

RADIO

IN AUSTRALIA
& NEW ZEALAND

Incorporating "Sea Land and Air"

VOL. I.

OCTOBER 3, 1923

No. 14



Jack Davis, of Vaucluse, Sydney, winner of the N.S.W.-New Zealand Radio Tests.

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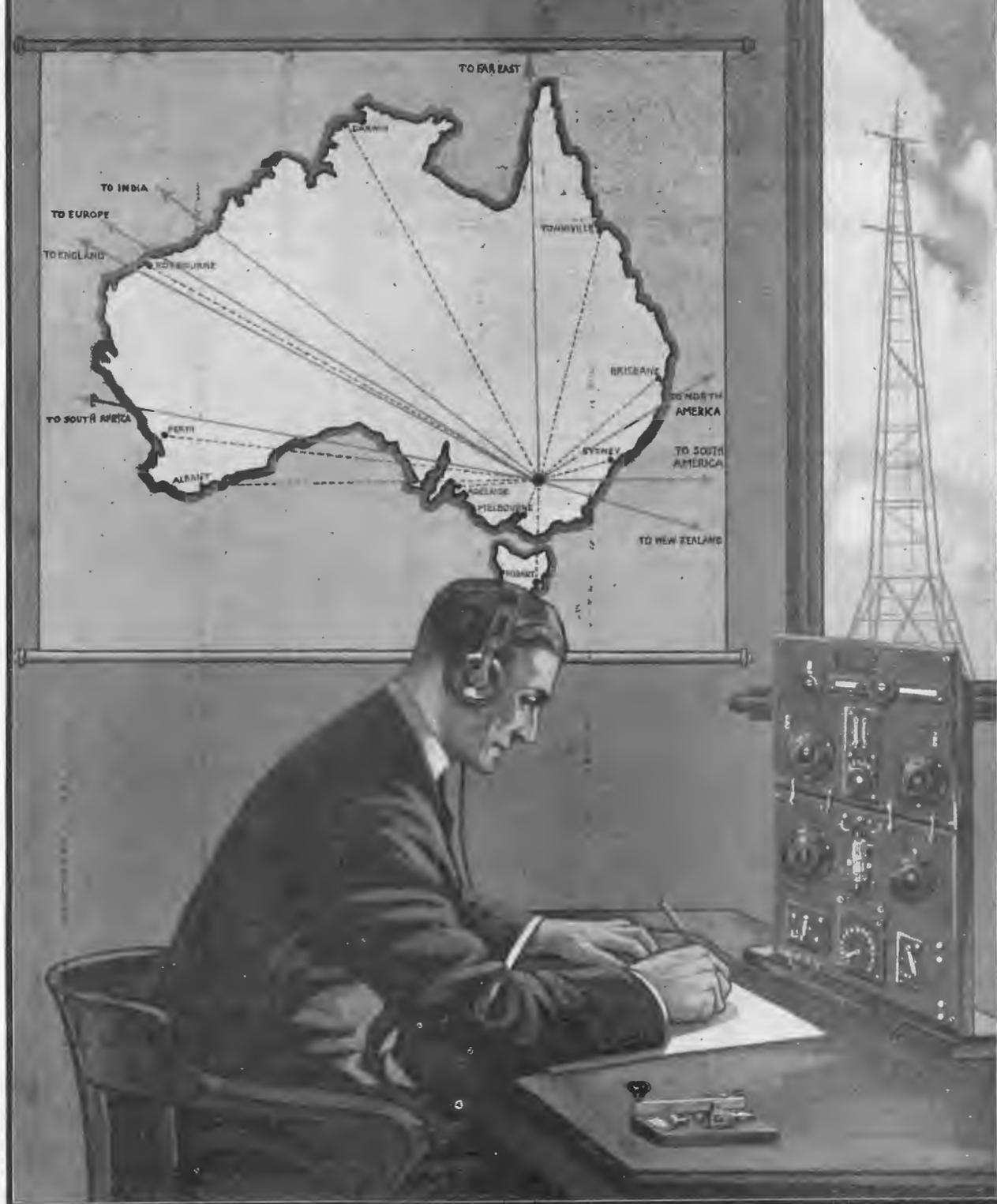
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What Wireless can do for Australia





What Country Experimenters Need

A MATTER that deserves serious consideration at the hands of the Wireless Institute, the Radio Association, or some other body in Sydney anxious to spread a knowledge of experimental wireless throughout Australia is that of affording practical assistance in the formation of radio clubs in the country.

OUT of the total number of wireless experimenters and enthusiasts throughout the Commonwealth, it is safe to say that over 90 per cent. is located in and around the capital cities.

THE main reason for this is that opportunities for gaining a practical knowledge of wireless are almost—if not actually—non-existent in the country.

THIS is a state of affairs which calls for immediate attention.

IT will seriously retard the universal adoption and appreciation of radio in Australia if it is centralised too much in the capital cities.

THERE is a keen desire on the part of countless enthusiasts in the country to take up the study of wireless, if only some practical means were available, outside a perusal of text books, to provide first hand knowledge of the construction and operation of a receiving set. It is probable that there are hundreds of experimenters throughout Australia in the same position

as a prominent North Coast enthusiast who has spent much time and money in the study of wireless, but now finds himself severely handicapped because he has never seen a wireless set outside his own humble effort at constructing one from text book instructions.

THIS in itself does not constitute the whole of the difficulties under which he, and those like him, are labouring.

IF it were possible to establish touch with someone well-versed in the technical side of wireless it would be worth more to these ardent country enthusiasts than hours of laborious work and study which they now employ in an effort to make good.

IT should not be a difficult matter for one of the controlling bodies in Sydney to despatch a fully qualified radio man into various country districts from time to time for the purpose of forming clubs and giving local experimenters the benefit of his knowledge and experience.

THE question of finance would, of course, be the most serious one, but in view of the real need for a service such as outlined, there should be ways and means of overcoming it.

THE idea is at least worth consideration.

A Solid Foundation

IN a previous issue of "Radio" an announcement was made concerning the high-class broadcasting service shortly to be established by Messrs. Farmer and Company, Ltd., of Sydney.

THE announcement was the most practical and encouraging evidence since the gazettal of the regulations that broadcasting in Australia will soon be an accomplished fact.

NO better proof could be forthcoming that its possibilities for development into an undertaking of great national value have been foreseen by some of the keenest commercial brains in our midst than a perusal of the preliminary arrangements made by Farmer's.

EVERY person who admires vision and enterprise will wish the firm the full measure of success for which it has so deservedly qualified.

High-Speed Trans-Ocean Wireless

England's Efficient Organisation

London Direct to Canada, U.S.A., France, Spain, and Switzerland

THE quarter of a century which has witnessed the development of commercial wireless telegraphy from the sending of the first tentative signal to the establishment of high-speed telegraphy services to all parts of the world has been a period of incessant progress.

These modern methods are to be seen at their highest state of efficiency in the group of Marconi stations comprising Radio House, Ongar, Brentwood, and Carnarvon, from which England's high-speed commercial services are conducted with France, Switzerland, Spain, Canada, and the United States of America.

sonal supervision of the operating controller, with considerable advantage in efficiency and economy.

RADIO HOUSE.

Radio House, London, is the nerve centre of the Marconi high-speed commercial services. It is the control



Senatore G. Marconi, G.C.V.O., L.L.D., D.Sc., Chairman of the Board of Directors, Marconi's Wireless Telegraph Company, Limited.

Every year has brought some fresh invention to increase the speed of signalling or to improve methods of working, but a stage has now been reached when certain basic principles have been established and can be incorporated in standard practice. Two of the most important of these are the ascendancy of continuous wave wireless telegraphy by means of valve transmission, and the distant control of the transmitting and receiving stations from a central office.

The wireless stations at Ongar and Brentwood are situated in Essex, some 20 miles from London, but full control is centred at Radio House, Wilson Street, in the city, the relaying of signals from the land lines to the wireless transmitters at Ongar transmitting station, and from the wireless receivers to the land lines at Brentwood receiving station being entirely automatic. The transmitting plant at Carnarvon used for communication to the United States is also controlled automatically from Radio House, and the signals from the United States are received at Brentwood and relayed automatically to Radio House.

The first thing that strikes the non-technical visitor to the wireless stations is the simplicity of the arrangements. The quietness that prevails is very impressive, and the visitor is surprised to find that it is only necessary to have one or two engineers on duty to keep the apparatus in good running condition.

The whole of the telegraphist staff is concentrated at the traffic headquarters, Radio House. Messages are thus actually despatched from the building where they are handed in by the public, and are received at the telegraph office abroad at the same instant that the signalling apparatus is actuated in London, all the operations between the two offices being entirely automatic.

Any number of commercial services can thus be brought under the per-

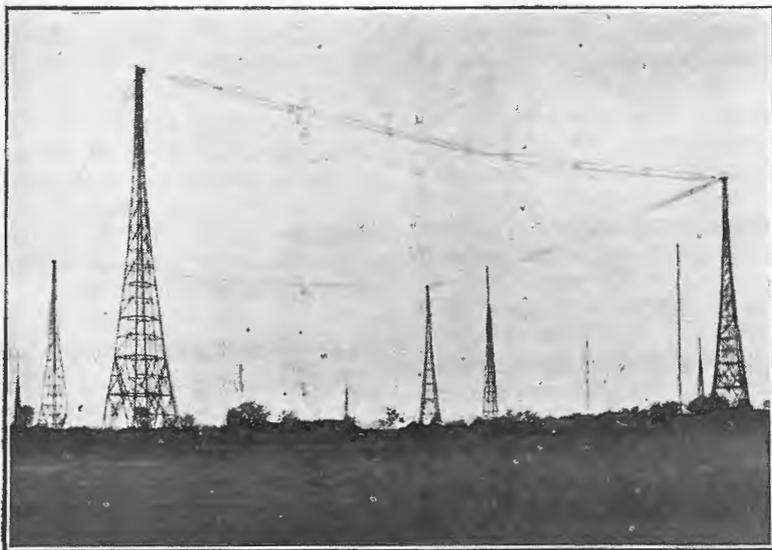


Mr. Godfrey C. Isaacs, Managing Director, Marconi's Wireless Telegraph Company, Limited.

office for the whole system of communications at the English end, and it is also a public receiving and distributing centre for traffic.

In the equipment of this building the special needs of speed and accuracy have been kept well in mind, and wherever a design, or piece of apparatus, has been forthcoming which could be proved to raise the efficiency of the Marconi service, that apparatus has been employed.

From the counter, in the public office, a conveyer runs into the main



BRENTWOOD RECEIVING STATION.

The new aerial system, for receiving messages from the United States and Canada, is supported on the four larger towers, 200 feet in height. Traffic from Continental stations is received on the smaller aerial system, the towers for which are 96 feet in height.

operating room, and deposits messages on the circulation table which is equipped with numerous time-saving devices. From this table each message is rapidly distributed to its proper circuit.

Having arrived at the circuit, the message is reproduced in Morse characters in the form of perforations on a paper tape. This is done by means of an instrument known as a keyboard perforator, which is operated in much the same way as a typewriter. The paper tape is then fed into an automatic high-speed transmitter, which actuates the wireless transmitting plant at Ongar or Carnarvon, according to the destination of the message.

By the side of each of the automatic high-speed transmitting instruments is the receiving instrument for that particular service, and it is therefore possible for the operator engaged in transmission to receive immediate acknowledgment of the messages he sends.

The high-speed automatic apparatus employed in reception on the European circuits operates a printer which transforms the signals into Roman characters, and prints them on a continuous paper tape.

The printed tape is drawn through a gumming machine and affixed in suitable lengths to a form ready for delivery.

The message is then sent to the telephone room, or one of the private wire circuits, for immediate transmission to the addresses, or to the messenger department for delivery by hand. Before passing to the messenger department the message is conveyed automatically to the "unpacking" room, where, by means of a comprehensive card index, an "unpacker" is enabled to place it in the

appropriate envelope bearing the full address required for delivery.

In the card index cabinet there are 65,000 cards, each bearing full details concerning a particular telegraphic address. A unique feature of this system is that any card can be quickly located without any other card being disturbed.

Many of the delivery envelopes bear addresses already printed, and means are provided for locating any envelope instantly, and without risk of error. Thus the whole process of decoding a telegraphic address and enveloping a message is a matter of a few seconds only.

The message is transferred from the unpacking department to the messengers' department by an automatic conveyer.

One of the most interesting points about Radio House is the special provision made for express private delivery and collection where traffic is consistently heavy. Apart from a number of telephone circuits available for the public, numerous private telegraph and telephone lines are rented by financial and commercial houses having traffic of a heavy and urgent character. Some of the telegraph circuits are operated with teletype instruments, by means of which messages are reproduced in typewritten characters at the other end of a telegraph line.



RADIO HOUSE.

The Continental circuits, showing tape passing through the printer and being gummed on message forms ready for delivery.

It is an interesting point that from the moment a message is accepted, until its final handling, its passage through the office is timed at various stages by automatic electric time-stamps, controlled by a master clock. By means of this and other systematic methods of checking, wireless maintains its unsurpassed reputation for speed and accuracy.

ONGAR TRANSMITTING STATION.

The Ongar group of wireless transmitting stations is built on a site just over one square mile in area. The site is on high ground, and in the centre of it there still exists one of the large but little known forts built

The aerial or radiator is not connected directly to earth, but to an earth screen comprising a number of insulated wires supported on 30 feet lattice masts. The provision of this metallic conducting screen between the aerial and earth reduces the losses in the soil under the aerial, and results in greatly increased radiation efficiency and in stronger signals being produced at the receiving stations than would be the case with a buried earth.

The efficiency of a transmitting station, and the legibility of the signals under bad atmospheric conditions, depend largely on the steadiness of the transmitted wave.

made is due to this link between the land line and the wireless plant which renders telegraph operators unnecessary at the wireless stations.

It is perhaps worthy of note that valve transmitters have the advantage of not requiring a complete duplicate installation, since any valve burnt out can readily be replaced in a few minutes with no appreciable interruption of the service.

BRENTWOOD RECEIVING STATION.

The receiving station at Brentwood is less imposing in appearance than the Ongar transmitting station, because it is possible to carry on reception with much smaller aerials than are required for efficient transmission.

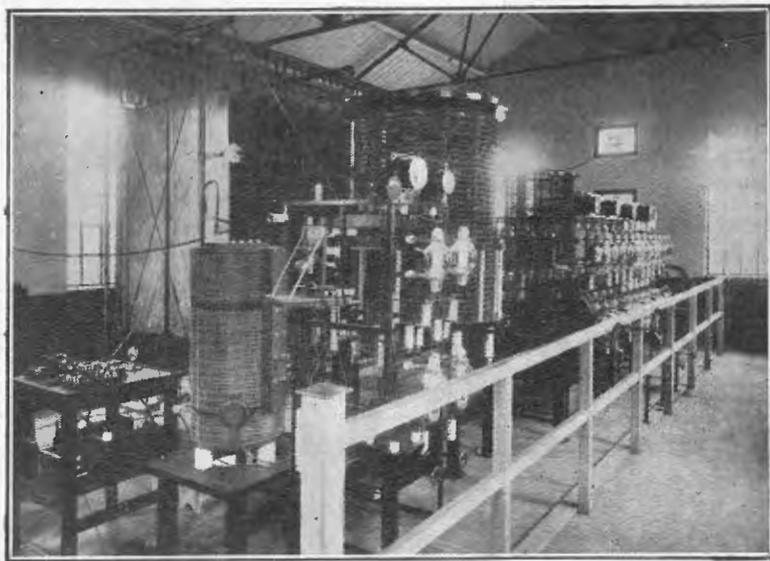
The circuits are so arranged that simultaneous reception can be carried on from four continental stations and from six Transatlantic stations.

The latest devices for filtering out atmospherics are in successful operations in a new type of receiving apparatus.

Special attention has been paid in the design of the apparatus to its operation under adverse atmospheric conditions, and to the maintenance of adjustment with the minimum of attention. Here again there is no need for telegraphists, owing to an automatic linking device, and the duty of the attendant in charge of each set is merely to adjust and maintain it in such condition that clear signals of maximum strength are passed to the land lines for operating the recorders installed at the central control office in London.

The receivers are very compactly constructed on a unit system. They make use of directional selectivity on the Marconi-Bellini system, and so efficient is this method that the six Transatlantic receivers, each tuned to a different transmitting station, are operated simultaneously from one aerial system.

Seven underground telegraph circuits and seven underground telephone circuits connect Brentwood and Radio House, and there are extensions to the transmitting centre at Ongar. Check circuits are connected to these land lines in order to enable observations to be made of signals relayed to or from Radio House.



ONGAR.

Continuous Wave Transmitter, showing from left to right: High Speed Signalling Relays; Independent Drive; Rectifier and Oscillator Valve Panel.

many years ago for the defence of London, but since abandoned by the War Office.

Near this fort is the power house, which supplies all the electric current required for running the transmitters and auxiliary apparatus.

At present there are three separate transmitting stations at Ongar. One is carrying on a service with France, another with Spain and Switzerland, and a third with Canada.

The aerial systems closely resemble one another, and consist, generally, of two circular cages with four wires suspended from two 300 feet self-supporting lattice towers.

This steadiness is attained at Ongar by the employment of the independent drive system. The fundamental principle of this system is the control of the main oscillations through the medium of a separate standard oscillation generator which, once adjusted to the required wave-length, maintains its adjustment with perfect constancy.

The transmitting plant is actuated by high-speed signalling keys, which are themselves controlled direct from the London central control office by means of land lines passing through the receiving centre at Brentwood.

The appearance of inactivity to which reference has already been

More Trans-Pacific Tests

Australia—America

By B. Jermyn Masters,

(Hon. Organising Secretary, Victorian Division, Wireless Institute of Australia.)

FOLLOWING the splendid success obtained by Australian and American experimenters in the recent trans-Pacific Tests, the Victorian Division of the Wireless Institute of Australia has just completed arrangements for further tests to be carried out between Australian and American experimenters during October and November.

The messages sent by American experimenters will be on a wave-length of 200 metres and it is requested that reports of all calls and messages received by experimenters in Australia, be immediately forwarded to the official Australian station, 3BM—owned and operated by Mr. H. Kingsley Love, Ferncroft Avenue, East Malvern, Melbourne—for the purpose of compiling a full report for despatch to America.

It is highly probably that the President of the United States will be asked to send a message to the Governor-General of Australia, and any Australian station picking up such a message should immediately forward same to the general secretary of the Victorian Division—Mr. G. W. Steane, Earl Street, Mont Albert, Victoria—so that it can be immediately forwarded to the General Manager of Wireless for delivery to the Governor-General.

The Americans will transmit from 5.45 p.m. to 8.45 p.m. (Melbourne time) each evening, from October 15 to November 3, inclusive. The Australian transmitting station will work at the same times from November 5 to 13, inclusive. The Roster for the Australian transmitting station is now being prepared and any Australian experimenter who considers his set capable of sending messages to America is requested to forward full particulars of such station before October 6 for inclusion on such Roster.

The experimenters in Victoria who were so successful in the recent tests strongly recommend that those competing in the forthcoming tests should use two stages of tuned radio frequency amplification and detector to obtain maximum results.

Recent N.S.W.-N.Z. Tests

IN the last issue of "Radio" (page 294) was recorded the proceedings of one of the most successful radio social functions held in N.S.W., when the prize-winners of the recent N.S.W. - N.Z. tests were entertained.

On the front cover of this issue appears the photograph of Master Jack Davis, owner and operator of Station 2DS, the winner of the first prize. In a future issue of "Radio" it is hoped to publish photographs, diagrams and full particulars of this very efficient station.

Mr. Charles W. Slade, owner and operator of Station 2SX, winner of the second prize, did some excellent work, only using one valve.

The diagram of the circuit used by Slade appears here-

able condenser, "S3," between the grid and filament. The H.T. Battery is variable, and fine adjustment of anode voltage is obtained by variation of the potentiometer shown connected to the negative of the H.T. terminals.

The inductance L1 (2.5 henries) is used instead of a grid leak. This prevents the rectified charge on the grid drawing away too quickly and also allows the potential of the grid to be varied by means of the grid potentiometer and the LT battery and the battery B3.

Mr. Slade states that, although delicate, these three adjustments well repay the expense involved. Using one stage of radio-frequency amplification

he logged six American amateur stations in one night. One message



Mr. C. W. Slade (2SX), the second prize-winner in the N.S.W.-N.Z. Tests.

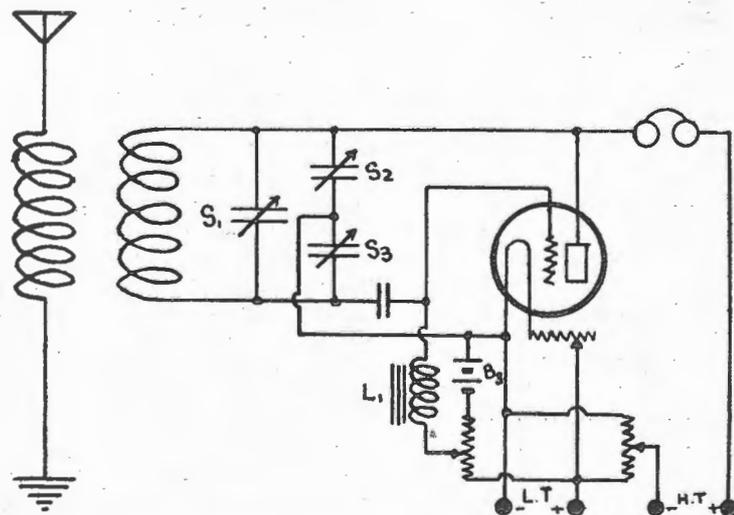


Diagram of the receiving circuit used by Mr. Slade.

circuit with a few refinements. It has a variable condenser, "S2," between the anode and filament, and a vari-

copied from American 6JD stated that station was only radiating 3.2 thermo-amps.

Australia's Future Wireless Services

High Power Station 1,000 K.W.

Twenty Masts 800 feet High

Broadcasting

SPEAKING at the annual general meeting of Amalgamated Wireless (Australasia) Limited, the Managing Director, Mr. E. T. Fisk, referred to the station that will be used for the Company's High Power Trans-Ocean Wireless Service.

"The station which we have selected for the Australian end of this service," said Mr. Fisk, "will contain the most modern and efficient equipment obtainable to-day, and will embody the most advanced scientific ideas in Wireless Communication. In view of the great importance of this station to Australia generally, and particularly to this Company, I think it is proper that I should give a general description of it. I cannot, at the present moment, talk about the actual site of the station; a number of sites are under consideration, both at Sydney and Melbourne, and I hope a final decision will shortly be arrived at.

The complete station will be made up of three sections:—

- (a) Transmitting equipment.
- (b) Receiving equipment.
- (c) Central Office equipment."

TRANSMITTING EQUIPMENT.

"This will consist of an electronic valve station, having a power in the neighbourhood of 1,000 kilowatts, with duplicated plant which will supply energy to a highly efficient aerial system, supported by 20 lattice steel masts, each 800 feet high."

RECEIVING EQUIPMENT.

"The receiving Equipment will consist of five complete sets of the most modern high speed commercial apparatus obtainable. Each equipment will be capable of receiving, simultaneously with the others from a different direction, and they will all be capable of receiving messages while the Transmitting Station is sending out messages at full power. This will

be achieved by the latest directional methods, which enable a receiver to take messages from any chosen direction and eliminate messages coming from all other directions.

By this means we shall be able to take messages simultaneously from five different countries, if required, while our Transmitting Station is in full operation, sending messages to any one of them, or to another country. It will also be possible for the five equipments to receive simultaneously from as many as five stations in one country, if so desired."

CENTRAL OFFICE EQUIPMENT.

"Instead of locating the operating staff at the high power station and carrying by wire or wireless all messages from the city to the station, which would necessitate double handling, the operators will be located in an office in the heart of the city, and from that office they will operate the transmitting and receiving equipments some miles distant. The central office will be equipped with automatic high speed transmitting and receiving apparatus. To send a message the operator will use a lettered keyboard arranged like the keyboard of a typewriter. The act of depressing the keys will cause Morse signals corresponding to the letters struck to be sent out from the high power station, and as this apparatus will be designed for working at speeds up to 120 words per minute, and the signals will go direct to England in one-fifteenth of a second, it will be seen that a very fast service will be available. The incoming messages from overseas will come through the receiving station into the central office, where they will be automatically recorded by an apparatus capable of recording at a speed of 120 words per minute, and the messages will be de-

livered by a special messenger to the addressee in clear typewritten characters.

A corresponding station of the same type will be provided in England, and will be operated from the G.P.O. in the City of London, so that a message will go direct from here to London without any relays, in a fraction of a second.

Another corresponding station will be erected in Canada to deal with our messages to and from North America. These corresponding stations are being erected without cost to the Australian Company.

Our equipment here can be extended as required, and thus by progressive development we shall have direct commercial Wireless Services with all countries of importance in the world."

INLAND FEEDER SERVICE.

"If the main Overseas station is located at Sydney, there will also be situated here a group of feeder stations which will communicate direct by wireless with similar feeder stations at each of the other State capitals. These feeder stations will also be equipped with electronic valve transmitters with directional receivers, and with automatic sending and receiving apparatus. They will be located outside the city, and in the more important cases each will be operated by distant control from its respective city. Thus, in Sydney there will be a central wireless operating office in which operators in direct touch with London, will work side by side with operators in direct touch with the other State capitals of Australia, so that those capitals will have an equally fast service of communication to and from Great Britain and North America."

Broadcasting

REFERRING to Broadcasting, Mr. Fisk said: "A few weeks ago regulations were gazetted in Australia providing and setting out the conditions under which Broadcasting equipment can be established and used in the Commonwealth. These regulations are on the lines recommended to the Government by a conference of all parties interested in Broadcasting. This conference was called by the Postmaster-General and sat about three months ago in Melbourne. You have no doubt seen already that a very high-grade Broadcasting service is about to be established here by Messrs. Farmer & Co. Ltd., and I have reason to believe that other services will be established shortly in other parts of Australia.

Broadcasting is a new form of entertainment, which has rapidly established itself in all parts of the world. In America it is carried on primarily for advertising purposes, but we are informed that the cost of doing this is increasing very rapidly, and there seems to be a possibility that the services cannot be made permanent unless some reliable means of getting revenue for the Broadcasting stations can be found. In England the Broadcasting station gets a certain revenue, but it has been necessary for the Government to give an exclusive monopoly of Broadcasting to one company, and, furthermore, to prohibit the use by the public of apparatus for receiving Broadcasting other than that made by members of the Broadcasting Company.

In Australia we have the benefit of seeing the difficulties which have arisen elsewhere, and have been able to draw up a scheme to meet Australian conditions, which will ensure the establishment of a high-grade service on a permanent basis. This scheme makes a monopoly of Broadcasting unnecessary, allows any manufacturers or importers to sell

receiving equipment, so long as it complies with the regulations and ensures a revenue to the Broadcasting Station. I am certain no person in Australia will mind paying a small annual fee for the privilege of having a high-grade entertainment and news service in his home for seven days per week throughout the year.

When we compare the annual cost of receiving Broadcasting service with the cost of going to a theatre, or even a picture show once a week, we find that the Broadcasting is extraordinarily cheap. At the same time, Broadcasting takes entertainments into the homes in all parts of the country, thus benefiting those who are unable to reach the ordinary places of entertainment, particularly the people living outside the cities, people suffering from sickness, and the ordinary citizen who prefers to stay at home for his entertainments. In addition to entertainments these services will give valuable news, market and weather information. Although it looks quite attractive from the financial point of view your Directors do not propose to go into the entertainment business, themselves they have decided to concentrate their efforts, and that of the Company's organisation on the designing of equipment and the operation of Broadcasting stations, so that we can offer to those who wish to carry on the entertainment business the very best that the scientific, technical and engineering world of wireless can provide for this purpose. This, we feel sure, is the right policy for the Company, and it also enables those who attend to the entertainment side to relieve themselves from technical and scientific problems, and from the cost of setting up an organisation, such as ours, which would be necessary to keep their stations at the highest point of efficiency, and to keep pace with the rapidly advancing technical work."

200 Miles Reception Without Aerial

MR. R. C. MARSDEN, a well-known Sydney experimenter (2JM), during a recent visit to the country towns of N.S.W., took with him a Neutrodyne receiver he constructed and achieved some remarkable results in reception

One evening when over 200 miles (air line) distance from Sydney,

without using an aerial, he received the Sydney experimental stations 2GR and 2DS.

On another occasion, when almost 300 miles (air line) from Sydney and using a small aerial, he received 2GR so strong the signals were audible all over a room.

Well done, Mr. Marsden!

All America to see famous Ziegfeld Follies

Some time ago Florenz Ziegfeld announced his intention of making a motion picture feature of the "Ziegfeld Follies." Now the idea has been enlarged. He is going to have them phonofilmed.

By use of the De Forest Phonofilm he plans to make the complete motion picture, and at the same time record all the songs, dialogues, monologues and choruses.

The picture will be an exact duplicate of the presentation as it is given at the New Amsterdam Theatre, with all the music, all the solos and all the incidental effects.

The phonofilm photographs sound as well as action, and, according to scientists as well as showmen, preserves an absolute synchronization.

It has long been Mr. Ziegfeld's wish to present the "Follies" in all cities and towns, but the expense has been so prohibitive that it simply could not be done. By phonofilming them, the "Follies" can be shown everywhere, just as motion pictures are shown in the smallest hamlet.

While the details of production still remain to be worked out, says an American paper, there is no doubt that they will be ready for announcement soon after Mr. Ziegfeld returns to New York. The work will be done in the studio of the De Forest Phonofilm.

Radio for Blind People Advocated

Radio can and should be a permanent and increasing blessing to those who cannot see. It is the best way in which the blind can lose the sense of being out of the world of other people, and can enjoy the manifold activities which engage a busy world.

Those who can afford their own apparatus will find their investments a thousand times repaid; and, as for people who cannot, especially those who spend their lives in institutions for the blind, we can only hope, says a writer in an American paper, that the more fortunate and wealthy will appreciate the unparalleled opportunity they have for doing good.

How to Get Results from Broadcasting

Useful Advice for "Listeners-In"

By DR ALFRED N. GOLDSMITH

Director of Research Department

Radio Corporation of America

The following interesting article deals with many of the simple technical difficulties which confront those operating radio receiving sets. It applies particularly to American conditions but contains many useful hints for the guidance of Australian "listeners-in."—Ed.

THERE has been rapid progress in broadcasting recently. Instead of the old crowding of all stations on the two wave-lengths of 360 and 400 metres, the stations are now assigned to definite wave-lengths covering the wide range from 220 to 545 metres. This has greatly increased the possibilities of broadcast reception, provided that the listener uses his receiver in such a way as to pick any desired station. Difficulty has been experienced by some in receiving the longer waves particularly. New stations have been established in certain localities, thus producing very powerful signals in the receiving sets of nearby listeners and somewhat interfering with the reception of more distant stations while their local station is in operation. Then, too, a few stations have been shut down or transferred thereby requiring the listeners to get their programmes from more remote stations which, in turn, involves some modifications in the receiver or in the way in which it is handled. And, finally, summer-time has come with its occasional diminished signal strength and "static" or electrical disturbances of distant reception. Fortunately, all of the difficulties mentioned can easily be overcome to a great extent by a little care and a proper attitude.

The enjoyment obtained from radio broadcasting by the listener will be much increased if he will keep in mind and properly apply a few simple facts which are well known to all skilled radio workers.

SUMMER-TIME RECEPTION.

While excellent radio reception is frequently possible during the summer months, yet the best long-distance records come in the winter. Signals are not quite so loud in the summer, and electrical disturbances such as lightning storms, are naturally more common in the summer, and



interfere occasionally with concerts, particularly those received from distant points. A reasonable attitude will help the listener here. He should remember that he cannot expect every act in even the best vaudeville performance to be tremendously amusing and just what he wants, nor can he expect the weather every day to be clear and pleasant. Similarly, he must not expect every day to be just right for long-distance radio reception. Now and then a summer storm may interfere with both radio

and picnics. The listener should become acquainted with his local stations and enjoy them during the summer, and be satisfied with the long-distance records he has made or will make in the winter. In other words, he should get the best there is in radio during all seasons, and, above all, he should be reasonable.

THE DISTANT LISTENER.

If the listener lives rather far away from all radio broadcasting stations, which he wants to hear, there are several things he can do. He can lengthen his aerial wires and increase their height from the ground. Both of these measures make the signals louder as a general rule. He can add an audio amplifier unless, of course, he already has this instrument. He can also increase the voltage of his "B" battery or plate battery up to 90 or even 112 volts (that is, to four or five of the usual 22½-volt units or blocks). He can use a more sensitive loud speaker, or content himself with the headset operation. He should also tune more carefully so as to get the very loudest signal which his set is capable of giving. If there is a tickler adjustment on his set, he should learn how to use it so as to get full volume of signals. And he should remember that the good results he will then get are going to be even better results in the winter.

THE NEAR-BY LISTENER.

If the listener is very near a powerful broadcasting station, he may get

excessively loud signals from that station and have difficulty in picking up other stations when the nearby station is in operation. In extreme cases it is not possible to get the distant station at all under such circumstances any more than it is possible to hear a whisper from a distance when someone else is shouting near-by. Still a good deal can be accomplished by some of the following measures, which should be tried. The listener can cut down the size of his antenna or use a small indoor antenna having a length of between a foot or two and say thirty feet. A few trials may be necessary to find the best length of indoor antenna in such cases. When an antenna less than 30ft. in length is used, a small fixed condenser of five-ten thousandths of a microfarad (.0005 mfd.) should be connected between the aerial and ground binding posts or terminals of his set. This will permit the reception of waves of the same length as possible with an outdoor antenna. The listener should experiment until he gets the best signals and the greatest ease of choice of one station or another. A little patience is required to get the desired results in some cases. It should be remembered that no one ever learned in five minutes to run an automobile skilfully through heavy traffic. Sometimes the "traffic" in the ether is heavy, and it may not be easy at first to pilot the desired signals through the receiver. Paderewski took quite a little time to learn to play the piano, but it was worth while. So is time spent in mastering the capabilities of the receiving set.

ADVICE TO BROADCAST LISTENERS.

There are ten good rules for broadcast listeners:—

(1) Don't try to hear England in midsummer. Be satisfied to enjoy the nearer stations most of the time.

(2) Don't be disappointed if an occasional storm interferes with your summer evening. There are many fine concerts coming. You can't expect to find a pearl in every oyster nor to receive a record-breaking concert every night.

(3) If you want louder signals, use a longer aerial, more tubes, higher plate voltage, more sensitive loud speakers, and more careful tickler and receiver adjustment.

(4) A pleasant signal filling a moderate size room should be enough to give satisfaction. It is not worth while producing signals which deafen the neighbours. It is wasteful to insist on tremendous signals which are generally less pleasant than moderate signals.

(5) If your local station comes in too loudly and drowns others out, a smaller aerial will help in tuning him out, with a smaller condenser connected between aerial and ground. And if all measures to get rid of the local station fail, why not enjoy his concerts? He is working hard for you and it is nobody's fault that you are so close to him that you are bound to hear him. Broadcast stations have to be closer to some people than others.

(6) For the new longer waves above 450 metres, use a condenser connected between the aerial and ground terminals of your set.

(7) A little patience in learning to handle your receiver yields rich returns in satisfaction from fine signals. Remember that "Rome wasn't built in a day," and keep on getting more and more familiar with your set and how it works.

(8) It is a good idea to read the radio column of a newspaper or a

good radio magazine or two. It helps you to know how your set works and keeps you up-to-date in radio. Information of this sort is an aid in getting the concerts loud and clear.

(9) Ask your radio dealer for advice; he can probably tell you what you want to know and will be glad to do so. The manufacturer of your set is also willing to help you get the desired results from its use.

(10) Do not throw away the direction sheets or booklet that came with your set and with the tubes. Read all such material carefully now and then. If you have lost the direction sheets, write to the dealer or manufacturer for another. The direction sheets must answer most of the questions which have been puzzling you and preventing you from getting the best out of your set.

Obituary

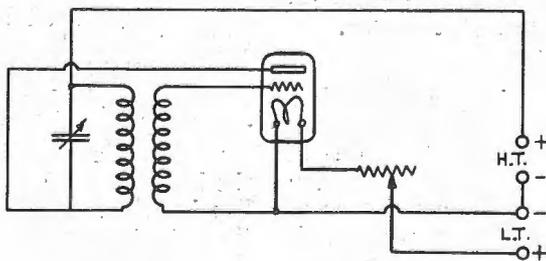
The Late SIR WALTER DAVIDSON,
K.C.M.G., Governor of N.S.W.

IT is with deep regret that we record the death of New South Wales' most popular Governor, Sir Walter Davidson, K.C.M.G.

Prior to the incorporation of *Sea, Land and Air* in this paper, the late Governor was a most enthusiastic reader of that magazine. We have several letters written by the late Sir Walter himself complimenting us on *Sea, Land and Air*. When that magazine was incorporated in *Radio* he instructed us to transfer his subscription, as realising what an important part wireless is to play in our everyday lives, he wanted to keep in touch with the progress in Australia.

On Saturday, September 15, the day before the late Sir Walter died, we received a letter from his private secretary, instructing us to renew His Excellency's subscription to "Radio."

Being such a distinguished reader of "Radio" and so interested in the development of wireless in Australia, we think it most fitting that, on behalf of both the wide circle of readers of "Radio" and ourselves, we record our sincere regret at the loss of Sir Walter Davidson. To his family we extend our very deepest sympathy.



OSCILLATION GENERATOR



The Radio King

Published by special arrangement with Universal Films. Adapted from the Universal Chapter Play, "The Radio King."



THE war had come and gone, leaving red anarchy in its wake. Not only in Russia, where it rose rampant, but in the smaller states adjacent to it, the new kingdoms and republics set up by the mighty league. From the great Mother of Anarchy, Moscow, its tentacles were groping slowly but surely after the bigger game. France had not escaped, nor England, but the greatest prize was yet to be won, America with its limitless resources sufficient to feed the world at war.

So that it was in America that the strongest, most astute, most daring, and yes, even the most learned, of all the anarchist group had gathered. For did not the Central Groups there hold "Marnee," the so-called "Wizard of Electrons," the scientific malcontent, the international scourge; doubly, trebly, quadruply dangerous because of his high attainment in applied physics and chemistry? And did not "Marnee" have for his right-hand man Ivan Renally, "Ivan of the Silver Tongue," whose persuasive, illogic and mesmeric speech brought men to a slavish state where they were ready to risk life and liberty to do his will?

Behind locked and bolted doors, the nailed down and closely shuttered windows, of an ancient house in one of America's greatest cities, Ivan Renally addressed a committee of the chosen, on a certain day of December in the early years of the third decade of the twentieth century.

They listened, eyes aglow, lips parted as though drinking his words in thirstily; while he concluded the peroration that had already lasted so long.

" And so, comrades, the world shall be divided up into provinces, each with one of the Brethren as Commissar. The general strike shall be declared all over these States. Not a wheel shall move on the railroad to bring soldiers against us,



Help! Bradley Lane!! Help!!! Came the boyish voice through the ether.

while we at our leisure loot the Exchanges and seize the Mints, and with these at our command—the reins of power. But two dangers threaten us. Bradley Lane, the equal even of "Marnee" in scientific powers, is only awaiting his chance to get evidence to throw us into prison before our great plans go into effect. John Leyden, the scientific experimenter, who is now in the employ of the Gov-

ernment, endeavouring to perfect a wireless instrument which will enable him to re-call from the air any message sent, irrespective of their wave-lengths or the power of the transmitting station, must be accounted for at all costs. If his invention proves a success and is put into use we will be placed in the hands of Bradley Lane, who, I will not hesitate to say, would have us imprisoned on the evidence of the messages re-called. It is not necessary for me to point out the importance of the secrecy of the messages exchanged with our emissaries in the various centres, and the instructions sent out by 'Marnee' and by myself."

Even as he spoke, beneath his feet in the subterranean chamber hewn out of the rocks beneath the sub-soils, a mis-shapen, deformed creature, who, for all the height and breadth of his white forehead, seemed hardly human, with his glaring eyes and twisted mouth, leaped from his seat before one of the most elaborate radio sets ever devised. Flinging off the receivers he executed a weird dance of triumph, his hideous figure standing out in weird contrast in the ghastly light shed by the arc lamp which flooded the concrete floor with a pool of light like molten silver. This grotesque, mis-shapen bird of prey was the feared and hated "Marnee."

"I have jammed him again," was the burden of his screech. "While I live he will never succeed—I'll teach them that they can't interfere with the plan of 'Marnee.' Ha, ha! I've jammed him! I've jammed him!"

Not half a mile away, old John Leyden, whose invention Renally had told his accomplices they had so much

cause to fear, also tore the receivers from his ears. “I can’t understand it, Ruth,” he muttered, as his daughter came into the room on tip-toe. “The air seems full of static—nothing intelligible can get through, and yet, it isn’t possible. My invention has been so thoroughly tried that it cannot fail.” Then from Ruth came the remark that, had he known it at the time, was so near to the truth.

“But, father, can it be that there is some person whose interests are entirely in opposition to the government?”

“That seems impossible, Ruth, my experiments have been kept a close secret. I just don’t understand.”

Had he seen and heard Marnee, and watched his manipulation of the complicated apparatus before him he would have understood, but as it was, he tried again and again without avail, and finally discontinued his efforts for that night, hoping for greater success on the morrow.

Marnee, satisfied, recalled the food he had allowed to grow cold on the tray, brought in an hour before, and began eating. As he did so he fell into rapt retrospection, his eyes glowing insanely. So engrossed was he that he entirely forgot the presence of Jimmy, his unfortunate orphan assistant. Week after week, month after month, Jimmy had tried to formulate some scheme to escape from his eccentric captor. Here was his opportunity—it was the chance for which the boy had been waiting; the boy who had shared the subterranean prison with him, a prison indeed, to the pale-faced lad of twelve, a victim of one of Marnee’s insane whims. Jimmy’s mother had rejected Marnee

in favour of the boy’s father and, believing it was his mis-shapen form, Marnee had bided his time stolen the boy from her swearing his mind and morals should be as mis-shapen as Marnee’s body. So far he had not succeeded. The boy’s sturdy honesty had prevailed, but he remained a prisoner of hate, watching his chance to be free.

Jimmy had pieced together conversations he had heard; he knew Bradley Lane was the enemy Marnee most feared. He had watched his uncanny master manipulate the various instruments in his wireless transmitting and receiving set and had memorised the codes and calls. Now, seizing his first opportunity while Marnee sat, staring vacantly, he tip-toed to the shining Radio corner, and began starting up the set. The hum of the motor generator brought Marnee back to the present, but not before the boy had sent out his call to Bradley Lane. “2430 Memling Avenue. Sub-cellar. Marnee. Prisoner. Help.”

Marnee sprang back across the room, hurling the boy backward, dashing him against the concrete wall. As he took the receivers the answer came. “Bradley Lane. Coming! Courage”

For a moment Marnee’s rage was a terrible thing to see. With a wolfish snarl he sprang at Jimmy, his demoniacal fury venting itself on the half stunned boy. Fearing that the lad may again seek to notify the outside world of his unenviable position, Marnee bound him to a chair. He ascended a stairway which had come down from a ceiling in response to the operation of a switch on his main board. Bursting in on the meeting of his confederates he surprised them with,

“Bradley Lane is coming here, we must prepare his welcome—adequately. Allow him to come right in among you and by whatever means you choose send him down to my laboratory. I will promise you he never leaves.”

(A further instalment of this sensational radio story will appear in the next issue of “Radio.”)

Sydney to Honolulu

2CM Succeeds

LAST July, Mr. C. D. Maclurcan, the well-known owner and operator of experimental station 2CM, arranged a transmission test with Honolulu to take place early in August.

Mr. Maclurcan is now in receipt of a letter from Mr. K. A. Cantin, Acting Manager of the Hawaiian Division of the American Amateur Radio Relay League at Honolulu, of which the following is an excerpt:—

“I have to report that on the first night of the test, August 3, amateur station 6CCR reported that at 10.55 p.m. Honolulu time he received your signals signing off 2CM on C.W., fairly QSA.”

The above time corresponds in 2CM’s log, which was actually 7.25 p.m. Sydney time.

That is a wonderful record and Mr. Maclurcan has shown Australian experimental transmitters the way across the Pacific.

“Radio” extends heartiest congratulations to Mr. Maclurcan on his excellent work.

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BURGIN ELECTRIC COY. WIRELESS ENGINEERS AND SUPPLIERS

Activities in South Australia

(By Our Special Correspondent.)

THE fifth annual meeting of the South Australian division of the Wireless Institute was held at the University of Adelaide on September 5. The president, Mr. Hambly Clarke presided over a large attendance.

Officers for the ensuing year were elected.

Mr. Caldwell, the newly-elected president, mentioned that owing to private reasons Mr. Clarke was unable to stand for president for the coming year. The Institute, however, still regarded Mr. Clarke as the most technically informed man on wireless in the State.

The secretary then read a letter received from the radio inspector regarding reaction circuits, use of which, by experimenters operating within a range of ten miles of a broadcasting station or a commercial or defence station, is to be discouraged.

A motion was carried in favour of forming a branch of the Radio Relay League. A motion was also carried to the effect that an additional entrance fee of 2/6 be added to the annual subscription in the case of full membership and a 1/- in the case of probationary membership.

A demonstration wireless concert broadcasted from Mr. Austin's transmitting station on the parade, Norwood, on Monday afternoon, September 3. The result was entirely satisfactory in view of the fact



The latest in American radio millinery. This is "The Tuner" style.

that a parlor machine had to be used for a concert job, and the power at the transmitting station was only five watts. The demonstration was under the supervision of Mr. E. W.

Sager, one of the pioneers of the wireless movement in this State, who used a set made by himself.

The entertainment was a novel one for Adelaide and attracted a large gathering, including members of the City Council.

The Lord Mayor of Adelaide (Mr. Lewis Cohen) opened the proceedings.

At the conclusion of the concert Mr. Nagar said that in England there were schools for training voices in correct technique for wireless transmissions.

The demonstrations were conducted each day throughout the week and attracted countless visitors, including many people down from the country for the Royal Show.

Considerable interest has been aroused in wireless circles in Adelaide by the announcement that a series of extension lectures is to be provided on theory and practical demonstration in wireless telegraphy at the Adelaide University.

Professor Kerr Grant has been responsible for the innovation and with his staff has installed an experimenting plant. There will be one lecture a week and the course will extend over three months. The number of enthusiasts who have signified their intention of attending the practical course has been so great that three classes instead of one have been formed, and it is fully expected that further classes will be made up in the near future.

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New Zealand Notes

(By our Special Correspondent.)

THERE has been increased interest in "broadcasting" during the past month, and excellent programmes are sent out from several chief centres at regular intervals. The Auckland and Dunedin stations are perhaps the most generous in this respect.

As showing the general usefulness of wireless in the Pacific it is interesting to note that the Prime Minister (Mr. Massey) shortly after his departure from Wellington by the *Tahiti*, received a wireless message from the Commissioner of Cook Island extending an invitation from the invitation from the native tribes and all the people of the Islands to attend a welcome ceremony. Mr. Massey gladly accepted the call, and when the *Tahiti* arrived in the roadstead was met by the Commissioner and Government officials. He was rowed ashore where the crowd received and entertained him in right royal native style. At the same time, Mr. Massey was still receiving wireless messages from his New Zealand friends wishing him bon voyage.

The Auckland Y.M.C.A. continues to make a feature of fortnightly club meetings, and in addition to an interesting lecture each evening, instruction classes are also held.

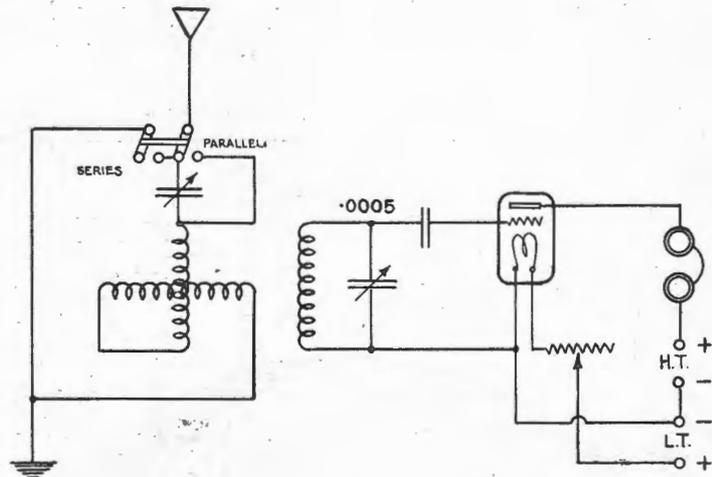
The Auckland Wireless Club also holds similar functions which are generally of an attractive character.

Most New Zealand amateurs are entirely in accord with the suggestion

of the Pan-Pacific Science Congress regarding time signals in the Pacific being sent from Honolulu. They would be more audible and dependable.

Amateurs in certain parts of the Auckland suburbs are said to have experienced some difficulty

ports led to investigations being made by Mr. G. P. Orams, who specialises in reception on a crystal. He visited the localities in question and in many instances found faulty connections, and other causes of obstruction. At one place there was a ground lead which exceeded 50 feet. The funda-



INDUCTIVELY COUPLED VALVE RECEIVER

in receiving music on a crystal set. They state that they can only receive the G.P.O. wireless station (VLD) very faintly. So general was the report that it was contended that the area in question was for some reason or other a "dead" one. These re-

mental wave-length of the aerial was thus too great to receive the local music, which is transmitted on 260 metres. In no instance could Mr. Orams discover a "dead spot," and he is carrying on further tests to prove the position.



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Radiofun

GRIPPED.

A chap from a way-outback station
Went to town for a quiet vacation.
The stores that sell coils
Have him fast in their toils,
And he says it's a quite new sensa-
tion.

TRUE.

Lots of civilised people nowadays
still gaze into the crystal, while in a
radio aspect a lot more tend to look
down on it!

Margie: And he had radio eyes.
Sue: What do you mean, radio
eyes?
Margie: Oh, just eyes with a broad
cast.

THEY ALL LISTENED IN.

Bank: "Smyth wanted to be or-
iginal, so he broadcasted his pro-
posal."
Bing: "And now he has three
breach of promise suits on his
hands."



Howling Valve Epidemic—Cause and Remedy.

"Mr. W. D. 11 seems very dull to
what the other chaps are."
"Yes, but there's method in his
dullness."

"Multi-valve sets are like most
wives—dashed hard to manage."

ASK THE EDITOR—HE CAN TELL YOU.

A question that was asked the edi-
tor of "Radio" and what he replied:
Q.: How is it that my reception is
very weak unless I keep my finger
glued on the ground post?
A.: Never glue connections; use
solder.

JAZZING UP THE ETHER.

Despite the general use of radio
and the millions of fans informed as
to the reception of broadcasts, some
remain ignorant of its possibilities.
The other day in the National Press
Club, one member suggested that the
set be "speeded up," saying the
music coming in was "too slow."

College professor to student: "By
what means is electricity transmit-
ted?"
Student: "Why—er—"
College professor: "Correct, and
how is electricity measured?"
Student: "What?"
College professor: "One hundred
per cent."

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The Experimenters' Corner



A USEFUL VERNIER CONDENSER.

THE reception of short wave radiophone and telegraph signals is not an easy matter when using the ordinary variable condensers for tuning, owing to the fact that a fraction of a degree of movement of the rotary plates is often sufficient to totally tune out the wanted signal. With the reduction

Reference to Fig. A will give an idea of the material required, and also a few suggested dimensions. The actual size of the finished condenser will depend upon the diameter of the fixed and movable plates, and as these may vary in individual cases, only the main details will be described. For the baseboard take a piece of hard rubber four inches square and one quarter of an inch thick. A neat and workmanlike finish can be given to this by sandpapering it with a fine grade of paper, and finally finishing off with a mixture of knife polish and oil until a smooth, dull, black surface is obtained. The rotary and fixed plates can be purchased from an experimental supply shop or cut to the shape shown in the diagram. Fix both plates to their respective baseboard and rotary knob with a good grade of adhesive such as Seccotine or Le Pages glue. They can be made doubly secure by driving in small nails known as panel pins and filing and sandpapering them flush with the remainder of the plate.

On top of the fixed plate is now glued a piece of thin, hard rubber sheet, about 1/32 in. thick. A hole must be drilled through this sheet to allow the rotor shaft to move easily.

Underneath the panel on this shaft is fitted a spring which keeps the plates held together and prevents wobbling. A soldered pigtail connection to the rotor shaft will guard against microphonic noises due to faulty contact as the plates are revolved. With plates three inches in diameter, the approximate maximum capacity of one of these condensers is in the neighbourhood of 0.00002 microfarads when using an ebonite dielectric of the abovementioned thickness.

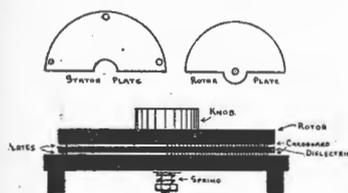


Fig. "A."

of the experimental wave-lengths to a band between 150 and 250 metres this effect will be especially noticeable, and make the experimenter sigh for some means of obtaining finer tuning. The use of a suitable vernier condenser overcomes most of the trouble in this direction, and by following the few simple directions below a most useful piece of apparatus will result.

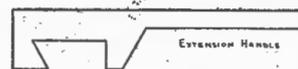
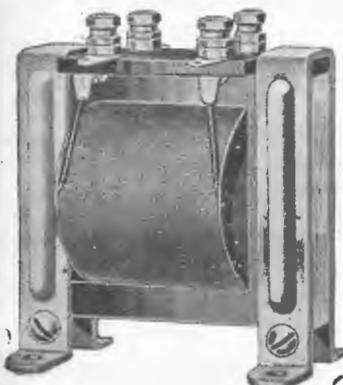


Fig. "B."

EXTENSION HANDLES FOR DIAL ADJUSTMENT.

In addition to the use of vernier condensers as described in the previous article, fine control can be obtained over the tuning properties of radio apparatus by the use of long extension handles on the dials. Many suggestions have been made for forms of these handles, but as they are all more or less of a permanent nature, their use either requires a fair amount of free space around the dial



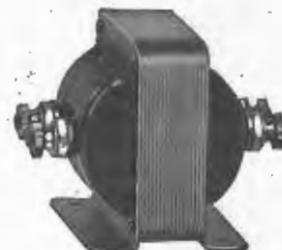
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or disfigures the surface with holes for attaching screws. By cutting a piece of ebonite or close-grained wood to the shape shown in Fig. B, the necessary adjustment can be made, and the extension handle removed for duty elsewhere. The exact size of the grip at the end of the rod depends upon the class of dial in use, and by cutting it in the manner shown a fair amount of latitude for different sizes is allowed. To use it, first of all hook the far end over the

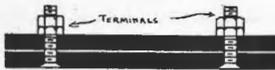


Fig. "C."

dial and then bring it down gently until it locks firmly enough for easy rotation.

SMALL FIXED CONDENSERS.

Small condensers of fixed capacity are very useful things to have around any experimental station. They come in handy for use in the grid circuit, across the telephones as a radio frequency by pass, and for placing in parallel with variable condensers to increase the tuning range of the receiver.

Their construction is a very simple matter, and even if there is no call for additional condensers at the moment it will be a good investment to make a few during some spare time, and then they will be available next time "the latest circuit" is being tried out.

The best dielectric is thin sheet mica, about two mils thick. These can be bought ready gauged in small sized sheets, or if it is possible to borrow a micrometer from some friend it will be more economical to split the sheets from a large piece, and determine their thickness accurately. There are four capacities which are more or less standard in experimental circuits, viz., 0.0001, 0.0003, 0.0005, and 0.001 microfarads. With a mica dielectric of the above-mentioned thickness, and active surface of one square centimetre—or an area about three-eighths of an inch square—will give a capacity of 0.0001 m.f. Cut the mica sheets into pieces one inch wide and two inches long, and for the plates either heavy tin-foil or three mil brass foil should be used. The latter must be cut $\frac{1}{8}$ in.

wide and $2\frac{1}{4}$ in. long. The extra length is to provide for connection to the terminal screws on each side. These are mounted as shown in Fig. C. To prevent short circuiting of the elements, they must not overlap more than one inch, which means a maximum capacity of 0.0003 m.f. approx. per plate. From this data it will be able to construct capacities of any desired value by using two or more plates in parallel. The dielectric specified is capable of standing up to voltages of 1000 at direct current potentials, but if used in circuits where radio frequency currents have to be passed this limit should be reduced to about 300 or 400 volts. If higher voltages are to be used, an extra thickness of mica must be used for every multiple of the abovementioned limits.

A STAND BY—TUNE CIRCUIT.

The use of coupled circuits certainly gives great selectivity when once a station is tuned in, but when waiting for a call from a station whose wave-length adjustments are not accurately known it is necessary to keep searching with the condensers of both circuits simultaneously. This is by no means an easy matter for an experienced operator, let alone the beginner, and for ease of adjustment many use single circuit tuners despite their rather broad tuning qualities. The advantages of both methods of reception can be obtained by the employment of the circuit

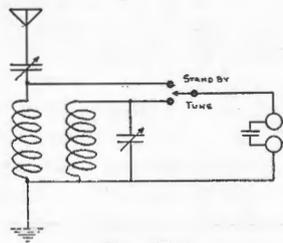


Fig. "D."

shown in Figure D. The only extra piece of apparatus is a single slide switch, which is almost certain to be found amongst the varied pile of junk which collects around every live experimental station. Leave the switch so that the detector and telephones are connected to the aerial circuit, and when a station is tuned in switch over to the coupled connection and adjust the secondary resonance. With slight modification this circuit may be adapted for use with a valve receiver.

CONDENSITE CELORON

FOR RADIO PANELS.

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Experimental Call Letters

New Zealand

- 1AA x N. Edwards, 42 Collins Street, Auckland, 5 watts.
- 1AB — Penney, Auckland, 5 watts.
- 1AC x L. Spackman, Herne Bay, Auckland, 5 watts.
- 1AH Hartle & Gray, Auckland, 50 watts.
- 2AB D. Wilkinson, Motueka, Nelson, 5 watts.
- 2AC x — O'Meara, Gisborne, 50 watts.
- 2AD x C. Stevens, Gisborne, 5 watts.
- 2AE x — Patty, Gisborne, 5 watts.
- 2AF — Sinclair, Gisborne, 50 watts.
- 2AG — Ewen, Wanganui, 5 watts.
- 2AH x Radio Club, Wanganui, 50 watts.
- 2AI x — Harrison, Wellington, 5 watts.
- 2AJ — Branagrove, Stratford, 5 watts.
- 2AK x — Rawson, Hawera, 5 watts.
- 2XA Mr. Shrimpton, Chief Telegraph Engineer, Wellington, 50 watts.
- 3AA x R. J. Orbell, 154 Heaton, Merivale, Christchurch, 50 watts.
- 3AB x — Vincent, Christchurch, 20 watts.
- 3AC x Rad'o Society, Christchurch, 15 watts.
- 3AD — Blake, Greymouth, 5 watts.

- 3AF x — Ball, Christchurch, 5 watts.
- 4AA x — Bell, Palmerston South, 50 watts.
- 4AB Otago Radio Association, Dunedin, 50 watts.
- 4AC — Robinson, Dunedin, 50 watts.
- 4AD — Jordan, Invercargill, 50 watts.

NOTE.—2AH and 3AC send musical programmes on 230 metres and 300 metres respectively several nights a week, 8 to 10 p.m. (N.Z. time). Those marked "x" have been heard working in Australia. Most of the others listed above should also be audible. 3AA, 3AC and 4AA have received good reports of their speech transmission in Australia and Tasmania. 4AA has been heard in Apia, Samoa.

The N.Z. Broadcasting Stations are always changing wave-length, power and nights of transmission. The following powers and wave-lengths are only approximate:—
 1YA Auckland Broadcast Station, 300 metres, 250 watts. Power to be 500 watts later.

- (?) International Electric Co., Wellington, 100 watts, 270 metres.
- (?) Wellington Broadcast Station. Now testing out on 500 watts.
- 4YA British Electric Co., Moray Place, Dunedin, 500 watts, two 250 watt tubes, one as oscillator, one as modulator, 370 metres.
- 4YO Dunedin Broadcast Station, uses four 250 watt tubes, two as oscillators, two as modulators. The speech is amplified by two five watt voice amplifiers, before it is finally applied to the grids of the modulator valves. These two stations (4YA and 4YO) broadcast on 370 metres on alternate nights.

Reports from Australian experimenters, on signals from any of the above transmitters, will be much appreciated. The New Zealanders do the same for the Australians.

The following additional Licences have been issued during August:—

NEW SOUTH WALES.

- 2AS Grigg, H. E., 370 Military Road, Mosman.
- 2BF Forsythe, L. E., "Holylake," Sailor Bay Road, Northbridge.
- 2DE Renshaw, R. P., "Waimea," Lord Street, Roseville.
- 2OI Whitaker, A. T., 31 Railway Crescent, Banksia.
- 2ZI Dixon, R. H., c/o. C.S.R. Co, Condong, Tweed River.
- 2ZM Deane, P.M., Clarence Street, Burwood.

Australia

- 2ZN Cottrell, J. W. M., 23 Dolphin Street, Randwick.

VICTORIA.

- 3FH Hall, R. F., Glindabourn Avenue, Toorak.
- 3JP Mitchell, H., Kean Street, Caulfield.
- 3JR Dunstan, W. J., 7 Cameron Street, Ballarat East.
- 3ZE McGregor, K. W. A., 23 Molesworth Street, Armadale.
- 3ZJ Lempriere, C. L., Terrara Road, Vermont.
- 3ZK Bradley, F. R., Beach Crescent, Sandringham.

- No. 2430, Kells, A. C. E., 366 Ascot Vale road, Moonee Ponds.

QUEENSLAND.

- 4CK Norris, E. L., Hume Street, Toowoomba.
- 4GE Fortescue, C., Arthur Street, Toowoomba.

SOUTH AUSTRALIA.

- 5DN Jones, L. C., 146 Rundle Street, Adelaide.

WESTERN AUSTRALIA.

- 6CZ Saar, A., Grey Street, Northam.
- 6DD Bishop, C. E., Grey Street, Albany.

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The money thus earned will enable you to buy radio equipment.

Australia Will Benefit

When Broadcasting Commences

With the commencement in Australia of wireless broadcasting—already well established in Great Britain and America—the "isolation" of people who live away from the cities will, in a large measure, be dispelled.

Broadcasting will be one of the greatest factors in the everyday life of the near future—to judge by its phenomenally successful development in recent years.

It is going to be of invaluable service and interest to the the community. Receiving sets will be obtainable at prices within the reach of all; what is more, once people have learned for themselves the wonderful benefits of wireless, they will begin to take an interest in the technical side of the matter, and desire to find out "the why and the wherefore" of the instrument which is the source of so much enjoyment for them.



Courtesy N. Y. Globe.

The broadcasted programme will be changed every day without extra cost. Maybe hundreds of miles from a theatre or concert hall, listeners will head the words of a play or the song of a great artist as clearly as if the programme were being performed in the very room where the receiving set has been installed.

In a land of vast spaces such as this, broadcasting will, without doubt, be successful because it will supply a great need. It does not require a great effort of the imagination to foresee the time when the house without wireless will be the exception, not the rule.

For simple instruction in the general principles of Wireless Telegraphy you should read the

Handbook of Technical Instruction for Wireless Telegraphists

BY
J. C. Hawkhead
and **H. M. Dowsett, M.I.E.E.**

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New Wave Lengths. Experimental Stations

In accordance with the new regulations, a number of the N.S.W. experimental transmitters are altering the wave-length of their stations.

Although we have not been officially advised and cannot therefore vouch for the accuracy of the following list, we understand the new wave-lengths will be:—

2AR—220 metres.
2BB—235 metres.
2CM—240 metres.
2DS—237 metres.
2JM—236 metres.

Movements of Wireless Officers

Mr. A. W. Hooper signed on s.s. *Niagara* as 2nd operator, at Sydney, on September 5.

Mr. J. A. Heavey relieved Mr. C. F. Griffiths on s.s. *Manuka*, at Sydney, on September 6.

Mr. J. M. Camps terminated service on September 30.

Mr. C. W. Drew signed on s.s. *Cantara*, at Sydney, on September 11.

Mr. E. T. Prentice, who was relieved by Mr. G. Tracey as 2nd operator, on s.s. *Taiyuan*, at Sydney, on September 11, signed on s.s. *Yarra* at Sydney, on the same date.

Mr. H. S. Chown signed on s.s. *Emita*, at Sydney, on September 11.

Mr. W. L. Myers signed on s.s. *Taiyuan* as 3rd operator, at Sydney, on September 11.

Mr. E. C. Morris signed off s.s. *Maheno*, at Wellington, on September 6.

Mr. J. G. Henderson signed off s.s. *Flora*, at Auckland, on September 3.

Mr. G. M. Gormlie was relieved on s.s. *Arahura* by Mr. J. G. Henderson, at Auckland, on September 3 and proceeded on Home Port leave.

Mr. A. W. Hodge signed off s.s. *Dongarra*, at Swansea, on July 30, on sick leave.

Personal

Mr. J. L. Davies, who has been superintendent of the Awanui wireless station for a number of years, has been promoted to an inspectorship, with Wellington as headquarters. Mr. Pellow has been appointed to succeed Mr. Davies at Awanui.

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Another Exclusive Feature for "RADIO"

"THE RADIO KING"

A Real Wireless Story.

WE have pleasure in announcing that by special arrangement with the Universal Film Manufacturing Co., Sydney, the sole Australian publication rights of the thrilling wireless motion picture story, "The Radio King," have been secured for "RADIO."

The story is adapted from the Universal Chapter Motion Picture Play of the same name. "RADIO" is the first journal in Australia to have been granted the sole rights for publishing the full story of a feature motion picture. The story is centred round Bradley Lane, a radio expert and secret service agent, who is hurled into many weird adventures through hearing a strange message while experimenting with his radio receiver.

The first instalment of this thrilling story commences on page 324 of this issue. Subsequent chapters will appear in future issues of "RADIO," and readers are assured of a most novel and fascinating "Radio" story.—[Editor.]

Club Notes & News



MALVERN CLUB.

A meeting of the Malvern District Section of the Victorian Division of the Wireless Institute was held on Tuesday, 11th instant, in the A.N.A. Hall, High Street, Prahran, and those present had a very interesting address delivered to them by H. K. Love, President of the Victorian Division, on "An Efficient Experimental Station." This section meets on the second Tuesday in each month, and, as there is still room for a few more members, those interested should come along to the next meeting or communicate with the Secretary, B. J. Masters, 16 Sutherland Road, Armadale, Victoria.

ILLAWARRA RADIO CLUB.

There was a good attendance of members at the 29th meeting when Mr. A. E. Atkinson addressed the members on "Symbols Used in Wireless." The speaker explained the whole of the numerous signs used in the science and in circuit diagrams, and exhibited many samples of the units in question.

A pleasant little interlude occurred during the evening when a presentation was made to Mr. and Mrs. McNeill as a mark of the Club's appreciation of the kindness extended towards it in providing club-room accommodation for the next year.

Mr. McNeill was the recipient of a gold-mounted pipe while Mrs. McNeill received a teaset, tray and flower bowl. Mr. Atkinson (Vice-President) in making the presentation, referred to the very fortunate position in which the Club has been

placed in the matter of quarters owing to the generous manner in which their hosts had made available that very comfortable room for their meetings for which the Club was deeply thankful.

At a later meeting the secretary read a notification which had been received from the Radio Inspector in reference to the new regulation on the question of regenerative circuits.

A talk was given by Mr. C. A. Gorman on "Circuits." In response to numerous questions, a great many circuits were given on the board. He dealt particularly with valve circuits, which were: (1) non-regenerative, (2) regenerative and would energise the aerial, and (3) regenerative but which would not energise the aerial.

At the conclusion Mr. Gorman was accorded a vote of thanks.

The secretary would be pleased to hear from any experimenters in the Illawarra suburbs (not already members) with a view to their joining the Club, and will supply any information concerning same on application.

Address—Mr. W. D. Graham, 44 Cameron Street, Rockdale.

ESSENDON RADIO CLUB.

At the last meeting of the above Club, held on September 6, the secretary, Mr. J. W. Jacobs, lectured on the "Nature and Propagation of Electro-magnetic Waves."

Mr. Jacobs explained the nature of vibrations in the ether, including light,

heat and sound waves, and further illustrated his meaning by suitable analogies.

The Club's new aerial is now in working order and at the next meeting a demonstration of wireless telephony—for which several well-known Melbourne experimenters will transmit—will be given.

Several Club members intend competing in the forthcoming trans-Pacific test, in which it is confidently expected fresh records will be created.

Information concerning the Club will be gladly supplied by Mr. Jas. Jacobs, 40 Munro Street, Ascot Vale, Victoria.

NEUTRAL BAY RADIO CLUB.

A general meeting of this club was held on Tuesday evening, September 18, and there was a record attendance of both members and visitors.

After general business had been dispensed with, the meeting was thrown open to a general discussion on wireless generally. Several members had various receiver parts, which were explained to other members.

By courtesy of Mr. G. Watkins, members were given the opportunity of listening to some of the local experimenters testing.

Mr. C. W. Donne delivered a short lecture on the Fire Underwriters' Rules governing the erection of aerials.

The club is going ahead rapidly and many attractive nights have been arranged by the committee.

Those desirous of information regarding this club should write to the Hon. Secretary at "Belle-Vue," Kurraba Road, Neutral Bay.

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Radio in W.A.

(By Our Special Correspondent.)

SPURRED to action by the success which has attended the formation of the Subiaco Radio Society, several wireless enthusiasts in Mount Lawley conferred together and decided to write a number of those interested in the science, calling an inaugural meeting to take place in the Lyceum Theatre, Mount Lawley. Accordingly, a large crowd assembled in the theatre. Mr. C. P. Knapton, president of the Wireless Development Association of Western Australia, was to preside at the meeting, but owing to unforeseen circumstances, he was prevented at the last moment from attending, therefore, Mr. P. Kennedy, State Engineer, officiated in that capacity. Letters of apology for non-attendance were received from Mr. J. Scaddan, M.L.A., and Mr. W. E. Coxon. Mr. Kennedy addressed the gathering on the desirability of having a radio club in Mount Lawley, and was supported in his remarks by Mr. J. A. Wishaw (Wireless Supplies Co.), Mr. H. Thomas (Harris, Scarfe & Sandovers, Ltd.), Mr. V. J. Matthews (Stott's Business College), Mr. C. M. Thompson (Editor, "W.A. Motorist"), Mr. C. H. Snowden (Chief Traffic Manager's Office, Railways), and Mr. B. M. Cavanagh (Cavanagh & Cavanagh, Ltd.). The following officers were then elected by ballot:—Hon. President, Mr. J. Scaddan, Minister for Mines, Railways, Forests, and Agriculture; President, Mr. B. M. Cavanagh; Vice-presidents, Mr. J. A. Wishaw and Mr. H. Thomas; Hon. Secretary, Mr. C. H. Snowden; Assistant Secretary, Mr. B. Randell; Hon. Treasurer, Mr. K. D. Powell; Technical Adviser, Mr. J. A. Wishaw; and Committee, Messrs. A. Strickland, E. O'Halloran, and D. Ireland. The election of officers concluded the evening's proceedings, and after calling another meeting to take place in Wallish's Hall, Grosvenor Road, Mount Lawley, to draw up the necessary rules and regulations, etc., the gathering dispersed. "Radio" ex-

tends its good wishes to the club for its future success.

A forward step in the advancement of radio in Western Australia was the meeting of electrical traders and radio importers, which was held recently in Perth. Mr. P. C. Knapton presided, and amongst those present were:—Messrs. W. E. Coxon, J. A. Wishaw, White, Unbehaun, Truman, Little, Fontaine, Jackman, Holt, McGillivray, and Hadley. Mr. Knapton explained that the primary object of the meeting was to bring the wireless traders of Western Australia together to form an Association to assist generally in the development of radio and broadcasting in this State. After several others had supported Mr. Knapton's remarks, Mr. Truman moved:—"That this meeting, representing the Radio Traders of W.A., form themselves into an Association called the Wireless Development Association of Western Australia." Mr. McGillivray seconded the motion, and was supported by Mr. J. A. Wishaw, Mr. White and Mr. W. E. Coxon. The motion was carried unanimously. Mr. Knapton was then elected President, and the following were chosen as a committee:—Messrs. Coxon, Wishaw, Truman, McGillivray, and Cohen.

Wireless in politics. If the political temper is ruffled in future, State Parliamentarians may calm themselves with the strains of "Believe Me if All Those Endearing Young Charms" or some other simple melody. The Minister for Railways (Mr. J. Scaddan) stated that Mr. Wing, a representative of the Amalgamated Wireless Ltd., had arrived in Perth from the Eastern States a few days ago with two wireless sets. One will be placed in the Ministerial room in Parliament House, and the other at Applecross Wireless Station, where they would be tested as a media for broadcasting. The value of wireless in forest fire control schemes will also be proved.

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J. C. M. (Gretna), referring to article on valve-spark coil transmitter published in "Radio," August 22 issue, asks: (1) Inductance required with .001 m.f. condenser? (2) Would Q valve be satisfactory? (3) Could 40 miles be worked with this set? (4) Could it be used for telephony.

Answer: (1) Use an inductance coil 4in. diameter wound with 45 turns of No. 1 D.C.C. wire. The final tuning will have to be done with a wave-meter or by listening in to a transmitter on the secondary circuit of the receiver and adjusting the former until signals are heard in the vicinity of the tuning necessary for other transmitters. (2) A Q valve will make an excellent oscillator, as it is capable of handling high voltages without risk. (3) Yes, if using a valve at the receiving end. (4) This arrangement cannot be used for telephony, as it is a tonic train telegraph transmitter only.

Joek (Orange) asks: (1) Qualifications necessary to pass First-class Wireless Officer's examination. (2) What is demand for skilled operators?

Answer: (1) The qualifications necessary is a thorough knowledge of the theory and practice of Wireless as outlined in Appendix 5 of the P.M.G. Handbook, a thorough understanding of the Rules and Regulations governing the handling of Wireless traffic, and the ability to send and receive at a speed of 20 words per minute for five minutes. (2)

This varies from time to time, no definite information can be given.

H. J. F. (Broken Hill) submits diagram and particulars of crystal receiver which he is constructing and asks: (1) Approximate range. (2) Would a pair of ordinary telephones and a telephone transformer be satisfactory? (3) How could three basket coils be used with this receiver, would it increase the range? (4) How should these be connected up? (5) What wave-length would above basket coils tune to on aerial (particulars given)? (6) Are connections as per diagram correct? (7) Where would loading coils be placed? (8) Approximate range using loose coupler, as described?

Answer: (1), (3) and (8) Estimates regarding range of reception cannot be given as so much depends upon the location of the station and skill of the operator. (2) Yes, if the windings are of the correct value. (4) The same as an ordinary inductance coil. (5) From 1000 to 3000 metres with a series-parallel 0.001 m.f. condenser. (6) You should connect end of the telephone transformer to the secondary instead of the primary. (7) In series with the primary and secondary coils.

G. A. M. (Perth) submits particulars of aerial and receiver and asks: (1) Is reception of Adelaide time signals and general traffic a record for crystal receiver? (2) Is stranded wire aerial superior to single gauge? (3) What is distance of Adelaide Radio from Perth? (4) Ama-

teur telephony on 5 to 10 watts five miles away can be received very strong, is this good?

Answer: (1) You are to be complimented on excellent reception with the simple receiver you are using. (2) Stranded wire is of noticeable advantage for transmitting only. For reception the decrease in resistance is only a small percentage of that of the tuning apparatus. (3) 1325 miles. (4) Yes.

Thanks for complimentary remarks of "Radio." Your suggestion being considered.

Crystal (Albury) asks: (1) Longest and shortest wave-lengths tuning coil dimensions diameter 3in., length 11in. (2) Will a 'phone condenser of 0.001 m.f. act as an ordinary fixed condenser on a crystal set? (3) Could telephony be received 60 miles using one valve as a detector?

Answer: (1) Owing to insufficient data regarding turns of wire we are unable to give information as to tuning range. (2) Yes. (3) Yes, if conditions are favourable.

J. B. S. (Lithgow) asks: If concerts can be received about 40 miles from Sydney using Mullard "Ora" valve and single coil tuner with the reactance.

Answer: Yes; but you must remember this circuit does not find favour with the Government authorities. We would suggest you use the circuit described in "Experimenters' Corner" last issue of "Radio" (No. 13).

IT is an old saying, but a true one, "that the quality will be remembered long after the price is forgotten." Our printing is readable, well-balanced, correctly displayed, and has a pleasing touch of individuality that will reflect credit upon your business.

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