's Music (Urbach); Waltz, Roses and Marguerites (Waldteufel); Violin Solos: (a) Faust Potpourri (Gounod-Barasate), (b) Liebesleid (Kriesler); Overture, Die Keusche Barbara (Nedbal); Selection from the Maid of the Black Forest (Jessel); Waltz, Was Blumen träumen (Translatteur); Fata Morgana (Raasch); Wilma-Marsch (Poppling). In the Interval, Racing Results. 6.0, Hugo Wolf Song Recital by Käthe Coranda-Laechelin: In dem Schatten meiner Locken; Du sagst mir, dass ich keine Fürstin sei; Als ich auf dem Euphrate schiffte (Goethe); Phänomen (Goethe); Die Bekehrte (Goethe); Ernst ist der Frühling (Heine); Nacht ist wie ein stilles Meer (Eichendorff); Wie glänzt der helle Mond (Keller); Bescheidene Liebe Wiegenlied im Sommer (Reinick). 6.30, A Veteran describes the Battle of Tannenberg (August 26th-30th, 1914). 7.0, Serenade Concert by the Königsberg Opera House Orchestra, conducted by Erich Seidler, relayed from the Courtyard of Königsberg Castle: Sonata (J. Pezel); Concerto in F, No. 28 (Händel); Partita from the Six

AUGUST 28th

SUNDAY

continued.

Divertissements (Haydn); Serenade in B for Wind Instruments (Mozart); Military March in D (Beethoven). 8.0, Sports Results. 8.10, Lebewohl und liebe mich—Goethe's Letter Ending—A Reading by Dr. Hanns Martin Elster. 8.30 to 12 Midnight, See Berlin (Witzleben). 12 Midnight, Close Down.

HILVERSUM

Announced HUIZEN, 296.1 metres, 20 kW. (7 kW. up to 4.40 p.m.).—8.10 a.m., Religious Programme by the Catholic Radio Society (K.R.O.). 9.10 to 11.55, Programme of the Christian Radio Society (N.C.R.V.). 9.10, Gramophone Records of Sacred Music. 9.30, Divine Service and Sacred Music on Gramophone Records, relayed from Harlingen. 11.55 to 4.40 p.m., K.R.O. Programme. 11.55, Sextet Concert: Pasodoble, Ich bin in Stimmung (Doelle); Liebe (Geitner); Waltz, Verschämte Liebe (Lincke); Bin nur ein Johnny (Abraham); Potpourri, Einfach Fabelhaft (Dostal); Loin du bal (Gillet); Une soirée chez Em. Hullebroeck (Wiggelaar); Melody from The Flower of Hawaii (Abraham); Le rêve du carillonneur (Jakma); Das wär herrlich (Benatzky); Finale. 1.25, Talk. 1.50, Literary Talk. 2.10, Orchestral Concert conducted by Johan Geritsen. 4.10, Programme for Invalids. 4.40 to 7.25, N.C.R.V. Programme. 4.40, Religious Music on Gramophone Records. 5.30, Divine Service and Sacred Music on Gramophone Records relayed from Apeldoorn. 7.25 till Close Down, K.R.O. Programme. 7.25, Religious Talk. 7.50, Concert: Overture, Quat and Carpenter (Lortzing); Potpourri, Aus Schuberts Skizzenbuch (Urbach); Pas des fleurs (Delibes); Potpourri, Für Alle (Dostal); Waltz, Soirée d'été (Waldteufel); Serenata diabolica (Cerrri); Finale. 8.50, News Bulletin. 9.0, See Brussels No. 1. 10.20, Epilogue. 10.40 (approx.). Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—7.55 to 11.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 7.55, Physical Culture. 8.10 to 8.40, Interval. 8.40, Football Notes and Pigeon Flying Report. 8.45, Horticultural Talk. 9.40, Divine Service of the Dutch Evangelical Society, relayed from Goor. 11.10, Address by M. Zwertbroek. 11.40, to 4.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Time Signal and Gramophone Records of Variety Music. 12.10 p.m., Concert by the Wireless Chamber Orchestra, conducted by Louis Schmidt: Overture, Le lac des fées (Auber); La Furiana (Fauchey); Ballet Suite, Ein Fest in Gnomeneich (Witteborn); Habanera (Duhamel); Heire Kali (Lederer); Male Voice Octet (a) Wanderlied (Merckx), (b) Waiting in Vain (Merckx), (c) Wiegenlied (Brahms), (d) Liebeslied (Schubert), (e) Song (Zander), (f) O Pepita (Müller); Overture, Gri-Gri (Lincke); Spieluhr und Puppentanz (Schebek); Selection from The Student Prince (Romberg); Tango, Dolores (Moretti); March, Venezia (Fabiani). 1.40, Weekly Book Talk. 2.10, 'Cello Recital by Mischel Cherniavsky: Sonata in A (Bocherini); Kol Nidrei (Bruch); Vito (Popper); Hungarian Rhapsody (Popper). 2.40, Orchestral Concert from the Kurhaus, Scheveningen; Conductor, Ignaz Neumark; Soloist, Mara Dyxhoorn (Soprano): Overture, Fidelio (Beethoven); Organ Solo, Largo (Handel); Two Arias from Figaro (Mozart); Prelude to the Third Act of Tristan and Isolde (Wagner); Three Songs, (a) Liebst du um Schönheit, (b) Rheinlegendchen (Mahler), (c) Meine Liebe ist grün (Brahms); Two Pieces (Hinderdael), conducted by the composer, (a) Adagio, (b) Minuet for Strings; Slav March (Tchaikovsky). In the interval, Gramophone Records of Variety Music. 4.10, Gramophone Concert of Light Music. 4.40 to 5.40 (approx.), V.A.R.A. Programme: Concert of Light Music. 5.40 (approx.) to 7.40, Programme to be announced. 7.40 till Close Down, A.V.R.O. Programme. 7.40, Time Signal, Weather, and News. 7.55, Concert, conducted by Ignaz Neumark, relayed from the Kurhaus, Scheveningen: Carnival Overture (Dvorak); Concerto No. 2 in A (Liszt). 8.55, Song Recital by Clinge Doerenbos. 9.15, Gramophone Records of Light Music. 9.25, Concert of International Dances by the Wireless Orchestra, conducted by Nico Treep. 9.55, Concert by Wireless Orchestra. 10.40, Concert by Kovacs Lajos and his Orchestra. 11.40 (approx.). Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LANGENBERG

473 metres; 60 kW.—11.0 a.m., See Frankfurt. 12.35 p.m., Talk: The Music of the Week. 1.0, Concert conducted by Eysoldt. Overture, Frau Meisterin (Suppé); Élégie (Massenet); Italian Serenade (de Micheli); Melodies from Manon Lescaut (Puccini); Slav Rhapsody (Friedemann); Waltz, Mon

trésor (Beucel); Rosenlieder (Eilenberg); Selection from A Waltz Dream (O. Straus). 2.30, Agricultural Talk. 2.50, Else Lasker-Schüler reads from her own works. 3.15, Talk: Town Children in the Holidays. 3.40, Talk: The Worker and Sport. 4.5, Talk by Ernst Glaeser: My Experiences in Colmar. 4.30, Choral Concert relayed from Kempen; Die Ernte (Schwartz); Salve Regina (Schubert); Hoch empor (Curti); Gesang der Geister über den Wassern (Brambach); Wilde Jagd (Buck); Totenvolk (Hegar); Empor (Kaun). 6.0, Talk: The Mind and Soul. 6.30, See Leipzig. 7.0, Variety Programme. 7.45, Sports Notes. 8.0, Concert by the Station Orchestra conducted by Buschkötter; Soloists: Kläre Hansen (Soprano); Helene Guernanova (Contralto), Leonardo Aramesco (Tenor), Else Pfaff and Karl Neufert (Elocutionists); Overture, Schwanda the Piper (Weinberger); Soprano Solos (Volbach): (a) Lied des Haffners, (b) Wiegenlied; Invitation to the Dance (Weber-Weingartner); Goethe Songs (Zilcher)—Part One—Songs for Tenor: (a) Blick um Blick, (b) Dem aufgehenden Vollmonde, (c) An die Entfernte, (d) Der Bräutigam, (e) Der neue Kopenhagen; Part Two—Songs for Contralto: (a) Süsse Sorgen, (b) Früh wenn Tal, Gebirg und Garten, (c) Um Mitternacht, (d) Elfenlied, (e) St. Nepomuks Vorabend; Symphonic Suite, Scheherazade (Rimsky-Korsakov). 10.5, News Bulletin. 10.45, Dance Music from Berlin (Witzleben).

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW. and DRESDEN, 319 metres.—11.0 a.m., See Frankfurt. 12.30 p.m., Concert relayed from Berlin (Witzleben). 2.0, Weather Forecast and Time Signal, followed by Programme Announcements for the Coming Week. 2.25, Hints for Farmers. 2.35, Talk: The Moselle. 3.0, From the Præludium to the Prelude—A Pianoforte Recital. 3.35, Goethe Programme (by Fritz Adolf Hünich). 4.0, Concert by the Kaufmann Orchestra, Dresden; Jubel-Overture (C. Bach); Cupid Waltz from Der Göttergatte (Lehár); Intermezzo, Farbenspiele (Siede); Potpourri, Von Wien durch die Welt (Hruby); Intermezzo, Op. 117, No. 1 (Brahms); Overture, Frühlingsluft (Josef Strauss-Reiterer); Waltz, Herbststimmung (Kienzi); Song from Countess Maritza (Kalmán); Spatenparade (Rathke); Potpourri, Aus der Woche (Thiele). In the interval from 5.0 to 5.15, A Report from Berlin (Witzleben) on the Round Europe Air Race. 6.0, Topical Reports on Gramophone Records: (a) Opening of a Youth Hostel in Schwarzburg, (b) Half-time in the German-Austrian Handball Championship, from the Stadium, Weissenfels. 7.0, A German Folk Song Play (Zilcher), Op. 32; Sixteen Folk Songs for a Vocal Quartet and Pianoforte; Irmgard Genzel-Roehling (Soprano), Henriette Lehne—(Contralto), Hanns Fleischer (Tenor), and Philip Göpel (Baritone). 8.0, Egmont—Opera (Beethoven). 10.0, Microphone Report: An Afternoon in Goethe's Time on the Gabelbach. 10.5, News Bulletin. 10.15, News Bulletin, followed by Dance Music from Berlin (Witzleben).

LINZ.—See Vienna.

MADRID

ARANJUEZ (EAO), 30.4 metres; 20 kW.—12.30 a.m. (Monday), Concert of Light Music. 12.45, Humorous Talk. 1.0, Concert of Variety Music. 1.35, Talk. 1.40, Popular Music. 2.0 (approx.). Close Down.

MADRID

UNION RADIO, Call EA7, 424.3 metres, 2 kW.—9.0 a.m., Topical Review, followed by interval. 3.30, Chimes, Time Signal, Weather Forecast and Theatre Notes, followed by a Concert of Light Music: Sevilla (Albeniz); Waltz, Katiuska (Sorozabal); Neapolitan Song (Maruccci); Selection from Aida (Verdi); La poupée valsante (Poldini); El señor Joaquin (Caballero); Fantasia (Chueca); Polonaise No. 2 (Liszt); Overture, Orpheus in the Underworld (Offenbach). 5.0, Interval. 8.0, Chimes and Request Gramophone Records. 9.30, Interval. 11.0, Chimes and Time Signal, followed by Talk, with Musical Illustrations. After the Programme, Concert by the Municipal Band, relayed from Rosales. Conductor: M. Villa. 1.30 a.m. (Monday), Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—6.0, See Prague. 7.0, See Brno. 7.50, See Prague. 10.21, Programme Announcements and Theatre Notes. 10.25, Light Music on Gramophone Records.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.10 p.m., Popular Music. 6.30, Young Communists' Radio Journal. 7.10, Popular Music. 9.0, Talk in English: Bolshevism. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—10.0 a.m., Sunday in the Summertime—Programme of Songs and Verse. 10.45, Chimes from Our Lady's Church. 11.0, See Frankfurt. 12.30 p.m., Concert of Chamber Music by the Augsburg Paepke Quartet. 1.5, Time Signal, Weather Forecast, and Programme Announcements. 1.15, Agricultural Talk. 1.35, Concert of Light Music on Gramophone Records. 2.30, Elementary Chess Lesson. 3.15, Programme for Children. 3.35 (from Nürnberg), Variety Programme. 4.15, Reading. 4.30, Organ Recital by Gustav Schoedel; Melody (Reger). 4.55, Talk on Birds. 5.15, Musical Curiosities. 6.25, Reading from the Works of Pieps Dengler. 6.45, Pianoforte Recital by Franz Osborn; Sonata No. 3 in F Minor, Op. 5 (Brahms). 7.25, Talk: How to see Towns. 7.45, Weather Forecast and Sports Notes. 8.0, Concert by the Station Orchestra, conducted by Karl List: Soloist, Heinz Hammer (Baritone). 9.0, Talk on Goethe. 9.20, Concert (cont'd.) 10.20, Time Signal, Weather Report, News Bulletin and Sports Notes. 10.45, Concert from Vienna. 12.0 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—10.50 a.m., Chimes and Divine Service Relay. 1.0 p.m., Military Band Concert, relayed from a Park. 5.30, Gramophone Concert of Classical Music. 6.20, Talk in German: Young People's Festival Day in Germany. 6.45, Recital of Norwegian Songs by Ida Theresia Singer. 7.15, Weather and News. 7.30, Talk: The Struggle for Liberty in Czechoslovakia. 8.0, Time Signal. 8.2, Orchestral Concert; Chamber Music for Strings and Pianoforte (Herrmann); Rhapsody No. 1 (Svendens); Chanson triste (Tchaikovsky); Danse slave (Chabrier); Ballet Suite (Pouget); Melodies (Ulfrstad): (a) Kyrkjebaten, (b) Under Kongsdalshorn, (c) Fra Trollheimen; Country-side Suite (Eric Coates); Waltz, Au revoir (Waldteufel); Turkish March (Mozart). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Recitations. 10.45, Dance Music on Gramophone Records. 12 Midnight, Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 to 6.30, Sextet Concert: Canzone di giocatori (Rulli); Serenata elegante (De Micheli); Selection from The Rose of Stamboul (Fall); Song: Campagna (Vittadini); Selection from Tannhäuser (Wagner); Song Celestina (Viama). 8.0, Announcements and Giornale Radio. 8.20, Sports Notes. 8.25, Popular Music on Gramophone Records. 8.30, Time and Announcements. 8.45, Symphony Concert, Conducted by A. La Rosa Parodi: Soloists: M. Cottone (Pianoforte), and Marisa Bentivegna (Oboe); Overture, Coriolanus (Beethoven); Concerto in G Minor for Pianoforte and Oboe (Mendelssohn); Three Preludes from Oedipus Rex (Pizzetti); Toccata (Rossi-Toni); Selection from Le donne curiose (Wolf-Ferrari). In the interval Talk. After the Concert, Book Review. 10.0 (approx.), Variety Programme. 10.55, News Bulletin.

PARIS

EIFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 1.0 p.m., News Bulletin. 1.10, Weather Forecast. 1.25 to 2.30, Symphony Concert, conducted by M. Flament. Soloists: M. Krabanski ('Cello) and M. Charon (Violin); Overture, Le songe d'une nuit d'été (A. Thomas); Melody from The Barber of Seville (Rossini-Nardon); 'Cello Solo: Scherzo Waltz (Chabrier-Rudd); Selection from Les Bavards (Offenbach-Gauwin); Violin Solo: Waltz (O. Straus); Dance of the Hours from La Gioconda (Ponchielli); Estudiantina (Turina-Chapelier). 6.45, Le Journal Parlé. 7.45, Programme for Children. 8.20, Weather Forecast. 8.30, Gramophone Concert: Part I, Music by Bizet; Part II, Light Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN; 328.2 metres; 60 kW.—10.0 a.m., Press Review. 10.5 to 1.5 p.m., Sponsored Concerts. 1.5, Light Music on Gramophone Records. 2.0 to 7.0, Interval. 7.0, News Bulletin and Press Review. 7.5, Popular Music on Gramophone Records. 7.15, Sports Review. 7.25, Gramophone Concert (cont'd.). 8.15, Catholic Notes. 8.30, Radio Journal and General News Bulletin. 8.45, Orchestral Concert. Soloist, M. Emil Rousseau (Songs). Four Songs: (a) Melody from Ciboulette (Hahn), (b) Ballade de François Villou (Debussy), (c) Marine (Lalo), (d) Au bord de l'eau (Fauré); En vue d'Alger; Prelude to the Suite algérienne (Saint-Saëns); Waltz, Brune ou Blonde (Waldteufel); Ballet de Cour (Pierlé); Prelude, Minuet, Rigaudon and Finale from Le Tombeau de Couperin (Ravel); Ballet de Siang-Sin (Hue); Waltz (Florent Schmitt); Petite Suite (Büsser); Entr'acte from Les Armillaires (Doret); Ballet Music from Antar (Gabriel Dupont); Melody for Strings; Berceuse gasconne (Lacombe);

Rondes d'enfants (Turina). 10.45, News Bulletin. 10.50, Experimental Transmission on the Coupleux-Civelet Wireless Organ. M. Olivier Messiaen (Organist); Fantasia and Fugue in G minor (Bach) with Improvisations.

PARIS

RADIO PARIS; Call CFR; 1,725 metres; 75 kW.—7.45 a.m., Light Music on Gramophone Records. 8.0, Weather and Press Review. 8.30, Physical Culture. 12 Noon, Religious Address. 12.20 p.m., Sacred Music: Fantasia in G minor (Bach); Choral No. 3 (Franck); Improvisation (Louis Vierne). 12.30, Bilbouet. 12.45, Press Review, News and Weather Forecast. 1.0, Reynaldo Hahn Concert on Gramophone Records: Two Airs from Brummel; Paysage; L'heure exquise; Si mes vers avaient des ailes; Mai; Ofrande; Three Airs from Ciboulette. 1.30 to 3.0, Programme in English by the I.B.C. 1.30, Concert of Brunswick and Panachord Records. Announcer, Mr. T. St. A. Ronald. Organ Solo, The Haunted Organ (White); Carolina Club Orchestra, Is I in Love? I is; The Mills Brothers, Good-bye Blues; The Street Singer; Marta; Bing Crosby, Can't we talk it over?; Boswell Sisters, with the Dorsey Brothers' Orchestra, River, Stay 'way from my door; the Street Singer, Auf Wiedersehen, my dear; Victor Young and his Orchestra, There I go, dreaming again. 2.0, Concert of Decca Records. Roy Fox and his Band. Roy Fox's Commentary on Winnie the Moocher's Wedding Reception; Cliff Connolly: If those lips could only speak; Jack Hylton and his Orchestra: You're taking a Chance with me; Len Fillis: Roses at Dawning; Jack Hylton and his Orchestra: Now listen to the Band; Jack Richard and his Orchestra: Twenty-one Years; The Westminster Military Band: The Gladiator's Farewell; Alfredo Campoli and his Salon Orchestra: Speak of Love; Gertrude Lawrence: My Sweet; Maurice Elwin (Rhythm Baritone): This is the Night; Edythe Baker (Rhythm Pianist): How long will it last?; Roy Fox and his Band: It ain't no fault of mine; Fred Elizalde (Pianist): When Work is through; Little Mary Hagan: My Daddy; Arthur Lally and his Orchestra: Every day's a lucky day; Harold Ramsey at the Mighty Wurlitzer Organ at the Granada Picture Theatre, Tooting: Paradise. 3.0 to 4.0, Interval. 4.0, Programme in English by the I.B.C. Gaumont-British Referee—Hour of Non-Stop Variety. Announcer: Captain C. Clayton Hutton. 6.45, Programme in English by the I.B.C. Second Concert on behalf of the Gaumont-British Picture Corporation. Music by the Alhambra-Paris Orchestra, under Lucien Goldy, with Songs by Mlle. Flore Mally, Lucien Lejal, M. Geluard, and Mme. Jane Manceau: Overture, Veronique (Messenger); Four Songs: (a) Aria from Isoleine (Messenger); (b) Das Leben ist ein Traum (Haydn); (c) Pardon mon Papa, from Le Roi Pausole (Honegger); (d) Si tu le veux (Kochlin); Two Hungarian Dances (Brahms). 8.30, News, Sports Notes, Sports Press Review and Weather Forecast. 8.45, Concert (contd.): Coq et poules (Paradis); Four Songs: (a) Beauté pour homme (Lejal-Rossi); (b) La vie moderne (Darris-Gauwin); (c) Ne jurez pas aux femmes (Joel-Tiska); (d) Euphrasie (Lejal-Rossi); Stéphanie Gavotte (Czibulka); Blonde amie (Carcel). 9.15, Press Review and News. 9.30, Concert (contd.): La feria (Lacôme); Four Songs: (a) La vieille cheminée (Desmoulines); (b) La chanson des femmes (Doumel); (c) Folie exquise; (d) Chanson des Terres Neuves (Leojuc); Four Songs: (a) Fascination (Feraudy-Marchetti); (b) Froufrou; (c) Serenata (Blondeau); (d) Les petites âmes du caire (Nerini); L'Escaipolette (Tremisot); Bouton d'Or (Pierne).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Cathedral of Song (from New York). 9.30, St. Stephen's Episcopal Church Boys' Choir. 10.0, Shadyside Presbyterian Church Services. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Weather Report. 11.5, Teaberry Sport Review. 11.10, Press News Reeler. 11.15, Westinghouse Concert. 11.45, Rita Cavalieri (Spanish Soprano). 11.59, Time Signal. 12 Midnight, KDKA Players. 12.30 a.m. (Monday), The Commodores (from New York). 1.0, McCravy Brothers. 1.15, New York Orchestra (from New York). 2.0, Enna Jettick Melodies (from New York). 2.15, Programme to be announced. 2.45, Sheaffer Life Time Review (from New York). 3.15, The Old Singing Master (from New York). 3.45, Roy Peterson (Tenor). 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News. 4.20, Alexander Roy (Tenor). 4.30, Will Ryshanek and his Orchestra. 5.0, Time Signal and Good Night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—11.0 a.m., Military Band Concert, relayed from Podiebrady Spa. 12 Noon, Chimes. 12.5 p.m., Orchestral Concert, relayed from Brno. 1.30, Agricultural Report. 4.0, Open Air Concert, relayed from Bratislava. 6.0, German Transmission; Reading from Goethe's Lighter Works, with Introductory Notes by Dr. F. Adler. 7.0, See Brno. 7.50, Concert by a Brass Band, relayed from Kralovska Obora. 8.50, Light Songs. 9.15, Concert by a Wind Instrument Orchestra;

AUGUST 28th

SUNDAY

continued.

Chamber Trio No. 8, Op. 2 (Handel); Trio Sonata (Quantz); Tarantella (Gaubert). 10.0, Time Signal, News Bulletin, Sports Notes, Theatre Notes, and Programme Announcements. 10.25, Light Music on Gramophone Records.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; **LAUSANNE,** 680 metres; and **GENEVA,** 760 metres.—9.55 a.m. (from Geneva), Chimes from St. Peter's Church. 10.0 (from Geneva), Protestant Service. 11.0 (from Lausanne), Light Music on Gramophone Records. 12.30 p.m., News Bulletin and Weather Forecast. 12.38, Orchestral Concert. 2.0 to 7.0, Interval. 7.0 (from Lausanne), Talk on Religion. 7.30 (from Lausanne), Popular Music on Gramophone Records. 8.0 (from Geneva), Reading (Tanner). 8.20, Concert by the Station Orchestra. 9.0 (from Lausanne), Dialogues. 9.20, Variety Concert by the Station Orchestra. 10.0, News Bulletin and Weather Forecast. 10.15 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call **190,** 441 metres; 50 kW. Relayed by Naples, 319 metres; and **290,** 25.4 metres.—9.40 a.m., News Bulletin. 9.45, Agricultural Notes. 10.0, Religious Programme. 10.15, Sacred Music. 10.45 to 11.0, Sports Notes and Amusement Guide. 12.30 to 2.0 p.m., Gramophone Concert, with Humorous Songs and Duets. In the interval at 1.30, Time and Announcements. 4.15 (Naples), Programme for Children, followed by Weather and Sports Notes. 5.0 to 6.15, Vocal and Instrumental Concert. Sports Notes in the interval. 7.25 (Naples), Shipping and Sports Notes. 7.30, Sports Notes, Announcements and News. 8.0, Time, Announcements and Gramophone Records of Variety Music. 8.30, Sports Notes. 8.45, The Merry Widow—Operetta in Three Acts (Lehár). In the intervals: Monologue and Announcements. News after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by **W2XAF** on 31.48 metres, and by **W2XAD** on 19.55 metres.—7.30 p.m. till Close Down, New York Relay. 7.30, Moonshine and Honeysuckle. 8.0, Gus Arnheim and his Orchestra. 8.30, National Sunday Forum. 9.0, Iodent Programme with Jane Froman. 9.15, Wildroot Institute. 9.30, Musical Programme. 9.45, Pastels. 10.30, Pop Concert. 11.0, Catholic Hour. 11.30, Sweetheart Days. 12 Midnight—Donald Novis with Orchestra. 12.30 a.m. (Monday), Orchestral Gems 1.0, Chase and Sanborn Programme. 2.0, Our Government, by David Lawrence. 2.15, American Album of Familiar Music. 2.45, Sheaffer Lifetime Revue. 3.0, Musings. 3.15, L'Heure Exquise. 3.45, Sunday at Seth Parker's. 4.15, Beau Balladeers. 4.30, Mood Orientale. 5.0, Teddy Black's Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; **BASLE,** 244.1 metres; and **BERNE,** 246 metres.—10.0 a.m. (from Basle), Protestant Service. 10.45 (from Basle), Walter Courvoisier Memorial Programme (Died December 27th, 1931); The Basle String Quartet: The Sterk Choir; Soloists: Erika Frauscher (Soprano) and Gustav Bley (Baritone). Talk by Dr. Edgar Refardt: The Life and Work of the Composer. 12 Noon, Concert by the Station Orchestra. 12.28 p.m., Time Signal and Weather Forecast. 12.30, News Bulletin. 12.40, Concert by the Station Orchestra. 1.45 (from Basle), Recital of Alemannic Lyrics, with Lute Accompaniments by Ludwig Egler. 2.15, Interval. 3.30 (from Basle), Reading. 4.0 (from Basle), Concert by the Radio Quartet. 5.0 (from Basle), Swiss Authors' Programme: Reading from the Works of Carl Albrecht Bernoulli. 5.35 (from Basle), Mouth Organ and Zither Duets by the Brothers Sahli. 6.0 (from Basle), Talk in Italian. 6.30 (from Basle), Heinrich Eduard Jacob reads from his own Works. 7.0, Time Signal, Weather Forecast, and Sports Results, followed by Folk Songs on Gramophone Records. 7.30 (from Basle), Talk: America and Religion. 8.0, See Leipzig. 10.0 (approx.), Weather Forecast and News Bulletin. 10.15 (approx.) (from Basle), Sports Notes. 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call **SASA,** 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—11.0 a.m., Divine Service Relay. 12.45 p.m., Weather Forecast. 1.0, Running Commentary on the Motor Cycle Grand Prix. 1.45 to 3.0, interval. 3.0, Running Commentary on the Motor Cycle Race (contd.) 4.0, Programme for Children. 4.30, Choral Concert, Conducted by Felix Körling, relayed from Halmstad, 216 metres. 5.5,

Evensong. 6.15, Popular Music on Gramophone Records. 7.15, Weather Report, News Bulletin and Sports Notes. 7.35, Talk: The Swedish Naval School. 8.5, Military Band Concert, Conducted by P. Berg: Overture, The Magic Flute (Mozart); Waltz, Verschmähte Liebe (Linke); Slav Rhapsody (Friedemann); Temple Dance from Olav Trygvason (Grieg); Melody (Beccce); Military March, (Berg). 9.0, Reading. 9.30, Recital of Old English Songs. 9.45, Weather Report and News Bulletin. 10.0 Concert of Light Music. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—10.45 a.m., Protestant Service in German, relayed from Mulhouse. 11.30, Catholic Service. 12 Noon, Gramophone Concert of Light Classical Music. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.20, Gramophone Concert of Popular Music. 1.30, Concert relayed from Mulhouse on the occasion of the Gathering of War Medalists; Music by the Mulhouse Fire Brigade Band. 3.30 to 4.0, Interval. 4.0, Talk in French: The Oberlin Reformatory at Labroque. 4.15, Gramophone Dance Music. 4.45, Talk in German: How men learnt to build. 5.0, Orchestral Concert of Light Music, conducted by Roskam. 6.0, Medical Talk in French. 6.15, Sports Notes in French. 6.30, Orchestral Concert, conducted by Roskam: Overture, La finta giardiniera (Mozart); Adagio cantabile, from the Sonata Pathétique (Beethoven); Spring Song (Mendessohn); Selection from Samson and Delilah (Saint-Saëns); Suite, Le Roi s'amuse (Delibes); Cello Solo, Kol Nidrei (Max Bruch); Cantabile (Sporek); March, Folies bergères (Lincke). 7.30, Time, News in French and German, and Sports Notes. 7.45, Gramophone Records of Light Music. 8.0, Organ Recital from the Palais des Fêtes. 9.0, Blanchette—Comedy in Three Acts (Eugène Brieux). 10.30, Dance Music from the Casino, Niederbronn-les-Bains. 12 Midnight, Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG,** 570 metres.—10.10 a.m., Catholic Service. 11.0, See Frankfurt. 12.30 p.m., Violin and Pianoforte Recital: Sonata for Violin and Pianoforte in B Flat, No. 15 (Mozart); Two Pieces (Suk): (a) Un poco triste, (b) Appassionato, Op. 17. 1.0, Gramophone Records of Scenes from Wagner's Tannhäuser, given during the Bayreuth Festival. 2.0 (from Karlsruhe) Agricultural Talk. 2.30 (from Karlsruhe), Male Voice Quartet Concert. 3.0, See Frankfurt. 4.0, Orchestral Concert, conducted by Gustav Görlisch: Soloist, H. Hosen (Baritone): Overture, Alessandro Stradella (Flotow); Intermezzo from Chatterton (Liesenborghs); Radio Suite (Cropp); Songs, Die Welt im Lied—Potpourri of Famous Dance Melodies (Intrator); Türkische Scharwache (Michaels); Little Ballet Suite (Armandola); Waltz, Red Roses (Lehár); Songs: (a) Serenade (Bruch); (b) Die Küsse (Förster); (c) Der Star (Sinding); Overture, Im Reiche des Indra (Lincke); Potpourri of Marches (Komzak). 6.0, Reading (Dr. Gerhard Benzmer). 6.30, Sports Notes. 6.50, Concert of Forgotten Melodies by Maria Waldner (Contralto) (Songs to the Lute), Franz Konwitschny (Viola d'Amore and Violin). 7.30 (from Karlsruhe), Zither Recital. 8.0 to 10.0, See Frankfurt. 10.0, News from Berlin (Witzleben). 10.30, Sports Report on Gramophone Records. 10.50, Concert from Frankfurt. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—12.30 p.m., Catholic Service. 1.0, News Bulletin. 1.15, Orchestral Music. 1.40, Agricultural Report. 1.45, Protestant Service. 3.30, Experimental Picture Transmission. 5.0, Picture Transmission. 5.15, Orchestral Music. Selection from The Merry Wives of Windsor (Nicolaï); Overture, The Caliph of Bagdad (Boieldieu). 5.30, Popular Songs. 5.45, Operetta Music: Selection from The Daughter of the Regiment (Donizetti); Waltzes from The Girl in the Taxi (Gilbert) and The Gipsy Princess (Kálmán). 6.0, Instrumental Music. 6.15, Military Music. 6.30, Racing Results. 6.45, Orchestral Music: Jubel ouverture (Weber); Overture, Rienzi (Wagner). 7.0, Sound Film Music. 7.15, Instrumental Music. Trio (Schubert); Vienna, City of my Dreams (Sieczynsky); Theme and Variations (Tchaikovsky). 7.30, Programme Announcements. 7.35, News Bulletin. 7.45, Music by an Argentine Orchestra. 8.0, Hunting Horn Music. 8.15, Popular Songs. 8.30, Music by Viennese Orchestra. 8.45, Operatic Arias: Two Arias from Rigoletto (Verdi); Aria from Benvenuto Cellini (Diaz); Aria from I Pagliacci (Leoncavallo). 9.0, Dance Music. 9.15, Military Music. 9.30, Accordion Solos. 9.45, Operatic Melodies: Arias from La dame blanche (Boieldieu); The Tales of Hoffmann (Offenbach), and Hérodiade (Massenet). 10.0, Orchestral Music: Hungarian Dances Nos. 5 and 6 (Brahms); Radetzky March (Johann Strauss); Waltz from Phryné (Ganne). 10.15, Operetta Music: Selections from Die Teresina (Oscar Straus) and La Fille de Madame Angot (Lecocq). 10.30, North African News. 11.15, Humorous Sketches: (a) In the Lift, (b) Christmas-

boxes, (c) The Hat. 11.30, Orchestral Concert: Ballet égyptien (Luigini); The Brandenburg Concerto (Bach). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—9.40 to 10.45 a.m., See Turin. 10.45, Agricultural Notes. 11.0 to 7.5 p.m., See Turin. 7.5, Quintet Concert: Solemn Overture (Lortzing); Notte stellata (Cortopassi); Waltz from Frasquita (Lehár); Leganda d'ottobre (Vallini); The Madman (Rodige); Gounod Potpourri (arr. Urbach); Drink with me (Borchert); The Castanets (Dauber). 8.0, Close Down (See Turin).

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—9.40 a.m., Giornale Radio. 10.45, Agricultural Notes. 11.0, Mass from the Church of the Annunciation at Florence. 12 Noon to 12.15 p.m., Religious Programme. 12.30 to 1.30, Variety Concert. In the interval at 1.0, Time and Announcements. 4.30, Dance Music from the Luna Park Lido, Milan. Sports Notes in the interval. 6.15 to 6.25, Giornale Radio and Sports Report. 7.0, Announcements. 7.5, Gramophone Records of Variety Music. 7.30 (in an interval), Time and Announcements. 8.0, Giornale Radio and Sports Notes. 8.30, Anima allegria, Opera in Three Acts (Vittadini). In the intervals: Talk and Theatre Notes. Giornale Radio after the Programme.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbrück, 283 metres; Klagenfurt, 452.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—10.15 a.m., Organ Recital: Prelude and Fugue in G minor (Frescobaldi); Passacaglia and Fugue in G minor (Frischenschlager). 10.45 a.m., Concert by the Vienna Symphony Orchestra. Soloist, Peter Stadler (Pianoforte). 12 Noon, Talk: The Stars and Humal Destiny—Goethe, born August 28th, 1749. 12.20 p.m., Concert of Light Music by the Vienna Symphony Orchestra. 3.0, Time, News, and Programme Announcements. 3.5, The Tiger—A Humorous Story. 3.30, Quartet Concert of Chamber Music: String Quartet in A, Op. 18, No. 5 (Beethoven); String Quartet in F, Op. 96 (Dvorák). 4.30, Talk: Summer Joys. 5.0, Concert by the Orchestra of the Vienna Volksoper: Suite from Il Seraglio (Mozart); Scènes napolitaines (Massenet); Preludes to Second and Third Acts of Carmen (Bizet); Selection from Romeo and Juliet (Gounod); Overture, Die Diva (Weinberger); Waltz from Der Opernball (Heuberger); Quick Polka, Feuerfest (Josef Strauss). 6.30, Talk: Benares, the Mecca of India. 7.0, Heinz Steguweit reads his own Works; Introductory Talk by Rudolf List. 7.25, Time, Sports Notes and Programme Announcements. 7.35, Song Recital by Serge Abranovic: Tamino's Aria from The Magic Flute (Mozart); Des Grieux's Aria, Depart Fair Vision, from Manon (Massenet); Raul's Song, from The Huguenots (Meyerbeer); Traum durch die Dämmerung (Richard Strauss); Two Songs: (a) Liebste, glaub' an mich, and (b) Schön ist die Welt, from Schön ist die Welt (Lehár); Sonny Boy (Sylvia-Brown-Henderson). 8.10, Two Plays of Goethe's Youth: (a) Die Laune des Verliebten—A One-Act Pastoral Play in Verse (Goethe); (b) The Accomplices—A Three-Act Comedy in Verse (Goethe). 10.0, Announcements. 10.15, Concert of Light Music by the Otto Römisch Orchestra.

WARSAW

1,411 metres; 120 kW.—9.55 a.m., Programme Announcements. 10.0, Divine Service relayed from Lowicz. 11.45, Harvest Celebrations, relayed from Lowicz. 12.30 p.m., Weather Forecast. 12.35, Concert of Light Music. 12.58, Health Talk. 1.10, Concert (contd.). 2.0, Talk, relayed from Lwow, 381 metres. 2.15, Concert (contd.). 2.30, Agricultural Talk. 2.50, Concert (contd.). 3.15, Agricultural Talk. 3.25, Concert (contd.). 3.40, Topical Talk for Young People. 3.55, Humorous Talk for Children. 4.5, Military Programme. 4.45, Useful Hints. 5.0, Concert by the Station Orchestra, conducted by J. Oziminski. Soloist: Aug. Wisniewski (Baritone): March from the Prophet (Meyerbeer); Selection from Madame Butterfly (Puccini); Four Songs; Waltz from Casanova (Rozycki); Cracovienne from Pan Twardowski (Rozycki); Airs from Olav Trygvason (Grieg); Songs: (a) Air from Casanova (Rozycki); (b) Air from Il Trovatore (Verdi). 6.0, Talk: The Science of the Future. 6.20, Concert of Light Music from Ciechowiec. 7.10, Miscellaneous Items. 7.35, Answers to Correspondents and Technical Hints. 7.50, Interval. 7.55, Programme Announcements. 8.0, Concert by the Warsaw Philharmonie Orchestra, conducted by J. Oziminski. Soloist: V. Breyz (Tenor). Overture, Raymond (Thomas); Spanish Suite, La Feria (Lacôme); Songs: (a) Two Spanish Songs (Fallá); (b) Two Polish Folk Songs; Fantasia on Music from the Mountains (Noskowsky). 8.45, Reading. 9.0, Concert (contd.): Selection from Manon Lescaut (Puccini); Songs (a) Air from Werther (Massenet); (b) Aria from Manon (Massenet); (c) Aria from Cavalleria rusticana (Mascagni); Intermezzo from Cavalleria rusticana (Mascagni); Tarentella (Godard); Serenade (Moskowsky); Etude in C (Rubinstein); Polonaise in E (Liszt). 9.50, Sports Notes. 10.0, Dance Music. 10.40, Weather Forecast. 10.45, Sports Notes. 10.50, Dance Music (contd.). 11.30 (approx.), Close Down.

ZÜRICH.—See Schweizerischer Landessender.

ALGIERS

363.3 metres; 13 kW.—7.0 p.m., Market Prices and Exchange Quotations. 7.10, Shipping Notes and Weather Forecast. 7.15, Concert of Light Music. 7.35, News Bulletin and Time Signal. 8.0, Concert by a Symphony Orchestra. 9.30, Programme of Monologues and Humorous Sketches. 9.45, Dance Music.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 349 metres; 8 kW.—8.0 p.m., Trio Concert: Selection from Rienzi (Wagner); Waltz in A (d'Ambrosio); The Butterflies (Couperin); Polonaise in G Flat (Schubert). 8.30, Exchange Quotations, Talk in Catalan, Request Gramophone Records, Sports Notes, and News. 10.0, Chimes, Weather Forecast, and Market Prices. 10.5, Orchestral Concert of Light Music. 11.0, Pianoforte Recital by Juan Gibert Camins: Prelude (Rachmaninov); In the Convent (Borodin); Dance No. 3 (Granados); Danza del fuego (Fallá); Recitations in the intervals. 11.30, Vocal and Orchestral Concert: Soloist, Conception Callao (Songs). 11.30, Dance Music by the Melody Boys Orchestra, relayed from the Excelsior Dance Hall. 1.0 a.m. (Tuesday) (approx.), Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12.5 p.m., English Talk for Schools, followed by Gramophone Concert and Weather for Farmers. 12.55, Nauen Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of Light Music relayed from Berlin (Witzleben). 3.0, Talk: Tobacco-growing in the Dutch Indies. 3.30, Weather and Exchange. 3.40, Talk for Young People. 4.0, Educational Talk. 4.30 to 5.30, See Berlin (Witzleben). 5.30, Talk: The Modern Newspaper. 6.0, Making Music with Invisible Partners. 6.30, Elementary Spanish Lesson. 6.55, Weather for Farmers. 7.0, Topical Talk. 7.30, Agricultural Talk, followed by Weather for Farmers. 8.0, Wagner Concert, relayed from the Queen's Hall, London. 9.30, Reading from Werther's Letters (Goethe). 10.15 till Close Down, See Berlin (Witzleben). 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.30 p.m., Chopin, Pianoforte Recital by Josef Wagner. 4.55, Schumann Songs—Recital by Roland Helf (Tenor). 5.15, Richard Strauss Songs—Recital by Hans Wrana (Baritone). 5.30, Talk for Young People: The Good Old Days of Football. 5.50, Talk: The German East Frontiers. 6.15, Mandoline Orchestra Concert, conducted by Bruno Henze. 6.55, The Witzleben Station informs its Listeners. 7.0, Topical Talk. 7.10, Reading. 7.35, Talk: Travelling in Autumn. 8.0, See Braslau. 9.0, News and Sports Notes. 9.10, Concert by the Edwin Fischer Chamber Orchestra, conducted by Paul van Kempen. 10.15, Political Press Review, followed by News and Dance Music. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin, Exchange Quotations and Market Prices. 7.40, Popular Music on Gramophone Records. 8.10, Lottery Results. 8.15, Charades. 8.20, News and Weather Forecast. 8.30, Concert; Arabian Song from Scheherazade (Rimsky-Korsakov); Le Cygne (Saint-Saëns); In questa tomba oscura (Beethoven); Wiegandien (Mozart); Plaisir d'amour (Martini); Sonata for Two Violins (Léclaire); Improvment and Sicilienne (Fauré); Gopak (Mussorgsky); Largo for Violin, Pianoforte and Harp (Händel); Les Berceaux (Fauré) Vergebliches Ständchen (Brahms); Duet for Two Violins (Mozart); Ballad No. 2 for Harp (Loukin); Theme and Variation (Tournier); Andante from Quartet No. 2 (Tchaikovsky); Air (Albeniz).

BRATISLAVA

279 metres; 14 kW.—6.0 p.m., Chesa Lesson. 6.15, Light Music on Gramophone Records. 6.25, Violin Recital. 6.45, Talk. 6.55, See Prague. 7.25, Song Recital by Dr. Blaha. 7.45, See Prague. 8.0, See Brno. 9.0, See Prague. 10.15, Programme Announcements. 10.20, Concert of Popular Music, relayed from the Café Muzem.

BREMEN.—See Hamburg.

BRESLAU

825 metres; 1.5 kW.; and GLEIWITZ, 253 metres.—6.20 p.m., English Lesson. 6.35, Talk: Goethe and Schiller. 7.0, Gramophone Concert: The Berlin Municipal Opera House Orchestra, conducted by Alois Melichar: Overture, Die Zwillingbrüder (Schubert); Wilhelm Kempff (Pianoforte): (a) Bagatelle in C, (b) Scottish Dances (Beethoven); Bronislaw Huberman (Violin): Concerto in E Minor,

MONDAY

AUGUST THE TWENTY-NINTH.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Light classical concert. Orchestral music. Mr. Desmond MacCarthy: "New Books." Orchestral concert. Vaudeville programme. Dance music.

LONDON REGIONAL National programme. Orchestral concert. Organ music. Orchestral concert. Instrumental concert. Promenade concert. Dance music.

MIDLAND REGIONAL Orchestral music. Light music by British composers. London Regional programme.

NORTH REGIONAL National programme. Midland Regional programme. Organ music. Orchestral concert. Professor W. Sherard Vines: Topical reading for Northern Holidays. Dance music.

WEST REGIONAL National programme. Orchestral concert from the National Museum of Wales. Welsh programme. On the March—Orchestral programme.

SCOTTISH REGIONAL National programme. Organ music. Dance music.

BELFAST National programme. Light orchestral concert. Dance music. National programme. Music of Ivan Caryll. "The Society Six" and their Jester, relayed from Orange Hall, Portrush. Light orchestral concert. National programme.

ABROAD

BERO-MUNSTER Grotesque Music, introduced by Dr. H. Fleischer. "A Visit to a Factory."

COPENHAGEN Talk in English: "Heard in the Law Courts."

MOSCOW Concert from the American Conservatoire, Fontainebleau.

PARIS (Radio-Paris) Concert from the American Conservatoire, Fontainebleau.

STOCKHOLM Orchestral concert of Swedish music.

Op. 64 (Mendelssohn); The Lamoureux, Orchestra: Siciliana from Pelleas et Mélisande (Fauré); Alexander Brailovsky (Pianoforte): (a) Pastorale and Caprice (Scarlatti-Tausig), (b) Perpetuum mobile (Weber); The Berlin State Opera House Orchestra, conducted by Mascagni; Lyric Vision (Mascagni); The Berlin State Opera House Orchestra, conducted by Richard Strauss: Selection from Le Bourgeois Gentilhomme (Richard Strauss); The Berlin Philharmonic Orchestra, conducted by Wilhelm Furtwängler: Hungarian Dance No. 3 (Brahms); The Berlin State Opera House Orchestra, conducted by Dr. Max von Schillings: Entry of the Gods into Valhalla, from The Ring (Wagner). 7.30 (in an interval), Weather for Farmers. 8.0, Rubezahl's Streiche—Scenes for the Radio (Ernst Schenke), Music by Karl Czuka. 9.0, News Bulletin. 9.10, Song Recital by Anton Maria Topitz (Tenor): Two Songs (Rausch): (a) Im Alter, (b) Kurze Fahrt. Das hat die Sommernacht getan (Kinzel); Two Songs (Neubeck): (a) Allerseelen, (b) Folk Song. Du (F. Th. Kaufmann); Fridericiana—Four Musical Silhouettes (W. Schütt). 10.0, Time, Weather, News, Sports Notes and Programme Announcements. 10.25, Wireless Technical Queries. 10.40, Talk: Sport for Women. 11.0 (approx.), Close Down.

BRNO

342 metres; 35 kW.—6.0 p.m., Talk for Women: Preserving Fruit. 6.15, Light Music on Gramophone Records. 6.25, German Transmission: News, Talk on Chemistry, and Light Music on Gramophone Records. 7.0, Reading. 7.30, Organ Recital. 8.0, Cabaret Programme. 9.0, Concert by a Tambourine Ensemble. 9.30, Recital of Yugoslav Melodies. 10.0, See Prague. 10.15, News Bulletin. 10.20, Popular Music on Gramophone Records.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Orchestral Concert. 1.0 p.m., Le Journal Parlé. 1.10, Concert (continued). 5.0, Concert by the Radio Orchestra, conducted by Franz André; Soloists: M. Gazon (Flute), M. Wayenberg (Horn), and M. Misson (Violin); Marche wallonne (Ernotte); Fantasia on Tchaikovsky's Music (Urbach); Serenade for Flute and Horn (Tite); Intermezzo, April Perfume (Berry); Violin Solo, La Campanella (Paganini); Suite, At the Circus (Armandola); Prelude (Rachmaninov); Love is like a song (Youmans); Raketer Stomp (Deloof-Tower); Foxtrot, Free as the air (De Kers). 6.0, Gramophone Concert: Phidylié (Duparc); Menuet antique (Ravel). 6.15, Talk: Belgium Museums—The Old Art Museum at Malines. 6.30, Gramophone Concert (continued): Cockney Suite (Kettelbey); Barcarolle (Chopin); Cydalise et le chèvrepié (Pierac).

7.15, Talk: Opinions of America. 7.30, Talk for Women, followed by Theatre Review. 8.0, Dramatic Programme on Gramophone Records. 8.45, The Letter Box. 9.0, Concert relayed from the Casino, Knocke, Soloist: Anna Candaël (Songs); Poème en forme de rapsodie (Candaël); Symphonic Poem, En Exil (L. de Voelt); Song from Lucia di Lammermoor (Donizetti); Forest Murmurs from Siegfried (Wagner); Siegfried's Journey to the Rhine from The Twilight of the Gods (Wagner); Song with Clarinet Accompaniment (Schubert); Symphonic Poem, Les Préludes (Liszt). After the Programme, Le Journal Parlé and Dance Music from the Casino, Knocke. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Concert by the Radio Orchestra. 1.0, Le Journal Parlé. 1.10, Orchestral Concert (continued). 5.0, Symphony Concert, conducted by Jean Kumps; Rhapsody (De Boeck); Melody from Piccolino (Guiraud); Waltz, Andalusia (Poppy); Melody from Thais (Massenet); Scenes brabançonnaises (Sarly); Gavotte (Gossec); Suite of Viennese Waltzes (Gilsen). 6.0, Gramophone Concert of Light Music. 7.15, Variety Items. 7.30, Sports Review. 8.0, Concert by the Symphony Orchestra, conducted by Jean Kumps; Overture, Sémiramis (Rossini); Melody from Samson and Delilah (Saint-Saëns); Canzonetta (Pierac); Procession nocturne (Rabaud); Melody from Sylvia (Delibes). 8.30, Reading. 9.0, Concert from the Kursaal, Ostend, Conductor: Toussaint de Sutter; Soloists: André d'Arkhov (Songs) and Mme. Ghaye (Elocutionist); Symphony in G Minor (Mozart); La procession nocturne (Rabaud); Cavatina from Faust (Gounod); Recitation: To Our Heroes (Moremans); Song, Romance from Carmen (Bizet); Salomé's Dance (Glazoumov). After the Programme, Le Journal Parlé and Dance Music relayed from the Kursaal, Ostend. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert by the Station Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Concert (cont'd.). 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records. 7.0, Trio No. 5 in G (Mozart). 7.30, Talk. 7.45, Trio in D Minor (Mendelssohn). 8.15, Light Music on Gramophone Records. 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on 240 metres from 7.10 to 12 Midnight. 4.0 p.m., Programme for Women. 5.0, Talk on Maeterlinck. 5.15, Military Band Concert. 6.45, Talk. 7.10, Hungarian Folk Song Re-

laid by Miss Gabl Erkel, accompanied by the Sini Kurina Cigány Band. 8.45, Concert of Popular Music by the Royal Hungarian Opera House Orchestra. Conductor: Tibor Polgar. 10.15, Weather Forecast, followed by Concert by the Weidinger Orchestra. 11.30, Concert by the Misi Vörös Cigány Orchestra from the Café Emke.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., Weather Forecast. 12.7, String Ensemble Concert, relayed from the Bellevue Strand Hotel. 2.0 to 2.50, Interval. 2.50, Talk for Housewives. 3.10, Reading from the Works of Carl Bernhard. 3.30, Orchestral Concert relayed from the Wivex Restaurant. 5.0, Gramophone Concert: Anna Maria (Gugliemetti) Rosina's Song from Act Two of The Barber of Seville (Rossini); Tancredi Pasero: Song from The Barber of Seville (Rossini); Marino Stabile Scarpia and the Milan Scala Opera House Choir: Te Deum and Finale from Tosca (Puccini); Yehudi Menuhin: La Capriciosa (Ries); Richard Tauber: Si vous l'aviez compris (Denza); Layton and Johnston: Day by Day (Gottler-Nichols); Foxtrot by George Buck and the Roysterers: He played his Ukelele as the ship went down (A. le Clerq). 5.30 to 5.40, Interval. 5.40, Exchange and Fish Market Prices. 5.50, Talk. 6.20, English Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Legal Talk. 8.0, Chimes from the Town Hall. 8.2, Suppé-Offenbach Concert. The Station Orchestra, conducted by Emil Reesen: Overture, Light Cavalry (Suppé); Waltz from Das Modell (Suppé); Overture, Le Vie Parisienne (Offenbach); Ballet Music from Les Brigands (Offenbach); Overture, Die schöne Galathée (Suppé); Barcarolle from The Tales of Hoffmann (Offenbach); Overture, Orpheus in the Underworld (Offenbach); followed by Weather Report. 9.0, A Visit to a Factory. 9.30, Trio in B flat for Pianoforte, Violin and Cello, Op. 99 (Schubert). 10.0, News Bulletin. 10.15, Suites from Stage Music. The Station Orchestra conducted by Emil Reesen: Suite from Belshazzar's Feast (Sibelius); Suite from Der Rosenkavalier (R. Strauss). 11.0 (approx.), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.15 p.m., Miscellaneous Items, News Bulletin and Programme Announcements. 7.35, Radio Journal. 7.45, Talk on Heat. 8.0, See Warsaw. 10.40, Sports Notes. 10.50, See Warsaw. 11.30 (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Forecast, Stock Report, and Popular Music on Gramophone Records. 6.0, Light Music on Gramophone Records. 6.15, Programme for Children. 7.0, Variety Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Talk (to be announced). 8.0, Concert by the Station Sextet: Waltz, Roses from the South (Strauss); Soldiers' Songs (Gungl); Romances (Laurier). 8.45, Soprano Solos by Mollie Phillips. 9.0, Violin Solos by Eleanor Reddy. 9.15, Bass Solos by H. J. McCormick. 9.30, Irish Music by the Station Sextet. 9.45, Pipes and Fiddle Selections by S. MacAonghusa and P. O'Higgins. 10.5, Contralto Solos by Betty Byrne. 10.20, The Station Sextet. 10.30, Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Sponsored Concert of Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Concert of Popular Songs. 7.30, Radio Gazette. 8.0, News Bulletin. 8.30, Wireless Notes. 9.0, Concert, relayed from the Municipal Casino, Le Tréport. 10.0 p.m. till Close Down, Programme in English by the I.B.C.—10.0, Dance Music by the Iboelians: You can't stop me from loving you; My Baby said Yes, Yes; Little Girl; Just one more chance; A little less of the moonlight; Oh, it looks like rain; I'll put your picture in the paper; Two Hearts; Sing a Little Jingle; Time Alone will tell; Sweet and Lovely; Ali Baba's Camel; City Lights; Heartaches; Limehouse Blues; My Song of Love. 11.0, Studio Concert, Orchestra: Stephanie Gavotte (Czibulka); Songs: (a) Cuban Love Song (Stothart), (b) Honest, really, truly (Turk); Pianoforte: I found you (Noble); Songs: (a) I am the Words (de Sylva), (b) Little White Lies (Donaldson), (c) Trees (Kilmer), (c) Sleepy Time down South (Muse); Orchestra: Wedding of the Winds (Hall); Songs: (a) Should I? (Nacio), (b) What wouldn't I do (Conroy); Pianoforte: Let Love take Care of you (Van Phillips); Songs: (a) Take off your Coat (Longstaffe), (b) When the Sergeant-Major's

AUGUST 29th

MONDAY

continued.

on Parade (Longstaffe); Orchestra: Serenade (Heykens). 12 Midnight, Concert of Dance Music by the Ibolicans and the Peach Blossoms: Peasant Love Song; We're Uncomfortable; You will come back to me; You forgot your Gloves; Sleep, Baby, sleep; Cuckoo in the Clock; If they ever had an Income Tax on Love; Lover of my Dreams; Doin' the Racon; Sweetheart, we need each other. 12.57 a.m. (Tuesday), I.B.C. Goodnight Melody. 1.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—6.15 p.m., Time and Economic Notes. 6.25, See Stuttgart. 6.50, English Language Lesson. 7.15, Time, Programme Announcements, and Weather. 7.30, Songs to the Lute: Old French Drummer Song; Old Dutch Serenade; Folk Song of Upper Austria; Der Altausseer Postillon; Old Bernese March (1522); Old Rhenish Song, Die drei Schneider am Rhein; Eighteenth Century Country Song, Der Bauer fährt in Hen. Tilly (H. Löns); Das Brombeerpfücken (Jöde); Der Spuk (Kremer). 8.0, Military Band Concert. 9.0, Reading from the Lyrics of Rainer Maria Rilke. 9.15, Reading: Kleiner Knigge für 1932 (Stefan Grossman). 9.30, Pianoforte Recital by Max Osborn: Impromptu in C Minor, Op. 90 (Schubert); Variations sérieuses (Mendelssohn); Sonata in F Minor, Op. 5 (Brahms). 10.20, Time, News, Weather, and Sports Notes. 10.45, See Munich. 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—5.55 p.m., Reading of New Fairy Tales in Low German (Hans Friedrich Blunck). 6.35, Talk for Workers on the Factory Laws. 6.55, Exchange Quotations. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20, Käte Wittberg reads from the Works of Maria von Ebner-Eschenbach; Introductory Talk by Dr. Rudolf Klutmann. 8.0, Concert by the Station Orchestra, conducted by Horst Platen; Overture, Tannhäuser (Wagner); Minuet from the Symphony in E Flat (Mozart); Three Movements from the Serenade in D No. 2 for Strings (Fuchs); Prelude to the Third Act of The Cricket on the Hearth (Goldmark); Selection from Lohengrin (Wagner); Tanzwalzer (Busoni). 9.0, The Blunt Age—Examples of German Wit and Humour, with Musical Interludes by the Station Choir and Orchestra. 10.0, Time Signal, Weather Forecast, News and Announcements. 10.20, Bi-Monthly Sound News Report.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and DANZIG, 453.2 metres.—1.5 p.m., Gramophone Concert. Part I. Light Music: March, Hell Europa (v. Blon); Selection from Faust (Gounod); Waltz, Aus schöner Zeit (Waldteufel); Idylle passionelle (Ruzigade); Egyptian Serenade, Amna (Lincke); March, Germanenblut (v. Blon). Part II. Operetta Music: Overture, The Gipsy Baron (Joh. Strauss); Song from Die Fledermaus (Joh. Strauss); Finale to the Second Act of Die Fledermaus (Joh. Strauss); Selection from Der liebe Augustin (Fall); Two Songs from Orpheus in the Underworld (Offenbach); Duet and Tenor Solo from The Land of Smiles (Lehár); Melodies from Marietta (O. Strauss); Duet from My Sister and I (Benatzky); March of the Musketeers (Benatzky). 3.40, Programme for Children. 4.10, A Student of a Municipal Commercial College describes her day's curriculum. 4.30, Programme from Breslau. 5.30, Sprechend Sie Deutsch?—A Talk on German Diction. 5.45, Book Review. 6.15, Agricultural Prices. 6.25 (from Danzig). Talk: The Technical Institute at Danzig. 6.50, Anniversaries of the Week. 7.0, Technical Talk. 7.15, Wolfgang Federau reads his own Short Stories. 7.40, Weather Forecast. 7.45 (from Danzig), Pianoforte and Cello Recital, Hans Jahow (Pianoforte) and Felix R. Mendelssohn (Cello). Adagio (Mozart); Baroque (L. Mendelssohn); Symphonic Etudes (Schumann); Scandinavian Song (Koch); Hungarian Rhapsody (Popper); Rigoletto Paraphrase (Verdi-Liszt). 8.30, Concert of Popular Variety Music by the Small Station Orchestra and Soloists. 10.20, Weather Forecast, News Bulletin, and Sports Results

HILVERSUM

Announced HUIZEN, 296.1 metres, 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Christian Radio Society (N.C.R.V.). 7.40 a.m., Reading from the Bible. 7.55 to 9.10, Gramophone Records of Light Music. 10.10, Programme for Invalids. 10.40, Reading. 11.10, Gramophone Records of Variety Music. 11.40, Police Notes. 11.55, Gramophone Records (contd.). 12.10 p.m., Organ Recital by Jan Zwart. 1.40, Gramophone Records of Popular Music. 2.55, Dress-making Lesson. 3.10, Millinery Lesson. 3.25, Interval. 3.40, Programme for Invalids. 4.40, Concert. Mme. J. Hekkert van Eysden (Soprano), P. v. d. Hurk (Flute). Höchster was ich habe (Bach); Care Selve, from Atalanta (Händel); Lass mich mit Tränen, from Rinaldo (Händel); Sonata in F for Flute and Pianoforte (Marcello); Adagio for Clarinet and Pianoforte (Mozart); Liedes (Tussenbroek); Lentebuid (Terlie); Dorinde (Oort); Zommer (Wiarta); Adagio for Clarinet and Pianoforte (Weber); Tarantelle, Op. 6 (Saint-Saëns); Slapdoe (Fagel); M'n lieveke zeg herinner ge 't u (Rennes); Zonne- (Rennes); Melody for Trio from The Merry Wives of Windsor (Nicolaï); Adagio for Clarinet and Pianoforte (Spohr). 6.10, The Letter Box. 7.10, Police Notes. 7.25, Ecclesiastical Notes. 7.40, Orchestral Concert conducted by Schumann: Overture, Grossef-Groffa (Lecocq); Selection from Les Saltimbanques (Ganne); Selection from La Belle Héloène (Offenbach); Herzwunden (Grieg); Letzter Frühling (Grieg); Fantasia on Dutch Folk Songs (Dopper). 8.40, Talk: The St. Gotthard Tunnel. 9.10, Concert (contd.): The Nutcracker Suite (Tchaikovsky); In the Steppes of Central Asia (Borodin); Spanish Caprice (Rimsky-Korsakov). 9.40 (approx.), News Bulletin. 10.10, Variety Music on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 7.40 a.m., Time Signal. 7.41, Light Music on Gramophone Records. 9.40, Time Signal. 9.41, The Daily Service. 9.55, Popular Music on Gramophone Records. 10.10, Concert of Light Music by the Rebtmeester Orchestra; Gramophone Records in the Intervals. 12.10 p.m., Concert by Kovacs Lajos and his Band. 1.25 to 1.40, Interval. 1.40, Song Recital by Rie Kaemena-Kist. 2.10, Talk on Marches, with Gramophone Illustrations. 3.10, Dance Music from the Grand Hotel, Scheveningen. 4.10, Programme for Children. 5.10, Organ and Song Recital by Pierra Palla and Albert de Boof; Organ Solos: (a) Overture, Raymond (Thomas); (b) Nocturne No. 1 (Liszt); Songs: (a) Kiss me, my Honey, kiss me (Snijder), (b) Air (Brooks); Organ Solos: (a) Waltz from The Merry Widow (Lehár), (b) Nolette, Dorothy (Banta); Songs: (a) Evry little while (Harris), (b) Love me, and the World is mine (Ball); Organ Solos: (a) Selection from Zwei Herzen doch nur eins (Gilbert), (b) Simple aveu (Thomé); Songs: (a) If you were the only Girl (Dayer), (b) Sing me to Sleep (Greene); Organ Solo: Selection from Mignon (Thomas). 6.40, Book Review. 7.10, Variety Music on Gramophone Records. 7.40, Time Signal. 7.41, Concert by Members of the Italian Opera and the Station Orchestra; Conductor: Vincenzo Marini; Selection from Don Giovanni (Mozart); Third Act of La Bohème (Puccini); Prologue to the Third Act from Meffstofe (Boito); Romance and Duet from Tosca (Puccini); Selection from The Barber of Seville (Rossini); in the interval, Gramophone Records. 9.55, Weather Forecast and General News Bulletin. 10.5, Concert by the Station Orchestra, conducted by Nico Trepp; March völkerbund (Lincke); Waltz, Man schwebt dahin (Lincke); Nachtigall im Fliederbusch (Krome); Argentinian Serenade (Köpping); Sous ta fenêtre (Lachaume); Die beiden kleinen Finken (Kling); Song and Czaradas (Lehár); March (Bidgood). 10.40, Dance Music by the Ramblers from the Hotel Hamdorff, Laren. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.15 p.m., News Bulletin, Announcements and Popular Music on Gramophone Records. 7.45, Talk. 10.50, Concert of Dance Music.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres, 54 kW., and HELSINKI, 368.1 metres.—6.15 p.m., Agricultural Talk. 6.25, Talk. 6.50, Violin Recital by Sulo Hürstinen.

7.15, Sketch. 7.45, Concert by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert of Military Music. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert: The Berlin Philharmonic Orchestra, conducted by Clemens Schmalstich: Selection from I Pagliacci (Leoncavallo); The Kristall Orchestra: Waltz Potpourri, Wir walzen (Kermbach); Karl Jöken and his Orchestra: (a) Das Zauberland (Meyer-Helmund); (b) Still wie die Nacht (Bohm); The Gebrüder Steiner Orchestra: Selection from The Merry Widow (Lehár); Björn Talen (Tenor): Song from the Tales of Hoffmann (Offenbach); Bernard Ettes Chamber Orchestra: (a) Zug der Gnommen (von Blon); (b) Schmeichelkätzchen (Eilenberg); Emil Roos and his Orchestra: Das Beste vom Besten (Dostal). 12 Noon, See Stuttgart. 1.15, Weather, News Time. 1.30, Concert, conducted by Eysoldt: Overture, Zampa (Hérold); Selection from Oberon (Weber); Basque Rhapsody (Pierné); Minuet (Thomé); Annen-Polka (Joh. Strauss); Waltz, Ich bin ein Kind vom Rhein (Zeller); Potpourri, Von Gluck bis Wagner (Schreiner). 2.30, Meat Market Prices. 3.30, Economic Notes and Time. 3.50, Programme for Children. 5.0, Concert from Munich. 6.20, Talk for Parents: The Stubborn Child. 6.45, Weather, Time, Economic Notes, and Sports Report. 7.0, Talk: The Tercentenary of John Locke. 7.20, Talk. 7.40, Talk: The Iron Industry. 8.0, News Bulletin. 8.5, The World on Gramophone Records: Guatemala. 8.30, Goethe Programme.—V. 10.5, News and Sports Notes. 10.20, Concert of Light Music and Dance Music. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW., and DRESDEN, 319 metres.—6.0 p.m., Book Review. 6.30, Literary Talk: Jeremias Gotthelf. 6.50, The Leipzig Station informs its listeners. . . . 7.0, Talk on the Tercentenary of John Locke's Birth: The English and the German Mind. 7.30, Concert by Marek Weber's Orchestra, on Gramophone Records; Melodies from Rose-Marie (Friml); Nocturne No. 3 (Liszt); Waltz, Marienklänge (Jos. Strauss); Melodies from Madame Butterfly (Puccini); Niki March from A Waltz Dream (O. Straus). 8.0, Summer Evenings—A Musical and Literary Radio Sequence (Herrmann). 10.5, News Bulletin. 10.15 (approx.), Excerpts from A Tango at Midnight—Operetta (Karl Komjate), by the Leipzig Symphony Orchestra, conducted by Theodor Blumer and Soloists: from the Johann Strauss Theatre, Vienna.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Quintet Concert. 7.0, Relay of Polish Stations. 7.30, Talk. 8.0, Quintet Concert (contd.). 9.0, Concert of Dance Music, relayed from Bled. 10.0, Time Signal and News Bulletin, followed by a Gramophone Concert.

LWOW

381 metres; 16 kW.—7.15 p.m., Miscellaneous Items. 7.35, See Warsaw. 7.45, News Bulletin. 8.0, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Concert by the Station Orchestra. 9.0, Concert of Music by Bach, Beethoven and Brahms. Soloist: Paul Lyonnet (Pianoforte).

MADRID

ARANJUEZ, EAQ, 30.4 metres; 20 kW.—12.30 a.m. (Tuesday), Concert of Light Music. 12.45, Radio Journal. 1.0, Popular Concert. 1.35, Talk. 1.40, Light Music. 2.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres, 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices, followed by Request Gramophone Concert. 9.15, General News Bulletin. 9.30 (approx.), Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—6.55 p.m., See Prague. 8.0, See Brno. 9.0, See Prague. 10.15, Programme Announcements and Theatre Notes. 10.20, Light Music on Gramophone Records.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—6.30 p.m., Young Communists' Radio Journal. 7.10, Popular Music. 9.0, Talk in English: Heard in the Law Court. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—5.0 p.m., Orchestral Concert; Soloist: Lotte Medak (Soprano); Overture, Alessandro Stradella (Flotow); Waltz, Die Pesther (Lanner); Russian Fantasia (Grotte-Kirchstein); Melody (Gabriel-Marie); Songs from (a) I Pagliacci (Leoncavallo), and (b) Turandot (Puccini); Gallop (Bizet); Selection from Die Fasnachtssee (Kálmán); By the Blue Hawaiian Waters (Kételbey); Radetzky March (Joh. Strauss). 6.15, Talk in connection with the Thirty-eighth German Vinicultural Congress, relayed from Neustadt a.d. Haardt. 6.45, Time, Weather, and Agricultural Notes. 6.50, Talk: Opera in America. 7.10, Talk: Two Thousand Years of Theatre. 7.30, Choral Concert. 8.0, See Frankfurt. 9.0, Variety Programme; Part One—Programme by Rolf Siegbert, Paula Menari (Soprano), Hans Weber (Tenor), and the Hugo Weisz Orchestra; Part Two—Der komische Druck—Wireless Drama in Ten Acts and an Epilogue (Kaspar). 10.20, Time and News. 10.45, Orchestral Concert. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Persgrund, 453.2 metres; and Rjukan, 447.1 metres.—5.30 p.m., Instrumental Concert. 6.30, Ole Bull Grieg reads from his own Works. 7.0, Announcements, Weather, and News. 7.30, Agricultural Talk. 8.0, Time Signal. 8.2, 'Cello Recital. 8.30, Pianoforte Recital by Waldemar Alme; Rondo in G (Beethoven); Nocturne in Three Movements (Palmgren); Humoresque (Rachmaninov); Rhapsody No. 12 (Liszt). 9.10, Political Review. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Programme by Charles Lassen (Songs) and Boris Borisov (Balalaika); Songs from (a) La Bohème (Leoncavallo), and (b) Tosca (Puccini); Melody (Lehár); Waltz (Stoltz); Tango, The Flower Girl at Naples (Lander); Waltz, Les roses rougissent et rient (Westher); Waltz, Nyota (Holmquist); Russian Music for Balalaika. 11.15 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m. to 6.30, Light Music on Gramophone Records. 8.0, Announcements, Tourist Talk, Agricultural Notes, Report of the Royal Geographical Society, and Giornale Radio. 8.20, Popular Music on Gramophone Records. In an interval at 8.30, Time Signal and News Bulletin. 8.45, Recital by Niny Misiti (Pianoforte), G. Gagliano (Cello), Jole Rondini (Violin), and Grignani (Tenor). Pianoforte Solos: (a) Prelude (Rachmaninov), (b) Polichinelle (Rachmaninov); 'Cello Solos: (a) Aria (Caminito), (b) Guitat (Moskovsky); Violin Solos: (a) Fugue in A (Tartini-Kreiser), (b) Sirventese (Pick Mangiagalli), (c) Novalletta (Manno); Songs: (a) Di te (Titrindelli); (b) Aria from André Chénier (Giordano). 9.30, Lu sul fu—Comedy in One Act (S. Volpes Luchesi). 10.0 (approx.), Recital (contd.). Song, Pena d'amore (Mascagni); Violin Solos: (a) Aria (Morasca), (b) Scherzo, Tarantella (Wiennawsky); 'Cello Solo, Hungarian Rhapsody (Popper); Pianoforte Solos: (a) Un Sospito (Liszt), (b) Les Papillons (Lavallo). 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals on 2,650 metres, at 10.26 a.m. and 11.26 p.m. (Preliminary and dot Signals).—6.45 p.m., Cinema Review. 7.0, Le Journal Parlé. 8.20, Weather Forecast. 8.30, Variety Programme. 9.30, Concert of Dance Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—12 Noon to 2.0 p.m., News and Light Music on Gramophone Records. In the intervals at 1.0, Press Review, and at 1.30, Exchange and News. 7.0, News Bulletin, and Press Review. 7.5, Popular Music on Gramophone Records. 8.0, Sports Talk. 8.20, Talk: Walks in and around Paris. 8.30, Radio Journal and News. 8.45, Sponsored Concert. 9.45, Dance Music from Les Ambassadeurs. 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records, Press Review, and Weather Forecast. 12 Noon, Concert of Liszt's Music on Gramophone Re-

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MONDAY

continued.

cords. 12.30, Light Music on Gramophone Records. 1.0, Exchange Quotations, News, and Weather Forecast. 1.5, Concert of Berlioz Music on Gramophone Records. Overture, Carnival romain; L'Absence; Four Pieces from The Damnation of Faust; Three Pieces, Romeo and Juliet; Symphonie fantastique. In the intervals, at 1.30 and at 2.0, Exchange Quotations. 3.45, Exchange and Market Prices. 4.30, Concert relayed from the American Conservatoire, Fontainebleau. 6.30, Market Prices, Weather, Agricultural Report, Talk, and Racing Results. 7.0, Gramophone Concert: Fontane (Padilla); Miami (Mearsi); Engrupido (Enriotti); Noblezza (Rovatti); Sous les toits de Paris (Moretti); C'est vous (Greenberg); La mélodie du bonheur (Sylvain); Bonsoir, Madame la lune (Marinier); Jouis (Nelson-Fischer); Marche des petits pierrots (Bosc). 7.45, Commercial Prices and News. 8.0, Dramatic Programme: (a) Chevalier rustique—Comedy (Verga), (b) Petin, Moullarbourg et Consorts (Courteline). In the interval at 8.30, News, Sports Results, and Weather Forecast. 9.15, Press Review and News. 9.30, Chamber Concert: Theme and Variations for Piano (Fauré); String Quartet (Debussy); Excerpts from Le Bourgeois Gentilhomme (Richard Strauss) on Gramophone Records: Sarabande (Ducasse).

PITTSBURGH

WESTINGHOUSE ELECTRIC, KDKA, 306 metres; 25 kW. Relayed by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, KDKA Kiddies' Klub. 10.15, Teaberry Baseball Scores. 10.20, David Lawrence Dispatch. 10.25, KDKA Artist Bulletin. 10.28, Programme Announcements. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day. 11.6, Teaberry Sport Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, Westinghouse Parade. 11.45 to 1.30 a.m. (Tuesday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15 a.m., Tastyest Jesters. 12.30, Stebbins Boys. 12.45, Billy Jones and Ernie Hare. 1.0, Time Signal and Carnation Contended Programme. 1.30, Programme to be announced. 2.0 to 4.0, New York Relay. 2.0, Sinclair Minstrels. 2.30, George Olson's Orchestra. 3.0, The Country Doctor. 3.15, Absorbine, Jr., Footnotes. 3.30, Tish. 3.45, Jane Froman and her Band. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, The Music Box. 4.30, Jack Pettis and his Orchestra. 5.0, Terrace Gardens Orchestra, from New York. 5.30, Time Signal and Good Night.

PORSGRUND.—See Oslo.

PRAGUE

498.6 metres; 120 kW.—5.50 p.m., Talk: Next Season's Films. 6.0, Talk. 6.10, Light Music on Gramophone Records. 6.15, Agricultural Notes. 6.25, German Transmission: Talk on Taxes. 6.55, Harp Recital by Emilie Brozova, Nocturne (Klicka); Concert Waltz (Hasselmans); Caprice, Gnomes (Hasselmans). 7.15, Song Recital. 7.45, Talk. 8.0, See Brno. 9.0, Time Signal and News Bulletin, followed by an Orchestral Concert, conducted by Vilem Mlejnek. 10.0, Time Signal, News Bulletin and Sports Notes. 10.15, Miscellaneous Announcements and Theatre Notes. 10.20, Light Music on Gramophone Records.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Lausanne), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5 (from Lausanne), Popular Music on Gramophone Records. 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1 (from Lausanne), Programme for Children. 5.30, Concert by a String Orchestra. 7.0, Weather Forecast. 7.1 (from Lausanne), Illustrated Talk: The Best Gramophone Records of 1932. 7.40, (from Geneva), Recitations. 7.55, News Bulletin. 8.0 (from Geneva), Talk on the Coming Fortnight at Geneva. 8.10 (from Geneva), Concert of Chamber Music. 8.45, Concert by the Station Orchestra: Soloist: Mlle. Magda Lavanchy (Violin). 10.0, News Bulletin and Weather Forecast. 10.15 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.0 a.m., Weather Report. 5.0 p.m., Weather Report. 8.30, Weather Forecast. 8.40, Popular Music by the Radio Quartet. 9.0, Chimes and Gramophone Records of Songs and Violin Solos. 9.30, News Bulletin.

RJKAN.—See Oslo.

ROME

Call 1R0, 441 metres; 50 kW. Relayed by Naples, 319 metres, and 2R0, 25.4 metres.—8.15 to 8.30 a.m., Giornale radio and Announcements. 12.30 to 2.15 (approx.), Weather, followed by Gramophone Concert

of Variety Music. In the intervals at 1.20, Giornale radio and Exchange, and at 1.30, Time and Announcements. 5.0, Exchange, Children's Radio Review, Giornale radio, and Announcements. 5.30 to 6.15, Instrumental and Vocal Concert. Soloists: Vera Nadia Foggiosi (Soprano) and Antonio Saldarelli (Cello). Sonata Op. 19 for Cello and Piano-forte (Rachmaninov); Soprano Solos: (a) Sognando (Guarnieri), (b) Aria from Edgar (Puccini) (c) Aria from the Third Act of Louise (Charpentier); Cello Solo: Popular Spanish Suite (Fallá); Soprano Solo from Le Cid (Massenet). 7.10 (Naples), Shipping and Sports Notes. 7.15, Agricultural Notes, Announcements, and Giornale radio. 8.0, Time, Announcements and Gramophone Records of Light Music. 8.20, Review of Books. 8.30, Sports Notes, Announcements, and Tourist Report. 8.35 (approx.), Concert of Light Music: Programme of Modern Songs by the Orchestra conducted by M. Bomvolonta, the Station Chorus, Gorella Gori (Soprano), Sirenetta Altieri (Soprano), Juanita Plata (Soprano), Giovanni Baroni (Tenor), Giglio (Tenor), and Nando del Duca (Tenor). Part I.—Canzoniere 1932 (Cunzio); Duet for Soprano and Tenor, L'amore cheste vo' (Lama); Tenor Solo, Cuori lontani (Ferruzzi); Soprano Solos with Chorus: Sorrisi d'amore (Alfieri); Tenor Solo with Chorus: Capri gentile (Valente); Soprano Solo: O cunto 'e Mariarosa (Tagliarini); Tenor Solo, Nun me ne importa (Soffi); Soprano Solo, Varca d'oro (Lama). Talk. Part II.—Duet for Soprano and Tenor: Quel che possiedi tu (Cioffi); Soprano Solo, Arrivederci Mimi (Bonavolonta); Tenor Solo with Chorus, Senza Maria (d'Annibale); Soprano Solo, Quando sei sul mio cuore (Marchetti); Tenor Solo with Chorus, M'amore all'erta sta (Tagliarini); Soprano Solo with Chorus, Canta, gioventù (Lama); Tenor Solo, Voce 'e chitarra (Tagliarini); Duet for Soprano and Tenor, Beato te (Cioffi). Announcements. Part III.—Tenor Solo with Chorus, Campagno d'o core (Cioffi); Soprano Solo, Promesse 'e femmine (Tagliarini); Tenor Solo, Mi chiamo Arman (Brero); Soprano Solo, Ciareca Memè (Valente); Tenor Solo, Diimè addo stàie (Cioffi); Soprano Solo, Sciantusella (Valente); Tenor Solo, Armunia d'amore (Bonavolonta). Soloists and Chorus, Maggio menestrello (Marchetti). News Bulletin.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY, WGY, 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres and by W2XAD on 19.56 metres.—9.0 p.m., Book Chat. 9.15, William Steven (Baritone). 9.30, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15, Swanne Serenaders, from New York. 10.40, A.B.C. Thumbail Sketches. 10.45, Swanne Serenaders, from New York. 11.0, Waldorf Astoria Orchestra, from New York. 11.30, Gordie Randall's Orchestra. 11.55, Baseball Scores. 12 Midnight (WGY only), Under the Big Top. 12.10 (W2XAF only), Stock Reports. 12.15 a.m. (Tuesday), Chandu, the Magician. 12.30 to 4.0, New York Relay. 12.30, Maxwell House Programme. 12.45, The Goldbergs. 1.0, Soconyland Sketch. 1.30, Voice of Firestone. 2.0, A. & P. Gipsies. 2.30, Parade of the States. 3.0, National Radio Forum. 3.30, Do You Remember? 4.0, Arm Chair Chats. 4.15, Johnny Albright (Crooner). 4.30, Gordie Randall's Orchestra. 5.0, Rex Koury (Organist). 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres; 60 kW. BASLE, 244.1 metres, and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40 (from Basle), Concert of Light Music, conducted by Ottov Wallredt. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Concert by the Small Station Orchestra. 4.0, An Afternoon in Spain—Concert on Gramophone Records. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Berne), Talk for Children. 7.0, Time Signal and Weather Forecast, followed by Swiss Choral Music on Gramophone Records. 7.30 (from Berne), Talk by Dr. Erwin Dreifuss. 8.0 (from Zürich), Concert of Waltzes by the Station Orchestra, conducted by Hermann Hofmann. 8.30 (approx.), Concert of Grottesque Music with Introductory Talk by Dr. Herbert Fleischer. 9.30, Weather Forecast and News Bulletin. 9.40, Orchestral Concert relayed from the Kursaal, Baden. Conductor: Ernö Kaisz. 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romandé.

STOCKHOLM

Call SASA; 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Concert of Light Music. 5.40, Reading. 6.0, Popular Music on Gramophone

Records. 7.0, The Practical Corner. 7.15, Weather and News Bulletin. 7.30 (from Göteborg), Talk: Icelandic Culture. 8.0, Orchestral Concert of Swedish Music. 9.15, Literary Review. 9.45, Weather Report and News. 10.0, Chamber Music, Mozart Programme: String Quartet No. 7 in D; Piano-forte Quartet in E Flat. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Variety Music. 12.45 p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Concert from Bordeaux-Lafayette. 1.50, Gramophone Records of Light Music. 2.0 to 4.45, Interval. 4.45, Talk: The History of the Jews in Alsace. 5.0, Orchestral Concert conducted by Roskam: Cigay March (Oscheit); Waltz, Karnevalsbotschaften (Fétras); Intermezzo, Omaka (Scassola); Overture, Haydée (Auber); Selection from Sylvia (Delibes); Intermezzo (Kalkmann); Spanish Piece, Almeria (Mahy); Les Airs de Mistinguett (Salabert). 6.0, Talk in French: The Tercentenary of Locke. 6.15, Topical Review. 6.30, Orchestral Concert conducted by Roskam: Overture, La dame blanche (Boieldieu); Simple avec (Thomé); Waltzes (Brahms); Chansons de Miarka (Alexandre Georges); Selection from Cavalleria rusticana (Mascagni); Waltz, Träume (Wagner); Polonaise from Eugen Onegin (Tchaikovsky). 7.30, Time, and News in French and German. 7.45, Orchestral Concert conducted by Roskam: Ballet Music from Faust (Gounod); Selection from Le Chemineau (Leroux); Overture, Czar and Carpenter (Lortzing); Entry March of the Halberdiers (Blankenberg). 8.30, Band Concert relayed from Thionville: La Robertsau (Sellenick); Overture, La Fête au Village voisin (Boieldieu); Saxophone Selection from Rigoletto (Verdi); Pastorale, Intermezzo and Farandole from L'Arlésienne (Bizet); Marche de la Garde Consulaire à Marengo; Address by the Rev. Heckmann; The Marriage of General Hoche at Thionville; Cigay March (Reyer); Selection from Lohengrin (Wagner); Polka for Flute, La Volière (Corbin); Ballet Music from Isoline (Messager); Sambre et Meuse (Rausky). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres, 60 kW.; and FREIBURG, 570 metres.—10.0 a.m., Organ Recital from the Palace Theatre: Melody in A (Davies); Intermezzo (d'Albert); Élégie in F (Edith Sohliström); Bayadere Dance from the Indian Suite, Taj Mahal (Süling); Waltz Song, Hawaii (Bizzoli). 10.20, Recital of Arias from Verdi's Operas, by Fritz Löffler (Baritone); Songs from La Traviata, Il Trovatore, A Masked Ball and Rigoletto. 10.40, Chamber Music on Gramophone Records. 11.0, Time, News, and Weather. 11.55, Weather. 12 Noon, Orchestral Concert from the Café Wilhelmshaus: Waltz Potpourri, Was die Donau erzählt (Morena); Overture, Maritana (Wallace); Intermezzo, In a Persian Market (Kettelbey); Potpourri of Viennese Songs and Operetta Music (Hruby); Selection from Tiedland (d'Albert); Violin Solo, Falling Leaves (Carena); Radezky March (Strauss). 1.15 p.m., Time, Weather, News, and Programme Announcements. 1.30, Gramophone Records of Eddie Saxon and his Orchestra. 2.0 to 2.15, Sponsored Programme with Gramophone Music. 4.30, Talk on Philately for Young People. 5.0, Concert from Munich. 6.15, Time and Weather. 6.25, Talk: The First Scheduled Trans-Atlantic Air Service. 6.50, See Frankfurt. 7.15, Time, Weather, and Agricultural Notes. 7.30 to 10.20, See Frankfurt. 10.20, Time, Weather, News, and Programme Announcements. 10.40, Talk on Chess. 11.5, Concert from Munich. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI; 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Hawaiian Guitar Music. 5.45, Opera Music: Airs from (a) The Tales of Hoffmann (Offenbach), (b) Le Jongleur de Notre Dame (Massenet), (c) Faust (Gounod), (d) Tannhäuser (Wagner). 6.0, Dance Music. 6.15, Exchange Quotations and Horse Racing Results. 6.30, Gramophone Records of Variety Music. 7.30, Programme Announcements and News. 7.45, Concert: Melodies from (a) Elle est à vous (Yvain), (b) The Land of Smiles (Lehar), (c) Tosca (Puccini), (d) La Traviata (Verdi) and (e) Lakmé (Delibes). 8.15, Military Music: Melody from Light Cavalry (Suppé); Overture, Zampa (Hérold); Washington Post March (Souza); Manhattan Beach. 8.30, Accordion Solos. 8.45, Melodies from (a) La Fille de Madame Angot (Lecocq), (b) Mam'zelle Nitouche (Hervé) and (c) A Waltz Dream (O. Straus). 9.0, Orchestral Music. 9.15, Sound Film Music. 9.30, Programme by a Viennese Orchestra: Rêe idéal (Fueck); Valse triste (Sibelius); Melody from Gipsy Love (Lehar); Les cloches de Locarno (Muzillo); Piccolo, Piccolo (Joh. Strauss).

9.45, Opera Music: Melodies from (a) Sigurd (Reyer), (b) Samson and Delilah (Saint-Saëns), (c) The Magic Flute (Mozart) and (d) L'Africain (Meyerbeer). 10.0, Concert of Light Music. In the interval at 10.30, North African News. 11.0, Concert: Ce n'est que votre main Madame (Erwin); Mio Padre (Moretti); In a Chinese Temple Garden (Kettelbey); Le Baptême des Oiseaux (Bach-Laverne); Messe de Saint Hubert (Blondiaux); Melody from Les Millions d'Arlequin (Drigo); Blanche de Castillo (Bléger); Scènes alsaciennes (Massenet); Pensée d'automne (Massenet); C'est pour Raymond (Puig); La Toulousaine (Defès). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.0 p.m., Quintet Concert: Carnival; Melody (Brody); Sotto al verone (de Micheli); Golden Rain (Waldteufel); Mosca bianca (Salomone); Selection from La Favorita (Donizetti); Delia (Ferraris); Melody (German). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—6.35 p.m., Giornale Radio, Report of the Royal Geographical Society, Agricultural Notes and Announcements. 7.0, Musical Programme; Introduction, Dans une Pagode fleurie (Mouton); Humoresque (Dvorák); A Festival in Bangkok (Norden). 7.25, Tourist Report. 7.30, Time, Announcements, and Gramophone Records of Variety Music. 8.0, Giornale Radio, Weather and Gramophone Records of Light Music. 8.20, Review of New Books. 8.30, Orchestral Concert; Overture, Luisa Miller (Verdi); Intermezzo from Cavalleria rusticana (Mascagni); Selection from Fedora (Giordano); Prelude to the First Act of Dejanice (Catalani); A Fête in Aranjuez (Demersmann); Overture, Maritana (Wallace). 9.20, A One Act Comedy. 10.0, Concert (contd.); Suite, En Voyage (Gabriel-Marie); Prelude to the First Act of Edmea (Catalani); Selection from Carmen (Bizet); Bacchanale from Il Guarany (Gomez); Overture, Queen for a Day (Adam). 11.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Italian. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—4.55 p.m., Vocal and Instrumental Concert. 6.15, Talk: A Journey through Middle Burgenland. 6.35, Talk: Vienna and its Suburbs. 7.0, Talk: Man and Machines. 7.20, Time, Weather, and Programme Announcements. 7.30, Concert by George Boulanger and his Company: Walzerparaphrase (Joh. Strauss-Grünfeld); Volga Boat Song; Potpourri of Russian Folk Songs; Minuet (Beethoven); Flageolet-Waltz (Boulanger); Doina (Boulanger); Hora (Dinicu); Hungarian National Songs; Russian Canary Song; Schön Rosmarin (Kreisler); Max und Moritz (Boulanger); Quand je suis content (Boulanger); Das gibt's nur einmal (Heymann); Waltz from The Dubarry (Müllöcker - Mackeben); Radezky-Marsch (Joh. Strauss). 8.30, The Farewell Banquet—Radio Operetta in Three Acts (Cvancara), Music by Fritz Seemann, the Orchestra of the Vienna Volksoper. 10.0, News and Announcements. 10.15, Gramophone Concert of Dance Music.

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Light Music (contd.). 2.10, Interval. 3.0, Economic Report. 3.10, Variety Music on Gramophone Records. 3.30, Traffic Report. 3.40, Popular Music on Gramophone Records. 4.35, Announcements. 4.40, Talk in French. 5.0, Concert by the Police Band, conducted by A. Sielski: Polonaise No. 8 (Oginsky); Waltz from Frau Luna (Lincke); Caprice (Katski); Selection from The Gipsy Baron (Joh. Strauss); Mazurka from Halka (Moniuszko); Slav March (Tchaikovsky). 6.0, Talk. 6.20, Dance Music from the Café Gastronomica. 7.15, Miscellaneous Announcements. 7.35, Radio Journal. 7.45, Agricultural Notes. 7.55, Programme Announcements. 8.0, Reading. 8.15, La Traviata—Opera (Verdi), on Gramophone Records. Radio Journal in the Interval. 10.30, Interval. 10.35, Aviation Weather Forecast. 10.40, Sports Notes. 10.50, Dance Music. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

TUESDAY

AUGUST THE THIRTIETH

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Organ music. Orchestral music. "Fride and Prejudice," by Jane Austen, read by Mr. Ronald Watkins. Pianoforte recital. Promenade concert. "The Pinchbeck Ring," a play, by Felix Aylmer. Dance music.
- LONDON REGIONAL** National programme. Orchestral music. Ballad concert. Orchestral concert. Tango orchestra. Military Band concert.
- MIDLAND REGIONAL** North Regional programme. Ballad concert. Orchestral concert. Light music. Organ recital. "Bored and Lodging," a sing-song at "Sea View."
- NORTH REGIONAL** National programme. Orchestral music. Midland Regional programme. Mr. Noel Bell: From Leeds to Hull by Barge. Choral concert. "Shepherd's Furse"—a Country Mood. National programme.
- WEST REGIONAL** National programme. Orchestral concert. Organ recital. National programme.
- SCOTTISH REGIONAL** Orchestral music. National programme. Dance music. Male Voice Quartet. Organ music. National programme.
- BELFAST** Orchestral music. National programme. Dance music. Male Voice Quartet. Organ music. National programme.
- ABROAD**
- BRUSSELS (No. 1)** Concert from Ostend Kursaal.
- HAMBURG** Weber concert by Station Orchestra.
- HILVERSUM** Festival of the Queen's Birthday (relayed from Amsterdam).
- PALERMO** Opera in Three Acts: "Poliuto" (Donizetti).
- ROME** Japanese music.

schau, wem (Strauss). 9.50, Time, Weather, News, Sports Notes, and Programme Announcements. 10.20, Sports Talk. 10.30, Cabaret Concert from Hamburg. 12 Midnight (approx.). Close Down.

BRNO

342 metres; 35 kW.—6.0 p.m., Talk in Esperanto. 6.15, Talk for Workers. 6.25, German Transmission, Talk and Agricultural Report, followed by Agricultural Talk. 7.0, See Prague. 10.15, News Bulletin. 10.20, Light Music on Gramophone Records.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Gramophone Concert of Light Music. 1.0 p.m., Le Journal Parlé. 1.10, Soloist Concert on Gramophone Records; Pianoforte Solo, Valse oubliée (Liszt); Violin Solo, Gitana (Kreisler); Flute Solo, Carnaval de Venise (Genin); Harp Solo, Etude de Concert (Godefray); Clarinet, Prelude and Waltz (Laparra); Cello Solo, Chanson villageoise (Popper); Celesta Solo, La Carillon (Blauw); Horn Solo, Romance in F (Saint-Saëns); Horn Solo, Réverie (Bellenot); Air varié for two Cornets (Wittmann); Xylophone Solo, La Tourterelle (Damare); Saxophone Solo, Saxophobia (Wiedoeft); Balalaika Selection, Czardas (Monti); First Dance from La vida breve (Fallá); Organ Solo, Amapola (Popy). 5.0, Concert by the Radio Orchestra, conducted by M. Walpot: Marche aux flambeaux (Meyerbeer); Selection from Boccaccio (Suppé); Gavotte des baisers (Popy); Muguette (Missa); Abandon (Waldteufel). 5.45, Programme for Children. 6.20, Literary Review. 6.30, Gramophone Records of Celebrated Pianists—Francis Planté: (a) At the Fountain (Schumann), (b) Le Psame pendant la rafale (Chopin); Emile Sauer: La Campanella (Liszt); Paderewsky: Etude (Chopin); Arthur de Greef: Hungarian Fantasia (Liszt); Rachmaninov: Prelude in C Sharp Minor (Rachmaninov); Brailovsky: Perpetuum mobile (Weber); Cortot: Second Hungarian Rhapsody (Liszt). 7.15, Catholic Bulletin. 7.30, Cinema Review. 8.0, Orchestral Concert conducted by M. Kumps: Hungarian Comedy Overture (Keler-Bela); Selection from Sunny (Kern); Bibelots (Rapp); Waltz (Scassola); Ballet des parfums (Popy). 9.0, Concert from the Kursaal, Ostend. Conductor: M. Toussaint de Sutter. Soloist: Mme. Yvonne Andry. Marche jubilaire (Lebrun); Concert Overture (Glazouvaire); Aria for Violins (Bach); Aria from Tosca (Puccini); Spanish Caprice (Rimsky-Korsakov); Aria from Carmen (Bizet); Overture, Russian and Ludmilla (Glinka). After the Concert, Journal Parlé and Gramophone Dance Music. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW. Programme in Flemish.—12 Noon, Gramophone Concert: Air from The Queen of Sheba (Gounod);

L'Apprenti Sorcier (Dukas); Melody from Figaro (Mozart); La Cor (Flégier); Dans la Forêt (de Fay); Slav Dance No. 18 (Dvorak); Slav Rhapsody (Friedemann); Alma de Diss (Serrano); Partita (Alvarez); Air from The Bartered Bride (Smetana); Academic Overture (Brahms). 1.0, Le Journal Parlé. 1.10, Gramophone Concert (contd.): Selection from La Vida Breve (de Falla); Trumpet Voluntary (Purcell); Kentucky Babe (Geibel); Valse Caprice (Barries); Sing you Sinners (Coslow); Spanish Dances (Moskowsky); The Woman in the Shoe (Freder Brown); Tango, Valencia (Pizarro); Melody (Stolz); Waltz, Pazar Serenade (Payne); Air (Costermans); Melody (Rotter); Gallop (Galaverni). 5.0, Concert by the Symphony Orchestra, conducted by Jean Kumps. 5.45, Programme for Children. 6.30, Concert of Gramophone Music: March, The Ruins of Athens (Beethoven); On the Wings of Song (Mendelssohn); Romance in F (Beethoven); The Unfinished Symphony (Schubert); Ewig Liebe (Brahms). 7.15, Talk. 7.30, Le Journal Parlé. 8.0, Concert of Request Gramophone Music: Emperor Waltz (Joh. Strauss); The Canary (Poliakin); Mattinata (Leoncavallo); Prelude (Rachmaninov); Thème and Variations (Proch); Humoresque (Dvorak); Dites-moi si je suis belle (Massenet); Air from La Gioconda (Ponchielli). 8.40, Variety Programme. In an interval at 10.0, Le Journal Parlé. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Romanian Music by the Motoi Orchestra. 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records. 7.0, Time Signal. 7.1, Concert of Light Music by the Station Orchestra. 7.30, Talk (to be announced). 7.45, Song Recital by S. Szekely. 8.15, Orchestral Concert (contd.). 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW. Programme also relayed on 210 metres from 8.0 to 12 Midnight.—5.30 p.m., Talk on Hungarian Literature. 6.0, Concert by the Band of the Royal Hungarian Postal Officials, relayed from the Margareteninsel. Conductor: Wilhelm Roubal, Hunyadi Laszlo (Erkel); Selection from Faust (Gounod); Ballet Suite (Perenyi); Selection from Thais (Massenet); Song (Roubal); Selection from Turandot (Puccini); Overture (Unger); Hungarian Variations (Horvath). 7.30, Programme by S. Szöllösy. 8.0, Concert by the Budapest Concert Orchestra. Soloist: Elisabeth Horvay: Carnavalesque (Berlioz); Eine kleine Nachtmusik (Mozart); Scherzo (Mendelssohn); Song, Aria from Turandot (Puccini); Rurality Hungaria (Dohnányi); Air from Euryanthe (Weber); Selection from Faust (Gounod); Symphony No. 4 (Tchaikovsky). 9.15, News Bulletin, Talk, and Concert by the Nandor

ALGIERS

363.3 metres; 13 kW.—7.0 p.m., Exchange Quotations and Market Prices. 7.10, Shipping Notes and Weather Report. 7.15, Variety Concert. 7.45, Songs from Operas. 7.55, News Bulletin and Time Signal. 8.0, Concert of Chamber Music. 9.0, Concert of Oriental Music.

BARCELONA

RADIO BARCELONA, Call EAJI, 349 metres; 8 kW.—8.0 p.m., Trio Concert: Ochsennuett (Haydn); Romance (Chopin); Canzonetta (Toselli); Selection from I Pagliacci (Leoncavallo). 8.30, Exchange quotations and Request Gramophone Records. 9.15, Talk on Football. 9.30, Request Gramophone Records (contd.), and News Bulletin. 10.0, Chimes, Weather Report, Programme for Seamen and Market Prices. 10.10, Orchestral Music: Spanish March (Dreyer); Selection from The Circus Princess (Kaiman); Waltz, Dans les nuages (Waldteufel). 10.30, Song Recital. 11.0, Vicente Diez de Tejada reads his story, Immortalidad. 11.15, Concert by a Male Voice Choir. 12 Midnight, Dance Music by the Crazy Boys' Orchestra, relayed from the San Sebastian Casino. 1.0 a.m. (Wednesday), Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers, followed by Gramophone Concert and Second Weather for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of Operatic Duets relayed from Berlin (Witzleben). 3.0, Programme for the Housewife, relayed from Munich. 3.50, Weather and Exchange. 4.0, Talk: False Conceptions of Careers. 4.30 to 5.30, See Leipzig. 5.30, Talk: Books on the Industrial Crisis. 6.0, Musical Exercises. 6.30, Talk: Russian Affairs and German Industry. 6.55, Weather for Farmers. 7.0, Talk for Civil Servants. 7.30, A Forecast of the September Radio Programmes. 7.40, Radio Technical Talk, followed by Weather for Farmers. 8.0 (approx.) to 10.30, See Berlin (Witzleben). 10.30, Concert from Hamburg. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—6.25 p.m., Review of Books. 6.55, The Witzleben Station informs its Listeners. . . . 7.0, Topical Talk. 7.10, Concert of Folk Songs. 7.40, Reading. 8.0, Orchestral Concert, conducted by Bruno Seidler Winkler. 8.45, Round Berlin—with introductory Talk by Wilhelm Scheuermann. 9.30, Concert (contd.). 10.15, News Bulletin.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin and Exchange Quotations. 7.40, Popular Music on Gramophone Records. 8.10, Lottery Results. 8.15, News and Weather Forecast. 8.30, See Paris (Eiffel Tower).

BRATISLAVA

279 metres; 14 kW.—6.0 p.m., Programme for Children. 6.20, Sonata in A minor, Op. 36, for Cello and Pianoforte (Grieg). 7.0, See Prague. 10.15, Programme Announcements. 10.20, Concert by a Cigány Orchestra.

BREMEN.—See Hamburg.

BRESLAU

325 metres, 1.5 kW.; and GLEIWITZ, 253 metres.—6.40 p.m., Recital of Spanish Violin Music by Elise Berry-Szephazy: Sonata for Violin and Pianoforte (Cassado); Arabian-Spanish Cigány Song, La Gitana (Kreisler); Tango, Op. 165, No. 2 (Albeniz); Spanish Dance from La vida breve (Fallá-Kreisler). 7.15, Weather for Farmers. 7.17 (approx.), Gramophone Concert: Symphony Orchestra conducted by M. Desiré Defauw: Introductory Music to the First Act of Fervaal (d'Indy); Symphony Orchestra, conducted by Dr. Frieder Weissmann: Intermezzo from Nala (Delibes); Gaspar Cassado (Cello): (a) Abendlied (Schumann), (b) Après le rêve (Fauré); Symphony Orchestra, conducted by Max von Schillings: Prelude to Mona Lisa (Schillings); The New Queen's Hall Orchestra, conducted by Sir Henry Wood: Two Songs without Words (Mendelssohn): (a) Frühlingsgesang, (b) Bienenhochzeit; Emmy Bettendorf (Soprano): Song, Der Nussbaum (Schumann); State Opera House Choir: Hunting Chorus from Der Freischütz (Weber); Gott-helf Pistor (Tenor): Song from Siegfried (Wagner); The London Philharmonic Orchestra, conducted by Bruno Walter: Siegfried's Rhine Journey from The Twilight of the Gods (Wagner). 8.0, Talk: Goethe and Science. 8.30, Concert by the Silesian Symphony Orchestra, conducted by Rischka: Overture, Egmont (Beethoven); Procession to the Minster from Lohengrin (Wagner); Minuet in E minor (Grieg); Overture, William Tell (Rossini); Waltzes (G. E. Rischka): (a) Waltz in A minor, (b) Waltz in F minor, (c) Waltz in B minor; Karelia Suite (Sibelius); Turkish March (Mozart); Waltz, Tralu,

Sovanka Cigány Orchestra from the Café Baross.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres, 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., Weather Report. 12.7, String Ensemble Concert relayed from the Hotel d'Angleterre. 2.0 to 3.0, Interval. 3.0, Concert by Mogens Hansens' Instrumental Ensemble. Soloist, Gustav Hellemann (Songs); Overture, Les Dragons de Villars (Maillart); Waltz, Krolls Balklange (Lumbye); Invocation (Gounod); Serenade (Gade); Rheinlegendchen (Mahler); Selection from Sylvia (Delibes); Danish Songs: (a) Nu er det Vaar i Skove, (b) Ved Soen i Skoven, and (c) Solnedgang (J. P. E. Hartmann), (d) I det Frie (Emil Hartmann), (e) Flyv lille Sommerfugl (R. Bay), (f) Violette (Gade), (g) O Du er lig en Rose rod (Rosenfeld), (h) Hvorfor straks jeg dig elsked (Lembecke), (i) Midsommersang (Enna); Hungarian March from Hunyadi Laszlo (Erkel); Sommersang (Jacobsen); Waltz (Ganne); Sylphs' Dance from The Damnation of Faust (Berlioz); Selection from King and Marshall (Heise); Festpolonaise (Svendsen). 5.0, Programme for Children; Reading from David Copperfield (Dickens). 5.40, Exchange and Fish Market Prices. 5.50, Talk and Readings in German: Stefan George, Rainer Maria Rilke and Hugo von Hofmannsthal. 6.20, German Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Talk: Politics in the Month of August. 8.0, Chimes from the Town Hall. 8.5, Classical Music for String Instruments; The Station String Orchestra, conducted by Launy Gröndahl; Overture, Euristeo (Hasse); Minuet from Berenice (Handel); Rondo, Air and Minuet from the Suite for Strings (Purcell); Serenata notturna (Mozart). 8.40, Wild Birds—Comedy in Three Acts (Pontoppidan), followed by Weather Report. 10.0, News Bulletin. 10.15, French Romantic Music by the Station Orchestra, conducted by Launy Gröndahl; Overture, Djamilch (Bizet); Selection from The Pearl Fishers (Bizet); Pastorale, Nocturne, March and Stretta from the Orchestral Suite (Massenet); Prelude to Mirella (Gounod); March and Selection from The Queen of Sheba (Gounod). 11.0, Dance Music from the Bellevue Strandhotel. In the interval at 12 midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Wednesday), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.10 a.m., Miscellaneous Items, News Bulletin and Programme Announcements. 7.35, Radio Journal. 7.45, Talk: Old Cracow. 8.0, See Warsaw. 10.40, Sports Notes. 10.50, Dance Music from Warsaw.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres, 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Forecast, Stock Report, and Popular Music on Gramophone Records. 6.0, Light Music on Gramophone Records. 6.15, Programme for Children. 7.0, Variety Music on Gramophone Records. 7.15, News and British Market Report. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, Tennis Lesson. 8.0, Concert by the Augmented Station Orchestra. 8.30, Soprano Solos. 8.45, Uilleann Pipes. 8.55, Concert by the Augmented Station Orchestra (contd.). 9.30, Contralto Solos by Elsie Hayes. 9.45, Pianoforte and Violin Recital by Mary Roughtan and Pauline St. John Pike. 10.5, The Augmented Station Orchestra (contd.). 10.30, Time Signal, News, Weather Report and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Concert of Popular Music. 7.30, Radio Gazette. 8.0, News Bulletin. 8.30, Variety Music on Gramophone Records. 9.0 (from Le Havre), Le Havre Chronicle and Concert. 10.0 p.m. till Close Down, Programme in English by the I.B.C. 10.0, Concert of Dance Music by the Ibcollians: What are you thinking about, Baby?; Look in the Looking Glass; Let a little Pleasure interfere with Business; I'm throu' with Love; I'm getting superstitious about you; I'm all dressed up with a Broken Heart; Guilty; Dance Hall Doll; Blues in my Heart; Same as we used to do; At your Command; The Mocking Bird went "Cuckoo"; Under the Roofs of Paris; Overnight; Smiler, keep on smiling; Your Eyes. 11.0, Sentimental Airs. Orchestra: Kiss me again. Duets (a) Put your loving Arms around me, (b) You are my Heart's Delight, (c) For you, (d) When the Moon comes over the Mountain, (e) I found you, (f) Goodnight, sweetheart; Orchestra: The Song is Done. 11.30, Light Orchestral Music: Lullaby Grass-hoppers' Dance; Springtime reminds me of you; Home along; Star of Love; Many Happy Returns of the Day; Sally; Beside the Lake. 12 Midnight, Dance Music by the Ibcollians: What's going to happen to me; Let's all sing like one o'clock; The Wedding Party of Mickey Mouse; You were my Salvation; That's why Darkies were born; You can't stop me from loving you; Cuban Love Song;

AUGUST 30th

TUESDAY

continued.

Lausie; It's a Girl; That's my Desire; This is the Missis; Rio de Janeiro; Live, Laugh and Love; The Way with every Sailor; Today I feel so Happy; My Sunshine is you. 12.57 a.m. (Wednesday), I.B.C. Good-night Melody. 1.0, Close Down.

FLensburg.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW. and CASSEL, 246 metres.—5.0 p.m., Orchestral Concert: Adlon-Marsch (Heinecke); Overture, Marinarella (Fueick); Waltz, Lustige Brüder (Vollstedt); Negro Cradle Song (Clusam); Melodies by Flotow—Potpourri (Erlach); Siamesische Wachtparade (Lincke); Overture, Edelweiss (Kozak); Valse romantique (Heinecke); Selection from The Bird Fancier (Zeller); March, Vater Rhein (Lincke). 6.15, Time and Economic Notes. 6.25, Talk: Aerial Safety. 6.50, See Stuttgart. 7.15, Time, Programme Announcements, Exchange Quotations and Weather. 7.30 to 10.20, See Stuttgart. 10.20, Time, News, Weather and Sports Notes. 10.45, See Stuttgart. 12 Midnight (approx.), Close Down.

FREDRIKSSTAD.—See Oslo.

FRIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENVA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call na (in Morse), 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hannover, 566 metres, and Kiel, 232.2 metres.—5.30, Talk: The Mentality of the Youth of To-day. 5.55, Book Review. 6.30, Talk: The German Colony in China. 6.55, Exchange Quotations. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20, Concert by the Small Station Orchestra. Overture, Zampa (Hérold); Valse fantastique (Heinecke); Suite, Luxustelegramme (Hollaender); Negertanz (Niemann); The Forge in the Forest (Michaelis); Pizzicato-Ständchen (Krone); Kameral der Zwerge (Raasch); Modern Ballet Suite (Armandola); Champagner-Walzer (Blon); Overture, Die Irrfahrt ums Glück (Suppé). 9.0, Weber Concert by the Station Orchestra and Choir: Eva Schlee (Soprano), Gerh. Maass (Pianoforte), Bernhard Kakstak (Baritone), and Others; Explanatory Talks by Siegfried Scheffler; Overture, Turandot; Rondo ungarese for Bassoon and Orchestra; Three Songs from Leier und Schwert: (a) Gebet während der Schlacht, for Baritone and Pianoforte, (b) Sword Song for Four-Part Male Voice Choir, (c) Lützows wilde Jagd, for Four-Part Male Choir; Two Pianoforte Duets from Huit pièces à quatre mains; Three Soprano Solos: (a) Reigen (b) Unbefangenheit, (c) Wiegenlied; Overture, Oberon. 10.0, Time, Weather, Sports Notes and Announcements. 10.20 (from Hannover), Instrumental Cabaret Concert: Schützenzug in Krähwinkel (Bokorny); Clarinet Solo: Waltz Air (Schreiner); Die Schilddörfer kommen (Köhler); A Humorous String Quartet (Karbe); Minuet (Schäfer); Two Piccolo Flutes. Die beiden kleinen Finken (Kling); Clarinet Solo: Polka, Sorgenfrei (Vollstedt); Vibraphone Solo: Waltz Intermezzo, Feckenreigen (Schmidt); Saxophone Solo: Giocodista (Ellic); Waltz Intermezzo, Püppchen erste Lieba (Melsel); Potpourri, Im siebenten Himmel (Fötros); Humoresque, Familie Gänselein (Köhler); Piccolo Solo: Concert Idyll, Tirili (Ganglberger); Krähwinkler Landsturm-Wachtparade (Hefner).

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW. and DANZIG, 453.2 metres.—1.30 p.m., Gramophone Concert; Part I—The Birds Concert; Song of the Forest Birds; Nightingale and Song Thrush; Nightingale and Blackbird; Nightingale and Hedge-Sparrow; A Summer Evening—Nightingales and Church Bells; Nightingales' Song, with Cello Accompaniment; Part II—Light Music; Ort hab' ich vom Glück geträumt (Kálmán); Du bist das Liebste (Kálmán); Oriental Suite (Popy); Ufatonbomben (Borchert); So küsst man nur in Wien (Abraham); Musik muss sein (May); Gitana March (Piefke). 2.30, Sponsored Programme, with Gramophone Records. 4.0, Musical Improvisations for Children. 4.30, Concert by the Police Band, relayed from the Kurgarten, Zoppot; Erzherzog Albrecht March (Kozak); Overture, Hunyadi Laszlo (Erkel); Adagio from the Sonata Pathétique (Beethoven); Pastorale and Gavotte from Auf hohen Befehl (Reinecke); Melodies from L'Africaine (Meyerbeer); Wedding Serenade (Klose); Fantasia on Four German Songs (Schmidt); Waltz, Dorfkind (Kálmán); Potpourri of Strauss, Millböcker, and Suppé Melodies (Ziehrer); Deutsche Marschperlen, Potpourri of German Marches (Blankenburg). 6.15, Agricultural Friezes. 6.30, Talk: A Walk through Königsberg in 1800. 7.0, Talk for Workers: The Operative and his Machine. 7.25, Weather Forecast. 7.30, See Leipzig. 8.30, See Langenberg. 10.15, Weather Forecast, News Bulletin, and Sports Report.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Catholic Radio Society (K.R.O.). 7.40 to 8.55 a.m., Gramophone Records of Light Music. 9.40, Popular Music on Gramophone Records. 11.10, Religious Talk. 11.40, Police Notes. 11.55, Trio Concert. Wenn du gehst (Benatzky); Syncopation (Kreisler); The Dolls' Waltz (Bayer); Wiegenlied (Schumann); Selection from The Little Dutch Girl (Kálmán); In Gedanken versunken (Schneider-Bobby); Selection from Phi-Phi (Christiné); Kann nicht küssen ohne Liebe (Abraham); Waltz, from Lysistrata (Lincke); Tambourin (Rameau); Finale. 1.25 p.m., Gramophone Records of Light Music. 1.40, Programme for Women. 2.40, Gramophone Records of Light Music. 3.10, Interval. 3.40, Cesar Franck Music—Pianoforte Recital by Hans Straesser; Prelude; Air; Finale. 4.40, Concert: Czardas (Kempner); Diavoletta capriccio (Lindemann); Liebeswalzer (Moszkovsky); In Wandel der Zeiten (Morena); Songs without words (De Michel); Sweden in Song and Dance (Pagel). 5.40, Educational Talk. 6.10, Concert (continued): Overture, Titus (Mozart); Klänge aus Rumanien (Dauber); Anamitische Zauberer (Siede); Ballet Music from La Gioconda (Ponchielli); Finale. 6.50, Talk: The History of Wireless in Holland. 7.10, Police Notes. 7.25, Talk. 7.40, Festival Concert for the Queen's Birthday (August 31st), relayed from the Concertgebouw, Amsterdam. Address by Dr. W. G. Harrenstein. Fantasia on Dutch Songs (Bouwmeester); Melodies for Choir: (a) Dutch National Anthem, Wilhelmus; (b) Haes Dies; Address by M. J. Schouten; Melody for Choir: Domine salvam fac; Address by M. Hendrix; Melody for Choir: Groot is de Heer; Song for Choir and Organ. 9.10, News Bulletin. 9.25, Orchestral Concert. 10.40, Recitation. 11.5, Gramophone Records of Light Music. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25, Physical Culture. 7.40, Gramophone Records of Variety Music. 9.40, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55 till Close Down, V.A.R.A. Programme. 9.55, Concert for Workers. 11.40, Sextet Concert of Light Music. 1.25 to 1.55 p.m., Interval. 1.55, Culinary Talk. 2.40, Organ Recital by Joh. Jong: Overture, The Thieving Magpie (Rossini); Minuet (Beethoven); Vision de Salome (Joyce); Sweethearts on Parade (Lombardo); Selection from Lilac Time (Schubert-Berté). 3.0, A One-Act Comedy (Kalf-Hermans). 3.40, Gramophone Records of Variety Music. 4.10, Septet Concert: Potpourri of Waltzes, Was die Donau erzählt (Robrecht); Buddhas Liebesfeier (Kronberger); Overture, The Caliph of Baghdad (Boieldien); Waltz, Rève (d'Ambrósio); Es war einmal ein Walzer (Lehar); Es gibt noch Märchen (Lehar); Serenade (Widor); Selection from Carmen (Bizet); Natascha (Margulies). 5.10, Programme for Children. 6.10, Programme by the People's Radio University (R.V.U.). 6.40, Orchestral Concert conducted by Hugo de Groot. Songs by Albert de Booy. 7.10, The Knudde-mans Family so Camping—Sketch (Appy Huppeldy). 7.40, Organ Recital by Reginald Foort: Overture, Poet and Peasant (Suppé); Grasshopper's Dance (Bucalossi); Medley of Dutch Folk Songs (arr. Palla); Humoresque (Dvorak); Etude (Rubinstein). 8.10, Topical Dialogue. 8.25, Organ Recital (contd.). 8.55, Play in One Act. 9.5, Orchestral Concert conducted by Hugo de Groot: Overture, The Black Domino (Auber); Norwegian Artists' Carnival (Svendisen); Melody (Schmalstich); Hungarian Dances Nos. 15 and 18 (Brahms); Melody (Paderevsky); March from Sigurd Jorsalfar (Grieg). 9.40, News Bulletin. 9.55, Concert (contd.): Flattergeister (Strauss); Le Pas des fleurs from Nalla (Delibes); Valse lente (Popy); Melody (Coates); Waltz from The Sleeping Beauty (Tchaikovsky); Valse bluette (Drigo); Très jolie (Waldteufel). 10.40, Gramophone Records of Variety Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.10, Announcements, News Bulletin, and Popular Music on Gramophone Records. 7.45, Gramophone Concert. 10.5, Concert of Dance Music.

KIEL.—See Hamburg.

KLACENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and HELSINKI, 368.1 metres.—6.15 p.m., Talk. 6.40, Musical Programme. 6.55, Song Recital by Viljo Viikari. 7.50, Recitations. 8.10, Concert by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert of Military Music. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—12 Noon, Gramophone Concert; The Symphony Orchestra, conducted by Alois Melichar; Overture, Banditenstreich (Suppé); Berlin Orchestra, conducted by Alois Melichar—Potpourri of Verdi's Opera Music; The Berlin Philharmonic Orchestra, conducted by Julius Prüwer; Waltz, Frühlingsstimmen (Joh. Strauss); Franz Völker (Tenor): (a) Heut' ist ja noch heut' (Schulze-Bach). (b) Mein Lied (Sabathil-Eschelbach); The Berlin Philharmonic Orchestra, conducted by Wilh. Furtwängler; Ballet Music from Rosamund (Schubert); Maria Olzsevka (Contralto): Songs (Brahms). (a) Von ewiger Liebe, (b) Die Mainacht; Franz Völker (Tenor): Folk Song Potpourri; The Berlin Orchestra, conducted by Alois Melichar; Concert Waltz Op. 47 (Glazounov); Franz Baumann (Tenor): (a) Die Post im Walde (Schäffer), (b) Grüsse an die Heimat (Krome); Lillie Claus and Helge Roswaenge and the Berlin Orchestra, conducted by Alois Melichar; Melodies from Die geschiedene Frau (Fall-Leon); Florentine March (Fueick). 1.15 p.m., Weather, News, and Time. 1.30, See Stuttgart. 2.30-3.30, Interval. 3.30, Economic Notes and Time. 3.50, Programme for Children. 4.20, Talk: The Brazilian Forests. 4.40, Reading: German Towns—Weimar. 5.0, See Frankfurt. 6.20, Reading of Unpublished Writings (Georg Piger). 6.45, Weather Time, Economic Notes, and Sports Notes. 7.0, Talk for Women. 7.20, Wireless Notes. 7.30, Book Review. 7.55, News Bulletin. 8.0, Music Talk: From the Flute to the Kettle-drum. 8.30, Tailor Wibbel—Comedy (Hans Müller-Schlösser). 10.5, News and Silent Night.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW.; and DRESDEN, 319 metres.—4.30 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Helmuth Meyer-Radonn: Overture, The Golden Cross (Brüll); Eine Serenadenmusik, Op. 40 (Juon); Swedish Dances (Bruch); Melodies from Die indische Witwe (O. Straus); Melodies from The Girl of the Golden West (Puccini). 5.50, Exchange Quotations, Weather Forecast and Time Signal. 6.0 to 6.30, Talk in connection with the International Dog Show at Dresden on September 3rd and 4th. 6.50, The Leipzig Station informs its Listeners... 7.0, Talk: Men of Letters as Politicians. 7.30, Recital of Vocal Duets, by Maria Cebotari and Max Hirzel. 8.30, Coffee—A Topical Radio Play. 9.30, Economic Notes. 9.40, Gramophone Concert: Overture, The Barber of Bagdad (Cornelius); Melodies from Les Cloches de Corneville (Planquette); Scherzo and Wedding March from A Midsummer Night's Dream (Mendelssohn); Waltz from The Dabary (Millböcker-Mackeben); Potpourri of Schubert's Music; Norwegian Dances Nos. 2 and 3 (Grieg). 10.10, News Bulletin. 10.15 (approx.), Instrumental Cabaret from Hamburg. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Reading. 6.30, Quintet Concert. 7.30, Talk. 8.0, Esperanto Lesson. 8.30, Programme from Zagreb, 307 metres. 10.30, Time Signal and News Bulletin.

LWOW

381 metres; 16 kW.—7.15 p.m., Announcements and Racing Notes. 7.35, See Warsaw. 7.45, Answers to Correspondence on Technical Questions. 8.0, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert: Airs from (a) A Waltz Dream (Strauss), (b) The Merry Widow (Lehar), and (c) The Countess Maritza (Kálmán); Serenata (Toselli); Melody from Lea Brizanda (Offenbach); La troubantée (Cuvillier); Air from Les dragons de Villars (Maillart); Ninon (Tosti); Selection from Miss Decima (Audran). 7.30, Radio Gazette for Lyons and the South-East. 8.30, Concert of Light Music relayed from Paris (Eiffel Tower).

MADRID

ARANJUEZ (EAO), 30.4 metres; 20 kW.—12.30 a.m. (Wednesday), Light Music. 12.45, Radio Journal. 1.0, Popular Concert. 1.35, Answers to Correspondents. 1.40, Light Music. 2.0 (approx.), Close Down.

MADRID

Union Radio, Call EAJ7, 424.3 metres; 2 kW. 8.0 p.m., Chimes, Exchange Quotations, and Market Prices, followed by Request Gramophone Concert. In the interval at 8.30, Talk by Joaquin España Cantos. 9.15, News Bulletin and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal, and Political Review. 11.15 (approx.), Madame Butterfly—Opera (Puccini), on Gramophone Records. 1.15 a.m. (Wednesday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—7.0 p.m. See Prague. 10.15, Programme Announcements, Theatre Notes, and News Bulletin. 10.20, Light Music on Gramophone Records.

MOSCOW

TRADES UNION; 1,304 metres; 100 kW.—6.30 p.m., Young Communists' Radio Journal. 7.10, Popular Music. 9.0, Talk in French: Heard in the Law Courts. 9.55, Time Signal.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserlautern, 560 metres; and Nürnberg, 239 metres.—6.35, Talk on Brewing. 6.55, Time, Weather, and Agricultural Report. 7.5, Talk: Brewing. 7.25 (from Nürnberg), Folk Music by a Mandoline Quartet; Soloist: K. Korn (Zither). 8.25, Symphony Concert by the Station Orchestra, conducted by Hans Winter. Soloist, Frieda Stahl (Pianoforte); Overture, Die Geschöpfe des Prometheus (Beethoven); Concerto in C minor for Pianoforte and Orchestra (Mozart); Symphony in D (Haydn). 9.25, A Dialogue. 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—6.0 p.m., Dialogue: Children and Games. 6.45, Accordion Recital. 7.0, Announcements, News and Weather. 7.30, Theatre Review. 8.0, Time Signal. 8.2, Talk: Words and Music, with Illustrations by the Station Orchestra. 9.0, Concert by the Halden Choir on the Thirtieth Anniversary of its Foundation. Soloists, Karl Petersen (Baritone) and G. Eriksen (Tenor). Spring (Lie); Cloude (Brolin); Barcarole (Heraldstvedt); Baritone Solo, Evening Voices (Borg); Memories, for Tenor, Choir and Orchestra. 9.30, Agricultural Report. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Concert of Light Music.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.40 p.m. to 6.30, Sextet Concert: Pablo (Rossi); Réverie (Scassola); Selection from The Dollar Princess (Fall); Song, Mignotise (Montanano); Selection from Madame Sans Gêne (Giordano); Mio caro (Consiglio); La canzone del perche (Mariotti). 8.0, Announcements, Tourist Talk, Agricultural Notes and Giornale Radio. 8.20, Popular Music on Gramophone Records. In the interval at 8.30, Time Signal and News Bulletin. 8.45, Poluto—Opera in Three Acts (Donizetti). In the intervals, Talk and Art Notes. After the Programme, News Bulletin.

PARIS

EFFEL TOWER, Call FLE; 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 6.45 p.m., Talk on the Theatre. 7.0, Le Journal Parlé. 8.20, Weather Forecast. 8.30, Symphony Concert, conducted by M. Flament: Soloists: Mme. Manassevitch (Songs) and M. Cantrelle (Violin); Symphony in E flat (Mozart-Lotter); Three Songs (Schubert); Violin Solo: Prelude to Le Déluge (Saint-Saëns); Two Songs (Brahms); Three Scenes from Gitanerias (Infante); Song: Ständchen (R. Strauss). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIAN; 325.2 metres; 60 kW.—12 Noon to 2.0 p.m., News and Light Music on Gramophone Records. In the intervals at 1.0, Press Review, and at 1.30, Exchange and News. 7.0, News and Press Review. 7.5, Popular Music on Gramophone Records. 7.30, Sponsored Gramophone Concert. 8.0, Popular Music on Gramophone Records (contd.). 8.30, Radio Journal and News. 8.45, Concert: Soloist, Mme. Marie Tiasier (Songs); Three Songs: (a) Les Trois Princesses (Marguerite Canal), (b) Pastourelle (Barraine), (c) Ariette (Vidal); Pieces from the Sonata for Voices and Pianoforte: (a) Sur un étang, (b) Les oies en file, (c) Les Poules (Thibiet); Overture (Filippucci); Waltz Suite from The Count of Luxembourg (Lehar); Melody from The Merry Peasant (Fall); Trio Serenade for Violin, Viola and Cello (Beethoven); Melody for Strings; The Virtuous Wife (Pncel); Suite, Fêtes de charité (Lecocq); La Fenêtre d'Amour (de Séverac); Melody from L'Oeil Crévé (Hervé); Pierrot joyeux (Levadé); Melody from Mam'zelle Vendémiaire (Gillet); Farandole provençale (B. de Fontbelle); Polka, Les Marionnettes (Métra); Polish Dance (Léopold); Marche des amoureux (Ganne). 10.45, News Bulletin.

PARIS

RADIO PARIS; Call CFR; 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records: La Clochette (Paganini); Habanera (Saraste); Scottish Lullaby (Schwab); Second Serenade (Toselli); 8.0, News and Weather. 12 Noon, Gramophone Concert: Overture, Zampa (Hérold); Duet from the First Act of Le Pré aux

AUGUST 30th **TUESDAY** continued:

Cleres (Héroid); Duet from Le Roi d'Ys (Lalo); Entr'acte, from Carmen (Bizet). 12.30, Ambrose Thomas Festival (Born 30th August, 1811): Selection from Mignon: (a) Overture, (b) I am Titania, (c) Romance, In her Simplicity, (d) Duet of the Swallows; Overture, Raymond; Selection from Hamlet: (a) Vain Regrets, (b) Duet, (c) Recitative, (d) Holy Spirit, dreadful form avenging, (e) Ophelia's Song, (f) Oh wine, dispel the heavy sorrow, (g) Ballet Suite. In the interval at 1.0 p.m., Exchange Quotations, News and Weather Forecast, and at 1.30, Exchange Quotations. 2.0, Exchange Quotations, News and Announcements. 3.45, Exchange Quotations and Market Prices. 6.30, Market Prices, Weather, Agricultural Notes, Talk and Racing Results. 7.0, Gramophone Concert: Ballet Music from Le Cid (Massenet); Sicilienne from Cavalleria rusticana (Mascagni); Midnight on Maundy Thursday, from Sevilla (Turina); Erikknig (Schubert); Valse romantique (Chabrier); Serenade (Saint-Saëns); Tis there, all hail, O Tom! from Romeo and Juliet (Gounod); Third Etude for Pianoforte (Chopin); Triste est le Steppe (Gretchaninov); Barcarolle from The Tales of Hoffmann (Offenbach); Waltz in A (Brahms); Trio for Violin, Oboe and Bassoon (Poulenc). 7.45, Commercial Prices and News. 8.0, Aida—Opera (Verdi), on Gramophone Records by the Cast of the Scala, Milan. In the interval at 8.38, News and Weather Forecast, and at 8.48, Review by Pierre Seize. In the interval at 9.37, Press Review and News.

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA); 306 metres; 25 kW. Relayed by W8KK on 48.86 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Booking Service. 10.12, Programme Announcements. 10.15, Tangee Musical Dreams, from New York. 10.30, The Singing Lady, from New York. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day? 11.6, Teaberry Sport Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, KDKA Kiddies' Klub. 11.30, Sheer Romance. 11.45, To-day's News, by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Wednesday), Industrial Pittsburgh. 12.30, The Stebbins Boys, from New York. 12.45, Gene Austin (Tenor), with Orchestra, from New York. 1.0, Time Signal and Thunder Death, from New York. 1.30, Samuel Di Primio (Tenor). 1.45 to 3.0, New York relay. 1.45, Rosa Low Song Recital. 2.0, Household Finance Programme. 2.30, National Oratorio Society. 3.0, The Country Doctor. 3.15, Westinghouse Pioneers. 3.30, Tish, from New York. 3.45, Florence Fisher; Pappy Drops In. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Louise Frayne (Soprano). 4.30, Jack Pettis and his Orchestra. 5.0, Heinie and his Grenadiers, from New York. 5.30, Time Signal and Good Night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.55 p.m., Market Prices. 5.45, Talk: The Production of Colour Films. 5.55, Talk: Music. 6.5, Agricultural Report. 6.15, Topical Talk for Workers. 6.25, German Transmission. News Bulletin, followed by Concert of German Operetta Music. 7.0, Talk on Medicine. 7.20, Introductory Talk to the following Transmission. 7.30, Aida—Opera in Four Acts (Verdi), relayed from the National Theatre. In the interval at 9.0, Time Signal and News Bulletin. 10.0, Time Signal and News Bulletin. 10.15, Miscellaneous Items, Theatre Notes, and Programme Announcements. 10.20, Light Music on Gramophone Records.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Lausanne), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5 (from Lausanne), Popular Music on Gramophone Records. 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1 (from Lausanne), Programme for Women. 5.30, Concert, relayed from the Ungaria Restaurant, Montreux. 6.0 (from Lausanne), Popular Music on Gramophone Records. 6.40 (from Lausanne), Talk on Chiropody. 7.0, Weather Forecast. 7.1 (from Geneva), Concert of New Gramophone Records. 7.30 (from Geneva), Sponsored Talk. 7.55, News Bulletin. 8.0 (from Lausanne), Variety Concert by a Village Orchestra, conducted by E. Moser: Soloists, M. Pierre Delys (Tyrolese Songs) and J. Rossi (Accordion). 9.0 (from Geneva), Variety Item. 9.15 (from Geneva), Ravel Concert on Gramophone Records. 10.0, News Bulletin and Weather Forecast. 10.15, Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.0 a.m., Weather Report. 5.0 p.m., Weather Report. 8.30, Weather Forecast. 8.40, Pianoforte Recital.

9.0, Chimes and Gramophone Records of Music by Beethoven. 9.30, News Bulletin: RJUKAN.—See Oslo.

ROME

Call IRO, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 2RO, 80 metres.—8.15 to 8.30 a.m., Giornale radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Light Music. 1.0 to 2.15, Sextet Concert; Overture, Giovinetta ardente (Cortopassi); Suite on Popular Russian Melodies (Cabella); Pavane from Le maschere (Mascagni); Danza diabolica (Zanella); Dances from The Demon (Rubinstein); Tango, Un bicchiere di Porto (Travaglia); One Step, Suzur (Petralia). 5.0, Exchange, Children's Radio Review, Giornale radio and Announcements. 5.30, Vocal and Instrumental Concert. 7.10 (Naples), Shipping and Sports Notes. 7.15, Atmospheric Signals, Agricultural Notes, Announcements, and Giornale radio. 8.0, Time, Announcements, and Gramophone Records of Light Music. 8.30, Sports Notes, Announcements, and Tourist Report. 8.45, Concert; Part I—Chamber Music; Soloists: Luigi Biondi (Violin) and Margherita Cossa (Soprano); Violin Solos: (a) Romance in F (Beethoven), (b) Rondo (Kreisler); Three Arias for Soprano (Pasquini): (a) Con tranquillo riposo, (b) Fidi, Fidi, (c) Giran pure in ciel maggiore; Soprano solos: (a) Canto amoroso (Sammartini), (b) The Spheres (Mozart); Violin Solo, Caprice No. 13 (Paganini); Soprano Solos (Richard Strauss): (a) Morgens, (b) Cécilie; Four Years After—Comedy in One Act (Marco Praga); Part II—Programme of Japanese Music; The Festival of Edo—Popular Songs of Old Japan for Tenor (Edo Matsuri); Ring the Bell—Love Song from the Mountains for Tenor (Kane Ga Nari Massu); The Song of the Island of Kiusiù—Song with Flute, Triangle, and Pianoforte accompaniment (Cinzi Contà); The Fishermen's Return—for Flute, Bassoon, Violins, Viola, Cello, and Double Bass. After the Concert, News Bulletin, followed by Dance Music from the Pincio. 12 Midnight, Close Down.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—9.0 p.m., Bridge Lesson. 9.15, Studio Ensemble. 9.35, News Items. 9.45, Stock Reports and Police Notices. 10.0, Garden Melodies, from New York. 11.0, Joe and Eddie. 11.15, Ollie Yettr (Pianist). 11.25, Baseball Scores. 11.30, With Gray McClintock in the Canadian Northwest. 11.45, Back of the News in Washington, by William Hard, from New York. 12 Midnight (WGY only), General Electric Programme. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Wednesday), Chandu, the Magician. 12.30 till Close Down, New York Relay. 12.30, Ray Perkins (Barbasoloid). 12.45, The Goldbergs. 1.0, Blackstone Plantation. 1.30, Walter Smith and his Band. 2.0, National Civic Artists. 2.30, Ed Wynn and the Fire Chief Band. 3.0, Lucky Strike Dance Hour. 4.0, Art Jarrett and his Orchestra. 4.30, Jack Denny and his Orchestra. 5.0, Ralph Kirby (Dream Singer). 5.5, Paul White-man and his Orchestra. 5.30 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASEL, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Concert by the Station Orchestra. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Dance Music, with Humorous Interludes, on Gramophone Records. 4.30, Concert by the Station Orchestra. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Zürich), Educational Talk. 7.0, Time Signal and Weather Forecast. 7.5 (from Zürich), Talk: Swiss Tourist Traffic. 7.30 (from Zürich), Talk for Women. 8.0 (from Berne), Interlude by the Station Orchestra. 8.10, Edward (Carl Loewe), sung by Ernst Schläfli. 8.20, Guilty?—A detective play (H. Rosenwald and J. Kaul). 9.30, Weather Forecast and News Bulletin. 9.45 (from Berne), Concert of Operetta Music by the Station Orchestra. Soloist, Walter Schür (Tenor). 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Programme of Songs and Accordion Music. 5.45, Popular Music on Gramophone Records. 6.45, Talk on Listening In. 7.15, Weather and News. 7.30 (from Östersund), Talk. 8.0, Songs by C. J. L. Almquist—a Recital by Sonia Estelle. 8.15, The Deluge—Play (Henning Berger). 9.45, Weather and News. 10.0, Concert, Overture to Maritana (Wallace); Ballet Music from Henry VIII (Saint-Saëns); Berceuse de

Jocelyn (Godard); Serenade (Moszkovsky); Waltz, A toi (Waldteufel); Potpourri, Fortissimo (Kalman-Felgel). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Variety Music. 12.45 p.m., News in French and German. 1.0, Time Signal and Exchange Quotations. 1.10, Gramophone Records of Variety Music. 1.30 to 2.15, Concert from Toulouse (PTT); 255 metres. 4.45, Talk in German: Through France. 5.0, Orchestral Concert, conducted by Roskam; March, Hollywood (Leopold); Waltz, Reflets du passé (Delmas); Der Rosehoheitszug (Jessel); Overture, Lysistrata (Lincke); Selection from Der Frauensee (Eysler); Aubade printanière (Lacombe); Ballet Suite (Popy); March, (Blankenburg). 6.0, Talk in German: Fischart—An Alsatian Writer. 6.15, Topical Talk in French. 6.30, Orchestral Concert, conducted by Roskam; Ballet Music from Alceste (Gluck); Minuet from Le Bourgeois Gentilhomme (Lully); Gavotte en rondeau (Lully); Song from Céphale et Procris (Grétry); Overture, The Barber of Seville (Rossini); Rosina's Aria from The Barber of Seville (Rossini); Selection from Les Dragons de Villars (Maillart); Two Songs (Kochlin), (a) Si tu le veux, (b) Les Fées; Waltz, Flattergeister (Joseph Strauss); March, Piccadilly (Benoit). 7.30, Time, and News in French and German. 7.45, Orchestral Concert, conducted by Roskam: Three Dances (Edward German); Overture, Les Cloches de Corneville (Planquette); Waltz, Pluie de diamants (Waldteufel); Selection from Eva (Lehár). 8.30, Concert, relayed from Paris. 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER; 360.5 metres; 60 kW, and FREIBURG, 570 metres.—10.0 a.m., Pianoforte Recital of Haydn Music; Caprice; Flötenhrstücke transcribed by Ernst Frlitz Schmid; Sonata in E flat. 10.30 (from Mannheim), Recital of Songs by Schubert, Abt and Gellert, by the Schubert Quartet. 11.0, Time, News and Weather. 11.15 to 11.30, Sponsored Gramophone Concert. 11.55, Weather. 12 Noon, Gramophone Concert; The Milan Symphony Orchestra, conducted by G. Neri; Overture, The Barber of Seville (Rossini); Two Songs: (a) The Two Grenadiers (Schumann), (b) Nächtliche Heerschau; The Berlin Municipal Opera House Orchestra, conducted by Meyrowitz: (a) A Wedding Day in Trolldhaugen (Grieg), (b) The Rustle of Spring (Sinding); The Livschakov Orchestra: (a) Serenade (Moszkovsky), (b) Nareissus (Nevin); Two Songs from the Song of Love (Johann Strauss-Korngold); The Roos Orchestra; Lehár Potpourri (Hrudy); Trumpet Solos: (a) Sei gegrüßt du mein schönes Sorrent (Waldmann), (b) Noch sind die Tage der Rosen (Baumgartner); Potpourri of Student Airs, by a Wind Instrument Quartet; Songs: (a) So ein Dalles geht über alles, (b) Die Mädels von Montparnasse (Wachsmann and Gilbert); Accordion Duets: (a) Old Norwegian Hunters' March, (b) March (Johansen). 1.15 p.m., Time, Weather and News. 1.30, (from Freiburg), Pictures of the Orient—Concert by the Freiburg Concert Orchestra, conducted by Richard Fried; Turkish March (Mozart); Oriental Ballet Suite (Popy); Indian Suite (Lüding); Egyptian March (Strauss); Waltz, Pictures from the Orient (Strauss); Reminiscences of Cairo (Armandola). 2.30 to 2.45, Sponsored Gramophone Concert. 4.0, Talk on Flowers. 4.30, Talk for Women: Happy Hours for the Children. 5.0, See Frankfurt. 6.15, Time and Weather. 6.25, Talk: Eleonora Duse and Sarah Bernhardt. 6.50, Talk: How Criminals are made. 7.15, Time, Weather and Agricultural Notes. 7.30, Recital of Melodies from Lehár's Operettas, by Elizabeth Jentsch (Soprano) and Karl Jantz (Tenor); Songs from The Land of Smiles, The Czarevitch, and Frasquita. 7.50, Symphony Concert by the Stuttgart Philharmonic Orchestra, conducted by Emil Kahn. Soloist: Alexander Vrovsy (Pianoforte); March in C (Mozart); Concerto for Pianoforte and Orchestra in C (Mozart); Entr'acte Music from Rosamund (Schubert); Concert Piece for Pianoforte and Orchestra (Weber); The Scottish Symphony in A Minor (Mendelssohn). 9.20, Variety Programme. 10.20, Time, Weather, News and Programme Announcements. 10.45, Concert by the Dance Ensemble of the Stuttgart Philharmonic Orchestra; Selection from Der Tenor der Herzogin (Nikisch); Jazz Fantasia, Cuban Love Song (Savino); Bacchanale (Mitja-Nikisch); Rhapsody, By the River Sainte Marie (Savino); Selection from Zur gold'nen Liebe (Benatzky). 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Concert; Coronation March from The Prophet (Meyerbeer); Overture, Semiramis (Rossini); Ballet Music from Hérodiade (Massenet); L'Autonne (Fauré); Ariettes oubliées (Debussy); L'invitation au voyage (Duparc); My Friend, Pierrot (Zimmermann). 6.0, Dance Music.

6.15, Vocal Tangos. 6.30, Exchange Quotations and Horse Racing Results. 6.45, Concert; Dolores (Waldteufel); Hlaisir d'amour (Martini); Suzanne (Monteux); Dans ma péniche (Borel-Clerc); Liebesleid (Kreisler); Melody from La Dame blanche (Boieldieu); Two Airs from Figaro (Mozart). 7.15, Accordion Solos. 7.30, Programme Announcements and News. 7.45, Military Music. 8.0, Concert; Air from The Barber of Seville (Rossini); Prologue to I Pagliacci (Leoncavallo); Air from Il Trovatore (Verdi); Selection from The Daughter of the Regiment (Donizetti); Selection from Les Noces de Jeannette (Massé); Introduction, Waltz and Mazurka from Coppélia (Delibes); Ballet Music from La Poupée d'Arlequin (Darcy). 8.45, Light Music. 9.0, Popular Sound Film Music. 10.0, Concert; Bigre (Leikens); Paquita (Charlys); Tango mystérieux; Vers le chemin du bonheur (Baudoin); La valse des cols bleus (Marafioti); Selection from Tosca (Puccini); Prelude to Cavalleria rusticana (Mascagni); Prelude to Werther (Massenet). 10.30, North African News. 10.45, Concert (cont'd); Two Airs from Le Jongleur de Notre Dame (Massenet); Melody from La Julve (Halévy); Melody from Samson and Delilah (Saint-Saëns). 11.0, Violin Recital; Serenade (Drda); La ronde des lutins (Bazzini); Cavatina (Raff); Spanish Dance No. 5 (Granados); Andantino (Kreisler). 11.15, Recitations. 11.30, Quintet in A Minor (Schubert).

TRIESTE

247.7 metres; 10 kW.—7.0 p.m., Quintet Concert; Slambrot (Solazzi); Consuelita (Bazan); Musetta qui danza (Fiaccone); Carnival Suite (Kostal); Charnes des Alpes (Cortopassi); Selection from Grandola (Allegro); Melody (Berger); Stra... Stra... (Mariotti). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—6.35 p.m., Giornale Radio, Agricultural Notes and Announcements. 7.0, Musical Programme: Waltz from Faust (Gounod); Barcarolle from Silvano (Mascagni); Dance (Keteley). 7.25, Tourist Report. 7.30, Time and Announcements, followed by Gramophone Records of Variety Music. 8.0, Giornale Radio, Weather, and Gramophone Records of Light Music. 8.30, Haschisch, Operetta in Three Acts (Delli Ponti and De Gregori). In the intervals, Talk: Astronomical Observations of the Month and Notes on Art, Giornale Radio after the Programme.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—6.10 p.m., Talk: Ab-originais at Home. 6.35, Talk: Poisonous Fungi. 6.45, Agricultural Talk. 7.10, Gymnastics. 7.30, Time, Weather and Programme Announcements. 7.40, Humorous Programme by Sigi Hofer. 8.10, Concert by the Vienna Symphony Orchestra; The Scottish Symphony in A Minor (Mendelssohn); Song of the Nightingale (Stravinsky); Second Leonora Overture (Beethoven). 9.30, News, Weather and Announcements. 9.45, Dance Music by the Blue Boys' Band, relayed from the Grabencafé; Egon Grosz (Songs).

WARSAW

1,411 metres; 120 kW.—11.58, Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5, Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Gramophone Records (cont'd). 2.10, Interval. 3.0, Economic Report. 3.10, Popular Music on Gramophone Records. 3.30, Aviation Report. 3.35, Announcements. 3.40, Variety Music on Gramophone Records. 4.35, Miscellaneous Announcements. 4.40, Sports Talk. 5.0, Symphony Concert by the Warsaw Philharmonic Orchestra; Conductor, Z. Dymmek; Soloist, Mme. Feltsen (Pianoforte); Nocturne and Scherzo from A Midsummer Night's Dream (Mendelssohn); Pianoforte Concerto in E Flat (Liszt); Symphony in C Minor (Haydn). 6.0, Talk: The Atlantic. 6.20, Concert of Light Music. 7.15, Miscellaneous Announcements. 7.35, Radio Journal. 7.45, Agricultural Notes. 7.55, Programme Announcements. 8.0, Concert by the Warsaw Philharmonic Orchestra; Conductor, J. Oziminski; Soloists, M. Fliedbaum (Violin) and A. Bronke (Trumpet); March from Carmen (Bizet); Selection from Hansel and Gretel (Humperdinck); Gipsy Dance (Moniuszko); Trumpet Solo, The Raftsmen (Münchheimer); Waltz from The Sleeping Beauty (Tchaikovsky); Ballet Music from La Gioconda (Ponchielli); Violin Concerto (Mendelssohn); Overture, Rosamund (Schubert). In the interval at 8.45, Literary Talk. 9.50, Radio Journal. 9.55, Aviation Weather Forecast. 10.0, Dance Music. 10.40, Sports Notes. 10.50, Dance Music (cont'd).

ZURICH.—See Schweizerischer Landessender.

ALGIERS

363.3 metres; 13 kW.—7.0 p.m., Exchange Quotations and Market Prices. 7.10, Shipping Notes and Weather Forecast. 7.15, Songs from Sound Films. 7.30, Debussy Pianoforte Recital by Alfred Cortot. 7.45, Songs from Operettas. 7.55, News Bulletin and Time Signal. 8.0, Les Esperances—Comedy (Paul Bihaud). 8.30, Relay of an Open-Air Concert. In an interval at 9.30, News Bulletin. 10.30 (approx.). Close Down.

BARCELONA

RADIO BARCELONA; Call EAJ1; 349 metres; 8 kW.—8.0 p.m., Trio Concert: Selection from Faust (Gounod); Ich liebe dich (Grieg); Aria from Louise (Charpentier); Hungarian Dance (Brahms). 8.30, Exchange Quotations, Request Gramophone Records, and News Bulletin. 10.0, Chimes, Weather Forecast, and Exchange Quotations. 10.10, Orchestral Music: Moorish March (Ribalta); Waltz (Worsley); Celtibéricas (Sancho Marcano); Serenade (Heumann). 10.30, Concert of Sardanás. 11.15, Quintet Concert, relayed from the Café de la Rambla. 1.0 a.m. (Thursday), Close Down.

BASEL.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers, followed by Gramophone Concert and Weather for Farmers. 12.55 p.m., Nauen Time Signal. 1.35, News Bulletin. 2.0, Ballad Concert on Gramophone Records, relayed from Berlin (Witzleben). 3.0, Talk: In Little-known Mauritania. 3.30, Weather and Exchange. 3.45, Talk for Women. 4.0, Educational Talk. 4.30 to 5.30, See Hamburg. 5.30, Talk on Languages. 6.0, Illustrated Talk: Songs Good and Bad. 6.30, Talk. 6.55, Weather for Farmers. 7.0 to 10.0, See Vienna. 8.20 (in an interval), Topical Talk. 10.0, See Berlin (Witzleben). 10.20, Concert from Vienna. 12 Midnight (approx.), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—5.50 p.m., Concert of New Music with Introductory Talk. The Station Choir, conducted by Maximilian Albrecht. Soloists: Marcella Röseler (Soprano), Nicolo Draber (Flute), and Heinz Fischer (Pianoforte). Sonata No. 3 for Pianoforte (Jemnitz); Soprano Solos: Songs (Pauels); Sonata for Flute and Pianoforte (Finke); Melody from Gesänge des späten Jahres (Krenek); Hungarian Folk Songs (Kodaly); Melody from the Cantata, Ich selbst muss Sonne sein (Höffer). 6.35, Talk: Civic Administration in Three Continents. 6.55, The Witzleben Station informs its Listeners. 7.0, Topical Talk. 7.10, Technical Talk. 7.25, Talk on Criminal Law. 7.55, Labour Market Report. 8.0, Variety Concert. 10.0, Weather, News, and Sports Notes. 10.20, Concert from Vienna. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News Bulletin and Market Prices. 7.40, Lottery Results. 7.45, Popular Music on Gramophone Records. 8.15, News and Weather Forecast. 8.30, Gala Concert. Soloist: J. Vieuille (Baritone). Overture, Light Cavalry (Suppé); Songs: Spanish Suite, La Féria (Lacôme); Scenes from Les noces de Jeannette—One-Act Operetta (Massé); Ballet Music from Isoling (Messager-Auvray).

BRATISLAVA

279 metres; 14 kW.—6.0 p.m., Market Prices, Talk, followed by Duo for Violin and Pianoforte (Rosza). 7.0, September—a Radio Drama. 7.55, Pianoforte Recital. 8.20, See Brno. 9.0, See Prague. 10.15, Programme Announcements.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW. and GLEIWITZ, 253 metres.—6.20 p.m., Talk on Factory Councils. 6.40, Legal Talk. 7.5, Talk: Goethe's Journey through Upper Silesia. 7.30, Weather for Farmers. 7.32, Orchestral Concert; Overture, Paragon 3 (Suppé); Gavotte, Contes villageois (Gillet); Ländliches Hochzeitstanz (Zibulka); Polka, Im Kahnenberger Dörfel (Fahrbach); Potpourri, Neue Wiener Volksmusik (Komzák); Kranz-Czardas (Michiels). 8.30, Variety Programme. 10.30, Time and News. 11.0, Dance Music. 12 Midnight, Close Down.

BRNO

342 metres; 35 kW.—6.0 p.m., Talk for Young People. 6.15, Popular Music on Gramophone Records. 6.25, German transmission: News, and Two Talks: (a) Importance of Sports and Gymnastics, (b) Good and Bad German. 7.0, See Prague. 7.50, Light Music on Gramophone Records. 8.20, A Comedy (Raimund Kroupa). 9.0, See Prague. 10.15, News Bulletin.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Concert by the Max Alexys Band. 1.0 p.m., Le Journal Parlé. 1.10, Concert (continued).

WEDNESDAY

AUGUST THE THIRTY-FIRST.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL Organ music. Orchestral music. Mr. Cedric Belfrage: "The Cinema." Military Band concert. White Coons Concert Party. Orchestral concert.

LONDON REGIONAL National programme. Orchestral music. Organ recital. Orchestral concert. Promenade concert.

MIDLAND REGIONAL London Regional programme. Organ recital. North Regional programme. Orchestral concert.

NORTH REGIONAL National programme. London Regional programme. Midland Regional programme. Orchestral concert. London Regional programme. National programme.

WEST REGIONAL National programme. Orchestral concert from National Museum of Wales. Miss E. Picton Turberville: "The Vale of Glamorgan." Welsh interlude. Summer Laughter, No. 3: National programme. "In Old Madrid"—orchestral programme.

SCOTTISH REGIONAL National programme. Song recital. Gramophone recital. Scottish concert. Organ music. Miss Janet Adam Smith: "Scotland Out of Doors" (6). Dance music. National programme.

BELFAST National programme. Orchestral concert relayed from Stranmillis. Orchestral concert. Light orchestral concert.

ABROAD

BERO-MUNSTER Schubert concert.

HAMBURG Dance music by Philharmonic Orchestra.

HUIZEN Popular music from Kurhaus, Scheveningen.

ROME Opera: "The Sicilian Vespers" (Verdi).

STOCKHOLM Opera: "I Pagliacci (Leoncavallo), relayed from Royal Opera House.

5.0, Dance Music from the St. Sauveur Palais de Danse. 6.15, Talk on Fishing. 6.30, Gramophone Concert: Moorish Rhapsody and Evening Reverie from The Algerian Suite (Saint-Saëns); T'amo (Maganelli); Eglogue (Rabaud); Liebesbotschaft (Schubert); Madrigale (Simonetti); Symphonic Poem, Till Eulenspiegel (Richard Strauss). 7.15, Talk: Roule Belgium—Huy. 7.30, Medical Review. 8.0, L'heure Fantaisiste, Programme of Monologues, Sketches and Music. 9.0, Concert relayed from the Casino, Knocke; Soloist: Mme. Germaine Teugels (Songs); Leonora Overture No. 3 (Beethoven); Symphonic Poem, Night on the Bare Mountain (Mussorgsky); Cavatina from The Pearl Fishers (Bizet); The Festival at Bagdad from Scheherazade (Rimsky-Korsakov); Jewel Song from Faust (Gounod); Overture, Charlotte Corday (Benoit). After the Concert, Journal Parlé and Dance Music from the Casino, Knocke. 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

I.N.R., 338.2 metres; 15 kW.—Programme in Flemish. 12 Noon, Orchestral Concert. 4.0 p.m., Le Journal Parlé. 1.10, Concert (continued). 5.0, Orchestral Concert, conducted by Kumps; Overture, Princesse Carnaval (Blasius); Selection from Faust (Gounod); Aubade fleurie (Ganne); Serenade (De Tave); Selection from Rigoletto (Verdi); Three Pieces (Godard); Ballet Music from Lakmé (Delibes); Marche joyeuse (Chabrier). 6.0, Gramophone Concert; Overture, Monte Cristo (Gabutti); Finnish Cavalry March; Auvergne Melody (Cayla-Canteloube); March, Björneborganes. 6.15, Reading (H. Lofting). 6.30, Gramophone Concert (continued); Overture, Egmont (Beethoven); Concerto in E Flat (Liszt); Ave verum corpus (Mozart); Fantaisie italienne (Delmas); Melody from The Magic Flute (Mozart). 7.15, Talk: English Literature. 7.30, Review of International Events. 8.0, Symphony Concert, conducted by Kumps; Symphony in B Flat (Schubert); Nocturne and Scherzo from A Midsummer Night's Dream (Mendelssohn); Two Dances (Brahms). 8.30, Extracts from De Wyze Kater (H. Heyermans). 9.0, Concert, relayed from the Kursaal, Ostend. After the Programme, Le Journal Parlé and Dance Music from the Kursaal, Ostend. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Variety Music by the Station Orchestra. 5.0, News and Time Signal. 5.10, Concert of Variety Music (contd.). 6.0, Educational Talk. 6.40, Il Trovatore—Opera (Verdi) on Gramophone Records. In the intervals, News.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 240 metres from 7.45 to 12 Midnight.—5.0 p.m., Concert by the Vinze Ferkas. 6.15, Reading. 6.45, Pianoforte Recital of Hungarian Folk Melodies by Margareta Timko. 7.15, Programme by Nikolaus Surányi. 7.45, Concert by the Mandits Orchestra; Selection from La belle Hélène (Offenbach); Melody (Rachmaninoff); Rocco Idyll (Dtephanides); Waltz, Alice (Siklos); Symphony: Im Garten (Goldmark); Tango, Es war einmal (Bachmann). 8.45, Racing Results. 8.50, Recitation. 9.45, News Bulletin and Announcements, followed by Dance Music from the Ritz Hotel. 11.0, Concert of Light Music by the Imre Magyar Cigany Orchestra.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW. and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., Weather Forecast. 12.7, String Ensemble Concert relayed from the Bellevue Strand Hotel. 2.0 to 2.40, Interval. 2.40, Wind Instrument Concert. March, Den raske Dragon (Sonderby); Overture, Martha (Flotow); Madrigal from Romeo and Juliet (Gounod); Waltz (Ganne); Selection from The Huguenots (Meyerbeer); Spanish Dance No. 2 (Moszkovsky); Litanei (Schubert); Military March (Schubert); March (Siede); Overture, La dame blanche (Boieldieu); Spanish Dances Nos. 2 and 5 (Moszkovsky); Selection from Aucassin et Nicolette (Enna); La petite mignonne (Gaman); Lagunen-Walzer (Johann Strauss); March, Vive Bologne (Bollmann); In the interval at 3.25, Programme for Children. 4.40, Gramophone Concert. Germaine Martinelli: Song from The Damnation of Faust (Berlioz); Beniamino Gigli: Cavatina from Act Three of Faust (Gounod); Riccardi Stracciari: Toreador's Song from Carmen (Bizet); Pablo Casals: Song without Words (Mendelssohn); Josephine Baker: Pardon si je t'importune (Celani); Jules Bledsoe: Ol' man river (Kern); Dan Donovan: The Wooden Soldier and the China Doll (Newman-Jonts); The Wiggers Quartet, Foxtröt, När djungeln vaknar (Munthe). 5.10, Talk with Gramophone Illustrations: Salzburg. 5.40, Exchange and Fish Market Prices. 5.50, French Lessons for Beginners. 6.20, Weather Report. 6.30, News Bulletin. 6.50, Introductory Talk to the following Transmission. 7.0, See Vienna. 8.20, Introductory Talk to the following Transmission and Weather Report. 8.50, See Vienna. 9.55, News Bulletin. 10.10, Mandoline Concert by the Alberto Bracomy Trio; Chemin faisant (Monti); Mazurka (Sartori); Waltz, Te sogno sempre (Zardo); Concert-Capriccio (Arieuzo); Can-

cion d'amore (Albeniz); Spanish Folk Dances: (a) Habanera, (b) Andalusian Jota, (c) Bolero. 10.40, Dance Music from the Nimb Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.30 a.m. (Thursday), Close Down. CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.10 p.m., Miscellaneous Items, News Bulletin and Programme Announcements. 7.35, Radio Journal. 7.45, Answers to Correspondents. 8.0, See Warsaw. 10.25, Topical Talk. 10.40, Sports Notes. 10.50, Dance Music from Warsaw. 11.30 (approx.), Close Down. DANZIG.—See Heilsberg. DRESDEN.—See Leipzig.

DUBLIN

Call 2RN; 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Forecast, Stock Report, and Popular Music on Gramophone Records. 6.0, Light Music on Gramophone Records. 6.15, Programme for Children. 7.0, Variety Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.31, Gaelic Talk. 7.45, German Lesson. 8.0, Bizet and Gounod Concert by the Station Sextet. 8.30, Tenor Solos by Gerard Crofts. 8.45, Uilleann Pipes, by Sean Dempsey. 8.55, Selections by the Station String Orchestra. 9.15, Soprano Solos by Violet G. Burne. 9.30, Play by L. Elyan and Company. 10.5, German Folk Songs, by Erni Ritter. 10.15, Station Sextet. 10.30, Time Signal, News, Weather Report, and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Sponsored Concert of Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Concert of Popular Music. 7.30, Radio Gazette. 8.0, News Bulletin. 8.30, Variety Concert. 10.0 till Close Down, Programme in English by the I.B.C. 10.0, Dance Music by the Ibcolians; Song of the Islands; You call it Madness; It's Great to be in Love; One little Quarrel; I idolise my Baby's Eyes; Save the Last Dance for me; You try Somebody else: Destiny; Mona Lisa; Life is just a Bowl of Cherries; I'm sorry, dear; Flame of Desire; Ecstasy; Falling in Love again; By the Fireside; Bend down, Sister. 11.0, Recital of Light Songs; All alone Monday (Kalmar); Waiting at the End of the Road (Berlin); Just Like in a Story Book (McCarthy); Orchestra: What's Next? (arr. Finck); Songs: (a) Any Time's the Time to fall in Love (Janis), (b) Dance away the Night, (c) I'm in the Market for you (McCarthy). 11.30, Music by the Ibcolians; Melody from The White Horse Inn (Benatzky-Stolz-Graham); Irish Medley (arr. Griffiths); Musical Comedy Switch (arr. Hall); Scotch Medley (arr. Griffiths); Miracle Melodies (arr. Connelly). 12 Midnight, Concert of Dance Music by the Ibcolians: Let's have a Sing-Song; In a little Rendez-Vous; I wanna sing about you; Down Sunnyside Lane; Two little Blue light Eyes; The Waltz you saved for me; Lights of Paris; Jolly Good Company; My Sunshine came on a Rainy Day; Got the Bench; Carry One; My Cradle is the Desert; Underneath the Spanish Stars; Wash Moon. 12.57 a.m. (Thursday), I.B.C. Goodnight Melody. 1.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSELL, 246 metres.—5.0 p.m., Concert from Wiesbaden. 6.15, Time and Exchange Quotations. 6.25, Talk: An Evening on the Mösgener See. 6.50, Time, Programme Announcements, Weather, and Exchange Quotations. 7.0, See Vienna. 10.0, The Werra Valley—A Radio Picture. 10.20, Time, News, Weather, and Sports Notes. 10.45, Concert from Vienna. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GOTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse); 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 556 metres; and Kiel, 232.2 metres.—4.30 p.m. (from Hanover), Concert by the Dresden Philharmonic Orchestra, conducted by Walter Stöver, relayed from Bad Pyrmont. Soloist, Szardahelyi. Overture, Ruy Blas (Mendelssohn); Violin Solo, with Orchestral Accompaniment, Heyre Kati (Hubay); Suite No. 2, from L'Arlesienne (Bizet); Selection from Faust (Gounod); Waltz, Roses from the South (Joh. Strauss). 5.30, Talk: The Development of Stage Production. 5.55 (from Kiel), Variety Programme. 6.25, Talk: The Importance of Ger-

AUGUST 31st

WEDNESDAY

continued.

man Motor Traffic. 6.5, Frankfurt Exchange and Meat Market Prices. 6.55, Weather Report. 7.0, See Vienna. In the interval at 8.50, News Bulletin. 10.0, Time and News. 10.10, Concert of Dance Music by the Hamburg Philharmonic Orchestra, conducted by Fritz Gartz: March Potpourri (Robrecht); Waltz, Nordseebilder (Joh. Strauss); Maxixe brésilienne (Salabert); Rheinländer, Die schöne Winzerin (Zikoff); Quadrille from The Geisha (Jones); Champagne Galop (Lumbye); Tango, Expressionen (Brase); Waltz, Seid umschlungen Millionen (Joh. Strauss); French Polka, Immer galant (Fahrbach); Offenbach Quadrille (Petras); March from The Merry Widow (Lehár).

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and **DANZIG**, 453.2 metres.—1.5 p.m., Concert by the Small Station Orchestra, conducted by Eugen Wilcken: Overture, Czar and Carpenter (Lortzing); Fantasia on Airs from Rigoletto (Verdi); Waltz, Die Werber (Lanner); Friedemann-Bach Suite (Leuschner); Romanza (Löh); Manchurien Sketches (Glan); Overture, Die geschiedene Frau (Fall); Debreczian (Meisel); Der verliebte Harlekin (Meyer-Helmund); Selection from La fille de Madame Angot (Lecocq); Deuma - Marsch (Wittenberg). 5.45, Talk: East German Handicrafts: Yellow Amber Ornaments. 6.15, Agricultural Prices. 6.25, East Prussia from 1807 to 1913—The Napoleonic Menace. 6.55, Weather Forecast. 7.0, See Vienna. 10.10 (approx.), Weather, News, and Sports Report, followed by Late Concert from Vienna. 12 Midnight, Close Down.

HILVERSUM

Announced **HUIZEN**, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme by the Christian Radio Society (N.C.R.V.). Programme in Celebration of Her Majesty the Queen of Holland. 7.40 a.m., Bible Reading. 7.55, Gramophone Records of Variety Music. 8.40, Topical Programme. 9.10, Choral Music. 9.40, Programme for Hospitals. 10.10, Choral and Mouth Organ Concert. 11.10, Light Music on Gramophone Records. 11.40, Police Notes. 11.55, Vocal and Instrumental Concert: Overture, The Crown Diamonds (Auber); Waltz, Tales from the Vienna Woods (Strauss); Selection from The Bartered Bride (Smetana); Potpourri, Dur und Moll (Moreau); Selection from I Pagliacci (Leoncavallo); Slow Lullaby (Neruda); Selection from Rigoletto (Verdi); Overture, The Caliph of Baghdad (Boieldieu); Serenade (Widor); Selection from The Pearl Fishers (Bizet); Entr'acte Music from Rosamund (Schubert); Selection from Lilac Time (Schubert-Berté). 1.40 p.m., Carillon Recital from the Royal Palace at Amsterdam. 2.40, Orchestral Concert from Hilversum: March, Queen Wilhelmina (Bouwman); Potpourri of Dutch Songs (Schweinsberg); Feestklanken (Kessels); Wilhelmus van Nassouwe; Potpourri of Sacred Songs (Ruh); Paraphrase on Harre meine Seele, Schönster Herr Jesu; Overture, Raymond (Thomas); Waltz, Estudiantina (Waldteufel); Ballet Music from Faust (Gounod); De Fremersberg (Koenenman). 4.40, Programme for Children. 5.40, Variety Music on Gramophone Records. 6.10, Choral and Orchestral Concert: Psalm 68, Verses 10 and 16; Wild heden nu treden; Song; Gelukkig Vaderland; Song (Caro); 'k Hou van Holland (Bute); Hymn 169, Verses 2, 7, and 8; Eendracht (Stuntz); Hollands Vlag (Wierts); Oranje-Liedje (Viotta); In 't Voorhout (Heye); Wilhelmus; Psalm 72, Verses 1 and 11. 7.10, Police Notes. 7.25, Religious Information. 7.40, Organ Recital by M. de Lange, with Orchestral Music; Prelude in E Flat (Bach); Hallelujah (Händel/Gottschlag); Concerto grosso (Händel); Suite gothique (Boillmann); Selection from Les petits riens (Mozart); Choral Melody, Op. 18 (Gulmunt); Variations on Wilhelmus (Hendriks). 8.40, Orchestral Music; De Hollandsche Leeuw; Waltz, Dorfschwalben aus Oesterreich (Joseph Strauss). 8.55, Accordion Duets. 9.5, Recitations. 9.20, Gramophone Records of Light Music. 9.40, Accordion Solos; I found you (Noble). Wien bleibt Wien (Schrammel). 9.50, Recitations. 10.5 News Bulletin. 10.10, Orchestral Concert: Fizzicato Polka (Strauss); Invitation to the Waltz (Weber); Potpourri (Sluiter and Hoogeboom); March, Folies bergères (Lincke). 10.40, Gramophone Records of Variety Music. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced **HILVERSUM**; 1,875 metres; 8.5 kW.—Programme of the Algemeene Vereenigende Radio Omroep (A.V.R.O.). 7.40 a.m., Time Signal and Chimes from St. John's Cathedral, Hertogenbosch. 8.10, Programme in honour of the 52nd Birthday of H.M. The Queen of Holland, relayed from Rotterdam. Choir 2,500 performers and Orchestra; Address by the Lord Mayor. 8.55, Light Music on Gramophone Records. 9.10, Concert by the Station Orchestra, conducted by Nico Treep: Cortège (Razigade); Fantasia on a Dutch Folk Song (Altérego); Festival Overture (Leutner); Paraphrase on a Limburg Folk Song (Altérego); Parademarsch der langen Kerls (Roland). 9.40, Time Signal and Daily Service. 9.55, Popular Music on

Gramophone Records. 10.10, Concert by the Station Orchestra, conducted by Nico Treep: Overture, Oberon (Weber); Ballet Music from Rosamund (Schubert); Aria (Mendelssohn); Invitation to the Waltz (Weber); Address by D. Hans, H.M. Queen Wilhelmina; Dance of the Hours from La Gioconda (Ponchielli); Songs, (a) La Cloche (Saint-Saëns), (b) Invitation au voyage (Duparc); Prelude and Clair de lune (Massenet); March from Athalie (Mendelssohn); Selection from Hansel and Gretel (Humperdinck); Marche solennelle (Tchaikovsky). 12.10 p.m., Popular Music on Gramophone Records. 1.10, Organ Recital by Frans Hasselaar. Soloist: Willem Ravelli (Bari-tone); Prelude and Fugue (Kersbergen); Songs, (a) Arioso, Dank sei Dir Herr (Händel), (b) Aria from Joshua (Händel), (c) Aria from St. Paul (Mendelssohn); Pastorale No. 1 Op. 56 (Sam. de Lange); Carillon in F (Sam. de Lange); Dutch Songs, Improvisation on Dutch Folk Songs (Hasselaar). 2.10, Programme for Children, relayed from the Kurhaus, Scheveningen. 3.10, Dance Music from the Grand Hotel, Scheveningen. 4.10, Popular Programme. 5.10, Military Band Concert, conducted by Captain Boer: National Anthem; March (Boer); Overture, Zampa (Hérold); Waltz, Dorfschwalben aus Oesterreich (Jos. Strauss); Selection from The Barber of Seville (Rossini); Hungarian Rhapsody No. 2 (Liszt, arr. Dunkler); Selection from Faust (Gounod, arr. Dunkler). In the interval, Light Music on Gramophone Records. 6.40, Talk: The Dutch National Anthem. 7.10, Popular Music on Gramophone Records. 7.55, Concert, relayed from the Kurhaus, Scheveningen, The Residence Orchestra, conducted by Carl Schuricht. Soloist: Nathan Milstein (Violin); Piet Hein Rhapsody (van Anrooy); Concerto in E minor Op. 64 (Mendelssohn). 8.50, Variety Programme. 9.10, Concert by Kovacs Lajos and His Band. 9.40, Weather Forecast and News Bulletin. 9.50, Concert (contd.). 10.40, Popular Music on Gramophone Records. 11.40, Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.10 p.m., Announcements, News Bulletin and Popular Music on Gramophone Records. 7.45, Talk. 10.10, Concert of Dance Music. 11.0; Answers to Correspondents in French.

KAUNAS

1,935 metres; 7 kW.—7.0 p.m., Talk: The Wilno District. 7.30, Weather Forecast and News Bulletin. 8.0, Light Music on Gramophone Records. 8.30, Health Talk. 8.50, Talk: Drink and Crime. 9.10, Concert: Soloist, E. Kalesviciene: Lyric Suite (Tchaikovsky); Ballet des Parfums (Poppy); Bal costumé (Rubinstein); Sirenenzauber (Waldteufel); Romantic Overture (Keler-Bela). 11.0 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres, 54 kW. and **HELSINKI**, 368.1 metres.—6.15 p.m., Programme for Children. 7.0, Sports Notes. 7.20, Talk, followed by a Violin Recital. 7.50, Dance Music by the Amarillo Orchestra. 8.10, Song Recital by Oiva Taimi. 8.25, Dance Music (contd.). 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert of Military Music. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert; The Berlin Municipal Opera House Orchestra, conducted by Max von Schillings: (a) Du und Du—Waltz from Die Fledermaus (Johann Strauss), (b) Polka, Tritsch-Tratsch (Johann Strauss); Franz Baumann (Tenor): (a) Die alten Strassen noch (Redl), (b) La Paloma (de Yradier); Michael Schugallité and his Orchestra: (a) Selection from Countess Maritza (Kálmán), (b) Volga Song from The Czarevitch (Lehár); Tango, Fabelhaft (Meisel). 11.40, A Visit to a Children's Holiday Camp at Cologne. 12 Noon, Concert from Munich. 1.15 p.m., Weather, News, and Time Signal. 1.30, Orchestral Concert, conducted by Heinz Eccarius, relayed from Duisberg: March from Aida (Verdi); Overture, Oberon (Weber); Songs (Grieg): (a) Herzwunden, (b) Letzter Frühling; Selection from Fra Diavolo (Auber); Arabian Serenade (Langey); Die Musik kommt (Strauss); Overture, The Hermit's Bell (Maillart); March, Deutschlands Ruhm (Schróder). 2.30, Sponsored Gramophone Concert. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Review of Books. 4.40, Reading from Unpublished Literature: The Shepherd Boy (Edith von Walter). 5.0, Concert. 6.20, Talk: Social Politics. 6.45, Weather, Time,

Economic and Sports Notes. 7.0, Talk: Health Before Everything—The Hardening Process during Childhood. 7.15, Topical Talk. 7.30, Legal Talk. 7.55, First General News. 8.0, Concert by the Westphalian Wind Instrument Orchestra, conducted by Georg Reincke; Zeppelnmarsch (Teike); Overture, Poet and Peasant (Suppé); Waltz, Golden Rain (Waldteufel); March, Old Comrades (Teike); Selection from Czar and Carpenter (Lortzing); March Potpourri, Alte Deutsche Treue (Frantzen); Freiheitsmarsch (Lauklen); Two Military Marches (Fürst). 9.0, In Praise of Dancing—Programme by Franz Konrad Hoefert. 10.5, News and Sports Notes. 10.30, Concert and Dance Music, conducted by Eysoldt.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres, 2 kW. and **DRESDEN**, 319 metres.—5.0 p.m., Children's Concert by the Emdé Orchestra. Overture, The Nuremberg Doll (Adam); Waltz from Die Puppe (Bayer); Doll and Goblin (Armandola); Plaudereien aus der Kinderstube (Mannfred); Berceuse in E minor, Op. 50, No. 5 (Cui); Träumerei (Schumann); Der kleine Reiter (Lincke); Das treue deutsche Herz (Weninger); Waltz Intermezzo, Was Blumen träumen (Translatour); March, Tiroler Holzhackerbaum (Franz Wagner). 5.50, Exchange Quotations, Weather Forecast, and Time Signal. 6.10, Talk: The Operetta of To-day. 6.50, The Leipzig Station informs its Listeners. . . . 7.0 to 12 Midnight, See Vienna. In the interval at 10.5, News Bulletin. 12 Midnight, Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Quintet Concert. 7.0, Talk: Work in the Garden. 7.30, Literary Talk. 8.0, Song Recital. 8.45, Concert Relay. 10.0, Time Signal, News Bulletin, and Concert of Light Music.

LWOW

381 metres; 16 kW.—7.10, Announcements and Popular Music on Gramophone Records. 7.35, See Warsaw. 7.45, Feuilleton. 8.0, See Warsaw. 10.25, Popular Music on Gramophone Records. 10.40, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert. Melodies from: (a) The Secret Marriage (Cimarosa), (b) Benvenuto Cellini (Diaz), (c) La Bohème (Puccini), (d) Samson and Delilah (Saint-Saëns), (e) Si j'étais roi (Adam), and (f) La princesse jaune (Saint-Saëns). 7.30, Radio Gazette for Lyons and the South-east. 8.30, Ciboulette—Operetta (Hahn), relayed from Paris (Ecole Supérieure), (447.1 metres).

MADRID

ARANJUEZ (EAQ), 30.4 metres; 20 kW.—12.30 a.m. (Thursday), Light Music. 12.45, Radio Journal. 1.0, Reading of Poems. 1.35, Talk. 1.40, Concert of Popular Music. 2.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJZ, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, and Market Prices, followed by Request Gramophone Records. 9.15, News and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal, and Political Review. 11.15, The Doll's House—Play (Ibsen), arr. for Radio by Heracleo Valente. 1.15 a.m. (Thursday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—6.25 p.m., See Prague. 8.20, See Brno. 9.0, See Prague. 10.15, Programme Announcements and News Bulletin.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.30 p.m., Young Communists' Radio Journal. 7.10, Popular Music. 9.0, Review of the Week and Answers to Correspondents in French, followed by Talk in Swedish: Sport in the Soviet Union; In an Interval at 9.55, Time Signal. 11.0 (approx.), Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—6.15 p.m., French Lesson. 6.35, Talk for Women: Women on the Factory Council. 6.55, Time, Weather, and Agricultural Report. 7.5, Talk for Workers. 7.30, Folk Songs from the Bavarian Forest,

with Introductory Talk, relayed from the Tankasaal, Zwiesel. 9.0, Gramophone Concert. 9.15, Chamber Music by Detlef Grümmer (Violin), Paul Grümmer ('Cello), and Dr. Rudolf Götz (Pianoforte). 10.20, Time and News. 10.45, Concert from Langenberg. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—6.0 p.m., Song Recital. 6.30, Talk with Recitation: Girls of Yesterday and To-day. 7.0, Announcements, Weather, and News. 7.30, Talk relayed from Trondheim, 493.4 metres. 8.0, Time Signal. 8.2, Orchestral Concert. Overture, Fierrabrag (Schubert); Selection from Die Tote Stadt (Korngold); Melody from Pelléas et Mélisande (Sibelius); Larghetto from Symphony No. 1 (Schumann); La Gitana (Kreisler); La fille aux cheveux de lin (Debussy); Le Tambourin (Leclair); Suite algérienne (Saint-Saëns); Wotan's Farewell and Fire Magic from the Valkyries (Wagner). 9.30, Agricultural Report. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Recitations. 10.45, Dance Music. 12 Midnight (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALÉRMO

542 metres; 3 kW.—5.30 p.m. to 6.50, Light Music on Gramophone Records. 8.0, Announcements, Tourist Talk, Agricultural Notes, and Giornale Radio. 8.20, Popular Music on Gramophone Records. In the interval, at 8.30, Time Signal and News Bulletin. 8.45, Variety Concert: Soloists: A. Gonzaga (Soprano) and R. Profeta (Pianoforte); Danse macabre (Saint-Saëns); Songs: (a) Non ritornate rondini (Billi), (b) Aria from Faust (Gounod), (c) Il giardino dei baci (Ranzani); Intermezzo (Wolf-Ferri); Bacchanale from Philemon and Baucis (Gounod); Violin Solos: (a) Valse triste (Sibelius), (b) Pastorale and Gavotte (Ritter); Norwegian Rhapsody (Lalo). After the Concert, Talk. 10.15, Variety Music on Gramophone Records. 10.55, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE; 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 6.45 p.m., Talk on Music, with Gramophone illustrations, followed by News and Weather Report. 7.0, See Vienna.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—12 Noon to 2.0 p.m., News and Light Music on Gramophone Records. In the intervals, at 1.0, Press Review; and at 1.30, Exchange and News. 7.0, News Bulletin and Press Review. 7.5, Gramophone Concert. 7.30, Le Marchand de picarlets—Two Tableaux (Gourguillon). 8.0, Tourist Talk. 8.15, Gramophone Concert (contd.). 8.30, Radio Journal and News Bulletin. 8.45, Concert. 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Light Music on Gramophone Records. 8.0, Press Review and News. 12 Noon, Educational Talk. 12.30 p.m., Gramophone Concert of Old French Songs: Vieux airs limousins (Rouchaud); Two Songs (Weckerlin): (a) Maman, dites-moi, (b) O ma tendre Musette; Tous les Bourgeois de Châtres (Tiersot); Chantons, je vous en prie; La Franc Comtoise (Livry); Le Cornemuseux de Marmignol (Mourgues); Mixed Choir: La Noce; Two Songs: (a) Le Roi a fait battre tambour, (b) A Parthenay; Le General Finfin (Berli); (a) La Gigue, (b) La Polka; Vocal Quartets: (a) Le petit Quinquin, (b) Griseldis; Vocal Solo: Les Cloches de Nantes; Mixed Choir: En venant de Lyon (Beon); Mixed Choir: La bourrée populaire d'Auvergne Lou Bouyé (Fontbernet); Magali (Loret); Montanyas Regaladas; Le Retour du Marin (Tiersot-Hahn); Breton Folk Song, Bro Goz ma Zadou; Sea Chanties (Capt. Hayet). In the intervals, at 1.0, Exchange, News, and Weather; and at 1.30 and 2.0, Exchange. 3.45, Exchange and Market Prices. 6.30, Market Prices, Weather, Agricultural Report, Talk, and Racing Results. 7.0, Gramophone Concert: Overture, Fra Diavolo (Auber); Minuet (Bocherini); Spanish Dance (Sarasate); Jota Aragonesa (Sarasate); The Little Silver Ring (Chaminade); Le pauvre Laboureur (Tiersot); Overture, Poet and Peasant (Suppé); Jean's Song from Hérodiade (Massenet); The Letter Aria from Werther (Massenet); Humoresque (Dvorák); Melody from Les Millions d'Arlequin (Drigo); Si vous l'aviez compris (Denza); Volga Boat Song. 7.45, Commercial Prices and News. 8.0, Literary Talk. The Poems of Leconte de Lisle. 8.30, News and Weather Forecast. 8.40, Fashion Review by Mlle. José. 8.45, Concert by the Station Orchestra, with 'Cello Solos by Roger Boulmé; Rondo-Concerto in D for Piano

AUGUST 31st

WEDNESDAY

continued.

forte and String Quintet (Mozart); Songs by Rosette Anday on Gramophone Records: (a) Cecilie (Richard Strauss), (b) Beifreit (Richard Strauss). 9.15, Press Review and News. 9.30 (approx.), Concert (contd.): 'Cello Solos': (a) Adagio (Tartini), (b) Grave (Eccles), (c) Courante (Eccles); Song by Lotte Lehmann (on Gramophone Records): Frauenleben und Leben (Schumann); Trout Quintet (Schubert).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8KK on 48.85 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Bulletin. 10.12, Programme Announcements. 10.15, Programme to be announced. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News Today. 11.6, Teaberry Sports Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, KDKA Kiddies' Klub. 11.30, Westinghouse Watchmen. 11.45 to 1.15 a.m. (Thursday), New York Relay. 11.45, Literary Digest Topics in Brief, by Lowell Thomas. 12 Midnight, Pepesodet, Amos 'n' Andy. 12.15 a.m., Royal Vagabonds. 12.30, The Stebbins Boys. 12.45, Billy Jones and Ernie Hare. 1.0, Time Signal and American Taxpayers' League. 1.15, Programme to be announced. 1.30, Jack Frost Melodies. 2.0 to 3.30, New York Relay. 2.0, The Island Boat Dance Club. 2.30, Canada Dry—George Olsen's Orchestra, with Jack Benny. 3.0, The Country Doctor, from New York. 3.15, Absorbine, Jr., Footnotes. 3.30, Tish. 3.45, Around the Cracker Barrel. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last-minute News Flashes. 4.20, The Music Box. 4.30, Jack Pettis and his Orchestra. 5.0, Orchestra, from New York. 5.30, Time Signal and Goodnight.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—6.20 p.m., Talk for Children. 6.45, Gramophone Records of Light Music. 7.0, Talk on the Polish Cinema. 7.15, Miscellaneous Items and News. 7.35, See Warsaw. 7.45, Gramophone Records of Light Music. 7.58, Time Signal. 8.0, See Warsaw. 9.8, Concert Relay, 9.55, See Warsaw. 10.0, Time, Sports Notes and Police Announcements. 10.15, Dance Music on Gramophone Records. 12 Midnight, Close Down.

PRAGUE

488.6 metres; 120 kW.—3.55 p.m., Market Prices. 5.50, Talk. 6.0, Talk on Enrico Caruso and Karel Burian. 6.10, Agricultural Report. 6.15, Light Music on Gramophone Records. 6.25, German Transmission. News Bulletin, followed by Programme for Children, and Talk: Technique and Social Politics. 7.0, Sonata for Violin and Guitar (Paganini). 7.30, Pianoforte Recital by Anna Kremanova: Kreisleriana, Op. 16 (Schumann); Scherzo in B minor (Chopin). 8.20, See Brno. 9.0, Time Signal and News Bulletin, followed by Orchestral Concert conducted by O. Jeremias. 10.0, Time, News and Sports Notes and Miscellaneous Items.

RABAT

416 metres; 6 kW.—8.30 p.m., Gramophone Records of Light Music. 8.45, Le Journal Parlé, Weather, and News. 9.0, Concert; Waltz (Ziehrer): Si vous l'aviez compris (Denza); Overture, Der Bettelstudent (Müllacker); Song from Romeo and Juliet (Gounod); Crépuscule (Massenet-Mouton); Selection from Don Giovanni (Mozart); Song from The Damnation of Faust (Berlioz); Scenes napolitaines (Massenet-Mouton); Aria from Lohengrin (Wagner); Pianoforte Solo, Humoresque (Schumann); Concerto for Two Violins (Bach). In the intervals. Exchange Quotations and Talk; Gramophone Concert of Variety Music.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres, 25 kW. LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40, Orchestral Concert. 1.0, Financial Notes. 1.5, Orchestral Concert (contd.). 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, Concert by a String Orchestra. 6.30 (from Lausanne), Book Review. 7.0, Weather Forecast. 7.1 (from Lausanne), Popular Music on Gramophone Records. 7.30 (from Lausanne), Talk on Dairy Organisation. 7.55, News Bulletin. 8.0, Concert by the Station Orchestra. 9.0 (from Lausanne), Dramatic Programme. 10.0, News Bulletin and Weather Forecast. 10.10 (from Geneva), Dance Music on Gramophone Records. 11.0 (approx.) Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.0 a.m., Weather Report. 5.0 p.m., Weather Forecast. 8.30, Weather Report. 8.40, Popular Music by the Radio Quartet. 9.0, Chimes, Organ Recital, and Light Music on Gramophone Records. 9.30, News Bulletin.

RIGA

525 metres; 15 kW.—6.0 p.m., Talk: Nietzsche's Thus spake Zarathustra. 6.30, Agricultural Talk. 7.0, Weather Forecast. 7.5, Operetta Concert; Overture, Orpheus in the Underworld (Offenbach); Waltz from The Merry Peasant (Fall); Overture, Der Opernball (Heuberger); Selection from The Dollar Princess (Fall); Overture, Das Waldmeister (Johann Strauss); March from Der Bettelstudent (Müllacker). 8.0, News Bulletin. 8.20, Vocal and Instrumental Concert. 9.0, Weather Report. 9.30, Concert, 10.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 190, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 290, 80 metres.—8.15 to 8.30 a.m., Giornale Radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Light Music. 1.0 to 2.15, Sextet Concert: Andalusian Rhapsody, Preziosilla (Schinelli); Bumba, Nostalgia cubana (Redi); Selection from Madama di Tebe (Lombardo); Violin Solos: (a) Bohemian Serenade (Valdez), (b) Gipsy Caprice (Kreisler), (c) Moto perpetuo (Ries); Waltz, Signora Felicita (Moletti); Selection from Adrienne Lecouvreur (Cilea); Foxtrot, All'aperto (Villa). In the intervals, at 1.20, Giornale Radio and Exchange; and at 1.30, Time and Announcements. 5.0, Exchange, Report of the Royal Geographical Society, Children's Radio Review, Giornale Radio, and Announcements. 5.30, Vocal and Instrumental Concert: Vittorina Bucci (Pianoforte) and Virginia Brunetto (Soprano): Pianoforte Solos: (a) Le Royaume des oiseaux (Rameau), (b) Tempo di minuetto (Martini), (c) Moment musical (Schubert); Soprano Solos: (a) Aria from La Sonnambula (Bellini), (b) Aria from Falstaff (Verdi); Pianoforte Solo: Jardins sous la pluie (Debussy); Two Duets: (a) Duet from Linda di Chamonix (Donizetti), (b) Duet from Dinorah (Meyerbeer). 7.10 (Naples), Shipping and Sports Notes. 7.15, Agricultural and Sports Notes, and Giornale Radio. 8.0, Time and Announcements. 8.15, Medical Talk. 8.30, Sports Notes, Announcements, and Tourist Report. 8.45, I Vespri Siciliani (Sicilian Vespers)—Opera in Three Acts (Verdi). In the intervals: Scientific Review and Talk. News after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—9.0 p.m., Song Souvenirs, from New York. 9.30, Studio Ensemble. 9.54, U.S. Navy Time Signals. 10.0, Stock Reports and Police Notices. 10.15, Swanee Serenaders, from New York. 10.30, Beau Balladeur, from New York. 10.40, A.B.C. Thumbnail Sketches. 10.45, Soloist Programme, from New York. 11.0, Ma Frasier's Boarding House. 11.15, Health Talk. 11.20, Ollie Yettru (Pianist). 11.30, When Day is Done Programme. 11.55, Baseball Scores. 12 Midnight (WGY only), Intermezzo d'Italia Programme. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Thursday), Chandu, the Magician. 12.30 to 4.15, New York Relay. 12.30, Maxwell Time Blenders. 12.45, The Goldbergs. 1.0, Big Time. 1.30, Musical Programme. 2.0, Goodyear Programme. 2.30, Mobiloil Concert. 3.0, The Corn Cob Pipe Club of Virginia. 3.30, Echoes of the Palisades. 4.0, Nellie Revell. 4.15, Carmelo Cascio (Pianist). 4.30, Vincent Lopez and his Orchestra, from New York. 5.0, New Kenmore Orchestra. 5.30, WGY Sign Off.

SCHWEIZERISCHER LANDESENDER

BEROMUNSTER, 459 metres; 60 kW.; BASEL, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Variety Concert on Gramophone Records. 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Light Music on Gramophone Records. 4.30 (from Berne), Reading for Children. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Berne), Capitalist v. Socialist—a Discussion. 7.0, Time Signal and Weather Forecast. 7.5 (from Zürich), Technical Talk on Wireless. 7.30 (from Zürich), Glänzhilf Programme. 9.30, Weather Forecast and News Bulletin. 9.45, Schubert Concert by the Station Orchestra. Conductor, H. Hofman. 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Programme for Children. 5.30, Swedish Folk Song Recital. 5.45, Popu-

lar Music on Gramophone Records. 6.45, Agricultural Talk. 7.45, Weather and News. 7.30 (from Östersund), Talk: Shooting in the Olden Times. 8.0, I Paggiacci—Opera in Two Acts (Leoncavallo), relayed from the Royal Opera House. 9.20, Talk in English by Sir Henry Penson: The Crisis in England, relayed from Malmö (231 metres). 9.45, Weather and News. 10.0, Concert of Modern Dance Music. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Classical Music. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.2, Exchange Quotations. 1.10, Concert, relayed from Bordeaux-Lafayette. 1.50, Gramophone Records of Light Music. 2.0 to 4.45, No Transmission. 4.45, Talk in German: Electric Kettles. 5.0, Orchestral Concert: March, The Diplomat (Sousa); Waltz, The Lotus Flower (Ohlsen); Promenade amoureuse (Faucher); Melody (Rubinstein); Selection from The Gipsy Baron (Joh. Strauss); International Suite (Tchaikovsky); Dancing Moon (Aubry); The Farewell of the Gladiators (Blankenburg). 6.0, Talk in French: Modern Italian Music. 6.15, Medical Talk in German. 6.30, Orchestral Concert: Overture, Maritana (Wallace); Suite, Callirhoë (Chaminade); Song of the Bees (Filippucci); Selection from Il Trovatore (Verdi); Spanish Rhapsody (Richardy); Minuet (Paderewsky); March, Apollo (Gawin). 7.30, Time Signal. 7.32, News in French and German. 7.45, Handel Sonatas—a Violin and Pianoforte Recital: Sonata in F; Sonata in A. 8.30, Orchestral Concert, relayed from Plombières-les-Bains: Overture, Figaro (Mozart); Nocturne from La Reine Fiamette (Leroux); Suite from La Légende du Point d'Artagnan (Fourdrain); Selection from Ghismondia (Février); Two Hungarian Dances, Nos. 5 and 6 (Brahms); Selection from Lohengrin (Wagner). 10.0, Waltzes on Gramophone Records: Roses from the South (Joh. Strauss); Two Guitars; From the Rhine to the Danube (Rhode); Morgenblüher (Joh. Strauss); Tales from the Vienna Woods (Joh. Strauss); Valse Bleue (Margis); Etincelles (Waldteufel); Künstlerleben (Joh. Strauss). 10.30, Dance Music from the Savoy. 12 Midnight, Close Down.

STUTTGART

MUHLACKER, 360.5 metres, 60 kW.; and FREIBURG, 570 metres.—10.0 a.m., Violin Music of Other Nations—The Latin Countries: Kurt Krause (Violin) and Trante Jarges (Pianoforte). Italy: (a) Passacaglia (Vittorio Gui), (b) Momenti agresti (Bossi); Spain: (a) Two Pieces (Joaquin Nin), (b) Spanish Dance (Granados), (c) Popular Spanish Suite (Falla); France: Sonata in D minor, Op. 75 (Saint-Saëns). 11.0, Time, Weather, and News. 11.15, Sponsored Concert. 11.55, Weather. 12 Noon, Concert from Munich. 1.15 p.m., Time, Weather, News, and Programme Announcements. 1.30, Gramophone Records of Folk Dances: Potpourri of Swabian Ländler (Lindemann); Alsatian Peasant Dances Nos. 1 and 2 (Merkell); Appenzell Dances and Melodies (Nef). 2.0 to 2.15, Sponsored Gramophone Music. 2.30 (from Freiburg), Talk: Women Workers and Welfare Work. 3.0, Programme for Young People. 4.0 (from Badenweiler), Orchestral Concert conducted by Albert Hirtzig. Overture, Oberon (Weber); Waltz, Künstlerleben (Johann Strauss); Selection from La Traviata (Verdi); Serenade (Heykens); Selection from The Maid of the Black Forest (Jessel); March, Deutschlands Ruhm (Schröder). 5.0, See Frankfurt. 6.15, Time, Weather, and Agricultural Notes. 6.25, Legal Talk. 6.50, Time and Weather. 7.0, See Vienna. 10.0, See Frankfurt. 10.20, Time, Weather, News, and Programme Announcements. 10.45, Concert from Vienna. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Chansonnettes. 5.45, Opera Music: Airs from (a) Parsifal (Wagner), and (b) Don Juan (Mozart). 6.0, Soloist Programme. 6.15, Opera Music: Airs from (a) Manon Lescaut (Fuccini), (b) Don Quixote (Massenet), (c) Le Pré aux Clercs (Hérold). 6.30, Exchange and Horse Racing Results. 6.45, Musical Programme: Andante (DuBussy); Serenade (Gounod); Extase (Ganne); Souvenirs (Nicholls). 7.0, Accordion Recital. 7.15, Chansonnettes. 7.30, Programme Announcements and News. 7.45, Dance Music. 8.0, Programme by a Viennese Orchestra. 8.30, Sound Film Music. 8.45, Concert: Cordoba (Alhéniz); Overture, Raymond (Thomas); C'est l'amour from Les Saltimbanques (Ganne); Air from The Drum Major's Daughter (Offenbach); Two Airs from La Mascotte (Audran). 9.15, Hunting Horn Solos. 9.20, Opera Music: Airs from (a) Il Trovatore (Verdi), (b) William Tell (Rossini), and (c) L'Africaine (Meyerbeer);

followed by Military Music. 10.0, Orchestral Music. 10.15, Chansonnettes and Humorous Items. 10.30, North African News. 10.45, Organ Recital: Indian Love Call (Fröml); Wedding Waltz (Lincke); Gold and Silver (Lehár); Melody from The Desert Song (Romberg). 11.0, Concert of Variety Music. 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.0 p.m., Quintet Concert: Menelik (Lunetta); Applause (Manfred); Lacrime d'amore (Marchetti); Melody (Senig); Schumann Potpourri (arr. Urbach); Melody (Siede); Rumba (Fragna). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—6.35 p.m., Giornale Radio, Agricultural Notes and Announcements. 7.0, Musical Programme: Spanish Dance (Gai); On the Blue Hawaiian Waters (Ketelbey); A Night on the Volga (Italo Russo). 7.25, Tourist Report. 7.30, Time, Announcements, and Gramophone Records of Variety Music. 8.0, Giornale Radio and Weather. 8.15, Medical Talk. 8.30, A Comedy in Three Acts, followed by Dance Music from the Luna Park Lido, Milan. 11.0, Giornale Radio.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in Spanish. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—6.15 p.m., Talk by the Bulgarian Ambassador on the Bulgarian Exhibition at the Vienna Fair. 6.25, Nature Talk. 6.50, Time, Weather and Programme Announcements. 7.0, Fidelio—Opera (Beethoven), conducted by Richard Strauss, relayed from the Festival Theatre, Salzburg; The Vienna Philharmonic Orchestra and the Vienna Grand Opera Chorus. 9.55, News, Weather and Announcements. 10.10, Concert of Light Music by Josef Halzer's Orchestra: Fliegermarsch (Dostal); Waltz from A Waltz Dream (O. Strauss); Overture, Reiche Mädchen (Joh. Strauss); Ländler, Grossmütterchen (Langer); Waltz, Durch die weiten Felder (Lehár); Hungarian Dance Suite (Kalmán); Viennese Song; Wenn dich ein Wiener Mädel küsst (Engel); Song, Das Töchterlein des Herrn Pedell (Leopoldi); Potpourri of Old Viennese Songs (Muus); Overture, Boccaccio (Suppé); Variations on the Song, Oh du lieber Augustin (Neumann); Waltz, Der Himmel voller Geig'n (Ziehrer); Potpourri of Viennese Folk Music (Kozmach).

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Gramophone Records (contd.). 2.10, Interval. 3.0, Economic Report. 3.10, Popular Music on Gramophone Records. 3.35, Naval and Colonial Notes. 3.40, Talk for Young People. 3.53, Programme for Children. 4.5, Variety Music on Gramophone Records. 4.35, Announcements. 4.40, Answers to Correspondents. 5.0, Concert of Ballet Music by the Station Orchestra: Music from Les Petits Riens (Mozart); Ballet Music from Rosamunde (Schubert); Ballet Suite from Lakmé (Delibes); The Queen of Spades (Tchaikovsky) and Rienzi (Wagner). 6.0, Talk. 6.20, Concert of Ballet Music, relayed from the Café de l'Europe. 7.10, Miscellaneous Announcements. 7.35, Radio Journal. 7.45, Agricultural Notes. 7.55, Programme Announcements. 8.0, Concert of Light Music. 8.45, Reading from David Copperfield (Charles Dickens). 9.0, Concert Relay. 9.55, Radio Journal. 10.0, Aviation Weather Forecast. 10.5, Dance Music. 10.25, Talk in French. 10.40, Sports Notes. 10.50, Dance Music (contd.). 11.30 (approx.), Close Down.

WILNO

563 metres; 16 kW.—5.0 p.m., see Warsaw. 7.10, Talk on Lithuanian Economics. 7.25, Variety Music on Gramophone Records. 7.35, See Warsaw. 7.45, Programme Announcements and Miscellaneous Items. 8.0, See Warsaw. 10.25, Gramophone Records of Popular Music. 10.40, See Warsaw. 11.30 (approx.), Close Down.

ZAGREB

307 metres; 0.75 kW.—6.35 p.m., Reports and Announcements. 6.50, Talk on the following Transmission. 7.0, See Vienna. 9.55, News Bulletin and Weather Forecast.

ZURICH.—See Schweizerischer Landessender.

ALGIERS

363.3 metres; 13 kW.—7.0 p.m., Exchange Quotations and Market Prices. 7.10, Shipping Notes, and Weather Forecast. 7.15, Talk: Curiosities and Pastimes. 7.30, Recital of Humorous Songs. 7.40, Recitations. 7.55, News Bulletin. 8.0, Popular Songs. 8.15, Opera Music. 8.30, A Sketch. 8.45, Classical Music. 9.0, Request Gramophone Records.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 349 metres; 8 kW.—8.0 p.m., Trio Concert. 8.30, Health Talk, followed by Exchange Quotations, Request Gramophone Records and News Bulletin. 10.0, Chimes, Weather Forecast, and Market Prices. 10.5, Orchestral Concert—The March of the Grenadiers (Schertzingler); Waltz, El Mensajero (Escalas); Selection from Phi-Phi (H. Christiné); Overture, Fingal's Cave (Mendelssohn). 10.30, Dance Music. 11.15, Concert relayed from the Café Español. 1.0 a.m. (Friday), Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.2 p.m., Gramophone Concert of Light Music, followed by Weather for Farmers. 12.55, Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of Light Music, relayed from Berlin (Witzleben). 3.0, Musical Programme for Children. 3.30, Weather and Exchange Quotations. 3.45, Talk for Women. 4.0, Educational Talk. 4.30, Concert from Berlin (Witzleben). 5.30, Talk: German Activities in the Caroline Islands. 6.0, Talk: Modern Pianoforte Music. 6.30, Spanish Lesson. 6.55, Weather for Farmers. 7.0, Agricultural Talk. 7.30, Topical Talk, followed by Weather for Farmers. 7.50, See Frankfurt. 9.0, See Langenberg. 10.0, Weather, News, and Sports Notes. 10.30, Concert from Langenberg. 12 Midnight, Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.30 p.m., Chamber Music. 5.30, Reading. 5.50, Talk by Dr. Erwin Münch. 6.15, J. E. Poritzky reads from his own works. 6.30, Orchestral Concert from the Lunapark. 6.55, The Witzleben Station informs its Listeners. . . . 7.0, Topical Talk. 7.10, Talk: Autarchy or World Economics? 7.35, Topical Programme. 8.0, Programme relayed from the Municipal Theatre, Stettin, 283 metres. 9.15, Reading from Noah's Ark (Brehms). 10.15, Weather, News, and Sports Notes. 10.30 (approx.), Concert from Langenberg. 12 Midnight, Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER.—See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—7.30 p.m., News and Exchange Quotations. 7.40, Talk for Workers. 7.55, Lottery Results and results of the Chardes Competition. 8.0, Popular Music on Gramophone Records. 8.15, News and Weather Report. 8.30, Light Music on Gramophone Records. 9.0, Le Voile déchiré Comedy in Two Acts (Pierre Wolff).

BRATISLAVA

279 metres; 14 kW.—6.0 p.m., Astronomical Talk. 6.15, Light Music on Gramophone Records. 6.40, Song Recital. 7.0, See Brno. 7.50, See Prague. 10.15, Programme Announcements. 10.20, See Prague.

BREMEN.—See Hamburg

BRESLAU

325 metres; 1.5 kW.; and GLEIWITZ, 253 metres.—6.40, Technical Talk. 7.0, Song Cycle, Frauenliebe und Leben (Schumann) on Gramophone Records by Lotte Lehmann (Soprano). 7.30, Weather for Farmers. 7.32, Talk on Goethe. 8.0, Concert by the Station Orchestra, conducted by Franz Marszalek. 9.0, See Langenberg. 10.0, Time and News. 10.30, Talk in Esperanto: The Baroque Period in Silesia. 10.40, Mandoline Concert: Overture in F Sharp Minor (Wälki); Symphony in E Minor in One Movement (Wälki); Concert Waltz, White Chrysanthemums (Wilhelm); March, Amazoneritt (Ritter); Potpourri, Im Wald und auf der Heide (Wormsbacher); Spanish Rhapsody (Salvetti). 11.40, Silent Night.

BRNO

342 metres; 35 kW.—6.0 p.m., Talk for Women: Completing the Education of Girls. 6.15, See Prague. 6.25, German Transmissions: News and a Sketch. 7.0, Band Concert. 7.50, Talk. 8.0, Pianoforte Recital. 8.30, Two Radio Sketches. 9.0, Orchestral Concert. 10.0, See Prague. 10.15, News Bulletin. 10.20, See Prague.

BRUSSELS (No. 1)

I.N.R., 509 metres; 15 kW.—12 Noon, Gramophone Concert of Light Music. 1.0 p.m., Le Journal Parlé. 1.10, Gramophone Concert (continued). 5.0, Concert by the Radio Or-

chestra, conducted by Franz André; Soloists: M. Misson (Violin) and M. Gazon (Saxophone); Joyeuse marche (Chabrier); Suite from Agnès, Dame galante (Février); Andante et Finale for Violin (Guillaume); Saxophone Solo; Old French Songs (Broustet); Egyptian March (Strauss). 5.45, Programme for Children. 6.30, Gramophone Concert: La Bataille de Marignan (Jeanquin); Selection from Tannhäuser (Wagner); Habanera (Ravel); Marlborough (Paradis); Rachel, quand tu Seigneur, from La Juive (Halévy); Potpourri of Viennese Operetta Melodies (Robrecht); Overture, Orpheus in the Underworld (Offenbach). 7.15, Talk for Workers. 7.30, Le Journal Parlé. 8.0, Choral Concert. 8.45, Talk. 9.0, Concert relayed from the Kursaal, Ostend, Conductor: Toussaint de Sutter; Soloist: Alfred Dubois (Violin); Symphony No. 2 (Bruckner); Concerto for Violin and Orchestra (Beethoven); Overture, Cyrano de Bergerac (Wagenaar). After the Concert, Le Journal Parlé and Gramophone Concert; Melodies from Les Mousquetaires au Couvent (Varney); Lamento (Grovlez); Tarentella (Grovlez); Melodies from Boccaello (Suppé). 11.0 (approx.), Close Down.

BRUSSELS (No. 2)

N.I.R., 338.2 metres, 15 kW.—Programme in Flemish. 12 Noon, Selection from Mephistopheles (Boito) on Gramophone Records. 1.0 p.m., Le Journal Parlé. 1.10, Mephistopheles (continued). 5.0, Symphony Concert; Conductor: M. Meulemans; Symphony in B flat (Schubert); Overture, Patria (Germany); Songs, Dances from Nell Gwyn (Ryman); Selection from Scheherazade (Rimsky-Korsakov). 6.0, Wembley Military Tattoo on Gramophone Records. 6.15, Talk on Folk Lore. 6.30, Concert on Gramophone Records: (a) Pictures from an Exhibition (Mussorgsky); (b) Marina; (c) Rapsodie viennoise (F. Schmidt). 7.15, A. Thiry reads from his own works. 7.30, Film Review. 8.0, Concert by the Radio Orchestra: Conductor, M. Franz André; Marche du progrès (Benhaes); Melodientraum (Urbach). 8.20, Reading, (Jaroslav Hasek). 8.45, Concert (contd.): Violin Solo, Aubade (Caludi); Badinage (d'Agèves); 'Cello Solo, Orientale (C. Gut); Scènes anglaises (Bantock); Réverie (Faulk); Waltz from Die geschiedene Frau (Fall); Foxtrot, We'll be together (Nicholls); Foxtrot (Poussigne); Potpourri (Seifenblasen (Urbach). 10.0, Le Journal Parlé. 10.10, Concert of Light Music. 11.0 (approx.), Close Down.

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Light Music and Romanian Music by the Dinico Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Orchestral Concert (contd.). 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records. 7.0, Song Recital by M. Stefanovici. 7.20, Sym-

phony Concert by the Station Orchestra. 8.0, Talk. 8.15, Symphony Concert (contd.). 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 210 metres from 6.45 p.m. to 12 Midnight.—5.25 p.m., Song and Pianoforte Recital: Songs: (a) Amarilli (Caccini), (b) Du bist wie eine Blume (Schumann), (c) Aria from Aida (Verdi); Hungarian Dances (Kodaly); Two Arias (Mozart): (a) Aria from The Magic Flute, (b) Aria from Il Seraglio; Three Songs: (a) Elkgie (Mascenet), (b) Mattinata (Leoncavallo), (c) Song (Lavotta); Schatzwalzer (Strauss-Dohnanyi); Two Songs: (a) Song from Die Fledermaus (Strauss), (b) Song from The Land of Smiles (Lehar); Serenade (Lengyel); Song (Szogi); Song (Fichtner); Concert Paraphrase on Rigoletto (Verdi-Liszt); Song (Radnay); Märchen (Kodaly). 6.45, Talk. 7.15, Cigány Concert. 8.30, News Bulletin. 8.45, Concert by the Royal Hungarian Opera House Orchestra, conducted by Ernest Dohnanyi; Overture, The Barber of Bagdad (Cornelius); Symphony in E flat (Goldmark); Ballet Music from Les petits riens (Mozart); Three Hungarian Sketches (Volksmann-Butyaki). 10.15, Weather, followed by Gramophone Dance Music. 12 Midnight (approx.), Close Down.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW.; and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, relayed from the Wivex Restaurant. 2.0 to 3.0, Interval. 3.0, Concert by Louis Preil's Instrumental Ensemble: March (Wilczynsky-Krome); Waltz (Menichetti); Hungary (A. F. Back); Vidste Du (Enna); Venetian Serenade (Svendsen); Intermezzo, Zazra (Bowen); Two Dances from The Nutcracker Suite (Tchaikovsky): (a) Danse des Mirlitons, (b) Chinese Dance; Foxtrot, Oh, That Mitz (O. Straus); Reading, Poème d'extase (Bullerian); Waltz Potpourri (Robrecht); Notre melancolie (Demaret); Selection from Dédé (Christiné); Ay-Ay (Perez-Freire); Tango (Valerio); Serenade (Simonetti); Pasodoble, El Conquistador (Orlando). 5.0, Programme for Boys. 5.40, Exchange and Fish Market Prices. 5.50, Talk. 6.20, English Lesson for Beginners. 6.50, Weather Forecast. 7.0, News Bulletin. 7.15, Time Signal. 7.20, Legal Talk. 7.50, Relay from the Royal Theatre—a visit behind the Scenes and in the Auditorium during a Play by Hastrup. 8.25, Danish Waltzes and Marches by the Station Orchestra, conducted by Emil Reesen: March (Kuhlau); Waltz and March from Et Folkesagn (Gade); Waltz from Kildereisen (J. P. E. Hartmann); Festival March (Lumbye); Waltz, Pomona (Lumbye); Mac-

THURSDAY

SEPTEMBER THE FIRST

PRINCIPAL EVENTS OF THE DAY:

AT HOME

- NATIONAL** Organ music. Orchestral music. Sonata recital. Dance music. "Pride and Prejudice," by Jane Austen, read by Mr. Ronald Watkins. Choral programme. Promenade concert. Mr. Vernon Bartlett: "The Way of the World."
- LONDON REGIONAL** National programme. Orchestral music. Organ music. Orchestral concert. "The Finchbeck Ring," an original play by Felix Aylmer.
- MIDLAND REGIONAL** North Regional programme. Organ music. Choral concert. Orchestral concert.
- NORTH REGIONAL** National programme. Orchestral music. Midland Regional programme. "The Bouquets" Concert Party, from Scarborough.
- WEST REGIONAL** National programme. Orchestral concert. Organ music. National programme. Light music.
- SCOTTISH REGIONAL** National programme. Organ music. Miss Evelyn Douglas, "Playing with Children—Happy Hunting Grounds."
- BELFAST** Orchestral music. Eye-witness account of the International Ulster Grand Prix Motor Cycle Practice Trials, by H. W. McMullan. Operatic programme.

ABROAD

- COPENHAGEN** Relay from Royal Theatre: A Visit Behind the Scenes.
- LAHTI** Saxophone recital.
- PARIS (Radio-Paris)** Concert of old French songs on gramophone records.
- TURIN** Opera in three acts: "Maggioleta Veneziana" (Rito Selvaggi).
- WARSAW** Concert of popular classics.

Mahon March (Lumbye); Waltz from The Little Mermaid (F. Henriques); March from Modern (Nielsen). 9.10, Talk. 9.40, Partita in C for Harpsichord (Handel), by Folmer Jensen. 9.55, Readings. 10.15, News Bulletin. 10.30, Concert of Modern Operetta Music; The Station Orchestra, conducted by Emil Reesen; Selection from Der Zigeunerprimas (Kálmán); Waltz from Gipsy Love (Lehár); Selection from Sunny (Kern); March from The Merry Widow (Lehár). 11.0 (approx.), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.10 p.m., Miscellaneous Items, News Bulletin, and Programme Announcements. 7.35, Radio Journal. 7.45, Talk. 8.0, Song and Violin Recital. 9.20, Relay from Wlino, 563 metres, and Warsaw. 10.40, Sports Notes. 10.50, Dance Music from Warsaw.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Forecast, Stock Report and Light Music on Gramophone Records. 6.0, Popular Music on Gramophone Records. 6.15, Programme for Children. 7.0, Popular Music on Gramophone Records. 7.10, News Bulletin. 7.30, Time Signal. 7.31, French Lesson. 7.45, Literary and Dramatic Talks. 8.0, Irish Music by the Station Sextet. 8.30, Harp Solos by Annie Fagan. 8.45, Celtic Song Recital by Olive Gilbert. 9.0, Sketch by The Mystics. 9.30, Violin Recital of Folk Music by T. Collins. 9.45, Tenor Solos by Lionel Boardman. 10.0, Recital by the Station Sextet. 10.30, Time Signal, News, Weather Report and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Light Music on Gramophone Records. 12.30 p.m., News Bulletin. 12.45, Concert of Popular Music. 7.30, Radio Gazette. 8.0, News Bulletin. 8.30, Concert relayed from the Town Hall, Rouen.—Programme in English by the I.B.C.—10.0 p.m., Dance Music by the Ibcollans: Ten Cents a Dance; The Queen was in the Parlour; Whistling in the Dark; Smile, darn ya, Smile; Pardon me, Pretty Baby; That's keeping my Prince Charming; Two Heads in the Moonlight; Jolly Good Company; Le Chemin de Paradis; Roll on, Mississippi, roll on; We're all good Pals at Last; When You were the Blossom; If you're really and truly in love; The Hour of Parting; Out of the Blue; I surrender, dear. 11.0, Symphony Concert: Rakoczy March, from The Damnation of Faust (Berlioz); Violin: Air on the G String (Bach); Night on the Bare Mountain (Mussorgsky); Melody from I Pagliacci (Leoncavallo); Slav Dance No. 10 (Dvorak); Selection from The Swan Lake (Tchaikovsky); Liebestraum (Liszt). 11.30, Vocal and Orchestral Music: Orchestra: Dance while the Music is ringing; Songs: (a) Down the Lane to Home, Sweet Home, (b) Ragamuffin Romeo; Orchestra: (a) River, stay 'way from my Door, (b) When it's Night Time in Nevada; Songs: (a) My Song, (b) It happened in Monterey; Orchestra: The Match Parade. 12 Midnight, Dance Music by the Ibcollans: You forgot your Gloves; They all make Love but Me; Tom Thumb's Drum; One little Rain drop; My Baby says Yes! Yes!; Put your loving arms around me; Making Faces at the Man in the Moon; Meet me To-night in the Cowshed; Just once for all time; Love Letters in the Sand; Life is just a Bowl of Cherries; Lies; When I dance with you; It's great to be in Love; Black Eyes; Got a Date with an Angel. 12.57 a.m. (Friday), I.B.C. Good-night Melody. 1.0, Close Down.

FLensburg.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres; 1.5 kW.; and CASSEL, 246 metres.—3.0 p.m., Programme for Children. 4.0, Time and Exchange Quotations. 4.50, Time and Exchange Quotations. 5.0, Orchestral Concert: Soloist: Hilda Crevenna (Soprano); Overture, The Taming of the Shrew (Goetz); Song from The Taming of the Shrew (Goetz); Overture and Ballet Music from Undine (Lortzing); Melodies from Eugen Onegin (Tchaikovsky); Overture, The Bartered Bride (Smetana); Two Songs from The Bartered Bride (Smetana); March from The Bartered Bride (Smetana). 6.15, Time and Exchange Quotations. 6.25, Topical Talk. 6.50, Talk: Modern Astrology. 7.15, Time, Programme Announcements, Weather Forecast and Economic Notes. 7.30, See Stuttgart. 7.50, From the Deutsche Eck to the Rittersturz—a Coblenz Programme. 9.0, See Langenberg. 10.0, See Stuttgart. 10.25, Time and News. 10.45, Silent Night.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENOVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha (in Morse), 372 metres; 1.5 kW. Relayed from Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—5.30 p.m., Talk: Germany's Part in International Social Reform. 5.55, Laterne, Laterne, Sonne, Mond und Sterne—A Play for Children in North German Dialect (Maass). 6.30, Talk on Homeopathy. 6.55, Frankfurt Exchange. 7.0, Topical Talk. 7.15, Weather Report. 7.20, Ernst Gläser reads from his own works. 8.0, (from Hanover), Nature's Moods—A Concert by the Hanover Station Orchestra, Conducted by Otto Ebel von Sosen: Soloists: Fritz Zille (Flute); Otto Ebel von Sosen (Pianoforte); and Emil Bartels (Cello); Flute and Pianoforte Duet: Nocturne from Summer Nights (E. Schütt); Moonlight (Mac Dowell); Pianoforte Solo: Weerspiele (Niemann); Tanz der Luft und Meerestier (Humperdinck); Cello Solo: Sur le lac (Godard); Am Meerstrand (Jensen); Melody from Die Vögel (Braunfels). 8.50, News Bulletin. 9.0, Dickköpp—Humorous Radio Play (Otto Franz Grund). 10.0, Time and News. 10.20, Concert of Waltzes and Operetta Music, relayed from the Ostermann Restaurant.

HANOVER.—See Hamburg

HEILSBURG

276.5 metres, 60 kW.; and DANZIG, 453.2 metres.—1.5 to 2.30 p.m., Concert by the Little Orag Orchestra, conducted by Eugen Wilken: Hensel-Marsch (Wohler); Overture, Marco Spada (Auber); Selection from Samson and Delilah (Saint-Saëns); Waltz, Dreams on the Ocean (Gungl); Cockney Suite (Kettelbey); Czardas No. 8 (Michiels). 3.30, Programme for Children. 4.0, Programme for Young People. 4.30, Concert by the Little Orag Orchestra, conducted by Eugen Wilken: Waltz, Mein Bad'n (Komzak); Suite, Musikanten (Geisler); Overture, Der Waffenschmied (Lortz); Variations in the Style of New Masters on 's kommt ein Vogel geflogen (Reckenwald); Selection from Il Trovatore (Verdi); Waltz No. 2, Op. 54 (Dvorák); Travel Pictures of Old China (Percy); Overture, Othello (Verdi). 5.45, Review of New Books. 6.15, Market Prices. 6.30, Agricultural Talk. 7.0, Forest Studies—by Dr. Ludwig Koegel. 7.25, Folk Songs by Friedrich Slicher—sung in their original setting by Hermann Munk, with guitar accompaniment: Four Songs, (a) Der Schäfer, (b) Blümeli, (c) Liebesschmerz, (d) Der Jäger und die Nixe; Four Songs, (a) Liebesqual, (b) Das Gedenken, (c) Ade! (d) Abschied; Four Songs, (a) Schäferliedchen, (b) Der Lenz ist angekommen, (c) Juchhei, dich muss ich haben, (d) Juchhei, Blümlein. 7.55, Weather Forecast. 8.0 to 9.55 (approx.). See Langenberg. 9.55 (approx.), Wolfgang Gilbert Koppert reads from his book—Nacherleben einer Orientreise. 10.20, Weather, News and Sports Notes.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—7.40 to 8.55 a.m., Programme of the Catholic Radio Society (K.R.O.). Gramophone Records of Variety Music. 9.40 to 10.40, Programme of the Christian Radio Society (N.C.R.V.). 9.40, Variety Music on Gramophone Records. 9.55, Programme for Hospitals. 10.25, Gramophone Records of Variety Music. 10.40 to 1.40, K.R.O. Programme. 10.40, Gramophone Concert of Variety Music. 11.10, Religious Address. 11.40, Police Notes. 11.55, Orchestral Concert, conducted by Johan Gerritsen. 1.40 p.m. till Close Down, N.C.R.V. Programme. 1.40, Handicrafts Lesson. 2.40, Programme for Women. 3.10 to 3.40, Interval. 3.40, Programme for Hospitals. 4.40, Handicrafts Lesson for Young People. 5.25, Song Recital: Aria from Judas Maccabeus (Händel); Sei nur still (Franck); Prayer (Hiller); Die Ehre Gottes aus der Natur (Beethoven); Du bist O' Herr mein Schirm und Schild (Dvorak); God hear my Prayer; Melodies (Schubert): (a) Heidenröslein, (b) Du bist die Ruh, (c) Erlkönig, (d) An die Musik; Preisinn (Schumann); Lied eines Schmiedes (Visser); Three Dutch Songs (arr. Röntgen and Nicolai); Visscherliedeken (Blockx); Ons Vaderland (Hol); Bede voor het Vaderland (Röntgen); Wilhelmus. 6.25, Dressmaking Lesson. 6.40, Talk. 7.10, Police Notes. 7.25, Religious Notes. 7.40, Light Music on Gramophone Records. 8.40, Talk. 9.10, Quintet Concert, conducted by M. Hurk: Studentenmusik (Rosenmüller); Sonata No. 6 (Steffani); Divertissement in D (Haydn); Quartet, Op. 101, in F (Mozart); Serenade, Op. 25 (Beethoven); Serenade, Op. 77 (Reger); Badinage (Cui); Berceuse (Cui). 9.50 (in an interval), News. 10.40, Variety Concert on Gramophone Records. 11.10 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW. Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.).—7.40 a.m.,

SEPT. 1st

THURSDAY

continued.

Time Signal and Light Music on Gramophone Records. 9.40, Time Signal. 9.41, The Daily Service. 9.55, Popular Music on Gramophone Records. 10.10, Pianoforte and Cello Recital by Frans Hillen and R. Viskoper. 10.40, Talk for the Housewife. 11.10, Concert (contd.). 11.40, Time Signal, followed by a Concert by the Orchestra of the Tschinsky Theatre, Amsterdam. 1.10 p.m., Concert by the Damesa Trio. Jo Davidson (Violin), Miep Meder (Cello), and Mies Samehntini (Pianoforte). First Movement of the Trio in G (Haydn); Andante and Minuet from the Trio in C Minor (Beethoven); Part One of the Duet for Violin and Cello (Kodaly); Sonata for Violin, Cello, and Pianoforte (Lœuillet); Presto from Trio in A Minor (Lalo). 1.55 to 2.10, Interval. 2.10, Talk for Women. 2.40, Variety Music on Gramophone Records. 3.40, Programme for Hospitals. 4.40, Concert by Kovacs Lajos and his Band. 6.10, Sports Talk. 6.40, Concert (contd.). 7.10, Talk. 7.40, Time Signal. 7.41, Concert by the Station Orchestra. Conductor: Nico Treep. French Military March (Saint-Saëns); Songs by a Male Voice Choir; Marche des petits soldats de plomb (Pierné); Valse des Fleurs (Tchakovsky); Songs by a Male Voice Choir; Gavotte for Cello and Orchestra (Popper); Two Slav Dances (Dvorák). 8.40, Light Music on Gramophone Records. 9.10, Concert by the Station String Orchestra: Adagio (Lekeu); Two Preludes (Järnefelt); Elegy for Strings (Busch); Danza piemontese (Sinigaglia). 9.40, Weather Forecast and News Bulletin. 9.50, Concert by the Station Orchestra, conducted by Nico Treep: Overture, Light Cavalry (Suppé); Waltz (Strauss); Siamesische Wachtparade (Lincke); Glockenserenade (Kockert); La Paloma (Yradier-Mannfred); Alhambra (Semler); Serenade from Les Millions d'Arlequin (Drigo); Les trésors de Columbe (Drigo); Dreaming (Joyce); Marche grecque (Ganne). 10.40, Variety Music on Gramophone Records. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.10 p.m., Announcements, News Bulletin, and Popular Music on Gramophone Records. 7.45, Feuilleton.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and HELSINKI, 368.1 metres.—6.15 p.m., Talk. 6.40, Saxophone Recital by Matti Rajula. 7.5, Recitations. 7.30, Song Recital by Martta Tiger: Airs from (a) Figaro (Mozart), (b) La Bohème (Puccini); Waltz (Venzano); Melody (Järnefelt). 7.50, Talk. 8.10, Concert by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert of Military Music. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert: The Berlin Orchestra, conducted by Selmar Meyrowitz: Overture, Mignon (Thomas); Orchestra conducted by Erich Orthmann: Chopin Potpourri; The Berlin Philharmonic Orchestra, conducted by Erich Kleiber: Waltz from Der Rosenkavalier (Richard Strauss); Irene Eisinger (Soprano) and Joseph Schmidt (Tenor): Two Duets from The Land of Smiles (Lehár); Operetta Ensemble, with Chorus and Orchestra, conducted by Selmar Meyrowitz: Selection from The Bird Fancier (Zeller); Robert Gaden and his Orchestra: Ein Lied aus meiner Heimat (Kaper and Jurmann); Adalbert Lutter and his Orchestra: Heut' bin ich gut aufgelegt (Kaper and Jurmann). 12 Noon, Concert from Munich. 1.15 p.m., Weather, News, and Time Signal. 1.30, Concert conducted by Eysoldt: Overture, Bacchus and Gambrius (Herling); Ballet, La forêt enchantée (Drigo); The Lost Chord (Sullivan); Spring Song (Mendelssohn); Selection from Preciosa (Weber); Waltz, Lotoblumen (Ohlsen); Spanish March (Dreyer). 2.30, Sponsored Gramophone Concert. 3.30, Economic Notes and Time Signal. 3.50, Talk for Children: Flowers and Animals. 4.20, Review of New German Novels and Narratives. 4.40, Talk: German Destiny mirrored in German Towns: Essen. 5.0, Concert from Frankfurt. 6.15, Reading of Unpublished Literature: Adventures of Childhood (Georg Pijet). 6.45, Weather, Time, Economic, and Sports Notes. 7.0, Reading (Georg Rendl). 7.20, Topical Talk. 7.30, Talk: Industry and Traffic; Traffic Questions of the Treves District. 7.55, First General News. 8.0, Concert of Classical Waltzes and Marches by the Station Orchestra, conducted by Eysoldt: Flower Waltz (Tchakovsky); Waltz in A flat (Chopin); Liebeswalzer (Moszkovsky); Little Waltz (Rubinstein); Heroic March (Liszt); Marche héroïque (Saint-Saëns); Coronation March

(Kretschmer); Hungarian March (Berlioz). 9.0, The German Paternoster (Gustav Kneip), by Adelheid Armhold (Soprano), Fred Drissen (Bass-Baritone), The Chamber and Concert Choir conducted by Zimmermann, the St. Gereon Choir conducted by Victor Düppen; The St. Dominicus Church Choir, conducted by Josef Schmitz; The Cologne A Capella Male Voice Choir, conducted by Willi Schell; The Boys' Choir, conducted by Rektor Hüsch; and Hans Hilger (Organ). 10.5, News and Sports Notes. 10.30, Concert by the Little Station Orchestra, conducted by Eysoldt. 12 Midnight, Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW.; and DRESDEN, 319 metres.—4.0 p.m., Concert of Operatic Suites by the Leipzig Symphony Orchestra, conducted by Hilmar Weber: Suite No. 2 (Gluck-Mottl): (a) March from Alceste, (b) Minuet from Iphigenia in Aulis, (c) Graciosa from Paris and Helen, (d) Dance of the Slaves from Iphigenia in Aulis; Suite No. 2 from Carmen (Bizet): (a) Introduction to the Third Act, (b) Toreador's, (c) Song Chorus of the Street Urchins, (d) Gipsy Song; Suite from Der Rosenkavalier (R. Strauss): (a) Ochs-Walzer, (b) Tenor Aria, (c) Breakfast scene, (d) Closing Duet; Concert Suite from Idomeneo (Mozart); Ballet Music from Ritter Pasman (Joh. Strauss). 5.30, Weather Forecast and Time Signal. 5.50, Exchange Quotations. 6.0, Talk: Gymnastics and Physical Culture. 6.15, Talk for Taxpayers. 6.30, Spanish Lesson. 6.50, Humperdinck Concert by the Leipzig Symphony Orchestra, conducted by Dr. Ludwig Neubeck; Introduction to the Third Act of Königskinder; Talk: Humperdinck and Richard Wagner (Wolfram Humperdinck); Melodies from Hansel and Gretel. 7.50, See Frankfurt. 9.0, See Langenberg. 10.5, News and Silent Night.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Quintet Concert. 7.0, Talk: Wild Life. 7.30, Talk on Academic Professions. 8.0, Humorous Programme. 8.30, Pianoforte Recital. 9.30, Concert by a Vocal Quartet. 10.0, Concert of Light Music. 10.30, Time Signal and News Bulletin.

LOWO

381 metres; 16 kW.—7.10 p.m., Announcements and Light Music on Gramophone Records. 7.35, See Warsaw. 7.55, Racing Notes. 8.0, See Warsaw. 9.20, Programme relayed from Wilno, 563 metres. 9.50, Dance Music from Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert of Light Music. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Orchestral Concert. Soloists: Mlle. Ugnon (Soprano) and Stéphane Bonnars (Tenor). After the Concert, Blonde et Brune—One-Act Operetta (Morisson).

MADRID

ARANJUEZ (EAQ), 30.4 metres; 20 kW.—12.30 a.m. (Friday), Light Music. 1.0, Radio Journal, followed by Popular Music. 1.35, Talk. 1.40, Light Music. 2.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices and Request Gramophone Records. 9.15, News Bulletin and Political Review. 9.30, Interval. 11.0, Chimes, Time Signal and Political Review. 11.15 (approx.), Song Recital by Franco Mar (Baritone). After the Recital, Concert by the Municipal Band, Conducted by Villa, relayed from Rosales. 1.15 a.m. (Friday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—7.0 p.m., See Brno. 7.50, See Prague. 10.15, Programme Announcements and Theatre Notes. 10.20 See Prague.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.30 p.m., Young Communists' Radio Journal. 7.40, Popular Music. 9.0, Review of the Week and Answers to Correspondents; Talk in French. 9.55, Time Signal. 10.0, Talk in Swedish by a Young Communist Worker: Fifteen Years of My Life. 11.0 (approx.), Close Down.

MOTALA.—See Stockholm

MÜHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—6.15 p.m., Talk: Bavaria

and Regensburg, 6.35 (from Nürnberg), Agricultural Talk. 6.55, Time, Weather, and Agricultural Report. 7.5, Talk: The People of Augsburg. 7.30, Gramophone Concert. 8.0, Twenty-four Hours in the Life of a Policeman—a Radio Report arranged in Scenes. 9.0, See Langenberg. 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—6.0 p.m., Gramophone Concert: Paul Whiteman's Band: Fantasia, Tchaikovskiana (arr. Hermann Hans); M. A. Dubois (Violin), Canzonetta (d'Ambrosio); Ignaz Friedmann (Pianoforte), Old Vienna (Schubert-Friedman); Caspar Cassado (Cello), Arab Melody (Glazunov); M. A. Dubois (Violin), Humoresque (Goyens); Kerstin (Songs), (a) Det gjelder (Hannikainen), (b) Melody (Merikanto). 6.30, Service from the Studio. 7.0, Announcements, Weather, and News. 7.30, Baritone Song Recital by Theodor Andresen. 8.0, Time Signal. 8.2, Agricultural Talk relayed from Aalesund, 447.1 metres. 8.30, Chamber Music by the Badapest Quartet. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Talk by Emil Smith. 10.45 (approx.), Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Light Music on Gramophone Records. 6.0 to 6.30, Programme for Children. 8.0, Announcements, Agricultural Notes, and Giornale Radio. 8.20, Popular Music on Gramophone Records. In the interval at 8.30, Time Signal and News Bulletin. 8.45, Concert. Orchestra: Marcia esotica (Pennati-Malvezzi). Songs: (a) Melody (Saletti), (b) Grazia (Cimatti), (c) Se tu mi baci (Mascheroni), (d) La Primavera (Magno), (e) Amore di studente (Caviglia), (f) A Dream of Love (Colmann), (g) Save Your Love for Me (Erwin), (h) Nevegal (Ferretto); Orchestra: (a) Negro, povero negro (Caviglia); Signora misteriosa (Fragna), (b) Marcellina (Lanzetta), (c) Song (Tagliareri); Visiona veneziana (Pant); The Song is ended (Stolz); Madrigale d'aprile (Villi); Stra... Stra... Stra... (Mariotti); Rumba (Badiali); Book Review in the Interval. After the Programme, Theatre Notes. 10.25, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals on 2,650 metres at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals)—6.45, Talk on Forthcoming Theatre Productions. 7.0, Le Journal Parlé. 8.20, Weather Forecast. 8.30, Gramophone Concert of Classical and Light Music. 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—12 Noon to 2.0 p.m., News and Light Music on Gramophone Records. In the Intervals at 1.0, Press Review, and at 1.30, Exchange and News. 7.0, News Bulletin and Press Review. 7.5, Talk. 7.15, Sponsored Gramophone Music. 8.30, Radio Journal and News Bulletin. 8.45, Concert. Soloist: Yvonne Farcet (Songs). Four Songs: (a) Air from Le Pré-aux-Clercs (Hérold), (b) Song from The Land of Smiles (Lehár), (c) Air from Le Roi d'Ys (Lalo), (d) Song from La Chanson de Fortunio (Offenbach); Overture, Zampa (Hérold); Waltz Suite from A Waltz Dream (O. Straus); Air from The Land of Smiles (Lehár); Trio No. 3 in A minor for Pianoforte, Violin, and Cello (Lalo); Selection from Barbe bleue (Offenbach); Sérénade (Godard) Entr'acte and Ballet Music from The Vovoyede (Tchakovsky); Minuet (Paderewski); Ballet Music from Les Fantoccini (Leocca); Les Cloches du Soir (Saint-Saëns); Slav Dance No. 9 (Dvorák). 10.45, News Bulletin.

PARIS

RADIO PARIS, Call GFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records. Selection from (a) The Cat and the Fiddle (Kern), (b) Hans, the Flute Player (Ganne). 8.0, Press Review and Weather Forecast. 12 Noon, Protestant Address. 12.30 p.m., Gramophone Concert for Children: The Fairy on the Clock (Reaves); Cadet Rousselle; General Lavine (Debussy); Two Fables (Le Fontaine): (a) Le Heron, (b) La Laitière et le Pot au lait; Le Canari et la Grenouille; Bicot, Suzy and Cie (Baer-Lenôtre); Heintzelmannchens Wachtparade (Noack); Bécausse prend le Tramway; Les réponses de grand-mère (Dalcroze); Mon ami Pierrot (Zimmermann); Polichinelle (Rachmaninov); Estrellita (Ponce); Toy Symphony (Romberg); Bécausse (Bear-Humble); Xylophone and Vibraphone: Baby's Birthday Party (Ronell); Der Rose Hochzeitstag (Jessel); Blüthquet's Circus (Bontemps); A Hunt in the Black Forest (Voelker); La boîte à jousoux (Debussy); Rondo (Andolfi). In the intervals, at 1.0, Exchange Quotations, News, and Weather Forecast, at 1.30 and at 2.0, Exchange Quo-

SEPT. 1st

THURSDAY

continued.

tations. 3.45, Exchange and Market Prices. 4.30, Organ Recital by Marcel Dupré, relayed from the American Conservatoire, Fontainebleau: Allegro, from the Sixth Symphony (Widor); Fantasia on Ad nos, ad salutarem undam (Liszt); Improvisation of a Symphony in Four Movements on a given Theme. 6.30, Market Prices, Weather Forecast, Agricultural Report, Talk and Racing Results. 7.0, Gramophone Concert. 7.45, Exchange Quotations and News. 8.0, Scenes from (a) Le Bourgeois Gentilhomme (Molière), (b) Les folies amoureuses (Regnard), (c) Les Fourberies de Scapin (Molière). 8.30, News, Sports Results, and Weather Forecast. 8.40, Review by Dominique Bonnard. 8.45, Concert of Old French Songs on Gramophone Records: Potpourri, Vieux airs limousins (Rouchaud); Old Seventeenth Century Air (arr. Rummel); Tambourin (arr. Tiersot); Two Airs (Reynaldo Hahn): (a) Le retour du marin, (b) Le pauvre labourer; Songs of Auvergne (arr. Canteloupe): (a) Malheureux qui a une femme, (b) La fleuse, (c) L'Antoine; Te, Te, Rête (Cayla and Canteloupe). 9.15, Press Review and News. 9.30, Light Music on Gramophone Records: Selection from La Bohème (Puccini); Three Old Songs: (a) La Meunière, (b) A Parthenay, (c) La belle est au jardin d'amour; Waltz, Salome's Vision (Joyce); The Horn (Flegler) (sung by Chaliapine); Entr'acte and Barcarolle from The Tales of Hoffmann (Offenbach); T.S.F. (Betove); Violin Solo: The Swanee River (Kreisler); Waltz, Die Schönbirner (Lanner); Paris, stay the same (Schertzing); March of the Grenadiers (Schertzing); Romance d'Ève, for Hawaiian Guitar; Clavelito (Valverde); Un flirt et puis c'est tout (Lenoir-Georgius); Non, Non, je ne veux pas, French Military March (Saint-Saëns).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relay by W8XK on 48.86 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.32, Market Reports. 9.45, KDKA Artist Bulletin. 9.47, Programme Announcement. 9.50, David Lawrence Dispatch. 9.55, Teaberry Baseball Scores. 10.0, Silhouettes. 10.15 to 11.0, New York Relay. 10.45, Tangee Musical Dreams. 10.30, The Singing Lady. 10.45, Little Orphan Annie. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day. 11.6, Teaberry Sports Review. 11.11, Press News Reeler. 11.14, Weather Report. 11.15, KDKA Kiddies' Klub. 11.30, Westinghouse Musical Maids. 11.45 to 1.45 a.m. (Friday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Pepsodent Amos 'n' Andy. 12.15, Royal Vagabonds. 12.30, The Stebbins Boys. 12.45, Gene Austin (Tenor), with Orchestra. 1.0, Time Signal and Regimental. 1.15, Song Sleuths. 1.30, Rin Tin Tin Thrillers. 1.45, Programme to be announced. 2.30, Thompkins Corners. 3.0 to 4.0, New York Relay. 3.0, The Country Doctor. 3.15, Absorbine, Jr., Footnotes. 3.30, Object Matrimony. 3.45, Jane Froman and her Band. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Songs in French Manner (Diane Laval). 4.30, Jack Pettis and his Orchestra. 5.0, Hollywood on the Air, from New York. 5.30, Time Signal and Good Night.

PORSGRUND.—See Oslo.

PRAGUE

488.6 metres; 120 kW.—3.55 p.m., Market Prices. 5.45, Talks. 6.5, Agricultural Report. 6.15, Talk: Infant Mortality, followed by News Bulletin. 6.25, German Transmission, News and Agricultural Talk. 7.0, See Brno. 7.50, Song Recital. 8.10, Symphony Concert, conductor, Robert Manzer: Soloist, Gertruda Nettleova-Hutterova (Pianoforte): Symphony in G, No. 13 (Haydn); Concerto in D Minor for Pianoforte and Orchestra (Mozart); Two Movements from the Symphony in F Minor (Vojacek); L'Apprenti Sorcier (Dukas). In the interval at 9.0, Time Signal and News Bulletin. 10.0, Sports Notes, Miscellaneous Items, Theatre Notes, and Programme Announcements. 10.20, Dance Music from the Berenek Cinema.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Lausanne), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5 (from Geneva), Variety Programme. 1.20 (from Lausanne), Popular Music on Gramophone Records. 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, Concert by a String Orchestra. 5.50 (from Lausanne), Reading. 6.10, Concert by a String Orchestra (contd.). 6.45 (from Geneva), Programme for Children. 7.0, Weather Forecast. 7.1 (from Geneva), Film Review. 7.20 (from Lausanne), Report of the Swiss Peasants' Union. 7.30 (from Lausanne), Talk: Giants of Aviation. 7.55, News Bulletin. 8.0, Concert by the Station Orchestra. 9.0 (from Lausanne), Cabaret Concert. 10.0, News Bulletin and Weather Forecast. 10.15 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.0 a.m., Weather Report. 5.0 p.m., Weather Forecast. 8.30,

Weather Report. 8.40, Popular Music by the Radio Trio. 9.0, Chimes and Gramophone Records of Music by Mendelssohn. 9.30, News Bulletin.

RJUKAN.—See Oslo.

ROME

Call 1RO; 441 metres; 50 kW. Relay by Naples, 319 metres; and 2RO, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Variety Music. 1.0 to 2.15, Sextet Concert: Overture, The Grand Duchess of Gerolstein (Offenbach); Negro Rhapsody (Clutsam); Selection from The Bayadère (Kálmán); Paso doble, Carmelita (Rosati); Guitar Solos: (a) In the Magic Land of Egypt (Ketelbey); (b) Waltz, Telegrammen (Strauss); (c) Foxtrot, Astrakan (Moletti); (d) Melody (Steele). In the intervals at 1.20, Giornale radio and Exchange, and at 1.30, Time and Announcements. 5.0, Exchange Quotations. 5.5, Children's Radio Review. 5.25, Giornale radio. 5.30, Vocal and Instrumental Concert: Trio in G minor, Op. 15, for Pianoforte, Violin, and Cello (Smetana); Tenor Solos: (a) Aria from Nero (Rubinstein); (b) Ballad (Mascagni); (c) Nalia (Tosti); Andante with Variations for Pianoforte, Violin, and Cello (Turina). 7.10 (Naples), Shipping and Sports Notes. 7.15, Agricultural Notes, Announcements, and Giornale radio. 8.0, Time, Announcements, and Gramophone Records of Variety Music. 8.30, Talk for the Housewife, followed by Sports Notes, Announcements, and Tourist Report. 8.45, Concert, conducted by Luigi Ruggiero. Soloist, Luigi Silva (Cello). Overture, The Italian Girl in Algiers (Rossini); The Unfinished Symphony (Schubert); Talk on Art; Pavane pour une Infante défunte (Ravel); Three Pieces for Orchestra (Germano Napoli): (a) Ninna nanna, (b) Marionette, (c) Angelus from Scene infantili; Ouverture giocosa (Cammarota); Cello Solos: (a) Chaconne (Vitali-Silva), (b) Old Popular Chinese Song (Goossens), (c) Canzone e danza araba (Mule); Nocturne (Marteucci); Scherzo (Vittadini); Prayer, Dream Pantomime, and the Witch's Ride from Hansel and Gretel (Humperdinck). News after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY); 379.5 metres; 50 kW. Relay at intervals by W2XAF on 31.48 metres, and by W2XAD on 19.56 metres.—9.0 p.m., Musical Comedy Hits, from New York. 9.30, Studio Ensemble. 9.50, News Items. 10.0, Stock Reports and Police Notices. 10.15, Paul Whiteman's Rhythm Boys, from New York. 10.30, Bosco Children's Programme. 10.45, Swanee Serenaders, from New York. 11.0, Joe and Eddie. 11.45, Studio Ensemble. 11.30, New Kenmore Orchestra. 11.55, Baseball Scores. 12 Midnight (W2XAF only), Stock Reports. 12.0 (WGY only), Cost of State Government Series. 12.15 a.m. (Friday), Chaudu, the Magician. 12.30 to 4.15, New York Relay. 12.30, Ray Perkins (Barbasoloist). 12.45, The Goldbergs. 1.0, Fleischman Hour. 2.0, Musical Programme. 2.30, G. Washington Coffee Concert Orchestra. 3.0, Lucky Strike Dance Hour. 4.0, Paul Whiteman's Orchestra. 4.15, Floyd Walter (Organist). 4.45 till Close Down, New York Relay. 4.45, Paul Whiteman's Orchestra. 5.0, Ralph Kirbery (Dream Singer). 5.5, Hotel New Yorker Orchestra. 5.0 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BÉROMUNSTER, 459 metres; 60 kW.; BASLE, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Musical Guessing Competition (on Gramophone Records). 1.35, Weather Forecast and Exchange Quotations. 1.45 to 3.30, Interval. 3.30 (from Basle), Programme for Women. 4.0, Concert by the Small Station Orchestra. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Basle), Talk on the German Poet, J. C. F. Hölderlin. 7.0, Time Signal, Weather Forecast and Traffic Report. 7.15 (from Basle), Italian Lesson. 8.0, Concert by the Station Orchestra. 8.15 (from Basle), Recital by the Vienna Violin, Viola and Guitar Trio. 9.5, Hermann Kesser reads from his own Works: Out of Working Hours. 9.30, Weather Forecast and News Bulletin. 9.45, Late Concert by the Station Orchestra. 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relay by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Religious Talk, relayed from Falun, 307 metres. 5.30 (from Göteborg), Concert of Light Music. 6.30, Song Recital by Carl Hellgren. 6.45, Mrs. Mumblewithe buys Pictures—Sketch (J. G. Andersson). 7.15, Weather and News. 7.30, Talk on Birds. 8.0, Wolf and Richard

Strauss Song Recital by Arno Schellenberg; Songs (Wolf): (a) Der Fremde, (b) Verschwiegene Liebe, (c) Heimweh, (d) Fussreise, (e) Zur Warnung; Songs (R. Strauss): (a) Morgen, (b) Du meines Herzens Königin, (c) Zueignung, (d) Traum durch die Dämmerung, (e) Heimliche Aufforderung. 8.30, Talk on Foreign Politics. 8.50, Violin Recital by Issay Mitnitzky: Prelude (Bach-Saint-Saëns); Romance in G (Beethoven); Waltz (Brahms); Adagio (Fiorillo); Capriccio (Paganini); Zapateado (Sarasate). 9.15, Reading. 9.45, Weather and News. 10.0, Popular Music on Gramophone Records. 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30 a.m., Gramophone Concert of Popular Music. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.2, Exchange Quotations. 1.10, Gramophone Concert: Selection from The Gipsy Baron (R. Strauss); Melody from Les Noces de Jeannette (Massé); In a Chinese Temple Garden (Ketelbey); Air (Yoshitomo); Selection from Rose Marie (Friml); Waltz, Wine, Woman and Song (Joh. Strauss); The Blue Danube (Joh. Strauss); Two Airs from The Land of Smiles (Lehár); Vienna at Night (Komzak); Le Réveil du Lion (Koustky); The Argentine (Ketterer). 2.0, Programme for Children. 3.0 to 4.0, Interval. 4.0, Dance Music on Gramophone Records. 4.45, Elocution Lesson in French. 5.0, Orchestral Concert: Overture, Gri-Gri (Lincke); Waltz, Dolores (Waldteufel); Selection from La belle Hélène (Offenbach); Lontanetta (Razigade); Idylle passionnelle (Razigade); Echos russes (Leopold); Ideale (Tosti); Melody (Tosti); Galop, Al Coda (Fosse). 6.0, History Talk in French. 6.15, French Lesson in German. 6.30, Orchestral Concert: Prelude to Kuhlind (Kisler); Canzonetta (Godard); Selection from Rienzi (Wagner); Suite, Ballet de cour (Pierné); La lettre de Manon (Gillet); Waltz from Der Rosenkavalier (R. Strauss); Romance (Tchaikovsky); Retour à la France (Mezzacapo). 7.30, Time Signal. 7.32, News in French and German. 7.45, Orchestral Concert: Overture, The Golden Cross (Brüll); Waltz, The Blue Danube (Joh. Strauss); Selection from The Bird Fancier (Zeller); Potpourri, Von Wien durch die Welt (Hruby). 8.30, Two Plays (Courteline): (a) La Gendarme est sans pitié—One Act Play, (b) Le Cruche—Play in Two Acts. 10.30 (approx.), Close Down.

STUTGART

MUHLACKER, 360.5 metres; 60 kW; and FREIBURG, 570 metres.—10.20 a.m. (from Karlsruhe), Recital on Two Pianofortes: Sonata in E Flat (Bach); Variations on a Haydn Theme (Brahms). 11.0, Time, News and Weather. 11.15, Sponsored Concert. 11.55, Weather Report. 12 Noon, Orchestral Concert, relayed from Nürnberg. 1.15 p.m., Time and News. 1.30, See Langenberg. In the interval at 2.0, Sponsored Music. 2.30 to 3.0, Interval. 3.0, See Frankfurt. 4.0, Concert relayed from Wildbad: Military March No. 9; Overture, Oberon (Weber); Hungarian Dances Nos. 5 and 6 (Brahms); Waltz, Delirium (Jos. Strauss); Xylophone Solo, Koboldspiele (Bode); Selection from The Mastersingers (Wagner). 5.0, See Frankfurt. 6.15, Time and Weather. 6.25, Talk on Mushrooms. 6.50, Talk: Germany and the Thirty Years War. 7.15, Time, Weather and Agricultural Report. 7.30, Concert of Operetta Music by the Stuttgart Philharmonic Orchestra, conducted by Gustav Görlich. Soloists: Lisa Hettmann (Soprano) and Hubert Buchta (Tenor). Overture, Der Waldmeister (Joh. Strauss); Duet from Wiener Blut (Joh. Strauss); Waltz from Das Fürstentum (Lehár); Duet from The Count of Luxembourg (Lehár); Selection from Der liebe Augustin; Duet from Countess Mariza (Kálmán); Waltz from Gipsy Love (Lehár); Duet from The Czardas Princess (Kálmán); March from The Merry Widow (Lehár). 8.30, Learn to Fly—A Radio Report from the Böblingen Aerodrome. 9.0, See Langenberg. 10.0, Pianoforte Recital by Dr. Walter Georgi; Tempo di ballo (Scarlatti); Allegro molto in E Flat (Schubert); Sonata in D (Haydn); Bagatelle in D (Beethoven); Polichinelle (Rachmaninov); Würstlprater (Petyrek); Variations on Im Grünewald ist Holzauktion (Moszkovsky). 10.25, Time and News.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIO-PHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Orchestral Music. 5.45, Operetta Airs. 6.0, Concert: Melody from Les Millions d'Arlequin (Drigo); Noël de Pierrot (Monti); Si vous l'aviez compris (Denza); Solveig's Song (Grieg); The Man I Love (Gershwin); La chèvre maison (Dalerose); J'ai peur (Eblinger); Le bonheur est chose légère (Saint-Saëns). 6.30, Exchange and Horse Racing Results. 6.45, Dance Music. 7.0, Opera Music: Airs from (a) Faust (Gounod), and (b) Samson and Delilah (Saint-Saëns). 7.15, Cello Recital: O Star of Eve from Tannhäuser (Wagner); Abenlied (Schumann); French Serenade (Leoncavallo); Berceuse de Jocelyn (Godard).

7.30, Programme Announcements and News. 7.45, Military Music. 8.0, Opera Music: Airs from (a) Carmen (Bizet), and (b) Werther (Massenet), followed by Bagpipe Music. 8.30, Opera Music: Airs from (a) The Merry Wives of Windsor (Nicolai), (b) Ariadne (Massenet), (c) Der Bettelstudent, (d) Die Fledermaus (Joh. Strauss). 8.45, Sound Film Music. 9.0, Saint-Saëns Concert: Marche militaire from Suite algérienne; Le Rouet d'Omphale; Volin Solo, Le Cygne; Melodies from Samson and Delilah. 10.0, Variety Music. 10.15, Airs from (a) Kaduheck (Yvain), and (b) The Czarevitch (Lehár). 10.30, North African News. 10.45, Accordion Music. 11.0, Songs for Choir. 11.15, Programme by a Viennese Orchestra. 11.30, Four Songs from Lohengrin (Wagner). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.0 p.m., Quintet Concert: Flamma italica (Gaudiosi); Viandante russo (Ferraris); Serenata fiorentina (Marchetti); Air from Gipsy Love (Lehár); Canzonetta d'autunno (Colutta); Selection from Ascoltate (Borchert); Melody (Handers); Baresina (Muci). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo

TURIN

273.7 metres; 7 kW. Relay by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—6.35 p.m., Giornale Radio, Agricultural Notes and Announcements. 7.0, Musical Programme: Malaga (Vigevani); Canzonetta (d'Ambrosio); Burlesca (Carabella); Kindersparade (Oschett). 7.25, Tourist Report. 7.30, Time, Announcements, and Gramophone Records of Variety Music. 8.0, Giornale Radio, Weather and Gramophone Records of Light Music. 8.20, Talk for the Housewife. 8.30, Magliolata Veneziana—Opera in Three Acts (Rito Selvaggi); In the Intervals: Talk and Literary Review; Giornale Radio after the Programme.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in French. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relay by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—5.35 p.m., Gramophone Concert. 6.20, A Medical Talk for Sports Enthusiasts. 6.45, Talk: The Sturgeon Fisheries of the Caspian Sea. 7.10, Review of the Week. 7.30, Time, Weather, and Announcements. 7.40, Choral Concert. 8.25, Talk: Apes of Various Kinds. 8.45, Jazz Paraphrases. 9.15, Talk: Interpreting at International Conferences. 9.30, News, Weather, and Announcements. 9.45, Orchestral Concert: Overture, Frühlingslied (Joh. Strauss-Reiterer); Waltz, Silk art, Satin (Ziehrer); Selection from Der Kubreigen (Kienzl); Melodies from The Merry Widow (Lehár); Serenade, Sei mir gut, schöne Marietta (Arnold); Rokokus Liebeslied (Meyer-Hellmund); Potpourri, Hallo, hallo, hier Wien (Morena); Waltz, Wine, Women, and Song (Joh. Strauss); Potpourri, Eine Singfahrt nach Wien (Silving); March of the Robbers from Das Fürstentum (Lehár).

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Popular Music on Gramophone Records. 2.10, Interval. 3.0, Economic Report. 3.10, Popular Music on Gramophone Records. 3.30, Announcements. 3.35, Variety Music on Gramophone Records. 4.35, Announcements. 4.40, Book Review. 5.0, Concert by E. Hofman (Mezzo Soprano) and R. Werner (Pianoforte). Pianoforte Solos: (a) Sarabande (Rameau-Gadovsky), (b) Gavotte (Gluck-Brahms), (c) Two chorals in G and F (Bach-Busoni), (d) Sonata in E flat (Beethoven). Songs: (a) Air from (Hérodiade (Massenet), (b) Air from Le Cid (Massenet). Pianoforte Solos: (a) Liebestraum (Liszt), (b) Waldesrauschen (Liszt), (c) Gnomensingen (Liszt). Songs: (a) Ecoute la plainte de mon coeur (Hahn), (b) Viens, mon bien aimé (Chaminade), (c) La Plainte (Franz), (d) Freundliche Vision (R. Strauss). 6.0, Talk. 6.20, Dance Music from the Cristal Restaurant. 7.10, Miscellaneous Announcements. 7.35, Radio Journal. 7.45, Agricultural Notes. 7.55, Programme Announcements. 8.0, Concert of Light Music by the Warsaw Philharmonic Orchestra, conducted by St. Nawrot; Ballet, Fête à Florence (Mignan); Waltz from Der Göttergatte; (Lehár); Melody and Gavotte (Hofman); Czardas (Gabriel Marie); Barcarolle from Casanova (Lincke); Mazurka No. 4 (Starzewski); Overture, Frau Luna (Lincke); Cortège (Moszkowski); Dances from Halka (Moniuszko); Waltz from The Gipsy Baron (Joh. Strauss); Oberkis (Namyrowski); Persian March (Lincke). 9.20, Talk relayed from Wilno, 563 metres. 9.50, Radio Journal. 9.55, Aviation Weather Report. 10.0, Dance Music. 10.40, Sports Notes. 10.50, Dance Music (contd.). 11.30 (approx.), Close Down.

ZÜRICH.—See Schweizerischer Landessender.

SEPT. 2nd

FRIDAY

continued.

4.30 to 4.50, Interval: 4.50, Time and Exchange Quotations. 5.0, See Stuttgart. 5.15, Time and Economic Notes. 6.25, Talk: The People of the Ruhr District. 6.50, See Stuttgart. 7.15, Time and News. 7.30, See Stuttgart. 8.0, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 8.15, See Stuttgart. 10.20, Time and News. 10.45, Recital of German Folk Songs by Henny Schmitt (Contralto). 11.15, Waltzes by Josef Strauss; The Station Orchestra, conducted by Walter Caspar; Frauenblätter, Op. 47; Herbstrosen, Op. 232; Herzstöne, Op. 172; Freudengrüsse, Op. 128; Wiener Kinde, Op. 61; Rudolfsklänge, Op. 281. 12 Midnight, Close Down.

FREDRIKSSTAD.—See Oslo.

FREIBURG.—See Stuttgart.

GENEVA.—See Radio-Suisse Romande.

GENOA.—See Turin.

GLEIWITZ.—See Breslau.

GÖTEBORG.—See Stockholm.

GRAZ.—See Vienna.

HAMAR.—See Oslo.

HAMBURG

Call ha, in Morse, 372 metres; 1.5 kW. Relay by Bremen, 270 metres; Flensburg, 218 metres; Manover, 566 metres; and Kiel, 232.2 metres.—6.55 p.m., Exchange Quotations. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20, William Tell—Play in Five Acts (Friedrich von Schiller). 10.0, News Bulletin. 10.20, Concert from the Café Wailhof.

HANNOVER.—See Hamburg.

HEILSBURG

275.5 metres; 60 kW.; and DANZIG, 453.2 metres.—11.30 a.m., Programme from Hamburg. 1.15 p.m., Gramophone Concert of Light Music. 2.30, Sponsored Programme, with Gramophone Records. 3.40, Talk for Women. 4.10, See Stuttgart. 4.30, Concert by the Small Orag Orchestra, conducted by Eugen Wilcken; Overture, Erlenhügel (Kuhlauf); Auf der alten Burg (Dvorák); Dance (Dvorák); Gounod Fantasia (Urbach); Aquarellenwälder (Jos. Strauss); Suppé Potpourri (Rhode); Carmen Overture (Gilsen). 5.45, Review of Books on Sport. 6.15, Agricultural Report. 6.20 (from Danzig), Talk: Old Prussian Village Names. 6.45, Choral Concert of Swedish and German Folk Songs. 7.25, Weather Report. 7.30, See Berlin (Witzleben). 9.0, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 9.15, News Bulletin. 9.25, Grieg Concert on the Twenty-Fifth Anniversary of his Death; The Königsgesang Opera House Orchestra, conducted by Erich Seidler; Soloist: Margarethe Schuchmann (Pianoforte); Concert Overture, Op. 11, Im Herbst. Concerto in A Minor, Op. 16, for Pianoforte and Orchestra; Symphonic Dances, Op. 64. 10.10, Weather, News, and Sports Notes.

HILVERSUM

Announced HUIZEN, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.). Programme of the Christian Radio Society (N.C.R.V.). 7.40 a.m., Bible Reading. 7.55 to 9.10, Gramophone Records of Variety Music. 10.10, Programme for Hospitals. 10.40, Harmonium Recital. 11.10, Instrumental Concert. Overture, Tancréd (Rossini); Waltz, Accelerationen (Offenbach). 11.40, Police Notes. 11.55, Concert (cont'd.): Selection from Les Saltimbanques (Ganne); The Wedding of the Winds (Hall); Selection from La Juive (Halévy). 12.35 p.m., Harmonium Recital: Sonata No. 4 (Guilmant); Marche solennelle (Maille-Snijders). 1.0, Concert (cont'd.): Overture, Flotte Bursche (Suppé); Waltz, Morgenblätter (Strauss); Selection from Martha (Flotow); Marche militaire (Schubert). 1.40 to 2.10, Interval. 2.10, Vocal and Instrumental Concert: Aria, In deine Hände (Bach); Sonata in G (Bach); Air, Ich will nach den Himmel zu (Bach); Sonata in F (Telemann); Air, Verdi Prati (Händel); Softest sounds (Händel); Sonata in G (Tartini); Caro mio ben (Giordano); Liebesleid (Kreisler); Scherzo (Wieniawsky); Tarentella (Wieniawsky); Nocturne (Behr); Still wie die Nacht (Böhmi); Suite (Verhey); Suite (Cui); Serenade (Curschmann); Ungeduld (Curschmann); M'n lievien zeg herinnet ge 't U (Rennes); Ous Lied (Tetterode). 4.10, Gramophone Records of Yehudi Menuhin (Violin). 4.40, Gramophone Records of Orchestral Music. 5.10, Talk for Young Photographers. 5.40, Talk by M. Steinvor. 6.30, Horticultural Talk. 6.40, Technical Talk. 7.10, Police Notes. 7.25, Talk. 7.40, Orchestral Concert, conducted by Frits Schuurman; Slav March (Tchaikovsky); Suite, Karelia (Sibelius); Suite, Jeux d'enfants (Bizet); Overture, Tannhäuser (Wagner). 8.40, Talk. 9.10, Concert (cont'd.): Suite in B minor (Bach); Sacred Songs for Choir; Sacred Pieces for Orchestra; Two Sacred Songs for Choir; O groote Christus, Eeuwige Licht (arr. Schuurman). 9.30 (in an interval), News Bulletin. 10.10, Gramophone Records of Light Music. 11.10 (approx.), Close Down.

HÖRBY.—See Stockholm.

HUIZEN

Announced HILVERSUM, 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25, Physical Culture. 7.40,

Gramophone Records of Variety Music. 8.40, Septet Concert. 9.40, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55 to 11.40, Programme of the V.A.R.A. 9.55, Recitations. 10.10, Septet Concert. 10.40, Talk for Women. 11.15, Concert (cont'd.). 11.40 to 3.40 p.m., Programme of the Algemeene Vereeniging Radio Omroep (A.V.R.O.). 11.40, Orchestral Concert conducted by Nico Treep: March, Einziger Hellebardieren (Blankenburg); Overture, Selma (v. Duninen); Ballet Suite, Etienne Marcel (Saint-Saëns); Serenade for Suzon (Smetsky); Somewhere a Voice is Calling (Tate); Russian Mazurka (Glinka); Selection from Iris (Mascagni); Parade im Zaubervald (Noack); Melody (Percy); Waltz, Forget-me-not (Waldteufel); Prelude and Serenade (Korngold); Selection from The Merry Peasant (Fall); Balgefüster (Meyer-Helmund); La zingara (Ganne); Galop (Eduard Strauss). In the intervals, Gramophone Records of Variety Music. 1.40 p.m., Talk. 2.10, Concert by the Wireless Orchestra conducted by Louis Schmidt: Potpourri of Overtures (Engelmann); Scherzo, Dream after the Ball (Broustet); Waltz, Donsaugen (Fucik); Cello Solo, Under Florentine Skies (Ackermans); Selection from William Tell (Rossini); Indigo March (Johann Strauss); Rose Serenade (Artok); Whispering of the Flowers (von Blon); Valse bleuetie (Drigo); Selection from Gasparone (Müllöcker); March, Sets Zielbewusst (Blankenburg). In the interval, Gramophone Records of Variety Music. 3.40 to 7.40, V.A.R.A. Programme. 3.40, Gramophone Records of Variety Music. 4.10, Programme for Children. 4.40, Orchestral Concert conducted by Hugo de Groot: Overture, Kakadu (Offenbach); Ballet Music from Les deux Pigeons (Messager); Ballet Music from Henry VIII (Saint-Saëns). 5.25, Recitations. 5.40, Organ Recital by Joh. Jong: Ballet Music from Sylvia (Delibes); Good-bye (Tosti); Wenn die kleinen Veilchen blühen (Stolz); Potpourri (Wilke). 6.10, Recitations. 6.25, Organ Recital (cont'd.). 6.40, Gramophone Records of Variety Music. 6.50, Orchestral Concert conducted by Hugo de Groot: Overture, Alessandro Stradella (Flotow); Gavotte tendre (Ganne); Potpourri of Operatic Melodies (Mannfred); Loir du bal (Gillet); Potpourri, Von Wien durch die Welt (Hruby). 7.40 to 7.55, V.P.R.O. Programme. 7.40, Announcements. 7.45, News Bulletin. 7.55 to 9.40 (approx.), V.A.R.O. Programme. 7.55, Concert from the Kurhaus, Scheveningen; Conductor, Carl Schuricht: The Ninth Symphony (Beethoven) by the Residence Orchestra, Jo Vincent (Soprano), Suze Luger (Contralto), Louis van Tulder (Tenor) and Willem Ravell (Bass). Talk in the interval. 9.40 (approx.), V.P.R.O. Programme; Exchange Quotations. 10.40 till Close Down, V.A.R.A. Programme; Gramophone Records of Variety Music. 11.40 (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres, 2 kW.; and DRESDEN, 319 metres.—4.30 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer: Ballet Overture (Reifner); Serenade in C for Strings, Op. 14, No. 2 (Fuchs); Melodies from La Bohème (Puccini); Waltz, Gold and Silver (Lehár); Dolls' Minuet (Mello); March, An der Mosel (Dreyer). 5.30, Review of Books on the Great Musicians. 5.50, Exchange Quotations, Weather Forecast and Time Signal. 6.25, English Lesson. 6.50, The Leipzig Station informs its Listeners. . . . 7.0, Talk on Karl Stauffer-Bern, on his Seventy-Fifth Birthday. 7.30, Lortzing Concert on Gramophone Records. 8.30, Talk: Sedan, a Symbol and a Warning. 9.0, Talk by Kurt Sell: What People are talking about in America, relayed from America. 9.15, Economic Questions of the Day. 9.25, Modern Chamber Music: Quartet 1931 for Flute, Oboe, Clarinet and Bassoon (Trantow). 10.5, News Bulletin. 10.15 (approx.), Vocal and Instrumental Concert: Soloists: Else Kochhann (Soprano), Kurt Uhlig (Tenor), Friedbert Sammler and Alfred Simon (Pianoforte); Pianoforte Duets: Hungarian Dances, Nos. 3, 7 and 9 (Brahms); Melody from A Waltz Dream (O. Strauss); Tenor Solo: Air from Countess Maritza (Kálmán); Soprano Solos: (a) Air from La belle Héloïse (Offenbach), (b) Fiorella's Aria from Les Brigands (Offenbach), (c) Soula's Song from The Czarevitch (Lehár); Pianoforte Duet: Waltz, The Blue Danube (Joh. Strauss); Tenor Solos: (a) Volga Song from The Czarevitch (Lehár), (b) Two Songs from Schön ist die Welt (Lehár), (c) Gern hab' ich die Frau'n geküsst, from Paganini (Lehár); Soprano Solos: (a) Opening Song of the Czarina from Der Günstling des Zaren (Winterberg), (b) Song from Wiener Blut (Joh. Strauss), (c) Song from The Land of Smiles (Lehár), (d) Madam Dubarry's Aria from The Dubarry (Müllöcker). Tenor Solos: (a) Song from Der Bettelstudent (Müllöcker), (b) Ob du mich liebst, from Nakiris Hochzeit (Lincke), (c) Song from The Circus Princess (Kálmán). 11.30 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDRÖG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.15 p.m., Announcements, News Bulletin and Popular Music on Gramophone Records. 7.45, Talk. 10.5, Concert of Dance Music. 11.0, Answers to Correspondents in French.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and HELSINKI, 368.1 metres.—6.15 p.m., Pianoforte Recital from Helsinki. 6.35, Reading in Swedish. 7.0, Concert from Helsinki. 8.0, Talk. 8.25, Gramophone Records from Helsinki. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert of Military Music. 10.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert: The Berlin State Orchestra, conducted by Otto Klemperer: Overture, La Belle Héloïse (Offenbach). The Berlin Symphony Orchestra, conducted by Hans Rosbaud: Selection from Tieland (d'Albert): Emanuel List (Bass): (a) Drinking Song, Hünther (Kuntermann); (b) Landknechtssändchen (Hermann); Barnabas Gussy and his Orchestra: Waltz from Congress Dances (Heymann); Joseph Schmidt (Tenor): (a) Song, Heute Nacht oder nie (Spoliarsky); (b) Nur dir will ich gehören (Wielczynsky); Edith Lorand and her Orchestra: Wiener Erinnerung (Lorand); The Vienna Military Orchestra: Deutschmeister-Marsch (Jurek). 12 Noon, Concert from Frankfurt. 1.15 p.m., Weather, News and Time Signal. 1.30, Concert, conducted by Eysoldt. 2.30, Sponsored Gramophone Music. 2.45, Sponsored Radio Play for Housewives. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.10, Radio Report of the Baden Grand Prix, relayed from Baden-Baden. 4.30, Programme for Young People: I. In an Aeroplane from Cologne to Frankfurt; II. On Board an Ocean Liner. 5.15, Concert, conducted by Eysoldt: Overture, Le Fils du Mandaria

(Cui); Chant Élégiacque (Vranckx); Indian Scene, Im heiligen Hain (Lindemann); Selection from I Pagliacci (Leoncavallo); Suite, Wedding Scenes (Smetana); Waltz, Hoch lebe der Tanz (Waldteufel); Potpourri of Offenbach Music (Conradi). 6.15, The World on Gramophone Records—Albanian Songs and Dances. 6.45, Weather, Time, Economic and Sports Notes. 7.0, Talk: Famous Men in German History—Bismarck. 7.20, Topical Talk. 7.30, Technical Talk. 7.55, First General News. 8.0, Talk by Kurt G. Sell: What People are talking about in America, relayed from America. 8.20, Concert from the Schlossgarten, Münster: The Münster Municipal Orchestra, conducted by Wolf: Soloist, Willi Schöne-weiss (Bass-Baritone); Overture, The Barber of Bagdad (Cornelius); Two Pieces (E. Schlag): (a) Adagio in F Sharp, (b) Scherzo; Ballet Music from Le Cid (Massenet): Songs: (a) Aria from The Caliph of Bagdad (Boieldieu), (b) Kaspar's Triumphal Aria from Der Freischütz (Weber); Waltz, Mein Lebenslauf ist Lieb und Lust (Joseph Strauss); Second Suite from L'Arlesienne (Bizet); Songs: A.B.C. Potpourri (Konczak). 10.0, News and Sports Notes. 10.30, Dance Music, relayed from London. 12 Midnight (approx.), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres, 2 kW.; and DRESDEN, 319 metres.—4.30 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Theodor Blumer: Ballet Overture (Reifner); Serenade in C for Strings, Op. 14, No. 2 (Fuchs); Melodies from La Bohème (Puccini); Waltz, Gold and Silver (Lehár); Dolls' Minuet (Mello); March, An der Mosel (Dreyer). 5.30, Review of Books on the Great Musicians. 5.50, Exchange Quotations, Weather Forecast and Time Signal. 6.25, English Lesson. 6.50, The Leipzig Station informs its Listeners. . . . 7.0, Talk on Karl Stauffer-Bern, on his Seventy-Fifth Birthday. 7.30, Lortzing Concert on Gramophone Records. 8.30, Talk: Sedan, a Symbol and a Warning. 9.0, Talk by Kurt Sell: What People are talking about in America, relayed from America. 9.15, Economic Questions of the Day. 9.25, Modern Chamber Music: Quartet 1931 for Flute, Oboe, Clarinet and Bassoon (Trantow). 10.5, News Bulletin. 10.15 (approx.), Vocal and Instrumental Concert: Soloists: Else Kochhann (Soprano), Kurt Uhlig (Tenor), Friedbert Sammler and Alfred Simon (Pianoforte); Pianoforte Duets: Hungarian Dances, Nos. 3, 7 and 9 (Brahms); Melody from A Waltz Dream (O. Strauss); Tenor Solo: Air from Countess Maritza (Kálmán); Soprano Solos: (a) Air from La belle Héloïse (Offenbach), (b) Fiorella's Aria from Les Brigands (Offenbach), (c) Soula's Song from The Czarevitch (Lehár); Pianoforte Duet: Waltz, The Blue Danube (Joh. Strauss); Tenor Solos: (a) Volga Song from The Czarevitch (Lehár), (b) Two Songs from Schön ist die Welt (Lehár), (c) Gern hab' ich die Frau'n geküsst, from Paganini (Lehár); Soprano Solos: (a) Opening Song of the Czarina from Der Günstling des Zaren (Winterberg), (b) Song from Wiener Blut (Joh. Strauss), (c) Song from The Land of Smiles (Lehár), (d) Madam Dubarry's Aria from The Dubarry (Müllöcker). Tenor Solos: (a) Song from Der Bettelstudent (Müllöcker), (b) Ob du mich liebst, from Nakiris Hochzeit (Lincke), (c) Song from The Circus Princess (Kálmán). 11.30 (approx.), Close Down.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0 p.m., Quintet Concert. 7.0, Talk for Parents. 7.30, Talk for Women. 8.0, Popular Music on Gramophone Records. 8.30, Programme from Belgrade (430.4 metres). 10.30, Time Signal and News Bulletin.

LWOW

381 metres; 16 kW.—7.15 p.m., Miscellaneous Items. 7.35, See Warsaw. 7.45, Feuilleton. 8.0, See Warsaw. 11.30 (approx.), Close Down.

LYONS

LA DOUA, 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert: Petite suite (Debussy); Moment Musical (Schubert); Noël Paien (Massenet); Élégie (Massenet); Der Grelkopf (Schubert); Etude Op. 10 Tristesse (Chopin); Ave Maria de Lourdes, by the Cantorum Choir. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Concert of Light Music, Conducted by Jean Dltkovski.

MADRID

ARANJUEZ, EAQ, 30.4 metres; 20 kW.—12.30 a.m. (Saturday), Light Music. 1.0, Popular Concert. 1.35, Answers to Correspondence. 1.40, Popular Music. 2.0 (approx.), Close Down.

MADRID

UNION RADIO, Call EAJ7, 424.3 metres; 2 kW.—8.0 p.m., Chimes, Exchange Quotations, Market Prices and Request Music on Gramophone Records. 9.15, News Bulletin and Political Review. 9.30 to 11.0, Interval. 11.0, Chimes, Time Signal and Political Review. 11.15 (approx.), Symphony Concert on Gramophone Records: Overture, Ros-

mund (Schubert); Invitation to the Dance (Weber); Spanish Rhapsody (Ravel); Symphony No. 3—the Eroica (Beethoven). 1.15 a.m. (Saturday), Time Signal, News Bulletin and Programme Announcements. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—7.0 p.m., See Bratislava. 7.45, See Prague. 10.15, Programme Announcements and Theatre Notes. 10.20, Light Music on Gramophone Records.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.30 p.m., Young Communists' Radio Journal. 7.10, Popular Music. 9.0, Review of the Week and Answers to Correspondents in English. 9.55, Time Signal. 10.0, Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relay by Augsburg and Kaiserslautern, 560 metres; and Nürnberg, 239 metres.—6.0 p.m., Wireless Report on a Visit to the Pfaffenburg, relayed from Kulmbach. 6.35, Talk: Political Science in the Middle Ages. 6.55, Time, Weather and Agricultural Report. 7.5, Talk: Historical Knowledge. 7.25 (from Nürnberg), Orchestral Concert: March, Zigeunerkind (Blankenburg); Waltz, Gebirgskinder (Ziehrer); Potpourri of Viennese Music (Kliment); March, Herr Adabei (Bednarz); Waltz Potpourri, Deutscher Liederschatz (Löwenthal). 8.25, Talk: Skiffs and Boats. 8.45, Der Corregidor (The Three-cornered Hat)—Opera in Four Acts (H. Wolf). 10.20, Time and News.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relay by Fredriksstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—6.30 p.m., Concert by a Saxophone Quintet: March, Master Builder (Holmes); Overture, His Life for the Tzar (Glinka); Melody (Rubinstein); Symphonic Dance No. 2 (Grieg); Selection from Faust (Gounod); Marche hongroise (Gounod). 7.0, Announcements, News and Weather. 7.30, Talk: Respiration. 8.0, Time Signal. 8.2, Orchestral Concert: Academic Festival Overture (Brahms); Suite for Strings (Gjerström); I valgelidn Prillar-Guri (Johansen); Melody (Nordraak); Potpourri of Students' Songs (Oehlschlägel). 8.50, Recitations. 9.15, Choral Concert of Students' Songs. 9.40, Weather and News. 10.0, Topical Talk. 10.15, Cabaret Programme. 12 Midnight, Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 to 6.30 p.m., Popular Music on Gramophone Records. 8.0, Announcements, Tourist Report, Agricultural Notes, Report of the Royal Geographical Society and Giornale Radio. 8.20, Light Music on Gramophone Records. 8.30, Time Signal and Announcements. 8.45, L'Amico Fritz—Opera in Three Acts (Mascagni). After the Opera, News Bulletin.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW. Time Signals (on 2,650 metres) at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals). 6.45, Talk: The Classical Comedy. 7.0, Le Journal Parlé. 8.20, Weather Forecast. 8.30, Orchestral Concert, conducted by M. Flament; Aube sous bois (Fauré); Forest Murmurs from Siegfried (Wagner-Mouton); Am Bächlein (Bethoven-Salabert); Sous bois forêt (Flament); La course dans la forêt (Eileberg); Diligence sous bois (Laigne); Promenade en forêt (Christiné); Le lac dans la forêt (de Massi-Hardman); Waltz, Tales from the Vienna Woods (Joh. Strauss). 10.0 (approx.), Close Down.

PARIS

POSTE PARISIEN, 328.2 metres; 60 kW.—12 Noon to 2 p.m., News and Light Music on Gramophone Records. In the intervals at 1.0, Press Review and at 1.30, Exchange and News. 7.0, News Bulletin and Press Review. 7.5, Popular Music on Gramophone Records. 8.0, Talk: Camping for the Family. 8.20, Theatre Notes. 8.30, Radio Journal and News Bulletin. 8.45, Concert: Soloist, Paul Paven (Songs), Four Songs: (a) Sur l'eau (Lazzari), (b) Song from Paganini (Lehár), (c) On Wings of Song (Mendelssohn), (d) Popular Spanish Songs (Falla); Overture, François les Bas Bleus (Messager); Waltz, Mélancolie (Métrá); Selection from The Dance of the Dragonflies (Lehár); Serenade for Flute, Violin, and Viola (Beethoven); Prelude to La Fin de Pierrot (Lacôme); Suite, Les Danses de chez nous (Jacquet); Barcarolle, Mallorca (Albéniz); Melody Countess Maritza (Kálmán); Reverie mauresque (Nerini); Ballet Suite (Lachaux); La Tête de Kenwarch (Canal); Springtime March (Filippucci). 10.45, News Bulletin.

PARIS

RADIO PARIS, Call CFR, 1725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather, and Physical Culture (cont.). 7.45, Gramophone Records of Svendsen and Ledere Music. 8.0, Press Review and Weather. 12 Noon, Summer—Sun and Fields—a Gramophone Concert; Orchestra: Summer Song (Peterson-Berger); Song, Jour de Juin from Thérèse (Massenet); Instrumental Melody, Les Plaisirs champêtres (Montclair); Aria from Werther (Massenet); The Berlin State Opera House Orchestra; Hymn to the Sun, from Iris (Mascagni); Jacques Thibaud (Violin); Hymn to the Sun from Le Coq d'or (Rimsky-Korsakov); The Berlin State Opera House Orchestra; Overture, A Midsummer Night's Dream (Mendelssohn); Poem—Choeur des blés, de la Vigne et du Pré (Witkovsky); Orchestra: In the Steppes of Central Asia (Borodin); Foxtrot, Sunnyside up; Song, Tant que les Cigales chanteront (Leduc-Cidale); Gregor and his Gregorians: Happy Days are here Again. In the intervals at 1.0 p.m., Exchange, News and Weather, and at 1.30 and 2.0, Exchange. 3.45, Exchange and Market Prices. 6.30, Market Prices, Weather Agricultural Notes, Gardening Talk and Racing Results. 7.0, Gramophone Concert: Foxtrot (Green); Reaching for the Moon (Irving Berlin); Soleil d'Espagne (José Senti); Tiern Hispana (José Senti); Java, Foulard au cou (Marafiste); Waltz, La belle Argentine (Lefebvre); Popular Russian Song, Volga; Popular Russian Song, There was once Twelve Robbers; Melody (Kern); Feu d'amour (Axt and Menloga); Give me your Heart (Rosen); Chiquita (Wayne). 7.45, Commercial Prices and News. 8.0, Music Talk by M. Charles L'Hôpital, with Gramophone Illustrations: Berlioz Quest for Expressionism. 8.30, News and Weather. 8.40, Review by Paul Reboux. 8.45, La Farce du Poirier—Operetta (Claude Terrasse), with Mme. Renée Senac and MM. Gilles and Roque. 9.15, Press Review and News. 9.30, Concert: Ballet funambulesque (Filippucci); First Spanish Dance (Falla); Suit brève (Büsser); Ballet Music from Esclaronde (Massenet); Le Carnaval des Animaux (Saint-Saëns) (on Gramophone Records).

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by W8XK, on 48.86 metres and 25.27 metres.—9.0 p.m., Teaberry Baseball Scores. 9.5, Business News. 9.15, Programme to be announced. 9.30, Weather Report. 9.35, Market Reports. 9.45, Programme to be announced. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Bulletin. 10.12, Programme Announcements. 10.15, Uncle Don's Party. 10.30, The Singing Lady from New York. 10.45, Little Orphan Annie, from New York. 11.0, Time Signal. 11.1, Temperature Report. 11.2, Who's News To-day? 11.6, Teaberry Sport Review. 11.11, Press News-Reeler. 11.14, Weather Report. 11.15, KDKA Kiddies' Klub. 11.30, Westinghouse Dinner Concert. 11.45 to 3.15 a.m. (Saturday), New York Relay. 11.45, To-day's News by Lowell Thomas. 12 Midnight, Popsident Amos 'n' Andy. 12.15, Royal Vagabonds. 12.30, Stebbins Boys. 12.45, Billy Jones and Ernie Hare. 1.0, Time Signal and Nestlé's Programme. 1.30, Candle Lighting. Time 1.45, Sisters of the Skillet. 2.0, The First Nighter. 2.50, Armour Programme. 3.0, The Country Doctor. 3.15, Westinghouse Pioneers. 3.30, Object Matrimony, from New York. 3.45, Jaue Froman and her Band, from New York. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Jack Pettis and his Orchestra. 5.0, Cotton Club Orchestra, from New York. 5.15, Time Signal and Goodnight.

PORSCRUND.—See Oslo.

PRAGUE

688.6 metres; 120 kW.—3.55 p.m., Market Prices. 5.45, Talks. 6.5, Agricultural Report. 6.15, Light Music on Gramophone Records. 6.25, German Transmission; News and Talk: How Newspapers are Issued. 7.0, See Bratislava. 7.45, Talk. 8.0, Dramatic Programme. In the interval, at 9.0, Time Signal and News Bulletin. 10.0, Announcements and Sports Notes. 10.15, Miscellaneous Items, Theatre Notes, and Programme Announcements. 10.20, Light Music on Gramophone Records.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 680 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Lausanne), Light Music on Gramophone Records. 1.0, Financial Notes—1.5 (from Lausanne), Popular Music on Gramophone Records. 1.45 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1 (from Geneva), Programme for Women. 5.45, Concert by the String Orchestra. 7.0, Weather Forecast. 7.1 (from Lausanne), Talk on Sports. 7.20 (from Lausanne), Report of the Swiss Automobile Club. 7.50 (from Lausanne), Popular Music on Gramophone Records. 8.0 (from Geneva),

SEPT. 2nd

FRIDAY

continued.

Dramatic Programme. 8.30 (from Geneva), Violin Recital by M. Rothpletz. 9.0 (from Lausanne), Literary Interlude. 9.15 (from Lausanne), Trio Concert of Viennese Chamber Music. 10.0, News Bulletin and Weather Forecast. 10.15, Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.0 a.m., Weather Report. 5.0 p.m., Weather Forecast. 8.30, Weather Report. 8.40, Songs on Gramophone Records. 9.0, Chimes and Operatic Music on Gramophone Records.

RJUKAN.—See Oslo.

ROME

Call 119; 441 metres; 50 kW. Relayed by Naples, 310 metres; and 2R0, 25.4 metres.—8.15 to 8.30 a.m., Giornale radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Variety Music. 1.0 to 2.15, Sextet Concert: In the Mountains of Transylvania (Dreyer); Valzer della notte (Cuscina); Selection from Isabeau (Mascagni); Intermezzo (Schmalstich); Tango, La donna mia è fuggita (Scagliotti); Melody (Rendegger); Fox-trot, Lilion (Licciodardo); Gallop (Fragna). In the intervals at 1.20, Giornale radio and Exchange, and at 1.30, Time and Announcements. 4.45 (Naples), Talk for Women. 5.0, Exchange, Children's Radio Review, Giornale radio and Announcements. 5.30, Vocal and Instrumental Concert. 7.10 (Naples), Shipping and Sports Notes. 7.15, Agricultural Report, Announcements, Giornale radio and Gramophone Records of Variety Music. 8.0, Time and Announcements. 8.5, Report of the Royal Institute of Agriculture (in Italian, French, English, German and Spanish. 8.30, Sports Notes, Announcements and Tourist Report. 8.45, Concert by the Rome Quartet; Soloists, Elda di Veroli (Soprano) and Mario Ceccarelli (Pianoforte); Quartet in G Minor for Two Violins, Viola and Cello, Op. 27 (Grieg); Soprano Solos: (a) Aria from Il Seraglio (Mozart), (d) Alleluiah (Mozart)—Comedy in One Act (Jean Toisin); Soprano Solos: (a) Song Waltz from Romeo and Juliet (Gounod), (b) Bravoura Variations from The Pearl of Brazil (David); Piano-forte Solos: (a) Etude de Concert (Rubinstein), (b) Impudense (Chopin), (c) Perpetuum mobile (Weber). After the Concert, News and Dance Music from the Pincio. 12 Midnight (approx.), Close Down.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 31.48 metres, and by W2XAD on 49.56 metres.—9.0 p.m., Musical Programme, from New York. 9.15, Business and Professional Women's Club. 9.30, Ollie Yettru (Pianist). 9.35, News Items. 9.45, Stock Reports and Police Notices. 10.0 to 11.25, New York Relay. 10.0, Rice String Quartet. 10.30, Echoes of Erin. 11.0, Ma Frasier's Boarding House. 11.15, Waldorf Astoria Orchestra. 11.25, Baseball Scores. 11.30, With Gray McClintock in the Canadian Northwest. 11.45, Song and Story Man. 12 Midnight (WGY only), General Electric Programme. 12.0 (W2XAF only), Stock Reports. 12.15 a.m. (Saturday), Chandu, the Magician. 12.30 to 1.30, New York Relay. 12.30, Maxwell Tune Blenders. 12.45, The Goldbergs. 1.0, Cities Service Concert. 1.30, WGY Agricultural Programme. 2.0 to 4.0, New York Relay. 2.0, Clicquot Club Eskimos. 2.30, Pond's Programme. 3.0, Paul Whiteman's Chieftains. 3.30, R.K.O. Programme. 3.45, Erno Rappe's Orchestra. 4.0, New Kenmore Orchestra. 4.30 to 5.30, New York Relay. 4.30, Hotel New Yorker Orchestra. 5.0, Ralph Kirbery (Dream Singer). 5.5, Hotel Pierre Orchestra. 5.30, WGY Sign Off.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres, 60 kW.; BASLE, 244.1 metres; and BERNE, 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Concert by the Station Orchestra. 1.35, Weather Forecast, Exchange Quotations. 1.45 to 3.30, Interval. 3.30, Concert for Children, on Gramophone Records. 4.30 (from Basle), Programme for Children. 5.0, Weather Forecast. 5.2 to 6.30, Interval. 6.30 (from Basle), Talk on Radio Plays by Hermann Kessen. 7.0, Time Signal. Weather Forecast, Market Prices, Tourist Report and Sports Notes. 7.30 (from Basle), Agricultural Talk. 8.0 (from Berne), Variety Programme. 8.30, Dr. Herr Gschwebe—Comedy in Dialect (Rolf Schwarzmann). 9.30, Weather Forecast and News Bulletin. 9.45, Yodelling Solos by Grütli Wenger. 10.0, Late Concert by the Station Orchestra. 10.30 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHÖLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres;

Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—5.5 p.m., Programme for Children. 5.25, Country Music, followed by reading. 6.0, Popular Music on Gramophone Records. 7.0, Agricultural Talk, relayed from Uppsala, 453.2 metres. 7.15, Weather and News. 7.30, Talk: Democracy and Dictatorship. 8.0, Symphony Concert: Soloist, Eva Johan-Fehrman (Songs); Overture, Egnont (Beethoven); songs: Lieder eines fahrenden Gesellen (Mahler); Symphony No. 5 in E Minor—From The New World (Dvorák). 9.15 (from Östersund), Talk: Shooting in the Olden Times. 9.45, Weather and News. 10.0, Orchestral Concert: March (v. Blon); Overture, Berlinerluft (Lincke); Salut d'amour (Elgar); Melodies from Preciosa (Weber); Melody (Kallstenius); Tango (Trobäck); Waltz (Samek); Selection from Schön ist die Welt (Lehár). 11.0 (approx.), Close Down.

STRASBOURG

345 metres; 11.5 kW.—11.30, Gramophone Concert of Classical Music. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.2, Exchange Quotations. 1.10, Gramophone Records of Variety Music. 1.30, Concert relayed from Toulouse (PTT) (255 metres). 2.15 to 4.30, No Transmission. 4.30, Trio Concert relayed from Lille (265.4 metres). 5.30, Literary Talk in French: The Works of Paul Bourget. 5.45, Gramophone Records of Light Music. 6.0, Topical Talk in German. 6.15, Talk in German: The Court of Assizes. 6.30, Orchestral Concert: Overture, Si j'étais Roi (Adam); Waltz, Acclamations (Waldteufel); Italian Ballet (de Bozi); La Voix des Cloches (Luigini); Potpourri of Verdi Music (Weninger); Gai Printemps (Gillet); March, La lune de miel (Rosey). 7.30, Time Signal. 7.32, News in French and German. 7.45, Orchestral Concert: March, Tout Strasbourg (Schneider); Minuet in E Flat (Mozart); Song from Don Carlos (Verdi); Selection from La Navarraise (Massenet); Song, Le pas d'armes de Roi Jean (Saint-Saëns); Waltz, Telegrams (Joh. Strauss); Sérénade espagnole (Chaminade); March (Holzmann). 8.30, Song and Piano-forte Recital by Annette Brincour and Gaby Schellenbach (Piano-forte): Frauenliebe und Leben (Schumann); Variations for Piano-forte (Mendelssohn); Four Songs (Ropartz, Words by Heine). 9.30, Mandoline Concert: March, On the Banks of the Rhine (Herzer); Overture, Imperia (Maciocchi); Impressions d'Espagne (Boucheron); Czardas, Milena (Maciocchi); Overture, The Golden Crown (Hermann); Selection from La Traviata (Verdi); March, Lustige Dorfschmiede (Fück). 10.30 (approx.), Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW; and FREIBURG, 570 metres.—10.0 a.m., Gramophone Concert: The London Symphony in D (Haydn); Symphony No. 5 in C Minor (Beethoven). 11.0, Time, News and Weather. 11.15 to 11.30, Sponsored Gramophone Music. 11.45, Sponsored Gramophone Music. 11.55, Weather. 12 Noon, See Frankfurt. 1.15 p.m., Time, Weather, News and Programme Announcements. 1.30, Gramophone Records of Songs by the Ural Cossacks Choir. 2.0 to 2.15, Sponsored Gramophone Music. 2.35, Talk: The Beginning of the Movement for the Emancipation of Women. 4.10 to 4.30 (from Ifzheim), Radio Report on the International Horse Races at Baden-Baden. 5.0, Talk by Emil Kahn on Evolution of Music: The Eastern and Northern European Nations in the Nineteenth Century—with Illustrations by the Stuttgart Philharmonic Orchestra. 6.15, Time, Weather and Agricultural Notes. 6.25, Talk: The Old German Princess and their Mercenary Armies. 6.50, Talk on Medical Hygiene. 7.15, Time, Weather and Programme Announcements for the Coming Week in Esperanto. 7.30, Violin Recital: Chaconne for Violin (Bach); Albumblatt (Wagner-Wilhelmy); Nocturne (Chopin-Saëns); Rondo capriccioso (Saint-Saëns). 8.0, Talk by Kurt G. Sell: What they are talking about in America, relayed from America. 8.15, Kleine Anzeigen—Radio Sequence (Antn. Schnack); Music by Frank Szuka. 9.15, Concert by the Stuttgart Philharmonic Orchestra, conducted by Emil Kahn: Kreuzritterfahre; Minuet (Benda); Alt-Schweizer (Michael Haydn); Overture, Abu Hassan (Weber); Serenade (Othmar Schoeck); Marionettes from Ballet Scenes (Glasunov); Prelude to the Third Act of The Mask (Hubay); Dreaming (Scriabin); Overture, Suzanne's Secret (Wolf-Ferrari); Furiant from Böhmische Musikanten (Grün). 10.20, Time, Weather, Programme Announcements and Sports Notes. 10.45, Dance Music from London. 12 Midnight (approx.), Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Exchange Quotations. 5.30, Music by an Argentine Orchestra. 5.45, Airs from Peer Gynt (Grieg): (a) Ingrid's Lament, (b) Arab Dance, (c) The Return of Peer Gynt, (d) Sol-

velj's Song. 6.0, Chansonnettes. 6.15, Dance Music. 6.30, Exchange and Horse Racing Results. 6.45, Operetta Music: Airs from (a) Elle est à vous (Yvain) and (b) Deshabillez-vous (Mercier). 7.0, Programme by a Viennese Orchestra. 7.15, Spanish Songs. 7.30, Programme Announcements and News. 7.45, Accordion Solos. 8.0, Military Music. 8.15, Concert: O Rosalinde, from Manon (Massenet); Prologue to I Pagliacci (Leoncavallo); Air from Carmen (Bizet); In the Steppes of Central Asia (Borodin); Norwegian Rhapsody (Lalo). 8.45, Programme by a Viennese Orchestra. 9.0, Sound Film Music. 9.15, Airs from (a) Barbe Bleue (Offenbach) and (b) Hans the Flute Player (Ganne). 9.30, Concert of Light Music. 10.30, North African News. 10.45, Music by an Argentine Orchestra. 11.0, Concert: Airs from (a) Faust (Gounod). (b) La Favorita (Donizetti) and (c) Patrice (Paladilhe); Violin Solos, (a) Les Cherubins (Couperin); (b) Tambourin chinois (Kreisler), (c) Les Cigognes (Sarasate), (d) Rondino (Beethoven). 11.30, Concerto in G (Beethoven). 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.0 p.m., Quintet Concert: Ritorna al campo (Fragna); Melody (Ralph); Pot-pourri of Ukrainian Melodies (Ferraris); Melody (Waldteufel); Mio caro (Sansoni); Selection from Schön ist die Welt (Lehár); Mary (Muci); Moskovianna (Tra vaglia). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence 500.8 metres.—6.35 p.m., Giornale radio, Report of the Royal Geographical Society, Agricultural Notes and Announcements. 7.0, Musical Programme: Fiori d'Alcazar (Giovanni); Tango della nostalgia (Pennati-Malvezzi); Juliska (Michiels), E l'Uccellino (Puccini). 7.25, Tourist Report. 7.30, Time, Announcements, and Gramophone Records of Variety Music. 8.0, Giornale radio and Weather. 8.40, Talk. 8.45, Symphony Concert conducted by Ugo Tansini: Overture, Iphigenia in Aulis (Gluck); Symphony No. 2 in D (Haydn); Literary Talk; Two Piedmontese Dances (Sinigaglia); Air for Strings and Organ (Respighi); Dream Pantomime from Hansel and Gretel (Humperdinck); Overture, The Mastersingers (Wagner). 11.0, Giornale radio.

VATICAN CITY

19.8 metres (Morning); and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Information in German. 8.0 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—4.20 p.m., Orchestral Concert of Light Music: 6.0, Talk for Housewives. 6.10, Tourist Report. 6.25, Talk on Hockey. 6.40, Sports Review of the Week. 6.55, Archæological Talk. 7.20, Time, Weather, and Programme Announcements. 7.30, Herminia zur Mühlen reads from her own Works. 8.0, Talk: What People are talking about in America, relayed from America. 8.15, Bruckner's Eighth Symphony, conducted by Leopold Reichwein. 9.35, Programme by the Three Nehrings, relayed from the Ronacher Café. 9.55, News, Weather, and Announcements. 10.10, Song Recital by Feodor Chaliapin: Calumny Aria from The Barber of Seville (Rossini); Monologue from Boris Godunov (Mussorgsky); Two Songs (Rimsky-Korsakov): (a) The Prophet, (b) The Volga Boat Song. 10.30, Dance Music relayed from London. 12 Midnight, Close Down.

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.20, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Gramophone Records (cont.). 2.10, Interval. 3.0, Economic Report. 3.10, Popular Music on Gramophone Records. 4.35, Announcements. 4.40, Talk: Polish Culture, relayed from Wilno, 563 metres. 5.0, Concert by the Kudejar Mandoline Orchestra, conducted by D. Jurkiewicz: March (Herzer); Waltz, Trommleade (Fück); Temptation Rag (Lodge); Suite orientale (Popy); Serenade (Carosio); Mazurka (Namyslawski). 6.0, Talk. 6.20, Dance Music and Light Music from the Café Gastronomica. 7.15, Miscellaneous Items. 7.35, Radio Journal. 7.45, Agricultural Press Review, relayed from Wilno. 7.55, Programme Announcements. 8.0, Symphony Concert by the Warsaw Philharmonic Orchestra. Conductor: E. Mlynarski. Soloist: S. Zmigrod-Pedyczkowska (Soprano). Overture, Tannhäuser (Wagner); Songs: (a) Elsa's Prayer from Lohengrin (Wagner), (b) Air from Tannhäuser (Wagner); Overture, Flis (Moniuszko); Air from Halka (Moniuszko); Sinfonietta (Perkowski). 8.55, Talk: The Ideal Listener-in. 9.10, Concert (cont.).: Symphony No. 7 in A (Beethoven). 9.50, Radio Journal. 9.55, Aviation Weather Report. 10.0, Dance Music. 10.40, Sports Notes. 10.50, Dance Music (cont.). 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

ALGIERS

363.4 metres; 13 kW.—7.0 p.m., Exchange Quotations and Market Prices. 7.10, Shipping Notes and Weather Forecast. 7.15, Concert of Light Music. 7.45, Violin Recital: Andalusian Romance (Sarasate); Mazurka (Zarsyehi); Adagio (Vivaldi-Bach). 7.55, News Bulletin, followed by Time Signal. 8.0, Request Gramophone Records: Selection from The Gipsy Princess (Kálmán); La Barquette (Raiter); Cou Cou (Jonasson); Le Coeur tzigane (Verolier); Es solerane, Au Bar du Soleil (Laverne); Hindou Song (Rimsky Korsakov); Le Patre des Montagnes. 8.30, Open-air Concert. 9.30, News Bulletin. 9.35, Open-air Concert (cont.). 10.30 (approx.), Close Down.

BARCELONA

RADIO-BARCELONA, Call EAJ1, 349 metres; 8 kW.—8.0 p.m., Trio Concert. 8.30, Exchange Quotations, Request Gramophone Records and News. 10.0, Chimes, Weather Forecast and Market Prices. 10.15, Concert by the Station Orchestra. 11.0, L'Endemàde Bodes—Catalan Comedy in Three Acts (Pous-Pagés). 1.0 (Sunday), Close Down.

BASLE.—See Schweizerischer Landessender.

BERLIN

KONIGS WUSTERHAUSEN, 1,635 metres; 60 kW.—12 Noon, Weather for Farmers. 12.5, Time Signal. 1.35, News Bulletin. 2.0, Gramophone Concert of Sound Film Music, relayed from Berlin (Witzleben). 3.0, Handwork for Children. 3.30, Weather and Exchange Quotations. 3.45, Talk on Cooking. 4.0, Talk: Egyptian Manuscripts. 4.30, See Hamburg. 5.30, Health Talk. 5.50, Talk on Mecklenburg. 6.5, Talk on German Dance Music. 6.30, The Eternal Harlequin, with Dramatic Illustrations. 6.55, Weather for Farmers. 7.0, English Lesson. 7.25, Talk: The German Village in the Middle Ages. 7.45, The Silent Hour. 8.10, See Leipzig. In the interval, at 9.30 (approx.), News and Sports Notes. 10.55, Weather, News, and Sports Notes, followed by Dance Music from Berlin (Witzleben). 12.30 a.m. (Sunday), Close Down.

BERLIN

WITZLEBEN, 419.5 metres; 1.5 kW.—4.5 p.m., Orchestral Concert conducted by Berthold Goldschmidt; Overture, Martha (Flotow); Suite, Lazy John (Nedbal); Annenpolka (Johann Strauss); Czardas from Ritter Pasman (Strauss); Talk on Films; Suite from the Swan Lake (Tchaikovsky); Night in Madrid (Glinka); Overture, Si j'étais Roi (Adam); Ballet Music from Undine (Lortzing); A Thousand and One Nights (Bortkiewicz); Nordische Hochzeit (Bräse); Frühling am Rhein (Eysler). 6.0, Talk on Gardening. 6.15, 'Cello Recital, by Max Baldner; Sonata in G (Gabielli); Adagio (Bach); Melody (Gluck); Adagio and Allegro (Boccherini). 6.50, Labour Market Report. 6.55, The Witzleben Station informs its Listeners. . . . 7.0, Topical Talk. 7.10, Talk: The Theatre Crisis. 7.35, The Narrative of the Week. 8.0, See Langenberg. 10.0, Weather and News. 10.15 (approx.), Dance Music. 12.30 a.m. (Sunday), Close Down.

BERNE.—See Schweizerischer Landessender.

BEROMUNSTER. — See Schweizerischer Landessender.

BODEN.—See Stockholm.

BODO.—See Oslo.

BORDEAUX-LAFAYETTE

304 metres; 13 kW.—6.30 p.m., Radio Journal. 8.0, News, Exchange Quotations and Lottery Results. 8.5, Sports Notes. 8.10, Gramophone Concert. 8.25, News and Weather Forecast. 8.30, See Paris (Eiffel Tower).

BRATISLAVA

297 metres; 14 kW.—6.0 p.m., Puppet Show. 7.0, See Prague. 8.40, See Brno. 9.0, Orchestral Concert. 10.0, See Prague. 10.15, Programme Announcements. 10.20, See Moravská-Ostrava.

BREMEN.—See Hamburg.

BRESLAU

325 metres; 1.5 kW. and GLEIWITZ, 253 metres.—6.0 p.m., Fred A. Angermeyer reads from his own Works. 6.30, Concert by the Station Orchestra, conducted by Franz Marszalek; March, Frisch drauf los (Wintersteiu); Overture, Masaniello (Auber); Variations on a Viennese Song by Benatzky (Leschetitzky); Selection from The Daughter of the Regiment (Donizetti-Schreiner); Egyptian Suite (Thiele); Ballad (Friedl); Overture, The Ace of Hearts (Künneke). 7.30, Weather for Farmers. 7.32, This will interest you—a Surprise Programme. 8.0, See Langenberg. 10.0, Time and News. 10.30, Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

BRNO

322 metres; 35 kW.—6.0 p.m., Talk: A Boy Scout's Diary. 6.15, See Prague. 6.25, German Transmission, News and Song Recital. 7.0, See Prague. 8.40, My first Success—A Detec-

SATURDAY

SEPTEMBER THE THIRD.

PRINCIPAL EVENTS OF THE DAY:

AT HOME

NATIONAL

Orchestral concert. Organ recital. Running commentary on the International Ulster Grand Prix Motor Cycle Race from County Antrim. London Regional programme. Organ music. Welsh interlude. Dr. John Barker: "The British Association at York." Gramophone records. Promenade concert. Mr. Frances Iles: By the Neck—a series of Crucial Episodes (3). Dance music.

LONDON REGIONAL

National programme. Orchestral concert. Instrumental concert. "Love in Greenwich Village"—a modern version of "Love in a Village" (Arne, 1760). Dance music.

MIDLAND REGIONAL

Dance music. London Regional programme. Choral concert. Military Band concert.

NORTH REGIONAL

National programme. Orchestral concert. "All i' t' Family."

WEST REGIONAL

National programme. Orchestral concert. Welsh interlude. National programme.

SCOTTISH REGIONAL

National programme. Choral concert. Dance music.

BELFAST

National programme. Running commentary on the International Ulster Grand Prix Motor Cycle Race. National programme.

ABROAD

BUCHAREST

Roumanian music by Luca Orchestra.

LANGENBERG

"A Merry Trip Down the Rhine."

PARIS (Radio-Paris)

Concert by a Mandoline and Banjo Orchestra.

ROME

Opera in four acts: "Dejanice" (Catalini).

WARSAW

Chopin recital.

tive Sketch, arranged for Radio. 9.0, See Bratislava. 10.0, See Prague. 10.15, News Bulletin. 10.20, See Moravská-Ostrava.

ret); Evening Bells (Rodionov); Military March (Schubert).

BUCHAREST

394 metres; 12 kW.—4.0 p.m., Concert of Variety Music by the Station Orchestra. 5.0, News Bulletin and Time Signal. 5.10, Concert of Variety Music (cont.). 6.0, Educational Talk. 6.40, Popular Music on Gramophone Records. 7.0, Time Signal. 7.1, Dramatic Programme. 7.45, Saxophone Solos. 8.15, Romanian Music by the Luca Orchestra. 8.45, News Bulletin.

BUDAPEST

550 metres; 18.5 kW.—Programme also relayed on 210 metres from 8.45 p.m. to 12 Midnight.—5.30 p.m., Cigány Concert. 6.30, Orchestral Concert Relay; Rakoczy March (Händel-Hubay); Zigeunerweisen (Sarasate); Selection from The Barber of Seville (Rossini); Selection from Lakmé (Delibes); Song (Clement); Aria from The Mastersingers (Wagner). 7.50, Racing Report. 8.0, Answers to Correspondence. 8.45, The Growth of the Opera—Oscar Strauss; Concert by the Royal Hungarian Opera House Orchestra, conducted by Bela Nagypal; Overture, Songs and Duets from A Waltz Dream; Overture, Two Songs and Duet from Rund um die Liebe; Waltz Potpourri; Songs from Die Teresina; Waltz Songs; Selection from Die Prinzessin von Tragant. 10.30, News, followed by Cigány Concert from the Hotel St. Gellert.

CASSEL.—See Frankfurt.

COPENHAGEN

281 metres; 0.75 kW. and KALUNDBORG, 1,153 metres; 7.5 kW.—12 Noon, Time and Chimes from the Town Hall. 12.5 p.m., String Ensemble Concert, relayed from the Wivex Restaurant. 2.0 to 2.30, Interval. 2.30, Gramophone Concert: Einar Larson; Song from Nero (Boito); Theodore Chaliapine; Aria from Russalka (Dargomizsky); from Carmen (Bizet); Jascha Heifetz; Waltz, La plus que lente (Debussy-Roques); Goltz Quartet; Der Jägers Abschied (Mendelssohn); Ernst Rolf; Giv den til mig (Ruby); Dan Donovan; Snap your fingers, clap your hands (Sarony); Van and Schenck; Melody (Tobias). 3.0, Programme for Children. 3.30, Orchestral Concert conducted by Emil Reesen. Soloist: Eliza Herlov (Pianoforte). Overture, Das Nachtlage in Granada (Kreutzer); Waltz, Wiener Frauen (Joh. Strauss); Spanish Dance (Fielitz); Selection from Madame Butterfly (Puccini); Waltz Intermezzo, Ballgäster (Meyer-Helmund); Persian March (Joh. Strauss); Pianoforte Solos: (a) Prelude (Sehested), (b) Selection from the Pianoforte

Pieces, Op. 47, (c) Vaarsang (Borresen), (d) Selection from the Pianoforte Pieces, Op. 17 (Nielsen), (e) Strofe (F. Henriques), (f) Concert Etude, Glissanda (Rung), (g) Humoresque (Nielsen); Selection from The Little Dutch Girl (Kálmán); Suite from Lakmé (Delibes); Cherry Ripe (C. Scott); Melody (Gillet); March (Möller). 5.40, Exchange Quotations and Fish Market Prices. 5.50, Reading: Mozart in Paris (Hetsch). 6.20, French Lesson for Beginners. 6.50, Weather Report. 7.0, News Bulletin. 7.15, Time Signal. 7.30, Legal Talk. 8.0, Chimes from the Town Hall. 8.5, Duet Op. 13 in E Minor for Violin and Bassoon (Spohr), by Mogens Hansen and Niels Borre. 8.20, Reading from the Works of Gudmundur Kamban. 8.45, Concert by Louis Preil's Instrumental Ensemble conducted by Ludvig Brandstrup, and a Vocal Quartet: Einzug der Jantscharen (Giel); Autumn Serenade (Dicker); Waltz, So köstlich man nur in Wien (Abraham); Foxtrot, Ein bischen Liebe für mich (Abraham); Intermezzo (Dicker); Notre doux rêve (Ackermans); Potpourri, Ufaton-Bombeu (Borchert); Waltz (Lenoir); Gloria (Hager); Czardas (Kempner); Melody (Murzilli); I Wien mellem blomstrende Ranker (Stolz); Intermezzo, Bib and Bob (Stolz); May (Hahn); Es war einmal ein Walzer (Lehar); A te Sola (Giuliani); Pasodoble, Ein deutsches Mädel (Reisfeld). 11.0, Dance Music from the Ritz Restaurant. In the interval at 12 Midnight, Time and Chimes from the Town Hall. 12.15 a.m. (Sunday), Close Down.

CORK.—See Dublin.

CRACOW

312.8 metres; 1.5 kW.—7.10 p.m., Miscellaneous Items, News Bulletin, and Programme Announcements. 7.35, Radio Journal. 7.45, Review of Foreign Affairs. 8.0, See Warsaw. In the interval at 10.40, Sports Notes. 12 Midnight (approx.), Close Down.

DANZIG.—See Heilsberg.

DRESDEN.—See Leipzig.

DUBLIN

Call 2RN, 413 metres; 1.2 kW.; and CORK, 224.4 metres.—1.30 to 2.0 p.m., Time Signal, Weather Report, Stock Report and Light Music on Gramophone Records. 7.20, News Bulletin. 7.30, Time Signal. 7.41, Talk. 7.45, Gaelic Talk. 8.0, Concert by the Augmented Station Orchestra. 8.30, Pianoforte Solos by Margaret Pigott. 8.45, Concert by the Augmented Station Orchestra (cont.). 9.15, Baritone Solos by T. W. Hall. 9.30, Pianoforte Solos by F. C. J. Swanton. 9.45, Contralto Solos by Mairin Fenning. 10.0, Selections by the Augmented Station Orchestra. 10.30, Time Signal, News, Weather Report, Sports Review, and Close Down.

FECAMP

223 metres; 10 kW.—12 Noon, Sponsored Concert of Light Music on Gramophone Records. 12.50 p.m., News Bulletin. 12.45, Concert of Popular Music. 7.30, Radio Gazette. 8.0, Tour de Garde Programme. 8.45, News Bulletin. 9.0, Concert, relayed from Le Tréport. 11.0 till Close Down. Programme in English by the I.B.C. 11.0 p.m., Recital of Welsh Songs: Land of my Fathers; Sospian Fach; Y Bugail; My little Welsh Home; Y Gwew; Cymru Fydd; God bless the Prince of Wales. 11.30, Gramophone Selections from Viktoria and her Hussar (Abrahams): Only one Girl in the World for me; Star of my Night; Mause; Goodnight and Pardon Madame. 11.45, Trio; Donegal Hornpipe; Morning Dew; Cliff Hornpipe. 12 Midnight, Orchestral Concert: If I didn't have you; I've got a Feeling; I'm still at your Beck and Call; I'm in Love with You; Do Something; When the Organ played at Twilight; Yet you Forgot; I'm following you; I'll be reminded of you; Dream Lover; I don't want to dream; Harmony Heaven; Falling in Love again; Great Day; Hush-a-bye Baby. 1.0 a.m. (Sunday), Variety Concert: My Baby and I; Van Peters; Dreams Four little Blackberries; My sweet Tooth says I wanna; I don't know why; The Police Station; El Capitan; Donauweller; O Nicholas; On a cold and frosty Morning; Polly; Carnalava. 2.0, Trio Selections with Pianoforte Accompaniment: I am the Words (de Sylva); Love Everlasting (Frini); A Bit, a Saddle and a Horse (Brown-Smith); Little White Lies (Donaldson); Song of Songs (Moya); P.C. Brown (Longstaffe); One Night alone with You (Jeffreys). 2.30, Music by the New Florentine Dance Band: Si diventassi un gran signor (Mascheroni); Se tu mi baci (Mascheroni); Io ti voglio baciare (Biacchi); Lodovico (Mascheroni); Se non sei la prima (Jurmann); Piove (Caslar); Pontenero (Heymann). 2.57 a.m., I.B.C. Goodnight Melody. 3.0, Close Down.

FLENSBURG.—See Hamburg.

FLORENCE.—See Turin.

FRANKFURT

390 metres, 1.5 kW.; and CASSEL, 246 metres.—6.15 p.m., Time and Exchange Quotations. 6.25, See Stuttgart. 6.50, Astronomical Talk: The Heavens in September and October. 7.15, Time, Programme Announcements, Weather Forecast and Exchange Quotations. 7.30, Talk on Gymnastics. 8.0, Concert of

Operetta Music by the Stalin Orchestra, conducted by Hans Rosshard. 10.20, Time and News. 10.45, See Munich. 12 Midnight, Close Down.

FREDBRICKSSTAD.—See Oslo.
FREIBURG.—See Stuttgart.
GENEVA.—See Radio-Suisse Romande.
GENOA.—See Turin.
GLEIWITZ.—See Breslau.
GÖTEBORG.—See Stockholm.
GRAZ.—See Vienna.
HAMAR.—See Oslo.

HAMBURG

Call ha, in Morse, 372 metres; 1.5 kW. Relayed by Bremen, 270 metres; Flensburg, 218 metres; Hanover, 566 metres; and Kiel, 232.2 metres.—4.30 p.m., Concert by the Norag Orchestra, conducted by José Eibenschütz; Overture, William Tell (Rossini); Mozart Fantasia (Bunkler); Russian Carnival—for Flute and Orchestra (Ciardi); Norwegian Rhapsody (Halvorsen); Waltz, Barcarolle (Waldteufel); Selection from The Gipsy Baron (Johann Strauss). 5.30, Reading: Technics and Morals (Hellmuth Günther). 5.55, Variety Programme. 6.30, Talk: Japan in World Affairs. 7.0, Topical Talk. 7.15, Weather Forecast. 7.20, Norderney—A Programme of Folk Songs and Dances from a North Sea Island, with Introductory Talk. 8.0, See Langenberg. 10.0, News Bulletin. 10.20, Dance Music.

HANOVER.—See Hamburg.

HEILSBURG

276.5 metres; 60 kW.; and **DANZIG**, 453.2 metres.—11.30 a.m., Concert by the Small Orag Orchestra, conducted by Eugen Wilcken: Overture, Medée (Oherubini); Suite No. 2 (Michele); Waltz, Madeleine (Waldteufel); Fantasia on Mozart's Music (Urbach); Serenata amorosa (Beccè); Schleier-Intermezzo (Schillings); Kysler Potpourri (Dostal); Waltz, Blumen aus Spanien (Ailbout); Titanen Marsch (Heinecke).—1.20 p.m., News Bulletin. 1.30, Gramophone Concert of Opera and Light Music. 2.30 to 4.0, Interval. 4.0 (from Danzig), Kindergarten. 4.30, Concert by the Königsberg Opera House Orchestra, conducted by Karl Hrubetz; Freiheit Marsch (Laukien); Overture, The Merry Wives of Windsor (Nicolai); Waltz, Etincelles (Waldteufel); Fantasia, Der unsterbliche Verdi (Rhode); Overture, Venus auf Erden (Lincke); Waltz, Wine, Woman and Song (Joh. Strauss); Klänge aus Arkaden (Morena); Diavolettta (Lindemann); Goldblondes Mädchen (Granchstäedten); Grenadier Marsch (Wiedemann). In the interval at 5.0 (approx.), (from Danzig), Talk on Films. 6.0, Programme Announcements in Esperanto. 6.15, Agricultural Report. 6.20, World Market Prices. 6.35, Talk: The Climate of the Future. 7.0, Hans Reisiger reads from his own works. 7.30, A Radio Report from a Camp. 8.5, Weather Report. 8.10, Concert of Light Music by the Small Orag Orchestra, conducted by Eugen Wilcken. 10.10, Weather, News and Sports Notes. 10.15 (approx.), Dance Music from Berlin (Witzleben). 12 Midnight, Close Down.

HILVERSUM

Announced **HILVERSUM**, 296.1 metres; 20 kW. (7 kW. up to 4.40 p.m.).—Programme of the Catholic Radio Society (K.R.O.). 7.40 to 8.55 a.m., Trio Concert. 9.40, Chopin Music on Gramophone Records. 11.10, Religious Address. 11.40, Police Notes. 11.55, Sextet Concert conducted by Piet Lustenhouwer: Im Casino da steht ein Pianino (Stolz); Will dir die Welt zu Füßen legen (Abraham); Waltz, Gold and Silver (Lehar); Warum lächelst du Mona Lisa (Stolz); Potpourri (Morena); Waltz, Sylphides (Lincke); Potpourri of Popular Songs (Dostal); Dornröschen Brautfahrt (Rhode); Potpourri of Strauss Walzes (Weber); Die Mühle im Tale (Rhode); That tender Melody (von Lindern). 1.25 to 1.40 p.m., Interval. 1.40, Gramophone Records of Variety Music. 2.10, Programme for Children. 3.40, Programme arranged by the H.I.R.O. 4.40, Gramophone Records of Light Music. 4.55, Sports Talk. 5.10, Gramophone Records of Light Music. 5.50, Journalist Review. 6.10, Gramophone Records of Variety Music. 6.50, Talk: Limburg. 7.10, Police Notes. 7.25, Light Music on Gramophone Records. 7.40, Orchestral Concert conducted by M. van 't Woud. 10.40, Variety Concert on Gramophone Records. 11.40 (approx.), Close Down.

HORBY.—See Stockholm.

HUIZEN

Announced **HILVERSUM**, 1,875 metres; 8.5 kW.—6.25 to 9.40 a.m., Programme of the Workers' Radio Society (V.A.R.A.). 6.25 to 6.40 and 7.10 to 7.25 a.m., Physical Culture. 7.40, Gramophone Records of Light Music. 8.40, Septet Concert. 9.40, Religious Programme by the Liberal Protestant Radio Society (V.P.R.O.). 9.55, Concert. 11.40, Orchestral Concert, conducted by Hugo de Groot, and Gramophone Records of Popular Music. 1.25 p.m., Interval. 1.40, Talk. 1.55, Mandoline Concert: March, On Duty (Rosey); Narcissus (Nevin); Waltz, Estudiantina (Waldteufel); Mattinata (Leoncavallo). 2.10, Sports Talk. 2.25, Concert (continued): Hawaiian Music; Polospiele (Fetras). 2.40, Talk. 3.0, Mandoline

SEPT. 3rd

SATURDAY

continued.

Concert. 3.10, Talk. 3.15, Gramophone Records of Light Music. 4.10, Talk on Politics. 4.25, Instrumental Concert by Joh. Jong (Organ); John Helden (Violin) and Frieda Belinfante ('Cello); Cortège carnavalesque (Razigade); Charme d'Espagne (Mezzacapo); Canzonetta (Filippucci); Selection from the Suite, Un bal à la cour (Thomé); Selection from Le Dérive (Saint-Saëns-Mouton). 5.10, The Woman who is never too late—Play (Lichtenberg, translated by Linden). 5.25, Concert (contd.): Melody (Goldberg); Forget-me-not (Macbeth); Farewell to Cucullain (Kreisler-Helden); Gavotte (Godard); Rigaudon (Kunc); Scènes rustiques (Mouton). 6.10, Programme for Children. 7.10, Variety Concert. 10.40, News and Gramophone Records of Light Music. 11.40 (approx.), Close Down.

INNSBRUCK.—See Vienna.

KALUNDBORG.—See Copenhagen.

KATOWICE

408 metres; 16 kW.—7.0 p.m., Sacred Music on Gramophone Records. 7.20, News Bulletin and Popular Music on Gramophone Records. 7.45, Talk. 10.50, Concert of Dance Music.

KAUNAS

1,935 metres; 7 kW.—6.0 p.m., Rifle Shooting Practice. 6.30, Health Talk. 6.50, Whistling Solos. 7.0, Weather Forecast, and News Bulletin. 7.30, Concert. Soloists: M. Zentavicius and V. Bagdonavicius (Clarinets), and P. Sinskis (Xylophone). Intermezzo, Capriccio (Smith); Xylophone Solo, Valse Capricieuse (Bode); Clarinet Solos: (a) The Clock and the Dresden Figures (Kettelby); Verwandte Seelen for Two Clarinets (Schreiner); Waltz, The Blue Danube (Joh. Strauss); Concert Polka (Sabahel). 8.40, Agricultural Talk. 9.0, Botanical Talk. 9.20, Dance Music. 10.30 (approx.), Close Down.

KIEL.—See Hamburg.

KLAGENFURT.—See Vienna.

KOSICE.—See Prague.

LAHTI

1,796 metres; 54 kW.; and **HELSINKI**, 368.1 metres.—6.15 p.m., Concert by the Station Orchestra. 6.45, A Sketch. 7.20, Violin Recital by Helge Sahlman. 7.45, Talk. 8.10, Concert by the Station Orchestra. 8.45, News in Finnish. 9.0, News in Swedish. 9.15, Concert of Dance Music. 11.0 (approx.), Close Down.

LANGENBERG

473 metres; 60 kW.—11.15 a.m., Gramophone Concert; Marek Weber and his Orchestra: Der ewige Verdi (Morena); The Operetta Ensemble: Selection from Die Fledermaus (Johann Strauss); Lotte Schöne (Soprano): Concert Aria, Bolero (Rossini); The Philadelphia Symphony Orchestra, conducted by Leopold Stokowsky: Flower Waltz from The Nutcracker Suite (Tchaikovsky); Marek Weber and his Orchestra: Selection from Prince Methusalem (Johann Strauss); Willy Domgraf-Fassbaender (Baritone), with Chorus and Orchestra: Alle Tage ist kein Sonntag (Clewing); Military Orchestra, conducted by Oskar Hackenberger: March, Old Comrades (Teike). 12 Noon, Concert, conducted by Wolf; Overture, Preciosa (Weber); German Dances (Reger); Diverissement from Scherwegewicht (Krenek); From the Land of the Sun—Second Japanese Suite (Yoshitomo); Czardas from Coppélia (Delibes); Selection from The Mikado (Sullivan). 1.15 p.m., Weather, News and Time Signal. 1.30, Concert from Stuttgart. 2.35, Gramophone Concert of Variety Music. 3.30, Economic Notes and Time Signal. 3.50, Programme for Children. 4.20, Talk: Through the Rhineland and Westphalia—The Möhnesee. 4.40, Extracts from Women's Books and Periodicals: Girls in All Parts of the World. 5.0, Concert. 6.20, Talk: Works of Art. 6.45, Weather, Time, Economic Notes and Sports Notes. 7.0, Talk: Materialism and Idealism. 7.20, Wireless Notes. 7.30, Talk on West German Industrial Areas. 7.55, First General News. 8.0, A Merry Trip down the Rhine; Programme by the Station Orchestra, conducted by Eysoldt, the Polyhymnia Male Voice Choir, conducted by Paul Kuhl and Soloists. 10.5, News and Sports Notes. 10.20, Concert, conducted by Eysoldt. 12 Midnight, Gramophone Dance Music. 1.0 a.m. (Sunday), Close Down.

LAUSANNE.—See Radio-Suisse Romande.

LEIPZIG

259 metres; 2 kW.; and **DRESDEN**, 319 metres.—5.0 p.m., Concert by the Leipzig Symphony Orchestra, conducted by Hilmar Weber: Overture, Barbe Bleue (Offenbach); Suite in D for String Orchestra (Taubert); Piedmontese Dance in A (Sinigaglia); Waltz, Münchner Kindl (Komzak); March Potpourri, Achtung! wir gehen voran (Recktenwald); Melodies from Lysistrata (Lincke); Overture, Die Heideschlacht Rokokozeit (Donath); Rundfunkmarsch (Pischek); Juxbaron Waltz from Der Juxbaron (Kollo); Dance Intermezzo, Pöppe und Hampelmann (Siede). 6.30, Talk on German Diction. 6.50, A Modern Dictionary. 7.0, Talk: Goethe's

Princely Friend, Karl August von Welmar. 7.30, Reading: A Year in Central Sumatra. 8.0, Topical Talk. 8.10, A Podium of Merriment (Mozart); The Leipzig Symphony Orchestra, and Elisabeth Gerö (Soprano), Walter Kathammer (Tenor), Oskar Lassner (Bass), Heinrich Schachtebeck (Violin), Christian Klug ('Cello), and Herbert Gross (Viola), with Introductory Talk by Dietrich von Oppen. In the interval, from 9.30 to 9.45, News from Berlin (Königs Wusterhausen). 10.55, News Bulletin, followed by Dance Music by the Emdé Orchestra.

LINZ.—See Vienna.

LJUBLJANA

574.7 metres; 2.5 kW.—6.0, Quintet Concert. 7.0, Physical Culture Course. 7.30, Talk for Workers. 8.0, Quintet Concert (contd.). 9.0, Dance Music, relayed from Bled. 10.0, Time Signal, News and Light Music on Gramophone Records.

LOWO

381 metres; 16 kW.—7.5 p.m., Miscellaneous Items. 7.25, Popular Music on Gramophone Records. 7.35, See Warsaw. 7.45, Answers to Correspondents. 8.0, See Warsaw. 12 Midnight (approx.), Close Down.

LYONS

LA DOUA; 465.8 metres; 1.5 kW.—7.0 p.m., Gramophone Concert of Light Music. 7.30, Radio Gazette for Lyons and the South-East. 8.30, Thais—Opera in Four Acts (Massenet), relayed from Paris (Ecole Supérieure), 447.1 metres.

MADRID

ARANJUEZ (EAQ), 30.4 metres; 20 kW.—7.0 p.m., Concert of Light Music. 8.20, Talk. 8.30, Popular Music. 9.0 to 12.30 a.m. (Sunday), Interval. 12.30, Light Music. 12.45, Radio Journal. 1.0, Reading. 1.35, Talk. 1.40, Light Music. 2.0 (approx.), Close Down.

MADRID

UNION RADIO; Call EAJ7; 424.3 metres; 2 kW.—8.0 p.m., Chimes, Market Prices, and Request Gramophone Records. 9.15, News Bulletin. 9.30 to 11.0, Interval. 11.0, Chimes and Time Signal, followed by extracts from (a) La Verbena de la Paloma—Operetta (Breton), and (b) The Dollar Princess—Operetta (Fall). 1.15 a.m. (Sunday), News Bulletin. 1.30, Chimes and Close Down.

MALMO.—See Stockholm.

MILAN.—See Turin.

MORAVSKA-OSTRAVA

263.8 metres; 11 kW.—6.15 p.m., See Prague. 8.40, See Brno. 9.0, See Bratislava. 10.0, See Prague. 10.15, Programme Announcements and Theatre Notes. 10.20, Variety Concert.

MOSCOW

TRADES UNION, 1,304 metres; 100 kW.—6.30 p.m., Young Communists' Radio Journal. 7.10, Popular Music. 9.0, Talks in French and Spanish. International Youth Day. In the interval at 9.55, Time Signal. 11.0 approx., Close Down.

MOTALA.—See Stockholm.

MUHLACKER.—See Stuttgart.

MUNICH

533 metres; 1.5 kW. Relayed by Augsburg and Kaiserslautern, 560 metres, and Nürnberg, 239 metres.—6.15 p.m., Programme for Children. 7.0, Wireless Notes. 7.15, Recital by Dr. Fritz Linden (Pianoforte), Friedel Günther (Soprano), Lotte Röpel (Contralto), Marie von Stubenrauch (Violin), and Richard Staab (Accompanist): Soprano Solos (Fleck): (a) Die Königskinder, (b) Frühlingskinder, (c) Ich und du; Pianoforte Solos; Contralto Solos (Von Fieli): (a) Die Lust so schwer, (b) Lasz mich in deinem stillen Auge ruhen, (c) Reue, (d) Auf dem Stein. 7.40, Talk: A Teacher in Afghanistan. 8.0, Holidays at Home—a Wireless Revue (Erich Müller-Ahremberg). 9.30, Gramophone Concert of Dance Music. 10.20, Time and News. 10.45, Military Band Concert, relayed from Miltenberg. 12 Midnight, Close Down.

NAPLES.—See Rome.

NOTODDEN.—See Oslo.

OSLO

1,083 metres; 60 kW. Relayed by Fredrikstad, 367.6 metres; Hamar, 560 metres; Notodden, 447.1 metres; Porsgrund, 453.2 metres; and Rjukan, 447.1 metres.—6.15 p.m., Norwegian Songs and Music for the Hardanger Fiddle. 6.45, Talk on Economics. 7.0, Announcements, Weather, and News. 7.30, Talk: Work in the Colonies for Mentally and Physically defective People. 8.0, Time Signal. 8.2, Academic Festival, relayed from the National Theatre. 8.20, Recitations and Orchestral Concert: Potpourri of Viennese Music (Leopold); Song of the Old Fisher-

man (Halvorsen); Passe-pied (Delibes); Weigenlied (Schubert); Menuet tendre (Lemaître); Waltz from Der arme Jonathan (Millbeker); Overture, Orpheus in the Underworld (Offenbach). 9.40, Weather and News. 10.0, Topical Talk. 10.15, Humorous Recitations. 10.45, Dance Music. 12 Midnight, Close Down.

OSTERSUND.—See Stockholm.

PALERMO

542 metres; 3 kW.—5.30 p.m., Popular Music on Gramophone Records. 6.0, Programme for Children. 6.30 to 8.0, Interval. 8.0, Announcements, Tourist Talk, Agricultural Notes, and Giornale Radio. 8.20, Light Music on Gramophone Records: In the interval at 8.25, Sports Notes, Time Signal, and Announcements. 8.45, La Fille de Madame Angot, Operetta in Three Acts (Lecocq). Conductor: F. Militello. In the intervals, Talk and Announcements. News after the Programme.

PARIS

EIFFEL TOWER, Call FLE, 1,445.7 metres; 13 kW.—Time Signals (on 2,650 metres), at 10.26 a.m. and 11.26 p.m. (Preliminary and 6-dot Signals).—6.45 p.m., Review of New Gramophone Records. 7.0, Le Journal Parlé. 8.20, Weather Report. 8.30, Thais—Opera (Massenet), relayed from the Opera House. 11.30 (approx.), Close Down.

PARIS

POSTE PARISIEN; 328.2 metres; 60 kW.—12 Noon to 2.0 p.m., News Bulletin and Light Music on Gramophone Records. In the intervals at 1.0, Press Review; and at 1.30, News and Press Review. 7.0, News Bulletin and Press Review. 7.5, Popular Music on Gramophone Records. 7.45, Review of the Events of the Week. 8.0, Gramophone Concert (contd.). 8.15, Dramatic Programme. 9.0, Concert of French Songs by Music Hall Artists. 10.0, Dance Music on Gramophone Records. 11.0 (approx.), Close Down.

PARIS

RADIO PARIS, Call GFR, 1,725 metres; 75 kW.—6.45 a.m., Physical Culture. 7.30, Weather and Physical Culture (contd.). 7.45, Gramophone Records of Variety Music. 8.0, Press Review and Weather. 12 Noon, Gramophone Records of Light Music:

Marche grecque (Ganne); Song: L'Homme rouge (Borel-Clerc); Pierrot Galant (Chillemont); Song, Je voudrais lui dire (Coslow-Harling); Accordion Solo, Les Lilas (Doelle); The Spanish Mantilla (Guerrero); Song, The Wedding of the Painted Doll (Brown); Mandoline (May); Song, Mon cœur est à vous (Valaire); Siempré (Blanco); Duet: Suzon (Herb Brown); Ton amour c'est ma vie (Dufas); Melody (Sider and Mayaud); Dajos Bela and his Orchestra; La Débutante (Iras-Dompre); Song, Estampilla (Romero-Delfino); Amorette (Gung'l); Song, I'm looking at the World through Rose-coloured Glasses (Abraham); C'est Montparnasse (Heintz); Song, Margot reste au Village (Zevaco); A la Godille (van Hoorebeck); Song, Pluie de Roses (Avignon); Chanson d'amour (Bixio); In the intervals: News and Weather. 6.30, Market Prices, Weather, Agricultural Talk and Racing Results. 7.0, Talk arranged by the Union des Grandes Associations Françaises. 7.10, Gramophone Concert. Selection from Le petit Duc (Lecocq); Violin Solo, Souvenir (Drdia); Clarinet Solo, Rigaudon (Lacôme); Bonsoir Madame la Lune (Marinier); Extase (Ganne); Melodies from Rose Marie (Friml): (a) O Rose Marie, (b) Minuet of the Minute; Song, Les Lilas (Doelle); Serenade, Ay, Ay, Ay (Perez-Freire). 7.45, Commercial Prices and News. 8.0, Reading. 8.30, News and Sports Notes. 8.40, Review by Jean Rieux. 8.45, Scenes, Sketches, and Humorous Songs. 9.15, Press Review and News. 9.30, Concert by a Mandoline and Banjo Orchestra, conducted by Charles Feret; Marche militaire (Schubert); Minuet from the Military Symphony (Haydn); Tambourin (Rameau); Mazurka from Isoline (Messenger); Waltz from Isoline (Messenger); Song from A Night in May (Rimsky-Korsakov); Gnomesparade (Noack); Lointain Espoir (Cottin); Glow Worm Idyll (Lincke); Habañera (Chabrier); Don Diegue (Goldberg). 10.30, Gramophone Concert,

PITTSBURGH

WESTINGHOUSE ELECTRIC (KDKA), 306 metres; 25 kW. Relayed by WXXK on 48.86 metres and 25.27 metres.—9.0 p.m., Saturday Matinée, from New York. 9.30, Concert Favourites, from New York. 10.0, Teaberry Baseball Scores. 10.5, David Lawrence Dispatch. 10.10, KDKA Artist Bulletin. 10.12, Programme Announcements. 10.15, Talk: Health through Recreation. 10.30, Behind the Law—Tales of the Pennsylvania State Police. 10.45, Little Orphan Annie. 10.50, Temperature Report. 10.51, Weather Report. 11.0, The Little German Band. 11.30, Time Signal. 11.31, Temperature Report. 11.32, Teaberry Sport Review. 11.37, Press News-Reeler. 11.44, Weather Report. 11.45, Programme to be announced. 11.59, Time Signal. 12 Midnight, Pepsodent Amos 'n' Andy, from New York. 12.15 a.m. (Sunday), Terrace Gardens Orchestra, from New York. 12.30, Sacred Songs. 1.0, The Play's the Thing, from New York. 1.30, Programme to be announced. 2.0, Porto-Rican American Coffee—Eltoro Week-End Revue with Gus Van,

SEPT. 3rd

SATURDAY

continued.

the Pickens Sisters and Vic Arden's Orchestra, from New York. 2.30, Programme to be announced. 3.0, Homey and Old-fashioned. 3.30, Object Matrimony, from New York. 3.45, Twenty Flingers of Harmony, from New York. 4.0, Time Signal. 4.1, Teaberry Sport Review. 4.11, Temperature Report. 4.12, Weather Report. 4.15, Press Last Minute News Flashes. 4.20, Messages to the Far North. 5.0, Jack Pettis and his Orchestra. 5.30, Time Signal and Good Night.

PORSGRUND.—See Oslo.

POZNAN

335 metres; 1.9 kW.—5.0 p.m., See Warsaw. 6.0, See Wilno. 7.0, Talk on Poznan. 7.15, Miscellaneous Items and News. 7.35, See Warsaw. 7.45, Gramophone Records of Light Music. 7.58, Time Signal. 8.0, See Warsaw. In the intervals, Theatre Review and Announcements. 9.55, Time, Sports Notes, and Police Announcements. 10.5, See Warsaw. 10.40, News Bulletin. 10.50, Dance Music from the Café Polonia. 12 Midnight, Close Down.

PRAGUE

488.6 metres; 120 kW.—5.50 p.m., Sex Talks. 6.10, Agricultural Report. 6.15, Talk: Rationalisation and the Feminine Mind. 6.25, German Transmission: News, Talk on the Polish Theatre, and Topical Talk. 7.0, Concert of Old Prague Melodies. 7.40, Concert by a Brass Band. 8.40, See Brno. 9.0, Time and News, followed by a Concert from Bratislava. 10.0, Time Signal, News Bulletin, Theatre Notes and Programme Announcements. 10.20, See Moravska-Ostrava.

RABAT

416 metres; 6 kW.—1.30 to 3.0 p.m., Orchestral Concert, conducted by Marcel Sallin; Soloists: Adrien Finzi (Violin) and Paul Neri (Cello); Waltz Suite from The Gipsy Princess (Kalman-Salabert); Overture, Giralda (Adam-Salabert); Violin Solo: Andante from the Spanish Symphony (Lalo); Variety Items and Weather Forecast; Melody from La Favorita (Donizetti); 'Cello Solo: Badinage (Delmas) Song; Allegro and Molto Moderato (Fauré-Salabert); Melody from Ciboulette (Hahn-Salabert); Tabarin's March (Roche). 5.0 to 6.0 p.m., Popular Music on Gramophone Records. 8.0, News Bulletin, followed by Orchestral Concert of Andalusian Music. 8.45, Le Journal Parlé, Weather Forecast, and News. 9.0, Concert; Melody from Les Vingt huit Jours de Clairette (Roger-Tavau); Song: Petit Français, gentil Français (Offenbach); Melody from Die Fledermaus (Joh. Strauss-Tavau); Song, Flossie (Szulc-Salabert); Fantasy (Szulc-Salabert); Song, La Dolores (Breton); Selection from Dédé (Christine-Salabert). 10.0, Variety Music on Gramophone Records. 11.15 (approx.), Close Down.

RADIO-SUISSE ROMANDE

SOTTENS, 403 metres; 25 kW.; LAUSANNE, 630 metres; and GENEVA, 760 metres.—12.30 p.m., Time Signal from Neuchâtel Observatory. 12.31, News Bulletin and Weather Forecast. 12.40 (from Lausanne), Light Music on Gramophone Records. 1.0, Financial Notes. 1.5 (from Lausanne), Popular Music on Gramophone Records. 2.0 to 5.0, Interval. 5.0, Time Signal from Neuchâtel Observatory. 5.1, Concert by a String Orchestra. 6.30 (from Lausanne), Dance Music on Gramophone Records. 7.0, Weather Forecast. 7.1 (from Geneva), Chimes from St. Peter's Cathedral. 7.10 (from Lausanne), Dance Music (cont'd.). 7.30 (from Lausanne), Talk: The Week in Foreign Affairs. 7.55, News Bulletin. 8.0 (from Geneva), Accordion Concert. 8.30 (from Geneva), Humorous Programme. 8.45 (from Lausanne), Concert of Popular Music by the Station Orchestra, Conductor: M. R. Kohenard. In the interval, Zither Duets by M. Klünger and M. Auderset. 10.0, News Bulletin and Weather Forecast. 10.10, Dance Music from Le Perroquet, Montreux. 11.0 (approx.), Close Down.

REYKJAVIK

1,200 metres; 21 kW.—11.0 a.m., Weather Report. 5.0, Weather Report. 8.30, Weather Forecast. 8.40, Popular Music by the Radio Trio. 9.0, Chimes and Choral Selections on Gramophone Records. 9.30, News Bulletin. 10.0, Symphony No. 5 (Beethoven) on Gramophone Records, followed by a Concert of Dance Music. 1.0 a.m. (Sunday), Close Down.

RIGA

525 metres; 15 kW.—5.0 p.m., Talk: Accident Insurance. 5.30, Concert of Popular Music. 6.30, Agricultural Talk. 7.0, Weather Report. 7.5, Humour in Music. 7.30, Literary Programme. 8.0, News Bulletin. 8.20, Concert. 9.0, Weather Report. 9.5, Concert. 9.30, Dance Music. 11.0 (approx.), Close Down.

RJUKAN.—See Oslo.

ROME

Call 190, 441 metres; 50 kW. Relayed by Naples, 319 metres; and 290, 25.4 metres.—8.15 to 8.30 a.m., Giornale Radio and Announcements. 12.30 p.m., Weather and Gramophone Records of Variety Music. 1.0 to 2.15, Sextet Concert: Dances from Veronique (Messager); Melodies from Bella Napoli (Mignone); Selection from The Tales of Hoffmann (Offenbach); 'Cello Solos: (a) The Minstrel (Glazunov); (b) Andalusian Granados; (c) The Flight of the Bumble

Bee (Rimsky-Korsakov); Foxtrot, All My Life (Gibbons and Staslam); Selection from Liliac Time (Schubert-Berté); One-Step, Bimbe, l'amore (Bonavolonta). In the intervals at 1.15 (approx.), Giornale Radio and Exchange, and at 1.30, Time and Announcements. 5.0, Exchange, Report of the Royal Geographical Society, Giornale Radio and Announcements. 5.15, Reading. 5.30, Vocal and Instrumental Concert; Concerto in A for Violin (Vivaldi); Soprano Solos: (a) Das Veilchen (Mozart); (b) Aria from Hansel and Gretel (Humperdinck); (c) Aria from Turandot (Puccini); Violin Solos: (a) Indian Lament (Dvorák); (b) Humoresque (Dvorák); Soprano Solo: Bravura Variations (Proch). 7.10 (Naples) Shipping and Sports Notes. 7.15, Atmospheric Signals, Agricultural Notes, and Giornale Radio. 8.0, Time, Announcements, and Gramophone Records of Variety Music. 8.30, Sports Notes, Announcements, and Tourist Report. 8.45, Dejanice, Opera in Four Acts (Catalini). In the intervals, Talk and Announcements. News after the Programme.

SALZBURG.—See Vienna.

SCHENECTADY

GENERAL ELECTRIC COMPANY (WGY), 379.5 metres; 50 kW. Relayed at intervals by W2XAF on 41.48 metres, and by W2XAD on 19.56 metres.—7.0 to 9.45 p.m., New York Relay. 7.0, Dick Snyder and his Orchestra. 7.30, Symphonic Matinée. 8.0, Merry Madcaps. 8.30, Soloist Programme. 8.45, Matinée Gems. 9.30, Soloist Programme. 9.45, Studio Ensemble. 10.15, Paul Whiteman's Rhythm Boys, from New York. 10.30, Melodic Gems Quartet, from New York. 11.0, Joe and Eddie. 11.15, Waldorf Astoria Orchestra. 11.30, American Trio. 11.45, Baseball Scores. 11.50, American Trio. 12 Midnight, Swimming Lesson, from New York. 12 Midnight (W2XAF only), Stock Reports. 12.15 a.m. (Sunday), Billy Rose (Tenor). 12.30, Musical Programme, from New York. 12.45, The Goldbergs, from New York. 1.0, Lady Fingers (Pianists). 1.15, Bernard Silberg (Cellist). 1.30 to 5.30, New York Relay. 1.30 K-7, Secret Service Spy Story. 2.0, Cuckoo. 2.30, Balkan Mountain Men. 3.0, Lucky Strike Dance Hour. 4.0, Russ Colombo and his Orchestra. 4.15, Talk by Merle Thorpe. 4.30, Paul Whiteman's Orchestra. 5.0, Buddy Rogers and his California Cavaliers. 5.30, New Kenmore Orchestra. 6.0 (approx.), Close Down.

SCHWEIZERISCHER

LANDESENDER

BEROMUNSTER, 459 metres, 60 kW.; **BASLE,** 244.1 metres; and **BERNE,** 246 metres.—12.28 p.m., Time Signal from Neuchâtel Observatory. 12.30, Weather Forecast and News Bulletin. 12.40, Variety Programme on Gramophone Records. 1.50, Weather Forecast and Exchange Quotations. 2.0 to 3.30, Interval. 3.30, Light Music on Gramophone Records. 4.0 (from Zürich), Talk for Workers. 4.30 (from Zürich), Concert by the Chromatic Accordion Club, Conductor, Robert Stadler. 5.0 (from Zürich), Talk: Physical Culture for Women. 5.30, Weather Forecast. 5.32 to 6.30, Interval. 6.30 (from Zürich), Talk on The Himalayas. 7.0 (from Zürich), Chimes by the Zürich Churches, followed by Time Signal, Weather Forecast, and Market Prices. 7.15 (from Zürich), Wireless Notes. 7.30, Popular Music on Gramophone Records. 8.0 (from Basle), Concert by the St. Gallen Municipal Orchestra. 9.30, Weather Forecast and News Bulletin. 9.45 (from Basle), Talk on Music. 10.15, Dance Music by Edgar Adeler and his Empire Orchestra, relayed from the Singers' House. 11.0 (approx.), Close Down.

SOTTENS.—See Radio-Suisse Romande.

STOCKHOLM

Call SASA, 436 metres; 55 kW. Relayed by Boden, 1,229.5 metres; Göteborg, 322 metres; Hörby, 257 metres; Motala, 1,348 metres; Östersund, 770 metres; and Sundsvall, 542 metres.—4.0 p.m., Technical Review, followed by a Talk. 4.20, Concert of Light Music. 5.20, Programme for Children. 5.45, Popular Music on Gramophone Records. 6.45 (from Sundsvall), Talk on Sports Terminology. 7.15, Weather and News. 7.30, Cabaret Programme. 8.15, Old Dance Music. 9.0, Late Summer Programme of Pianoforte Solos, Songs, and Readings. 9.45, Weather and News. 10.0, Concert of Dance Music, relayed from Malmö, 231 metres. 11.0 (approx.), Close Down.

STRASBOURG

345 metres, 11.5 kW.—9.30 to 11.0 a.m., Relay of the Inauguration of the Exhibition at Strasbourg. 11.0, Gramophone Concert of Popular Music. 12.45 p.m., News in French and German. 1.0, Time Signal. 1.5 to 5.0, Relay of the Inauguration of the Exhibition (cont'd.). 1.5, Addresses and Concert from the Banquet at the Paris Town Hall. 3.0, Military Band Concert from the Exhibition. In the interval, Talk on the Exhibition. 5.30, Talk in German. 6.45, Talk in French. 6.0, Orchestral Concert: Overture, Heimkehr aus der Fremde (Mendelssohn); Selection from The Huguenots (Meyerbeer); Minuet and

Moment musical (Schubert). 6.30, Tourist Talk in French. 6.45, Agricultural Talk in French. 7.0, Orchestral Concert (cont'd.): Prelude to Loreley (Bruch); Ilyls (Ganne); March, La Grande Victoire (Savasta). 7.30, Time Signal. 7.32, News in French and German. 7.45, Chamber Music by Mme. Marguerite Moser (Pianoforte), Paul Pogoda (Violin), and Mathieu Roskam (Cello); Trio No. 1 in D Minor (Mendelssohn); Impromptu in E Flat for Pianoforte (Schubert); Sonata No. 1 in C Minor for 'Cello and Pianoforte (Saint-Saëns). 8.30, Thais—Opera (Musset), relayed from Paris. 10.30, Dance Music from the Savoy. 12 Midnight, Close Down.

STUTTGART

MUHLACKER, 360.5 metres; 60 kW.; and **FREIBURG,** 570 metres.—10.0 a.m., Old Chamber Music for Flute, Violin, and Harpsichord, relayed from Mannheim: Sonata in E Minor for Violin and Harpsichord (Veracini); Chaconne in G for Harpsichord (Händel); Sonata in D for Flute and Harpsichord (Quantz); Sonata in G for Flute, Violin, and Harpsichord (Bach). 10.40, Time, News, and Weather. 11.0, Sponsored Programme. 12 Noon, Weather Report. 12.5 p.m., Sponsored Concert. 12.20, Italian Songs by Hermann Lingor: O sole mio (di Capua); Oh Marie (di Capua); Funiculi Funicula (Denza); Farewell (Leoncavallo); La Rosa Mercadante; La Paloma (Mercadante). 12.50, Song Recital by Hede Schack. 1.15, Time and News. 1.30, Orchestral Concert: Overture, Eine Nacht in Venedig (Joh. Strauss); Two Melodies from Olav Trygvason (Grieg); (a) Prayer, (b) Temple Dance; Rusticella (Cortopassi); Waltz, Ninna Nanna (Micheli); Waltz, Old Vienna (Ziehrer); Polka-Mazurka, Kriegers Lieben (Joh. Strauss); Zwanzimette (Lehár); Intermezzo, Die kleine Kompagnie (Ganglberger); Potpourri, Jung Deutschland (Weninger). 2.30, Variety Music on Gramophone Records. 3.30, Programme for Children. 4.30 (from Karlsruhe), Harmonium Concert: March, Tiroler Holzhaecker-Buab'n (Wagner); Im Prater blüh'n wieder die Bäume (Stolz); Renaissance (Bär); German and Swiss Folk Songs (Helbing); Im schönen Wien (Thöni); March, Wien bleibt Wien (Schrammel); Rheinbrüder Marsch (Baumgärtner). 5.0 (from Mannheim), Concert by the Mannheim Philharmonic Orchestra, conducted by Ludwig Becker: Overture, Sémiramis (Rossini); Melodies from Mignon (Thomas); Serenade (Moszkovsky); Overture, La Dame blanche (Boieldieu); Waltz, Neu Wien (Strauss); Potpourri, Für lustige Leut' (Komzak); Pankgrafen Marsch (Schlenk). 6.15, Time, Weather, and Sports Notes. 6.25, Talk: The Tercentenary of the Philosopher, John Locke. 6.50, See Frankfurt. 7.15, Time and Weather. 7.30, See Frankfurt. 10.20, Time and News. 10.45, See Munich. 12 Midnight, Close Down.

SUNDSVALL.—See Stockholm.

TOULOUSE

RADIOPHONIE DU MIDI, 385 metres; 8 kW.—5.0 p.m., Transmission of Pictures. 5.15, Programme by an Argentine Orchestra. 5.30, Orchestral Music; Airs from (a) The Bird Fancier (Zeller) and (b) Poet and Peasant (Suppé). 5.45, Chansonnettes. 6.0, Opera and Military Music. 6.30, Exchange Quotations and Horse Racing Results. 6.45, Concert of Popular Music. 7.30, Programme Announcements and News. 7.45, Bagpipes. 8.0, Opera Music; Airs from (a) Thais (Massenet), (b) The Pearl Fishers (Bizet), and (c) La Basoche (Messager). 8.15, Concert; Dance (Granados); Un peu d'amour (Silesu); Canzonetta (Pierne); Serenade (Drdla); Waltz Potpourri (Weber); Dream of Love after the Ball (Czibulka); The Nightingale in the Lilac Bush (Klose); Intermezzo, Hochzeitzeit in Liliput (Translatour); Valse bleue (Margis); Castigliana (Padilla); Melody from Eva (Lehár). 9.0, Melodies from Romeo and Juliet (Gounod). 10.0, Concert: Potpourri, Fortissimo (Kálmán); Ballet Music from Sylvia (Delibes); Melody from Pique Dame (Tchaikovsky); (Mus-Melody from The Fair at Borochinsk sorgsky). 10.30, North African News. 10.45, Accordion Recital. 11.0, Concert of Variety Music. 12 Midnight, Weather and Announcements.

TRIESTE

247.7 metres; 10 kW.—7.0 p.m., Quintet Concert; Suona, fanfara mia (Moletti); Southern Sun (Dreyer); Bizet Potpourri (arr. Urbach); Poesia (Andolvitz); Melody (Cowler); Selection from Price Methusalem (Joh. Strauss); Waltz (de Micheli); La danza di Nené (Hamud). 8.0 till Close Down, See Turin.

TRONDHEIM.—See Oslo.

TURIN

273.7 metres; 7 kW. Relayed by Milan, 331.5 metres; Genoa, 312.8 metres; and Florence, 500.8 metres.—6.35 p.m., Giornale Radio, Announcements and Agricultural Report. 7.0, Musical Programme: Aquile d'

Italia (Pennati-Malvezzi); Gipsy Serenade (Gastaldon); Pierrot e Colombina (de Micheli); Barcarole (Siede). 7.25, Tourist Report. 7.30, Time, Announcements and Gramophone Records of Variety Music. 8.0, Giornale Radio, Weather and Gramophone Records of Light Music. 8.30, Talk: Events and Problems. 8.45, Variety Programme. In the interval: Review of New Books. 10.0, Dance Music from the Luna Park Lido, Milan. 11.0 (in an interval), Giornale Radio. 11.55 (approx.), Close Down.

VATICAN CITY

19.84 metres (Morning) and 50.26 metres (Evening); 10 kW.—11.0 to 11.15 a.m., Religious Announcements in Different Languages. 8.0 to 8.15 p.m., Religious Information in Italian.

VIENNA

517 metres; 15 kW. Relayed by Graz, 352.1 metres; Innsbruck, 283 metres; Klagenfurt, 453.2 metres; Linz, 246 metres; and Salzburg, 218 metres.—4.50 p.m., Orchestral Concert; Nechledil March from Wiener Frauen (Lehar); Festival Overture (Schmidt); Waltz, The Wedding of the Winds (Hall); Bei der Höldrichsmühle (Bass); Selection from The Goldsmith of Toledo (Offenbach); Marching Song from Die geschiedene Frau (Fall); Waltz, Wiener Bombons (Johann Strauss); Viennese Song, Ein Märchen, vom Herrgott erdacht (Allmeyer); Potpourri, Was wir lieben (Ganglberger). 6.20, Topical Talk. 6.50, Pianoforte Recital by Severin Eisenberger, accompanied by the Vienna Symphony Orchestra; Pianoforte Concerto in A Minor, Op. 16 (Eduard Grieg); Pianoforte Concerto in B flat, Op. 83 (Brahms). 8.10, Time, Weather, Sports Report and Announcements. 8.20, The Forest Primeval—A Radio Play (Fred von Hoerschelmann). 10.15, News, Weather Forecast and Announcements. 10.30, Orchestral Concert; Overture, Banditenstreich (Suppé); Waltz, Rote Rosen (Lehar); Potpourri, From A to Z (Geiger); Two Pieces (Pokriekovsky): (a) Children's Serenade, (b) Tarantella Song, Das wir mein höchstes Glück (Weiner-Dillmann); Eysier-Potpourri (Hruby); Tango, Ist dein kleines Herzchen mir treu? (Eisele); Naval March (Schieder); March Foxtrot, Blau Donau (Moravetz).

WARSAW

1,411 metres; 120 kW.—11.58 a.m., Time Signal and Bugle Call from the Tower of St. Mary's Church, Cracow. 12.5 p.m., Programme Announcements. 12.10, Polish Press Review. 12.30, Interval. 12.40, Weather Forecast. 12.45, Light Music on Gramophone Records. 1.25, Interval. 1.35, Gramophone Records (cont'd.). 2.10, Interval. 3.0, Economic Report. 3.10, Popular Music on Gramophone Records. 3.30, Military Report. 3.40, Programme for Children. 4.5, Variety Music on Gramophone Records. 4.35, Announcements. 4.40, Review of Periodicals. 5.0, Orchestral Concert, conducted by J. Oziminski. Soloist, J. Dworakowski (Viola). Overture, Halka (Moniuszko); Melody from Otello (Verdi); Ukrainian Dance (Noskowski); Violin Solo, Meditation from Thais (Massenet); Chaconne (Durant); Minnet (Beethoven); Serenade (Haydn); Hungarian Rondo (Haydn); Berceuse and Prelude (Jánfelfet); Hungarian Rhapsody No. 2 (Liszt). 6.0, Divine Service, relayed from the Ostro Brama, Wilno. 6.20, Concert of Light Music. 7.0, Church Music on Gramophone Records. 7.10, Miscellaneous Items. 7.35, Radio Journal. 7.45, Gardening Notes. 7.55, Programme Announcements. 8.0, Concert of Light Music by the Warsaw Philharmonic Orchestra. Conductor, Nawrot. Soloist, Umberto Macnez (Tenor). Overture, Norma (Bellini); Ballet Music from William Tell (Rossini); Waltz (Bucalossi); Mazurka (Cabella); Songs: (a) Occhi neri (Denza), (b) L'ultima canzone (Tosti), (c) Fiori del campo (Rotoli), (d) Nido d'amore (Donaudy); Spanish Suite (Leoncavallo); Songs: (a) Rondine al nido (Crenzo), (b) Canto del grillo (Billi); (c) Te quiero (Serrano); Danse d'amour (Mascagni); Fagottino (Camussi); Burlesque (Culotta); Minuet (Bolton); Interlude (Culotta); Waltz (Leoncavallo). In the interval at 9.0, Topical Talk. 9.50, Radio Journal. 9.55, Aviation Weather Report. 10.0, Interval. 10.5, Chopin Pianoforte Recital by Mme. S. Rabezewicz; Bolero; Sonata in B minor. 10.40, Sports Notes. 10.50, Dance Music. 12 Midnight, Close Down.

WILNO

563 metres; 16 kW.—4.5 p.m., Gramophone Concert of Popular Music. 5.0, See Warsaw. 6.0, Divine Service from the Ostro Brama Chapel. 7.0, Gramophone Records of Popular Music. 7.15, Weekly Lithuanian Review. 7.30, Programme Announcements. 7.35, See Warsaw. 7.45, Talk on Music. 8.0, See Warsaw. 12 Midnight, Close Down.

ZAGREB

307 metres; 0.75 kW.—8.0 p.m., Veterinary Talk. 8.15, Reports and Announcements. 8.30, Concert of Light Music by the Station Orchestra, with Instrumental Solos. 10.30, News Bulletin and Weather Forecast. 10.40, Dance Music by the Binger Boys' Jazz Band, relayed from the Hotel Esplanade. 11.30 (approx.), Close Down.

ZURICH.—See Schweizerischer Landessender.

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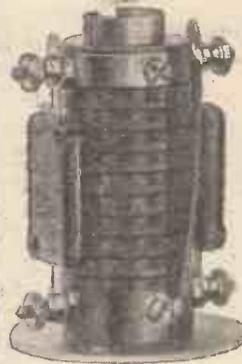
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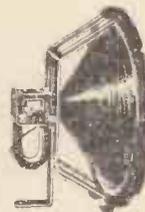
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example of first-class workman-
ship and the unit, with its heavy
permanent magnet containing a
high percentage of cobalt, is
wonderfully sensitive. From any
set this new "Blue Spot" Speaker
will reproduce every detail of
speech or music to perfection.
Send only 2/6 deposit for 7 days'
trial. If satisfied pay further 3/6
at once, then 8 monthly payments
of 7/6 (Cash in 7 days, 59/6).
For further details of this Speaker
see the "Blue Spot" advertise-
ment on back cover of this
issue.



E. J. HERAUD, LTD., Dept. WW3, NUMBER ONE, EDMONTON, LONDON, N.15
and at Tottenham, Walthamstow, and Enfield Wash. *Established 33 years.*

'AERIALITE'

The 7 Strand insulated Copper Aerial with
a reputation for lasting quality

Mr. R. L. W.
of Wolverhampton writes:—
I have received the 75 ft. of
Aerialite and have got it in use.
I am delighted with the results.
It is all that you say, bigger
volume, better reception and
more selective than any aerial
that I have tried. I have found
that I have listened in one
hour than previously in a
whole week.



Mr. F. A. E.
of Walthamstow writes:—
I have given your Aerialite the
most exacting test, and it has
stood up in every way to your
claims. I have located 7 more
"foreigners" using Aerialite
tested.

"WIRELESS WORLD" SAYS:—Owing to the exceptional quality of the covering, insulators are unnecessary.
REDUCED PRICES: 50 ft. 1/3, 75 ft. 1/10, 100 ft. 2/5.
★ If you do not require an insulated Aerial Wire, why not try "SILVERITE" the 7 strand copper,
Silver plated Aerial Wire. Price 2/9 per 100 ft. ★
AERIALITE LTD., 10, Amber Street, Manchester.

At Your Service

for the Building of all
"W.W." SETS
or any other apparatus

We make up apparatus described in
any of the Wireless Journals, and
supply complete as a Set, or in Kit
Form. Special Circuits made up to
customers' own requirements and
designs.

equipment manufactured and supplied,
or made up to clients' ideas.
**A REALLY EFFICIENT AFTER-
SALES SERVICE,** both to post orders
as well as local orders.

**RADIO, TELEVISION, PUBLIC
ADDRESS and HOME-TALKIE**

We devote ALL our time and experi-
ence to radio and its branches.
WRITE US TO-DAY for Particulars.

Under the Management of a Member of the R.S.G.B. and Fellow of the Television Society.

Radiovox Co.

34, Basinghall Street

LEEDS

MISCELLANEOUS ADVERTISEMENTS

NOTICES.

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12 words or less, 3/- and 8d. for every additional word.

Each paragraph is charged separately and name and address must be counted.

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ADVERTISEMENTS for these columns are accepted up to **FIRST POST** on **SATURDAY MORNING** (previous to date of issue) at the Head Offices of "The Wireless World," Dorset House, Tudor Street, London, E.C.4, or on **FRIDAY MORNING** at the Branch Offices, 19, Hertford Street, Coventry; Guildhall Buildings, Navigation Street, Birmingham; 280, Deansgate, Manchester; 26a, Renfield Street, Glasgow, C.2.

Advertisements that arrive too late for a particular issue will automatically be inserted in the following issue unless accompanied by instructions to the contrary. All advertisements in this section must be strictly prepaid.

The proprietors retain the right to refuse or withdraw advertisements at their discretion.

Postal Orders and Cheques sent in payment for advertisements should be made **& Co.** payable to **LILFEE & SONS Ltd.** and crossed. Notes being untraceable if lost in transit should not be sent as remittances.

All letters relating to advertisements should quote the number which is printed at the end of each advertisement and the date of the issue in which it appeared.

The proprietors are not responsible for clerical or printers' errors, although every care is taken to avoid mistakes.

RECEIVERS FOR SALE.

RADIO HOUSE, 198, Finchley Rd. Hampstead, London, N.W.3 (opposite Finchley Rd. L.M.S. Station and within a few minutes of Oxford St.). Fine premises for fine radio in a fine quarter!—Appleby's new premises! [9165]

£3/19/6, c.o.d., without valves; with valves, £5/19/6; Edison D.C. electric set, Power Pentode Three model, original packing, unused; list £21.—Kay, 287, City Rd., Islington, E.C.1. [8093]

KOLSTER-BRANDEN 1952 4-valve All-electric Kestrel Receiver; cost £18/18, accept £7.—Box 4652, c/o The Wireless World. [9227]

JECOPHONE Table Four, 1932 model, all-electric (A.C.), 10-150, 200-250, cost £20, used month only. £16/10; with matched Epoch P.M. speaker, £19/10.—15, Canterbury St., Gillingham. [9210]

FERRANTI All-mains 7-valve Superhet., brand new, perfect; £20, or near offer.—Redfern, 47, Baker St., W.1. [9225]

39/6—A.C. mains kit sets, complete with Westinghouse rectifier. Particulars. Mains Radio 1, George Rd., Erdington, Birmingham. [9211]

SINGLE Dial Super, complete with valves, £6; McMichael latest 47gn. Four, £9/10, as new; B.T.H. Senior P.M. speaker, listed £5/12/6, £3, with D.—Hale End Radio, 40, Amhurst Rd., Hackney, London. [9213]

4-VALVE A.C. Receiver in Cabinet, excellent quality, long range, perfect order, eliminator and L.T. for M.C. speaker, demonstrated any time; complete, £10.—Taylor, 65, Glenclon Rd., Streatham. [9185]

PART Exchange Receivers at Bargain Prices, overhauled, guaranteed; state approximate requirements for quotation.—Coutts, Wireless Engineers, Horley. [9188]

BARGAINS—Meteor III kits, £2/12; S.T.300 author's kits, £2/15; Challenger and Epoch P.M. M.C. speakers, £1/6; all wireless journals' kits in stock, old sets taken in part exchange for 1933 models; we quote keenest prices for anything wireless.—Serwell Wireless Supplies, 74, Gough St., London, E.14. [9197]

SINGLE Dial Super, as specified in "Wireless World," needs adjusting, 6-volt valves.—Below. [9185]

IGRANIC Neutrosomic Heterodyne, complete with frame and valves, perfect; what offers?—Fletcher, Barrington Lodge, Chigwell Row, Essex. [9183]

HIRE a McMichael Duplex Portable; 15/- weekly; special terms longer periods.—Alexander Black, Wireless Consultant, 55, Ebury St., S.W.1. Skane 1655. [0328]

1932 McMichael A.C. Moving Coil Receiver, brand new condition; cost 24 guineas, sell £14.—Rankin, The Bungalow, Croyde, N. Devon. [9202]

McMICHAEL Super Range Portable Four, excellent condition; best offer £10 secure.—D. G. Henderson, 22, Nicolson St., Edinburgh. [9204]

"**WIRELESS** World" A.C.3. Receiver, extra smoothing, humdinger, humless, Rola speaker, fine reproduction, B.T.H. golden disc electric motor, brand new condition; lot cost £27, bargain £14.—Box 4618, c/o The Wireless World. [9181]

ACCUMULATORS—BATTERIES.

120-VOLT Milnes Unit, single capacity; what offers? —Fletcher, Barrington Lodge, Chigwell Row, Essex. [9134]

NUMBERED ADDRESSES.

For the convenience of private advertisers, letters may be addressed to numbers at "The Wireless World" Office. When this is desired, the sum of 6d. to defray the cost of registration and to cover postage on replies must be added to the advertisement charge, which must include the words Box 000, c/o "The Wireless World." Only the number will appear in the advertisement. All replies should be addressed to No. 000, c/o "The Wireless World," Dorset House, Tudor Street, London, E.C.4. Readers who reply to Box No. advertisements are warned against sending remittance through the post except in registered envelopes; in all such cases the use of the Deposit System is recommended, and the envelope should be clearly marked "Deposit Department."

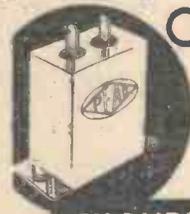
DEPOSIT SYSTEM.

Readers who hesitate to send money to unknown persons may deal in perfect safety by availing themselves of our Deposit System. If the money be deposited with "The Wireless World," both parties are advised of its receipt.

The time allowed for decision is three days, counting from receipt of goods, after which period, if buyer decides not to retain goods, they must be returned to sender. If a sale is effected, buyer instructs us to remit amount to seller, but if not, seller instructs us to return amount to depositor. Carriage is paid by the buyer, but in the event of no sale, and subject to there being no different arrangement between buyer and seller, each pays carriage one way. The seller takes the risk of loss or damage in transit, for which we take no responsibility. For all transactions up to £10, a deposit fee of 1/- is charged; on transactions over £10 and under £50, the fee is 2/6; over £50, 5/-. All deposit matters are dealt with at Dorset House, Tudor Street, London, E.C.4, and cheques and money orders should be made payable to Lilfee & Sons Limited.

SPECIAL NOTE.—Readers who reply to advertisements and receive no answer to their enquiries are requested to regard the silence as an indication that the goods advertised have already been disposed of. Advertisers often receive so many enquiries that it is quite impossible to reply to each one by post. When sending remittances direct to an advertiser, stamp for return should also be included for use in the event of the application proving unsuccessful.

PEAK CONDENSERS



BRITISH MADE
INDUCTANCE NEUTRALISE J

1,500 Volts D.C. Test.
1 mfd. Terminals 2/8
2 " " 3/9
4 " " 6/9
Special Buffer Type 2,000.

Non-inductive 750v. A.C. working .01 + .01—Terminals 3 2, Tag 2 2.

WILBURN & COMPANY

23, Bride Lane, London, E.C.4.
Phone: Central 6994.

Northern Distributors: W. Andrew Bryce & Co., Bury, Lancs.

THE MAIN IDEA! SCOTT SESSIONS

for **BETTER** Mains Transformers
BETTER Smoothing Chokes
BETTER Output Chokes
BETTER Power-Grid Chokes

For all "Wireless World" designs—
Especially suitable for modern
metal chassis construction—
"Specials" constructed without delay.

BETTER Testing
BETTER Design
BETTER Finish
BETTER Price
and last—but not least—
ENTIRELY BRITISH.

When in Westminster, call on our
MAINS DEPARTMENT MANAGER,
Norman G. R. Partridge, B.Sc. (Eng.),
A.M.I.E.E., Chartered Electrical Engineer.

SEND NOW FOR
FREE INSTRUCTIVE CATALOGUE!

SCOTT SESSIONS & CO.

(Mains Apparatus Dept.)

KING'S BUILDINGS, DEAN STANLEY STREET
WESTMINSTER, S.W.1
Phone: Victoria 5035.



For Monodials, Straight
Fives, etc., completely
constructed with first-
class workmanship,
send to:—

SCOTT SESSIONS

(Construction and Repair Departments),

MUSWELL HILL, LONDON, N.10

Telephone No.: Tudor 5326.

Contractors to H.M. Office of Works, etc.

CHARGERS AND ELIMINATORS.

TANTALUM for A.C. Rectifiers; blue prints for inexpensive H.T. and L.T. chargers.—Blackwell's Metallurgical Works, Ltd., Garston, Liverpool. [7583]

GILBERT INDUSTRIES Offer More Bargains. See Components column before you order. [0377]

SOUND SALES Again Specified by the Experts, for aluminium clamps and bobbins; price 6/9 per set, with bolts as supplied to "Wireless World" for their transformer described June 29th, 1932.

SOUND SALES Can Supply Everything necessary to construct the "Wireless World" H.T.8 Mains Transformer, wire, Stalloy stampings, etc.

SOUND SALES Have Further Extended their Premises and Installed Additional Machinery.

SOUND SALES' Latest Illustrated Catalogue is Now Released, and includes details of 30 different transformers and chokes, etc.—Sound Sales, Ltd., Tremlett Grove Works, Junction Rd., Highgate, N.19. Phone: Archway 3871. [0366]

ALL-POWER Components for Home Constructors Have no Equal; write for list.

ALL-POWER Transformers are Cheaper and Better; write for list.

ALL-POWER Transformer for "W.W." Baby Super, input 200-250v., sec. 240v. 200 m.a., 4v. 4 amp., C.T.; price £1/10.

ALL-POWER TRANSFORMERS Ltd., 5a, Gladstone Rd., Wimbledon, S.W.19. [9200]

PEPPER Draws Your Attention to the Following Seradex all-British, guaranteed products.

SERADEX Super Transformers, guaranteed 3 years, primaries tapped 200/230/250 volts, 40-100 cycles.

FOR Use With Westinghouse Metal Rectifiers, with 4-volt centre-tapped L.T. windings.

W⁶, for use with H.T.8, £1/5; stripped type, without L.T., 18/11.

W⁷, for the new H.T.9, £1/6/5; S.W.7 stripped type, without L.T., £1/2.

W⁸, for use with H.T.10, £1/19/6; S.W.8 stripped type, without L.T., £1/7/6.

W⁹, for use with H.T.11, £2/5; S.W.9 stripped type, without L.T., £1/12/6.

SERADEX Stripped Transformers are as Super Type, only with leads, L.T.s, if required, 2/- each extra.

SERADEX Super Transformer, type S.V.F. for W.W. Monodial, screened primary; £1/17/6.

SERADEX Super Transformer, type S.V.G., for W.W. Straight Five, screened primary, as specified; £2/12/6.

SERADEX Chargers for A.C. 200/230/250 volts, 40-100 cycles, fitted metal rectifier, guaranteed 12 months.

M¹, output variable from 2 volts 0.5 amp. to 10 volts 1.5 amps.; £1/12/6.

M², output variable from 2 volts 0.5 amp. to 6 volts 3.0 amps.; £1/15; lists of others.

SERADEX Super Filter Chokes, made in all sizes, low resistance, guaranteed 3 years; all centre-tapped.

30^H when carrying, 20 mA., 9/6; 60 mA., 14/6; 85 mA., 18/6; 150 mA., 19/6; 250 mA., £1/15.

(This advertisement continued on next page.)

- just that little difference - the little that counts

THE SUCCESS of OLYMPIA! THE BAKER

"TONE-CONTROLLED"

PERMAG

MOVING-COIL SPEAKER



THE success of the new BAKER "PERMAG" speaker is instantaneous. Fitted with the new TONE-CONTROL unit, it possesses just that little difference in Tonal Quality and Sensitivity with positively NATURAL reproduction of music and speech that lifts it high above all its competitors. Every lover of music should ask his dealer to DEMONSTRATE this marvellous speaker: it will convince the most critical ear.

ASK FOR ILLUSTRATED FOLDER.

BAKER'S 'Selhurst' RADIO

OFFICES:
89, SELHURST ROAD, S. NORWOOD, S.E.25
WORKS & DEMONSTRATION ROOM:
42, CHERRY ORCHARD ROAD, E. CROYDON
Phone: CROYDON 1618.

PRICES
Complete with CABINET, Tapped Transformer and TONE-CONTROL:

49/6

As above but without the TONE-CONTROL:

47/-

Chassis only with Transformer:

38/6

TONE-CONTROL only, complete with switch, for use with Chassis - 2/6

Our famous SUPER-POWER SPEAKERS are still in huge demand! Send Now for new Booklets-

Chargers and Eliminators.—Contd.

(This advertisement continued from previous page.)

60H when carrying, 35 mA., 15/6; 60 mA., 19/6; 85 mA., £1/1; 150 mA., £1/15; 250 mA., £2/15.
LISTS of Super Chokes, including Pentode and double-wound types, for stamp.
SERADEX Resistance Nets for the New D.C. Valves, rigid, compact, cool running.
GUARANTEED 12 Months.—Tapped for mains 200/210/220/230/240/250 volts; state type and number of valves to be used.
R.A. for any number of Mazda 0.1 amp. valves; 4/6, post free.
R.B., for any number of Marconi-Osram 0.25 amp. valves; 4/6, post free.
R.C., for any number of Mazda 0.5 amp. valves; 8/6; terms to trade.
SERADEX Bakelite A.C. or D.C. Meters, flush mounting, large scale, 0-20 mA., upwards; 7/11; also volts and amps.
SERADEX, nickel type, 0-10 mA., upwards, any range to order; £5/11; lists.
SERADEX Competition Mains Equipment, massive construction, guaranteed 12 months.
C.A. "Wireless World" Choke, 20H, constant to 100 mA., resistance 200w.; 13/6.
C.B.S. 36H, no D.C., 16H, at 20 mA., carry 25-30 mA., see W.W. report, 8/7/32, resistance 800w., 3/11; type C.B., as above, but unshrouded; 3/6.
C.I. Transformer, 2-0-2 volts, 4 amps., 15/6; C2, 230-0-230 volts, 35 mA., 2-0-2v. 1a., 2-0-2v. 5a., 19/11.
SERADEX C4 Transformer, 300-0-300v. 35 mA., with 2 L.T.s, £1/4/11; lists of others.
SERADEX Wire Wound Resistances, 1/6; moulded type 1 1/2-watt rating, 10/4d.; full lists for stamp.
PEPPER, Wakegreen Rd., Moseley, Birmingham, guarantees the above products; terms to trade. [9222]

DYNAMOS, ETC.

ROTARY Convertors, D.C. to A.C., 50 to 250 volts D.C. input to 220 volts A.C., 1-phase, 50 cycles output, approximately 1/2 K.W., all ball bearing machines, unused and guaranteed; cheap.—Mile Engineering Works, Milo Rd., East Dulwich, S.E.22. Sydenham 4422. [9095]
CONVERTERS, 12 volts D.C. to 230 volts A.C., price £4 to £12; 12 volts D.C. to 500 volts D.C., 120 m.a., price £5/10; 100 volts D.C. input, 230 volts A.C. output; 230 volts D.C. input, 230 volts A.C. output; sizes 40, 75, 100 and 120 watts in stock; prices from £2/10.—Freeman's Electrical Repairs, Tresham St., Kettering. [9084]
ROTARY Converter (M.L.) (D.C. input 6 volts, D.C. output 200 volts 40 milliamps), 6 months old, little used, as new; also 2 accumulators to drive above (6 volt 80 actual and 6 volt 40 actual), Exide; 3 articles cost £18/10, accept £11; converter alone, £7/10.—Box 4651, c/o The Wireless World. [9221]

HEADPHONES.

HEADPHONES.—Two receivers, with metal headbands, 120 ohms, 5/- pair; ditto, 8,000 ohms, 4/- pair; field service headphones, leather headbands, 120 ohms, 2/6 pair; clean, and boxed in makers' cartons; single earpieces, L.R., 1/6; all guaranteed 2 years; microphones, insets 2/-; photo cells, Television, sound, burglars, etc., 15/-; 7lb parcel useful oddments 5/-, 10lb. 7/-, post free.—Electradix Radios, 218, Upper Thames St., E.C.4. [0358]

LOUD-SPEAKERS.

BAKER'S SELHURST RADIO 36-page Booklet, "Sound Advice is Yours for the Asking": write now for new edition. See displayed advertisement on this page. [0231]
ROLA Type S. M.C. Speakers, 6 1/2 in. diaphragm, 4,800 ohms field, with input transformer, 17/6; carriage paid; any M.C. speaker repaired or reconditioned.—Munro, 3, Parliament Hill, Hampstead, N.W.3. [9167]
GOODMAN'S Permanent Magnet Moving Coil Loud-speaker with Output Transformer; list price 47/6; brand new and perfect; 22/6, c.o.d., carriage paid.
ROLA J.90, complete with output transformer, brand new and perfect; 22/6, c.o.d., carriage paid.
ROLLS Multi Ratio Output Transformer, 6 ratios; from 14/1 to 67/1 brand new, 8/6, c.o.d., carriage paid.
ROLLS Conversion Transformer, 100 up to 240 volts or 240 down to 100 volts, 100 watts type, brand new and perfect; 16/-, c.o.d., postage paid.—Phillip Kay, Ltd., 287, City Rd., Islington, E.C.1. Clerkenwell 4520. [9023]
35/-—B.T.H. R.K. moving coil speakers, 6in. ribbed cone, new and unused, guaranteed; these speakers are the type as used in cinema sound equipment, weigh 30lb., and are vastly superior to the cheap speakers now on the market; 100 volts, 150 volts, and 200 volts D.C., 6 volts D.C., 200-250 volts A.C. type, £2/15; carriage paid.—Wird, 12, Tredegar Rd., Bow. E.3. [9131]
ELECTRO Dymnic Ferranti Speaker, Type A1; £7/10, as new, cost double.—Frost, 34, Highland Place, Bridgend. [9196]

PICTURE RECEIVER APPARATUS.

TELEVISION.—Parts for experimenters, scanning discs, mirror drums, motors, etc.—John Salter, Member Television Society, Featherstone Buildings, Holborn, W.C.1. [9201]

TRANSMITTERS.

TRANSMITTING Crystals, 2 megacycle band; 10/-.—Smith, Bryn Rodyn, Colwyn Bay. [9203]

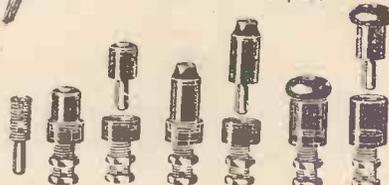
VALVES.

MARCONI Valves, super power; 5/-; c.o.d., postage paid.—Melba Radio Co., 60, Stoke Newington Rd., N.16. [0383]
A MANUFACTURER'S Surplus Stock of 2,000 Valves, all guaranteed, latest types and new; P.M.1 H.F.s, H.L.210s, 210L.F.s, 210D.E.T.s, H.L.2s, 3/9; P.M.2s, P.M.2As, P.220s, 215Ps, 220Ps, 4/9; P.M.22s, P.M.24s, A.C./P.s, 104V., 164V., 8/6; S.4V.B.s, M.8.4B.s, A.C./S.2s, M.S.G./H.A., A.C./S.G., P.M.24B.s, 425/P.E.N.s, 9/6; 354V.s, A.C.2/H.L.s, A.C./H.L., M/L.4s, M/H.L.4s, 7/-; 1821 rectifiers, etc., etc.; cash with order or c.o.d.—Newman, 309, Roman Rd., Bow. E.3. [9226]

PREVENT DAMAGE!



to valves and other components, when looking for faults in your set, by using Eelex Testing Prods. They are easily manipulated even amongst the most intricate wiring without danger of shorting. Enclosed in insulated handles the connection points only come into operation when required. Price per pair, red and black, 3/6.



Eelex All Mains Plugs and Sockets
2DM. Type S. 2DW. Type S. MPS Type
Types 2 DWS and 2 DMS in six colours.
Plugs 2d. Sockets 2d.
Series MPS in red and black only.
Plugs 4d. Sockets 2d.



Write for List—C34.

J. J. EASTICK & SONS,
Eelex House, 118, Bunhill Row, London, E.C.1
Phone: Metropolitan 0314/5/6.



BURNE-JONES "STENODE"

These high quality instruments are now available as Radiogramophones and Radio Receivers.

A fully descriptive brochure is now ready and free on application.

BURNE-JONES & CO. LTD.,
"Magnum House," 296, BOROUGH HIGH ST.,
LONDON, S.E.1. Telephone:—Hop 6257 & 6258.
Scottish Agent:—
Mr. ROSS WALLACE, 54, Gordon Street, Glasgow, C.1

FREE! RESISTANCE CALCULATION CHART STAND 273

When visiting our Stand ask for a free copy of the WATMEL Resistance Circulation Chart.

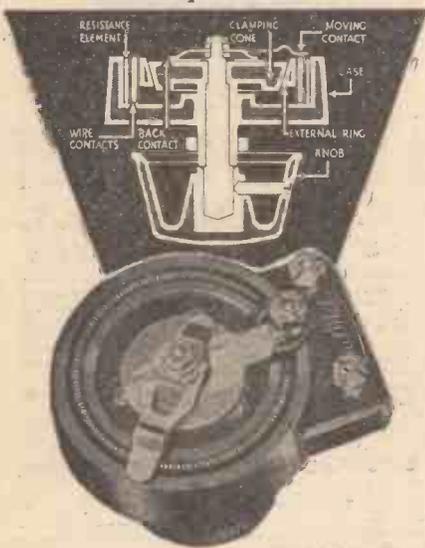
WATMEL POTENTIOMETERS AND RESISTANCES

The 1932-33 Series of Watmel Potentiometers and Resistances will also be on view and we should like you to see the novel and advanced ideas used in the construction of our Type 3 Non-Inductive Resistance.

This new All-British Resistance is guaranteed to give a far steadier performance than resistances constructed on old and obsolete principles.

PRICE
4/6

Trade Enquiries Invited.



Don't forget STAND 273!



WATMEL WIRELESS CO., Ltd.
IMPERIAL WORKS, HIGH ST., EDGWARE.
Telephone: Edgware 0323.

M.C. 70.

Valves.—Contd.

VALVES!!—P.P.5/400s, boxed, 17/6; A.C./S.G.s, 9/3; 354V.s, 6/11; A.C./Pens, 12/6; V.M.S.4s, 12/6; D.W.3, 8/6; D.O.20s, 7/6; set valves, Baby Super, 42/6.—Below!!

CONDENSERS!!—450v. D.C. (working T.C.C., 4 mfd., 1/9; 6 mfd., 2/-; 8 mfd., 2/6; 4 mfd., electrolytics, 3/-; 8 mfd., 3/6; 8+8 mfd., 4/-.—Below.

MAGNAVOX 7.500/200v. Universal Transformer, 15/-; Ormond boxed oak cabinet speaker, 11/6; eliminator, Pye, T.C.C., etc., 200v./40 m.a., 4v./3A., oak cabinetted, 32/6; other bargains; postage extra; callers invited.—R. A. Arnell, 8, Fishponds Rd., S.W.17. [9211

GUARANTEED Perfect Order, money back guarantee. —P.M.16, P.M.26, P.M.22, 7/11; P.M.5x, P.M.5d, P.M.5b, P.M.6d, P.M.6, P.M.4, P.M.256, 2/3.

BOXED Tungsram.—P614s, 4/3; P625s, P.M.256a, P.M.254, 5/11; M.P./PEN, 12/6; P.X.4, 9/11; postage extra, please.—Pepper, Wakegreen Rd., Birmingham. [9224

THE Following Valves are Guaranteed Unused and Perfect: M.S.G./L.A.s, M.S.G./H.A.s, P.M.24B.s, M.S.4s (metallised), M.S.4B.s, A.C. S.G.s, 10/-; A.C. H.L.s, A.C. 2H.L.s, 8/-; 354V.s, 7/6; D.W.3s, 9/-; cash with order, or c.o.d.—Ward, 12, Tredegar Rd., Bow, E.3. [9130

COMPONENTS, ETC., FOR SALE.

GILBERT INDUSTRIES Offer More Guaranteed Bargains, all post paid.

HAYBERD Chokes, type 757, 50h. 150 m.a., brand new, 15/-; E.I. transformers, input 105, 210, 230, 250, output 2v.+2v., 3 amps., 2v.+2v. 1 amp., 250+250 at 50 m.a., brand new, 15/-; R.I. Dux chokes, 25h. 50 m.a., brand new, 6/-; tapped 2 ratio pentode chokes, heavy, 6/-; 20h. 10 m.a. eliminator chokes, 3/6.

3-GANG 0.0005, by Polar, end vane trimmers, continuous slow motion, 10/8; special mains transformers, input 210, 230, 250, output 2v.+2v., 4 amps., 4v. 2 amps., 325-0-325 at 85 m.a., 15/-; Polymet, 8 mfd., 435 working, 4/-; number 5 stallion stampings, 3/6 gross pairs; bobbins, moulded, 6d.

GILBERT INDUSTRIES, 519, London Rd., Westcliff-on-Sea, Essex. [0378

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15 Ferranti A.F.5 Transformers, 16/- each; 12 A.F.6 ditto, 7-1 ratio; 16/- each.

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14 Ferranti, special heavy duty, tapped output transformers, 40-1 and 1.5-1, suitable for three L.S.6A valves; 21/- each.

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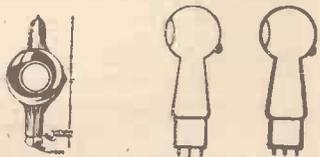
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MAINS Transformers, input 200/250v., output 150v.+150v., 35 m.a., 4v., 1a. C.T., 4v. 1.5a. C.T., 8/-.

PARMEKO Transformers, input 200-250v., output 250-0-250v., 60 m.a., 4v. 4a., 4v. 1a., 12/6.

H.ELSBY 4M.F., 250 D.C. working, 3/-; 250 A.C., 4/-.

T.C.C. 4 m.f., 400 v., working; 4/-.

FERRANTI A.F.6, 15/-; Ferranti, A.F.5, 15/-; Pye 110 henry tapped chokes, 4/-.

TWO-VALVE K.B., all electric, £4, shop soiled; 5-valve Columbia portable, £6, shop soiled; 4-valve, all electric Columbia receiver, 1932 model, £15, shop soiled; H.M.V. 1932 3v., all electric, £15.

EDISON Bell Mains Transformers, 200-250v., input, 160-0-160v. 40 m.a., 4v. 1a., 4v. 4a.; 10/6.

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(This advertisement continued on next page.)

1932 1933 NEW SEASON'S SETS ON THE BEST TERMS

A LARGE number of Manufacturers have now released their New Season's sets, which represent a considerable advance on previous models. We are demonstrating these new receivers during broadcasting hours and our advice is at your disposal.

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NEW R.I. "MADRIGAL" 3-VALVE A.C. RECEIVER, with moving coil loud-speaker. With 30/- order
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NEW LOTUS BUDD 2-VALVE A.C. RECEIVER. With 15/- order
Cash Price 10 Gns.

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SAME RECEIVER AS ABOVE, BUT FOR D.C. MAINS. With 17/6 order
Cash Price 11 Gns.

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NEW PYE "K" 2-VALVE A.C. RECEIVER. With 22/6 order
Cash Price 12 Gns.

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NEW BLUE SPOT 4-VALVE BATTERY RECEIVER. Complete with 100U loud-speaker and variable-Mu valves. With 24/6 order
Cash Price 12 Gns.

And 12 monthly payments of 20/6

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Descriptive leaflets of any of the above receivers will be sent on request. At present we can give prompt delivery.

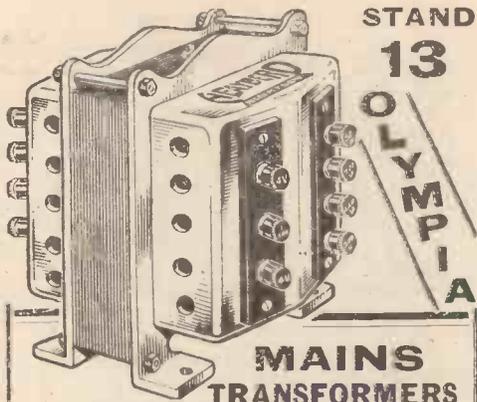
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Descriptive leaflets of any of the above receivers will be sent on request. At present we can give prompt delivery.

And 12 monthly payments of 17/4

Descriptive leaflets of any of the above receivers will be sent on request. At present we can give prompt delivery.

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11, Oat Lane, Noble St., LONDON, E.C.2
Phone NATIONAL 1977



STAND
13
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One minute from Moorgate Station.



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We are showing our products on Stand 285 at Olympia. You should see our Two Valve All Mains Receiver with Magnavox Moving Coil Speaker, A.C. or D.C.
Price: £9.17.6

You will like the "Cifel" Three Valve A.C. Receiver with Band Pass Tuning—"The Mediator with the Continent." Marvellous selectivity and volume, Price: £16.0.0

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CIFEL PRODUCTS LTD., 2, Cynthia St., N.1.
Demonstration Room at: 79, Hammersmith Road, W.6.

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- (This advertisement continued from previous page.)
- A**CCUMULATOR Chargers, charge 6-volt batteries at 3 amps., incorporating Igranite Elkon metal rectifiers, 25/-; charge 2v. at 1/4a., 8/6.
 - A**MPLION Transformers, 350+350v., 120 m.a., 4v. 5a., 4v. 2a., 6v. 1a., input 100-250v.; 17/6.
 - W**ESTINGHOUSE Rectifiers, 8v. 1a., style A.9. 10/-; 120v. 20 m.a., 6/6; 180v. 30 m.a., 8/6.
 - A**MPLION Pick-up Leads, consisting of 12ft. length of flexible metal shielded wire, jack plugs, and special jack incorporating double break switch; 3/6.
 - W**ESTERN ELECTRIC Condensers, 2 mfd., 500v. test, 1/-; 1,000-volt test, 2/-; 1+1 mfd. 500v., 1/3.
 - A**MPLION Block Condensers, 250v. working, 9x0.5 mfd. (4.5 mfd.), 2/6; 6x0.5 mfd. (3 mfd.), 2/-.
 - T.C.C.**, 3 mfd., 250v. D.C. working, 1/9; T.C.C. blocks, 375v. working, 6+4+2+2+2, 10/- each.
 - E**DISON Bell Wire Wound Clip-in Resistances, with bases, 60,000, 70,000, 80,000, 90,000, 150,000 ohms; 1/3 each.
 - E**DISON Bell H.T. Eliminators, 150 volts, 30 m.a., 4 taps, 1 variable, 4v. 4 amps.; 30/-, with rectifier.
 - 6-WATT** Semi Variable Resistances, all values, from 40 to 40,000 ohms; 1/3 each; 12 watt, 1/9.
 - A**LL the Following Lines 6d. each or 5/- doz., assorted: Columbia trimming condensers; Mullard 0.5-watt resistances, 25,000 ohms and 60,000 ohms; Mullard 1-watt resistances, 16,000 ohms and 50,000 ohms; Met-Vick resistances, 25,000 ohms and 12,000 ohms; shielded 3.G. or Pentode leads; Edison Bell grid leads and condensers all sizes; T.C.C. 0.05 condensers, T.C.C. 0.1 condensers; Dubilier 0.01.
 - MURPHY** Condenser Blocks, 4+2+2+2+1+0.09 mfd., 400 volts working; 6/-.
 - I**GRANITE Illuminated Dual Drum Dial, last and slow motion, takes 2 condensers; 3/6.
 - A**EROVOX Dry Electrolytic Condensers, 8+8 mfd.; 5/- each; 450v. working.
 - E**DISON Bell Double Pole Double Throw Push Pull Switches, 2/-; make and break ditto, 6d.
 - A**MPLION 4-gang Condensers, with trimmers semi-shielded, 0.0005, with split end vanes; 10/-.
 - C**OLUMBIA Smoothing Chokes for Series Connected Filaments from D.C. Mains, carry 1 amp, resistance 12 ohms; 7/6 each.
 - BURNEPT** 0.00007 Short Wave Condensers, with insulated spindles; list price 13/6, our price 1/-.
 - A**LL Post Orders to 20-22, High St., Clapham, S.W.4; callers to The Premier Supply Stores, 20-22-24, High St., Clapham, S.W.4. Macaulay 2188. Close 1 o'clock Wednesdays. (Book to Clapham North, Underground.)
 - A**ND 32, London Rd., S.E.1. Hop 5030. Closed 1 o'clock Thursdays. Open Saturdays until 9 o'clock. [9228]

MISCELLANEOUS.

- E**ASY Payments.—We supply, by easy payments, components, accessories, and sets, any make; 10% down, balance spread over 11 months.—Send list of requirements to London Radio Supply Co., 11, Oat Lane, London, E.C.2. [0337]
- S**COTT SESSIONS and Co.—Receivers overhauled, modernised, and repaired, see advert. page 52.—Muswell Hill, N.10. Phone: Tudor 5326. [0262]
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- E**NGINEERS and Technical Workers of All Kinds.—A proper training by post in your spare time will take you through your right examination, then employment is waiting. Our advice on all careers free.—Dept. 92, The Bennett College, Ltd., Sheffield. [0384]
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PATENTS.

- I**NVENTOR Advanced Radio Patent Requires Firm Join in Full Patent.—Box 4338, c/o The Wireless World. [9176]
- P**ATENT AGENTS.
PATENTS and Trade Marks, British and Foreign.—Gee and Co. (H. T. P. Gee, Member R.S.G.B. and A.M.I.E.E.), 51-52, Chancery Lane, London, W.C.2. Phone: Holborn 1525. [0001]
- K**ING'S PATENT AGENCY Ltd., 146a, Queen Victoria St., London, E.C.4. Phone: Central 0682. 45 years' experience. Advice handbook free. [0381]

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Over 8 years, research enables us to offer you a range of receivers and radiogramophones which for all-round efficiency and perfection of reproduction at economic prices are practically unsurpassable. The two examples below are typical of our range.

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The 5-valve receiver incorporates Variable-Mu Valves, Bi-grid oscillator Detector, Power Grid Second Det. and Pentode. Band Pass Tuning and Band Pass Intermediates tuned to 126 Kc. Energised Moving Coil Speaker, Electric Turntable, A.E.D. Pick-up, etc. In handsome Burr Walnut Cabinet ... **45 Gns.**

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With Moving Coil Speaker, Band Pass Tuning, 2 Watts undistorted output. **19 Gns.** In Burr Walnut Cabinet ...

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&

METAL RECTIFIERS

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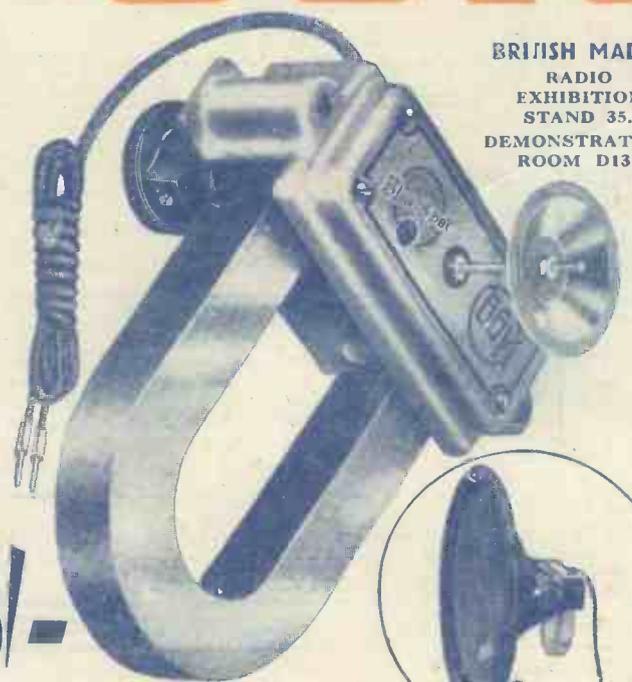
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