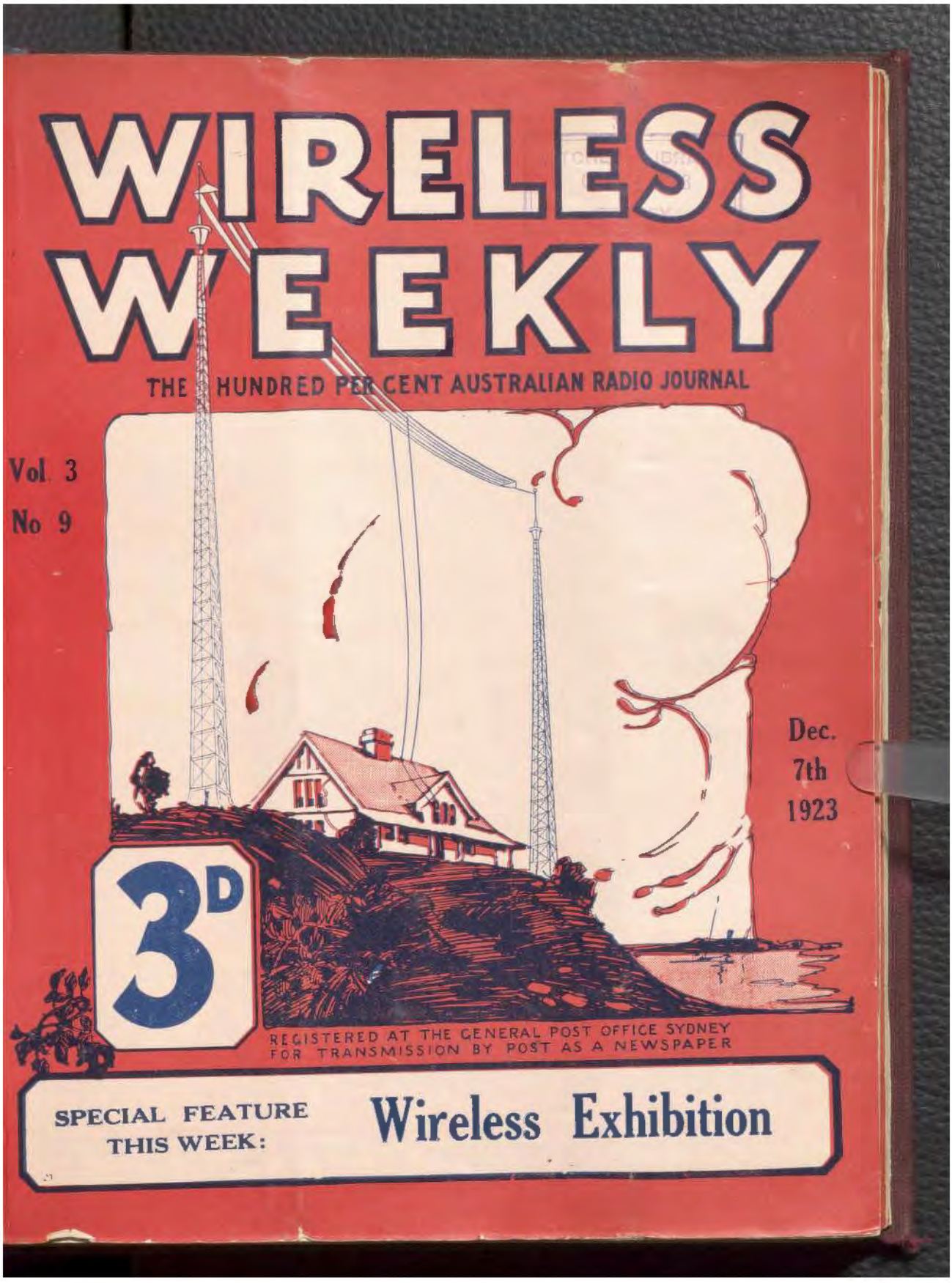


THE WIRELESS WEEKLY

A Journal Devoted to the Interests of Wireless Enthusiasts both Amateur and Professional

OFFICIAL ORGAN OF THE AUSTRALASIAN RADIO RELAY LEAGUE.

Vol. 3. December 7, 1923. No. 9

STILL IN THE AIR!

THAT EMPIRE WIRELESS CHAIN

The London Daily Mail's recent pronouncement that our war-time stations were sadly inferior to those of other nations is just another instance of John Bull's peculiar attitude towards advancement.

Even in these piping days of peace the proposals to establish a chain of high power stations throughout the Empire is being handled in a manner that mildly suggests a lack of common sense on the part of the British Government.

As the Mail states, the recent Trans-Atlantic tests are a reminder that no time should be lost in putting the proposal into effect. The value to Australia and the Empire is only too apparent, but the British Government looks through the large end of the telescope, sees a little dot of land which is famous for fighters and a multitude of premiers and makes a promise on the lines of Miss Kathleen Mavourneen's famous utterance.

By the time arrangements have been completed, some private firms will be well established, necessitating the usual bill through parliament to buy them out at their own figure.

You can't beat the Government for muddle.

Roster for Week ending 12th December, 1923

	7.30 to 8.0	8.0 to 8.30	8.30 to 9.0	9 to 9.30	9.30 to 10
Sunday, ...9		7 to 7.45 2 GR	7.45 to 9.15 2 CM	9.15 to 10 2 JM	

Owing to the Wireless Exhibition and the Trans Pacific Tests very few stations are on the roster

Wireless Exhibition

Australia's Greatest Show

The best display of electrical and wireless apparatus ever shown in Australia was opened in the Sydney Town Hall on Monday. Various types and styles of electrical apparatus was shown; but the wireless stands were continually besieged by hundreds of spectators.

Mr. Fisk, Manager of the Amalgamated Wireless Co., said that it eclipsed the British Exhibition, held in London recently, and compared favourably with the American display.

Exhibition officials were enthusiastic over the success.

"It surpasses our highest expectations," said one, "and may be taken as an indication of Australians in wireless matters."

Over 100 entries were received from experimenters covering a wide range of types and ingenious contrivances.

"There is nothing on the trade stands to touch them," said one jubilant official. "It proves that our fellows are experimenters in the truest sense of the word. Australia may soon become the greatest wireless country in the world."

SOME OF THE EXHIBITS.

The experimenters' stand is crowded with interesting sets and was by far the favourite among those who attended.

A sealed set "from Woop Woop" showed what can be done with the cheapest of materials. A beer bottle was used for the tuning inductance and a broken fork made an efficient sliding contact. Two jam tins represented the tuning condenser. Portion of a ladies' suspender held the crystal and a leg of a child's metal compass was used as the cat's whisker. The set was wired with a piece of barbed wire. A crown cork represented the official seal. The whole contrivance was mounted on the top of a kerosene box, and cost about 7/6 to make.

Another cheap short wave set, costing only £1/10/11, was also shown.

A German Telefunken set used on a Zeppelin was an exhibit from the University, the motor generator being driven by a wind propeller.

An experimental valve wave meter set on a glass panel, another on white xylonite and a Radion panel were also shown.

A miniature crystal set mounted in a walnut shell brought gasps of surprise even from the most experienced wireless men. An engagement ring case held another set.

A new use for old shaving soap holders was the suggestion of a well-known amateur who managed to build a set inside one.

Another exhibit which evoked a good deal of interest was a transmitter and receiver which was operated by a single switch effecting a complete change over from transmission to receiving.

HISTORICAL EXHIBITS.

Another part of the stand was devoted to a collection of pieces of the first apparatus used in New South Wales by members of the Wireless Institute.

Indoor loop aerials, wave meters, and other apparatus were also exhibited.

PRIZE WINNERS.

The prizes allotted to experimenters were as follows:—

Multi valve set: E. Cropley, 1st prize.

Transmitter: L. N. Schultz, 2LO.

The other awards were not to hand when this edition went to press.

BEGINNERS, BEWARE! POINTS TO REMEMBER.

I would like, through your columns, to warn those amateurs who are just beginning to experiment in this branch of science.

Many of these experimenters, being over-anxious to have at once a more advanced and sensitive receiving set, go to another amateur who they think is well advanced, and have their set constructed by him, instead of going carefully into the matter, and investigating whether the person is capable of constructing the desired receiver.

In many cases these beginners are very disappointed with the working of their set.

A striking example of this came before my notice recently, when a neighbouring experimenter received his set from one of these wireless jobbers. He showed his appreciation of his set by dropping it upside down on the floor as he came into my station. His disappointment can be well imagined on examining the set—a four valves employing one radio and two audio, laid out most crudely.

The technical knowledge of the builder of the set could not have been very great since the primary tuning was not tapped, but provided with a series parallel switch which left a blank band of wavelengths between the series and parallel positions of the condenser. Apart from that the secondary, also untapped, would not tune below 600 metres, consequently, none of the experimental stations could be heard. These are only a few of the many faults of the receiver, which made it entirely unworkable.

I bring this occurrence before you, so that others may profit by the experience of this unfortunate experimenter, and would strongly advise those contemplating the purchase of a set to go to a reliable dealer.

H. Holst.

WHAT AMERICA THINKS OF LOW WAVE LENGTH FOR BROADCASTING.

At the time of writing says Basil Lake, the prominent American authority in "The Broadcaster" there are some 560 American stations putting programmes into the air. And, with a score of exceptions, they all operate on the same wave length, 360 metres.

This wave length is 10 metres above that used by Broadcasters (Sydney) Ltd., the first and only Free Broadcasting Service in Australia.

AUSTRALASIAN RADIO RELAY LEAGUE.

A meeting of the Committee of the League will be held at the Wentworth Hotel on Wednesday, November 28th at 8 p.m.

Business is important; will you please make a special effort to be present.

MAKE YOUR OWN

Card Honeycombs

Most amateurs, whose pockets will not allow the purchase of honeycomb and other low capacity coils, will have endeavoured to wind coils by hand on formers with radiating spokes, and will probably have found some disadvantages in this method, says Frank H. Hayes in "The Wireless World." The windings are difficult to keep neat and even when the larger coils are reached on account of the greater distance between the spokes as the diameter of the coil increases, and because the two rows of spokes have a tendency to pull in towards one another. Also, unless proper coil plugs are used, mounting presents some difficulty.

For the coils I am about to describe, I do not make any claim to electrical superiority over the ordinary honeycomb coils, but they will be found to be more compact, and, in the winding and mounting, they do not present the difficulties mentioned above. Their capacity is somewhat higher than that of honeycombs, but in this respect they are greatly superior to slabs and solenoids. One point very much in their favour is the fact that formers are ready to hand, since cardboard and some adhesive are the only materials required for their construction.

Each former consists of a number of circular cards with slots cut radially, dividing them up into an odd number of equal sections exactly as for the flat basket coils, now so popular. The number of cards in each former depends upon the number of turns of wire per layer required, and, incidentally, the number of slots in each card depends upon the number of cards used. Thus, coils can be wound, having equal diameters, but different natural wave lengths, simply by varying the number of cards in constructing the different formers; this will be found to be of some advantage where space has to be considered.

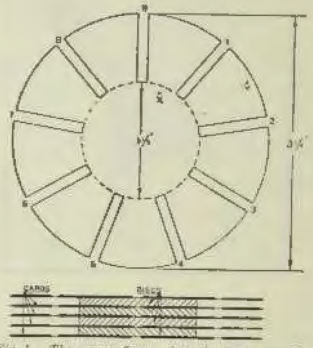


Fig. 1. The upper figure gives the dimensions for the cards. The lower figure shows the cards and cardboard separators assembled.

The means by which the number of cards (and slots per card) is arrived at, is quite simple. First, decide the number of turns required in the finished coil, and a convenient number of layers, and divide the first number by the second, the result (obviously the number of turns per layer), halved will give the number of cards required.

Any even number may of course be substituted for the 2 or 4, but these are sufficient for all practical purposes, since a larger figure will make the slots too numerous to allow the cards to be cut without danger of breakage.

The method of cutting the cards is too well known to require repetition here, but a drawing is given (Fig. 1) showing a convenient size of card. All cards must be cut as accurately as possible, and all exactly alike. A good plan is to draw the card shape on paper, and then prick through the paper at every point on the card; this will ensure all cards being alike. If thin cards are used, such as post cards, it is possible to cut through four at once with a sharp knife, whilst keeping the cards pressed down on a sheet of glass.

Having cut the required number of cards, next cut from thicker card which should be at least three or four times the thickness of a post card, a number of plain discs slightly less in diameter than the clear space in the centre of the slotted cards. You will require one disc less than the number of cards. Now glue the discs and cards altogether in the following manner:—Lay one card flat and stick one of the discs exactly in the centre of the card; glue the upper side of the disc and lay a second card exactly over the first, taking care that the slits in the two cards exactly coincide. Proceed in this manner, taking a disc and a card alternately, until the last card is reached. Fig. 1 shows the elevation of a five-card former, the dark lines representing the cards, and the shaded portion the thicker disc separating them. When the whole is firmly stuck together the former is ready for winding.

Double cotton covered wire is to be recommended for these coils, as this covering gives slightly more space between crossing wires than does silk.

Fig. 2. The method of winding is clearly shown in this figure.

Start as for simple basket coil by drilling a hole through the former in the centre space near one of the slots, and passing the end of the wire through and bending back to keep secure. The method of winding is best seen from the diagram (Fig. 2), which shows a former made up of five cards, each having

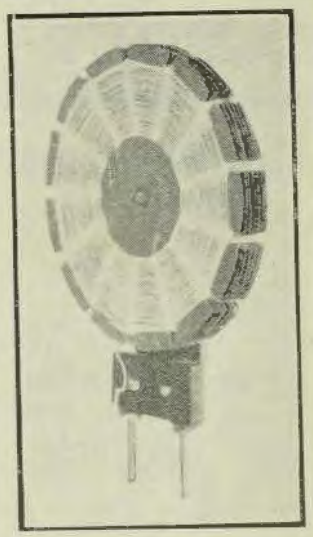
Continued on next page

Continued from previous page

nine slots. For simplicity an edge on view is given, as if the perimenter were cut through at one of the slots and spread out to show the whole of it at once. The slots are numbered from 1 to 9 and the cards are lettered from A to E. The wire is passed through the former at X (Fig. 1) to secure the end, and then brought back through the slot 1 of card A, slot 2 of card B, slot 3 of card C, and so on until slot 5 of card E is reached; it is now passed outside one section of card E and returned back through 6E, 7D, 8C, 9B, and 1A; this will complete one turn. The second turn passes through 2A, 3B, 4C, 5D, 6E, 7E, 8D, 9C, 1B, and so on. At the end of the tenth turn, the first layer will be complete, and the subsequent layers, of course, follow the same path as the first. The wire should be kept quite taut during winding, and the coil can be finished off by passing the wire through all the cards at a point near the edge (see Y, Fig. 1). The completed coil will be compact and neat, and really needs nothing to hold it together, but a thin coating of shellac on the outside and edges will prevent the cotton covering from absorbing dampness.

It will be seen that for mounting, similar methods as for flat basket coils may be employed.

The windings of these coils may, perhaps, appear rather formidable from the foregoing description, but my own experience is that they are more quickly wound than ordinary honeycombs. A little patience is required in the cutting of a number of cards, but I think that the experimenter will feel amply repaid by the compactness and neat appearance of the finished coils, for any little trouble he may take in their construction.



The photograph shows a completed coil with mounting. The coil is compact and strong, and quite pleasing in appearance.

INCREASING INTERFERENCE FROM SPARK STATIONS.

Interference is being noted by radiophone listeners, especially in the New York area. Evening after evening the spark stations break into the excellent musical programmes of the broadcasters, and mess things up for the listeners. During the most exciting moments of the short but thrilling Dempsey-Firpo bout, the spark stations broke in with the most aggravating racket. The writer of these lines has listened to spark stations sending the test letter, "V," minute after minute during the height of the evening broadcasting entertainment. Of course, the stock excuse on the part of spark operators is that broadcasters are either using inefficient receiving apparatus, which cannot be tuned sharply enough to eliminate undesired waves, or that the broadcasters lack the necessary skill to tune properly—or most likely both. To which we hasten to reply that even with the sharpest kind of tuners, such as the Reinartz circuit, we have time and again been unable to eliminate the intense interference from spark stations. Obviously, the radio inspectors have a job ahead of them. The majority rules, does it not?

NEW IDEAS FOR GROUNDS.

Three methods have been introduced during recent years with a view to minimising ground losses, namely, the multiple antenna of Alexanderson, which is employed at Radio Central; the powerful multiple transmitter station of the Radio Corporation of America; the ground screen installed at several of the Marconi stations, and the multiple ground system in use at Sainte-Assise and being installed at Nauen. The first-named is applicable to very long aerials at a medium height, and especially to those of the T or inverted L type. It really reduces it to a number of smaller aerials connected in parallel and the paths of ground currents are greatly reduced. The ground system of each one of the multiple aerials has still to be properly designed and may involve either of the other methods. The ground screen is a development of the insulated counterpoise, the wires being so spaced and arranged that they practically screen the ground from the electric field of the aerial. The introduction of the ground screen has reduced the ground resistance of the stations where it has been installed to a fraction of the previous value, with a corresponding increase in the efficiency. The multiple ground system, on the other hand, consists in distributing under the aerial a large number of ground plates or pins, the currents from which are brought back to the transmitter station by means of overhead wires. The French engineers at Sainte-Assise have fitted up both types, so as to compare the relative merits of the ground screen and the multiple ground system. It appears that they have decided on the latter, the reasons being given that the ground screen is expensive and that the large number of wires with their supports and insulators make it difficult to carry out work on the aerial. They consider that equally good results can be obtained by the multiple ground system.

He had no success whatever crystallising the Limburger cheese after it had been boiled. It would not form itself into crystals. It formed ropes and slabs of Limburger linoleum and soap, but it would not form crystals. It formed odors so strong that the roof flopped up and down and the foundations of the house palpitated, but it would not crystallise.—"Radio News."

Construction of a Telephone Transformer

By H.A.C.

This article will prove of value to the experimenter who takes pride in making his own apparatus and prefers the arrangement of low-resistance telephones and transformer.

Many advantages may be gained by the use of a telephone transformer in conjunction with low-resistance 'phones instead of the more usual arrangements in which high resistance telephones are connected directly in the anode circuit.

An efficient telephone transformer may easily be made at the small expense of about 5/- provided care is taken in its construction. For the primary and secondary windings ¼lb. of No. 42 s.w.g. enamelled copper wire and about half-an-ounce of No. 38 s.w.g.d.s.c. copper wire respectively will be required, whilst sufficient No. 22 or 24 gauge iron wire cut into lengths of 3¾in. to form a bundle ¾in. in diameter, will make an excellent core.

The iron wires should be straightened and bound very tightly with tape, especially at the ends of the core, and soaked in hot paraffin wax for about fifteen minutes. The wax is then allowed to cool until it is about to solidify, when the whole

Fig. 1.—Section of completed transformer, showing dimensions

may be taken out and left until quite cold. The binding tape and any surplus wax are then removed, the iron wires and wax forming a solid core.

A strip of paper ¾in. wide should be wound tightly round it two or three times and held in place by a few turns of wire, which may be taken off as the winding progresses. The end of the secondary or inner coil of fairly thick wire may then be secured to one end of the iron core with cotton and the winding commenced, the turns being wound closely and evenly backwards and forwards as cotton is wound on a reel until five layers have been completed. The finishing end of the wire may also be bound in place with cotton and the whole immersed again in hot wax.

For the primary windings it is almost essential to use some sort of winder, which may easily be constructed from an old wire bobbin in the following manner. Select one which has a diameter of stem less than that of the finished secondary winding, and saw off one of the cheeks. If the stem is too

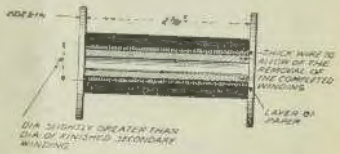


Fig. 2.—Section of the finished primary winding and former.

long, cut a piece off so that the distance from the inside of the remaining cheek to the end of the stem is about three inches or just under, this being the length of the finished primary coil. The cheek which was removed should now be screwed to the stem, as in Fig. 2, so that it may be taken off when it is required to remove the finishing winding.

A few layers of about No. 28 s.w.g enamelled wire are wound on this former until the diameter over the winding slightly exceeds that of the finished secondary and core. The experimenter should note that this winding is merely for the purpose of removing the primary winding when complete, also of adjusting its internal diameter to the correct size. After wrapping a piece of paper two or three times round this the primary winding may be commenced, whilst the bobbin is mounted between supports, a piece of bent wire forming a handle as in Fig. 3.

It is not necessary to wind this coil in exact layers, but the turns should be wound on as evenly as possible, the wire being guided by

the hand. The experimenter should also be sure that sufficient length of wire is left over the cheek of the bobbin for purposes of connection, and whilst winding, the bobbin from which the wire is taken may be mounted on a large nail, as in Fig. 4.

After this is completed the whole, including the former, should be soaked in fairly hot wax until it has permeated through the entire primary winding. The bobbin should then be removed from the wax and left until cold, after which the cheek may be unscrewed and the few turns of thick wire removed by pulling steadily on the end. The primary, together with the paper, may be slipped off and placed over the completed secondary and iron core.

Another immersion in fairly hot wax will serve to hold the components together and coat the whole with a layer of insulating wax, after which it may be enclosed in a box or incorporated in a receiving set as required, the ends of the windings being soldered to four terminals for purposes of making connection.

Fig 3.—The winder.

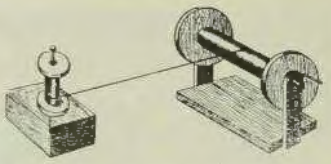


Fig. 4.—Illustrating method of winding [illegible]

The experimeter, however, will doubtless favor a quicker method of winding the primary coil. If a small wooden pulley be fastened to the spindle of the winder, a sewing machine treadle connected with this pulley by means of a string or belt will solve the difficulty, or, as an alternative, the wooden rod passing through the winder bobbin may be held in the chuck of a breast drill which is itself gripped in a bench vice.

The writer has made a transformer according to the description given, obtaining practically as good results with it and low-resistance 'phones as were obtained by the use of high-resistance 'phones connected directly in the anode circuit.

STRANGE SIGNALS.

AN EXPLANATION.

During the past week or two many experimenters while "listening-in" to transmission on the part of amateurs have been at a loss to account for the meaning of four letters transmitted immediately before the station call sign. These have been the letters "ARRL" and have been used by quite a number of our leading transmitters.

The explanation of the signals is an easy one, the letters themselves representing "Australasian Radio Relay League" and the use of them denoting that the sending station has already linked up with the League in an attempt to establish a chain of amateur stations.

With the League in full swing these signals will shortly be a nightly occurrence.

A WIRING HINT.

When wiring up a receiver of a fairly complicated type with the aid of a wiring diagram it is sometimes a little difficult to keep track of the connections which have been made and those which remain to be done. As a result, wires are liable to be omitted, and it is worth while to be a little methodical and adopt two safeguards; first, wire up the circuits one at a time, connecting, say, all the grids, then all the plate circuits, and so on, and second, as each wire is soldered in endorse the corresponding line on the diagram by going over it with a coloured pencil.

G. P. K.

FOR SALE.—Wimshurst Electrical Machine, gives 2½ inch spark, Leyden Jar, Geissler Tubes and 376 Lane Cove Rd., Crow's Nest, accessories, in perfect order; £5 Phone, North 120.

An Efficient Home-Made Neutrodyne

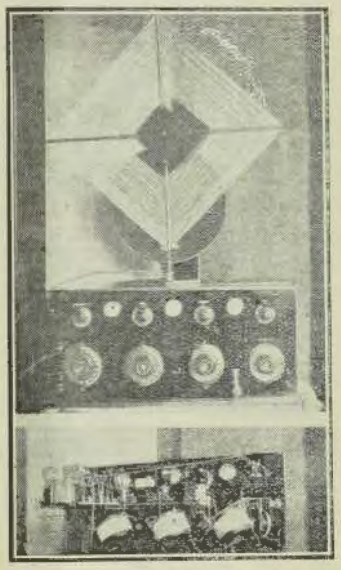
By L. KRANZL.

A really selective and extra sensitive broadcast receiver may be secured with the Neutrodyne circuit invented by Professor Hazeltine.

These results will be readily obtained if the capacity couplings of the radio-frequency amplifying tubes are properly neutralised by means of the neutralising condensers. If proper care is taken in handling the detector circuit there will be a total absence of whistling and at the worst a click in the phone may be heard when a carrier wave is located, whence it is an easy matter to bring in the speech or music. It is equally effective on short and long waves.

The radio frequency amplifying tubes with a properly designed circuit cannot be made to oscillate, but merely to amplify the incoming signals, and this prevents the oscillations of the detector circuit from finding their way into the antenna circuit and so eliminates radiation, which is coming to be a rather serious source of interference where several oscillating receiving sets are all operated in close proximity.

The following is a brief description of the construction of this set and some of the parts. The panel is of 3/16 in. bakelite 11 x 25 ins., polished, with the lettering engraved. There are few holes to be drilled since no switch points are used and the battery connections are all from the back, doing away with binding posts and unsightly, tangling wires in front of the panel. For the input a jack is provided permitting of quick and convenient change from the antenna to loop, or vice versa. On the lower left hand side of the panel are two binding posts for the ground and antenna, but the latter is not used in this case. On the extreme right two binding posts are provided for the "A" battery connections to be used when it is not practical to use the connection in the back of the cabinet. The first three large dials at the bottom are the tuning condensers, the fourth one is the variometer, which controls the regeneration, which is sometimes useful for



The home-made Neutrodyne receiver with loop antenna.

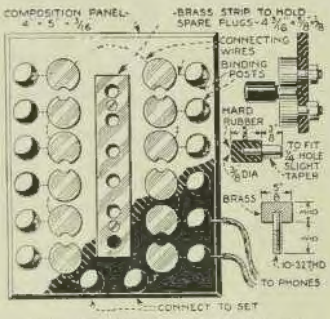
short wave lengths and C.W. reception. For ordinary broadcast reception, however, I have found so far very little use for it, and where a set is intended for the latter purpose only it may be omitted without in the least detracting from the efficiency of the set. Two jacks are used for the detector and second stage audio. The dial in the upper row to the left is a potentiometer which can also be omitted. In this case it was used because one was on hand to help out the looks of the panel and for very fine adjustment of the detector tube plate potential, being connected in series with the "B" battery. The other three dials are rheostats, one for the two radio amplifying tubes.

Continued on page 16, col. 1

PLUG SWITCHBLOCK GIVES EASY CONTROL OF RADIO-PHONES.

The radio fan who prizes neat and unusually efficient apparatus will find the switchboard illustrated an excellent means for controlling the connections of his loud-speaker and telephone headsets. Five pairs of phones and a loudspeaker can be plugged in or out at will without changing any connections. The base is a 3-16 by 4 by 5 in. composition panel. The connectors are 12 pieces of 5-8 in. brass rod. The head of each is 5-8 in. in diameter and 3-8 in. deep, with a threaded stud or a separate stud provided, as shown, from a length of 10/32 threaded rod. It is just as well to mount these connectors first on a wooden templet the same size as the composition panel. Place the connectors so that there will be 1-16 in. clearance between the units of each pair, and 1-8 or ¼ in. between the pairs. When the studs have been locked tight with nuts, drill ¼ in. holes between and through the heads of each pair, as shown. A piece of brass 3-8 by 5-8 by 4 7-8 in. should also be drilled with the same size holes to hold the plugs when not in use.

The plugs should next be turned, as indicated, to be a snug yet not too tight a fit in the ¼ in. holes. A slight taper is desirable. Hard rubber handles about 3-8 in. in diameter and 5-8 in. deep should be prepared for the plugs, but not fitted to them until they have been nickel plated and polished at a plater's or jeweller's.



How the switchblock is laid out, and the plugs and connectors are made

While this is being done, use the wooden templet for marking and drilling the composition panel. Drill holes for the binding posts, bevel the edges, and give a satin finish with fine emery paper. The nickel-plated parts are then attached and the hard rubber handles fitted to the plugs.

The connections are made at the back, as shown by the dotted line, and the panel can be fastened to a hardwood block, recessed to take the projecting nuts and wires. The edges of the block should be polished.

In use, the loudspeaker and telephone are connected with the various binding posts and the receiving set is connected with the terminal binding posts. To plug in the loud-speaker or any particular pair of phones, simply remove the plug from between the correspondence connectors and place it in the holder.

Leslie Greenslade, Hamilton, Ontario, Can.

NEWS IN BRIEF

Steps are being taken by the Durban Municipality to establish a broadcasting station before the end of the year.

We learn from a contemporary that during 1922, £22,000,000 were spent by the American public on wireless sets.

The Westralian Farmers' Co., Ltd. will cater for our outback "Sandgroper" friends with a broadcasting service which they intend to instal shortly.

According to the Sydney Evening News, English radio programmes were heard in New York and Boston recently.

A piano played in Liverpool was clearly heard in Garden City, New York.

One of our English contemporaries informs us that the Brazilian Minister for Public Works recently inspected a new station erected by the National Wireless Company. We feel that Mr. Ball could do no better than to follow his Brazilian confrere's example, providing, of course he dose not inflict a speech on our sorrowing readers.

According to the "Leeds Mercury" one of the troubles experienced in the organisation of a road motor transport service has been the difficulty of keeping in touch with the driver once he has left headquarters. That is now being overcome by the use of wireless installations, and, according to Mr. F. G. Bristow, General Secretary of the Commercial Motor Users' Association, several large transport undertakings are considering the fitting up of receiving apparatus on their motor waggons, so that they may be able to broadcast instructions to their drivers.

What will be the largest wireless station in the world is to be erected near Rugby, England. The postal authorities have purchased 830 acres of land for the purpose.

Balmain Council recently turned down a proposal to instal a receiving set in the Town Hall.

One alderman was reported to have said that the parliamentarians might use it as a means of broadcasting "dry-as-dust" debates. We feel, however, that the other advantages would compensate any audience for the discomfort, which happily is not likely to occur.

The recent electrical disturbances which affected radio enthusiasts in South Australia were not from natural causes, we understand. We are in receipt of information which lays the blame on some entertainer who had the temerity to broadcast "Yes, we have no bananas." It is said that hundreds of "listeners in" caused such a commotion that the other wobbled.

The Marconi room on board ship is always the centre of interest, since it now affords means of keeping in touch with things ashore. Not only general news, but information broadcasted from land radio stations is often of great value to business men on board. The Aberdeen liner, Themistocles, en route for Australia, via Cape Town, recently kept in radio communication with Great Britain's land stations the whole journey. Every day about seven hundred and thirty eight words were received, and news of all kinds from "home" was a continual source of anticipation for the passengers whiling away in pleasant fashion the long voyage.

According to a Sun cable, Georges Carpentier, the French pugilist, used a wireless telephone to speak from London to America.

Mr. Dempsey will no doubt endeavour to go one better.

Mr. Marconi predicts that the cheapest crystal set will shortly be able to receive messages across the Atlantic.

Szarka Bros., who run the Enmore Picture Theatre, intend to establish a receiving set in the theatre —so it is said.

The educational value of wireless is so apparent that we must expect the next generation to possess an all round knowledge which we have never attained. We have talks and lectures on a great variety of subjects—music, literature, art and science — and although many of us would not take the trouble to read the written article, we are often constrained to listen when the words come uninvited to our ears. For instance, we heard the announcement recently of a talk on electricity for cooking purposes. Not being cooks, we were just about to turn off the precious juice, but lingered to catch the first few words. These aroused our interest, and we heard the talk through; in fact it proved most interesting and instructive. This has happened many times when listening in, and as an educational medium wireless is much pleasanter than dry, laborious text-books.

A cable published in the Evening News states than the Radio Station of L. Bamberger and Co., of Newark, New Jersey, U.S.A., will be conducting wireless telephony tests to Japan, Australia, and New Zealand.

The tests started on December 1 and will be continued till the 15th, between the hours of 7 and 9 p.m. (Sydney standard time).

The station will be using a wave length of 405 metres.

We will be glad to hear from Wireless Weekly readers who may have picked up any of the messages.

To prevent the filament crystallising you should always dull down before switching off the current. This will prolong the life of the valve.

Good results are often obtained with tree aerials as described in the accompanying note.

To exterminate "bootlegging" is the aim of the United States these days. And radio is the best assistant possible. The U.S. Coastguard Service, which is instrumental in so many heroic rescues, is also strong in pirate-chasing stunts. Any ship suspected of carrying contraband is kept under supervision and the vessel detailed to follow suspect keeps in close touch with headquarters by radio. The movements and those of its quarry are broadcasted from the Naval base, and any other cutters lying off the coast can pick up details and if necessary join the hunt.

TREE AERIALS.

Among the many peculiar objects which can serve as wireless aerials, trunks of trees can be numbered. The accompanying illustration shows how the apparatus may be connected, the aerial lead being taken to a nail in the upper part of the trunk and the earth lead to a point lower down. There has been some discussion as to the exact function of the tree, some people holding that the wires connected to the tree are the chief means of picking up signals. Others have held that the whole tree trunk, with its conducting sap, acts as an aerial, and that the receiver, if connected as shown, is shunted across part of the total inductance. Whatever theory should prove to be the correct one, the fact remains that good results are frequently obtainable with valve sets. Experimenters might try a periodic aerial circuits in this way. They should prove suitable in the circumstances.

—P. W. H.

Did you ever try washing the crystal with an old toothbrush and a little warm water and soap? This will brighten up the signals considerably.

RADIOCULOUS

THE TUNING TROUBLES OF MESSRS. GALLAGHER AND SHEAN.

By A. G. CLARK

(In "Radio Broadcast").

Oh, Mister Gallagher, Oh, Mister Gallagher,
I was listening on the radio last night,
But an amateur quite near seemed to like to interfere,
So I'm going to kick and have him closed up tight.
Oh, Mister Shean, Oh, Mister Shean,
In the radio game I see you're pretty green;
As they say in gay Paree, what an animal you'd be——
What, an air hog, Mister Gallagher?
No, a jackass, Mister Shean!

Oh, Mister Gallagher, Oh, Mister Gallagher,
Now I don't see why you put the blame on me,
Everywhere I turn my knob I can hear the noisy slob,
So it's not my fault at all as you can see.
Oh, Mister Shean, Oh, Mister Shean,
You are up against a problem what I mean,
But there's something you can get that will cut him out you bet—
An injunction, Mister Gallagher?
No, a tuner, Mister Shean!

Oh, Mister Gallagher, Oh, Mister Gallagher,
Interference is no more I hear them boast,
Cause a guy named Schnell has said that old zinc spark is dead—
When the tube came in the spark gave up the ghost.
Oh, Mister Shean, Oh, Mister Shean,
I can't get the situation through my bean,
I must ask Conan Doyle for when I burn the midnight oil——
You hear spirits, Mister Gallagher?
No—spark sets, Mister Shean!

Oh, Mister Gallagher, Oh, Mister Gallagher,
Station 20M is just a mile away,
I can recognise his call but can't tune him out at all,
Though he's on two hundred sharp I hear them say.
Oh, Mister Shean, Oh, Mister Shean,
If you hear him high and low and in between,
That "200" is a fraud, why he's on "180 broad!"
Is that lawful, Mister Gallagher?
No, it's awful, Mister Shean!

"I get Honolulu, Peru, Moscow and Dresden on my wireless set."

"Do you keep the windows open or closed?"

"It makes no difference."

"Well, I keep my windows open and I get Chili."

—"Comrades" (S. Africa.)

A London employer has had a wireless loud speaker fitted up in his engineering works and says that the men now work better. But many employers still rely on the old fashioned loud-speaking foreman.

—"Eve" (Eng.)

Some wireless enthusiasts receive nothing but bills.

Mr. ———— the well known experimenter of St. Kilda had his wireless apparatus severely damaged by hooligans during the recent police strike. It is not known whether it was done purposely or by design.—Melbourne Paper.

We suspect it was six of one and half a dozen of the other.

Mr. ———— reports having received signals ewmf sssrt urthnthtseees ahtsc saesceine from Hobart.—Auckland Paper.

Evidently some secret code used by our island friends.

"Why is he suing his wife for divorce?"

"Because she concealed a miniature broadcasting instrument in his inside coat pocket."

—"Judge" (U.S.A.)

The First Amateur.—"Radio News."

BOYS' RADIO CLUB.

College Enthusiasts.

Turramurra College has an enthusiastic radio club which has the able assistance of Mr. W. Sanderson, one of the head-masters. Composed entirely of the boys of the school it has during its six months' existence, "listened in" to some of the best programmes in this, as well as other States.

The Club started with a loose coupler crystal set and good results were obtained. They now have a handsome cabinet valve set, which was made wholly by the boys. A log is kept of the stations received, and in it appear the names of Melbourne, Adelaide, Brisbane, Townsville and other radio stations. All the experimental transmitters round Sydney have been received.

At present only one valve is employed, but the Club possesses three other valves and is only waiting till the exams. are finished to add them to their set—two low frequency and one high frequency.

An experimental valve and crystal license is held by D. M. Selby, the President of the Club, and members hope that in the near future they will be able to obtain a transmitting license and transmit their own programmes.

FINE PERFORMANCE.

By Western Suburbs.

At the meeting of W.S.A.W.A., held in the club-room, Auburn, on 3rd, November, the report from the organising secretary of their recent concert was received. The report was very satisfactory. Mr. Wade—the organising secretary—was accorded a vote of thanks as also was 2GR, Mr. Marks, of Rose Bay, who was sending music for the occasion. Mr. Marks, in conclusion, gave an interesting little talk on broadcasting.

The Association conveyed to Mr. Marks their heartiest thanks. Last, but not least, was a vote of thanks to 2CM, Mr. C. D. Maclurcan, the ever willing experimenters' friend. 2CM sent a gramophone record, and then Mr. A. E. Haigh (who sang on the stage at Auburn, at 8.40) sang into the microphone at 2 CM and was heard in Auburn Town Hall again at 9 p.m. through a magnavox. Mr. Haigh was heard very clearly and loud, using three valves.

This has been considered quite an accomplishment, and it is also thought that is the first time such a performance has been carried out. A hearty vote of thanks was also accorded to Mr. A. E. Haigh.

Mr. Burman and Mr. Challenger had charge of the receiving set. Mr. Phil Renshaw, Hon. Secretary, W.I.A., was present at the show.

The Association was at this meeting without either President or Vice-President. The secretary explained at the beginning of the meeting that it was the first time in over two years that such a circumstance occurred. Mr. Calver, a member from Blaxland, took the chair.

The Secretary desires to notify all members that the buzzer practice classes are being very poorly attended.

All members requiring practice should take the opportunity, also others who are able to attend will be welcome, even if they are not members.

Wireless experimenters in the Western Suburbs have a splendid chance for good lectures if they join the above Association. Persons interested should write to C. R. Challenger, 77 Park Rd., Auburn.

ILLAWARRA RADIO CLUB.

The 35th general meeting was held on the 20th November, with a fair attendance of members. The Secretary reported on the action being taken by the Committee with regard to the Club's next benefit entertainment, and also as to what was being done in connection with the Club sets.

It was stated that one of the main difficulties which the club was up against in connection with transmitting C.W. or telephony was the lack of power for the plate supply, but in order to at any rate make a start with transmitting it was suggested a small set should be constructed utilising accumulator and spark coil method for plate potential, which would give I.C.W. (tonic train) over a fair range, and should prove of interest to all members and experimenters in the district, until the Club could undertake transmission on more ambitious lines. This suggestion will be fully considered by the Committee with a view to putting the idea into operation at an early date.

The Club's receiver is undergoing extension and reconstruction, on the unit panel system, and will comprise (when completed) one stage of radio frequency amplification, detector and one stage of audio frequency amplification, and should prove quite a neat and efficient job when finished. It was decided to place this set in the forthcoming exhibition if finished in time. The receiver will shortly be working in the club-room.

The Secretary reminded the members of the Wireless Institute's Wireless and Electrical Exhibition, to be held in the Town Hall from 3rd to 8th December, and urged the Club and all members to give the Exhibition all possible support. It would be the best advertisement the experimenters ever had in Australia and would show the public what they were capable of.

For the remainder of the evening members listened-in to some music from 2JM and others, Mr. Gorman having a three valve set and loud speaker in operation.

The next meeting will be held on Tuesday, 4th December, at Club-room, 75 Montgomery St., Kogarah.

KILLARA RADIO CLUB.

The Killara Radio Club held its 15th general meeting on 23rd November. The main business of the meeting consisted of discussing the advisability of joining up with the large radio club which is about to be formed in the district between Chatswood and Hornsby.

It was unanimously decided that it would be best to affiliate with this body, and many of the members have given their services in getting the new club together; the first meeting will be held at Gordon Public School on Friday, 7th December, at 8 p.m., and all experimenters who would like to see this club in operation are asked to come along and give their opinions.

WAVERLEY RADIO CLUB URGES CONFERENCE

A large batch of correspondence was dealt with at the meeting of the Waverley Radio Club, held on the 27th November. A letter was received from the authorities asking that the Clubs form some sort of central organisation, which could be approached at any time by the Postmaster General.

After discussion, it was decided to suggest to the Wireless Institute as the oldest and largest organisation, that a conference of the Club Secretaries be called, with a view to meeting the requirements of the authorities.

Letters also came from Melbourne re their inability to forward monthly lists in future; and the matter of the payment by amateurs to broadcasting companies. The letters, along with some from the Exhibition Committee were received.

Formal business concluded the meeting.

LEICHHARDT AND DISTRICT RADIO SOCIETY.

On Tuesday, November 27th, the members of the Leichhardt and District Radio Society held their 58th general meeting at the club-room, 176 Johnston St., Annandale.

Several matters were discussed, including a proposed launch picnic for the purpose of raising funds for the Society's use, and it was decided to hold an excursion on Saturday, January 19th, 1924. Arrangements will be made for a receiving set to be installed on board the launch for the occasion, and as accommodation will be necessarily limited, early application for tickets will be advisable.

Considerable interest is being taken by members in the Wireless and Electrical Exhibition now being held at the Town Hall, and several of them are exhibiting apparatus. In addition, the Society's valve set has been entered.

The Society meets at the club room every Tuesday night at 8 p.m. and all enquiries regarding its business should be addressed to the Hon. Secretary, Mr. W. J. Zech, 145 Booth St., Annandale.

COOGEE CONCERTS.

The "Poster King," Mr. A. Nevin Tosseau, provided a radio entertainment to about 12,00 people at Coogee last Saturday night. The music was given under the auspices of Broadcasters Ltd. The entertainment will be continued for the remainder of the week.

COULD YOU TELL ME.

Our technical editor answers enquiries from puzzled readers:—

"Worried" (Leichhardt) has been recommended to add the low frequency amplifier to his crystal receiver, and asks whether we consider this a suitable arrangement.

A well made note magnifier is a highly efficient piece of apparatus, and, when added to a crystal receiver, will result in a very satisfactory increase in signal strength.

EXCHANGE COLUMN.

Mr. F. Simpson, 8 Kiora Road, Double Bay, has the following equipment for sale:—2 Expanse "B" Valves (nearly new), 1 UV201 Amplifier (never been used), 1 QX Valve and Holder (never been used), 1 6-volt, 4 amp. "Gecko," Accumulator (about 12 months' old), 1 ¼ Spark Coil, 1 Buick Ignition Coil (can be used as spark coil, brand new).

A HOME-MADE NEUTRODYNE—Continued from page 9.

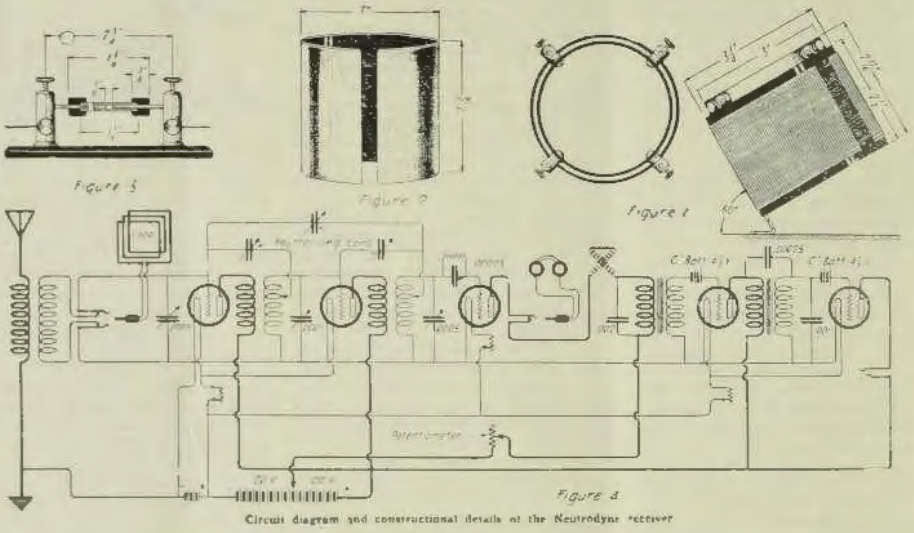


Figure 3. Figure 2. Figure 1. Figure 4.

Circuit diagram and constructional details of the Neutrodyne receiver

(6)

one for the detector and one for the two audio amplifying tubes.

It is better to use a separate rheostat for each circuit, and in particular for the detector. Amplifier tubes can be used throughout, but better results will be obtained by the use of a soft detector tube. All tubes are mounted on a shelf, the shelf resting on rubber cushions, supported by brackets. These help to eliminate a great deal of noise caused by jarring the tubes.

Probably the most difficult parts of this set to construct are the radio-frequency transformers, see figure 1. I used bakelite tubing 3¼ x 2¼ inches for the secondary or outside coil and 3 x 13/16 inches for the primary or inside coil. The secondary has 53 turns of No. 24 D.S.C. wire, the primary 12 turns of No. 24 D.S.C. wire. The four terminals are brought out on the inside and soldered to small metal binding posts, which are made fast to the primary or inside tube which in turn is made to protrude far enough on one end to accommodate this post. This post also helps to keep the coils in place and provides an easy means for connecting the leads. Another good way to make these transformers is to get the

Continued on page 20, col. 2

"LISTENERS-IN"

From Back o' Bourke.

Tribute to Broadcasters.

As a tribute to the energy and enterprise of Broadcasters Ltd., it is now possible to obtain news in the farthest corners of the State, before the newspapers publish it.

For some time Broadcasters have been carrying out extensive experiments with a loud speaker on four valves and regular programmes have been supplied.

Listeners in have received news and concerts all over the State and the North of Queensland.

One experimenter in Longreach, (Q.), 820 miles from Sydney, heard an entire programme one night as clear (to use his own words) as if he had been present with the entertainers.

The benefit to the man on the land is borne out by a number of letters of appreciation received from farmers "back o' Burke" and Dingo Flat.

At noon and each half hour afterwards, news items, stocks, shares, market reports and exchange calls are broadcasted. Children are catered for with bedtime stories, and dance music and concert items are provided.

Results of big races and sporting are broadcasted as soon as the Daily Guardian receives them.

As a guide to the times and extent of the programme we publish hereunder the one that has been operating this week.

Noon.—Sporting news, fish, fruit, and vegetable market reports; Alexandria produce market report; morning exchange calls.

1—2.—Orchestra.

1.35 p.m.—Weather forecast.

2 p.m.—Noon calls on Stock Exchange.

3.30 p.m.—Chats to women.

3.45 to 4.45—Orchestra.

4.45 p.m.—Sussex St. markets.

6.30 p.m.—Final Stock Exchange reports.

6.45—7.30.—Bedtime stories.

7.30—8.—Orchestra.

8—10 p.m.—Dance music interspersed with concert and news items.

The following performers will supply to-night's concert items: Madame Barbara Maxwell (soprano), Miss Anne Casey (contralto), Mr. Frank Allanson (baritone), Mr. Arthur Leland (flautist), Mr. Frank Hansen (monologuist).

The dance music will be by Coleman's orchestra.

"F.B." (Balmain): We can recommend any of the advertisers in this journal to supply you with up-to-date and high quality wireless apparatus.

"M.P.B." (Hornsby): Please send address to this office, when your queries will be answered by post.

SEALED SETS.
UNIVERSITY CRITICISES.

On learning that he was to have a wireless set, he became greatly interested in the science, but when he found that he was to be tied down to one wave length, and his instrument to be sealed, he lost that interest.

So said Professor Brailsford Robertson at a gathering of a large number of members of the Adelaide University Graduates' Association, at the Prince of Wales' Lecture Room at the University on Tuesday evening, when the advisability of the University participating in broadcasting by wireless was discussed.

President Brailsford Robertson, President of the Association, occupied the chair.

Professor Davies said that to be convinced of the utility of broadcasting for educational purposes, they must first be assured of the perfect technique of transmission.

Intent listening alone could reveal the message of music to many, and listening plus wise suggestion, and simple explanation, could immeasurably extend appreciation of the art.

Professor Brailsford Robertson added the progress of wireless had been extraordinarily retarded in this country. The wireless telephone in the American household was almost as much a convenience as the original telephone. Universities in America had also taken an active part in the propagation and use of wireless. The common form of amusement—the moving picture was not falling into the hands of the highest section of the community intellectually and there was no danger of wireless falling into similar hands.

Professor Kerr Grant endorsed the opinion of the previous speaker with respect to the danger of wireless falling into mercenary hands, but he instanced cases in England where lectures and discourses of a high standard were being regularly transmitted, and he was of the opinion that in such a way wireless could do a great amount of good.

During the evening instrumental and vocal items from various experimental transmitting stations were listened to with interest.

A general discussion followed.

STAFF CHANGES.
COASTAL RADIO SERVICE.

Mr. A. Longstaff, radio-telegraphist, Adelaide Radio, has been transferred to the Technical Department at Amalgamated Wireless Ltd., Sydney.

Mr. R. Simons, radio-telegraphist, Melbourne Radio, has been temporarily transferred to Hobart Radio for relief duties.

Messrs. K. Lawry and J. Lalor, left Willis Islets Radio Station on the 14th November, per the S. S. "Melusia," and are returning to Melbourne via Cairns, on completion of the term of service.

IN CHARITY'S NAME.

That well known wireless expect, Mr. W. Harry Wiles, gave an interesting display the other day on the use of loop aerials. The exhibition was carried out on the top of "Smith's Weekly" buildings. He also gave a wireless display at St. Bartholemew's Church bazaar, the proceeds of which were considerably augumented by his efforts. Mr. Wiles is a radio dealer in Goulburn Street, Sydney.

The Australasian Radio Relay League

By J. W. Robinson, Publicity Officer, Australasian Radio Relay League

During the past few weeks many amateurs, having heard but little of the activities of the Australasian Radio Relay League have come to the conclusion that its activities have ended. Such is, however, by no means the case.

When the League was originally formed much work was done by its officers in an effort to place its affairs on a solid basis and to encourage amateurs to join up with it.

It was pointed out that the League furnished the means for the regular and systematic working of all stations, and that on this score alone it deserved the patronage of all experimenters.

While a very satisfactory response was made by Sydney experimenters during the early portion of the League's existence, there was very little evidence of the display of any active interest on the part of those experimenters operating stations in the more distant parts of the State.

Membership slowly increased for a little while, but afterwards stood still, and the executive of the League in view of the apathy which was being displayed by the very men from whom keen interest might have been expected was unable to carry on with any definite working programme.

During the past few days, however, the Australasian Radio Relay League has taken on a new lease of life and its officials now confidently expect that within a very short time it will be possible to carry out regular and properly organised transmissions between members.

Many amateurs who, when the League was first formed, did not display any great amount of interest in it have lately made inquiries regarding the League, and have decided to join. Special meetings of the committee have been held, and the whole affairs of the A.R.R.L. have been re-organised.

The committee has accepted with regret the resignation of the Honorary Secretary, Mr. Charlesworth, who is unable to carry on owing to business reasons. Mr. J. W. Robinson has been appointed Hon. Secretary in Mr. Charlesworth's place, and is now carrying on with the work of the League.

SUBSCRIPTIONS INCREASED.

At the last meeting of the Committee of the League the question of subscriptions was raised, and it was decided that the fees for Active Members in future be £2/2/- per annum, and for Associate Members 10/6 per annum.

Application for Membership.

Members are urgently needed and those who have not already joined up are requested to fill in the following form and forward it, together with a postal note covering fees, to the Hon. Secretary, "Milano," Edward St., Concord.

A.R.R.L.
APPLICATION FOR MEMBERSHIP.

The Secretary,
Aust. Radio Relay League,
N. S. W. Division. 192

I, ...

of .....

beg to apply for admission as Active Member of the Australasian Radio Relay League If accepted I agree to abide by the rules and regulations of the League.

License No..... Date of issue .....

Address at which Station is maintained .....

Postal Address of applicant .....

Particulars of License (transmitting or receiving) .....

Power of Station (if transmitter) I enclose herewith.....

being payment of fees for one year.

Usual Signature.....

Active membership only to persons operating transmitters for League.
Associate membership to holders of receiving licenses.

Qualifications for membership.

(A) A bona fide interest in wireless; (B) Holder of an experimental license.

P.S.—This form must be accompanied by one year's subscription (active member £2/2/-; associate member 10/6) and forwarded to J. W. ROBINSON, Hon. Secretary, "Milano," Edward St., Concord.

SOUTH AUSTRALIAN TRANSMITTERS.

On Sunday evening last, 5AC, Mr. Roy Cook was heard transmitting piano and vocal items.

Mr. Cook has been experimenting for some time with the object of perfecting piano transmision and his music on this occasion more than repaid his efforts, being beautifully rendered and wonderfully clear, the high and low notes of the piano coming out with equal clarity.

5BD, Mr. Frank Earle, has tuned his 5 watter up to perfection, his strength being remarkable and his modulation perfect. Mr. Earle has only had his set a short time, and deserves great credit for the high standard he has already attained; he also selects a good class of music for broadcasting and his programs are always thoroughly enjoyed.

5AH, Mr. Fred Williamson, is the leading light in Adelaide so far as transmission is concerned, and is well known for the high class of music which he transmits.

5BN, Mr. Hal Austin, is still going strong and has many engagements transmitting for various concerts, fetes, etc.

5AG, Mr. Bland, is going strong again at his new address, c/o The Bald Motor and Electrical Works, Adelaide, if he can only eliminate the high pitched squeal of his microphone his transmission will be perfect.

5AE, Mr. Jack Honnor, has just started transmitting, and is making good progress.

5BP, Mr. Caldwell, of Unley, was heard to-night (Saturday) giving reports of 5AG's transmission, his voice coming in very clear; he is a fresh starter and is doing very well indeed.

5AV, Mr. C. E. Ames, is improving the quality of his transmissions, and hopes, when the interference question with VIA is settled, to increase the strength of his music, etc.

5BQ, Mr. L. C. Jones, is not doing much at present, business claiming his whole attention, but it is hoped that he will again very shortly be able to put out some more of his delightful musical programmes.

A Home-made Neutrodyne

(Continued from page 16)

same size tubing for both coils, take the longer, or primary, and cut out a strip of sufficient width the full length of the tube, see figure 2, to just permit it, when wound, of going inside the secondary. The width of the strip to be cut out depends on the size and thickness of the tube, plus the wire. The distance between the windings of the primary and secondary should not be more than ¼ in., but may be less, the windings are all in one direction on the secondary of the second and third transformers. A tap is taken off just opposite the upper end of the windings of the primary for the leads to their respective neutralising condensers, the transformers are mounted 6 inches between centres and at an angle of 60 degrees to prevent magnetic coupling.

Wonderful clarity of signals with very little loss of volume will be obtained by connecting a fixed condenser of approximately .001 mfd. across the secondary and another one of .00025 mfd. capacity in series with the plate and grid terminal of the second audio frequency transformer, thus forming a by-pass and ground for any stray radio frequency currents that find their way into the audio frequency circuit.

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