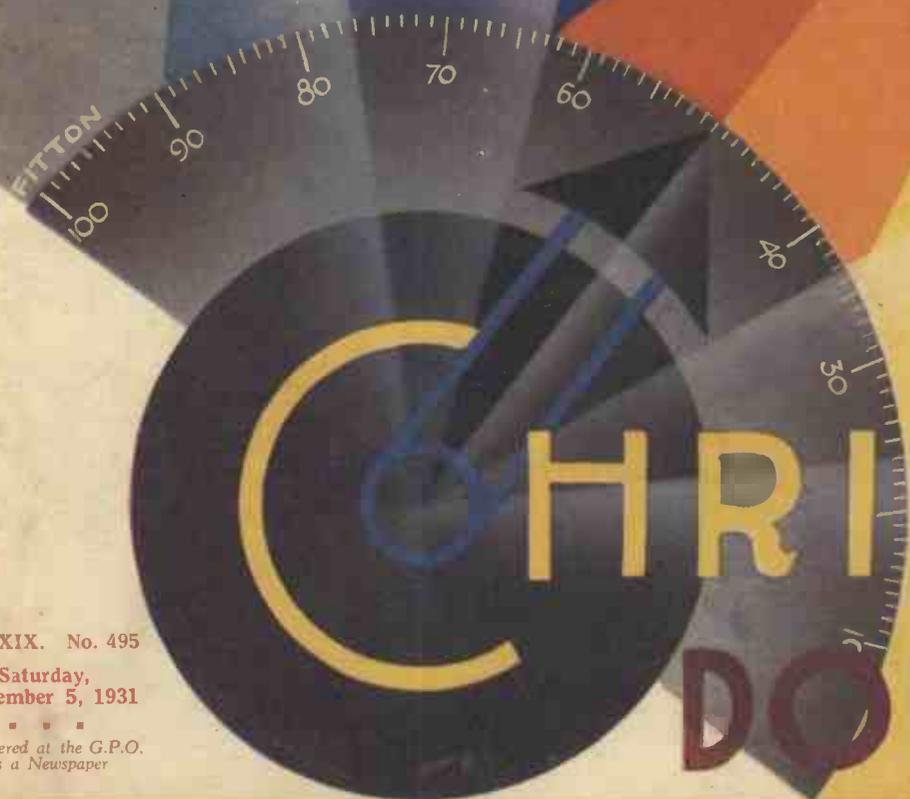


# Amateur Wireless

3<sup>d</sup>



CHRISTMAS  
DOUBLE NO

Vol. XIX. No. 495

Saturday,  
December 5, 1931

Registered at the G.P.O.  
as a Newspaper

OUR BEST CHRISTMAS ISSUE YET

Make certain of Good Radio this Christmas

Make certain of improved selectivity, better quality and more volume by equipping your set with the amazing Mazda valves. And hear these improvements through an R.K. moving coil loud-speaker if you would know listening that is a sheer delight.

You can get the same beauty of reproduction from your gramophone records too, by playing them with a B.T.H. Pick-up.

*All good Radio Dealers sell Mazda Valves and.... Ediswan Radio Products*



**MAZDA**  
THE  
BRITISH  
VALVES

**EDISWAN RADIO**



THE EDISON SWAN ELECTRIC CO. LTD. RADIO DIVISION: 155 CHARING CROSS RD., LONDON, W.C.2 W.182

# Buy a "THREE STAR 3" chassis and build a real set



Price of metal chassis including valve holders **10/-**

H.T. supply for this set is a Junit Mains Unit tested and recommended by the technical staff of "Amateur Wireless" Type 120 T.C.

## JUNIT MAINS UNITS

Model	Smoothed Output	Price
120/18 H.T. Unit	120 v. 18 m/A ... ..	£3 7 6
120/18/T.C. H.T. Unit and Trickle Charger	120 v. 18 m/A L.T. Charger for 2, 4 or 6 v. accumulators	£4 12 6
120 H.T. Unit	120 v. 20 m/A ... ..	£4 7 6
120/T.C. H.T. Unit and Trickle Charger	120 v. 20 m/A L.T. Charger for 2, 4 or 6 v. accumulators	£5 17 6
150/4 H.T. Unit with 4-volt tapping for A.C. valves	150 v. 25 m/A 4-volt A.C. centre-tapped winding for indirectly heated valves ...	£5 0 0

Dimensions of all Units : 9 by 5 by 3½ in.

All Units have one variable tapping, one fixed tapping, and one S.G. Tapping. All Units covered by guarantee.

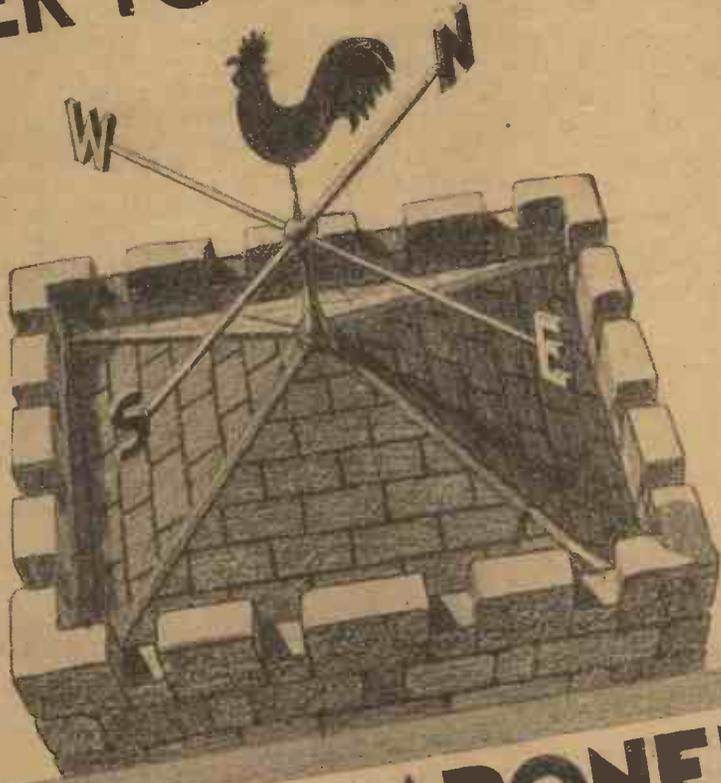
Designed to suit Radio for the Million V3 Kit and the Corsor Melody Maker. Your local dealer can supply you with a full range of Junit components.

# JUNIT

## MASTER OF THE MAINS

2 RAVENSCOURT SQUARE, LONDON, W.6. Telephone: Riverside 0274

# WHETHER YOU LIVE



## LEWCOS COMPONENTS are far the best!



THE NEW LEWCOS LINK BAND PASS FILTERS—  
No. 1 (Ref. T.B.F./C) Price 9/6 each, and the LEWCOS  
A.T.G./C COIL, No. 2, Price 9/6 each, are specified for  
the "FOUR STAR 4"  
described in this issue.

**LEWCOS RADIO PRODUCTS FOR BETTER RECEPTION**

THE LONDON ELECTRIC WIRE COMPANY AND SMITHS LIMITED, CHURCH ROAD, LEYTON, LONDON, E.10

To Ensure Speedy Delivery, Mention "A.W." to Advertisers

# CONNECT UP WITH LEWCOS WIRES AND CORDS

GLAZITE COLOURED CONNECTING WIRE  
18 S.W.G. 6d. per 10 ft. coil  
20 S.W.G. 4d. " " "



LEWCOS FLEXIBLE CORD for all radio purposes, provided with loop connections, nickel-plated terminals, etc., ranging in price from 1/- to 4/- according to type. HEAD PHONE CORDS ranging in price from 1/6 to 2/6 according to type.



LEWCOFLEX on Card-board drums, 100 yards lengths, ranging in price from 8/6 to 26/- per 100 yards, size 14/36 11/- to 33/- per 100 yards, size 23/36.

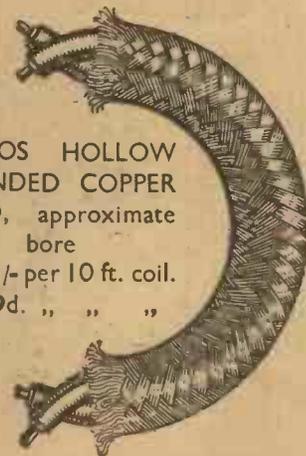


LITZ WIRE, ranging in price from 5/- to 16/6 per 10 ft. coil according to size and covering.

LEWCOS SCREENED CONNECTING WIRE  
Single, 10d. per 10 ft. coil.  
Flat twin, 1/8 " " "



LEWCOS HOLLOW STRANDED COPPER BRAID, approximate bore .135" 1/- per 10 ft. coil. .070" 9d. " " "



Ask your Radio Dealer for them "LEWCOS" by Name—

**LEWCOS RADIO PRODUCTS FOR BETTER RECEPTION**

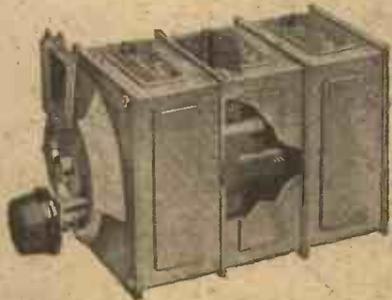
THE LONDON ELECTRIC WIRE COMPANY AND SMITHS LIMITED, CHURCH ROAD, LEYTON, LONDON, E.10

Don't Forget to Say That You Saw it in "A.W."

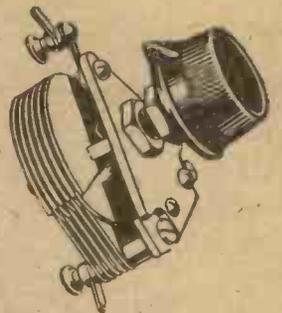


# FOR CONSTRUCTORS AND ENTHUSIASTS

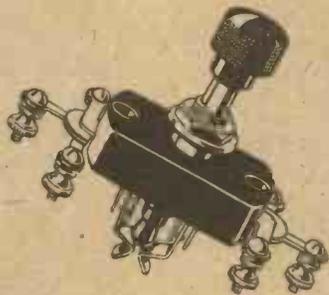
What better gifts than the LOTUS Components specified for the "Four Star 4"? The three-gang condenser with disc drive



at 35/-, the LOTUS Reaction Condenser at 4/-, the LOTUS Jack Switch, Type JS/9 also 4/-, and the famous LOTUS Transformer, Type AT/1, costing but 5/6.



Post the coupon to-day for your copy of the free LOTUS Component Catalogue.



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# CHRISTMAS

## FOR THE FAMILY

### The Set That needs no Expert Touch

Anyone can tune the LOTUS Table Console. One knob brings in all the worthwhile broadcasts of Europe with a power and purity of reproduction that is simply amazing, even for a Moving Coil Speaker. The illuminated dial is marked in actual wavelengths, and provision is made for a gramophone pick-up.

Ask your dealer to demonstrate this wonderful Christmas Gift for the family.

Battery Model with Balanced Armature Speaker £9 9 0. Or 17/9 DOWN.



# GIFTS

THE LOTUS 3-VALVE ALL-MAINS TABLE CONSOLE

Moving Coil Speaker

£15 15 0 or 27/9 down



“THE IDEAL GIFTS”  
LOTUS RADIO LIMITED  
MILL LANE, LIVERPOOL

**POST THIS COUPON NOW**

LOTUS RADIO LTD.,  
MILL LANE, LIVERPOOL

Please send me free copies of the LOTUS Component Catalogue and Table Console Leaflets.

NAME .....

ADDRESS .....

A.W. 5/12

# A FEW FACTS ABOUT TRUE AND EFFICIENT RECTIFIERS

 **WESTINGHOUSE**   
**METAL RECTIFIERS**

are the most efficient rectifiers known for radio receiving sets—there are NO FILAMENT LOSSES.

 **WESTINGHOUSE**   
**METAL RECTIFIERS**

require LESS COSTLY TRANSFORMERS for receivers than other rectifiers.

 **WESTINGHOUSE**   
**METAL RECTIFIERS**

require SIMPLER CIRCUITS than any other rectifier.

 **WESTINGHOUSE**   
**METAL RECTIFIERS**

give LONG TROUBLE-FREE RECEPTION, and radio receivers ARE MORE EFFICIENT for their use.

**BUY RADIO SETS AND MAINS  
UNITS WHICH INCORPORATE**

 **WESTINGHOUSE** 

## METAL RECTIFIERS

THE WESTINGHOUSE BRAKE & SAXBY SIGNAL CO. LTD.,  
82, YORK RD., KING'S CROSS, LONDON, N.1, 'Phone: North 2415

# DUX

**RECOMMENDED**



"DUX"  
The Leader

For the  
**Amateur Wireless**  
**THREE STAR THREE**  
and the  
**FOUR STAR FOUR**

Indisputably the best low-priced transformer for every suitable circuit, "DUX" is specified with persistent regularity by the designers of popular circuits published by the Radio Press.

Its selection for the "Three Star 3," and now for the "Four Star 4," the latest and best of the super circuits designed by "Amateur Wireless," is significant of its *absolute dependability and efficiency*—qualities to be found only in a transformer that was *built first and foremost to satisfy* and not merely to sell because it is low priced.

Credited by the reputable Technical Press with a performance equal to transformers at many times the price, "DUX" has the remarkable primary inductance of

**30 HENRIES**

Moreover, full technical details are published and given with "DUX" as with the highest priced components. *They prove before you buy, that performance will be right*

Ratio 1-3½ (standard) or 1-4 (auto-connection) Weight 11½ oz. Size: 3½ x 2 x 2½ in. high. List No. D129

Ask your dealer or write to us for the "DUX" leaflet giving full technical data and diagrams. Ask also for our 1931 2 catalogue.

**6'9**



The Admt. of  
Radio Instruments Ltd.,

Croydon, Surrey.  
Phone: Thornton Heath 3211.

To Ensure Speedy Delivery, Mention "A.W." to Advertisers

## RI QUAD-ASTATIC CHOKE

Specified for  
**Four STAR 4**

Designed to be suitable for all circuits in which H.F. chokes are employed and in particular for use as a parallel-feed choke. *Maintains high impedance and negligible loss of H.F. voltage.*

The Quad-Astatic Choke functions efficiently over the entire broadcasting wavelengths. It is entirely free from resonant losses and blind spots—and further, the method of astatic winding renders it free from H.F. interference with adjacent components.

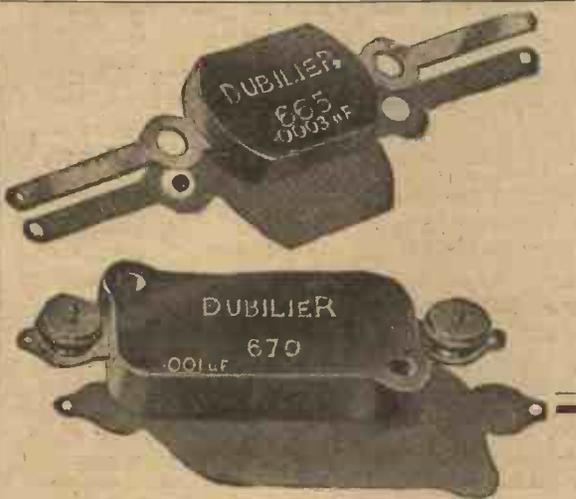
List No. FY2.

**3/6**

Ask for Quad-Astatic leaflet



# Use the condensers with a world-wide reputation



Dubilier condensers are famous the world over for their infallible accuracy and uniformity. Therefore, when you buy condensers, always demand Dubilier, the condenser in which you can place absolute reliance. They are made in England by British workpeople by a British company. This latest range of moulded-in mica types fulfils the long-felt need for the best possible condensers at an extremely low cost, built as only Dubilier can build them.

- PRICES**
- TYPE 665**  
 .0001, .0002, .0003 mfd. 6d. each.  
 .0005 mfd., 9d. each.
- TYPE 670**  
 .0001, .0002, .0003 mfd. 1/- each.  
 .0005, .001, .002, mfd. 1/3 each.  
 .005 and .006 mfd. 1/6 each.
- TYPES 610 and 620**  
 Prices from 1/8 to 3/- each

All radio dealers stock them.

# DUBILIER

CONDENSER CO. (1925), LTD.

DUCON WORKS, VICTORIA ROAD, N. ACTON, LONDON, W.3

# AMPLION MOVING COILS

THE famous Amplion M.C.6 Unit is acknowledged as representing the best value and the greatest efficiency amongst small permanent magnet moving coil speakers. Its reproduction and sensitivity are really remarkable, and it will handle without distortion adequate volume for all normal requirements. It requires no external excitation and the universal transformer which is fitted enables the speaker to be correctly matched to either Power, Super Power or Pentode output from standard British 2, 3 or 4 valve receivers.



M.C. 6 UNIT COMPLETE WITH TRANSFORMER

**67'6**

## M.C.9 UNIT

This is also a permanent magnet type, but is much larger and more powerful than the M.C.6.

Unit only **£6 - 0 - 0**

Or on deferred terms, matching transformer 15/- extra.

## CABINET MODELS

THE M.C.6 Unit is also available in handsome cabinets of very modern and striking design. Transformer is also fitted in Cabinet Models.

M.C.6 Oak - **£5 - 10 - 0**

M.C.6 Walnut **£5 - 19 - 6**

Both Cabinet Models are available upon deferred terms.

M.C.9 Oak - **£9 - 9 - 0**

M.C.9 Walnut **£10 - 10 - 0**

All M.C.9 models are available on deferred terms. Both the Cabinet Models are fitted with matching transformers.

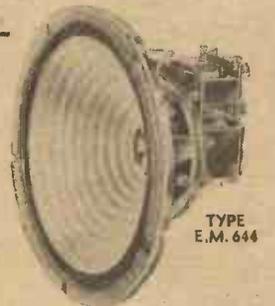


## D.C. ENERGISED MODEL

A MOST efficient unit for D.C. Voltages 100/110, 200/240, very suitable for A.C. sets. Full details of alternative methods of operation supplied with each model.

UNIT ONLY **29'6**

UNIT WITH matching transformer **42' -**

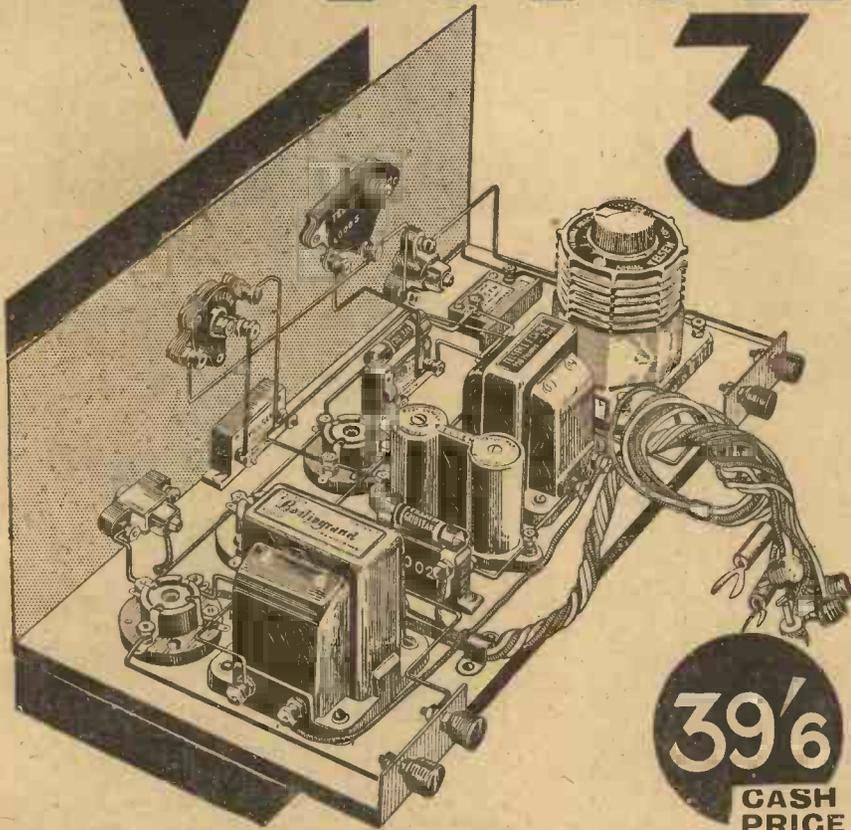


TYPE E.M. 644

Ask your dealer for a demonstration of these **AMPLION MOVING COILS** or send for booklet **W.L.60** which contains full details, to:—

**GRAHAM AMPLION LTD., 26, Savile Row, W.1.**

# BUILD THE TELSEN VICTOR 3



**39/6**  
CASH PRICE

Buy it from the  
**PIONEERS IN  
KITS OF PARTS**  
—established 12 years

**5/6**  
DOWN  
AND 7 MONTHLY  
PAYMENTS OF... **5/6**

**IMMEDIATE  
DELIVERY**

**KIT "A" . 39/6**

CASH or C.O.D.  
Exactly as supplied by Telsen, with baseboard, metal panel, flex, and terminal connections, in sealed carton, as advertised.  
or 8 monthly payments of 5/6

**KIT "B" . 70/-**

CASH or C.O.D.  
As Kit "A" with Valves as specified (Mazda HL2, Mazda L2, Mazda P220A), less Cabinet.  
or 12 monthly payments of 6/5

**KIT "C" . 82/6**

CASH or C.O.D.  
As Kit "B," with Valves as specified and Cabinet "A."  
or 12 monthly payments of 7/7

SEE PAGES  
1221 and 1163

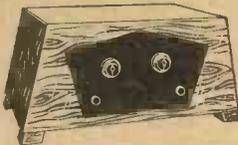
**RECOMMENDED ACCESSORIES**



**PETO-SCOTT VICTOR 3  
CABINETS**  
**CONSOLE CABINET 'B'**  
In Hand-french-polished Oak with accommodation for Telsen Speaker and Chassis, as illustrated **21/-**

● **MAZDA VALVES**  
Type H.L2. (Detector Stage).  
Type L.2 (First L.F. Stage).  
Type 220A (Super Power Output).  
**£1.10.6**

● **EXIDE BATTERIES**  
Exide C.23, 2-v. 30 (Actual) L.T. Accumulator. **11/-**  
Drydex (Orange Triangle) H.T. Battery, 120-v. Triple Capacity. **£14.0**  
Drydex (Green Triangle) C.B. Battery, 16-v. **2/6**



**TABLE CABINET 'A'**  
As illustrated, in Oak .. **12/6**

You are safe in dealing with Peto-Scott, the oldest established Mail Order House in the country specialising in Radio.

**FILL IN THIS COUPON NOW!**

**EXPRESS ORDER FORM**

To PETO-SCOTT CO. LTD.  
Please send me C.O.D., CASH/H.P.

**TELSEN VICTOR 3**

KIT "A"

KIT "B"

KIT "C"

for which I enclose  
Cash/H.P. Deposit £    s.    d.

NAME

ADDRESS

A.W. 5/12/31

# PETO-SCOTT

PETO-SCOTT CO. LTD. Head Office: 77 CITY ROAD, LONDON, E.C.1. Clerkenwell 9406. 62 HIGH HOLBORN, LONDON, W.C.1. Chancery 8266. MANCHESTER: 33 WHITELOW ROAD, CHORLTON-CUM-HARDY. Phone: Chorlton-Cum-Hardy 2028. NEWCASTLE, STAFFS: 7 ALBANY ROAD.

Don't Forget to Say That You Saw it in "A.W."

# A Celestion Cabinet Speaker

Incorporating the famous Reinforced Diaphragm

for **8/-** down

and 4 monthly payments of 9/-

If you pay cash it costs only **38/6**



Think of it. Celestion, unparalleled amongst loud-speakers, at the remarkably low price of 38/6. Known as the J.12, this outstanding model incorporates the famous exclusive Celestion feature known as the reinforced diaphragm, which gives perfect rigidity with extreme lightness. The J.12 is housed in a highly polished and artistic oak cabinet, fully in keeping with Celestion's high quality of craftsmanship.

**CELESTION**  
*The Very Soul of Music*  
**LOUD-SPEAKERS**

For those who do not wish to pay cash there is an easy payment scheme, by which the J.12 may be obtained for 8/- down and 4 monthly payments of 9/-. Fill in the coupon below and in return all particulars will be sent to you.

POST COUPON TO-DAY  
Post to: Celestion Ltd., Dept. A.W., London Road, Kingston-on-Thames. Please send me your J.12 literature.  
NAME \_\_\_\_\_  
ADDRESS \_\_\_\_\_  
Here insert name of dealer \_\_\_\_\_



**SIMPLIFIED SET BUILDING**  
AT A LOWER COST  
in the New "A.W."

**"Four Star 4"**

with the use of the

**CONDENSER BANK**

PRICE **9/6**

The Formo Bank Condenser is fitted with coloured leads of the correct length for immediate wiring up. Only one mounting and a saving of space are two other features of this latest Formo achievement.

The Condenser illustrated above embodies the Formo "Vacuum Process" condensers as specified in the "A.W." circuit and is specially designed for this super-efficient set.

Formo Mains Condensers have set a new standard of high working and test voltages with a high insulation resistance that ensures long life and great reliability.



**COMPONENTS SPECIFIED IN THIS ISSUE**

<b>SHORT-WAVE PLUG-IN UNIT</b>	<b>GRAMO-PLAYER</b>
Reaction Condenser	Mains Condenser
Price — — <b>2/9</b>	2 mfd. Price <b>3/3</b>
Knob 6d. extra	

ALWAYS USE FORMO COMPONENTS FOR EFFICIENCY AND RELIABILITY

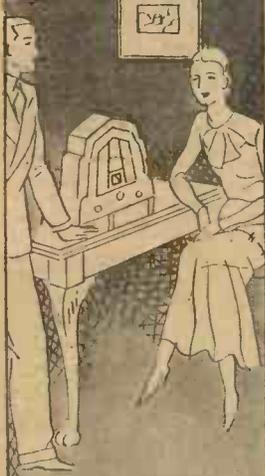
COMPLETE CATALOGUE FROM:—

**ARTHUR PREEN & CO. LTD.,**  
Golden Square, Piccadilly Circus, LONDON, W.1  
Works Address: Crown Works, Southampton

You will Help Yourself and Help Us by Mentioning "A.W." to Advertisers

# Make "BETTER AND CHEAPER RADIO FOR YEARS TO COME"

## your Xmas Gift



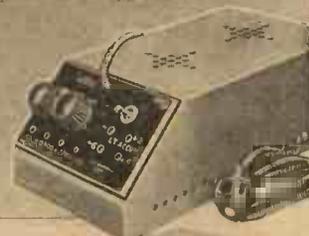
Here's the gift that every battery-set owner longs to have. Absolute reliability, increased power and economy, and battery troubles banished for ever, are the blessings of Power from the Mains.

Give your friends and your own family an "ATLAS" All-British Mains Unit this Christmas. Nothing could be easier to install, nothing simpler or more reliable in operation.

Ask your dealer to demonstrate, and be sure to insist on "ATLAS," the winners of the *Wireless World* Olympia Ballot in 1930 and 1931.

Follow the experts' lead to "Better and Cheaper Radio" and look for the name "ATLAS" on the panel.

There are "ATLAS" Units for every requirement. D.C. Models from 35/-. A.C. Models from 52/6. Send coupon for your free copy of "Power from the Mains," giving many valuable hints on converting battery sets to Mains Operation.



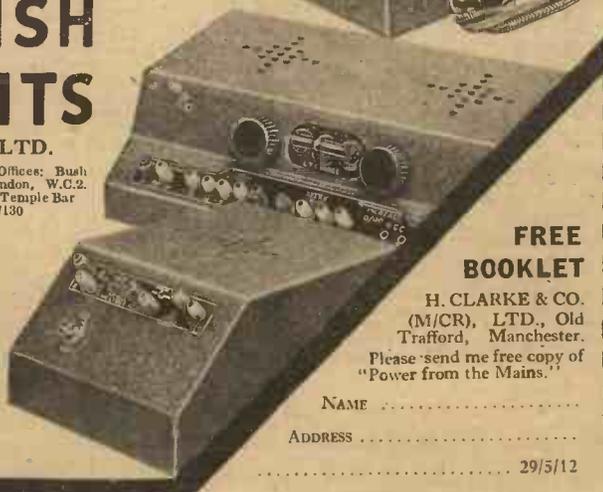
# "CLARKE'S ATLAS" ALL BRITISH MAINS UNITS

H. CLARKE & CO. (M/CR), LTD.

Old Trafford, Manchester. Phone: Trafford Park 1744-5-6.

Southern Offices: Bush House, London, W.C.2. Phone: Temple Bar 7130

**10/-**  
DOWN  
AND BALANCE  
IN EASY  
MONTHLY  
PAYMENTS

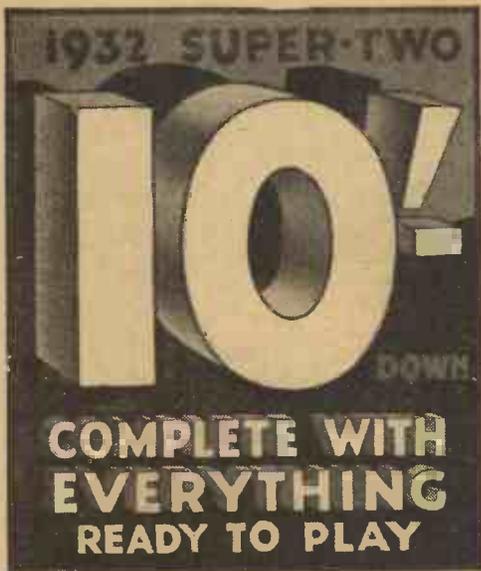


**FREE BOOKLET**

H. CLARKE & CO. (M/CR), LTD., Old Trafford, Manchester. Please send me free copy of "Power from the Mains."

NAME .....  
ADDRESS .....

29/5/12



# BRITAIN'S SUPER-TWO

## STAGGERING OFFER BY BRITISH RADIO MANUFACTURERS

100,000 Radio Sets Complete to be sold at 84/- each.

This world-famous Super-Two Set is the most compact and trouble-free radio set ever invented. (Yet you can have it playing in your home for 10/- down!) There are no gadgets or fancy bits to worry you. Simplicity and perfect year-after-year performances are the keynotes of this wonder set. In three years time it will still be a modern up-to-date set. A child can fix it up and work it easily. The Super-Two is the Morris of the wireless world—efficient—utterly dependable—and inexpensive. Playing for you like clockwork when more elaborate and fancy-priced sets are “not working.” How different to sit by the fireside on winter nights—calling music to you from anywhere at a turn of a dial! Clear, pure-toned music of gramophone volume—you can tone it down quiet if baby's sleeping.

“What station shall we have?”  
“Regional?” Push that plug in. You've got Regional, perfectly clear.

“National?” Plug in there. You've got National by itself—no “back-stage” noises of any kind.

Maybe there is a special programme of Spanish music. Turn the dials according to the simple-to-follow instructions—and there is the blood-stirring Spanish music. Dance music from Paris—even on a Sunday evening? There you are—clear as a bell—all other stations cut out automatically whilst you listen to the one you want.

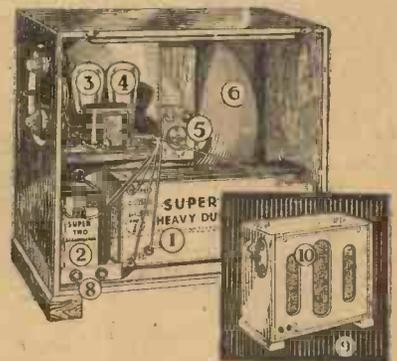
Even with an indoor aerial you can listen to British stations, in full volume, and with an outdoor aerial foreign stations roll in clear and pure.

The Super-Two has been specially tested in 148 centres in every corner of the British Isles, so no matter where you live your Super-Two will give you perfectly satisfactory reception.

*Yet this Super-Two set is yours for 10s. down, absolutely complete. Then only 9 more monthly payments of 9s. 5d. Everything self-contained in handsome Jacobean Oak Cabinet, 16 1/2" high.*

*Post special “Amateur Wireless” Order Form below for return post delivery.*

TRADE INQUIRIES INVITED



Guaranteed to arrive in perfect condition and to fulfil every claim made by the manufacturers and thousands of present owners.

### HOW THIS PRICE BECAME POSSIBLE

By eliminating all the frills and troublesome gadgets of the ordinary wireless set and concentrating upon utter simplicity and effectiveness, we have, by modern British mass-production methods, achieved what the wireless trade had thought impossible—WE HAVE PRODUCED A 10-GUINEA SET TO SELL AT 84/-. But this was only made possible by making 100,000 sets at a time instead of 1,000, by cutting out intermediate profits, by cutting our costs to the bone.

### 10 BIG POINTS

- (1) The “1932 SUPER-TWO” 100-volt super capacity high-tension and grid-bias battery.
- (2) The “1932 SUPER-TWO” 2-volt low tension accumulator.
- (3) The “1932 SUPER-TWO” detector valve.
- (4) The “1932 SUPER-TWO” amplifying valve.
- (5) The “1932 SUPER-TWO” four-pole balanced armature loud-speaker unit.
- (6) Special large “1932 SUPER-TWO” cone gives natural reproduction of low and high notes.
- (7) Outline of clamp holding batteries in position—accumulator cannot spill.
- (8) Terminals for aerial and earth—the only outside wires.
- (9) Back view of the “1932 SUPER-TWO.”
- (10) Fine metal gilt gauge prevents vibration and nasal tone giving loud-speaker reproduction back and front.

### ORDER FORM

Post to HUSTLER, SIMPSON & WEBB, LTD., 317 HOE ST., WALTHAMSTOW, E.17.

Dear Sirs,

- Please send me by return, carriage paid, with full instructions:—
- (1) One H.S.W. 1932 Super-Two Set, complete with valves, batteries, and loud-speaker, in oak cabinet, at £4 4s.
  - (2) I enclose 10s. deposit for an H.S.W. 1932 Super-Two Set complete with valves, batteries, and loud-speaker, in oak cabinet, on hire purchase terms, as advertised. I agree to pay 9 further monthly instalments of 9s. 5d.

(Cross out paragraph (1) or (2) not required.) I order only on the condition that my Super-Two Set will be delivered in perfect working order and exactly as advertised.

If you desire further information before buying, cross out (1) and (2) and just fill in your name and address.

I enclose .....

Name .....

Address .....

W.T.1. .... A.W. 5/12/31

Mention of “Amateur Wireless” to Advertisers will Ensure Prompt Attention

# C.A.V.

**NO HUM NO NOISE**

  
 LOOK FOR THIS LABEL  
 IT IS YOUR GUARANTEE THAT THE CAPACITY OF C.A.V. RADIO ACCUMULATORS HAS BEEN CERTIFIED BY THE PORTABLE ACCUMULATOR MANUFACTURERS ASSOCIATION



Electric mains are not essential for really good Radio reception. C.A.V. High Tension Accumulators will give you results that are quite unrivalled.

There is no longer need for the constant scrapping of Dry Batteries. C.A.V. High Tension Accumulators only need a recharge about three times a year and have a very long life.

*We have a useful and interesting booklet on battery maintenance and charging. A post card will bring you a copy.*

TYPE  
**G 103** 10-VOLT UNIT 5,000 Milliamp Hrs. **6/6**

60-VOLT GROUP  
 IN WOOD CRATE

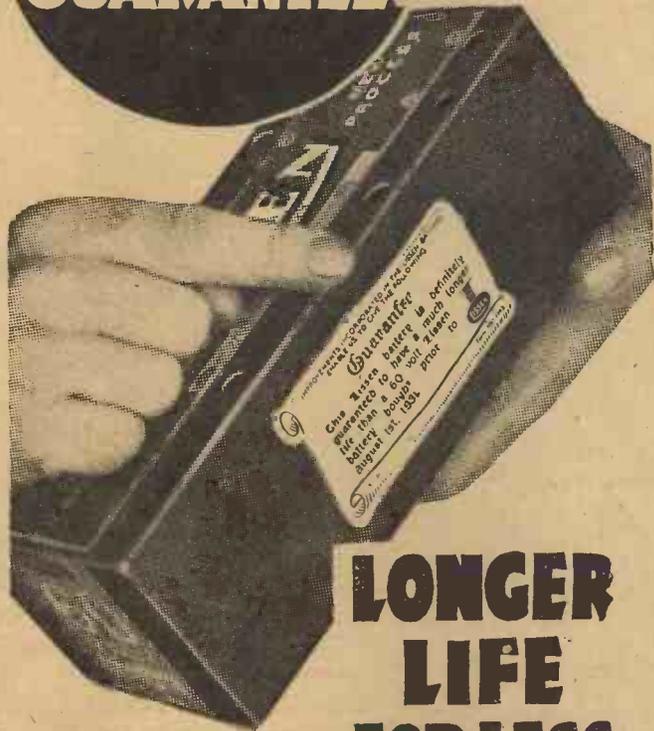


## H.T. ACCUMULATOR

**C. A. Vandervell Ltd.**  
 WELL STREET, BIRMINGHAM.

*Don't Forget to Say That You Saw it in "A.W."*

**HAVE  
YOU SEEN  
THIS  
GUARANTEE?**



**LONGER  
LIFE  
FOR LESS  
MONEY**  
*guaranteed!*

**60 VOLT  
WAS** ~~7/6~~  
**NOW** **5/6**  
**100 VOLT  
WAS** ~~12/6~~  
**NOW** **9/3**

Longer lasting power has been put into the Improved Lissen H.T. Battery—and a **LIFE GUARANTEE** is printed on the side of every Improved Lissen Battery you buy.

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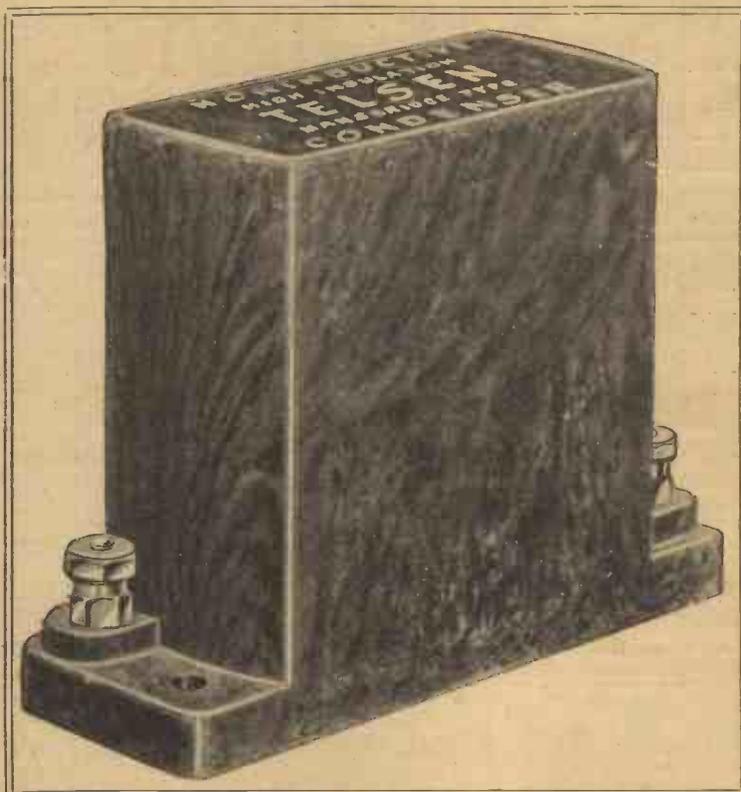
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Made in capacities from .01 to 2.0 mfd.

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**FOR CONSTRUCTOR, LISTENER & EXPERIMENTER**

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RESEARCH CONSULTANT:  
**W. JAMES.**

ASSISTANT EDITOR:  
**H. CORBISHLEY.**

**NEWS & GOSSIP OF THE WEEK**

**OUR CHRISTMAS NUMBER**

**W**ELL, here is our special Christmas issue. We think you will agree that it really is a bumper number and wonderful value considering that even in these hard times the price has not been raised to cover the extra number of pages!

**SOME OF THE "PLUMS"**

**I**T is hopeless in a few lines to *precis*e the contents of so big an issue, one of the

find the special "gift" pages a great help in present buying.

**A TRUE STORY**

**T**HE scene is Strangeways Gaol, Manchester. Around a wireless set are grouped prisoners. First Prisoner: "I suggest we switch over to Jack Payne for some dance music." Cries of "No, no," from the others. Second Prisoner: "Tune in the National, we want to hear the

**GOLD COAST GROUSE**

**W**E have been interested in a conversation we had recently with a colonial listener recently returned from the Gold Coast. He tells us that, in connection with Empire Broadcasting, it is probably not known that a very big premium is placed on listeners wanting to keep in touch with the Old Country. He cites the Gold Coast as an example of what colonials have to put up with. In the name of the P.M.G. he is charged 10 guineas for a licence to work a set. And before this licence is granted he must satisfy the local police that he is a fit and proper person to use a set.

**THEY WANT NEWS**

**A**CCORDING to this colonial, the great need of our distant kinsmen is a short-wave news service. At the moment the B.B.C. is negotiating with the News Agencies for a special service of news outside the present times. Unless this is fixed up the new station to be built at Daventry will be a great disappointment to the Empire audience.

**MORE TALKS**

**E**ARLY in the new year a new talks schedule will come into operation on Mondays and Thursdays, from 1.45 p.m. These talks will be devoted to cooking hints on Mondays and to children's health matters on Thursdays. Another new series of talks has been specially prepared for the benefit of the unemployed, of whom a great number listen in every morning. These talks are timed for 10.45 a.m., and on Tuesdays very practical topics will be covered, such as chicken farming and small holdings. Wednesdays' unemployed talks will be on how to keep fit.

**JACK PAYNE'S BIGGEST**

**O**N December 7, Jack Payne goes to the Paramount Theatre, Manchester, to fill the biggest outside contract he has yet had. This popular broadcaster seems to go from strength to



Behind the scenes at one of the recording rooms of the new H.M.V. studio centre in London. A wax is being made and the engineer is listening, by means of a speaker, to what is going on in the studio, which can be seen through the observation window in the centre

best numbers of "A.W." that has ever been published. Let it suffice to say that set constructors are catered for by the "Four Star 4," the "Short-wave Adaptor," the "A.W." Record Player," and many other interesting items. Ordinary listeners will want to read Jack Payne's article on the Christmas Dance Music, the feature "Europe from Your Armchair," and the dozens of other bright items in this issue. All readers will

lecture." Murmurs of approval from the others. This is not a fairy tale, for in Strangeways Gaol there are two group listening classes, and the prisoners take a great interest in the lecture series!

*To Every Reader*  
**HEARTY**  
**CHRISTMAS GREETINGS**

NEWS & GOSSIP OF THE WEEK

—Continued



strength. Certainly his post bag continues to bear eloquent testimony to his appeal to listeners. In a recent post he received a silver pencil, a ten-shilling note, and a box of cigars. He always returns these presents, unless they are sent anonymously.

THOSE FOUR CHAPS

ANOTHER example of a turn made entirely by microphone appeal and then attracted to the legitimate music hall

for a special programme for New Year's Eve. This will take the form of a B.B.C. news retrospect—a sort of account rendered for the B.B.C.'s activities throughout the past year. For the compilation of this programme the Blattnerphone machine will be extensively used. Extracts from speeches broadcast by the King, Ramsay Macdonald, Viscount Snowden, Lloyd George, and other notabilities will be included in the programme, which will certainly demonstrate the great value of the Blattnerphone in "bottling" outstanding broadcasts. The programme will begin at 11 p.m. and will continue until midnight.

MIDDAY TRANSMISSIONS

THE B.B.C. tells us that slight readjustments in midday timing will come into effect in the new year. Under the new arrangement all provincial stations will broadcast every day from Monday to Friday inclusive from 12 midday until 2.30 p.m. Some of the provincial outlets do not, at present, conform with this arrangement.



BOURNEMOUTH WARNING

THE Chief Engineer of the B.B.C. has publicly warned the listeners of Bournemouth that some difficulty may be found in separating Daventry from the new high-power Radio Paris station, which is very strongly heard on the South Coast. The Chief Engineer suggests that a frame aerial will greatly help to clear Daventry from the French interference. He suggests using this type of aerial with the bigger sets, turning the frame away from the direction of Paris.

GRETA KELLER IN PARIS

AS we have previously mentioned, that popular vaudeville star, Greta Keller, is married to Joe Sargent, of Ross and Sargent fame. The point is that Ross and Sargent have had to leave England at the end of their permit, and so Greta Keller has gone also. The B.B.C. was able to get an extension for Greta Keller's recent broadcast, and it hopes to be able to fix up for a further broadcast in the New Year, in which case Greta would come over from Paris, where she is now staying.

AMERICA'S "OLYMPIA"

THE American annual radio trade show, one of the biggest wireless exhibitions in the world, will open on May 23, 1932, at Chicago. Usually the exhibition is held in June, but has been advanced to May because of the national political conventions.

BELOW ONE METRE



This is the special beam aerial used by Marconi in his recent experiments in Italy in sending signals on a wavelength of half a metre over a distance of twenty-five miles. This is the aerial at the receiving end

These experiments are on very much the same lines as those carried out across the Channel several months ago, but in this case bowl-shaped reflectors were used

Marconi says that, way back in 1896, he experimented with wavelengths of about 20 centimetres. He hopes to make use of this new beam system for telephone work in Italy

are Those Four Chaps, consisting of Paul England, Claude Hulbert, Bobbie Comber, and Eddie Childs. We note that they are at the top of the bill at one of London's leading vaudeville theatres. Theirs is a well-deserved success.

NEW YEAR'S EVE

MR. E. A. HARDING, of the B.B.C. Programme Staff, is busy preparing

PIQUANT

THE Archbishop of York, as readers may know, is Chairman of the B.B.C.'s committee on adult education, and he will speak on this subject at the forthcoming conference to be held on December 5. It will be interesting to see whether he makes any reference to the pronouncement of the Bishop of Durham, who recently said that, teaching through the medium of broadcasting is fundamentally unsound.

WHAT DOES DADDY SAY?

IN a New York studio, during the children's hour, a popular broadcaster is Baby Rosemarie, who thrills youngsters with his radio adventures. For this he gets 40,000 dollars a year, and he is only eight years old. This is more easily understood when one realises that he incorporates advertisements in his stories. Baby's youthful admirers refuse to use any other toothpaste than that used by their hero!





# THE A.W. RECORD PLAYER

*A novel unit for radio-gramophone enthusiasts who want to have an entirely separate amplifier for gramophone reproduction. The amplifier can also be used as the low-frequency side of a receiving set*

**T**HIS unit will appeal to amateurs who, having small sets, are unable to do justice to their radio-gram reproduction.

Of course, nearly every set can be modified so that its low-frequency side acts as a gramophone amplifier, but in small outfits where a relatively high-impedance power valve is used and there is not much high tension available, one cannot get as much volume as is really needed to do justice to electrical reproduction.

### A Complete Record Player

The "A.W." Record Player" comprises a turntable unit, driving motor and pick-up, and a two-stage amplifier. It is not a receiving set. It can, however, be used as the low-frequency side of a set where more volume is required.

The unit is made up in rather a novel way with the turntable unit and the amplifier on separate platforms.

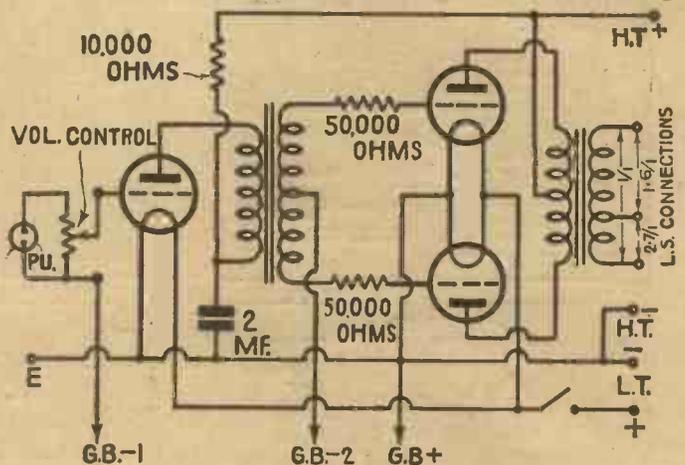
A reproduction of the full-size blueprint for the amplifier is given on page 1168 and next week the turntable unit will be dealt with. Blueprints of these sections are avail-

able and can be obtained, post free, from the Blueprint Department, AMATEUR WIRELESS, 58-61 Fetter Lane, London, E.C.4., price one shilling. The amplifier is given full size and the turntable unit and framework to scale on the same sheet.

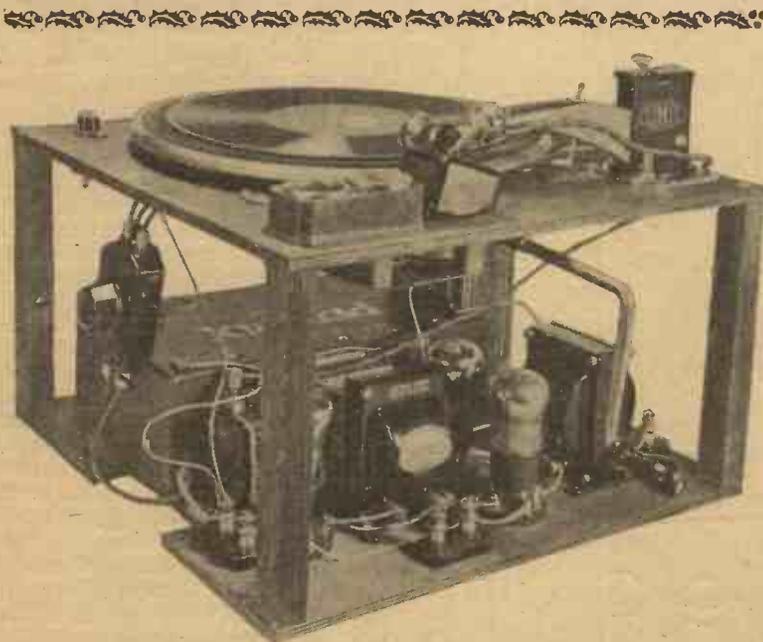
The two-stage amplifier consists of a low-frequency valve, transformer coupled to a push-pull stage. In this way you can get huge amplification without having too high an H.T. voltage. Also the two valves of the push-pull stage can handle a large input without overloading and even a 120-volt battery, double or treble capacity, is ample.

The layout of the amplifier is straightforward and a notable point is that the three

is so simple as to call for little comment. The baseboard, which is cut from plywood, carries the three valve holders, the two coupling transformers, a terminal block for the input from the volume control and



The circuit of the amplifier



Here is the complete instrument removed from the cabinet

batteries are on the same board as the valve and coupling transformers. This makes the record player an entirely separate unit. Of course, a mains unit can be used in place of the high-tension battery.

The panel on page 1168 and you will see that, taking into consideration the utility of the record player and the output it gives, the cost is low.

Construction

pick-up, and a 2-microfarad condenser. Spaghetti resistances are used in the wiring, which not only saves cost, but make the construction easier.

For instance, a 50,000-ohm resistance is included in the grid circuit of each of the valves in push-pull. These little resistances prevent spurious oscillation. Spaghettis are used and so there is no need to mount wire-wound components on the baseboard. The resulting layout, you will see, is very compact.

### Volume Control

In order to prevent interaction, the transformers are placed with their fields at right-angles. One transformer, with a split secondary winding, is used for input, and the other with a split primary, this for output to the speaker.

The secondary of this output transformer is tapped, so that you can match up the output with the impedance of your speaker.

The pick-up is on the motor board, of course. A potentiometer type of control is used, so that there is no tone distortion as the volume is varied.

**NEXT WEEK: A THREE-VALVER SPECIALLY DESIGNED FOR FINE TONE**

“THE ‘A.W.’ RECORD PLAYER”—(Continued from preceding page)

With a direct shorting resistance type of volume control there is distortion as the resistance is reduced towards the minimum end, but with this type of potentiometer volume control used in the record

player, there is no distortion.

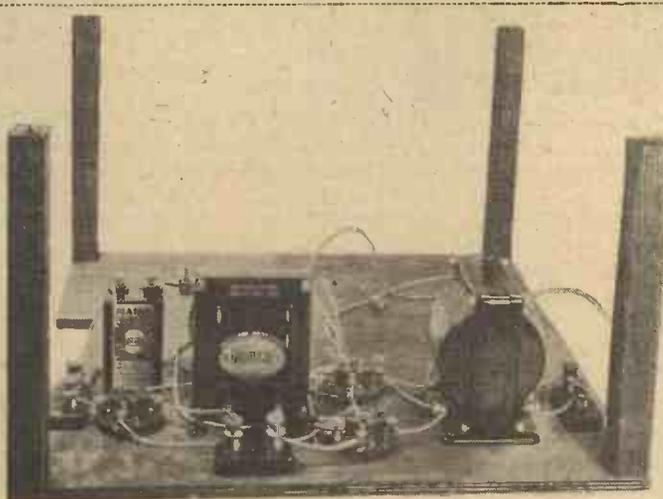
For simplicity, no scratch filter is used and on test we find that with the components and pick-up specified, the frequency curve is such that there is no undue predominance of “top” and so record scratch is not unnecessarily amplified.

Connection to the speaker is made by the terminal block on the side of the baseboard.

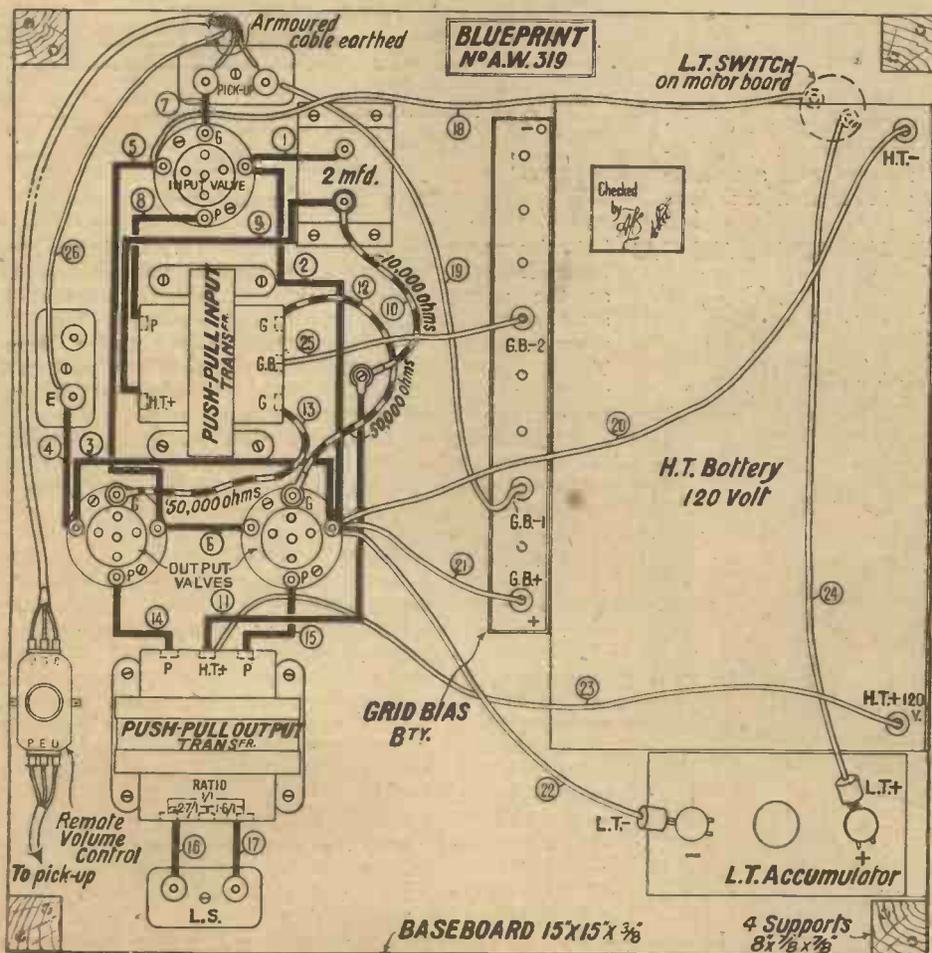
The battery leads go off direct to the accumulator and the high and low-tension batteries. There are two grid-bias tapping, one for the first L.F. valve, and one common tapping for the two push-pull valves.

COMPONENTS REQUIRED

- Wooden chassis and cabinet to specification (Peto-Scott).
- Push-pull input transformer (Ferranti AF3c, Varley R7).
- Push-pull output transformer (Ferranti OPM1c, Varley R9).
- Three valve holders (Telsen, W.B., Lotus, Clix, Junit, Bulgin, Burton, Wearite, Lissen).
- 2-mfd. fixed condenser (Formo, Dubilier, Lissen, T.C.C., Telsen, Ferranti).
- Three spaghetti resistances, one 10,000-ohm and two 50,000-ohm (Sovereign, Bulgin, Lewcos, Telsen, Lissen, Read-Rad, Tunewell).
- Filament switch (Bulgin, Telsen, Sovereign, Lissen, Junit, Read-Rad, W.B., Wearite, Lotus).
- Two yards of thin flex (Lewcoflex).
- Five wander plugs, marked H.T.—, H.T.+, G.B.—, G.B.—1, G.B.—2 (Belling-Lee, Clix, Elex).
- Two spade terminals, marked L.T.—, L.T.— (Belling-Lee).
- Three terminal blocks (Lissen).
- Connecting wire and sleeving (Lewcos).
- Gramophone motor (Apollo, Garrard).
- Pick-up and volume control (H.M.V., A.E.D., B.T.H., Varley, Lissen, Blue Spot, Edison Bell, Harlie, Celestion).
- Pick-up arm (Limit, Watmel).
- Needle cup (Bulgin).
- 120-volt high-tension battery (Pertrix, Drydex, Fuller, Ever Ready, Lissen, Palaba).
- 16-volt grid-bias battery (Pertrix, Drydex, Fuller, Ever Ready, Lissen, Palaba).
- 2-volt L.T. accumulator (C.A.V., Pertrix, Ever Ready, Exide, Fuller).



This photograph shows the amplifier and skeleton frame. The motor board, carrying the turntable and pick-up are mounted above and supported by the four legs



The layout of the base and amplifier. A full-size blueprint is available, price 1/-

There are several points to note in getting the positions for the pick-up and turntable motor properly arranged, and in wiring through to the pick-up, on-off switch, and volume control on the turntable motor. These will be dealt with in next week's issue.

AT THE QUEEN'S HALL

THERE were two works played on November 25 that refuse to fit any existing classification. The first was Mozart's *Konzertante Symphonie*, for violin, viola, and orchestra. Whether this work is a symphony or concerto I would not like to say. It was played tremendously well, and though it proceeds with Mozart's faultless technique to a perfect conclusion, I myself would like to have heard much more.

The other was a new work by William Walton, "*Belshazzar's Feast*." This is not cantata, oratorio or dramatic scena, but it has something in common with all three. It is a most inspiring work. I thought that "*Praise Ye the God of Gold*," etc., was one of the two or three finest modern pieces of music that I have heard. The end is a tremendous thing. The choir has a sustained passage which seems to knit together every sort of appeal, austere and classical to romantic and mystical. And the modern coda for the orchestra is the most brilliant I have heard.

Adrian Boult conducted, the orchestra and choir were both excellent, and so was Stuart Robinson, whose talent is perfectly fitted to this work.

L. R. J.

# DANCE MUSIC for Christmas



In this exclusive interview, JACK PAYNE tells how the dance music is being arranged this Christmas and in a specially prepared programme list shows when dance enthusiasts will be catered for during Christmas week

"I'VE an idea that I am going to envy ordinary listeners this Christmas!" said Jack Payne when I saw him recently at Savoy Hill.

"Of course, I am myself a dance-music enthusiast; and yet I get extraordinarily little time to listen to dance music. This Christmas, according to the advance programme schedules, I shall have still less time in which to listen to broadcast dance music; I shall be too busy broadcasting!"

I asked what arrangements were being made for dance music during Christmas week.

"Programmes in the ordinary way at Savoy Hill are made out 'in the rough' six weeks ahead," explained Jack. "This is necessary for

the programme builders and the artistes. At special times like Christmas, where programmes very much out of the ordinary have to be squeezed into broadcasting days, the hours of which cannot be altered much beyond the limits, programme schedules are made out a trifle over six weeks in advance.

"It is often not until the last moment that the details can be settled. So beware of last-minute alterations in the dance-music programme time-table. I don't know what other things the Programme

very late night—or, rather, early morning—dance-music sessions. Broadcasting of every kind must, so far as the B.B.C. is concerned, stop at midnight.

"Keen dancers who want to carry on Christmas festivities till the early hours of Sunday morning will have their gramophones and radio-grams. It is also possible that some Continental stations will continue rather later than the B.B.C.'s midnight, owing to the difference in time in other countries; and for an hour or so after we have shut down you may still get more dance music from foreign stations.

"During the holidays and the few previous days there is plenty of dance music, both for those who only want to listen to it and for those who want to dance.

### Christmas-day Dance Music

"On Monday, Tuesday, Wednesday, and Thursday of Christmas week I shall be giving the usual 5.15 to 6 p.m. session on Daventry National. On certain evenings of Christmas week, too, I shall be giving late night dance music from about half-past ten till midnight.

"There is, you will note, a one-hour's extension on Christmas Day and dance music will continue from half-past ten or thereabouts until 1 a.m. on Boxing morning."

"What sort of dance music will be popular this Christmas?" I asked.

"I've no doubt," said Jack, "that during Christmas parties there will be the old argument between those who like dance music and those who profess that it sends them into hysterics! This Christmas I hope the argument will be settled!

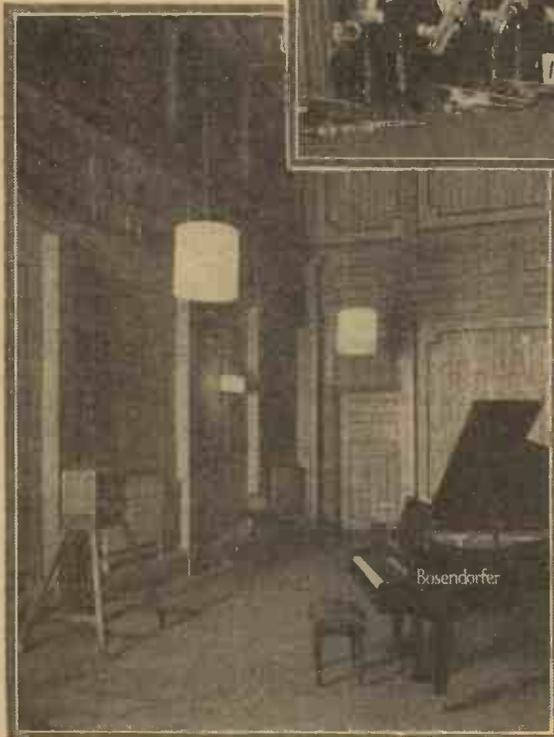
"As each month goes on, and as we find new dance music for broadcasting, there is an ever-increasing amount of material which is not only good for dancing, but pleasant just when you want to sit and listen to it. I can tell from my post bag of several thousands of letters a week that my public consists mainly of listeners and the proportion who actually dance to the radio music is comparatively small.

"I do not want non-dancers to get into a

(Continued at foot of page 1178)



(Left) Number Seven studio at Savoy Hill, from which Jack Payne does most of his dance music broadcasts. (Above) Marius B. Winter's band—a popular combination with dancers



Department has in store for you and some slight alteration in the main programme may mean shifting a dance-music session forwards or backwards.

"But, no matter what last-minute alterations may be made, it is obvious that dancers are well catered for in the Christmas programmes." Jack then sketched out the table of dance music given on page 1178.

"It is unfortunate," he continued, "that Christmas this year falls so that Boxing Day is on the Saturday. It prevents any



# EUROPE from Your ARM CHAIR

In this article Alan Hunter tells you how to compile a log of foreign stations to do justice to that new Christmas set.

WHEN a new set is installed, as many must be about this time of the year, it is just as well to adopt a systematic method of logging, so that from the dial positions of the known stations you may subsequently hazard a guess as to the identity of adjacent mystery stations.

### Compiling a Log

In this article I shall therefore show how I would set about compiling a preliminary log of stations on a set I had never seen before. Firstly, I should make sure the set had sufficient power to bring in foreign stations on the loud-speaker. Many fruitless efforts to hear foreign stations could be saved by this elementary consideration. If the set has one stage of high-frequency amplification there is no reason why it should not bring in a good bag of stations, say twenty. But if the first valve of the set is the detector, followed

by one or two low-frequency amplifying valves, one can never tell — the log may contain a dozen loud-speaker signals, and maybe only half a dozen.

I will assume that, for the purpose of this article, I have been presented with a four-valver, comprising two high-frequency stages, detector, and power output stage. Lucky me! The dial, I find, is clearly marked in degrees, numbered from 0 to 100. There are two other divisions, providing me with approximate dial positions for the medium waves and the long waves. Your set, if it is a modern set, will be equally well blessed.

### Landmarks

Now that Brookmans Park and Moorside Edge, as well as Midland Regional, send out such powerful signals, we have five certain signposts of the ether, so to speak, at least if we live anywhere within 200 miles of most of them. As the wavelengths of these stations are well spaced throughout the medium wave-band, don't you think it is a good idea to locate them right away? We shall find London National near the bottom

of the scale, and North Regional near the top. Between these dial points we shall find, coming down the scale, Midland Regional, then London Regional, and then North National.

Already, without leaving Merrie England, we have five definite dial points. And from these we can soon get the positions of many of the most interesting foreigners. It happens that many of the foreigners are on wavelengths adjacent to the home stations.



By noting the dial positions of these stations you have five prominent ether signposts

Just above North Regional, for example, is the immensely powerful Prague station, or should we call it Leiblitz now? And just below North Regional is Langenberg, the German station that is on the point of pushing up its power to 60 kilowatts.

From Midland Regional we travel a degree higher to find Söttens, the high-power Swiss station. Below Midland Regional we shall not be so lucky, for Bucharest is not always easy to get.

London Regional provides us with the dial location of Mühlacker, the high-power German station, just a degree above the home station. If the set is very selective the Graz station just below London Regional may be heard, but it is more likely Strasbourg will be the first station heard actually clear of London.

Continuing to signpost our route through Europe with home stations, we come down to North National. Just above this station is Bordeaux, the powerful French station, and just below North National is Hilversum, the Dutch station, heard well in spite of his meagre 8.5 kilowatts.

London National provides us with the

last of our certainties, for just above the dial setting for this station we shall find Moravska-Ostrava, the incomprehensible Czechoslovakian station. We may get Leipzig just below London National, but it is more likely that we shall bump into Hörby, the Swedish station below Leipzig.

Let us see what we have located already, without the slightest need of wavelengths or language knowledge. I make it nine foreigners so far. My list includes Prague, Langenberg, Söttens, Mühlacker, Strasbourg, Bordeaux, Hilversum, Moravska-Ostrava, and Hörby.

I have apparently neglected the problem of selectivity. We shall not be able to get all the stations so far mentioned at loud-speaker strength and clear of the local stations. Obviously, whichever centre of regional broadcasting is nearest will affect the stations on wavelengths adjacent to the locals. In the London district, for example, nothing less than a super-heterodyne set will enable you to hear Mühlacker clear of London Regional.

Similarly, a very selective set is wanted for the reception of Söttens if the listener is working close by the Midland Regional. Prague and Langenberg will be difficult to get clear of North Regional in, say, the Manchester district — unless a really "super" set is available.

Still, we do not all live under the shadow of the transmitting aerials and even if we do the selectivity problem should apply only to the separation of two of the many stations mentioned. I should emphasise the point that quite an average set should separate the adjacent foreigners from the B.B.C. stations outside the

(Continued on page 1242)



**THE  
IDEAL  
3-VALVE  
BATTERY  
COMBINATION**

Here is a 3-valve combination for a battery operated set, which for efficiency cannot be equalled. It is composed of three famous valves from the Mullard 2-volt range—the P.M.12., screened-grid high-frequency amplifier; the P.M.1 HL, detector; and the P.M. 2A, power output valve. The P.M.12 has recently been re-designed with greatly improved characteristics,

while the P.M.1HL and P.M.2A are among the latest introductions. Three valves as modern as this morning are united in a combination which is in the front line of radio development.

**P.M. 12**

**P.M.1 HL**

**P.M. 2A**



P.M.12 20/-  
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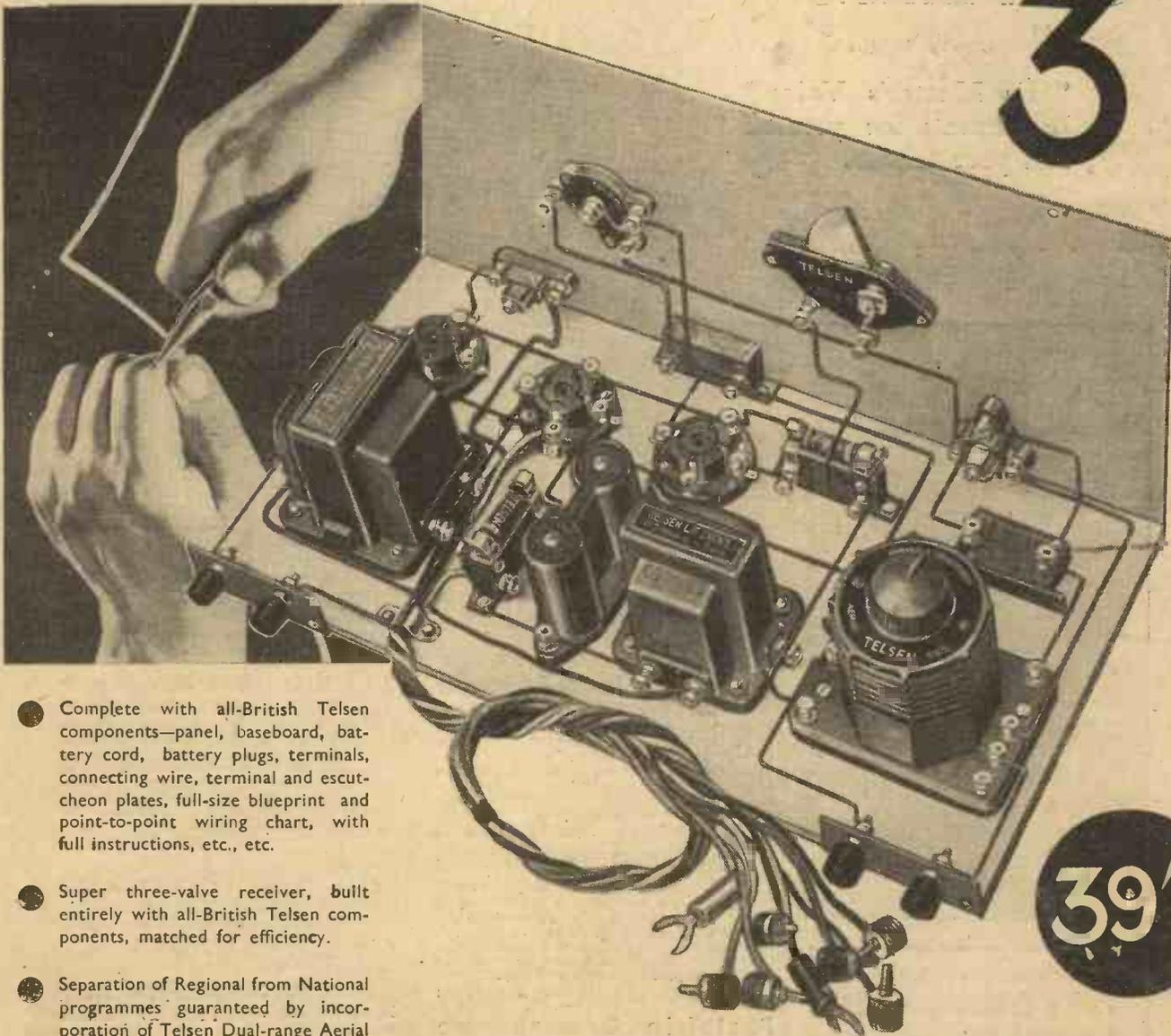


Build the Telsen Victor 3—and whether you give it away or give it to yourself in either event you have the thrill of making a gift that will give pleasure for years to come. There is no possibility of failure—the Telsen Victor 3 is as easy to build as it is to operate. You can build it to-night and to-morrow night you can tune in for the first time—its performance will delight and astonish you. And, remember, your Telsen Victor 3 is made entirely with all-British Telsen Components, all matched for efficiency.

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# TELSEN VICTOR 3

# TELSEN GIVE THE VICTOR 3



- Complete with all-British Telsen components—panel, baseboard, battery cord, battery plugs, terminals, connecting wire, terminal and escutcheon plates, full-size blueprint and point-to-point wiring chart, with full instructions, etc., etc.
- Super three-valve receiver, built entirely with all-British Telsen components, matched for efficiency.
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"His Master's Voice"  
Instruments for yourself  
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102



11

## "His Master's Voice" RECORDS FOR CHRISTMAS . . .

"His Master's Voice" December list comprises over 90 records. Every type of music for the festive season is included . . . Dance, Vocal, Instrumental, Orchestral and Humorous, also Hymns and Carols . . . and every one is made by world-famous artists exclusively for "His Master's Voice." No matter what your taste in music may be, you cannot fail to find in the list the records you want.

The Gramophone Company, Ltd., London, W.1

### Automatic Record Player

(Model 117). In a handsome walnut cabinet of compact design is fitted the new "His Master's Voice" automatic record-changing mechanism, pick-up and volume control. By connecting it to your radio receiver, eight 10 or 12 inch records (unmixed) may be played at one loading or a single record repeated up to eight times. A unit you have been waiting years for. A.C. or D.C.

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### Moving Coil Loudspeaker

(L.S. 7). A permanent magnet moving-coil loudspeaker in an arched walnut cabinet of attractive design. It is extremely sensitive and will handle up to 3 watts without difficulty. A universal input transformer incorporated in the instrument enables it to be matched to receivers with triode, pentode or push pull output.

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### Portable Gramophone

(Model 102). Entirely new cabinet design. New, all-metal, one piece sound-box. New metal detachable record tray—capacity 14 ten-inch records. New "slip in" winding handle. New lid-stay, one hand operated. Chromium plating. Automatic brake works without previous setting, on any record. Fittings include leather carrying handle, new lid lock, pivoted needle container, spring clip for box of "Tungstyle" needles.

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### Armchair Record Player

(Model 116). The new "His Master's Voice" pick-up, volume control, electric turntable motor and automatic start and stop, housed in an oak cabinet of pleasing design. By connecting it to a loudspeaker radio-receiver records may be played from one's armchair. Interchangeable resistances may be clipped in to the volume control to match the pick-up to any radio receiver. A.C. or D.C.

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### Table Radio-Gramophone

(Model 501) 3-valve all-electric (A.C. or D.C.). Moving Coil Loudspeaker. One operating switch. One tuning knob. One volume control. Illuminated wave-length scale. Mains aerial. New type gramophone pick-up — with reversible head — operating automatic brake. Plugs for two additional loudspeakers. In walnut cabinet.

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### Pick-up (Model 11).

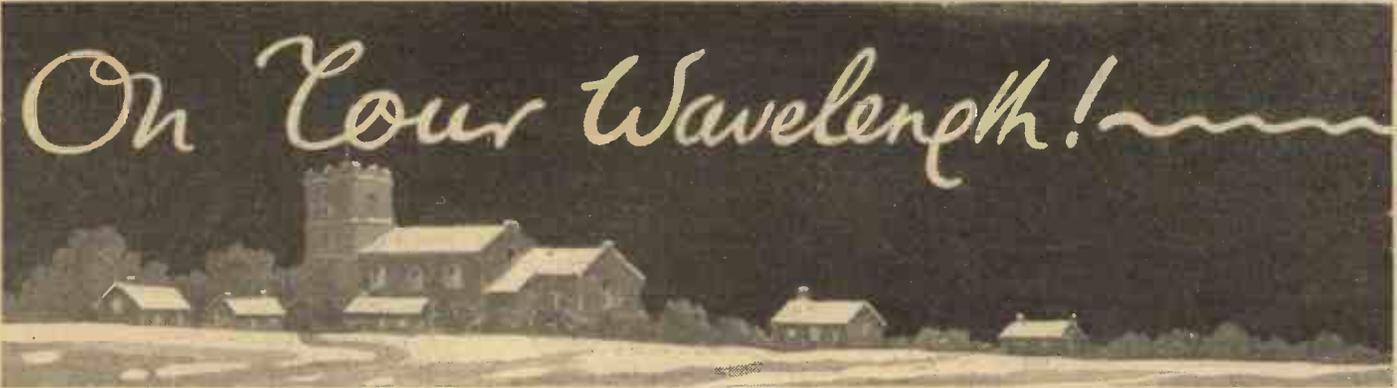
This pick-up is similar to the one fitted to all our new instruments. It can be attached easily to any type of tone-arm and is supplied complete with a logarithmic volume control and connecting leads. The weight of the pick-up is 5½ ozs.; it has an input of over 1 volt R.M.S., and a D.C. Resistance of 6,000 ohms.

Price Complete 2 gns.



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### A NOISY NOISE

**I**F you have happened recently to go a hunting for Madrid Union Radio you may have obtained the impression that he had returned to his old strength. Sorry though I always am to shatter any illusion, I am afraid that the station which you heard was not Madrid, but Moscow, whose new 100-kilowatt station, known as Stalin, has now calmly bagged Madrid's wavelength. As the Moscow station is shortly to go up to 300 kilowatts, it doesn't seem as if we shall hear much more from Madrid. One wouldn't mind so much if good musical programmes were put out by Moscow; as a matter of fact, the Stalin station transmits no music at all, but is entirely devoted to propaganda talks. This is the first of the big Russian stations to be put into the medium waveband. There are about forty more of them to come along within the next two or three years, which is not at all a jolly prospect. The worst of it is that Russia will not come into the fold of the U.I.R. and refuses to accept any allotment of wavelengths.

### WHAT WILL IT COME TO!

**T**HE position is a very serious one, for 300 kilowatts is by no means the limit of the power of the projected Russian stations. Many are designed for an output of 500 kilowatts. Even a score of these "horning in" on the medium-wave band could ruin the broadcast entertainment of about half Europe. It may be that, unless some agreement can be reached, the rest of Europe will have to take concerted action against Russia—

or, indeed, against any other country guilty of radio selfishness. This is going to be one of the big problems of the future in broadcasting.

### STILL THEY COME

**A**ND Russia is not the only one, by any manner of means. Other countries may not grab wavelengths, but there seems to be an all-round

desire to increase power. I told you about Luxembourg recently. Now I hear that Hilversum is going up to 60 kilowatts, whilst many other stations are already at work in the erection of bigger and bigger transmitting plants. It is a very great pity, for this race for power must increase the difficulties of a position that is already difficult enough, in all conscience.

### WHY NOT?

**S**O far the variable-mu valve has been made only in A.C. mains form, and I have heard it stated that a type for battery operation could never be expected. I don't believe a word of this and, though there are difficulties in the way, I cannot see why it should not be possible to turn out a variable-mu screen-grid valve, at any rate, in the 2-volt series. Nowadays 2-volt valves are by far the most important from the makers' point of view, since hardly anybody uses 4-volters and the 6-volt valve is rarely seen outside the laboratory of the wireless experimenter. I use 6-volters myself, because I think that they are just a little more efficient, taken all round, and because you can obtain special types not available in the 2-volt series. But I should go over to 2-volters without delay if a variable-mu battery valve were brought out.

### UNSUSPECTED METAL

**I**CAME across a queer case the other day of a set that simply refused to function properly in a certain house. It was quite a small affair, designed solely for the reception of the Brookmans Park twins at short range, but in my house it gave all the volume that could possibly be required when used with a minute indoor aerial. The second house stands a great deal higher, and it was naturally thought that splendid working would be obtained there. To my surprise, the owner of the house rang me up to say: "I can hardly get a bleat out of the set. Could you have a look at it?" I did. It was in perfect order and the batteries were right up. The earth was a good one and the indoor aerial did not look too bad, though it was taken closer to the walls than I care about. For about half its length it ran very close to what was apparently an oak beam. Investigation, though, showed that this was really an iron beam with an oak casing. The solution of the mystery seemed to be in sight. But there was more in it than that. The house is built of reinforced concrete, so

that all the walls contain large quantities of metal. Add to this iron-framed casement windows and an extensive system of central heating, gas and water pipes in the walls, and you will see that this house was pretty well wireless-proof. I expect that there are lots of others which are veritable mines of unsuspected metal.

### AN INTERESTING RESULT

**Y**OU may remember that the Cossor people recently ran a competition in which people were asked to vote for what they considered the most desirable points in a wireless receiving set. The result, which has just been announced, is extraordinarily interesting. The good features were placed in the following order of merit: (1) Tone, (2) Price, (3) Selectivity, (4) Range, (5) Simplicity, (6) Appearance, (7) Up-keep cost, (8) Volume. One presumes that by tone is meant quality reproduction, and it is an excellent sign of the times that this should occupy first place. In these days I would have expected selectivity to come second, for it doesn't much matter how low the price of a set is if it insists on bringing in two or three stations at once. The fact that range occupies the fourth place shows what an enormous amount of interest is taken in long-distance reception, a fact which is still not realised in every quarter. Some people may be surprised to find upkeep cost near the bottom of the list, but I am not, for up-to-date receiving sets are so economical that upkeep costs are, in any case, nothing very serious.

The combination of quality at the top and upkeep cost near the bottom comes, when you think it out, to a public demand for good quality and hang the expense. Manufacturers in general should, I think, note with care that volume is at the very bottom of the list. I never have been able to make out why some make such a strong point of the huge volume that their sets can supply—outputs of from 1½ to 5 watts. Unless you live in a baronial hall or a moated grange, half a watt is ample for the average living-room, and most of us use a good deal less than that in the ordinary way.

### VALVE NEWS

**S**O many interesting valves have been placed on the market this season that it has been quite difficult to keep pace with developments. I mentioned recently the very economical type of two-volt pentode which has been developed, and now I want to draw your



## On Your Wavelength! (continued)

attention to a particularly interesting kind of triode output valve. Many people don't like pentodes, because you must use a filter circuit or a transformer in their output and because, even if you do, they are apt to make reproduction somewhat shrill. At the same time, they would like to have something of the big magnification in the last stage that a pentode can give. Well, there are nowadays very wonderful little power valves which go a long way towards meeting these requirements. Valves of the LP<sub>2</sub> type have a nominal amplification factor of 15 with an impedance of 3,900 ohms. These figures are taken with the plate at 125 and the grid at zero. Under working conditions the grid is given a negative bias of 3 volts with 125 on the plate. This means that the amplification and impedance figures are rather higher under working conditions. The plate current is only just over 5 milliamperes. As is the case with the pentode, very big amplification takes place within the valve itself, with the result that a very respectable output to the loud-speaker is obtained, despite the small grid-voltage swings that the valve can handle.

### MY OWN MEDICINE

**T**HERE is an old saying that the shoemaker's children are the worst shod, and appropriately altered it would appear to apply in some measure to the families of wireless experts. The other day Mrs. Thermion told me that the set installed specially for her use was producing nasty noises and asked me to take the necessary action. A flick of the switch disclosed that there were very nasty noises indeed, so I proceeded to take a look inside. The first thing that struck my eye was a label in my own handwriting on the grid battery which read "Due for renewal March 1, 1931." And I seemed to remember having given in these columns that tip about labelling grid batteries so that you couldn't possibly neglect to change them at the right time! A sad thought, is it not?

### A QUESTION OF SIZE

**A**PROPOS of the permanent magnets used in a moving-coil speaker, a correspondent asks why it is necessary to make them so big and heavy, seeing that the only useful part of the field is that passing through the gap between the comparatively small pole-pieces. He points out that, theoretically, each limb of the magnet can be divided up into a number of equally strong magnets—since the same flux passes through—and so he thinks it ought to be possible to cut away some of the "superfluous" metal without reducing the strength of the field in the gap.

The trouble is that a certain bulk of metal is essential in order to generate sufficient force to drive the flux across the air-gap. For instance, it takes at least five 2-volt cells to drive one ampere of current

through a 10-ohm resistance. If you take one of the cells away the current drops, and similarly when you cut away some of the metal of a magnet you simply diminish its magnetomotive force, and so reduce the amount of flux it can drive through the high "reluctance" of the gap.

### REDUCED TO A NUTSHELL

**O**F course, in a sense, we are only at the beginning of the possibilities of modern magnetism. The production of the high-powered "permanent" magnet is in itself a comparatively new discovery, and there are bound to be further developments along the same lines. In fact, it is one of the most promising avenues now open to scientific research, and I shouldn't be at all surprised if, sooner or later, we don't get the permanent magnet of a loud-speaker movement more or less down to nutshell size.

### A MAGNETIC CURIOSITY

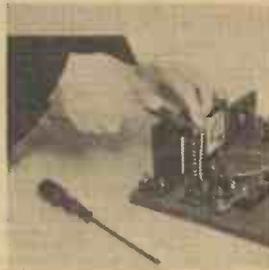
**O**NE of the earliest discoveries made in connection with magnetism is the peculiar way in which the normal field can be concentrated or increased under certain conditions. Galileo, writing in 1608 of the properties of a piece of lodestone, pointed out that it never tires of holding a weight, but invigorates itself with time. "The longer it sustains a weight, the more it gains in strength and the more weight it can carry." He himself had a piece of lodestone which weighed 6 ounces and would normally support only 1 ounce, but by suitably "arming" it with iron caps he succeeded in making it carry a weight of no less than 150 ounces.

### TOO GOOD TO BE TRUE

**T**HE same philosopher also refers to a system for communicating over long distances by means of magnets which, even in these days, would throw modern radio into the shade.

### FRAGILE WIRING

Take care when connecting up parts which have internal connections to thin wires, H.F. chokes, for example, that too much strain is not placed on



the terminal shank. If the terminal itself were rotated by tightening up the nut too much, this would break the inside connections.

He relates that someone once offered to sell him this "secret art", which, by making use of the "sympathy between magnetised needles," would enable him to speak to another person over a distance of from two to three thousand miles. Galileo was prepared to buy, provided he could first make a trial, and for this purpose asked for a practical demonstration between two different rooms in the same house. The vendor hesitated and then replied that over so short a distance the action would be scarcely discernible. This was enough for the shrewd Galileo, who promptly declared that he did not find it convenient just then to go to Cairo or Muscovy, but that if the other chose to go there himself, he would remain at home and abide by the results.

### A NOVEL FAULT

**R**ECENTLY I came across a fault which I had not previously encountered. I was testing a D.C. set using some of the new indirectly-heated valves. The set was of the H.F. detector, and L.F. variety, and worked very well except that at one point on the long-wave scale it burst into a curious growing type of oscillation. I had, as a matter of fact, experienced a little difficulty in making the set stable, and I assumed that this was some remnant of the instability, and accordingly tried all sorts of alterations to the wiring to avoid any coupling between the circuits. This, however, did not make any difference, and I was considerably puzzled to discover what the fault was.

I got a clue from the fact that, in an endeavour to get down to first principles, I removed the aerial and earth; this, to my surprise, cured the fault, for the set was now quite stable. This is, of course, rather the reverse of what usually happens, the set tending to become more unstable as the aerial damping is removed. In this instance, however, the set was quite stable over the whole scale, with an appreciable margin of safety, until the aerial and earth were connected up again, when the old instability reappeared. As I have said, it was not a continuous oscillation, but only occurred at one point on the long-wave scale at about 1,700 metres.

### THE REASON

**E**VENTUALLY I found the trouble, which was in the condenser in the earth lead. Being a D.C. set, I could not connect the H.T.—to earth, and the latter, therefore, was connected to the set through a 2-microfarad condenser. This was of the ordinary inductive type and presumably had a resonance just about the 1,700-metre mark. Replacing this condenser with another of a non-inductive type put matters right. Whether this effect is always obtained with inductive condensers I do not know, but it is, at any rate, rather interesting, and a fault which might cause one a lot of trouble.

THERMION.

# A FIRST-RATE CHRISTMAS MYSTERY



## A NEW IDEA FOR YULE-TIDE PARTIES

NO doubt, by now you will have started to make arrangements for that Xmas Party of yours and, possibly, you may have been seeking ideas for some new "stunt" with which to entertain your guests.

If these parties are to be a success some preparation must be made in advance. It is true that the wireless programmes may be called upon to contribute to the enjoyment of your visitors; also, gramophone records may be relied upon to fill up odd moments and, inevitably, the evening will include a jolly dance. Then what about the old parlour games which some member of the party will most certainly suggest; those round games which both young and old join in with glee?

### Be Up To Date!

You cannot play *Kiss in the Ring* all the time! You know the sort of thing to which one usually drifts, a guessing competition, the same idea, with variations, that somebody should go out of the room and be invited to carry out certain suggestions made in his or her absence. He must find a hidden object, detect something unusual or be allowed to put questions to which the only replies allowed are "yes" and "no." We appear to come back regularly to the old "Animal, mineral and vegetable" convention and, believe me, we want something new.

To-day, most households possess a wireless set and a loud-speaker; it can be put to a use for which it was not originally constructed. A little alteration must be carried out, but such a simple one that it can be done without anyone being the wiser, at least, for the time being. It is this adaption of the set which gives us our main idea. For this, however, you want an accomplice

and if you do select one, see that you choose a person who is not likely to let you down; select someone wide awake and if he possesses some imagination, some initiative, is bright, and can play a part your success is assured.

### Advance Preparation

The only advance preparation you will need to make is to take a flexible lead—ordinary twin electric bell wire will do—from some point near your wireless set to another point outside the room. Take it to some inconspicuous corner of the hall or to another adjoining room and to that end attach a pair of headphones. The main idea is to use the loud-speaker as a microphone and all that is required is to connect one of the loud-speaker leads to the grid of the detector valve and the other lead to the negative side of the grid-bias battery or to any earthing point on the set. The diagram (Fig. 1) clearly shows you what to do. If your set has been constructed to take a gramophone pick-up these terminals should be used without any other alteration.

The free end of the new length of flex goes to the output terminals of the receiver, but it is advisable if the leads to the phones are more than a few feet long to use a choke filter output as shown in Fig. 2, so that the H.T. current will not have to circulate round the house. You must, of course, disconnect the aerial and earth leads from the set.

You will see what we are trying to do, namely, to use the loud-speaker as a "mike" and to pick up a message on the headphones outside. Providing you are not too far from the loud-speaker, your confederate should hear everything you say.

Should you, by chance, possess a microphone—even of the ordinary carbon type—the matter will be greatly simplified for you will not need the wireless receiver. On headphones every word picked up by the microphone from the room would be distinctly heard and from experiments made, even with a connecting twin-wire, of as much as fifty feet there is no need for extra amplification.

If however you would like to use a loud-speaker at the distant end of the leads instead of the phones, the microphone should be connected up as shown in Fig. 3, but the room in which the loud-speaker is situated must of course be at some distance from the room in which the

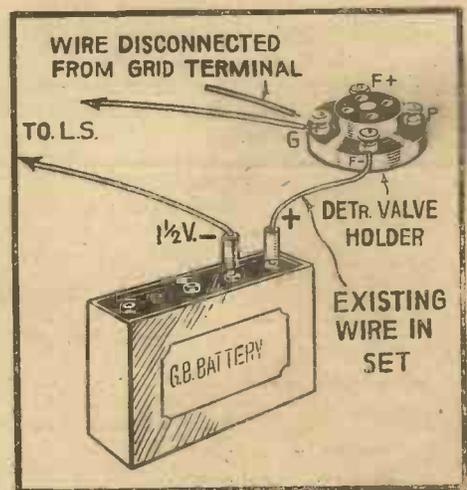


Fig. 1. Method of connecting up the loud-speaker as a microphone.

microphone is used, so that the sound cannot be overheard.

Whichever method you adopt be sure to rehearse with the friend you have chosen to assist you. Now, if this is all clear to you, we may proceed with our mystery.

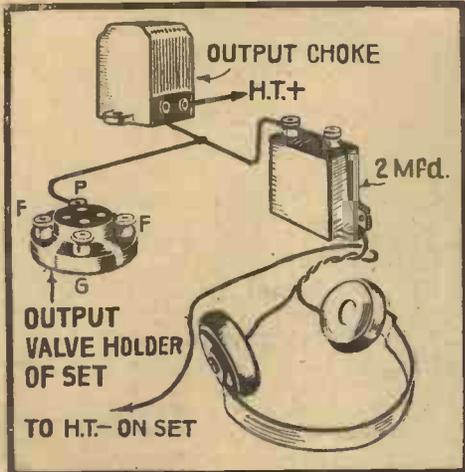


Fig. 2. Using a choke filter output to the headphones

Bear in mind that it is necessary that whatever amusements have been indulged in no reference on your part should be made to the wireless set.

On the contrary, if the set has been working, you might, in a casual manner, say, "Oh, well, we've had enough of this." "What about playing at so-and-so?" says somebody. "Yes," you reply, "that might do, but I have an idea." Make a reference to thought-reading or thought transference and carefully explain that, "Our friend"—say Brown, your confederate—"is a past master in the art." He will go out of the room whilst your friends decide what he is to do.

Leave the choice of his duty entirely to your guests. If you make suggestions you will find that scenting collusion between him and you they will not be accepted. Ask your friends to make the test a difficult one, not just the simple matter of guessing a word or finding a hidden pencil. The greater the test the better the audience will be pleased; the more they will be mystified and the greater enhanced will be your reputation as a Master of Telepathy.

If you are capable of it make them a speech in true showman style; something on these lines:—

*Ladies and Gentlemen, I have brought you together to-night to demonstrate to you the remarkable telepathic powers of our friend Brown. To ensure the success of the marvellous experiments we intend to carry out, however, I must impress upon you the absolute necessity of granting me your undivided attention. For this difficult test of thought transference I have to use every ounce of concentration to transmit any message you may give to Brown and if I am to do so there must be no interruption to my continuity of thought. (Arthur take your arm away from Betty's waist and give me all your attention. Your frivolity disturbs me.) If you are all ready, we may start. I want you to decide amongst yourselves what Brown is to do when he returns to the room. Apart from making one or two hypnotic passes over him to place him in a receptive frame of mind I will not utter a word or make any sign to assist him. (Note: Later, should your audience object to these hypnotic passes "cut them out" magnanimously; this will deepen the mystery.)*

You may carry on in this style, *ad lib* with any additions that may come to your mind; in fact, so long as your audience

will permit it. Now when the accepted suggestion regarding Brown's duty is decided upon make sure that you are standing near the loud-speaker so that Brown who, with his headphones outside, would not have heard what has been said in the back of the room, may get your message. Repeat it slowly. Close your eyes as if thinking deeply, hold your hands to your temples and say, for instance: "Let's see now. Have we got that clearly? When Brown comes in he is to go to Aunt Julia, take her bag, open it, take out the powder puff and dab it on Helen's nose. Is that it?"

Of course, Brown will have heard all this clearly and the rest is easy. If your friend can take the part seriously he will give the impression that he is in a semi-hypnotic stage after those magic passes and wrinkling his brow, after some hesitation will walk towards Aunt Julia, and again, after a few moments' deep thinking will do what was required of him.

You will be surprised how puzzled your friends will be for, apart from your presence near the loud-speaker for a very short time you can allow them to take you to another part of the room, hold your hands, blindfold you or do anything to prevent all possibility of carrying out any previous arrangement they may imagine you have made with Brown. You may repeat the tests several times with any variations.

The necessary alterations to the wireless receiver can be made by your confederate at some opportune moment, but do see that the twin-wire leading to the headphones outside the room is properly concealed. Don't, by any chance, let Aunt Maria trip over it!

J. GODCHAUX ABRAHAMS.

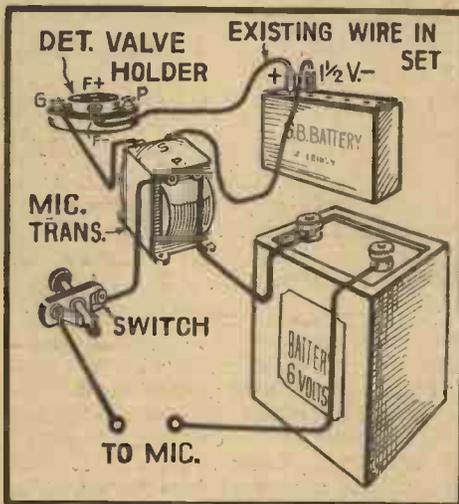


Fig. 3. Microphone connections when a loud-speaker is to be used instead of phones

"DANCE MUSIC FOR CHRISTMAS"

(Continued from page 1169)

huff when they see the Christmas programmes and realise what a large amount of dance music there is.

"To a greater extent than ever before, they will find that this music is enjoyable as a listening item. They have no need to dance; in fact, many of our comedy numbers are almost impossible as dance items.

They are designed solely for listeners, as my boys can tackle everything from syncopated tunes of the "hottest" type to extremely difficult serious items, such as Ravel's "Bolero," they are, you see, well qualified to please listeners.

DANCE MUSIC IN CHRISTMAS WEEK			
	LONDON & 5XX NATIONAL	LONDON REGIONAL	
MONDAY	5.15—6 p.m.	10.35 p.m.—12 midnight	(Dorchester Hotel—Blue Lyres)
	11 p.m.—12 midnight	10.35 p.m.—12 midnight.	
TUESDAY	5.15—6 p.m.	6.30—7.15 p.m.	
	10.30 p.m.—12 midnight.	10.35 p.m.—12 midnight	(Grosvenor House—Jack Harris)
WEDNESDAY	5.15—6 p.m.	10.35 p.m.—12 midnight	(Jack Payne)
	11 p.m.—12 midnight	10.30—1 a.m.	
THURSDAY	5.15—6 p.m.	(10.45—12 midnight, Savoy Orpheans—Savoy Hotel)	
	10.45—12 midnight	10.35 p.m.—12 midnight.	
FRIDAY	5.15—6 p.m.		
(Christmas Day)	10.30—1 a.m.		
SATURDAY	5.15—6 p.m.		
(Boxing Day)	10.30—12 midnight.		

(May Fair—Ambrose)

Records and Radio

"Those who want my B.B.C. Dance Orchestra music for dancing will find that, generally speaking, in recording I have chosen items for dancers and, in broadcasting, items for listeners. Gramo-radio enthusiasts should note this.

"I have not yet chosen the programme of the actual music which will be played during Christmas week.

"This year," said Jack, in conclusion, "our motto will be 'On with the Dance'—and if you don't want to dance, sit and listen!"



*She interrupts a beam of light . . . and the radio plays!*

HE had tuned in the Regional before he left. He knew that she had only to open the door when the radio would start. For he had fixed it up himself. It was not done by magic—for he was no magician. It was a simple application of a new scientific study—of Raycraft.

On one side of the door—tidily out of sight, he had fixed a Raycraft Bridge—a small light-sensitive cell. Focused on to this Bridge was a beam of light from a Raycraft Projector, fixed, also unobtrusively, on the opposite side of the doorway.

To the Bridge was connected a Raycraft Kit—he had built it up himself—which contained a one-valve amplifier and a Raycraft Relay. This Relay he had connected to the switch of the radio.

And now his radio was controlled by Raycraft, by the beam of light across the door. When the door is opened the beam is interrupted—and the radio plays.

Raycraft is simplicity itself. Anyone can build it, and there are dozens of practical applications for it. For just as Raycraft will switch on the Radio, or off for that matter, so it will control a light, ring a bell, count, sound an alarm, time to a fraction of a second, operate signs—all by means of the beam of light on the sensitive Bridge.

Raycraft is not expensive. You can experiment with a Kit costing only a few pounds.

Read the Raycraft Book. Free from your radio dealer or from Audiovisor, Ltd., and learn more about this practical but amazing scientific development—the biggest since radio.

PRICES		
Raycraft Kit, including Bridge and Relay but without Valve or Batteries	£3	17 8
Raycraft Projector, Battery Model	£1	2 6
A.C. Model, 200/250 volts	£1	15 0

**RAYCRAFT**  
 AUDIOVISOR LTD.,  
(Domestic Division, Radiovisor Parent Co., Ltd.)  
 28 Little Russell Street, London, W.C.2

Fill in this Coupon and send to Audiovisor, Ltd, 28 Little Russell Street, London, W.C.2, for FREE copy of Raycraft Book, 2nd Edition.

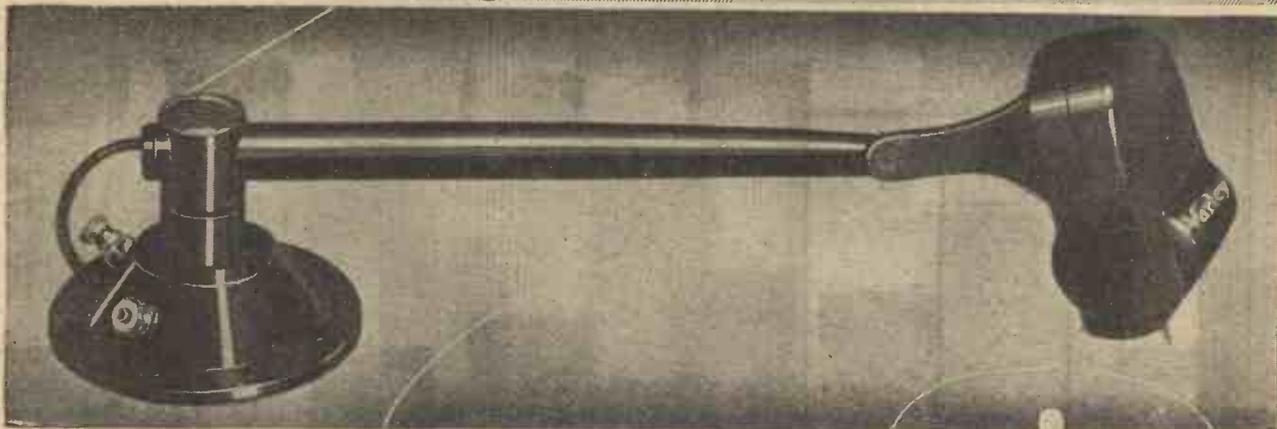
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Address .....

To Ensure Speedy Delivery, Mention "A.W." to Advertisers

# WORTHY COMPANIONS FOR THE "SQUARE PEAK" COIL

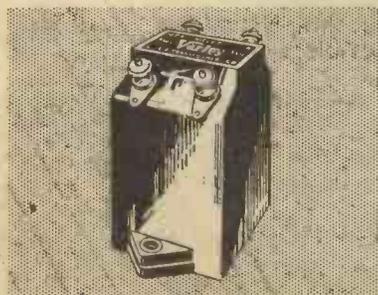
(REG. TRADE MARK)



THE ONLY VOLUME CONTROL



ADAPTABLE FOR GANGING



"NICLET" L.F. Transformer

## NEW PICK-UP AND TONE-ARM

(Patent.—Arm manufactured under Licence)

After all, good radio is the cheapest form of entertainment, so have it *as good as you can get it*. Build Varley Components into your set or radiogram and you will build in Quality. Quality of workmanship, of materials and of performance.

For full particulars of the components shown on this page write for sections B, C and D of the new Varley Catalogue.

**VARLEY COMBINED PICK-UP AND TONE ARM.**—Pick-up enclosed in black bakelite case. Compensated bass output, giving gradually increasing response as the frequency decreases below 250 cycles. Needle scratch and subsidiary record noises practically eliminated. Self-adjusting needle clutch—no screws to tighten. You merely press the needle in. Ball-bearing, frictionless Tone Arm, suitable for turntables from 10 in. to 12 in. Almost perfect tracking and minimum record wear. Plays records of all sizes, from small nursery ones to the large 12 in. type. List No. CPI38. 42/-.

**VOLUME CONTROL.**—Exceedingly compact. Two or more easily ganged by means of the ganging equipment which is listed separately. Smooth action—all strain removed from spindles when ganged. 25,000, 50,000, or 250,000 ohms. 6/6 each.

**GANGING EQUIPMENT.**—1 coupling link and 1 mounting bracket, to gang 2 Volume Controls. 1/- per set. (For each additional Volume Control a set of Ganging Equipment is needed.)

**NICLET L.F. TRANSFORMER.**—Primary inductance 45 henries with no D.C. Ratio  $3\frac{1}{2}$  to 1. The primary will carry a steady D.C. current up to 3 m.a. When resistance fed, ratios of 2.5, 3.5, and 4.5 to 1 are obtainable. List No. DP21. Price 7/6.

# Varley

ADVERTISEMENT OF OLIVER PELL CONTROL LTD., KINGSWAY HOUSE,

L.F.S. Representative: L. R. WOOD,

To Ensure Speedy Delivery, Mention "A.W." to Advertisers

# SQUARE PEAK<sup>®</sup> MAINS SETS (REG. TRADE MARK) AND RADIO GRAMOPHONES

New principle, new performance . . . . The Square Peak Sets owe their amazing selectivity and range to Varley Square Peak Canned Coils (*prov. protected*) which were placed first in the recent "Wireless World" Olympia Ballot. Their fine quality of reproduction comes from VARLEY L.F. Components—the first to give a straight-line N.P.L. curve—and the built-in British Moving-coil Speaker.

A Square Peak set will be a source of lasting pride and pleasure. Write for the new illustrated colour booklet and particulars of hire purchase terms.

*Illustrated below is the Square Peak 4-Valve Mains Receiver.*



VARLEY "SQUARE PEAK" 4-VALVE MAINS RECEIVER.—Complete as illustrated with built-in moving-coil speaker. One-dial tuning. Stations calibrated direct on tuning dial. Equipped for gramophone pick-up. Exquisite Burr Walnut-finished cabinet. A.C. or D.C. models, 29 guineas.

VARLEY "SQUARE PEAK" 4-VALVE CONSOLE RECEIVER, with moving-coil speaker housed beneath the set. A.C. or D.C. models, 34 guineas.

VARLEY 3-VALVE MAINS RECEIVER.—Complete with built-in moving-coil speaker. New special aerial filter control. Highly selective. Dial marked in degrees. Supplied with log chart showing 12 station points. A.C. or D.C. models, 24 guineas.

VARLEY "SQUARE PEAK" CONSOLE RADIOGRAM.—The set portion employs a circuit similar to that of the new "Square Peak" 4-Valve Receiver, with a really large output stage. Baker Super Power Moving-coil Speaker. A.C. model, 80 guineas. D.C. model, 85 guineas.

VARLEY "SQUARE PEAK" UPRIGHT RADIOGRAM.—Similar to the Console, but built on a smaller scale. A.C. model, 53 guineas. D.C. model, 58 guineas.

*All the above prices include valves and royalties:*

**HIRE PURCHASE  
FACILITIES AVAILABLE**

*All A.C. Models are made for 100/120 volts or 200/250 volts supplies, 40/100 cycles (25 cycle models to order):  
D.C. Models are for 200/250 volts only.*

# "SQUARE PEAK"

(REG. TRADE MARK)

103, KINGSWAY, LONDON, W.C.2.

TELEPHONE: HOLBORN 5303

110B, St. Stephen's Green, Dublin.

*Advertisers Appreciate Mention of "A.W." with Your Order*

## PRICES:

Upright Grand in Walnut	27 Gns
Table Grand in Walnut (as illustrated)	25 Gns.
W.S.400 in Oak	20 Gns.
W.100 in Walnut (without loudspeaker)	£18.0.0
W.400 in Oak (without loudspeaker)	£18.0.0

All Blue Spot Receivers are sold complete with B.R.V.M.A. valves and Marconi Royalty paid, and are suitable for any A.C. voltage between 100 and 240.



# Give your home a BLUE SPOT RECEIVER

—and your family the  
freedom of Europe

**I**NDIVIDUAL gifts are delightful to give and to receive but have you ever thought of buying a Christmas present for your home?

If you instal a BLUE SPOT Receiver this Christmas you will provide endless entertainment for yourself and your family and everybody who comes to see you.

In their company you can travel over Europe —by ear. You can have a French evening, a German evening, Spanish, Italian, Norwegian and Russian evenings. Or you can be a cosmopolitan and visit them all in a few minutes. Everything that Europe is saying and playing is brought to your fireside at the touch of a switch. The best of the stations are obtained instantly by turning the controls to the correct reading on the tuning dial.

BLUE SPOT Receivers are all electric and trouble free. You plug in and tune in. You hear everything perfectly through the BLUE SPOT Loudspeaker built into the cabinet. The circuit employed, while incorporating two screened grid, detector and output valves and a fifth valve for rectification only, has one H.F. stage followed by a detector and two L.F. stages. It is to this modern arrangement that much of the success of Blue Spot Receivers is due, a fact strikingly brought out in the Test Report which appeared in *Wireless World* for Nov. 11th, 1931.

You will never find a better gift for your home. Ask your dealer for a demonstration or write for Catalogue A.W. 19



## THE BRITISH BLUE SPOT COMPANY LTD

BLUE SPOT HOUSE · 94/96 ROSOMAN STREET · ROSEBERY AVENUE · LONDON · E C1

Telephone: Clerkenwell 3570.

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Distributors for Northern England, Scotland and North Wales: H. C. RAWSON (Sheffield and London) Ltd., 100, London Road, Sheffield: 22, St. Mary's Parsonage, Manchester: 183, George Street, Glasgow.

Hutcheonad

Advertisers Appreciate Mention of "A.W." with Your Order

# A SHORT-WAVE ADAPTOR FOR YOUR SET



The adaptor connected up to a set and ready to pull in the long-distance short-wave stations



Constructional details of a simple unit which can be added to practically any type of set, enabling it to be used on the short waves below 100 metres

THIS Christmas you ought to take advantage of short-wave reception because over the holiday week-end there will generally be ample time to listen in late at night—not an opportunity usually afforded to the family man. It is in the latish hours of the evening that the short-wave stations are best received.

This little unit can be used with practically any set, a two-valver or larger output, and will enable you to receive the short waves without making any structural alterations to the broadcast set.

### Replacing the Detector

The unit consists of short-wave tuning coils, and a detector valve. It takes the place of the detector valve in your present set. The valve is removed, put into the detector socket of the short-wave adaptor and the four-pin plug attached to the adaptor is inserted in the detector socket of the broadcast set.

The high-frequency stages, if any, of the broadcast set, are not used. Only this

special detector stage and the subsequent L.F. stage or stages of the broadcast set are used.

The little unit is easy to build, being made up in the conventional fashion with panel and wooden baseboard. There is not much ebonite drilling to be done.

A full list of the parts required is given in the accompanying table and those who are not experts at constructional work will be well advised to get the full-size blueprint, which can be obtained, price 1s., post free, from the Blueprint Department, AMATEUR WIRELESS, 58-61 Fetter Lane, London, E.C.4. A scale reproduction of this is given here.

### On the Panel

The construction is so straightforward that it calls for little comment. The panel has to be drilled to carry the central tuning condenser, the reaction condenser on the left (looking at the front), and the on-off switch on the right. On the baseboard are the coil holder, series aerial condenser, H.F. choke, detector valve holder, grid leak and two condensers, and the wire-wound potentiometer.

The aerial and earth are connected to the two terminals at the back and there are, you will see, no battery connections, because the four-pin plug which is placed in the detector holder of the broadcast set, automatically connects up the high and low tension. The aerial and earth must be disconnected from the broadcast-band set and connected to the terminals on the unit.

### Connecting Up

The wiring is straightforward. Take care to get the connections correct to the four-socket coil holder. There is a short flexible lead from one terminal of the

series aerial condenser to the coil connections and for convenience this should be soldered to a crocodile clip so that various connections may be tried. Three flexible leads are taken direct from one side of the potentiometer, from the on-off switch on the panel, and from the top of the H.F. choke. The grid pin of the four-pin plug is not used.

### Getting Results

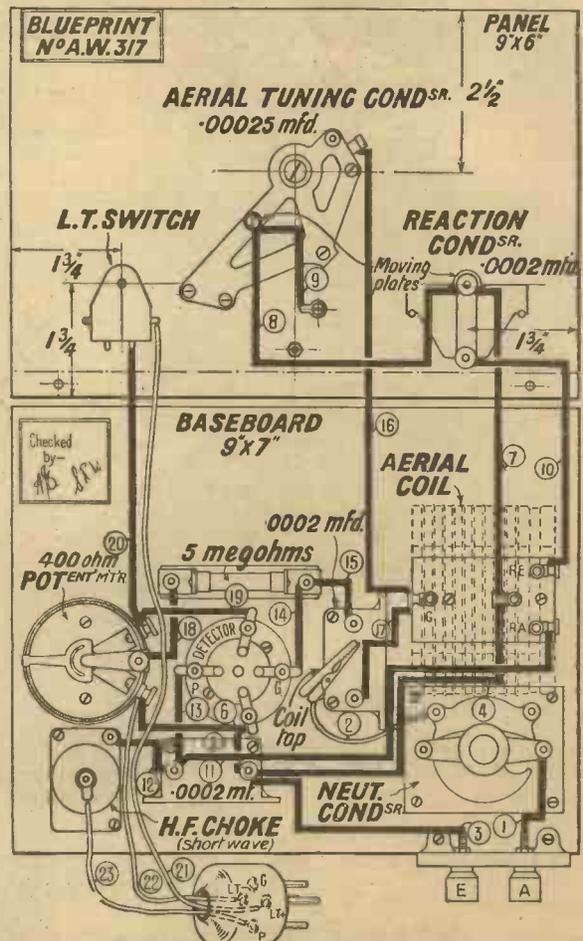
In operation the unit is simple. Any valve which makes a good detector in the  
(Continued on page 1212)

**COMPONENTS NEEDED FOR THE SHORT-WAVE ADAPTOR**

Panel, 9 in. by 6 in. (Permcot, Danipad, Becol, Peto-Scott, Readi-Rad).  
 Baseboard, 9 in. by 7 in. (Camco, Peto-Scott, Readi-Rad).  
 Tuning condenser, .00025-mfd. (J.B., Utility, Stratton, Formo).  
 Reaction short-wave condenser, .0002-mfd. (Formo, Burton, Bulgin, Cyldon).  
 Neutralising condenser (Peto-Scott, J.B., Polar).  
 Slow-motion dial (Astra, Telsen, Ormond).  
 Coils and coil holder (Bulgin).  
 On-off switch (Wearite, Bulgin, Readi-Rad, Telsen, Lissen, Junit, W.B.).  
 Valve holder (Clix, Telsen, Lissen, W.B., Benjamin, Lotus, Wearite).  
 Three-megohm grid leak (Dubilier, Telsen, Sovereign).  
 Two fixed condensers, .0002-mfd. (Telsen, Readi-Rad, T.C.C., Dubilier).  
 Short-wave H.F. choke (Readi-Rad, Stratton, Lissen, Watmel, Wearite, Igranic).  
 400-ohm potentiometer (Lissen, Wearite).  
 Terminal block (J.B., Junit, Belling-Lee).  
 Grid-leak holder (Readi-Rad, Bulgin, Lissen, Dubilier, Wearite).  
 Terminals, marked: A, E (Belling-Lee, Bulgin, Elex, Clix).  
 Four-way cable plug (Clix, Bulgin).  
 Glazite connecting wire (Lewcos).  
 2 yards single flex (Lewcos).

**ACCESSORIES**

Loud-speaker (Sovereign).  
 Cabinet (Camco, Peto-Scott, Readi-Rad).



A reproduction of the full-size print which can be obtained, price 1/- post free. Compare this with the photograph of the baseboard layout given on page 1212



# Seasonable GIFTS

## Some Practical Suggestions

**C**HOOSING a Christmas radio gift; the annual problem. "What can I possibly buy as a present this year?" is a regular question, effectively solved if the recipient owns a set, or is likely to own one by Christmas.

As with non-radio gifts, some radio presents are "safe" for giving by those who do not know very much about the technicalities of a set and others present a certain amount of risk as to whether or not they will be suitable. Obviously it is no use buying an accumulator for a man who intends at Christmas time to go in for an all-mains outfit, while a brand-new mains filament transformer will not be much use to a man on D.C. mains, who uses batteries anyway.

### Some "Safe" Gifts

Ascertain first, then, what kind of set the recipient owns, and if you do not know very much about wireless technicalities, take your local dealer into your confidence.

"Safe" presents which one can give without knowing very much about the type of set, are loud-speakers, batteries, and certain small parts, such as volume controls. Valves—among the most acceptable wireless gifts—

need a rather specialised knowledge of the type of circuit. This year there is a fine opportunity for anybody to give valves as gifts, because so great an improvement has been made in valve characteristics during the last year that practically any set owner will welcome a new valve or two; but you must know what impedances and "mu's" are needed.

### Why Not a Speaker?

Loud-speakers are generally acceptable because the new inductor and moving-coil types have, almost without exception, incorporated transformers so that they can be used with practically any output valve. Meters are handy and there are still too many set users who wish they had a meter for testing volts and milliamperes, but who are too lazy to buy one. Nevertheless this is a most acceptable form of gift and some of the new triple-purpose meters are very low in price and quite reasonably accurate.

If you happen to know something about the circuit of the set of the owner to whom you intend making a Christmas gift, and if it is lacking in selectivity, then you might prepare to invest in a set of band-pass coils and a ganged condenser. Or a wave trap may be fitted. A new low-frequency transformer or an output unit will improve the performance in many cases.

Remote control; that is a good idea. Several remote control devices are on the market with which you have only to push in the loud-speaker plug in order to switch on the set at a distance.

(Continued on page 1202)



Blue Spot Model  
100-U speaker



Lotus three-gang condenser



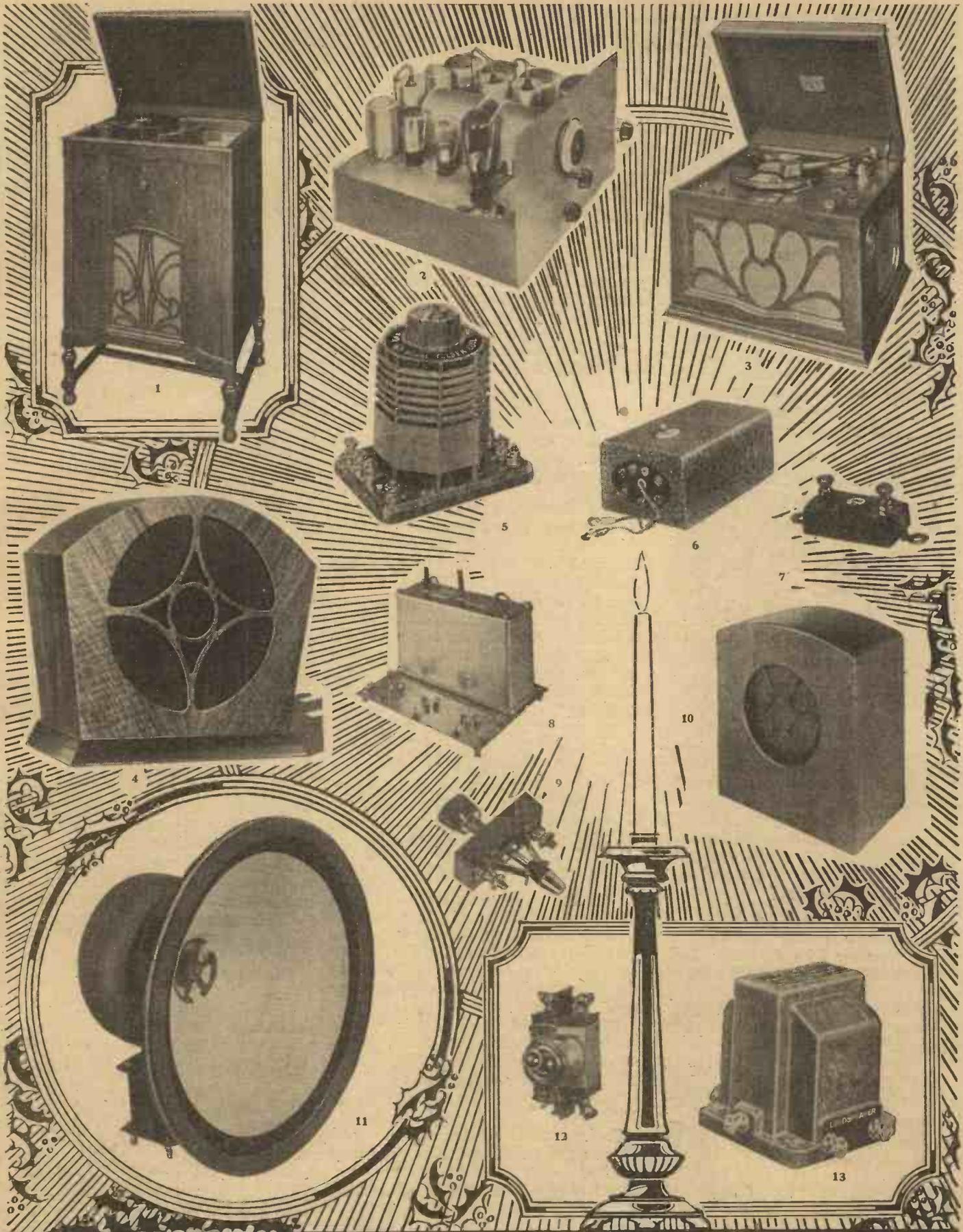
Wufa  
60-pole  
speaker



Wearite Talisman coil



Ormond cone speaker



(1)—H.M.V. Super-het. (2)—R.I. Chassis. (3)—H.M.V. table radiogram. (4)—Blue Spot speaker. (5)—Telsen aerial coll. (6)—Tannoy eliminator. (7)—Goltone condenser. (8)—Lewcos super-het coll unit. (9)—Goltone switch. (10)—Ferranti moving-coil speaker. (11)—Amplion MC6 moving-coil chassis. (12)—Bulgin switch. (13)—Telsen output transformer.



"WHY, I always thought you liked high-brow items," said the unexpected visitor to a flat where a set was in full blast.

"Well you see it was like this," said the owner, "I wanted to listen to the Bach concert and my wife wanted to listen to Gillie Potter. . . . So we compromised and listened to Gillie Potter!"

A.: "What a dreadful noise next door's



So we compromised!

set is making! Shut the door!"

B.: "It is shut."  
A.: "Well, lock it."

Here's a new one about the theatre broadcasting controversy. A West End theatre owner, who shall be nameless, was asked whether broadcasting had a good effect on the box-office. "The other night," he said, "a man came to me and said, 'we heard the broadcast of part of your show last night and felt we must come up to see it. Can you let me have a couple of free stalls?'"

A well-known wireless comedian was walking down the Strand towards Savoy Hill when he noticed that a passer-by was eyeing him up and down very curiously. Feeling a little flattered, he stopped.

"Haven't I seen your face in the papers somewhere?" the stranger said.



What were you cured of?

"Yes, maybe," said the radio comedian, graciously, fame sitting heavily on his shoulders!

"Ah, I knew it!" said the stranger, "do

you mind telling me what it was you were cured of?"

"The latest bandpass tuner is only one inch high," says a correspondent. Flat tuning!

"There are two main difficulties in choosing eliminators," says another expert. Yes, A.C. and D.C.

The 114 members of the Symphony Orchestra were going all out on an ultra-modern score, and the composer conducting was waving his baton wildly and tearing his hair. Suddenly an even louder discord than usual broke the air and the rehearsal stopped with a jerk. The conductor glared at one of the trombonists. "Vat vas dat you play?" he blared. "Vat vas dat note?" The trombonist looked again and blushed. "I'm sorry, sir, it's gone now," he said, "it must have been a fly."



A Shakespearian recital!

A B.B.C. play producer who toured America tells a good story of the American producer who asked him for a few hints. As material for explanation, the B.B.C. man started off on a few lines of Hamlet, and showed how, in the B.B.C. mode, this passage would be produced.

The American looked on in wonder. "Say," he said at length, "that's pretty smart. But you guys aren't up to date. We had that over here two years ago!"

Professor: "Science has now made such progress that we can now send pictures by wireless."

Old lady listener: "Really, ready framed?"

"More wireless sets for teaching," I read. Now we shall get some genuine howlers.—Sunday Pictorial.

Lighthouse keeper (referring to the wireless): "Switch it off, Fred, I like to know what it is they think we gets out of 'ints on gardening'."—Punch.

A B.B.C. vaudeville producer relates that a man came to him in an audition and asked if he could be taken on to do minor acting parts. He appeared to be an old actor. "Have you had any experience of acting



Gardening!

without audiences?" asked the B.B.C. man. "Yes," came the reply, "that's why I'm here!"

In the young days of broadcasting, when there was no S.B. system, artistes had to travel from station to station. Leonard Henry relates that once in a country district he hired a very decrepit vehicle to take him to the nearest station and on the way the country youth who was driving had a slight contretemps with a pedestrian.

They got out to investigate, but the yokel merely looked on and sucked a straw in astonishment.

"Heavens, man," said Leonard, "why don't you do something? Go and fetch the doctor!"

"That be 'im," came the reply.

"I don't see why you should say I am unsuitable," said a budding soprano to a

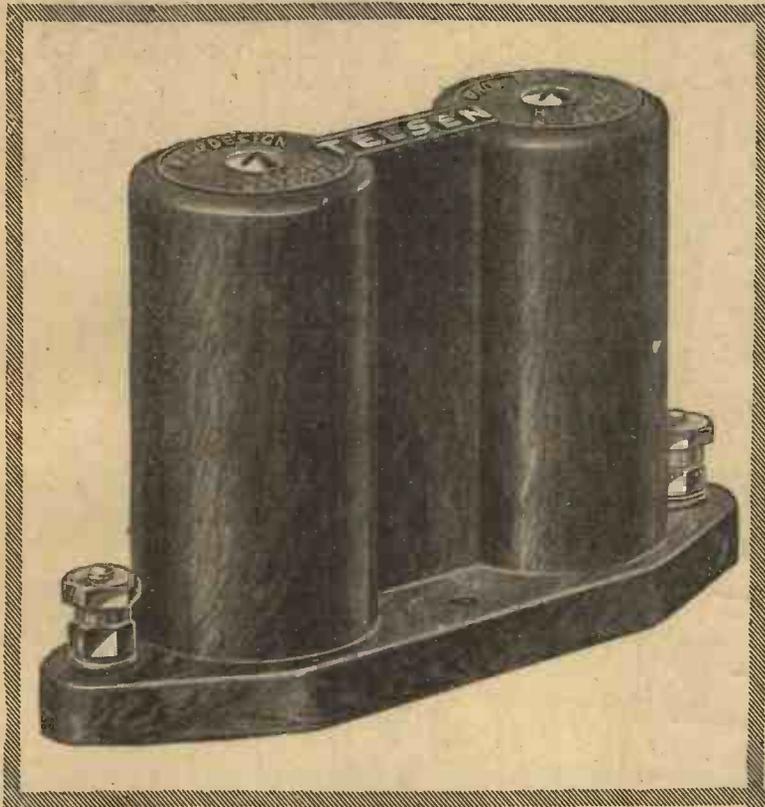


Two free stalls

B.B.C. man, "I'm getting a singing part at the Frivolity Theatre next week."

"Oh," exclaimed the official, in sorrow, as he turned to the next applicant, "inside or out?"

# IMPEDANCE . . .



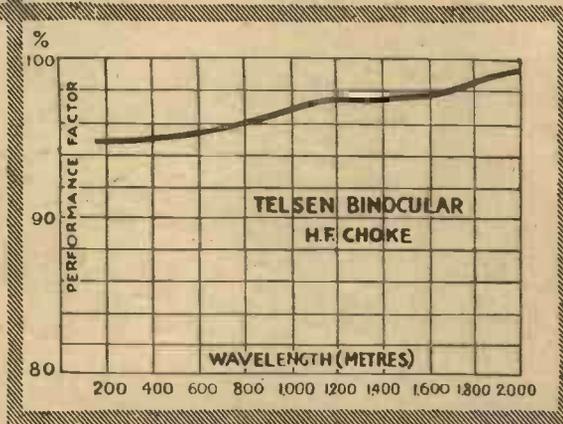
## TELSEN BINOCULAR H.F. CHOKES

It is the function of an H.F. Choke to present the highest possible impedance to H.F. currents at all wavelengths. Particularly does this apply to the popular tuned grid arrangement of screened-grid amplification, where the performance of the whole set is limited by the value of the impedance in the anode circuit of the screened-grid valve. It is equally important that this high efficiency should be maintained over the whole broadcast band.

Telsen Binocular H.F. Choke. Price 5/-.

The Curve adjoining (published by courtesy of AMATEUR WIRELESS) represents the efficiency over the Broadcast Band, as measured at the Furzehill Laboratories by J. H. Reyner, B.Sc., A.C.G.I., D.I.C., A.M.I.E.E., M.I.R.E., who says: "This curve shows the fine performance of the new Telsen Binocular H.F. Choke . . . the performance factor exceeds 95 per cent. at all points, and there is a distinct freedom from subsidiary resonances. . . This Choke must be considered as taking its place as the best on the market."

Combined with its "fieldless" properties these figures show that where superlative performance is called for the choice must be the TELSEN Binocular H.F. Choke.

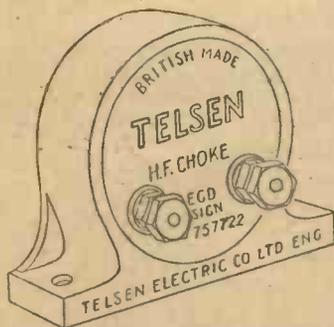


## TELSEN STANDARD H.F. CHOKE

The Telsen Standard H.F. Choke utilises the minimum baseboard space. It is designed to cover the whole broadcast band and has an extremely low self-capacity. The inductance is 150,000 microhenries and the resistance 400 ohms.

It has proved very popular and has been incorporated by set designers in many of the leading circuits.

Telsen Standard H.F. Choke Price 2/-



THE SECRET OF PERFECT RADIO RECEPTION

Send for the "Telsen Radio Catalogue" and book of "All-Telsen Circuits" to The Telsen Electric Co., Ltd., Aston, Birmingham.

Advt. of The Telsen Electric Co., Ltd., Aston, Birmingham.

CY8-94

Mention of "Amateur Wireless" to Advertisers will Ensure Prompt Attention

EVERYTHING **The G.E.C.** ELECTRICAL  
your guarantee

# Get better results with

## OSRAM S.21

Impedance 200,000 ohms.  
Slope 1.1  
(also metallised)

The screen grid valve particularly designed for low H.T. current, low leakage capacity, and stability—specially suitable for sets with 2 stages H.F. magnification.

## OSRAM S.22

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# MAKING "NOISES" FOR RADIO PLAYS

*In a visit to the Sound Effects Department KENNETH ULLYETT describes the new ways of making noises for radio plays*

**L**ISTENERS to radio plays are never tired of arguing that either too little or too much use is made of sound effects. Those in favour of cutting out the effects quote the use of the record—which must now be getting well worn—of horses' hooves; those who like the effects point out, accurately I think, that in radio plays we have an excellent chance to create a fine background of sound, a chance not available in stage plays where too many effects noises make a play seem amateurish.

During the past two years a big "effects" department has been growing at Savoy Hill and there is now an official who has, as a full-time job, the collection of strange noises of all kinds for broadcasting.

## Impressionist Effects

Effects are not only used in plays, of course, certain impressionist programmes needing effects to heighten the realism. The Empire Day programme of last year is an example of this.

I have had the opportunity of having a long chat with the effects official at Savoy Hill. His centre of industry is a room outside No. 2 studio in the basement of Savoy Hill.

It is not essential, that the sound effect producers should be able to see what is going on in the radio play studio. The new system of indicator lights controlled from the "D.C." (Dramatic Control) room enables the producer to bring in the players' studio or the effects' studio as needed.

## In the Studio

The effects studio is full of the strangest things. Part of it is screened off and in this cubicle are two gramophones with a fader control between. This fader is regulated by the man in the effects studio, but the final control of volume is done by the producer at the D.C. panel.

There is a third gramophone, without a fader, which can also be switched on to this line, and this is done also from the D.C. panel.

Where a large number of simultaneous gramophone record effects are needed, the gramophone used by Christopher Stone in No. 6 studio can be switched on to the same line.

They have been collecting noise records at Savoy Hill ever since radio plays started and in a fireproof metal file there are now

some six hundred records of noises of all kinds. Some of these records have been specially made by the Gramophone Co., and Columbia for the B.B.C., others are commercial records now on the market; a number of special records have also been brought over from the Continent.

Where possible, effects noises are taken from gramophone records, but the limit to this is where short staccato noises are needed and accurate timing is important. These noises are still made in the studio.

To settle doubters, the noise of horses' hooves is made by banging small pieces of hard wood on a board, and the old record of this is seldom used!

In the centre of the effects studio is a large wooden bath with taps ending in long rubber tubes. This is one of the most useful effects producers because everything from bathroom noises to the rushing of a wide torrent can be imitated. There is a rowlock at one end and when they want to make the noise of a rowing boat an oar is put in this and splashed about. In this way they get the splashing of the water and the squeaking of the oar in the rowlock. That's the way to get realism!

## A Midget Door

A microphone in the centre of the room, picks up the noises from the other effects. They have spent hours in getting the right distance from each noise-producing gadget.

A number of ingenious ways have been devised for getting at noises which are not accurately produced by doing the real thing. For instance, the noise of a door slamming cannot be done by slamming a real door, for this causes too much of a bang. The effects people have made up a little door, about 18 in. high. This is carried up to the studio and slammed at the right moment by one of the assistants!

Among the effects records are some amazing discs. For my special benefit they put on a German record of a revolution in full swing, complete with machine guns and death shrieks! There are some fine train records and a number of Continental impressionist records of machine noises made by a large orchestra.

"We generally use more than one record at a time," said the effects man. "In a



Here one of the effects records for B.B.C. radio plays is being made in the lift of a Londontube. The master wax has just been taken off the recording machine and from this the effects record is made

recent revue turn there was a skit on the parade of the B.B.C. when moving from Savoy Hill to Broadcasting House.

"For this we had four records running at a time. One was of ordinary crowd cheering. Superimposed on this was a restaurant "chatter" record, the balance between the two being varied so that at times the cheering seemed to predominate. The other two gramophones ran records of the B.B.C. artistes—Jack Payne, for instance—as they paraded along, and these had to be

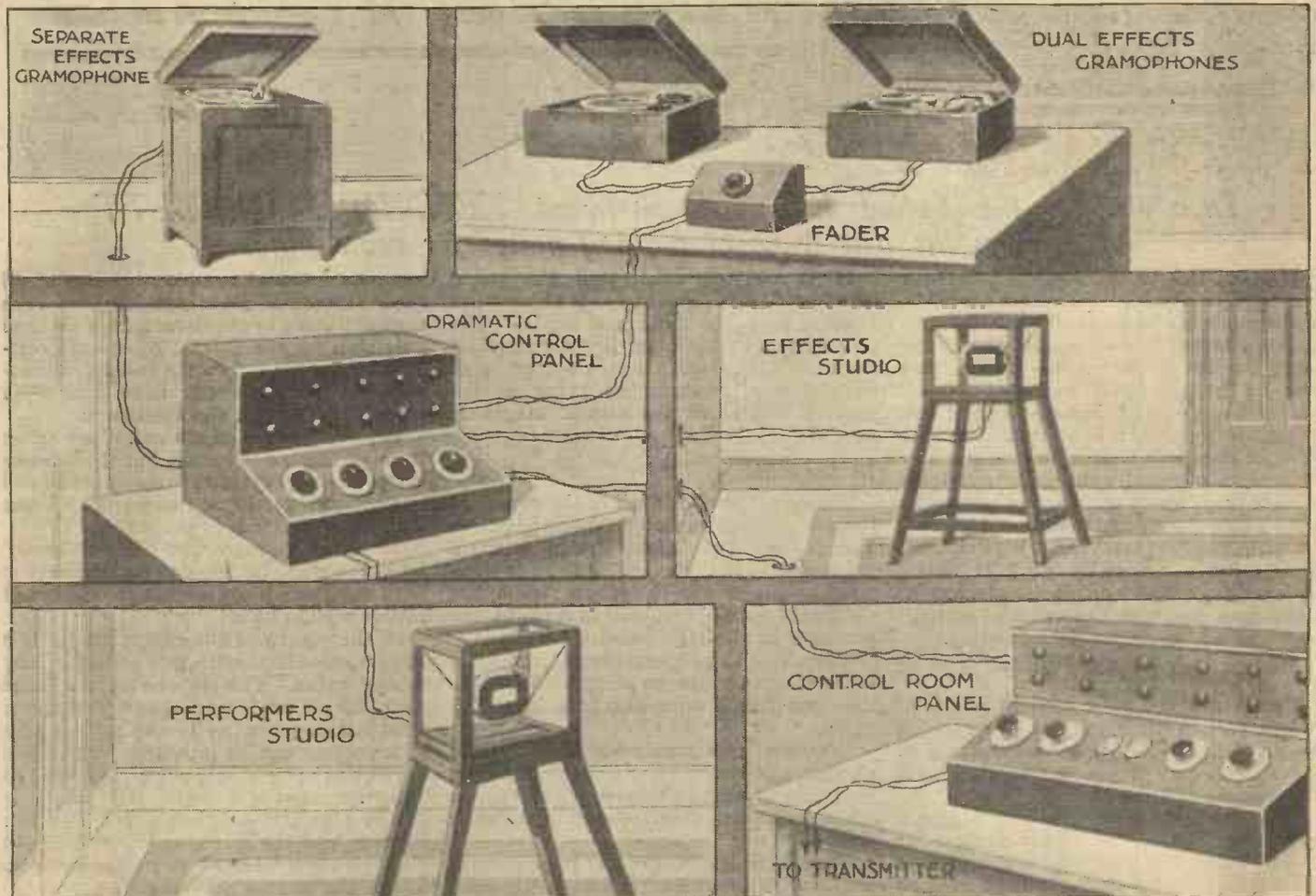
faded in and out to give the procession effect."

I asked how the effects are grouped and was told that they are under general headings, such as "realistic," "symbolic," "impressionistic," "music," and so on.

Some of these new highbrow plays demand very complex sound effects. For instance, in one of the *Kaleidoscope* plays, a Beethoven symphony was faded in against jazz music as being symbolic of the sacred and profane love forces!

A much more direct effect is the use of morse, as in our Empire Day programme, to suggest ships a great distance away out at sea.

At Broadcasting House the effects department will have a much better time of it. They will have twelve gramophones at their disposal for there will be two studios specially fitted up with six gramophones in each. These will be for effects only. Christopher Stone will have a special gramophone console of his own.



This pictorial diagram shows how effects noises are "mixed" with radio plays. The three gramophones used for the effects records are at the top, and the inputs from the performers and effects studios are combined by means of the dramatic control panel seen at the left. The whole transmission is regulated by the panel in the control room.

"ONE of the pleasures of a wireless set," said my neighbour Pottleby, "is logging the stations."

"Is logging a swear word?" I inquired politely. I have a lot to learn about wireless, really."

"Idiot. You put down the dial reading of every station your set brings in at full strength and when you want a particular station at any time—"

"You find you've lost your log book, so to speak," I said, "and you go cruising about the uncharted ether in the same old way."

"Idiot," snapped Pottleby, with distressing lack of invention.

The idea seemed good to me, though, later on. Instead of twiddling the knobs vainly in front of the family, it would be a considerable lift to the old prestige if I could turn the dial to the required spot and command Huizen or Milan or Stuttgart to roll up and do its stuff.

## LOGGING THE STATIONS

By LESLIE T. BARNARD

At a dial reading of 24 I got an earthquake in Tokio or Vladivostok, a long way off, anyway, and a request from Uncle Herbert to shut the dam' set off, he couldn't stand the modern dance music at any price.

At 30 I logged Paris; at least, I thought it was, until I saw in a programme that Milan was giving a French lesson at that hour, so I put Milan. Then I discovered that the lesson was being relayed from Turin, and that it was a last week's programme, so I crossed it all out and turned the dial again.

I got Jack Payne and the B.B.C. Dance Orchestra at 35, and also an ultimatum from the missus that if I didn't stop fiddling about with the set when it was going all

right she'd—well, you know what wives are!

Getting a bit hot round the collar, I twiddled the dial viciously. I brought in a Spanish bull fight, two Chinese dogs barking in Sanskrit, and my neighbour asking what the heck I meant by oscillating so. Uncle Herbert said what a boon and a blessing wireless is.

At a reading of 50 I brought in Berlin. For the benefit of my less educated relatives I translated the lengthy news bulletin being announced, and felt a trifle foolish as the German stopped and a very correct B.B.C. voice intoned, "That concludes for this evening Mr. Otto Siepman's German lesson."

Less stout-hearted men than me would have been disheartened, but I twisted the dial slowly and resolutely. Soon a mysterious silence brooded over my set.

It was not until the next morning that I discovered the wife had snipped the lead-in.



# J. H. REYNER TELLS YOU HOW TO GET THE BEST FROM A PICK-UP

**A** VERY popular present this Christmas time will be a gramophone pick-up. Pick-ups can be obtained in various forms ranging from a simple electrical sound-box which is attached to an ordinary gramophone in place of the usual mechanical sound-box up to a complete pick-up, tone-arm, and volume control combined. A gramophone pick-up, of course, is merely an electrical sound-box which converts the

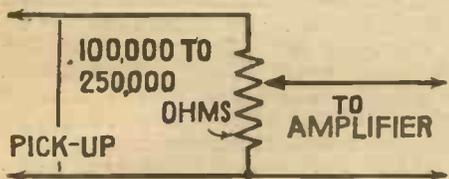


Fig. 1. Potentiometer type of volume control

impulses recorded on the disc into electrical currents which are applied to a valve amplifier and caused to operate a loud-speaker.

### Volume Control

Perhaps the most important advantage of the electrical pick-up is the easy control which one has over the volume. This is the first thing that strikes anyone who is not used to an electrical gramophone, and who then reverts even temporarily to a mechanical model. There is no satisfactory means of reducing the volume with the mechanical type, whereas with an electrical system the volume can be controlled from a whisper to full volume by a mere rotation of the control knob.

The simplest method of volume control is the brute force system of connecting a variable resistance across the pick-up. As one reduces the value of this resistance, the output from the pick-up is progressively short-circuited, so that a smaller and smaller voltage is applied to the amplifier. This method suffers from the defect that it affects different frequencies to a different extent.

### Loss of "Top"

The short-circuiting action of a resistance connected across the pick-up depends essentially upon the internal impedance of the pick-up relative to the external impedance of the shunt. The internal impedance rises with the frequency, so that the shunting effect of the volume control is much more for the upper frequencies than

for the bass. Consequently, the reduction of volume by this method results in a loss of the top notes and the quality sounds "woofy."

A certain amount of cut-off in the top is perhaps desirable when playing at low volume because it tends to reduce the scratch. With full volume one can stand the full amplification up to, say, 5,000 cycles, for the scratch will not be appreciable except possibly in the quiet passages. On reduced volume on the other hand it is desirable to cut the scratch down, as it is relatively more noticeable. A volume control which cuts off the frequencies from 3,000 cycles upwards to a progressive extent is, therefore, sometimes useful, but a better form of control is that shown in Fig. 1.

This is a high-resistance potentiometer arrangement consisting of from 100,000 to 250,000 ohms connected directly across the pick-up. As the slider is moved up or down the resistance, so the voltage tapped off the resistance increases or decreases.

### Capacity of Leads

The trouble is the same top cut-off as we have had in the previous case, but it arises from a different cause, namely the self capacity of the leads, and is much less marked than with the simple variable-resistance type of control. Generally speaking, it may be taken that a volume control of this type is satisfactory, but it is desirable to try several values of resistance between the limits already stated in order to find one which suits the particular pick-up. Different types of pick-up have differing internal impedances, and there is one particular impedance which will suit any type of pick-up better than any other. Where a combined outfit is obtained, of course, this has already been worked out by the manufacturers, but if the volume control is being fitted to a pick-up exter-

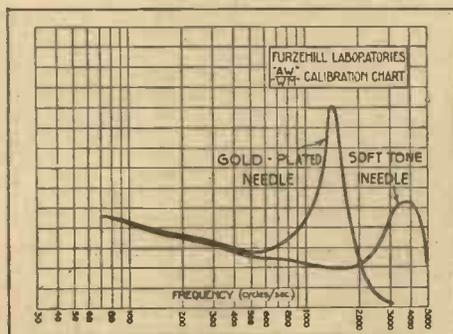


Fig. 3. Resonance curves showing effect of different needles

nally, it is desirable to try several values in order to find which is the most suitable.

### Scratch Filters

Scratch filters are not used as much as they might be. The reason appears to be that the majority of amplifier-loud-speaker combinations do not reproduce much above 5,000 cycles. We hear a lot of talk about 7,000 and 8,000 cycles, but most people would be surprised to realise how soon their radio sets cut off, even assuming they can hear 8,000 cycles themselves, which

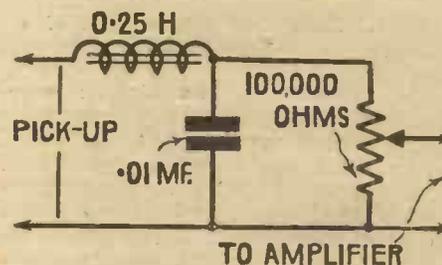


Fig. 2. Circuit of easily-made scratch filter

many people cannot. Another fallacy is the assumption that with a good quality amplifier and loud-speaker it is possible to get 6,000-cycle frequencies off a record. This is not so, except while the needle is absolutely new; after it has played for about one minute the point has become so blunted as to be unable to reproduce anything above about 4,000. The trouble gets progressively worse as one goes towards the centre of the record.

Fig. 2 gives a circuit of a scratch filter which can easily be made up with a standard Wearite iron-cored H.F. choke. This filter cuts off at about 4,000 cycles and is easily fitted in the position shown. The volume control may either be on the input or output side of the filter, but where a choice is possible it is better to fit it between the pick-up and the volume control.

### Choice of Needles

Finally, we may revert to a point which is  
(Continued on page 1234)



# THE HOW AND WHY OF TUNING—XIII

## HINTS ON USING DUAL-RANGE AERIAL COILS

Another of a comprehensive series of articles on tuning, specially written for newcomers to wireless

IF the circuit of Fig. 1 is thoroughly understood, the reader will be able to follow all the variations on the original theme introduced by the coil makers. Shall we briefly go over this circuit, and then look into one or two commercial versions? We start with the first idea about a dual-range coil, which is its ability to cover, when shunted by a .0005-microfarad

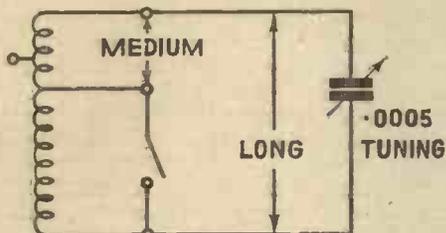


Fig. 1. The scheme of connections of a dual-range coil

variable condenser, two distinct wavelength ranges.

The medium wavelengths to be covered extend from 200 metres to 550 metres. The long wavelengths extend from 1,000 metres to 2,000 metres. A continuous length of winding will do the trick if we arrange to short-circuit a section during the reception of medium waves. So in the Fig. 1 circuit it will be seen that the larger portion of the coil can be cut out of circuit by means of a two-point switch, one switch terminal going to the earth end of the coil and the other switch terminal going to a tapping on the coil winding.

When this switch is in action the remaining part of the coil is used for the medium wavelengths. When the switch is out of action the whole coil is in circuit and the long wavelengths are tuned. Such is the simple theory of the dual-range coil. Reaction can be applied to this coil either as a separate winding or as a continuation of the tuned winding. Fig. 2 shows the two alternative methods for the reaction. At Fig. 2A is shown the simplest reaction winding, with the free end connected to one side of the reaction condenser, the other side of which goes to the anode of the detector valve.

### Hand-capacity Effects

Fig. 2B is often advocated when it is specially desired to avoid any hand-capacity effect of the reaction control. Here we have the reaction as an entirely separate winding, with the end nearer the tuning coil connected to one side of the reaction condenser and the end of the reaction winding remote from the tuning coil connected to the anode. The remaining reaction connection is then taken to earth. If the moving vanes of the reaction condenser are earthed there is not much trouble with hand-capacity effects. This is a great advantage on the ultra-short waves, for the reception of which the

Fig. 2B reaction arrangement is nearly always specified.

Now we will examine a typical commercial dual-range coil, whose circuit is shown by Fig. 3. This is the Telsen dual-range aerial coil arrangement, which I have tried out and found very satisfactory.

If the circuit to the right of the dotted line is examined, it will be seen to follow the lines of the standard connections shown by Fig. 2A. That is to say, the dual-range action is obtained by shorting out the larger section of the coil when the medium waves are wanted. The reaction here is a continuation of the tuning-coil winding, so the reaction condenser is connected between the free reaction coil lead and the anode of the detector.

Now look at the arrangement to the left of the dotted line, since this shows a departure from the normal aerial tapping method. We can ignore the dual-range idea for the moment and analyse the aerial coupling arrangement as at Fig. 4A and 4B. At A is the simple aperiodic aerial coupling, consisting of a few turns of wire, usually no more than twenty turns for the medium waves, connected in series with the aerial and earth and closely coupled to the tuning winding.

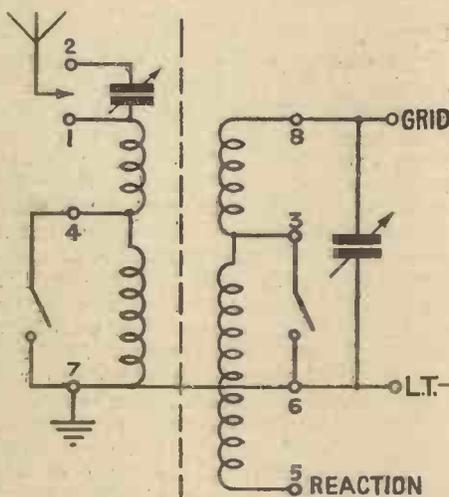


Fig. 3. Telsen dual-range coil connections

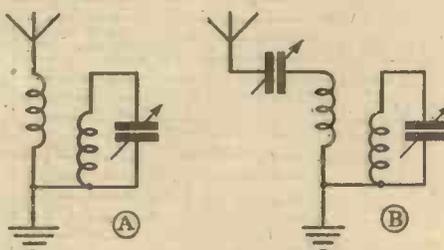


Fig. 4. Aperiodic aerial coupling arrangements

The earth end of the aperiodic winding is usually connected to the low-potential end

of the tuning coil, as at Fig. 4A. At Fig. 4B the aerial is connected to the aperiodic winding through a pre-set type of variable condenser. This increases the selectivity in the way shown by previous

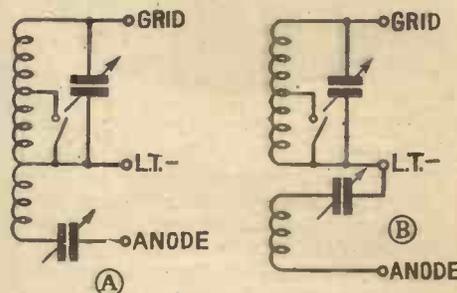


Fig. 2. Alternative methods of reaction

articles. It can also be used as a form of volume control.

Returning now to Fig. 3, we can see that the circuit to the left of the dotted line is a combination of the aerial-coupling methods shown at Fig. 4A and 4B. If the aerial is connected to terminal No. 1, the Fig. 4A coupling is obtained. If the aerial is connected to terminal No. 2 the Fig. 4B coupling is obtained, by means of the pre-set condenser which is incorporated in the coil.

As the grid-tuning winding is dual-range, it is necessary to make the aperiodic aerial winding dual-range also. So the two aerial windings are connected in series.

### A Three-point Switch

From this it might seem that two entirely separate switches were needed to change the whole tuning coil from medium to long wave. Actually, a three-point switch will do the trick, since the switch points going to coil connections No. 7 and No. 6 are common. With these forming one of the switch connections, namely the centre contact, the other two switch contacts can then be No. 4 and No. 3 on the coil. The external switching is therefore quite simple, in spite of the refinement of aperiodic coupling on both wavebands.

Among commercial coils, of which the Telsen is a typical example, it is not the usual practice to wind all the coil sections as single-layer windings. There is no objection to such a practice, as exemplified in the home-made dual-range coil described last week, but for compactness the alternative method of slot or pile winding has much in its favour.

If the selectivity of such simple circuits as those of Fig. 4A and Fig. 4B is carried too far it will be found that quality will be impaired.

One of the latest ways of obtaining good-quality aerial selectivity is the band-pass tuner, which I will begin to talk about in my next article.

HOTSPOT.

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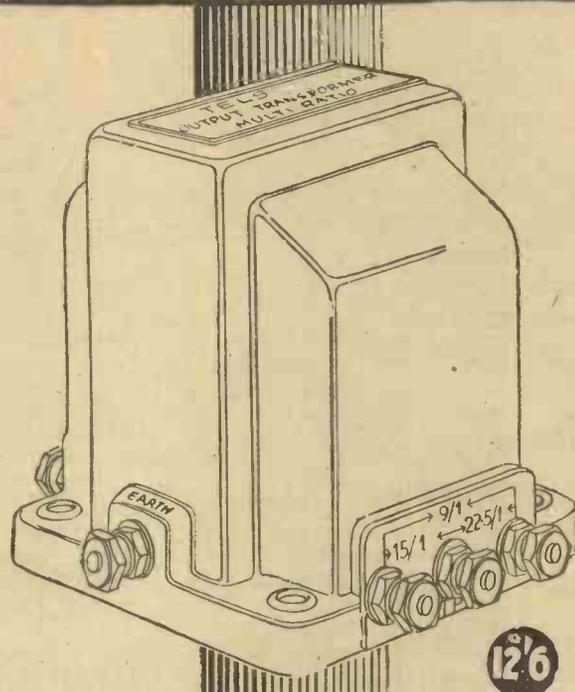
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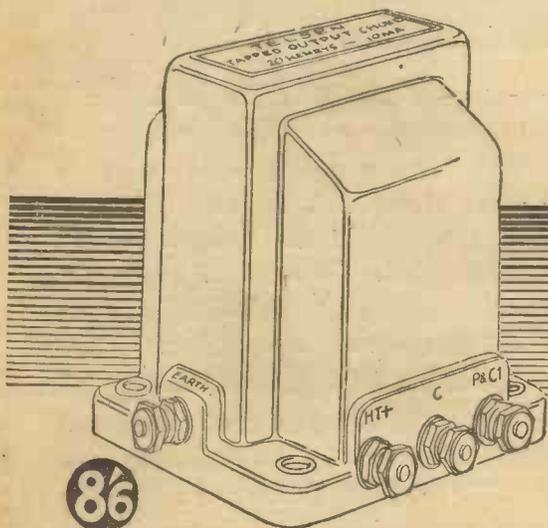
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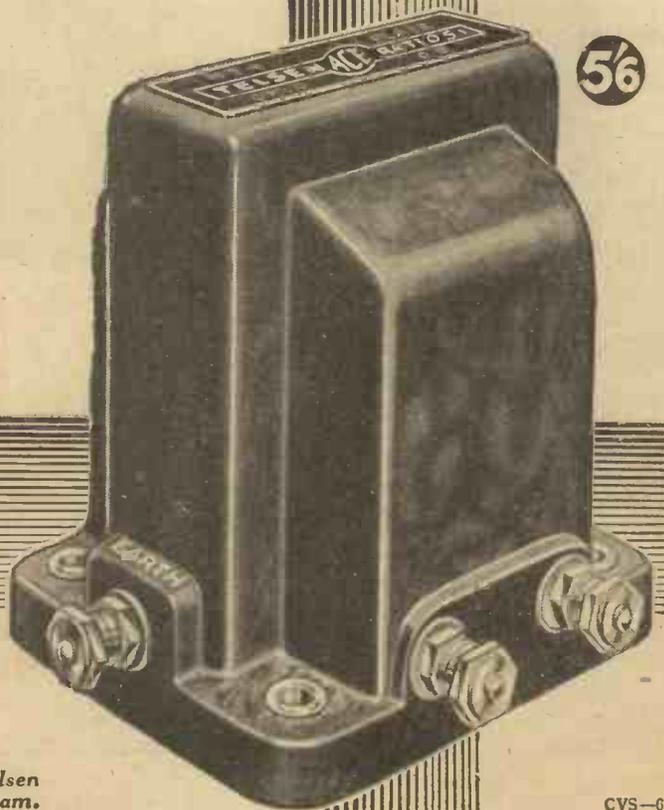
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This order was secured in open competition and is a remarkable testimony to the efficiency and reliability of T.C.C. All-British Condensers.

# A NEW ETHER GIANT

**"Safety First" sends Prague to Britain, and British components are used in this huge new station**

**S**ITUATED some thirty miles east of Prague, the new Czech high-power station is an interesting example of modern design.

It is, according to the latest C.C.I.R. rating, a 200-kilowatt station. Apart from its high power the station contains a number of novel features. The equipment was installed by the Standard Electric Company, to the order of the Czechoslovakian Government, and a striking thing is that despite the enormous number of foreign condensers available on the Continent, the Prague engineers had to come to Britain for the large power condensers! "Buy British" meant the same to them as Safety First.

## Parts from Britain

Nearly all the condensers have been supplied by the T.C.C. and one of the most interesting types are the smoothing condensers which are rated to work up to 25,000 D.C. Seven banks were required, each having a capacity of 5 microfarads, the whole being contained in seven tanks. Each tank was made up of a number of units of small capacity, working in parallel. The units are readily accessible after removing the side covers, and the steel tanks are mounted on rollers to facilitate movement on site. The condensers were fixed into the tanks in such a manner that they could be transported without need for taking apart or building up on site, thus making a convenient and easily-handled unit. The condensers were tested up to 50,000 volts D.C., and are similar to the smoothing condensers supplied to the Post Office and the B.B.C.

The H.F. condensers were supplied in

various capacities and to pass various currents in different parts of the equipment. Likewise anode stopping and bypass condensers were supplied. The working conditions required certain condensers to work up to 50,000 volts peak value. These condensers working at high frequencies had as usual, a mica dielectric and were immersed in oil so that the heat generated in the dielectric might be dissipated.

The general station arrangements are interesting. The speech input equipment

The New Prague station, with a power of 200 kilowatts, C.C.I.R. rating, is now "on the air," and should be a good signal for practically every listener owing to the huge power

is designed to cater for two studios in Prague with provision for extension to ten studios, which will be built later. It utilises two condenser microphones and one carbon microphone in the first studio, and one condenser microphone and one carbon microphone in the second studio. It also provides the apparatus for a central



announcer and controller, with a possibility of adding a further small amount of apparatus to introduce echo effects. The controls give the possibility of "mixing" the outputs of the various microphones in the studio, in any desired proportion, and also of mixing the output of another studio or of the announcer microphone with the output of the studio "mike." Facilities are provided for taking a programme from a number of outside lines. The whole of this equipment, with the exception of the microphone batteries, is operated from the supply mains by means of dry metal rectifiers and smoothing circuits.

## At the Transmitter

The system at the transmitter is one of modulation at low power with subsequent H.F. amplification. The carrier is generated in a low-power master oscillator, which provides the drive for a succession of amplifier stages.

The power for the operation of the whole station is obtained from a 15,000-volt, three-phase 50-cycle A.C. line. There are actually three separate high-tension lines feeding three separate underground cables which are all brought into the station building. There is, therefore, no danger of any serious interruption in the service due to failure of the main power supply.

The transmitter is housed in a two-storey building of very modern architectural design. The main impression given in the interior of the building is the extremely high degree of lighting.

All the radio equipment is on the first floor, and all the power equipment on the ground floor. There is one main room in which is located the transmitter proper (the oscillator modulator, and the power amplifier) the monitoring desk and the transmitter control switchboard.

There is also a studio, a control room, a valve store, writing room, engineer's and assistant engineer's offices, all on the first floor.



Some of the big condensers, rated to work up to 25,000 volts D.C., can be seen at the left, while (above) one of the operators of the station is holding one of the cases containing condenser banks.



# THE FOUR STAR

## 4

A New Type of  
Home-constructor Set

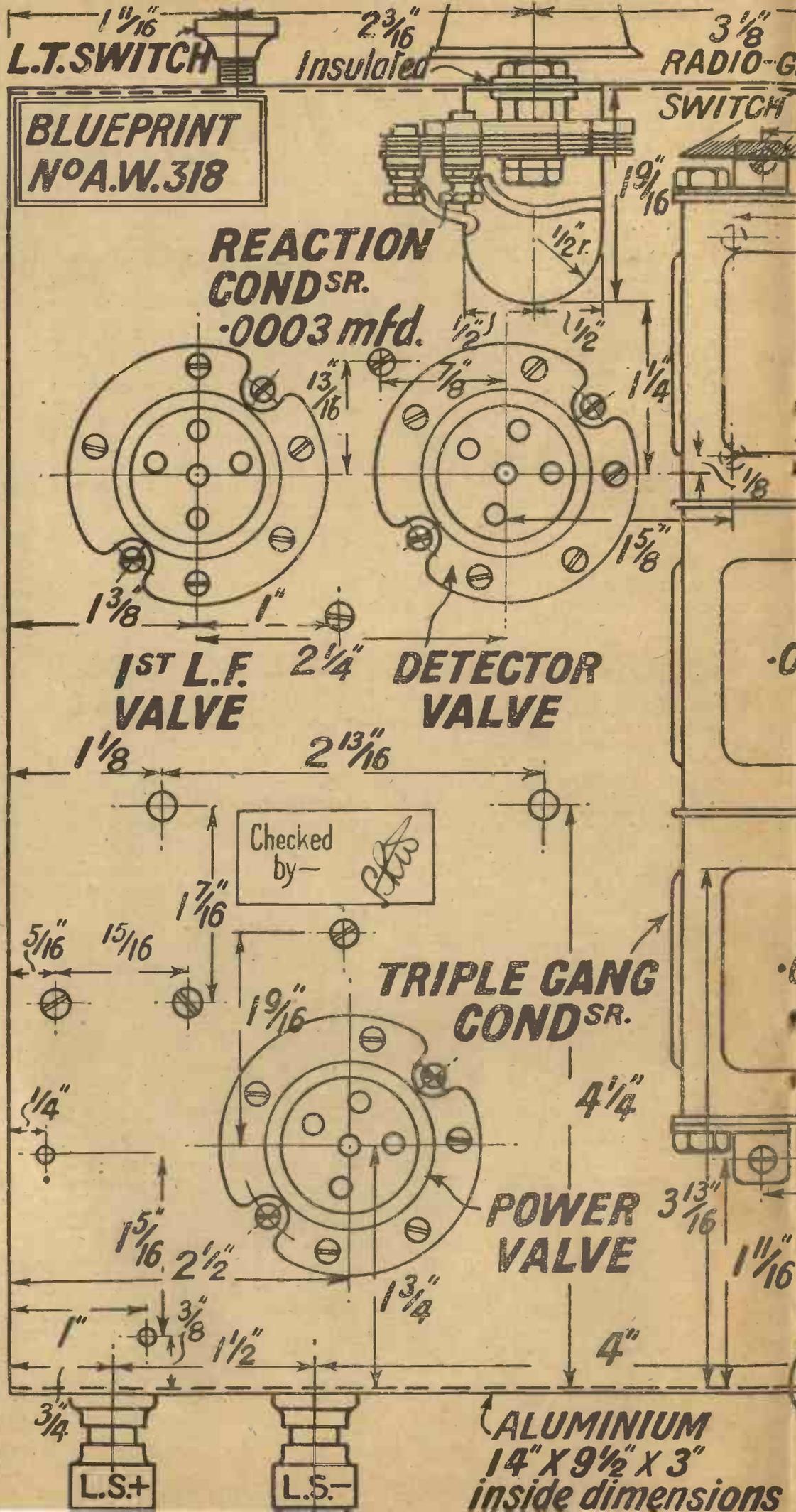
### FULL-SIZE PLAN OF UPPERSIDE of CHASSIS and LIST OF COMPONENTS

- Cabinet (Peto Scott).
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- Three-gang, .0005-mfd., screened, variable condenser (Lotus, Utility).
- Binocular H.F. choke (Telsen, Atlas, Watmel).
- Ordinary H.F. choke (R.I. quodastatic) (Telsen, Varley Junior, Lewcos, Wearite).
- .0003-mfd. reaction condenser (Telsen, Lotus, Polar, Utility, Readi-Rad).
- Dual volume control (Varley, values 50,000, 250,000 ohms, Wearite).
- .0002-mfd. max, preset (Lewcos, Type W).
- Six spaghetti resistances, three 20,000 ohms, one 30,000 ohms, 40,000 ohms, 10,000 ohms (Sovereign, Telsen, Lewcos, Bulgin, Lissen).
- Three .01-mfd. fixed condensers (T.C.C., Dubilier, Lissen, Graham-Farish).
- Three .0002-mfd. fixed condensers (Dubilier, T.C.C., Telsen, Lissen, Graham-Farish).
- Two grid leaks, 2-meg. and 1/2-meg. (Lissen, Graham-Farish).
- Radio-gramophone jack switch (Lotus, type JS9, Wearite).
- Fixed condenser bank (Formo).
- Three-point battery switch (Readi-Rad, Telsen, Bulgin, Wearite, Graham-Farish).
- Fuse and holder (Bulgin, Telsen, Readi-Rad).
- Transformer (Varley Nicore II, Telsen Ace, Formo, R.I. Dux, Lissen Torex, Lotus, Igranic J).
- Six terminals with insulating washers, marked: A, E, L.S.—, L.S.—, two P.U. (Belling-Lee, Ealex, Clix, Bulgin).
- S.G. anode connector (Clix, Belling-Lee).
- One terminal block (Lissen, Belling-Lee).
- Six wander plugs, marked: H.T.—, H.T.—, G.B.—, G.B.—1, G.B.—2, G.B.—3 (Clix, Belling-Lee, Ealex).
- Two spades, marked: L.T.—, L.T.— (Clix, Belling-Lee, Ealex).
- Connecting wire and sleeving (Lewcos).
- Five yards thin flex (Lewcoflex).
- One yard metal shielded wire (Lewcos).

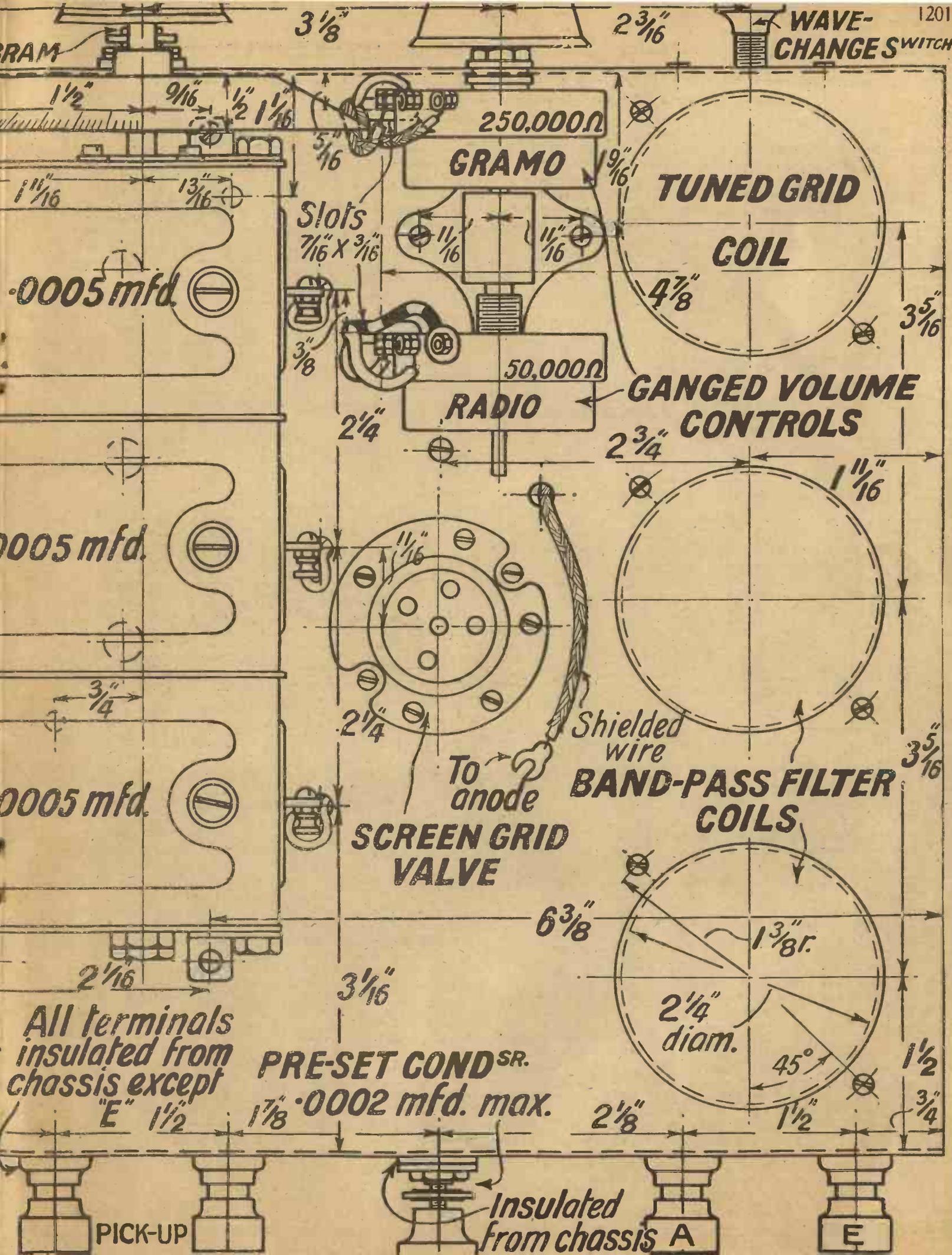
#### ACCESSORIES

- Speaker (W.B., type PM3).
- H.T. batteries (Ever-Ready Popular Power, Pertrix, Lissen, Dubilier, Fuller, Drydex, Oldham, Palaba).
- G.B. battery (Ever-Ready Popular Power, Pertrix, Lissen, Dubilier, Fuller, Drydex, Oldham, Palaba).
- Accumulator (Fuller, Oldham, Exide, C.A.V.).

Full-size layout of underside of Chassis will be given next week



ALUMINIUM  
14" X 9 1/2" X 3"  
inside dimensions



3 1/8"

2 3/16"

GRAM

250,000Ω

GRAMO

TUNED GRID COIL

0.0005 mfd.

Slots 7/16" X 3/16"

50,000Ω

RADIO

GANGED VOLUME CONTROLS

0.0005 mfd.

2 1/4"

2 3/4"

0.0005 mfd.

2 1/4"

Shielded wire

To anode

BAND-PASS FILTER COILS

SCREEN GRID VALVE

6 3/8"

1 3/8" r.

2 1/4" diam.

45°

All terminals insulated from chassis except "E"

PRE-SET COND SR. 0.0002 mfd. max.

2 1/16"

3 1/16"

2 1/8"

1 1/2"

1 1/2"

3/4"

PICK-UP

Insulated from chassis

A

E

**I**N this Christmas Number of **AMATEUR WIRELESS** we introduce the third of the new Star series of sets—this time a four-valver, called the "Four Star 4." This set is really a development of the three-valver described in a recent issue, but for the benefit of readers coming across the Star series for the first time we will go over the main features governing the design of the chassis and the sequence of the valves.

There is small need, in these days, to make out a good case for the multi-valver, since public opinion has already decreed that the four, five, and six-valver shall be the sort of set to meet the selectivity requirements now prevailing.

**The Best Valve Sequence**

As the number of valves per set increases the scope of individuality of sequence increases. So in a four-valver you may have, quite logically, two high-frequency-amplifying valves, a detector and a power valve. But for a straight set this implies a complication that, while by no means insuperable, will put off the majority of home constructors.

The only alternative sequence of any value in a four-valver is one high-frequency amplifier, detector, and two low-frequency stages. That is the sequence adopted for the "Four Star 4," a sequence that lends itself to an eminently simple practical layout.

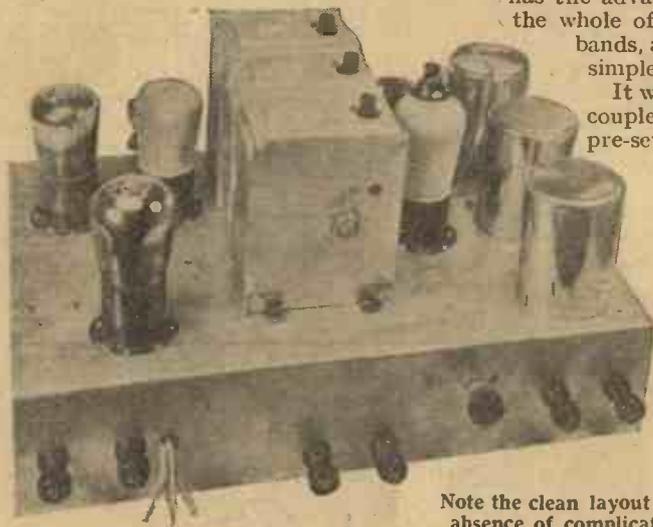
Here we should explain for the benefit of regular readers that the circuit arrangement of the first two valves of the "Four Star 4" follows exactly the same lines as the



# The Four



A set em  
features a  
constr  
Rutherford



Note the clean layout and absence of complication

"Three Star 3." That is to say, there is a band-pass aerial input, preceding a screen-grid valve, which is choke-capacity coupled to a leaky-grid detector valve, in whose grid circuit is a parallel tuned circuit.

**Aerial Tuning Circuit**

The aerial tuning circuit therefore comprises two tuned circuits, which are tuned by a gang condenser, which also tunes the intervalve tuning circuit. A good measure of pre-selection is obtained by the first two tuned circuits comprising the band-pass,

and this selectivity is further enhanced by the tuning circuit in the grid of the detector valve.

The two sections of the band-pass are coupled together by a .01-microfarad fixed condenser and a small link coil producing negative-inductive coupling. This system provides very satisfactory band-passing and has the advantage of an even action over the whole of the medium and long-wave bands, an advantage not possessed by simpler methods of band-passing.

It will be noted that the aerial is coupled to the band-pass through a pre-set type of variable condenser.

We should emphasise that this is not intended to be used as a volume control, but is inserted so that the aerial load may readily be adjusted for accurate matching of the tuned circuits.

Once this load has been correctly applied, by varying the pre-set until the best compromise between strength and selectivity has been found, there is no need to touch the pre-set, as volume control is done

in the screen-grid valve circuit.

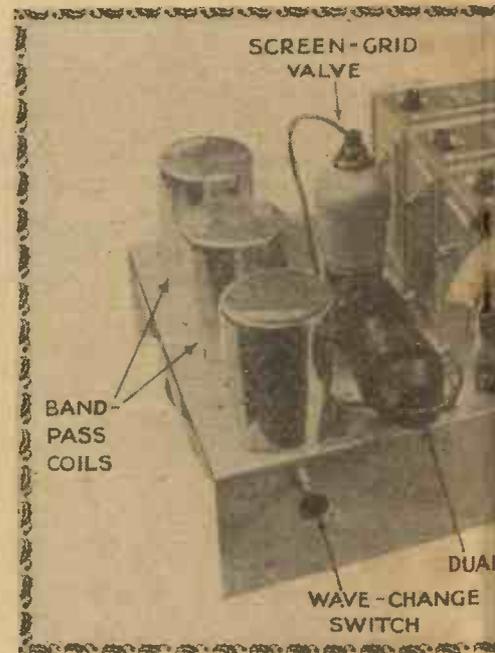
**Volume Control**

Let us look at this volume control, since it is one of the most useful devices in the circuit. It consists essentially of a potentiometer controlling the voltage applied to the screen of the screen-grid valve. The sensitivity of the valve depends on the screen voltage, so this form of control enables the sensitivity and thus the ampli-

fication of the first valve to be adjusted to suit the amplitude of the incoming signal.

The potentiometer winding is connected in series with a 20,000-ohm resistance and the maximum high-tension supply. As this method of connection draws a small current from the high-tension supply, since the potentiometer winding is across it, we have introduced a three-point battery switch, so that when the set is switched off the high-tension battery is entirely disconnected, and the current through the potentiometer is stopped.

Following the screen-grid valve is the detector. The method of coupling these



The "Four Star 4" embodies all the mo

# FOUR STAR 4

bodying all the latest  
and the newest ideas in  
construction—designed by  
I Wilkins and Alan Hunter

valves has proved its worth in many sets, including the "Three Star 3." It has the merit of simplicity and also of enabling the intervalve tuning circuit to be accurately ganged with the aerial tuning. A high-frequency choke is connected in the anode circuit of the screen-grid valve. In series with this choke and the high-tension supply is a 10,000-ohm resistance, which with the 1-microfarad fixed condenser, serves to decouple the screen-grid valve.

The high-frequency signals are passed on to the detector through a .0002 coupling condenser, which is connected between the choke and the grid end of the grid tuning

circuit. This coupling condenser is needed to prevent the high-tension battery from being short circuited; it will be seen that with the system adopted the normal grid condenser and leak are also used.

## Gramophone Reproduction

Some complication at the detector circuit is inevitable if we wish to introduce facilities for gramophone reproduction. Actually, if the jack-switch connections are examined in detail they will be readily understood. The contacts are so arranged that when the pick-up is brought into circuit the filament circuit of the screen-grid valve is broken, so this unwanted valve is out of action while records are being reproduced. At the same time the grid of the detector, which is normally slightly positively biased, receives a 1½-volt negative bias through the pick-up volume control, which comes into action with the pick-up.

The provision for gramophone pick-up work is really complete—and all users of the "Four Star 4" should appreciate the fact that when the pick-up is brought into action, so also is a pick-up volume control. This takes the form of a potentiometer, the slider going to the contact of the switch connecting up the grid of the detector, the winding going across the pick-up terminals, one of which is connected to the negative grid-bias.

The rest of the detector circuit is quite simple to understand. Note that, to pre-

serve the symmetry of the tuning, a .01-microfarad fixed condenser is connected between the low potential end of the grid tuning coil and earth.

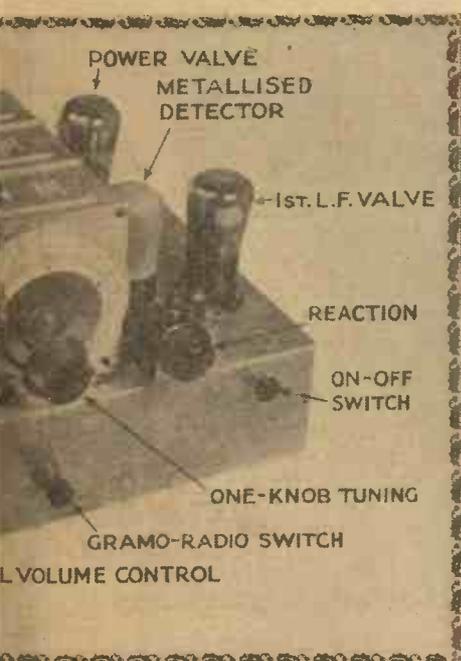
Capacity-controlled reaction is introduced into the detector circuit by means of a .0003-microfarad variable condenser and a small winding on the grid tuning coil. To ensure adequate high-frequency bypassing when the reaction is at its minimum, a .0002-microfarad fixed condenser is connected across the anode of the detector and earth.

## The L.F. Side

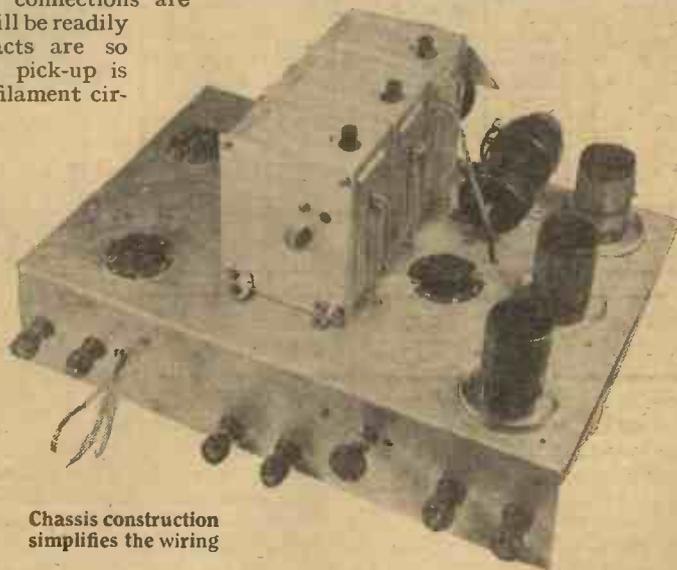
Following the detector is a stage of resistance-capacity-coupled low-frequency amplification. The anode resistance has a value of 40,000 ohms, and this circuit is de-coupled with a 20,000-ohm resistance and a 2-microfarad fixed condenser. There is a high-frequency choke between this anode resistance and the anode, needed to divert the high-frequency current through the reaction system, and to prevent it getting into the low-frequency section of the set.

The low-frequency current is handed on to the first low-frequency valve, that is the valve after the detector, by means of a .01-microfarad fixed condenser, the grid of this valve being biased negatively through a .25-megohm grid leak.

The last valve is the output valve, and this is transformer coupled to the first low-frequency valve. Again we find that the anode circuit is de-coupled, by means of a 20,000-ohm resistance in series with the primary of the low-frequency transformer and the high-tension supply, and a 2-micro-



most desirable up-to-date circuit features



Chassis construction simplifies the wiring

farad fixed condenser connected to earth.

The loud-speaker is connected directly in the anode circuit of the power valve, as most of the latest moving coils incorporate suitable output transformers.

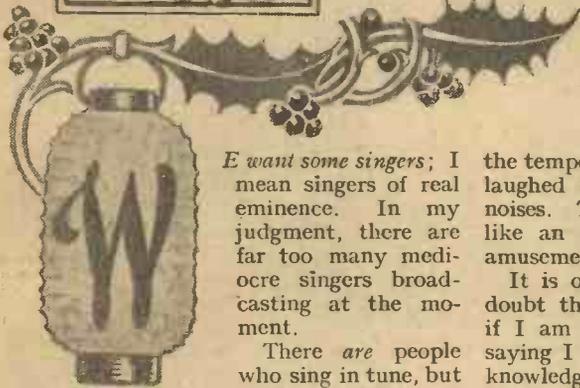
Comparing this four-valve circuit with the three, there is very little difference in the cost. The extra components for the resistance-capacity coupling comprise a fixed resistance, grid leak, and coupling





# OUR BROADCAST CRITIC

## TALKS ABOUT— SOME SINGERS



*E want some singers; I mean singers of real eminence. In my judgment, there are far too many mediocre singers broadcasting at the moment.*

*There are people who sing in tune, but*

*I have heard far too many who sing out of tune. I cannot see that there is any justification for it.*

*What is happening at the auditions? Something ought to be done about it. I do not wish to be too personal and name artistes as being incapable of singing to the true pitch; I merely complain bitterly that I have listened recently to some dreadful noises. B.B.C., will you, please, think very hard about it? Thank you in anticipation!*

*On the other hand, I have heard three singers in one week of whom I want to hear more.*

*Enid Cruickshank is one. Her singing of Brahms in a Sunday afternoon chamber-music concert appealed to me enormously. It seemed to me that it needed such a lovely voice to sing such lovely music.*

*The second was Evelyn Scotney, that same evening. She has a style and finish that has not been equalled on the wireless for a very long time. And such a wonderful range and quality!*

*Thirdly, Ben Davies. Did you hear him? A link with the past, of course, and his voice is not, perhaps, what it once was; but the finish and clarity of diction was an example to some of our younger mumblerers who do not take the trouble to enunciate their words. I should like to offer my congratulations to him; he is seventy-four next January, and, apparently, still going strong. The best of good wishes, sir!*

*Walter Giesekeing created a sensation at Queen's Hall in the symphony concert by his piano-playing.*

*Incidentally, though, where on earth does Queen's Hall find its pianos? Of all the old tin kettles I ever hear, the worst are there, where they should be the best. Please, Queen's Hall, sell all your crocks; put some money to what you get for them, and buy a piano.*

*Did you hear the Five Orchestral Pieces*

*the temper of the audience, many of whom laughed unrestrainedly at the monstrous noises. The bass tuba, whose mute looked like an enormous silk hat, caused great amusement.*

*It is only my opinion, but I begin to doubt the sincerity of Schönberg. Even if I am wrong, I have no hesitation in saying I think anyone, given a reasonable knowledge of orchestration, could write that sort of stuff.*

*I earnestly plead with the B.B.C. not to continue these experiments in hyper-modern music; they are ruining the cause of broadcasting and are little less than an insult to people with refined feelings. However, there was compensation; Adrian Boult gave a perfectly wonderful representation of Beethoven No. 7.*

*A word to the Two Pairs. Once is enough of that bridge scene. Very good of its kind; but, please, do not repeat yourselves so soon. Try to keep us interested.*

*Incidentally, I was told that other items in that same vaudeville contained repeats. I did not hear them for myself, as one of my valves suddenly entered into rest and I had no spare by me.*

*I listened to Jack Harris and his band.*

*Very enjoyable, but one word to him. Why not engage a really good singer for the vocal refrains? I do not know who sang, of course, but he was not good enough, in my opinion.*

*Memories was rather pleasing, I thought. The Wireless Chorus sang well and the whole production was attractive. I must say I prefer "them old tunes" to many of the modern ones. Many of them are more suited to the microphone, too.*

*After listening to a Ridgeway Parade I switched into the*

*by Schönberg in that concert? I expect you switched them off.*

*The lack of applause at the end showed*

*our programme. What do you think I found? A Bach concert given by the Philharmonic Society.*

*I felt it my duty to listen to it—at any rate, for a while. I thought Isolde Menges and Harold Samuel wholly delightful. Unfortunately, I became so engrossed in Bach that I forgot to switch back—er, back—into the Ridgeway Parade.*

*I chanced to be in for lunch one day and heard Reginald Foort foorting the good foort, so to speak. Although I hate cinema organs with a deadly hatred, I must in honesty say I admired some of the effects he produced. I hope he will understand me if I say I think he is too good for a job of that sort; he has an easy technique. I shall try to hear him again.*

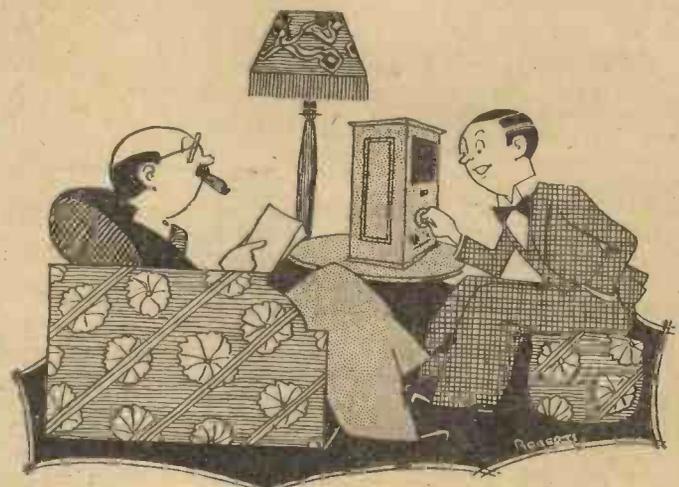
*Now for the Saturday vaudeville.*

*I confess I read the list with misgivings, and what I have to say here I am trying to say without being ruder than I can help.*

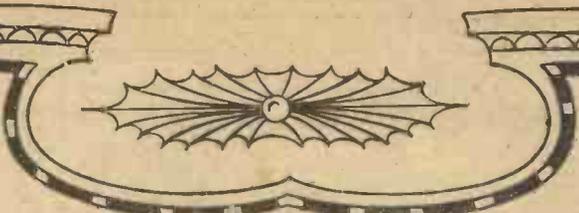
*What I feel is the matter with these vaudevilles is that they are merely one sort of thing after another. Even the Ridgeway Parades, despite my rather strong opinions about them, have some consecution of thought.*

*I feel that it is time to say that there were very long spaces of boredom and mediocrity between, say, the Sisters Waters, who were admirable, and Leonard Henry, who was brilliantly funny.*

WHITAKER-WILSON.



*"My nephew's making things hum at the B.B.C."  
"Indeed. Is he in the Programme Department?"  
"No. In charge of the generators!"*



One of the new Clarke's Atlas H.T. Units

(Continued from page 1184)

Few houses are wired for radio and a gift of this kind opens up endless possibilities.

Battery users generally welcome a spare accumulator, but it is not much use buying a new high-tension battery for a man who has just installed one himself.

A mains eliminator is not subject to the same disadvantage and if you know that a listener shortly intends changing over to mains operation, then an eliminator makes a most acceptable and, nowadays, not very expensive gift. Err on the generous side, though, for sets are apt to hum if operated from an eliminator which is pressed to its limits for

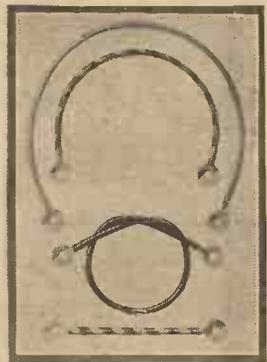
(Continued on page 1204)



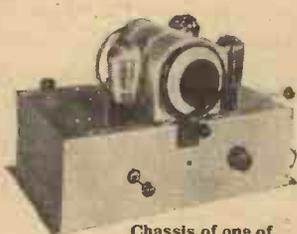
Dubilier drum control condenser



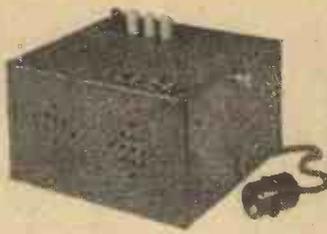
Harlie pick-up and combined volume control



Four typical Telsen spaghetti resistances



Chassis of one of the new R.L. sets



One of the new Climax A.C. Units



Rooke Bros. coil



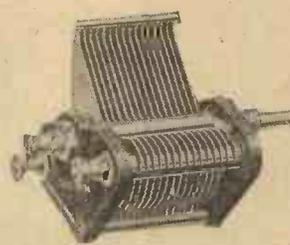
T.C.C. condenser



Three Bulgin fuses



W.B. permanent-magnet speaker



Telsen variable condenser



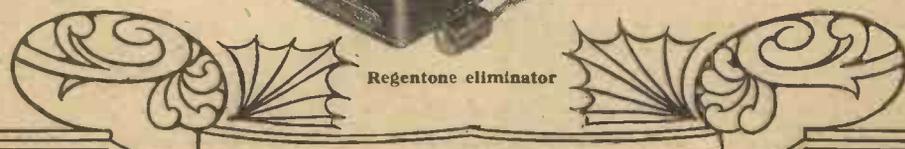
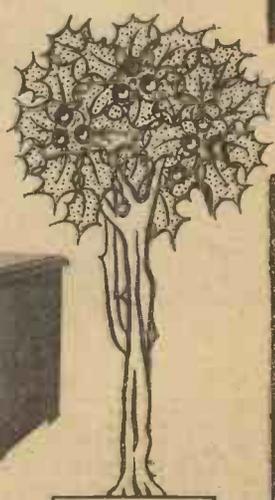
Celestion type M speaker chassis



Regentone eliminator



One of the new range of Mullard sets



# GET IT FROM READY RADIO

There is a Ready Radio Tested Kit for every set described in this journal. Let us know your requirements and we shall be pleased to quote you. Immediate Dispatch. Cash or Easy Payments.

## Matched Kits for

### "BRITAIN'S SUPER"

KIT A (Less valves and cabinet) £7.7.6

**OR BY EASY PAYMENTS**

13/6 DOWN and 11 monthly payments of 13/6

KIT B (With valves, less cabinet) £10.15.0

**OR BY EASY PAYMENTS**

19/9 DOWN and 11 monthly payments of 19/9

KIT C (With valves and cabinet) £12.0.0

**OR BY EASY PAYMENTS**

22/- DOWN and 11 monthly payments of 22/-

For full list of components and complete details see our announcements in previous issues.

### NEW READIRAD SHORT WAVE H.F. CHOKE

Specially designed for the Short Wave Plug-in Unit

Ultra-efficient sectionalised double-silk covered winding of particularly low self-capacity, high inductance and uniform efficiency over its whole waveband of 10 to 100 metres. Price **3/9**



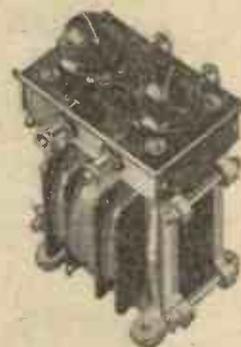
### READIRAD SUPER-HET CHOKE

Chosen for "Britain's Super" and essential in all Super-het Receivers. Will effectively block H.T. currents of wavelengths even as high as 3,500 metres. Sectionalised windings designed for extremely low losses, low capacity, and low D.C. resistance. Price **5/6**

### INSTAMAT OUTPUT TRANSFORMER

Gives you all the benefits of an output transformer of the perfect design with the unique advantage of being able to select, INSTANTLY, the correct ratio necessary for the best quality reproduction.

Instamat.—For all loud-speakers except low-resistance moving coils **27/6**  
Instamat Major.—For low-resistance moving-coil loud-speakers **37/6**



Be sure to read Kendall's book, entitled "10 Hows for Modern Radio Constructors." Send four 1½d. stamps now.

#### A READY REFERENCE TO RADIO.

Our new 100-page fully illustrated Catalogue contains details of all modern radio products. You need a copy. Price 1/- Post free.

#### TO INLAND CUSTOMERS.—

Your goods are dispatched post free or carriage paid.



Head Offices and Works: Eastnor House, Blackheath, S.E.3. Phone: Lee Green 5678. Grams: Readirad, Blackoil. Showrooms: 159 Borough High Street, London Bridge, S.E.1. Phone: Hob 3900

TO OVERSEAS CUSTOMERS.— Everything Radio can be supplied against cash. In case of doubt regarding the value of your order, a deposit of one-third of the approximate value will be accepted and the balance collected by our Agent upon delivery of the goods. All goods are very carefully packed for export and insured, all charges forward.

### CASH or C.O.D. ORDER FORM

To: Ready Radio, Ltd.  
Eastnor House,  
Blackheath, S.E.3.

To: Ready Radio, Ltd.,  
Eastnor House,  
Blackheath, S.E.3.

### EASY PAYMENT ORDER FORM

Please dispatch to me at once the following goods.....

Please dispatch to me the following goods.....

for which (a) I enclose (b) I will pay on delivery } (Cross out line not applicable) £.....

for which I enclose first deposit of £.....

NAME .....

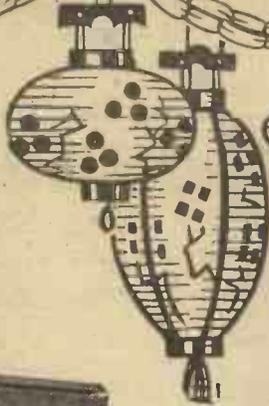
NAME .....

ADDRESS .....

ADDRESS .....

A.W. 5/12/31

A.W. 5/12/31



British General band-pass coll.

(Continued from page 1202)

milliamperes. A four-valver, for instance, may need an eliminator giving at least a 20-milliampere output, without causing the voltage to drop below 140 or 150.

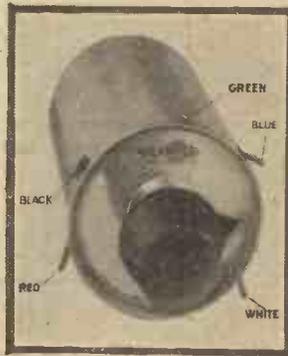
If you intend purchasing a complete set, then your choice will be limited only by the depth of your pocket. Where you know the recipient has a mains supply, then if at all possible, go to the slight additional expense of mains operation, having ascertained the type of supply, A.C. or D.C., the voltage and periodicity.



One of the new Tannoy Radio-grams



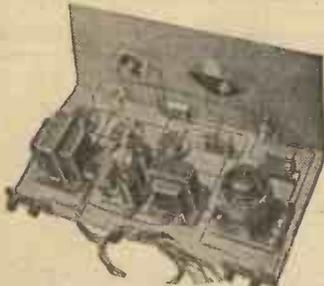
Varley band-pass aerial coll.



Wearite super-het coll.



One of the new cabinets by the Miscellaneous Trading Co.



Telsen Victor 3 Kit.



Peto-Scott cabinet,



"Radio for the Million" V3 Kit



Telsen fuse.



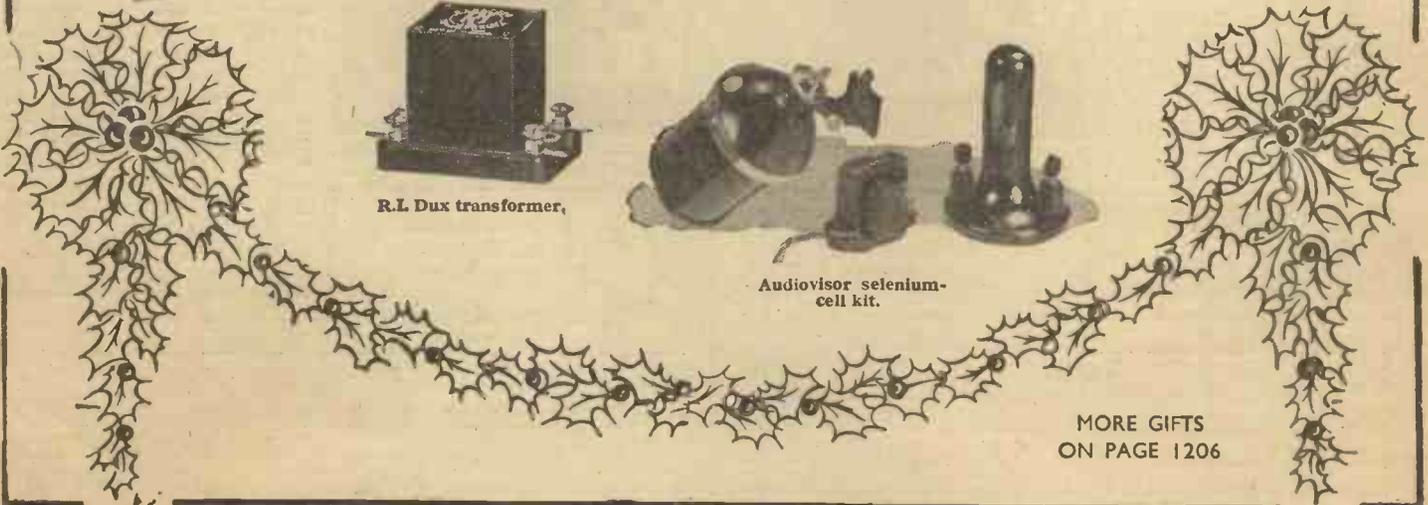
Fuller 120-v. battery.



R.L. Dux transformer,



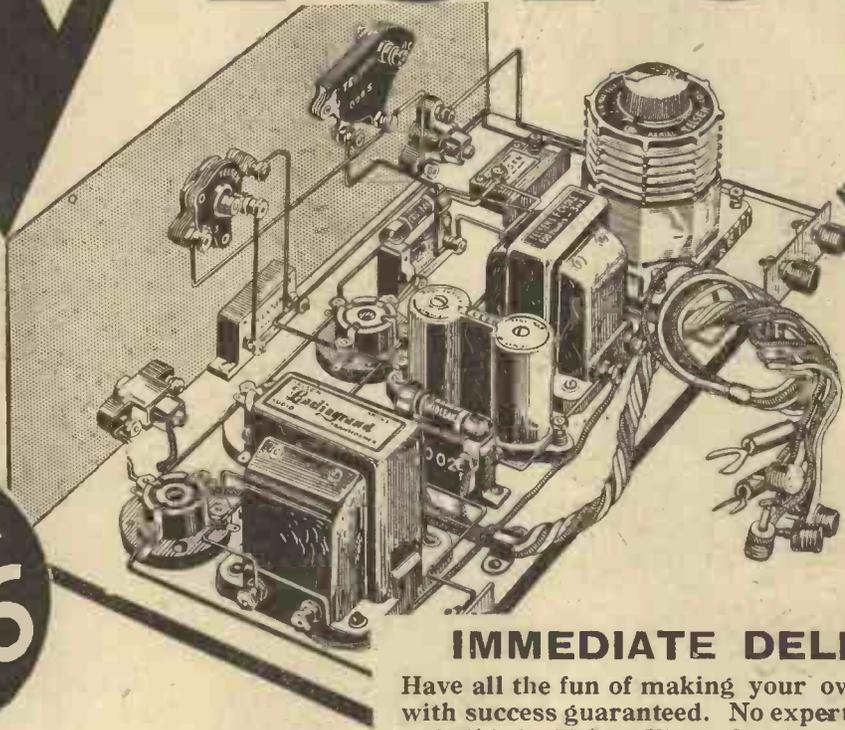
Audiovisor selenium-cell kit.



MORE GIFTS ON PAGE 1206

# TELSEN BUILD THE VICTOR 3

# 39/6



- Super 3-valve receiver built entirely with all-British Telsen Components, matched for efficiency.
- Complete with panel, baseboard, battery cord, battery plugs, terminals, connecting wire, terminal and escutcheon plates, full-size blueprint, and point-to-point wiring chart, with full instructions, etc., etc.
- Separation of Regional from National programmes guaranteed by incorporation of Telsen Dual-Range Aerial Coil.
- Very simply built and simply operated. Full constructional and operating details with every kit.

## IMMEDIATE DELIVERY

Have all the fun of making your own radio set—with success guaranteed. No expert skill is needed to build the Telsen Victor 3. An evening delightfully occupied and you are ready to tune in for the first time . . . And a child can operate it when complete—simple to build and simple to work—with a performance that will astonish you.

**KIT 1** Exactly as supplied by Telsen, with Baseboard, Metal Panel, flex and terminal connections, in sealed Carton as advertised - **39/6**

**KIT 2** As Kit 1 with Valves as specified (Mazda HL2, Mazda L2, Mazda P220A) less Cabinet - **70/-**

**KIT 3** As Kit 2 with Valves as specified and Cabinet. Cash or C.O.D. **82/6**  
or 12 monthly payments of 8/-.

**MONEY RETURNED IF NOT SATISFIED**

### ORDER FORM

To **BOYNTON'S**  
67-68 Stafford Street, BIRMINGHAM

Please send Kit 1.....(Cash or C.O.D.)  
Kit 2.....(Cash or C.O.D.)  
Kit 3.....(Cash, C.O.D., H.P.)  
(Place X against Kit required)  
For which I enclose

£      s.      d.

Name .....

Address .....

A.W. 5/12/31

# BOYNTON'S

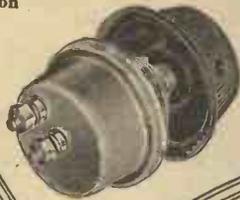
67 & 68 STAFFORD ST.  
BIRMINGHAM

To Ensure Speedy Delivery, Mention "A.W." to Advertisers

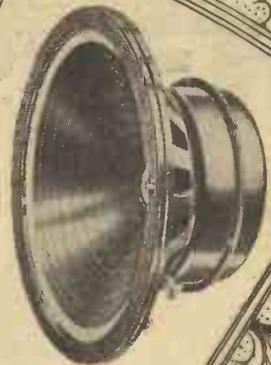


One of the range of Oldham batteries

Sovereign compression resistance



Graham Farish speaker



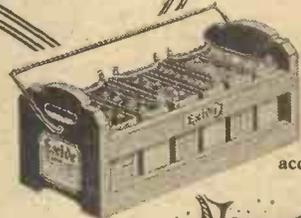
Celestion R.P.M. 12 speaker



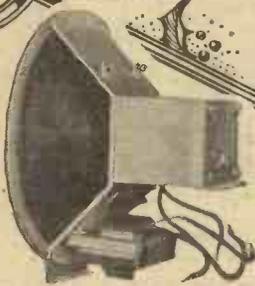
J.B. U20 condenser



Ekco radio gramophone



Exide accumulator bank



Blue Spot 22 speaker



Varley Square-peak four-valver



Lissen Torex transformer



Six-Sixty Chassikit set



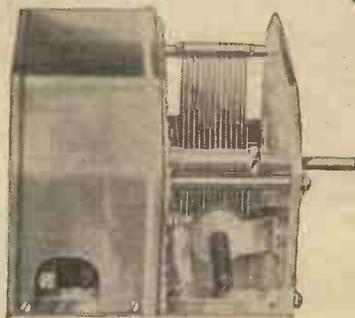
Westinghouse rectifier



Kolster Brandes set



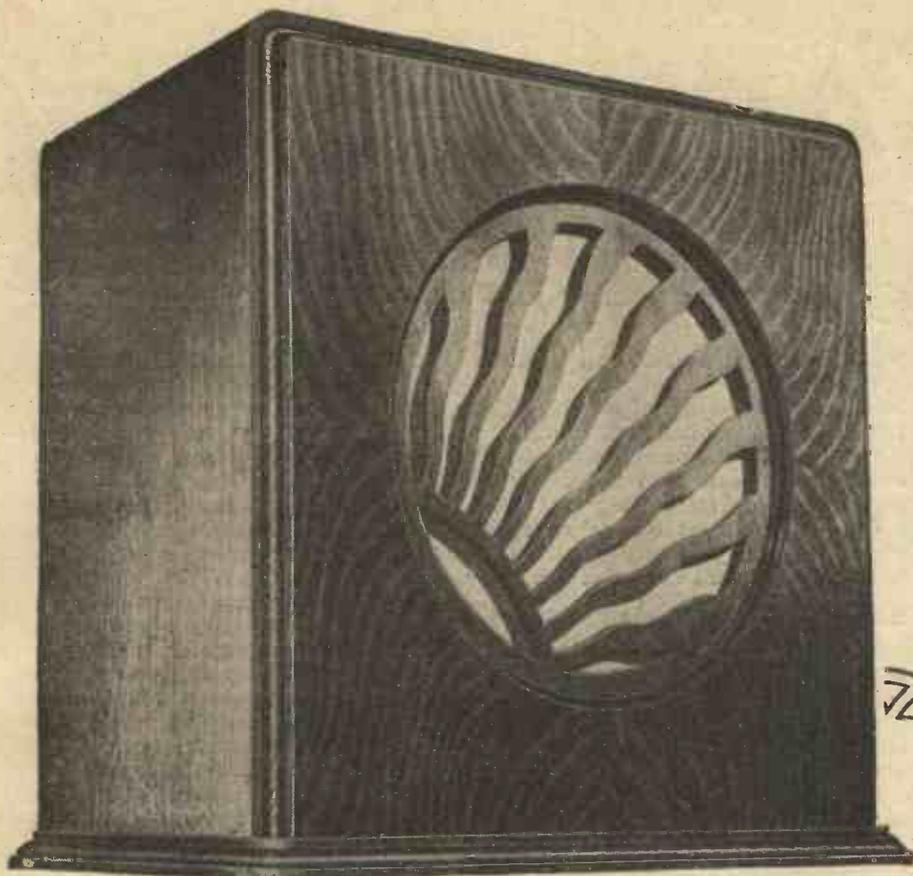
Blue Spot cabinet speaker



Section of J.B. gang condenser



Blue Spot disturbance eliminator



*A*  
 Performance  
 which justifies  
 our Pride in  
 its Production

*The* **ORMOND** **MOVING COIL** **CABINET**  
**LOUDSPEAKER**

*"Definitely a Loud-speaker  
 in the Highest Class"*

*"Wireless World" test report, Nov.  
 18, of the Chassis incorporated in  
 this Loud-speaker.*

**£4:19:6**

Height 16½ in. Width 16½ in. Depth 10½ in.

So remarkably faithful to its reproduction, so gloriously natural its tone, this new Ormond achievement presents a new conception of perfection in Loud-speakers. Such amazing performance can only be ensured by a perfectly balanced frequency response.

The Cabinet is handsomely constructed in figured Oak, and provided with terminals for connecting wires. A speech transformer is incorporated in the cabinet and three sockets are fitted at the back, together with two leads complete with plugs, which allow for a choice of alternative ratios for matching with the valve used in the output stage of the receiver.

**THE ORMOND ENGINEERING CO., LTD.,**  
 ORMOND HOUSE, ROSEBERY AVENUE, LONDON, E.C.1  
 Telephone: Clerkenwell 5334/5/6 & 9344/5/6  
 Telegrams: "Ormondengi" Isling.



**FOR PUNCH POWER & PURITY**

SETS OF DISTINCTION



# VARLEY SQUARE PEAK 4

Maker: Oliver Pell Control (Varley) Ltd. Price: 29 guineas

**E**QUALLY good quality from home and foreign stations—that is what I got during my recent tests of the latest Varley set, a four-valver of real distinction. Its claims to distinction are numerous. Firstly, as has always been true of Varley sets, the "Square Peak" four-valver is good to look at. The burr-walnut cabinet will appeal to all set buyers of taste.

This cabinet houses more than the set and power supply, for on lifting the lid we find that the top of the cabinet is the loud-speaker grille. The loud-speaker itself is mounted horizontally underneath this grille, so the sound is propagated upwards. The sound waves then strike the half-opened lid, which is mounted at a scientific angle to reflect the sound outwards. This set therefore strikes a new note in design.

### Fine Quality and Volume

My tests show that the design is fully justified, the volume and quality of reproduction being really fine. This arrangement of the loud-speaker makes for compactness, and when the lid is closed there is no chance of dust getting into the loud-speaker's "works."

Another point about the lid—when it is opened the mains are automatically switched on. This is done quite simply by means of a rod on the left-hand side of the cabinet top, operating an internal switch mechanism. It is points of this nature that give a set real individuality, and which appeal to the discerning set buyer.

The moving coil has a special centring device so that it is not thrown out by atmospherics or by very loud signals. I found the speaker could take the full output of the power valve without rattling in the least.

### The Valve Sequence

The four valves of the "Square Peak" set are arranged in a highly sensitive sequence, comprising two screen-grid high-frequency amplifiers, power-grid detector and super-power output. The two screen-grid valves and also the detector valve are of the metallised type, with indirectly-heated filaments. The PX4 is directly heated. Then there is a U12 valve rectifier, used for converting the A.C. supply into direct current for the anode circuits of the receiving valves.

The internal construction follows modern metal-chassis idea, everything being extremely well screened, such as the square-peak tuning coils, and the four-gang tuning condenser. At the back of the chassis are terminals for the external

connection of the aerial, earth, pick-up, and, if desired, another loud-speaker.

Here, also, is the mains plug and socket connection. Near by I noted the very plainly-marked mains terminal board, which enables the set to be adjusted for all supplies between 200 and 250 volts. (There is also a D.C.-mains version of this set.)

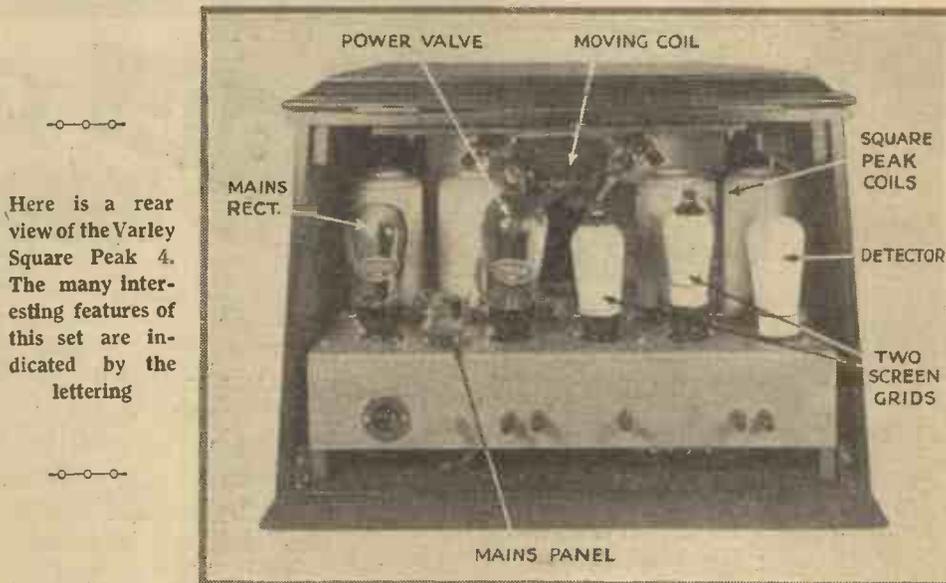
### Excellent Tuning Scale

When we come to examine the external arrangement of the controls we find a large tuning scale occupying the centre of the front of the set, worked by a massive drum dial—one of the best I have handled. The scale is illuminated as the set is switched on. Rather daringly, I think, the makers have calibrated the scale directly in wavelengths,

that there is one particular point in the rotation of the volume control knob that gives maximum volume, with a decrease in volume on each side of it. The volume control of all stations proved to be very satisfactory, powerful locals being reduced in output without any appreciable mutilation of the quality.

When the gramophone side is in action, the volume control knob works an entirely separate potentiometer connected across the pick-up terminals, but worked on the same shaft as the aerial coupling coil.

I was particularly interested to see how the band-pass aerial circuit of this set worked. With band-pass, and a total of four tuned circuits, I anticipated real selectivity. But I was not prepared for the



Here is a rear view of the Varley Square Peak 4. The many interesting features of this set are indicated by the lettering

medium-wave stations on the left and long-wave stations on the right. The home stations are marked in red and all the foreigners in black.

I must say these station calibrations turned out to be mostly in the right places.

Arranged in a line along the bottom of the front are the subsidiary control knobs. That on the left is the gramo-radio switch knob, and this knob also applies a spot of reaction over the middle portion of its travel from gramo to radio. The centre knob is for changing the wavelength range from medium to long. The right-hand knob is to control the volume—which is done in two ways.

For the control of volume during the reception of broadcasting, an aerial coupling coil is mechanically varied. This means

good-quality selectivity given by this set—although I should have known, I suppose, that the Varley band-pass coils are the goods.

Anyway, it was a real pleasure to find stations so easily separated and with no apparent loss of either volume or quality. Quite the most remarkable feature of this set, as I indicated at the beginning of the report is the excellent quality on the distant stations.

These stations come in with a bang, and remain in over an appreciable part of the dial; then they sharply disappear in the best band-pass fashion.

With the exception of Belgrade and Riga I logged all the forty odd medium-wave stations marked on the scale, mostly in the positions indicated. SET TESTER.

# NO MORE BATTERIES!

In three minutes you can change to trouble-free radio which will cost you only 1/- a year and finish with batteries for ever.



Just connect an EKCO Unit in place of your usual battery, then plug into the electric-light supply and switch on—that's all. No alterations to your set or valves. No additions or replacements. No trouble—ever. Instead, a constant and reliable power supply of ample current and full voltage—always. You will be more than delighted by the wonderful improvement in your radio.

EKCO Units embody many exclusive features and combine highest efficiency with greatest simplicity. Made by the Pioneers and Leading Specialists in British All-Electric Radio, they are without equal in design and performance.

H.T. Units (A.C. and D.C.), Combined H.T. and L.T. Charger Units (A.C.).

PRICES FROM 39/6

ALSO OBTAINABLE BY EASY PAYMENTS FROM 3/8 PER MONTH



To: E. K. COLE, LTD. (Dept. K18)  
Ekco Works, Southend-on-Sea.  
Please send me details of  
EKCO ALL-ELECTRIC POWER UNITS

Name \_\_\_\_\_  
Address \_\_\_\_\_

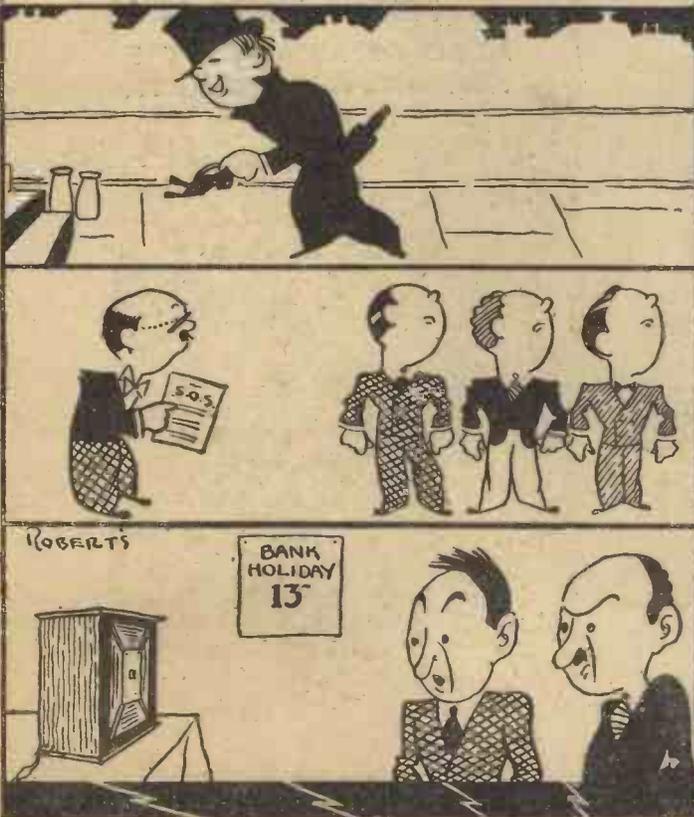
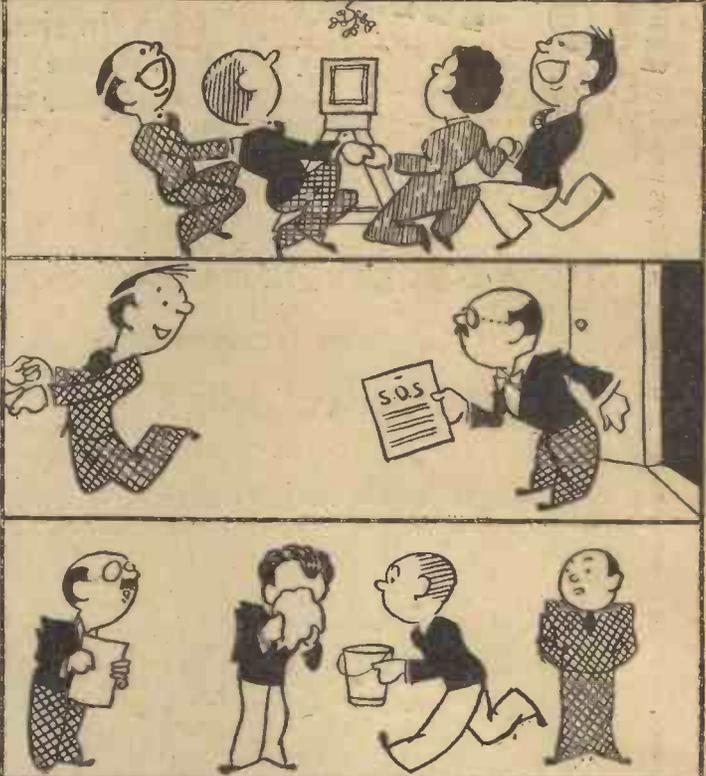
POST COUPON NOW FOR FULL DETAILS

You Will Help Yourself and Help Us by Mentioning "A.W." to Advertisers

# THE BIRTH OF A RADIO PLAY

VERSES AND SKETCHES BY ROBERTS

It was Christmas Day in the Studio,  
 The Announcers were full of good cheer  
 For it had rained in the night,  
 While the sun had shone bright,  
 'Twas the sign of a Happy New Year.  
 Then there entered the Chief Announcer,  
 He said, "Lads, here's an S.O.S.,  
 Shall we read it or burn it or raffle it?"  
 And with one accord they all answered "Yes."  
 Then came the Director of Programmes,  
 He said, "What's all this I hear?"  
 So the S.O.S. was read to him;  
 He listened, and stifled a tear.  
 The Effects Man then came and inquired  
 The cause of all the commotion.  
 So the S.O.S. was read to him;  
 He heard it, and wept a small ocean.  
 The Producer appeared and demanded  
 The reason for all the sorrow.  
 So the S.O.S. was read to him;  
 (Five hankies he had to borrow).  
 Now the S.O.S. was from Scotland Yard,  
 And was signed by Five of the Big Four;



It was stated that from Wigan Spa,  
 Had disappeared a Mother-in-Law.  
 Her daughter's husband sponsored the message,  
 His grief, it is said, was immense;  
 Home is not Home with no Mother-in-law,  
 (The reward being Nine and Four pence).  
 Pray stifle your tears for a moment,  
 To visualise the poor fellow's plight.  
 Getting home with the milk and the papers  
 And no Mother-in-law to kiss him Good-night.  
 Great was the sorrow felt by the staff;  
 As all of them possessed wives.  
 They knew if they lost their Mothers-in-law,  
 'Twould be the saddest day of their lives.  
 So the staff then held a meeting,  
 The S.O.S.'s fate to decide;  
 Could they Broadcast such a sad missive?  
 Nay. Even announcers have their pride.  
 So they set to work on the message,  
 And turned it into a Radio Play.  
 'Twill be Broadcast three weeks come next Michaelmas,  
 To brighten our Bank Holiday.



## BRITISH MAKERS introduce standardisation into dry battery manufacture . . .

A dry battery is a collection of small cells. Like a company of soldiers it operates most successfully when each individual is equally strong, equally efficient and equally energetic. That is why the FULLER machine-made and tested 'Super' Battery is proving its superiority under all conditions in the field of wireless. The FULLER cells are standardised by machinery. Each part, each detail, each ingredient is identical in every cell, no matter how many are turned out. Each step in construction is automatically correct. Result—a perfect dry battery. A battery, too, which is British-made. The perfection of the Fuller 'Super' emphasises the benefit of **Buying British.**

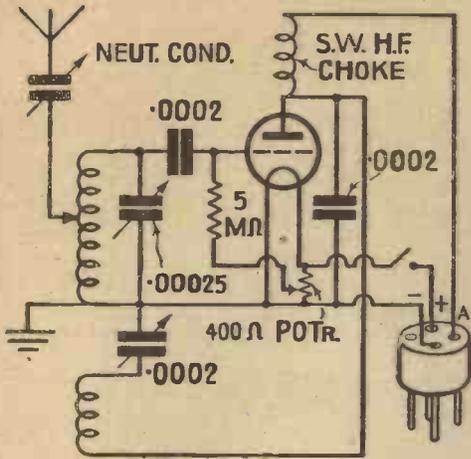
'Super' type—60 to 120 volts, 7/5 to 15/3  
'Sparta' type—60 to 120 volts, 5/3 to 10/9  
Also Portable, Triple and Grid Bias batteries and  
a full range for torches, flashlamps, cycle lamps  
and electric bells.

**FULLER**  
**'SUPER' DRY BATTERY**  
EMISSION UP TO 20 MILLIAMPS

Full List of other types and sizes with names of Local depots on application to  
FULLER ACCUMULATOR CO. (1926) LTD., Chadwell Heath, Essex.  
Telephone: Seven Kings 1200. Telegrams: Fuller, Chadwell Heath.  
Contractors to British and Overseas Government Departments, Railways, etc

*Mention of "Amateur Wireless" to Advertisers will Ensure Prompt Attention*

**"A SHORT-WAVE ADAPTOR FOR YOUR SET"** (Continued from page 1183)



The circuit of the adaptor. Note the positive and negative connections on the four-pin plug. These must correspond with your set

broadcast band set will work well in the unit. There is really no need to have a special valve.

**A First Test**

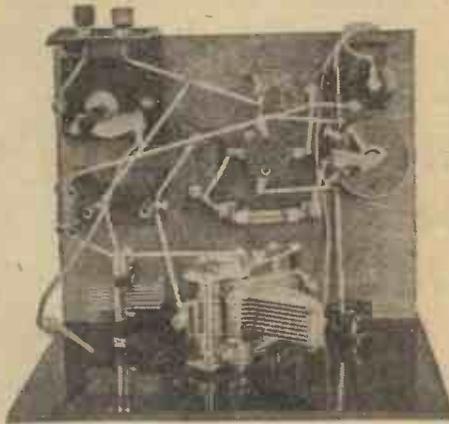
For a first test, remove the aerial and earth from the set and wire to the terminal strip on the unit, and change over the detector valve.

Set the neutralising condenser on the baseboard at about the full-in position and

set the arm of the potentiometer about half-way round the winding. There should be no difficulty in making the unit oscillate. Try various coil tapplings and various positions of the neutralising condenser. The potentiometer arm may be shifted a little one way or the other until the reaction is smooth. Tuning is carried out just as in a broadcast set and you must tune very slowly indeed if you want to avoid missing stations.

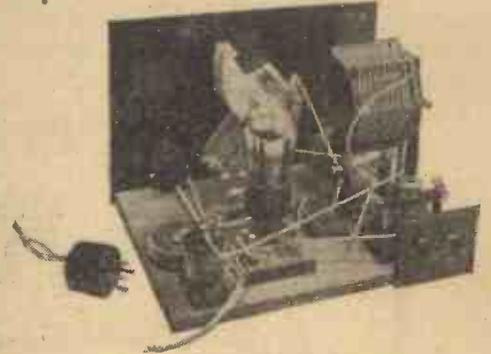
**Shorter Aerial**

Often on the short waves a long outdoor



Only a few parts are needed in the short-wave adaptor

aerial—one which may be ideal for broadcast reception—is found to be too large. A short indoor wire is frequently more suitable than your normal aerial when this unit is used. A good, direct earth, or a counterpoise, is essential, too. If the unit appears "live" and is prone to hand-capacity, then this is a fairly safe sign that your earth lead is not good enough. Just one further point. When altering the position of the potentiometer arm, use an insulated stick. A pencil will do. In this way you



The unit all ready for working

will be able to adjust the arm without upsetting the set's tuning by stray capacity. These points need watching in short-wave reception. You should have no difficulty in bringing in the stations. Tune slowly.

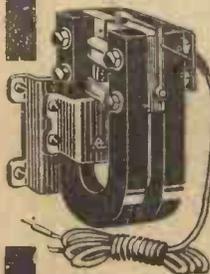
**Still farther ahead!!**

*The World's greatest Radio Value*  
Hear it and prove it at any wireless dealer's.



UNDY Pick-up with adjustable Volume Control. The best of its kind both for service and value.

35/-



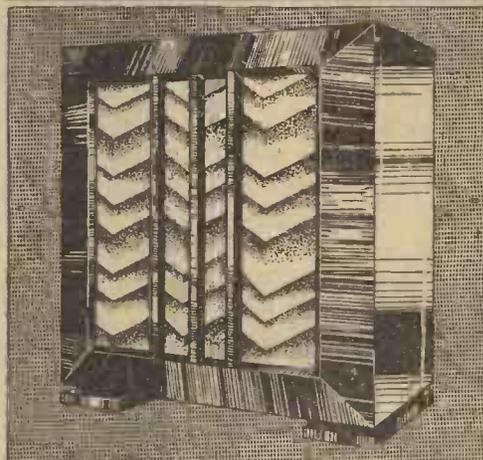
The New UNDY Dynamic 8-pole Unit. The "new principle" speaker unit, far more efficient than any past or present.

Adjustable

28/6

British Patent 336839.

*The New UNDY reveals a marked advance over all others!*



**Undy Cabinet Speaker**

A beautiful piece of furniture of superb design and finish, and embodying that acme of units—the new Undy 8-pole Dynamic—no wonder the tone is so clear and natural. A high-class luxury model at an astoundingly low price.

58/-

**UNDY**

Sole Representative for Great Britain and Ireland—  
J. HEMELIK, 8 Cullingworth Rd., London, N.W.10. Phone, Glad. 3033

Not only can we claim without fear of contradiction that these new UNDY products are far ahead of anything previously produced, but also that they are the greatest value in radio ever given. This is not an idle boast, but a statement of fact that can be fully verified by the demonstration which any radio dealer will be pleased to give.

**GUARANTEED FOR 12 MONTHS.**

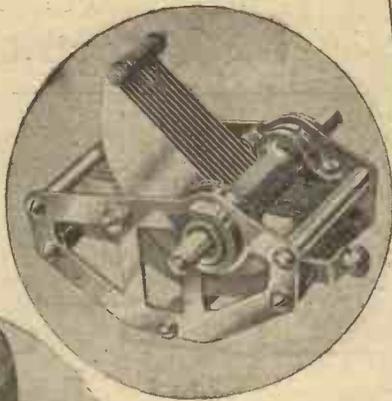


The New Undy 8-pole Dynamic

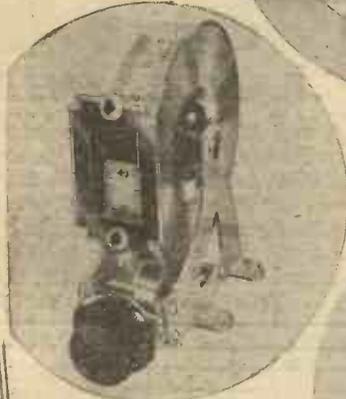
The New UNDY Dynamic 8-pole Unit and Chassis. Adjustable. Compared to any other speaker, moving-coil or otherwise, the greatest radio revelation of all time.

50/-

**J.B. UNIVERSAL LOG**  
 .0005 9/6 .00025 8/9  
 .0003 9/- .00015 8/9  
 4 in. Bakelite Dials  
 Black 1/6 extra  
 Mahogany 2/- extra



**BASEBOARD DRUM DIAL,**  
 4 in. Drum. Ratio 16-1. 7/6.



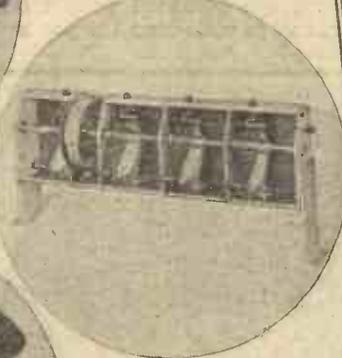
**"R" TYPE GANG CON-**  
**DENSERS.** 1-4 stages.  
 Prices 12/6 to 37/-.



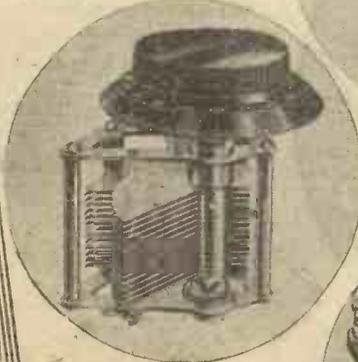
**TYPE U.20 (2-gang) for "Square**  
**Peak" Coils, 24/-.**  
**TYPE U.30 (3-gang), 34/6.**



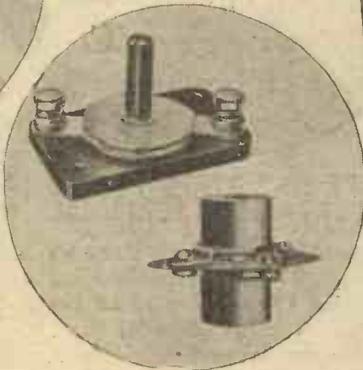
**J.B. CHASSIMOUNT, 2, 3, 4,**  
 5 or 6 stage. Prices from 15/-.



**POPULAR. Slow Motion (35-1)**  
 as illustrated, 8/6.  
 Plain type, 6/- 4 in. dial, 1/6  
 extra.



**BASEBOARD TRIMMING**  
**CONDENSER.** Ebonite Base.  
 Mica Insulation. .00005 and  
 .0001, 1/- each.



**GANG COUPLING DEVICE.**  
 Gangs two condensers while  
 insulating rotors. 9d

# SOME J.B. PRECISION INSTRUMENTS

J.B. leave nothing to chance. Laboratory research is followed by exhaustive testing. The J.B. standard of achievement is high, and no J.B. Condenser or Dial is ever introduced until it satisfies this exacting standard. Add excellence of materials and workmanship, and you will see why, since the earliest days of broadcasting, home constructors and manufacturers have used J.B. consistently and in increasing numbers.

See these J.B. Precision Instruments at your dealers, or write for the new J.B. Catalogue, which gives full particulars.



## PRECISION INSTRUMENTS



A weekly review of new components and tests of apparatus conducted by J. H. Reyner, B.Sc., A.M.I.E.E.

**Junit AC150/4 Unit**

A VERY serviceable eliminator which we have tested this week is the Junit type 150/4AC. This eliminator is suitable for use on supplies of 200-240 volts, 50 to 100 cycles, and has been designed to enable complete mains operation of the receiver with which it is used. Three high-tension output tappings are provided, a power

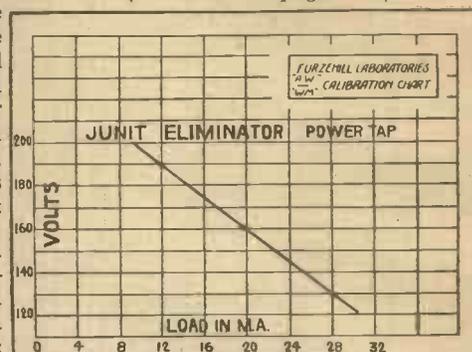


The Junit AC150/4 eliminator

tap, a general purpose tap, the output from which can be varied by means of a variable series-resistance, and a screen-grid tap, this being the centre point of a fixed potentiometer. In addition to the above, terminals are provided for a centre-tapped 4-volt supply; in fact the unit comprises a complete power pack such as might be found in any all-mains receiver. A Westinghouse metal rectifying unit is employed, the voltage-doubling scheme being used. All outputs are well condensed and unit can be used without any fear of low-frequency instability developing. The unit is housed in a neat crystalline-finished metal case, the various output tappings and controls being mounted on a small ebonite panel set at a convenient angle along the front.

On test the eliminator was quite satisfactory, all outputs being well up to their rated standard. With loads of 26 milliamperes, 2 milliamperes, and 1 milliampere, the voltages obtained were 138 volts, 80 volts, and 72 volts from the power

tap, variable tap, and the screen-grid tap respectively. The curve below shows the variation of voltage with load on the power tap with a full load on the other taps. Similar figures were also taken in the case of the 4-volt A.C. supply; on open circuit the voltage obtained was 4.4 volts, this falling  
(Continued on page 1216)



Output curve of the Junit eliminator

**DON'T LEAVE IT TO CHANCE**

**BELLING-LEE SAFETY ANODE CONNECTOR**

protects your S.G. or Pentode Valve. Short circuits impossible. Price 6d.

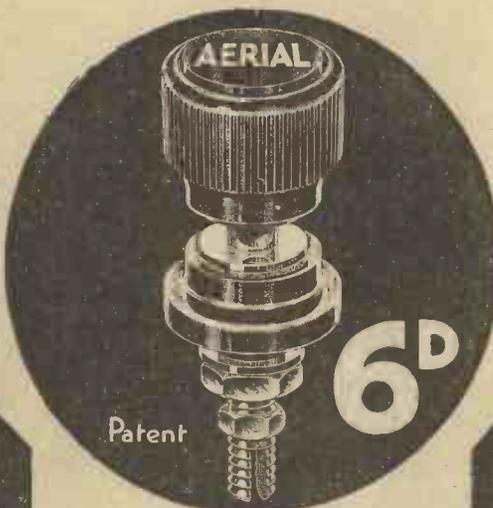
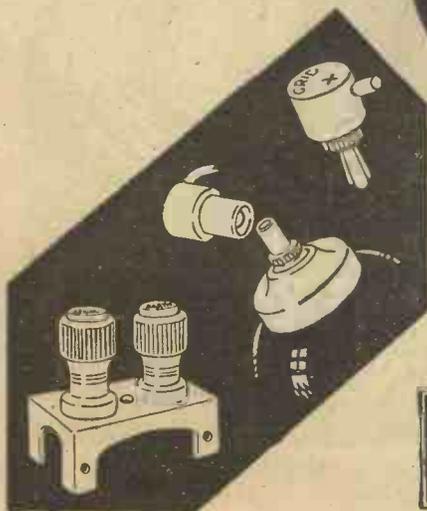
**BELLING-LEE ENGRAVED WANDER PLUG**

3-Prong spring contact. Grips any battery socket. Price 2d.

**BELLING-LEE TERMINAL MOUNT**

To mount two terminals of any type, vertically or horizontally. Price 8d.

Write for list



**TYPE "B." THE WORLD'S MOST FAMOUS TERMINAL**

Insulated engraved heads that can't come off. 37 different letterings that don't rub off. Chosen by all the leading Wireless Journals and set designers... your choice, too...

**BELLING-LEE FOR EVERY RADIO CONNECTION**

Advt. of Belling and Lee Ltd., Queensway, Ponders End, Mdx.

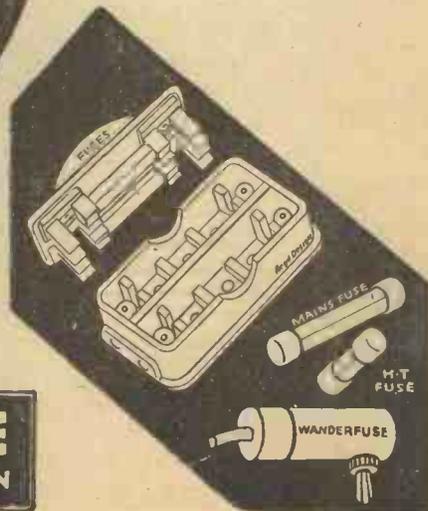
**COMPLETE RANGE OF FUSES**

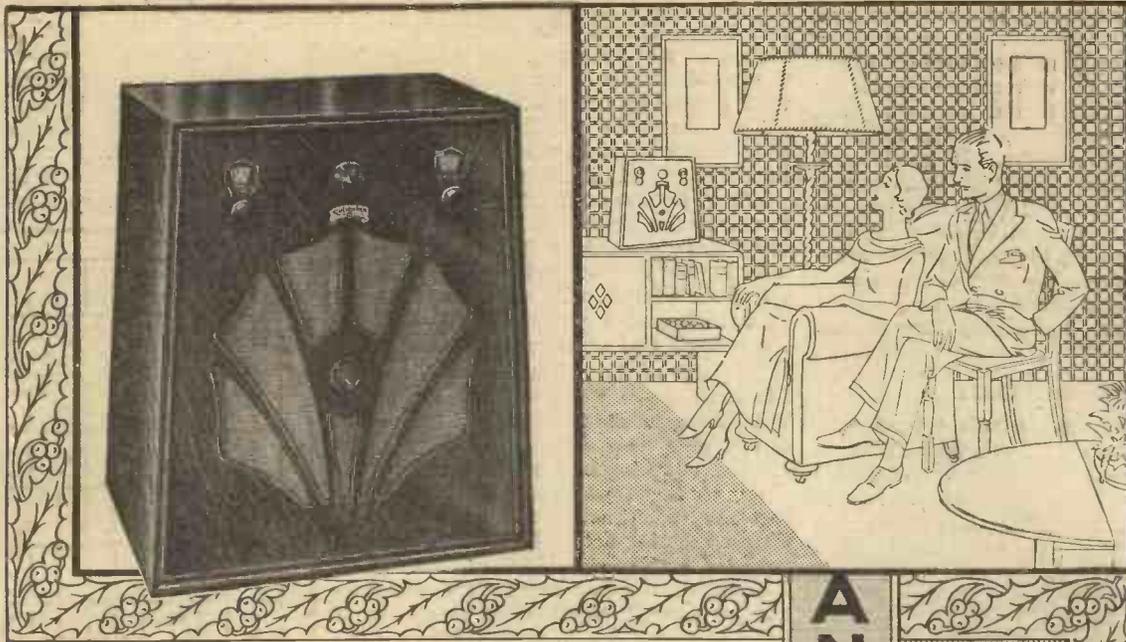
**TWIN BASEBOARD FUSE-HOLDER**, with two 1-amp. fuses for mains leads (illustrated below) 3/6.

**WANDERFUSE**, combined wander plug and fuse, with 150m/a. fuse, 1/6.

**SPARE FUSES**, in two lengths, H.T. ratings 60 m/a., 150 m/a. and 1/2 amp), 3/8 in. long; mains ratings, 2, and 3 amp), 1 1/4 in. long.

All ratings are sold at 6d. each





**£5 cash or less than 2/6 a week  
—yet made by Columbia.**

Price includes 2 valves, batteries, accumulator, loudspeaker.

**Now read what people say about it.**

**From Cornwall.** "All major transmissions received at good volume on medium wave band . . . . . quality of tone is pleasing."

**From Exeter.** "Stations came in at every movement of the dial."

**From West Scotland.** "A great little set for the money . . . . . equal to any straight 3-valve set on the market last season."

**Free trial in your home of this and other models.**

A postcard to Columbia, 102<sup>B</sup> Clerkenwell Road, London, E.C.1 will arrange a demonstration free and without obligation in your own home. Other models include a 2-valve all-electric set at 10 gns., a 4 valve set with moving coil speaker at 23 gns., and a screen-grid portable at 17 gns.

# Columbia RADIO

**This is a Columbia year!**

**A  
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**"WE TEST FOR YOU"**

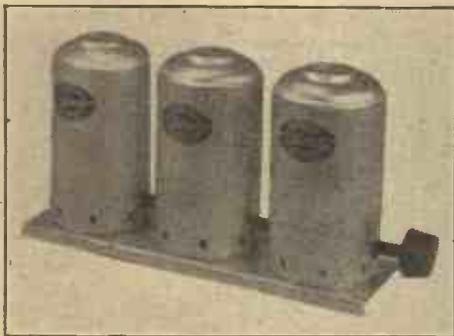
(Continued from page 1214)

to 4.1 volts with a load of 2 amperes, and 3.8 volts with 4 amperes.

It will be seen from the above data that the unit is suitable for receivers employing three or four valves, and having a total milliampere consumption of the order of 26 to 30 milliamperes. If used with receivers requiring less high-tension current than the above it should be remembered that the voltage on the power tapping will be considerably higher than the value mentioned above. The overall dimensions of the eliminator are 9 1/4 in. by 5 in. by 3 1/2 in. It can thoroughly be recommended

**Varley Square-peak Coils**

**T**HE Varley Square-peak canned coils have been designed and produced with the object of enabling good selectivity with good quality to be easily obtained. In this



The new Varley coil set

range of coils there is a band-pass aerial filter of the mixed variety and inter-valve coupling coils of the transformer and tuned-grid types. These coils are matched to a high degree of accuracy, thus enabling all the tuned circuits of a multi stage receiver to be ganged on one control.

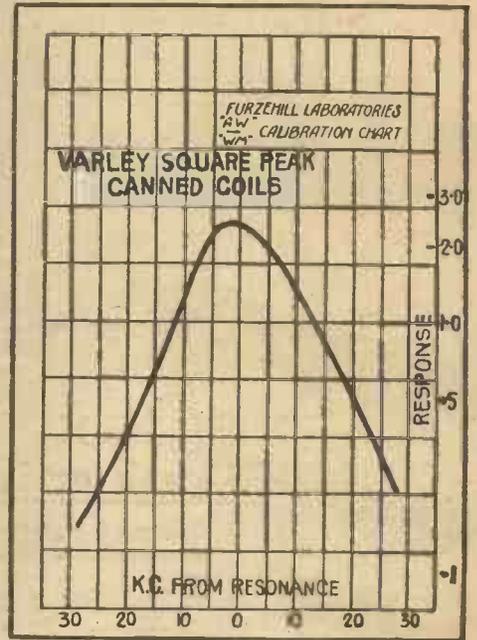
The short-wave section of the coils is a single layer solenoid wound on a paxolin former of 1 1/4 in. diameter. The long-wave winding is accommodated on a slotted former at the bottom end of the coil. The coupling between the coils in the band-pass filter is provided partly by a fixed condenser of .02 microfarad capacity, and partly by a small coupling coil which is actually the bottom end of the primary coil.

The base of the coil is of moulded bakelite and houses the wave-change switch. This latter has been designed with care and should give very satisfactory service. It consists of spring blades with special gold-silver contacts, which are caused to rub together each time the switch is operated, thus a cleaning action is obtained and no trouble from dirt should arise. The switch is arranged in such a way that several coils can be ganged together on one control. Complete screening is provided with each coil and each set of coils is supplied mounted on a metal base and with the wave-change switches ganged.

A test was conducted on a set of coils which consisted of an aerial band-pass filter and a tuned grid coil. These coils were wired into a circuit using a Mazda SG215 valve, and overall resonance curves were plotted at different points over the wavelength range. The ganging was found

to be excellent at all points. It is, however, recommended that a condenser with trimmers be used in order that stray capacities may be balanced out. On the chart accompanying this report is plotted a resonance curve of the complete H.F. circuit, the figures being obtained at 250 metres. It will be seen that the double-hump feature of the filter circuit is not apparent, this being masked by the peak tuned-grid.

(Continued on page 1218)



Resonance curve of the Varley coil set

# 9 SOVEREIGN SPAGHETTI RESISTANCES SPECIFIED IN THIS WEEK'S "A.W."



IN "FOUR STAR 4" AND "GRAMO-PLAYER"

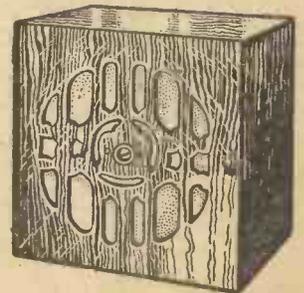


Ohms	Price	Ohms	Price
600	.. 4d.	20,000	.. 10d.
1,000	.. 4d.	25,000	.. 1/-
2,000	.. 7d.	30,000	.. 1/-
3,000	.. 7d.	40,000	.. 1/-
4,000	.. 7d.	50,000	.. 1/1
5,000	.. 7d.	60,000	.. 1/1
10,000	.. 9d.	80,000	.. 1/3
15,000	.. 10d.	100,000	.. 1/3

**S**IX in the "Four Star 4"; three in the "Gramo-player." The quality and value of Sovereign Spaghetti Resistances is proved for all time by these record specifications—and they are the lowest priced spaghetti resistances on the market. This is typical of the quality of all Sovereign radio components, and in building either of these sets you are SAFE in using Sovereign wherever you can.

FOR "A.W." SHORTWAVE UNIT

**L**OW price and quality are once more the dominant features in two more Sovereign specifications:—(1) The Sovereign 20/- Speaker. (2) The Sovereign Terminal Block. Both designed for utmost efficiency so vital on short-wave work. Wherever there's a Sovereign component to do the job, use it and be sure of good results.



Terminal Block, with highest insulating properties, each ... **6D**

Sovereign Twenty Shilling Speaker, complete in solid polished Oak Cabinet with harmonising fret and closed back. **20/-**

**SEND FOR THE SOVEREIGN CATALOGUE**

If your dealer cannot supply, send direct to:  
**SOVEREIGN PRODUCTS LIMITED,**  
52-54 ROSEBERY AVENUE, E.C.1  
Telephone: Clerkenwell 2788/9



# PIFCO ALL IN ONE RADIOMETER

VALVE TEST

COMPONENT TEST

CIRCUIT TEST

TESTS EVERYTHING

TO H.T. ON SET

TOTAL DISCHARGE from BATTERY

MIAMPS DISCHARGE ON ONE TAPPING

**12/6**

**PIFCO ALL IN ONE**

*The Sherlock Holmes of your Radio*

The Pifco "All-in-One" Radiometer is patented throughout the world. There is no instrument made like it. You must have one to secure the best reception.

Ask your radio dealer to demonstrate it. Standard Model for Battery-operated sets 12/6. De Luxe Model for Electric Receivers £2 2s. Booklet free from Patentees: Pifco Ltd., High St., Manchester.

Ⓟ P.4

Advertisers Appreciate Mention of "A.W." with Your Order

**"WE TEST FOR YOU"**

(Continued from page 1216)

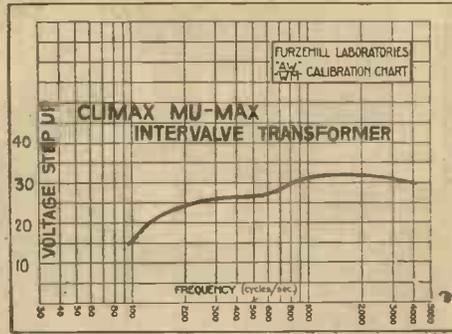
The action of the filter can, however, be seen in the slightly lop-sided shape of the curve, which incidentally indicates that the ganging of the circuit as arranged for test was not quite accurate, and in the fact that the slope of the curve for a range of about 10 kilocycles around the resonant point is much less than elsewhere.

When wired into an actual receiving circuit, the coils behaved very well, the overall sensitivity being good, while the selectivity was adequate for all normal uses. These coils are well made, and should make a general appeal.

**Climax Mu-Max Transformer**

WE have recently tested one of the new Climax Mu-Max inter-valve transformers. The construction of this transformer is a little out of the ordinary in that the core is bolted to a bakelite moulding which also carries the necessary terminals, forming at the same time the top of the transformer case. The core is built of laminations of a high-permeability iron, no air gap being used. The windings are accommodated on one leg. The transformer is housed in a metal casing provided with lugs at the bottom for baseboard mounting. A test was carried out on the transformer to ascertain the standard of performance when connected in an actual amplifying circuit. An L210 type valve was used for the test, the steady anode current being

approximately 2.5 milliamperes as recommended by the makers of the transformer. The curve accompanying this report shows



Performance curve of the Climax Mu-Max

the overall voltage step-up obtained; the effective step-up ratio of the transformer is given at any point by dividing the voltage step-up as read from the curve by 15.6, the amplification factor of the valve. It will be seen that the average step-up to be expected from a low-frequency amplifying stage using this transformer is approximately 30 over the range from 256 cycles to 4,000 cycles. The inductance of the primary with no D.C. flowing in the winding was 12.7 henries, while with 2.6 milliamperes direct current it was 9.2 henries. The D.C. resistance of the primary was approximately 800 ohms.

Let "AMATEUR WIRELESS" solve your wireless problems

**VOLUME CONTROL**

THE high amplification factor of the modern screen-grid valve has introduced new difficulties in volume control. The ordinary method of varying screen-grid volts, or inserting a potentiometer resistance across one of the tuned couplings, is not sufficiently elastic, if used alone, to reduce the volume from a long-distance set to a reasonable value when working on the local station. It is usually necessary to combine at least two such controls, and to gang them together. Another effective plan is to use a "short-distance" switch for cutting out one of the amplifying stages when receiving the local programme.

M. B.

**MODERN "STATIC"**

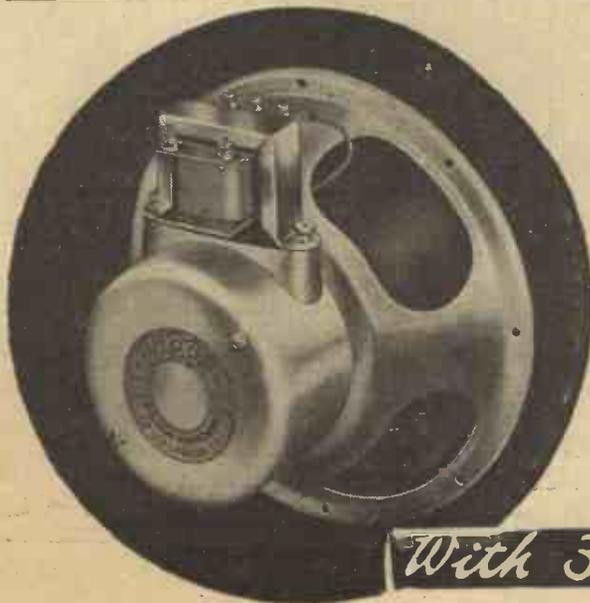
IN the early days of wireless, static was caused mostly by storms. It still is, of course, but nowadays it is largely overshadowed by the man-made variety radiated from electrical apparatus of all kinds. Wherever sparking occurs in any electrical appliance, there is always a danger of serious interference with broadcast reception. The area of interference is increased if the sparking circuit is connected to anything that can act as a radiator, such as the overhead wires of a tram or trolley bus. For this reason choke coils are now being inserted between the driving motor and the trolley, in order to localise the disturbance as much as possible.

B. A. R.

**EPOCH REAL PIONEERS YEARS AHEAD**

**PERMANENT MAGNET**

*in experience, research and design*



**MODEL J.I.** 18 months before the many so-called pioneer claims to the production of the Permanent Magnet

Moving-Coil Speakers, Epoch designed, developed and manufactured the first practical Permanent Magnet. Epoch's leadership in this class is definitely established by a new standard of comparison for performance and price set by Model J.I. The lowest price Permanent Magnet Moving-Coil Speaker on the market. Comparable to instruments costing far more. The 3-Ratio Transformer fitted makes it ready to work instantly from any set with Pentode or Super Power output. When purchasing a Moving-Coil insist upon EPOCH.

Send for Free Art Booklet A.S.5.

Complete with aluminium covered cobalt steel magnet, one-piece moulded linen diaphragm and 3-ratio input transformer. Ask your dealer for it. He will gladly demonstrate this or any Epoch Model. If you have any difficulty send for nearest dealer's name or call at our new showrooms and hear it.

**45/-**

**NEW MODEL—STILL MORE SENSITIVE!**

**EPOCH RADIO MANUFACTURING CO., LTD.** EXMOUTH HOUSE, EXMOUTH STREET, E.C.1  
At the junction of Rosebery Avenue and Farringdon Road.

*With 3-Ratio Input Transformer*

DX. 43

RADIO TIMES

DAVENTRY

102 kc/s (1,554.4 m.)

PROGRAMME

THE REVUE CHORUS and ORCHESTRA,  
Conducted by  
STAFFE

11.15 a.m.

11.30 Time  
cast

11.45-11.0  
N

12.0

12.45

(Organist to the Society)  
Relayed from ALL SAINTS',  
MARGARET STREET  
Introduction and Passacaglia  
Reger  
(Note on page 12)  
Adagio ..... Lenarc  
Grand Choeur } (7th ) Guilmiant  
Intermezzo... } Sonata)  
Finale .....  
Nocturne ..... Bonnet  
Minuet Scherzo ..... Jongen  
Fantasy—Toccata  
Leslie Woodgate

Time Signal, Greenwich, at 1.0

1.30-2.30 Light Music

FRASCATI'S ORCHESTRA  
Directed by GEORGES H.  
From THE

3.30 Symph

Relayed from

THE BOURN

Conductor,

EDA K

Porsian Dan

Violin Conce

Allegro;

Irish Symphon

Allegro; Allegro;

(Note on page

Time Signal, Greenwich, at

4.45

REGINALD NEW

At THE ORGAN of THE BEAUFORT CINEMA

Relayed from WASHWOOD HEATH, BIRMINGHAM

Coronation March, The Prophet ..... Meyerbeer

Selection, The Desert Song ..... Romberg

Sanctuary of the Heart ..... Kaelbey

Introduction, Act III, Lohengrin ..... Wagner

5.15

'The Children's Hour

by ETHEL MALDEN

Exide Batteries, Clifton Junction, near Manchester. Branches at London, Manchester, Birmingham, Bristol, Glasgow, Dublin and Belfast.

Every item's a better item  
if you've a **Drydex**



Some  
Written, complete  
produced by

ERNEST

Additional



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cert  
IE (Sopra  
ORCHEST  
lucted by  
N CLIFFOR  
No. 1 in C B  
A ro; A  
Allegro  
E and Orche  
r (Toll me n  
)  
A  
ly (Octet) fr  
struments .....  
Allegro moderato;  
with Variations; M  
two Trios; Finale;  
NOEL EADIE  
Songs

★  
**Makers of the world  
famous Exide offer  
greatest dry battery  
value**

Obtainable everywhere from all good dealers in sizes and types to suit every wireless set. Also for torches, pocket lamps, cycle lamps and bells.

Please mention "A.W." when Corresponding with Advertisers



# IN MY WIRELESS DEN

Weekly Hints — THEORETICAL  
CONSTRUCTIONAL & BY  
**W. JAMES**

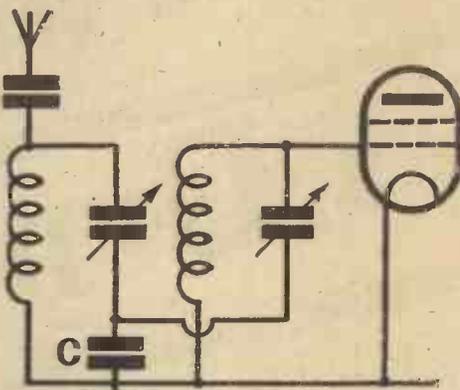
### Band-pass Condensers

**I**N filter circuits of the type shown in the accompanying diagram it is usual to specify a non-inductive type fixed condenser at c.

The coils in the two circuits are loosely coupled magnetically and there is a further coupling which is provided by the condenser. Both couplings are arranged to give just that amount of coupling of the circuits that the desired band width is maintained as uniformly as possible over the tuning range.

If the condenser used at c has inductance as well as capacity the chances are that the band width will vary over the tuning range. The width of the band will certainly be different from that intended by the designer. It is, therefore, necessary to use a suitable condenser and to connect it with as short wiring as possible.

Some condensers have relatively little inductance and are called non-inductive.



Points about this band-pass circuit are dealt with in the accompanying paragraph.

Others have inductance as well as capacity. Look for the words *Non-inductive* on a condenser that is to be used in a filter, therefore.

The capacity often used is .01 microfarad. In particular instances the results as a whole may be better when smaller or larger capacity is used. An interesting hour or two may be spent in noting the effect of using different capacities.

### A Transformer Delusion

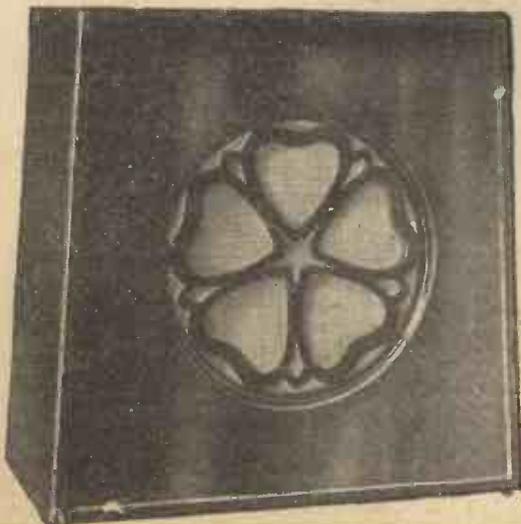
It is commonly supposed that the thin case fitted to some makes of low-frequency transformers acts as an effective shield.

This, generally speaking, is not so. In order properly to shield a component from 50-cycle alternating currents, iron of about 1/8 in. thick at least would be needed. Complete shielding is not always necessary,

(Continued on page 1222)



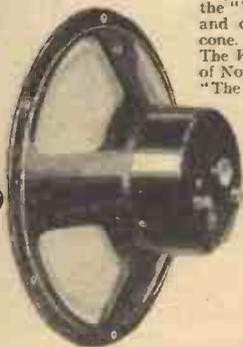
**Reproducers  
are now available  
in attractive  
Cabinets**



**THE R. & A. "TYPE 40" REPRODUCER** more nearly approaches moving-coil performance than any speaker of its type. Amazingly sensitive, it reproduces the veriest whisper, and yet handles large inputs without a trace of "chatter." A test will readily convince you of its superiority. Dimensions, 14 in. dia. by 5 1/2 in. deep.

**THE R. & A. "FIFTY"** has been produced to meet the demand for an R. & A. "Type 40" with a smaller cone. The only difference between it and the "Type 40" lies in the design and dimensions of chassis and cone.

The *Wireless World* Test Report of November 18, 1931, states:—  
"The reproduction of speech is comparable with that of a moving coil... the reproduction of music... is beyond reproach." Dimensions: 10 in. dia. by 4 1/4 in. deep. Diameter of diaphragm, 8 in.



Ask your dealer to show you R. & A. Reproducers. If out of stock he can obtain at short notice. Write us for illustrated literature, sent post free on request. It contains particulars and prices of R. & A. Chassis and Cabinet Models, also full specifications.

**THE R. & A. "100" PERMANENT-MAGNET MOVING-COIL REPRODUCER** is sweeping all before it. For sheer beauty of tone, brilliant response throughout the whole audible range, and remarkable sensitivity, it has been acclaimed the "best yet." Construction and finish are superlative. The dustproof cover to protect the cobalt steel magnet is a refinement not found in many moving-coil speakers. Dimensions, 10 in. dia. by 3 1/2 in. deep. 3-ratio Output Transformer to suit all Power Valves, 12/6 extra.

**45/-**



REPRODUCERS & AMPLIFIERS LTD.  
FREDERICK ST., WOLVERHAMPTON



**"IN MY WIRELESS DEN"**

(Continued from page 1220)

of course, but it is as well to remember that thick iron is needed for good magnetic shielding.

A metal shield of thin metal does act as an electrostatic screen and is valuable. You may find that a set howls until the shield of the transformer is earthed, which proves that the shield has some effect.

Some transformers are made with the metal cover touching the core and in others the two are insulated. You can never be quite sure whether earthing both is going to help matters and so the experiment should be tried.

The detector valve and its grid circuit is a very sensitive part of a set. A hum is frequently introduced at this point owing to the position of a part such as a transformer carrying low-frequency currents. An electrostatic shield will avoid this trouble. With a metallised valve the chances of hum are minimised, which is an advantage of this type.

**A Leaky-grid Matter**

A reader has asked why the anode current of a leaky-grid type detector falls off when a signal is tuned in, while in the case of an anode-bend detector the anode current increases.

The point is that in the leaky-grid detector the grid is held at a certain voltage about zero by the grid leak and therefore a steady current flows in the anode circuit. But when the signal is tuned in, the grid is made more negative. Its negative

bias is, in effect, increased according to the strength of the signal. Therefore the anode current is reduced, as the current always falls when the negative bias is increased.

In the case of the anode-bend detector the anode current is small to start with, as the negative bias is given such a value that the current is small. When a signal is brought in, the current is increased because the average value of the negative bias is reduced. With less bias the current increases.

The change in the value of the anode current is, in fact, a measure of the strength

of the carrier wave of the signal being received.

**Condensers Which Give Way**

Small fixed condensers of the mica type may not withstand a working voltage of 200 or so. I had further proof of this when testing a new set in which I had temporarily fitted two small high-frequency by-pass condensers.

Both short-circuited in a few minutes. If a fuse had not been fitted the rectifier might easily have been damaged.

Much trouble is caused by using condensers not designed for the voltages to which they are subjected. The chances are that the voltage at some period during switching on or off is greatly in excess of the normal working pressure. The result is that the condensers fail to stand up to the extra pressure applied to them.

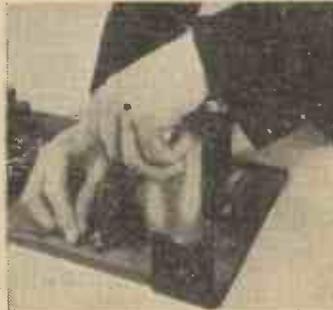
In the case of the larger condensers, the makers provide a wide margin between the safe working voltage and the test voltage. If the condenser is used in a circuit the voltage of which is not in excess of the stated safe working voltage then no trouble should be experienced.

The life of condensers properly used is nearly always many years. Some of mine are eight and nine years old and still appear perfectly satisfactory

On page iv of the special coloured cover this week, the telephone number of Messrs. Britannia Batteries, Ltd., makers of the Pertrix batteries, is given incorrectly. The number should be Temple Bar 7971, and London readers should make a note of this.

**USING SPAGHETTIS**

Some spaghetti resistances have rather frail end connections. This means that you must not use too much



force when tightening down the terminal heads for otherwise the end of the resistance wire may break away from the tag.

**FIRST and LAST—remember the AERIAL and the SPEAKER are the two essentials upon which EVERY SET depends for actual reproduced result!**

**WEEDON ARE THE POWER LINK THAT GUARANTEES IMPROVED RECEPTION**



THE



**AERIAL**  
(Bakelite Case)



Banishes for ever inefficient, unsightly, and troublesome outdoor and indoor aerials! **Remarkable Results.**—The receptive capacity of the XZIT Aerial has been scientifically proved by expert test and reveals the astonishing fact that, by comparison with the most efficient outdoor (pole) aerial, the XZIT achieves an increased selectivity that adds new stations at full strength to your set's present range. Volume and quality are vastly improved. Don't rob your set of its efficiency—get the last ounce with an XZIT.

Model A.—For super-hets. (mains or battery drive) and D.C. mains sets. Price **10/6** (Post free 10/10).

**KIT OF PARTS** complete of A.W. Amateur's Linen Speaker (only official suppliers), ready for building. 19 6s. Carriage paid. Irish Linen 40 in. wide, 5/6 per yard (post free, 5/9). Set of 4 Thumb Screws, 2/4 (post free 2/6). Frags Aerial Wire, enamelled, stranded, 9/40 and 27 49. Price per set of 2 reels 6s. (post free 6/4). Obtainable from all Radio Dealers. If out of stock apply to: —WEEDON & CO., LTD., 26a Lisle Street, London, W.1.

**"GOLDEN DOPE"**

The finest dope obtainable for all linen speakers.

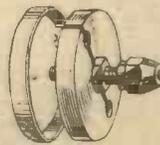


Recommended and used by "Amateur Wireless." Improves the tone of the speaker as it matures. Bleaches out, easily applied. Sold in airtight tin. Price ... **1/-**

(Post free 1/3).

**"ADAPTADISK"**

GRIPS ANY SIZE OR ANGLE OF CONE LIKE A VICE. Scrap those cone washers that rattle and buzz!

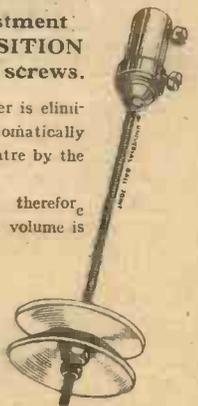


Gets every ounce of efficiency out of your unit. Pure, clear reproduction free from distortion due to ill-fitting washers. Wonderful improvement that will delight you. Complete with universal reed connector and simple instructions. Price ... **1/6** (Post free 3/8).

**SELF-CENTRING DRIVING ROD**

Automatic Adjustment. LOCKED IN POSITION by rattle-proof set screws.

All side stress and chatter is eliminated and the unit is automatically adjusted to true dead-centre by the ingenious driving rod. Greater toning and therefore greater tonal beauty and volume is easily accomplished merely by tightening up one nut. Get one now and build or reconstruct the finest speaker you have ever heard. Price **1/6** (Post free 1/8).



**ACCESSORIES.**—Specially woven guaranteed Irish Linen 40 in. wide, 5/6 per yard (post free, 5/9). Set of 4 Thumb Screws, 2/4 (post free 2/6). Frags Aerial Wire, enamelled, stranded, 9/40 and 27 49. Price per set of 2 reels 6s. (post free 6/4).

## “THE ‘A.W.’ RECORD PLAYER”

The significant point—and the one which says all that need be said about the quality of output—is the designer’s recommendation of



Push-pull  
Transformer  
Type A.F.3c  
29/-

THE  
**FERRANTI**  
A.F.3c TRANSFORMER

AND THE

**FERRANTI**  
O.P.M.I.C. TRANSFORMER

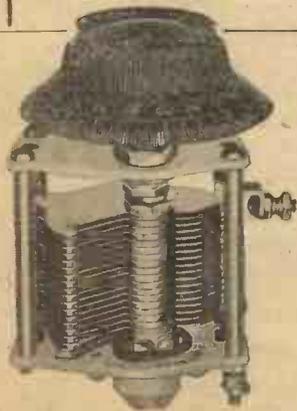


Push-pull  
Transformer  
Type O.P.M.I.C.  
26/6

FERRANTI LTD., Head Office & Works: HOLLINWOOD, LANGS. London: Bush House, Aldwych, W.C.2

## EFFICIENCY with ECONOMY

Polar—known wherever condensers are used—combines both. Highest possible working efficiency, the result of correct design and careful construction, produced at a price which makes it easily obtainable.



**POLAR “No. 2”**

The combination of Fast and Slow motion in this condenser enables quick and accurate tuning. The rigid construction and bonded rotor vanes ensure long service with permanent accuracy, while the Polar ball-bearing action gives smooth, easy control.

.0003, .00035, .0005 **6/6**

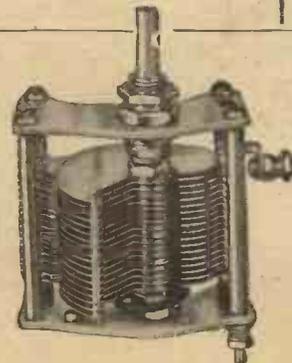


**POLAR DIFFERENTIAL CONDENSER**  
Direct drive. Solid di-electric. Constructed of highest quality materials. Smooth action gives very accurate control. Insulated spindle. Supplied with knob. **3/-**  
.0001, .00015, .0003, each side

24 Page Catalogue “A” free



**CONDENSERS**



**POLAR “No. 4”**

A Direct Drive condenser with ball-bearing action. Aluminium vanes and end plates. Bonded rotors. Rigid construction with four brass pillars.

.0003  
.00035  
.0005 **4/-**

Wingrove & Rogers, Ltd. 188/9 Strand, London, W.C.2

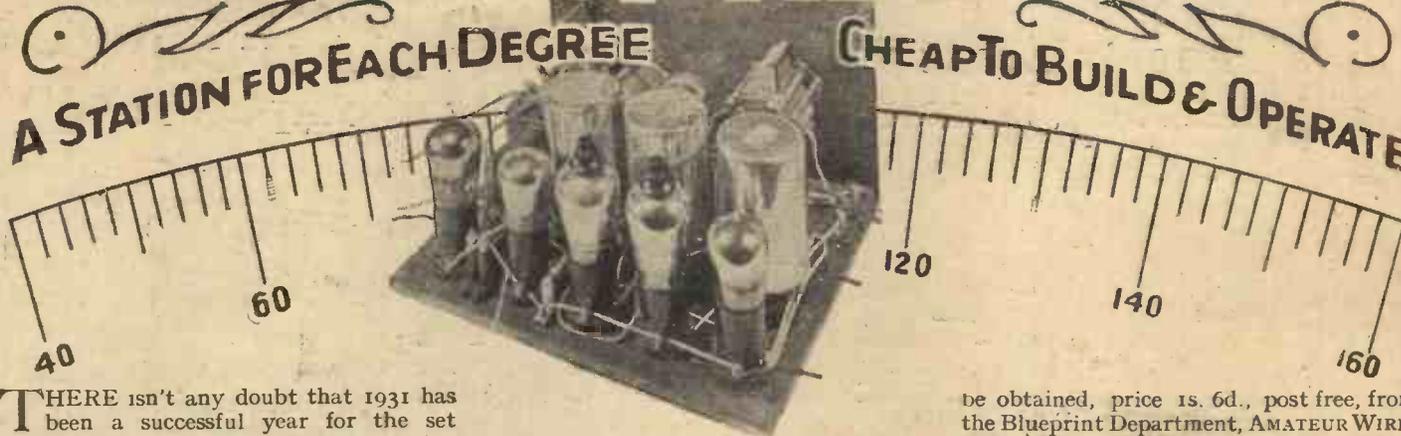
Polar Works, Old Swan, Liverpool

Please Mention “A.W.” When Corresponding with Advertisers

# THE SET OF THE YEAR!

A STATION FOR EACH DEGREE

CHEAP TO BUILD & OPERATE



THERE isn't any doubt that 1931 has been a successful year for the set constructor. Although European station jamming has increased, set design—at least, so far as AMATEUR WIRELESS sets for home constructors are concerned—has proceeded apace and with modern sets there need be no serious selectivity troubles.

## A High Peak

One of the high peaks of the year, a record-breaking receiver, is the "Century Super." Our Research Consultant produced this in the late spring and it was described in AMATEUR WIRELESS Nos. 463-466.

It was the first amateur-built set claimed to receive one hundred stations and it created what may be frankly described as a furor.

Even the non-technical press was enthusiastic about this new type of outfit which,

in the hands of a beginner, could be relied upon to bring in station after station free of interference. The *Daily Mail* and the *Daily Express* gave glowing announcements and manufacturers of components for the "Century Super" had to make rapid increases in their production arrangements to cope with the exceptional demand.

**IF YOU ARE CONTEMPLATING BUILDING A SET—STUDY THE BLUEPRINT LIST ON PAGE 1248 THERE IS A SET FOR EVERY NEED**

In order to make the construction as simple as possible for readers, full-size plans were included in the issue. A full-size blueprint has since been prepared and can

be obtained, price 1s. 6d., post free, from the Blueprint Department, AMATEUR WIRELESS, 58-61 Fetter Lane, London, E.C.4.

## Popular Features

There are many features of the "Century" which account for its exceptional popularity, apart from the fact that, being a receiver of the super-het type, it has amazing reaching-out properties.

It is compact and easy to control, there are only two main tuning knobs, a volume control and wave change and filament switch on the panel. It works from a frame aerial and so all difficulties in the way of erecting a suitable outdoor wire, or a lead arranged round the room, are overcome.

It uses ordinary valves, two screen-grid valves, two normal triodes, and a power valve. These are the ordinary valves, some of which are used in any straight-forward three- or four-valver and so there is the minimum of expense in changing over to the "Century." No special valves are needed.

The super-het circuit is of a type in which there are two intermediate stages and so the most is made of the available H.F. amplification. There is a separate oscillator valve.

## Economical

The set is economical, in spite of the fact that it is a six-valver. Valves nowadays are in many cases cheaper than large components, such as special coils and transformers, and by having an efficient six-valve circuit the most is made of amplification which one can get in any set without introducing much background noise.

Running costs are low because, in spite of the six valves, the anode current consumption is small, the power valve specified takes only 5 or 6 milliamperes. A double capacity 120-volt battery is suitable. This is a big advantage for battery users and, for mains users, means that a relatively inexpensive unit will do.

Coming down to details, the "Century" incorporates a novel control of volume on radio reception and, by means of a simple modification, a gramophone pick-up can be added. Every detail that the discerning listener requires has been considered and incorporated—all at amazingly low cost.

Undoubtedly the set of the year!

## PHYSICAL JERKS BY WIRELESS



Health exercises are now being broadcast over both sound and television from the Baird television studios in London. Owners of television sets will be able to see demonstrations of morning exercises by Fred Dyer, the physical culture expert

# JUST IN TIME FOR CHRISTMAS

a new version of the famous

# REGENTONE ALL-ELECTRIC RECEIVER

*A gift your friends or your family will appreciate*



THE NEW REGENTONE 2V. A.C. ALL-ELECTRIC RECEIVER WITH BUILT-IN SPEAKER - - **£8-10-0**



THE REGENTONE 2V. A.C. ALL-ELECTRIC RECEIVER (WITHOUT SPEAKER) - - **£6-15-0**

Radio for your family, or your friends this Christmas. Luxurious yet inexpensive. A perfect gift . . . a perfect radio set, in two forms.

Here is a new version of the famous Regentone 2-v. A.C. All-Electric Receiver . . . in a handsome walnut-finish cabinet, with built-in loud-speaker. It costs, complete with B.V.A. valves, only £8 10s.

If you already have a good speaker, there is the original Regentone 2-v. All-Electric Receiver. What a remarkable receiver it is; giving National and Regional programmes at loud-speaker strength, as well as other British and Continental stations. Really keen selectivity . . . a few degrees on the dial cuts out any station. Simple to operate . . . there is only one tuning dial. In a handsome All-British walnut-finish bakelite cabinet, complete with B.V.A. valves. It costs £6 15s. Ask your local dealer for a demonstration and full particulars, or write for the FREE Regentone Art Booklet giving full details of Regentone products. (D.C. Mains Units from 35/-; A.C. Mains Units from 50/-).



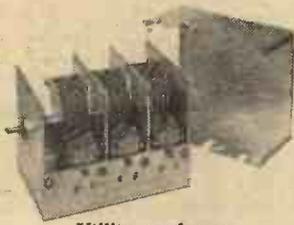
REGENTONE LIMITED, Regentone House, 21 Bartlett's Buildings, E.C.4.  
Irish Free State Distributors: Kelly & Shiel, Ltd., 47 Fleet Street, Dublin.

Tel.: Central 8745 (5 lines).

MORE GIFT SUGGESTIONS

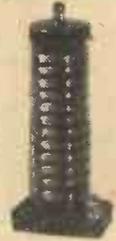


Wearite super-het. coil set

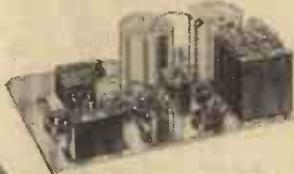


Utility condenser

Ready Radio Instamat transformer



Ready Radio super-het. choke



Cossor Melody Maker Chassis



Pertrix high-tension battery



Telsen reaction condenser



Epoch permanent-magnet speaker



Zonophone kit set in cabinet



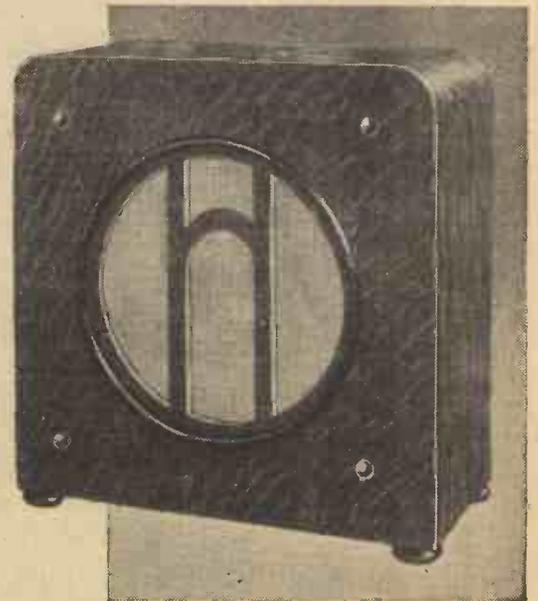
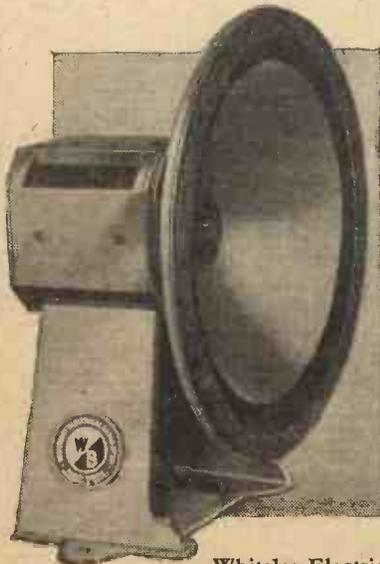
Columbia transportable



Junit mains transformer

# A P.M.3 for Christmas

The GIFT OF GIFTS—the ideal present. No need to enquire what voltage your friend uses—no mains or batteries are needed with the W.B. PERMANENT MAGNET Moving Coil Speakers. Let him experience the wonder of true moving coil reproduction. Have you seen the test report on PM3 by "Wireless World" . . . "both speech and music of a very high standard." And "Radio for the Million" recommend it very strongly for the V3 Kit Set.



W.B. P.M.3. for the V3

**45/-** Three-ratio output transformer extra 7/6

Handsome Grained Oak Cabinet to suit. Price 30/-

Write for interesting art booklet "Speaking of Speakers" (post free) giving full information of Models P.M.1. £5.5.0, P.M.2. £3.10.0, and the new W.B. Popular Cone Speaker, complete with Cabinet, 22/6. Also W.B. Valve-holders, Switches.

Whiteley Electrical Radio Co., Ltd., Nottingham Rd., Mansfield, Notts.  
Irish Free State Distributors: Kelly & Shiel, Ltd., 47 Fleet Street, Dublin.



# A DOUBLE LIFE !

Wireless battery revives after long disuse

## LONDONER RELATES REMARKABLE EXPERIENCE

If you have a wireless set, the letter below from a well-known wireless user will interest you.

Dear Sirs,

*I am using a 5-valve, battery operated portable wireless set of a well-known make and last November I purchased a 99 volt EVER READY 'Winner' Battery and used it continuously daily until March (5 months), when it began to run down, and I thought it was about time to renew the battery.*

*I purchased a 100 volt battery of another make and after only two months' use found that it was giving very poor service and as I had not thrown away the EVER READY I again put it into use.*

*After lying idle for nearly three months, it registered 65-70 volts and when I replaced it on the set the results were extremely satisfying, many foreign stations being obtained at full strength. It is now in constant use and giving good service after all this time, much better than the new battery which cost exactly the same as the 'Winner.'*

*Nothing else but EVER READY for me in future.*

Yours faithfully,

L. N. C., London, W.C.1.

(This letter may be inspected at the offices of the Company.)

~~~~~

What Mr. C. has discovered is what regular users of EVER READY batteries have been saying for years past. EVER READY batteries not only provide the most perfect reception, they provide it for the longest time! That is why it will pay you to use the EVER READY battery; you will find an EVER READY battery made to power to perfection every kind of wireless set, portables included. Write to-day for the EVER READY list (free), and ask for the battery printed opposite your set. Every EVER READY battery is made by an exclusive process, and is guaranteed to give satisfaction by the firm which has been making batteries for over 29 years.

THE EVER READY CO.  
(GT. BRITAIN) LTD.,  
HERCULES PLACE  
HOLLOWAY, LONDON, N.7.



**THE BATTERY  
THAT LASTS A  
LONG TIME**

## The Best Records of the Year

In order that readers may be assisted in their choice of those extra records which will be bought for the Christmas festivities, I am reviewing the outstanding issues of the year. It is a pleasurable retrospect—this selection from a store which contains so many good things. Here, then, are some of the best, which are sure to give pleasure

### ORCHESTRAL

First, the pieces that are vaguely described as "good music." I shall interpret these as those compositions which have stood the test of time and are as strong in their appeal as when the great composers wrote them. Here they are:

**The Fourth Hungarian Rhapsody, 6s. COL LX132**  
A sumptuous feast of music; a narrative of tuneful melody. Nobody can remain unmoved by this performance by the Hallé Orchestra.

**Sonata Pathétique (2nd movement) and Moonlight Sonata (1st movement), 4s. H.M.V. C2234**  
Both popular; it would be difficult to find anyone who did not wish to hear them again and again.

**La Gazza Ladra Overture. Polydor R21304**  
A little-known, but most fascinating, jolly piece. Would cheer anybody.

**Rubinstein's Melody in F and Romance in E Flat, 2s. 6d. H.M.V. B3783**

I make no apology for mentioning this. You have it already? Never mind—hear *this* record.

**Voices of Spring, 4s. COL DX266**  
Strauss at his best. The same flowing, lovely melody, but a welcome change from the "Blue Danube." A real bargain, this.

**Barber of Seville Overture, 4s. PARLO E11148**  
A most pleasant mixture of music that shouts good fellowship. The Berlin State Opera Orchestra takes you right along with it.

**From the New World Symphony, Dvorak, 3os. H.M.V. D1893-7**  
A real luxury, these five records. There is three-quarters of an hour's sheer delight in them. There's nothing "highbrow"—nothing that cannot be understood. Like a book of good stories, you can dip into this work to satisfy any mood. I know of no "big" piece more likely to please thousands.

**Eine Kleine Nachtmusik, 12s. COL LX144-5**

Here is Mozart in very delicate, pleasing music. Hear the "Menuetto" on the second record and *then* say you don't like chamber music!

**Carnival of the Animals, 18s. H.M.V. D1992-4**  
Saint-Saëns' famous musical joke! Perhaps the funniest thing ever composed. The youngsters will revel in it, so will the grown ups. Try it at a party; it will be the success of the evening.

Now for the really light orchestral records. The good ones run into dozens, but here are one or two safe purchases:

**From Offenbach's Sample Box, 4s. H.M.V. C2208**  
Selections by Marek Weber's Orchestra. And you will know at least three of the tunes, all of which go with a fine swing.

**Bin Kein Hauptmann, Bin Kein Grosse Tier, 2s. 6d. H.M.V. EG1737**  
A martial, rousing tune with a slow haunting contrast on the other side, "Sieben Sterne Hat Der Grosse Bär."

**Under the Bridges of Paris and Vienna, the Town of My Dreams, 2s. 6d. PARLO R969**

An old-fashioned, tuneful thing. You will find yourself humming the first for days after.

**While Hearts are Singing and Toujours l'Amour in the Army, 1s. 3d. IMP 2547**

Two good tunes from *The Smiling Lieutenant*. Gandino and orchestra put these over in splendid style.

**Serenade (Heykens) and Clockwork Courtship, 2s. 6d. BRUNS 1149**  
The most pleasing performances of these charming tunes. A most delightful record.

### BAND

These have to be *really* good to find universal favour. Here are three outstanding records:

**The Mill on the Rock, 4s. COL DX259**  
Perhaps the best band record of the year. The Wireless Military Band give a marvellous performance.

(Continued on page 1230)



P4100, one of the new Tungram range of high-power output valves, will be found extremely useful in gramophone or radio amplifiers, or where a very large output is required. Using the P4100 the undistorted output of the amplifier is 3,000 milliwatts or more. By connecting two or more valves in push-pull or parallel an even greater output can be obtained. The filament can be operated from a 4-volt accumulator, or from the secondary winding of a suitable transformer. At an anode voltage of 400 volts, at which the P4100 can be operated, the grid-bias required is 35 volts and it consumes 35 m.a. Price 17/-.

Write for further particulars of the complete new range to Dept. A.W. Prices from 5/6 to 19/-.

# P4100

## A NEW

# TUNGSRAM

# HIGH POWER

# OUTPUT VALVE

# TUNGSRAM

TUNGSRAM ELECTRIC LAMP WORKS (GT. BRITAIN), LTD.  
Radio Department, Commerce House, 72 Oxford Street, London, W.1

Makers of the famous Tungram Electric Lamps.

I.F.S. Organisation, Tungram Lamps and Radio, Ltd., 11 Burgh Quay, DUBLIN.

Branches in Birmingham, Bristol, Glasgow, Leeds, Manchester, Newcastle, Nottingham, Southampton.

Lamp, Valve, and Glass Factories: Austria, Czechoslovakia, Hungary, Italy, and Poland.

Tungram Photo-electric Cells: Nava "E" (for scientific measurement), £2 17s. 6d.; Nava "R" Red Sensitive Cell (for colour matching devices), £3 3s.; Nava "EH" (for talkie work), £3 13s. 6d.

# UTILITY TUNED THE THREE ★ 3

*Utility*  
**the logical  
 choice for the  
 4 STAR 4**

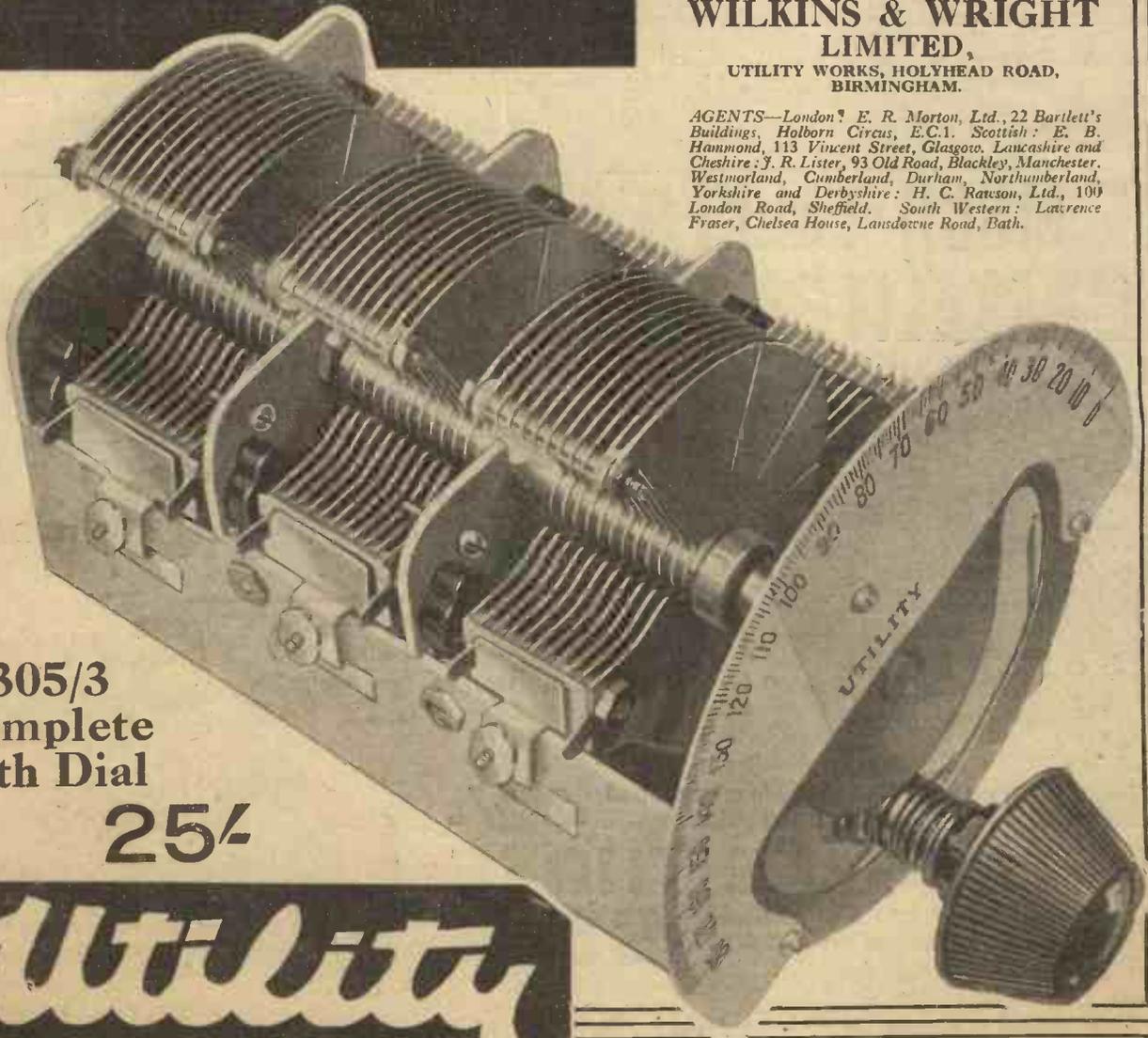
The better the ganged condenser the better the band-pass circuit will be.

Utility, the most accurately ganged condenser in the world, was recommended for the Three Star 3, that is why that circuit was so extraordinarily successful.

To ensure the same results from the Four Star 4 insist on Utility semi-screened W305/3, the designer's choice. When you ask for a Utility ganged condenser you are asking for the best, therefore insist on the best, for only the best will do.

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 LIMITED,**  
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**W305/3  
 Complete  
 with Dial**

**25/-**

*Utility*

Mention of "Amateur Wireless" to Advertisers will Ensure Prompt Attention

Belmont

**"THE BEST RECORDS OF THE YEAR"**

(Continued from page 1228)

**A Merry Hunting Day and Fire Star, 1s. 6d. WIN 5286**  
By the famous Black Dyke Band. Another ideal party record, with its vocal "A Hunting We Will Go." Finely recorded.

**INSTRUMENTAL**

I must confine to this heading pianoforte, violin, and 'cello. I know that handsaws and steel guitars have their devotees, but they are generally regarded as the musical equivalents of oscillation!

**PIANOFORTE**

**Valse Impromptu and Rondeau Favori in E Flat, 4s. COL DX294**  
Liszt and Hummel respectively. I am sure the playing and the wonderful recording will please. Ania Dorfmann has scored a triumph here.

**Andante Favori (Beethoven), 6s. H.M.V. D1874**  
A very beautiful composition played by Benno Moisevitch. A restful, soothing piece which is altogether delightful.

**VIOLIN**

**Gavotte in E Major (Bach), 2s. 6d. H.M.V. B3465**  
This, so delicately played by Isolde Menges, can be cordially recommended; it is a fascinating record.

**La Capricieuse (Elgar) and Waltz in C Sharp Minor (Chopin). COL LX137**  
Played by Huberman. Frankly, the second is not so good, but the Elgar piece more than makes up for it.

**'CELLO**

**Mazurka, Op. 11, No. 3 (Popper), and Musette (Bach, Pollain). H.M.V. DA1030**  
An amazing record by Casals. I believe most people will confess that they never knew a 'cello could give such music as in the first piece.

**PIANO AND VIOLIN**

**Duo, Op. 162 (Schubert), 18s. H.M.V. DB1465-7**  
Here are two masters at their best—Rachmaninoff and Kreisler. It is chamber music again, but I ask "explorers" who want something really good to hear it; they will not be disappointed.

**VOCAL**

First, one or two of the best of the older songs, some of which are of doubtful merit as artistic accomplishments, but which, when capably sung, still remain as popular as ever.  
**The Toymaker's Song and Tick-Tock, 1s. 1d. PIC 700**  
From the *Toymaker of Nuremberg*. Bernard Dudley not only

sings well, but acts well. His inflexions are commendable and rare. For children's delight, I don't know a better record.

**Patiently Smiling and You Are My Heart's Delight, 1s. 6d. WIN 5280**  
This, of course, was bound to find a place. Everybody has sung it. Best of all, I like this performance of Richard Terelli, tenor. He, again, makes you feel the song.

**Lover, Come Back to Me and Wanting You, 4s. H.M.V. DA1200**  
As songs, I am not enthusiastic about either, and yet I feel that I cannot omit this record. I suppose it is the glorious voice of Lawrence Tibbett that captivates one.

**Good Night and Pardon, Madame, 4s. PARLO RO20156**  
Tauber's best. Incidentally, by far the best songs in *Viktoria and Her Hussar*. They are in German, of course.

Now I want to recommend three gems of classical standing:  
**The Bell Song (Lakmé), 4s. H.M.V. DA1190**  
By Lily Pons, soprano. This is a truly amazing performance. The voice is perfect; the skill of the singer spell-binding.

The really humorous songs are few. The following are harmless, clever, and funny:  
**Shut the Door, 2s. 6d. BRUNS 1184**

Episodes overheard on the telephone. Well sung by two clever artistes.

**Radio Tit-bits, 1s. 6d. WIN 5351**  
Jenny Howard and Percy King do a fine little vaudeville turn—comedy and imitations.

**DANCE**

To do justice to this enormous class would require many pages. I have found, however, that people know just what they want in dance records. A certain title is demanded, and that is all. But here are a few I have much enjoyed as tunes and as good performances:

**Hawaian Stars are Gleaming and Two Hearts and a Waltz Refrain, 2s. 6d. H.M.V. B6007**

**Jueves (tango), 2s. 6d. BRUNS 1089**

**If You're Really and Truly in Love and I'm a Hundred Per Cent in Love, 1s. 6d. ZONO 5955**

**Wedding of the Garden Insects and Two Heads in the Moonlight, 1s. 6d. DEC F2395**

**I Miss a Little Miss, 1s. 6d. BRDCST 3057**

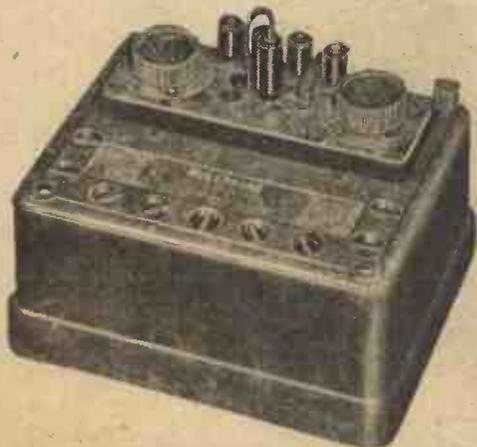
**When You Were the Blossom of Buttercup Lane, 1s. 6d. PAN 25030**

**Life is Meant for Love and Thank You Most Sincerely for That, 1s. 1d. PIC 718**

**Le Million and We're All Alone, 1s. 6d. STERNO 757**

RECORDER.

**THE MUCH TALKED OF ALL-BAKELITE A.C. ELIMINATOR**



**20 Mill. Output at 120 Volts**

Fitted with two variable wire wound resistances 0/120 and one fixed. Westinghouse rectification. 2 years' guarantee.

**60/-**

**10/- DEPOSIT**

**D.C. ELIMINATORS**

Model 1—25 Mill. Output at 120 Volts.

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Model 2—Fitted with two variable wire wound resistances 30 mill. output at 120 volts.

**42/-**

**NIGHTINGALE THREE**

Bakelite cabinet size 19" x 8" x 9" as illustrated, less valves, or 10/- deposit and 12 monthly instalments.

**£3-5**

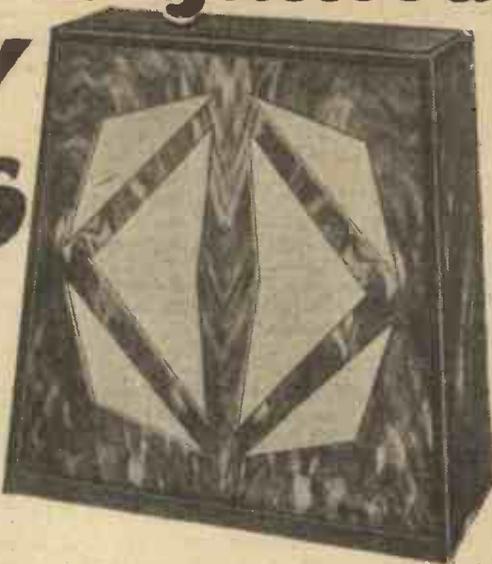
From all dealers or direct from:

**BULLPHONE, Ltd., New North Road, Barkingside, Essex**



'Phone: Chigwell 162.

# How to build a 2-guinea Loudspeaker for 5/6



Here is an intensely interesting development—the Home Constructor's Loudspeaker, which you can build for 5/6 and which for tone and volume compares with many 2-guinea speakers you may have heard. And from a distance of 2 feet away its handsome appearance closely resembles a solid walnut cabinet of fine finish.

## A WONDERFUL FREE GIFT to every purchaser of the NEW LISSEN SOLENOID SPEAKER UNIT

That extra loudspeaker for the other room is now available to you at small cost. See the completed loudspeaker above. That is what the Lissen free gift enables you to build. You buy the new Lissen Solenoid Cone Unit for 5/6. With it you will get—

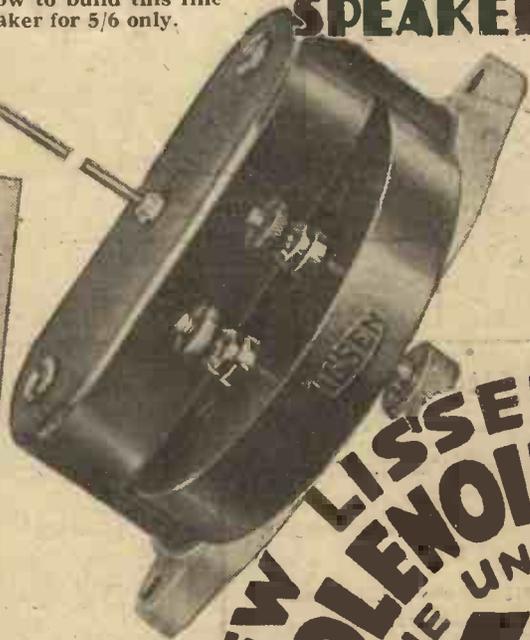
- (1) Special Cone Paper printed to exact size ready for cutting out and glueing up to make a 14-in. cone.
- (2) Full Instruction Sheet with complete diagrams showing each operation in the building.
- (3) Sheet, size 28 in. by 35 in., lithographed walnut grained panelling, printed on reverse exact shapes and sizes for cutting out, including front fret. You have only to stick this on to cardboard to build up cabinet shown above.
- (4) The postal tube in which these gifts are packed, and which is also used in the construction.

Anybody can easily build this speaker—the essential parts are all provided for you at an all-in cost of 5/6. The other sundries such as gum you probably have at home already.

**NOW YOU CANNOT FAIL TO MAKE A SPLENDID SPEAKER**

Go to your radio dealer now—he will tell you anything more you may want to know about how to build this fine loudspeaker for 5/6 only.

**LOOK WHAT YOU GET FREE!**



**NEW LISSEN SOLENOID CONE UNIT 5/6**

LISSEN LIMITED, WORPLE ROAD, ISLEWORTH, MIDDLESEX

Don't Forget to Say That You Saw it in "A.W."

# OUR LISTENING POST

By JAY COOTE

LAST week, in these notes, I mentioned Moscow Stalin, the 100-kilowatt which has suddenly cropped up in the middle of the broadcast band. For several evenings at odd hours I have tuned in this transmission on 424.3 metres and have discovered that, barring a concert at 8 p.m., the programme mainly consists of talks. The station is on the air from 5 a.m. daily; at 8.55 p.m., as do other Russian transmitters, it takes its listeners over to the Kremlin Square for chimes from the famous Spassky Tower and for the usual midnight (9 p.m. G.M.T.) time signal and dose of "Internationale."

## The Soviet Studios

In view of the difference existing between Eastern European time and G.M.T., it is seldom that you will pick up Soviet studios at a late hour; but exception must be made in the case of Leningrad, which at 11.30 p.m. on Sundays, Tuesdays, and Fridays broadcasts a special concert for the benefit of night workers. Moscow-Komintern, on 1,481 metres, also has greatly increased its power; in fact, I believe that we now hear the new Noghinsk station. You may discover it when Eiffel Tower has closed down between 9 and 9.30 p.m., but in my home it is spoilt on most nights by a strong background from Warsaw.

Another station which has loomed up big on my horizon is the 36-kilowatt recently installed at Kiev. If you have already logged Leningrad, slowly move up to 1,034 metres, where you are sure to pick up this newcomer. If anything, the transmission is better received than the former studio, as it suffers less interference from fog beacons. You might note

the call for future reference; it is phonetically: *Sloo-schah-eet-ye-aye* (twice) *Govoreet Hey-ff*. The concerts broadcast from this city are particularly good.

When, a few nights ago, Koenigswusterhausen closed down at 11.30 p.m. after the dance music transmission, I stood by for a few minutes and logged, on that wavelength, a transmission from the official coastal telephony station at Norddeich. This transmitter provides a regular weather and news service to the German fishing fleets in the North Sea and the Baltic. Private messages to members of the crews are also sent, as well as special information concerning prices of fish, etc., for the benefit of their respective skippers. Every broadcast is prefaced by the call "*Achtung! Achtung! Hier der Nordseerundfunksender Norddeich*" (*Gnaw-dye-ch*). The station is also on the ether at 6.25 and 9.50 a.m.

## Via Kalundborg

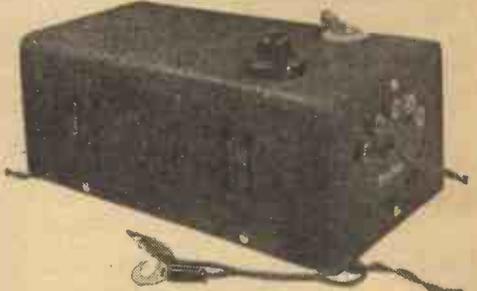
In my log I find a special note to tune in to Copenhagen via Kalundborg on every alternate Saturday evening. On these nights a relay is effected of a fete offered to listeners by the local Music Hall Artistes' Association at the Lorry Cabaret in the Danish capital. It consists of an exceptionally bright show, featuring excerpts from the latest revues, songs, instrumental solos, short sketches, and dance music, and the performance is usually kept up until 1 a.m. on Sunday morning.

As you cannot fail to have noticed, the new Radio Paris has been successfully launched, but whether it is to prove an asset to British listeners remains to be seen. Its energy is

positively overpowering. Unfortunately, on the other hand, I have not noticed any marked improvement in the programmes in which, as of yore, gramophone records play a singularly large part. By the way, on Sunday afternoons from that studio you will catch the bright and breezy tones of our old friend, Christopher Stone. He does not, however, as in London, preside at the mike in the flesh, but records his remarks on this side of the channel in anticipation of the weekly broadcast.

## READY RADIO H.T. UNIT

USERS of the popular "Britain's Super," described in "A.W." recently, will be interested to know that Messrs. Ready Radio, Ltd., are producing a special high-tension unit designed primarily for use with the "Super." This has the necessary four



The special H.T. unit for the "Britain's Super"

high-tensionappings and is provided with a two-way switch and a special trickle-charging circuit, so that the L.T. accumulator may be charged at 1/4 amp. The price of this new unit is £5 17s. 6d., or 10s. 9d. deposit and eleven monthly payments of 10s. 9d.

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Panel 6" x 9" x 3/8" drilled,  
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400 W. Potentiometer,  
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Valveholder, with sprung  
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### "FOUR STAR 4"

3-point on-off switch  
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DUAL-VOLUME Con-  
trol: 50,000 ohms,  
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ready ganged, 9/-.

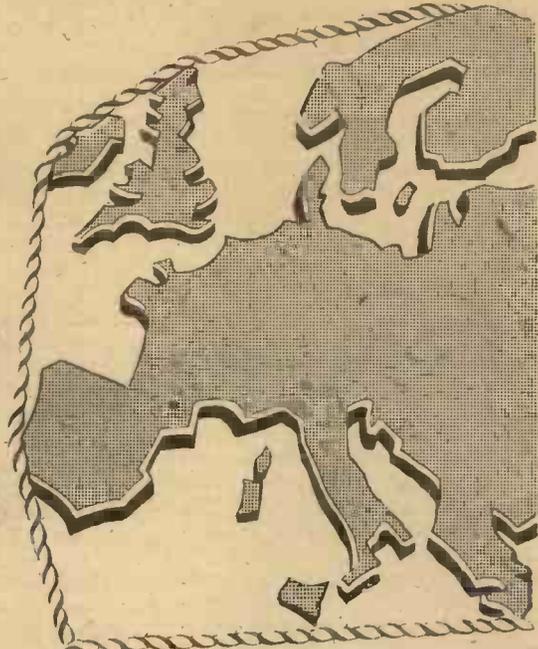
### GRAMO PLAYER

Valveholders, 1/3 each.  
On-off switch (G22),  
1/-.

All copper Patent  
Earth Tube, the best  
of its kind—no  
soldering iron, no  
clamped joints, no  
screws. Price 3/6.



# ETA VALVES pull in the stations



**I**N spite of all the latest devices—ganged condensers, band pass tuning and the rest—your valves will always play a major part in bringing you “all Europe.”

And getting stations, with a set of ETA valves on board your set, is not a matter of pious hope but absolute certainty. All the best programmes of Europe come when ETA calls, and behave like perfect gentlemen as long as their company is desired.

ETA valves are strong on economy, too. They are every bit as efficient as the dearest valves you can buy, but they're much lighter on your pocket. The price of ETA valves is, in fact, as low as you *dare* go without sacrificing efficiency and as high as you *need* to go to get the best valve that's made.

Next time you buy valves buy

# ETA

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PRICES FROM  
**7/-**

Hutcheonad

Mention of "Amateur Wireless" to Advertisers will Ensure Prompt Attention

**"GETTING THE BEST FROM A PICK-UP"**

(Continued from page 1191)

not often discussed, that of the effect of the needle. In a mechanical gramophone the volume of reproduction can be altered quite appreciably by the use of different types of needle. Variation of needle also affects the quality to some small extent, but the principal reason for having the different types is the alteration of volume, which is practically the only method available with the mechanical type of reproducer. What exactly is the effect when using an electrical pick-up?

**The Best Needles**

Most people are of the opinion that the type of needle makes no difference on an electrical reproducer. This is true to a large extent as far as volume is concerned, although a short needle tends to give slightly larger volume than a long one, simply because of the alteration in the distance between the record and the fulcrum or pivoting point of the needle. The volume is so easily controlled on a gramophone pick-up, however, by the methods already described that this question rarely receives any consideration. In point of fact it is worth a little investigation because the type of needle does have a very marked effect on the quality of reproduction.

The needle is part of the vibrating system in a pick-up and the resonances which are inevitable in any vibrating system are, therefore, dependent on the type of needle.

I had a striking example of this the other day when testing a pick-up. For the first test I used a fairly thin gold-plated needle intended to play a number of records. The other was a fairly long, stout, "soft-tone" steel needle. The difference between the two response curves was quite extraordinary, as will be seen from Fig. 3. The general trend of the characteristics was the same, but the upper resonance occurred at a distinctly higher frequency in the second case, and was not nearly so marked.

Moreover, the upper frequency response which was quite unmeasurable with the gold-plated needle above 3,000 cycles was well in evidence at 5,000 cycles with the soft-tone needle.

These results, of course, apply to this particular pick-up only, and for this reason I have not specified the names of the needles used, as this might be misleading. The fact is that two needles which most people would have said to be as good as one another gave very considerably different results, so that it is desirable when using a pick-up to try a variety of needles in order to find which type gives the most satisfactory performance.

**DO YOU KNOW**

THAT one of the easiest ways of controlling high-frequency amplification is by means of a rheostat in the filament lead of the screen-grid valve? This cannot be done with mains-lit valves, of course, and here some kind of potentiometer device across the tuning circuit may be tried.

**DISPATCH RIDERS' REUNION**

**R.E.** DISPATCH RIDERS will be very interested to hear that Mr. Ernest R. Gilbert is organising a reunion dinner of "D.R.," to be held at the Wharncliffe Rooms, Hotel Great Central, on January 9. Arrangements are now in progress and applications for tickets and further information should be made to Mr. Gilbert at 14-18 Holborn, London, E.C.1. It is hoped to make this reunion dinner a great success, and as there must be many war-time dispatch riders who are now radio enthusiasts and readers of AMATEUR WIRELESS, it is hoped that they will make a special point of being present on the 9th

**THE TELSEN "RADIOMAG"**

**N**EW ground has been broken by the production of the first issue of the Telsen *Radiomag*. This is a magazine for home-constructors and contains many articles of general constructional interest. Constructional details are given in connection with four sets, the Telsen Songster Two, the Conqueror Three, Commodore Three, and Empire Four. Miniature blue-prints, complete wiring diagrams, are given for each set, and there are also theoretical circuit diagrams for those who like to wire up in this way. Altogether a fine little production, and one which set-builders will undoubtedly find of interest. Copies may be obtained free from Messrs. Telsen Electric, Ltd., Aston, Birmingham, upon mention of "A.W.," and from all radio dealers.

**ALL-MAINS RADIO FOR BATTERY SETS AT ONLY 1d. PER WEEK**



IF YOU FIT A



**BATTERY ELIMINATOR**

For only 10/6 down and balance in easy monthly payments

NO DRY BATTERIES NO TROUBLE H.T. and L.T.

**"MULTIVO"**

H.T. Output—25 m/A  
 1 Variable tapping ... 0/100 volts  
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 1 Tapping ... 150 "  
 Trickle Charger for 2, 4 and 6 volts accumulator at .5 amps.  
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H.T. only  
 H.T. Output—120 volts at 20 m/A  
 1 Tapping ... 50/90 volts  
 1 Tapping ... 90/100 "  
 1 Tapping ... 120/150 "  
 Housed in attractive metal box with coloured jacks. Fits any portable set.  
 Cash Price £3 3 0

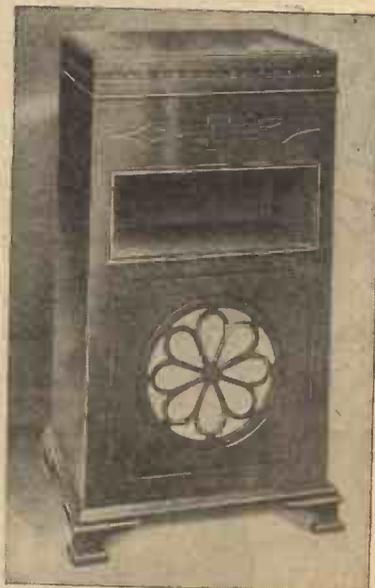
**"VOLTEX"**  
 For indirectly heated valves.  
 H.T. Output—25 m/A  
 1 Variable Tapping ... 0/100 volts  
 1 Tapping ... 50/90 "  
 1 Tapping ... 150 "  
 L.T. Output—4 volts, 4 amps.  
 (Raw A.C.)  
 Cash Price £5 5 0

Write for fully illustrated Catalogue "B" to:—

**ARTHUR PREEN & CO., LTD.,**  
 Golden Square, Piccadilly Circus, London, W.1.  
 Crown Works, Southampton.

See also page 1158.

**HOUSE YOUR RADIO-GRAM IN A CAMCO CABINET!**



This is the Camco "Waverley" Radiogram Cabinet. It is beautifully finished in Oak and Mahogany and is made in two models, Junior and Senior. Full provision is made for an electric or clockwork gramophone motor.

From £5 10s.

Write for FREE copy of the 24-page Camco Radio-cabinet Catalogue



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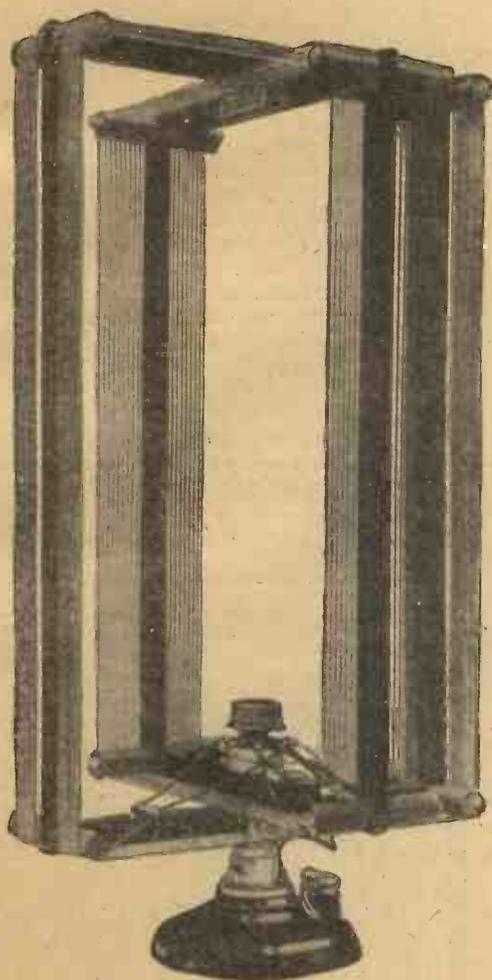
# THE CENTURY SUPER

## RECEIVES 100 STATIONS WITHOUT TROUBLE!

### Praise from all quarters!

And well merits the report accorded to it in this week's "Amateur Wireless."

Originally described in "Amateur Wireless," April 25, 1931, but still the outstanding success of the year.



Super Frame Aerial (in oak or mahogany) 24/-

NOTE:—The switch now fitted has an extension rod which allows for external wave-changing and control.

POPULAR FRAME AERIAL 32/6

ILLUSTRATED LIST AND DETAILED FOLDERS FREE ON REQUEST



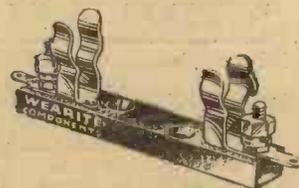
Set of 4 Century Super Coils 50/-



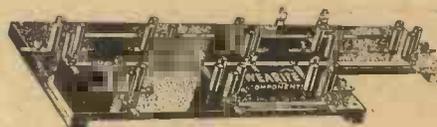
Short-wave 'Frame' coil 5/9



On-off switch 1/6



Grid-leak holder 6d.



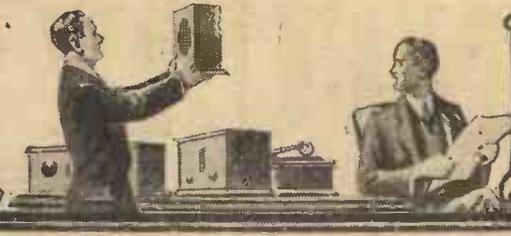
8-way chassis 7/-

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# READERS IDEAS



# AND QUESTIONS



### Crackling in Reception

**S**IR,—Just recently I have been very much troubled with crackling noises in my loud-speaker. A neighbour advised me to try the receiver with the aerial and earth disconnected to see whether the noises were being

picked up with the wireless programmes. This I did but noises continued. My neighbour was unable to suggest where to look for the trouble. Can you assist me to trace this annoying difficulty? A. K. (Withington).

The noises about which you complain point to faulty insulation having developed in the primary winding of an L.F. transformer in your receiver. If either you or your neighbour has a spare L.F. transformer, you could connect it up in place of that already in your

receiver. When you have definitely traced the cause of the trouble, and you are almost sure to trace it to the component suggested above, you could get a permanent replacement for you old transformer or have the latter repaired.—Ed.

### Pentode Advantages

**S**IR,—I notice that occasionally a pentode is used in the last stage of a receiver instead of a power or super-power valve. As I am not as conversant with the pentode type of valve as I could wish to be, perhaps you would explain to me the advantages obtaining in the use of such a valve.

W. C. L. (Glasgow).

The pentode possesses quite a small input grid swing, but with quite a small signal input it can give an appreciable output power. It is therefore very suitable for use in single-stage amplifying receivers where a weak signal is required to be magnified considerably to give loud-speaker results. As the pentode has such a small grid swing, it should not normally be

used to follow an existing L.F. amplifying stage. Some pentodes will give sufficient output power, from a small input, to work a moving-coil speaker.—Ed.

### Football Broadcasts

**S**IR,—One notes Mr. Rogers' article in a recent issue, regarding the broadcasting of football matches.

It strikes the writer that Mr. Rogers is in the same frame of mind as other writers to wireless weeklies, and also the attitude of the B.B.C., that whatever that body thinks it ought to be allowed to broadcast, no one else has any right to stop it.

When the B.B.C. stated that on a day when it broadcast a big match, that clubs had bigger gates, it omitted to state that this was one of the most interesting days of the English Cup, with some real "needle" matches.

No one will argue that the Arsenal's  
(Continued on page 1239)

## ELECTRADIX BARGAINS

### MOVING-COIL LOUD SPEAKERS

220 volts Magnavox, with input transformer, 25/-.  
220 volts B.T.H. Rice Kellogg, with input transformer, 40/-.

### DOUBLE HEADPHONES

Sullivan L.R., 3/6 pair; 8,000 ohm, 4/3. Morse Keys: Lucas, 2/6; R.A.F., 6/-; Brown Treble, 7/6. Buzzers: Townsend High Note, 3/6; Practice Sets for morse, 7/6.

### FULTOGRAPH PICTURE MACHINES

Brand new, in maker's carton, 27/6 only. Wonderful bargain. Cost £20.  
Deaf Aid Mike Sets, 18/6. Weston Relays, 32/-.  
Weston Electric Weco Valves, 3/3; Power, 4/3.

### MAINS PLUG AND SOCKET

The new SHOCK PROOF Electradix model, totally insulated, no bare metal accessible. For mains sets, H.T. units, or any H.T. coupling. Red or black. 1/- pair.

### MICROPHONES

You will find our Microphones remarkably cheap and efficient for all purposes. We have all types from 1/- to £20. Pendant: No. 11, single, 4/6; No. 7 (special panel), 12/6; No. 10 (pulpit), 12/6; No. 8 (hand), 15/-; No. 4 (pedestal), 17/-; Nos. 1 or 5 (announcer's P.A.), 65/-.  
Siesmo Microphones for vibration testing, massive brass body in teak case, 10/6. Micro Transformers, 3/6, 5/-, 7/6, and 10/-.  
Three-valve Amplifiers for P.A. off D.C. mains (Panatropé), £3 10s.; three-valve portable type, £2 15s., fitted mike transformer.

### CONDENSERS

2-mfd. T.C.C. and Sterling, 1/6 each. X-Ray Valves, 7 in. diameter, 37/6.

**ELECTRADIX RADIOS, 218 Upper Thames St., E.C.4**

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The best value you can get

**THE TRIUMPH**, a marvellous achievement with a guaranteed performance. Ratio 3½ to 1, Price 5/- (7 to 1 ratio 10/6).

**THE VICTORY**, for perfect distortionless reproduction equal in performance to the most expensive models. Price 7/6 Ratio 3½ to 1

From all dealers or direct from the manufacturers.

## BRITISH GENERAL

British General Manufacturing Co., Ltd., Brockley Works, London, S.E.4.

# Quality Radio for £6.6.0

## SEVEN VITAL FEATURES

- Self-Contained Loud Speaker ● Band-Pass Tuning and Pentode Output giving Astonishing Selectivity and Power ● Economical Battery Consumption ● Full Broadcast Range (230-550 & 1,000-2,000 metres) and Easy Operation ● Entirely New and Simple Colour-Coded Assembly without Soldering ● Fixed Pick-up Sockets ● Compact Walnut Cabinet ●

At its amazing low price the Zonophone Kit Set brings Quality Radio within the reach of the most modest purse. The simple and ingenious construction of this set is praised by expert and amateur alike.



### GRAMOPHONE ENTHUSIASTS!

The Zonophone Pick-up is the finest value in the world at

15/-

### AND OF COURSE ZONOPHONE BATTERIES

Highest Efficiency  
Greatest Economy

# ZONOPHONE KIT SET

Famed alike for  Radio and Records

Prices shown do not apply in Irish Free State.

## LARGER AND BETTER THAN EVER! "LANGMORE" RADIO CABINETS

### THE NEW "LANGMORE" RADIO-GRAMOPHONE CABINET No. G1

These cabinets are very strongly constructed of selected oak. Size overall, 3 ft. 6 in. high by 21 in. wide by 15 in. deep.

**THE TOP SECTION.** Size, 4½ in. high by 18 in. wide by 14 in. deep, gives ample accommodation for gramophone or pick-up.

**THE CENTRE SECTION.** Size, 10 in. high by 18 in. wide by 14 in. deep, is for the wireless set, to take a panel either 18 in. by 7 in. or 18 in. by 8 in.

**THE BOTTOM SECTION.** Size, 16 in. high by 18 in. wide by 13½ in. deep, gives accommodation for loud-speaker and batteries.

The whole of the back is enclosed by double doors, so that all parts are easily accessible. ALL are fitted with hinged top, heavy platform to take a 12-in. turntable for the gramophone, and a substantial baseboard for the wireless set.

Polished Wooden Panels to fit cabinets Nos. G1 and 8, with oval aperture, 12 in. by 5½ in., 2/- extra

**THE 'LANGMORE' No. 8** has been designed to meet the demand for a simple well-made Cabinet at the lowest possible price, consistent with good workmanship and finish.

Strongly constructed of selected Oak and Plywood.

**SIZE OVERALL.** 33 in. high by 21 in. wide by 15 in. deep.

**THE TOP COMPARTMENT.** To accommodate the wireless set. Measures 9 in. high by 18 in. wide by 13 in. deep, and takes a panel 18 in. by 7 in. or 18 in. by 8 in.

**THE BOTTOM COMPARTMENT.** To accommodate loud-speaker and batteries. Measures 16 in. high by 18 in. wide by 13 in. deep inside.

All are fitted with hinged top, heavy baseboard, and lift-out back, so that all parts are easily accessible.

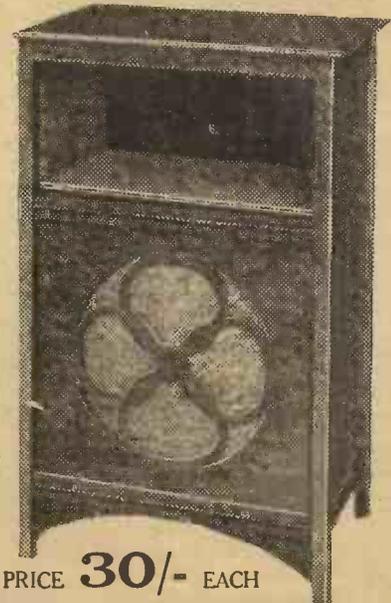
BEAUTIFULLY FINISHED  
:: IN JACOB AN OAK ::



Price 49/6 each

Packed FREE and sent Carriage Paid to any address in Gt. Britain.

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:: JACOB AN OAK ::



PRICE 30/- EACH

### THE LANGMORE RADIO-GRAMOPHONE CABINET NO. 9

is 36 in. high, 21 in. wide, and 15 in. deep, is similar to No. 8 above, but is fitted with a panel and has additional accommodation for gramophone and pick-up.

PRICE 39/6 EACH

Both are fitted with hinged top, baseboard, and lift-out back. Beautifully finished Jacobean oak.

Trade Inquiries Invited.



No. 9

All packed free and delivered carriage paid to any address in Great Britain.

THE MISCELLANEOUS TRADING CO., LTD.,  
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Commemorate  
**This CHRISTMAS**  
with a **GIFT**  
that Gives



What better gift to the entire family than MORE Radio Enjoyment? And what better time to give it than NOW?

A MoToR Loud-speaker will make a most practical expression of Christmas goodwill. It will be a gift that compliments the donor every day of the year because MoToR Speakers give the utmost in tone, punch, purity and volume.

- MoToR - LOUDSPEAKER "REX" 60/-  
(Caucasian Walnut)
  - MoToR CHASSIS, C88 Complete with MoToR S8 UNIT 43/6
  - Type S8 MoToR SUPER UNIT 23/6
- The most Sensational Unit of the Year.



Hear a MoToR Unit, Chassis or Cabinet Speaker at your Radio dealer's.

Unsolicited . . .

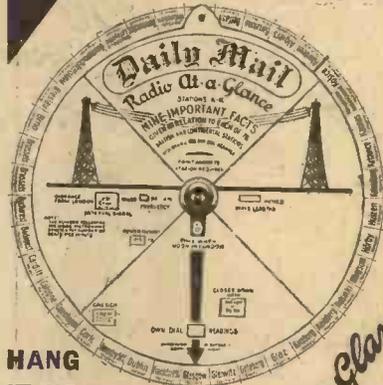
"There is now a roundness, richness and finish to instrumental music that was missing before I had the MoToR Unit."

Signed: H. E. M.  
Sanderstead, Surrey.

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LOUDSPEAKERS · UNITS · CHASSIS  
YEKADE Radio & Electric Ltd., 147 Farringdon Rd., E.C.1  
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FOR THE CHRISTMAS STOCKING



Does away with continual searching through the leaves of books and papers.

ADDS TO THE PLEASURE OF LISTENING IN.

## DAILY MAIL RADIO WHEEL

HELPS YOU TO LOCATE and IDENTIFY IMMEDIATELY

**76 STATIONS**  
By a turn of the pointer

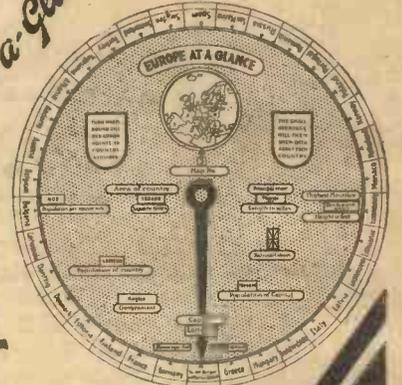
DIAMETER 9 1/2 ins. **1/-**  
TWO-SIDED.

**HANG IT UP**  
Above Your Wireless Set.

Over **500** Geographical and Statistical facts by pointing the arrow to the country required.

## GEOGRAPHY MADE EASY

Europe, British Empire, England and Wales, U.S.A., Scotland, Ireland, N. & S. America, time, etc. Diameter 10 ins. in colours. **1/-**



At all Stationers, Bookstalls, Radio Stores, etc., or if any difficulty write direct to F. PITCHFORD & Co., Ltd., Well Street, LONDON, E.C.1.

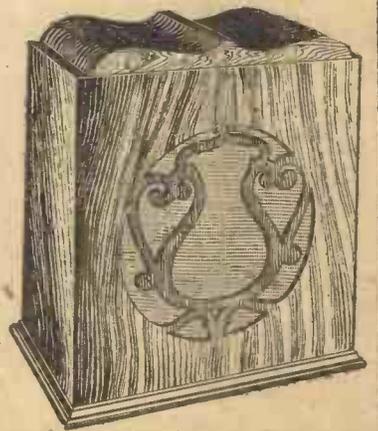
THE BEST receiver is only as good as its speaker. The Best Speaker has the name of Edison Bell behind it. Therefore, the Best Wireless Receiving-set is that equipped with one of

## The new EDISON BELL Permanent Magnet Moving Coil Models

universally admitted by Trade, Press and Public to be EASY FIRST.

Says the WIRELESS RETAILERS ASSOC.

"At the Radio Eisteddfod held in Bristol your Permanent Magnet Moving-coil Speaker was placed first by popular vote."



Two types are available—as illustration, in finely grained walnut cabinet. Model 553 with tapped transformer to which the connections may be adjusted in order to match various power-valves, and Model 553a fitted with Transformer suitable for use with Pentode and small power-valves.

## WHEN ITS BEST BUY BRITISH EDISON BELL IS BOTH

Prices:  
In Walnut Cabinet  
£4 : 15 : 0

No. 456 & 456a  
Chassis only  
£3 : 7 : 6  
Write for folder.

*Edison Bell*  
Manufactured by  
**EDISON BELL LTD**  
Glengall Road. S.E.15

**"READERS' IDEAS & QUESTIONS"**

(Continued from page 1236)

gates are affected by broadcasting; they are in a position to draw the crowd, but such as Third Division and minor league clubs certainly are hit by these broadcasts.

On the day in question last season that the B.B.C. quoted, one club in the Blackburn area alone was £85 down, on a fine afternoon, a large sum for a small club.

If it is purely football the B.B.C. wishes to broadcast, why not Third Division matches? Why the Arsenal every time?  
Football Fan (Church).

**Gramophone Needles**

**SIR**,—With reference to the letter from Messrs. William Hall & Co., Ltd., published in your issue dated November 14. The wavelength of top C (C<sub>4</sub>) is given as 3¼ thousandths of an inch; but as the formula is Wavelength = 1132/frequency, the wavelength for the note in question will be approximately 3 inches. Presumably the writer is referring to the mechanical form of the sound-wave as incised on the record, but the writer does not make himself clear. C. C. (London, W.C.).

**Amateur Transmitters**

**SIR**,—Re the article in a recent issue "What's Wrong with Television," by E. H. Robinson, who terms himself 5YM. We beg to draw your attention to a paragraph which states that one of the "so-called amateur bands should be used for television."

If 5YM was a real amateur he would realise that our bands are not large enough for the work carried out in them. It is proved that we do experimental work, by the fact that the Postmaster-General has recently decreased the tolerances in force on British stations.

Viewing the fact that the amateurs are the real originators of wireless, it seems rather selfish that the people who obtain most benefit from work done by "Hams," should wish to exterminate them.

We are of the opinion that the writer, 5YM, must have incorrectly worded the paragraph, and it should read, "These bands are used by a few so-called 'hams' (among whom it would seem right to class 5YM) for personal amusement, and by literally thousands of genuine enthusiasts for real useful experimental work."

2BSR, 2AMV (Bristol).

**WHEN SUBMITTING QUERIES**

Please write concisely, giving essential particulars. A Fee of One Shilling (postal order), a stamped addressed envelope, and the coupon on the last page must accompany all letters. The following points should be noted.

Not more than two questions should be sent with any one letter.

The designing of apparatus or receivers cannot be undertaken.

Modifications of a straightforward nature can be made to blueprints, but we reserve to ourselves the right to determine the extent of an alteration to come within the scope of a query. Modifications to proprietary receivers and designs published by contemporary journals cannot be undertaken.

Readers' sets and components cannot be tested at this office. Readers desiring specific information upon any problem should not ask for it to be published in a forthcoming issue, as only queries of general interest are published and these only at our discretion. Queries cannot be answered by telephone or personally.

Readers ordering blueprints and requiring technical information in addition, should address a separate letter to the Query Department and conform with the rules.

**TRANSFORMERS**

Dario Transformers are made under a special process of wiring and insulating the different circuits. Notwithstanding their very low price they give marvellous results.

Ratios 1.3 and 1.5.

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| Constructor ... | 4/6 |
| Normal ...      | 5/- |
| Super ...       | 6/- |

Also available extensive range of Mains Transformers and Filter Chokes.

**DARIO SILVER OXIDE CHARGER**

the best in the world. Enables you to charge your accumulators in your own home. **17/6**

**DARIO SETS**

The Dario S.G.3 Battery Type Receiver now reduced to **£5 17s. 6d.** complete with Dario Valves, represents amazing value. Highly sensitive, gives wonderful volume. Renowned for its purity of reception.

The Dario Regional Straight 3 Transportable housed in an attractive modern oak cabinet complete with Dario valves and matched speaker. **£4 17s. 6d.**

Inside frame aerial 10/- extra

Made in one of the most modern factories in the world under a special secret process, Dario valves incorporate the new Radio Micro Dull Emitter Filament which ensures great sensitivity, unequalled performance and utmost current economy.

- DARIO UNIVERSAL BIVOLT - 5/6
  - DARIO SUPER H.F. BIVOLT - 5/6
  - DARIO SUPER POWER BIVOLT 7/6
- etc., etc.

Also 4 volts and A.C. Mains type.

Write for illustrated folder giving full particulars.

# "SUPREME" S.R.S. ULTRA SHORT WAVE PRODUCTS



Reproduced by courtesy of "Wireless World."

The world famous S.R.S. Adapter—instantly converts any Set into an extremely powerful Short Wave Receiver without alterations of any kind—

Double Spaced Tuning Condensers—all working parts totally enclosed—no hand capacity—dead smooth tuning and reaction—no coils to change, covers the whole Short Wave Band.

TESTIMONIALS FROM ALL PARTS OF THE WORLD  
Send for copies and leaflets—  
PRICE COMPLETE READY FOR USE **18/6** Postage 1/- extra.  
Also special model for all-electric Sets **25/-**

**THE S.R.S. "UNIVERSE TWO" SHORT WAVE SET**  
Factory assembled—Aerial tested and guaranteed to bring in the world's Short Wave Stations. Complete ready to switch on. This is the Set with which "Amateur Wireless" tuned in the world. Send for leaflets and enthusiastic testimonials. **38/6** Post and Packing 1/3 extra

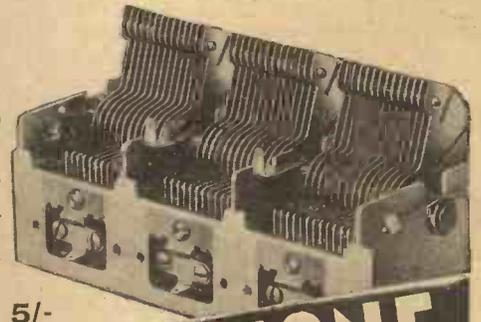
**SHORT WAVE RECEPTION IS BOOMING**  
The B.B.C. is building a special Empire Station that will send out a 24-hour programme. Holland, Germany, America, France, etc., etc., send out programmes daily. DO NOT MISS THE GOOD THINGS now on the Short Waves. SEND AT ONCE.

**STONEHOUSE RADIO SUPPLIES** (Phone 2496)  
54 UNION STREET, PLYMOUTH, DEVON  
THE ONLY FIRM MANUFACTURING SHORT WAVE APPARATUS EXCLUSIVELY

# SIMPLIFYING SELECTIVITY

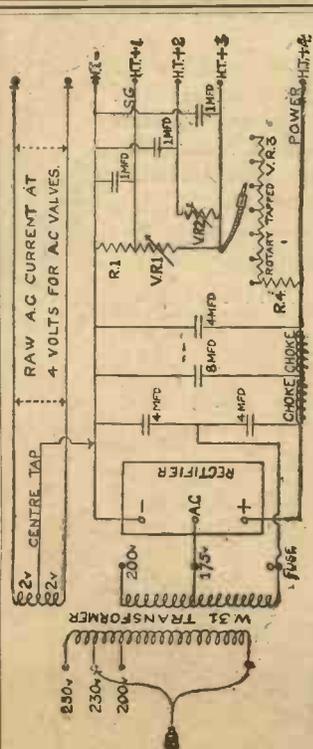
The wonderful new Radiophone Ganged Condensers are specially designed to meet the requirements of modern circuits demanding very high selectivity, smooth action and accurate matching. WE GUARANTEE ACCURACY.

- 2-Gang 18/-  
Dustproof cover 3/-
- 3-Gang 28/-  
Dustproof cover 3/6
- 4-Gang 38/-  
Dustproof cover 4/-
- Oxidised Silver Escutcheon and Drive Assembly with pilot lamp and attachment 5/-



## RADIOPHONE GANGED CONDENSERS

Write for descriptive brochure.  
THE BRITISH RADIOPHONE LTD., Aldwych House, ALDWYCH, W.C.2



### Here's your HOBBY for Christmas!

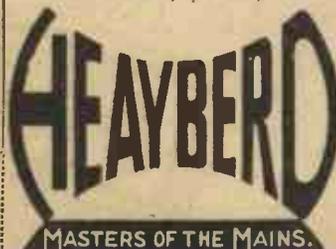
Build your own H.T. Mains Unit this Xmas with Heayberd Kit. Includes: New Westinghouse H.T.8 metal rectifier. Smoothing circuit with Heayberd's double-core Choke and Block Condenser with total capacity of 23 mfd. Specially designed for large sets using modern super-power valves. Variable power tapping giving range of 100 to 200 volts, in addition to fixed power tapping of 250 volts. Ready assembled in case—requiring wiring-up only.

**Model C.250**

Output 250 v. 60 m.a.

- Tappings:—
- H.T.1 (S.G.) Variable 60-80 v.
  - H.T.2 Variable 0-150 v.
  - H.T.3 Variable 100-200 v.
  - H.T.4 Fixed 250 v.

Price.....**137/6**  
(L.T. 4 volts 6 amps. supply for A.C. valves, 8/- extra.)



10, FINSBURY STREET, LONDON, E.C.2  
(One minute from Moorgate Und. Stn.)

POST NOW  
I enclose 3d. stamps for lists and diagrams showing how simple it is for me to build my own mains units.  
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## SUPER DOUBLE-MAGNET LOUD SPEAKER

ONLY  
**2/6**  
DOWN



Our new and improved 1931 Super Double-Magnet Loud-speaker comprises Chassis and Cone, complete with 4-pole Balanced Armature Adjustable Unit with Bakelite cover. The double magnets are of specially prepared Tungfram Steel, and the richness and volume of the deep bass reproduction will amaze and delight you. Nothing nearly so good has ever before been offered at such a low price. Send only 2/6 for it on approval; if satisfied, complete purchase by five monthly payments of 5/-. (Cash Price, 25/-) Send deposit to-day.



NEW 1932  
DE LUXE  
MODEL  
comprising Chassis and Cone with special 4-pole Balanced Armature Adjustable Unit

Prompt delivery guaranteed.  
**E. J. HERAUD**  
(Dept. A.W.2)  
Number One, Edmonton, London, N.18

Branches: 78-82 Fore Street, Edmonton; 77 Green Road, Tottenham; 34 St. James' Street, Walthamstow; and 139 Hertford Road, Enfield Wash

fitted Bakelite cover, ready to fit into any cabinet or baffle-board. Supplied with Unit fitted either inside or outside Chassis (state which required). Send only 2/6 for it on approval; if satisfied, complete purchase by 7 monthly payments of 5/-. (Cash Price, 35/-)



### — Ideal Christmas Present — JACOBAN OAK CABINET for WIRELESS OR RADIO - GRAM

This exceptionally low priced Cabinet is made to suit your special requirements. For Wireless only (Overall size, 32 in. high, 21 in. wide, 14 1/2 in. back to front, panel 20 in. x 8 in.) or for Radio-Gram (Overall size 36 in. high, 21 in. wide, 16 1/2 in. back to front, panel 20 in. x 8 in.) Fret front, constructed from 9 m/m oak faced ply.

| Prices                           | As Wireless Cabinet. | As Radio-gram Cabinet. |
|----------------------------------|----------------------|------------------------|
| R.T.A                            | 20/-                 | 26/6                   |
| Assembled ready for              | 27/-                 | 34/-                   |
| Polishing                        | -                    | -                      |
| Completely finished and Polished | 30/-                 | 37/-                   |

Cash with Order. Carriage Paid anywhere in England and Wales, add 1/- extra for Scotland.

(Dept. A9), A. H. FOSTER & CO.  
11 HIGH STREET, ERDINGTON, BIRMINGHAM.

# Postcard Radio Literature

**GET THESE CATALOGUES FREE.**

Here "Observer" reviews the latest booklets and folders issued by well-known manufacturers. If you want copies of any or all of them FREE OF CHARGE, just send a postcard giving the index numbers of the catalogues required (shown at the end of each paragraph) to "Postcard Radio Literature," "AMATEUR WIRELESS," 58-61, Fetter Lane, E.C.4. "Observer" will see that you get all the literature you desire.

**H.M.V. Speakers**

If you are on the lookout for a new speaker, then don't overlook the new H.M.V. type S.7 permanent-magnet moving-coil. This, together with other H.M.V. products, such as a novel pick-up control, is described in new literature which can be had free through my Catalogue Service. **632**

**Telsen Parts.**

The Telsen "Victor 3," a set using all Telsen parts, is making a fine name for Telsen. A new book has been issued describing the complete range of parts and I advise set builders to get a copy of the Telsen "Radiomag." **633**

**Valve Information**

Every set user should keep up to date in valve information and you should get from Mullard the latest literature describing the new valve releases. **634**

**Varley Parts**

Varley issue a catalogue in various sections dealing with power chokes and transformers, resistances, band-pass coils and so on. This is well worth having. **635**

**Climax Sets**

The new Climax sets are described in literature which I have just received. If you are getting a new set for Christmas then you should certainly have a copy of this—free, through my catalogue service. **636**

**New Ediswan Catalogue**

Set builders should write for the new catalogue which gives details of Mazda valves, B.T.H. speakers, pick-ups, and all other parts in the range. **637**

**Colvern Coils**

A new four-page folder of Colvern coils, switches, resistances, and Colverstats is of interest to set builders and you should write through my Catalogue Service for a copy of this new production. **638**

**A Home Recorder**

Three models of the new Fay home-recorder are made, acoustic and two electric models. This new system is described in a folder just issued. **639**

OBSERVER

# New Times Sales Co

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listener's local service area with no trouble.

By no means all the high-power foreigners work adjacent to British stations, so let us see how we can add to the log without losing our way. We might well tackle the segment of the dial between North Regional and the maximum reading, which will be either 100 or 180 degrees. There are three stations, apart from Prague, that are usually worth logging up here.

At the very end of the scale is Budapest, easily identified by the clear announcements and the prevalence of tzigane music. Not far below will be found Vienna, also unmistakable, thanks to the clear "Radio Wien" announcement. Then between Vienna and Prague will be located Brussels, whose announcements in the French language readily mark the station.

Be careful, though, because Vienna also talks in French sometimes. The best way to identify Brussels, I suggest, is to travel slowly up the dial from Prague—then stop at the first loud signal.

### Two Good Indicators

Now let us see what we can find between North Regional and Midland Regional. Dropping down below Langenberg, adjacent to North Regional, we cannot help hearing the high-power Swiss station called Beromunster. The language is German.

Skip the next few degrees, for just about this part of the dial are some of the most appalling mix-ups—little indeed of any programme value. You will readily recognise that stations just below Beromunster are on shared wavelengths, due to the moaning and whistling background to

### "EUROPE From Your ARMCHAIR"

(Continued from page 1170)

whatever item you pick up. Carry on and the first clear station below Beromunster will greet you—Rome, with its lady announcer.

Right next to Rome you will find Stockholm, probably butting into the Italian programme. These twins, Rome and Stockholm, are almost as good landmarks—at night-time—as the British stations. Between Rome and the lower limit of the North Regional-Midland Regional segment of the dial you may or may not find anything worth hearing. There is nothing really powerful except Söttens just above Midland.

Between Midland Regional and London Regional there is another dial segment worth your sub-division. A degree or so immediately below Midland Regional you should hear a German voice, namely Frankfurt. Just below this the unmistakable Toulouse will greet you. Lvov, the Polish station, is very strong just below Toulouse. Working up from London Regional, having logged Mühlacker, you should find Hamburg.

We now come to a fruitful sector of the dial between London Regional and North National. Moving down three or four degrees from London Regional you are almost sure to hit on Strasbourg, easily identified by the bi-lingual announcements, in French followed by German. Late at night Barcelona, just above the dial setting

for Strasbourg, is often loudly heard. Below Strasbourg you ought to get Brussels No. 2, announcing in that queer Flemish language.

Bordeaux, just above North National, would satisfy my log on this sector, so I should then try between North National and London National. Working up, I suggest, from London National, we find Moravska-Ostrava, as incomprehensible as ever, and if we skip four or five degrees we shall most certainly run across Heilsberg, the high-power German station. Just above it will be Bratislava, another Czech station. If we end this sector with Hilversum, just below the dial reading for North National, we shall have done all most listeners ever do.

### The Lower Part of the Scale

To complete the medium waves we have only to explore the remaining dial sector between London National and the bottom of the scale. The first station of any power below London Regional is Hörby, the Swedish station. The rest of the sector is usually a real "muck-up" and it is best to work upwards from the bottom of the scale. The first station heard will probably be a German, and that German is most likely to be Cologne. Switch up to Langenberg if in doubt—the two stations share programmes.

It would be wrong to pretend that all the stations I have mentioned in this article can be picked up in one evening at enjoyable loud-speaker strength, but all of them can be heard well during the course of two or three evenings at the dial.

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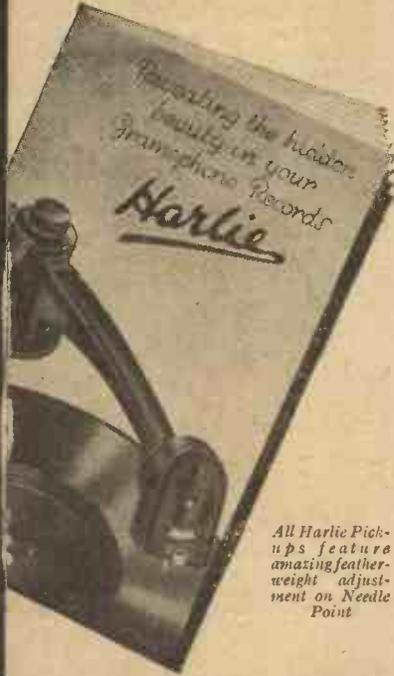
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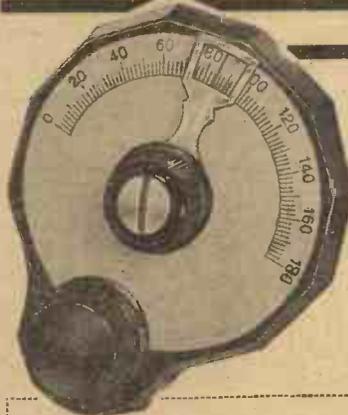
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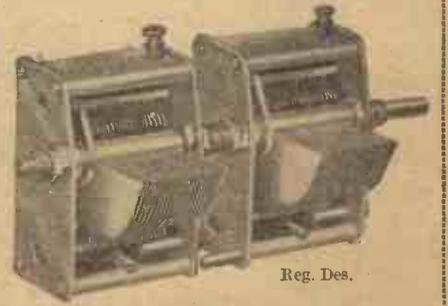
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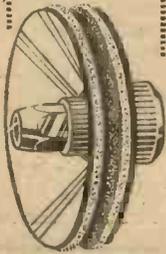
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| <b>SPAIN</b>                    |             |         |         |                       |                 |
| Barcelona (EAJ15) ..            | 1.0         | 251     | 1,193   |                       |                 |
| Valencia .....                  | 5.0         | 268.8   | 1,176.5 |                       |                 |
| Barcelona (EAJ1) ..             | 8.0         | 348.8   | 860     |                       |                 |
| Seville (EAJ5) ...              | 1.5         | 368.1   | 815     |                       |                 |
| Madrid Espana ...               | 2.0         | 409.8   | 732     |                       |                 |
| Madrid (EAJ7) ...               | 2.0         | 424     | 707     |                       |                 |
| San Sebastian .....             | 0.6         | 451     | 665     |                       |                 |
|                                 |             |         |         |                       | (EAJ8)          |
| <b>SWEDEN</b>                   |             |         |         |                       |                 |
| Malmö .....                     | 0.75        | 230.0   | 1,301   |                       |                 |
| Hörby .....                     | 15.0        | 257     | 1,167   |                       |                 |
| Falun .....                     | 0.65        | 306.8   | 977     |                       |                 |
| Goteborg .....                  | 15.0        | 321.9   | 932     |                       |                 |
| Stockholm .....                 | 75.0        | 435.4   | 639     |                       |                 |
| Sundsvall .....                 | 15.0        | 541.5   | 554     |                       |                 |
| Ostersund .....                 | 0.7         | 770     | 389     |                       |                 |
| Boden .....                     | 0.75        | 1,255.3 | 233     |                       |                 |
| Motala .....                    | 40.0        | 1,348.3 | 222.5   |                       |                 |
| <b>SWITZERLAND</b>              |             |         |         |                       |                 |
| Basle .....                     | 0.65        | 244.1   | 1,229   |                       |                 |
| Berne .....                     | 0.5         | 246     | 1,220   |                       |                 |
| Söttens .....                   | 25.0        | 403     | 743     |                       |                 |
| Beromuenster ...                | 75.0        | 469     | 653     |                       |                 |
| <b>TURKEY</b>                   |             |         |         |                       |                 |
| Istanbul .....                  | 5.0         | 1,204.8 | 249     |                       |                 |
| Ankara .....                    | 7.0         | 1,517.4 | 197.7   |                       |                 |
| <b>YUGOSLAVIA</b>               |             |         |         |                       |                 |
| Zagreb (Agram) ..               | 0.7         | 307     | 977     |                       |                 |
| Belgrade .....                  | 3.0         | 481.7   | 695     |                       |                 |
| Ljubljana .....                 | 2.8         | 574.7   | 522     |                       |                 |

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|----------------|---------|------------------------------|------|
| 281.2          | 1,067   | Copenhagen .....             | 1.0  |
| 1,153          | 260     | Kalundborg .....             | 7.5  |
| <b>ESTONIA</b> |         |                              |      |
| 468.7          | 640     | Tartu .....                  | 0.5  |
| <b>FINLAND</b> |         |                              |      |
| 291            | 1,031   | Viipuri .....                | 13.2 |
| 368.1          | 815     | Helsinki .....               | 13.2 |
| 559.7          | 536     | Tampere .....                | 1.0  |
| 1,796          | 167     | Lahti .....                  | 54.0 |
| <b>FRANCE</b>  |         |                              |      |
| 223            | 1,345.2 | Fécamp .....                 | 5.0  |
| 245.9          | 1,220   | Sunday after 11.0 p.m.       |      |
| 237.6          | 1,261.2 | Bordeaux-<br>Sud-Ouest ..... | 2.0  |
| 240.9          | 1,245.3 | Béziers .....                | 0.6  |
| 249.6          | 1,202   | Juan-les-Pins .....          | 0.5  |
| 255.1          | 1,176   | Toulouse (PTT) ..            | 1.0  |
| 266            | 1,128.5 | Lille (PTT) .....            | 2.0  |
| 271.5          | 1,105   | Rennes .....                 | 1.2  |
| 286            | 1,049   | Montpellier .....            | 2.0  |
| 287.3          | 1,044   | Radio Lyons .....            | 30.0 |
| 294.6          | 1,018   | Limoges (PTT) ...            | 1.0  |
| 307.6          | 975.2   | Bordeaux (PTT) ..            | 15.0 |
| 312.6          | 960     | Natan-Vitus<br>(Paris) ..... | 0.5  |
| 315            | 950     | Marseilles .....             | 0.3  |
|                |         | (temporary)                  |      |

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| 299.5                   | 1,001.3 | Radio Idzerda<br>(The Hague) ..... | 3.0  |
| 1,053                   | 285     | Kootwijk (testing)                 | 10.0 |
| 1,071.4                 | 280     | Scheveningen-<br>Haven .....       | 10.0 |
| 1,875                   | 160     | Huizen .....                       | 8.5  |
| <b>HUNGARY</b>          |         |                                    |      |
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| <b>ICELAND</b>          |         |                                    |      |
| 1,200                   | 250     | Reykjavik .....                    | 16.0 |
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| 25.4                    |         | Rome (3RO) .....                   | 9.0  |
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| 273.0                   | 1,096   | Turin (Torino) ...                 | 8.5  |
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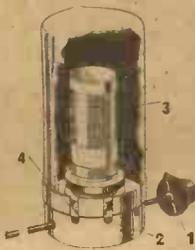
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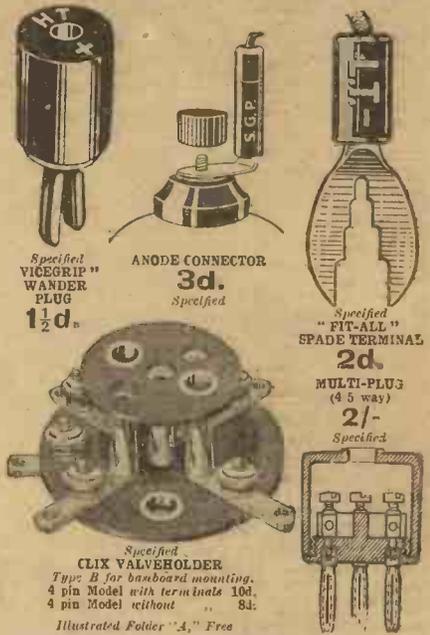
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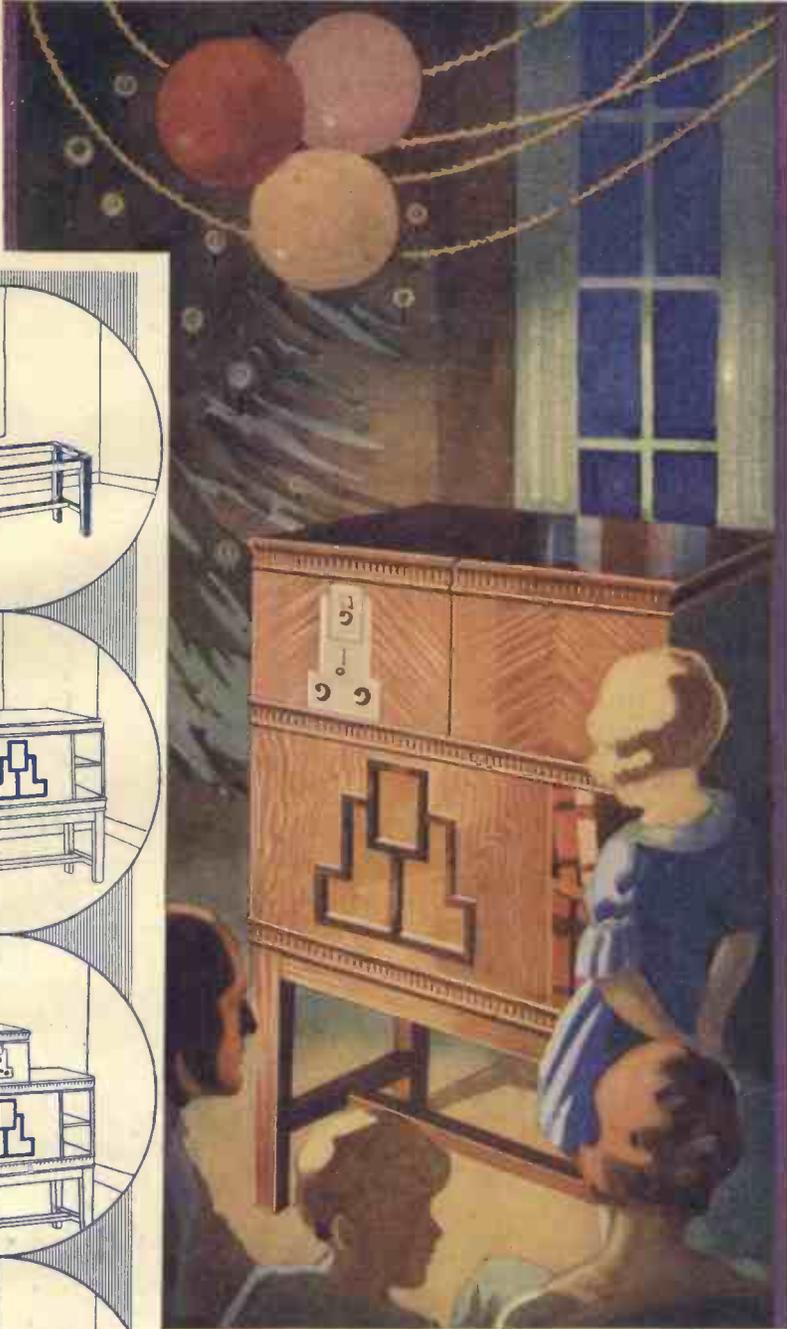
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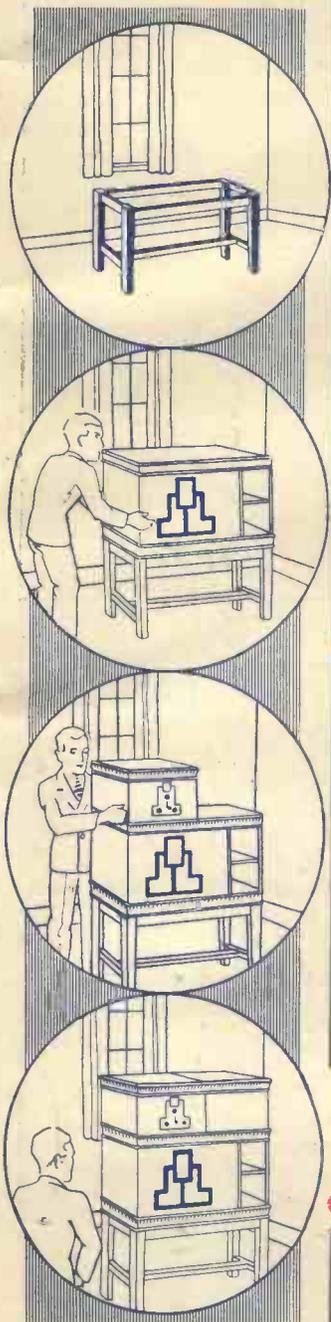


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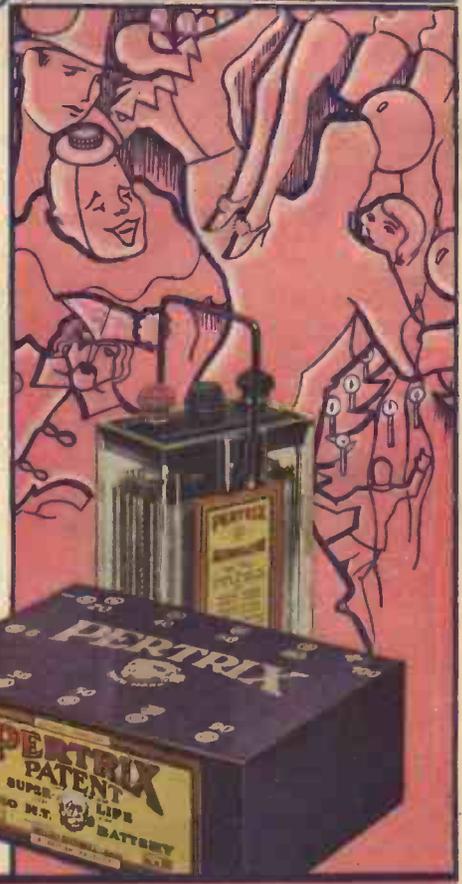
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