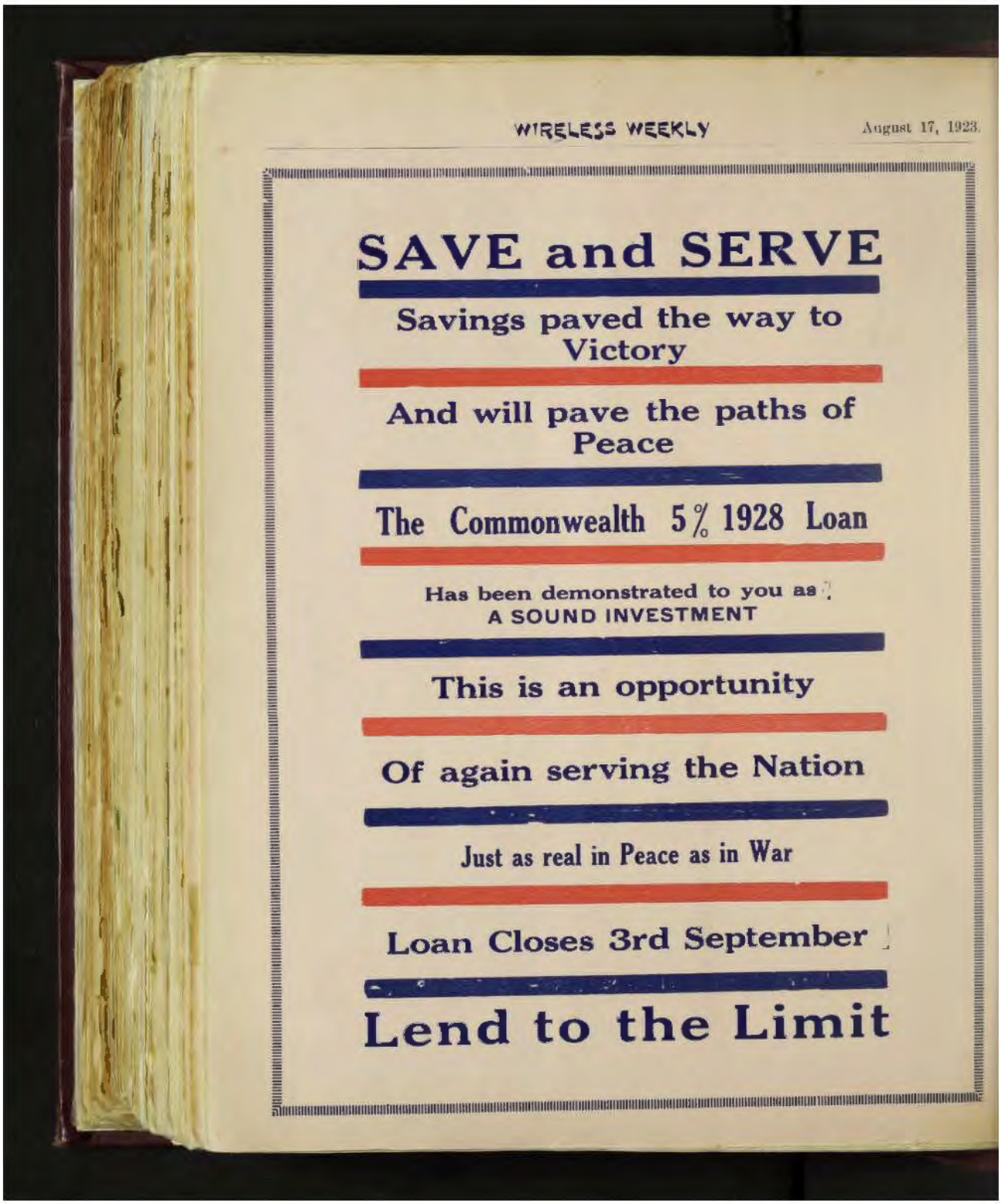


THE WIRELESS WEEKLY

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

OFFICIAL ORGAN OF THE AUSTRALASIAN RADIO RELAY LEAGUE

Vol. 2. August 17, 1923. No. 33

Traders, Beware!

THE MAILED FIST—No. 1.

A most astounding document has recently been handed to us for perusal. We can hardly believe that this document is meant to be taken seriously or that any Firm or Amalgamation could have the audacity to ask Wireless Traders to sign it, and so give their very existence away. We warn all Wireless Traders in these troublous times to be very careful in regard to any agreements they are asked to sign.

The Wireless Board.

It will be remembered by our readers that at the recent Wireless Conference it was suggested to the Postmaster-General that an Advisory Board representing various interests should be elected to sit from time to time and advise the Government in regard to Wireless

Roster for Week ending 22nd August, 1923

	7.30 to 8.0	8.0 to 8.30	8.30 to 9.0	9.0 to 9.30	9.30 to 10
Thursday, 16	2 GR	2 ZG	2 GR	2 FA	2 ER
Friday, 17....	2 ZG	2 WV	2 ER	2 WV	2 DS
Saturday, 18..	2 ER	2 GR	2 WV	2 GR	
Sunday, 19...	7 to 7.45 2 GR		7.45 to 9.15 2 CM		9.15 to 10.0 2 JM
Monday, 20...	2 GR	2 GR	2 WV	2 ER	
Tuesday, 21 ..	2 ER	2 GR	2 GR	2 FA	
Wednes., 22...	2 GR	2 GR	2 WV	2 WV	

Vacant times may be booked by Transmitters by ringing Red. 732 between 9 a.m. and 5.30 p.m. daily.

matters. It will surprise many to know that this Advisory Board HAS been elected, but when and where we do not know. It consists of Mr. E. T. Fisk, representing Broadcasting; Mr. Wilson, Retailers; Mr. Hurst, Manufacturers, and Mr. Holst, Press.

Mr. Holst, when interviewed a few days ago, did not even seem to know he was on this very important Board.

How can Mr. E. T. Fisk possibly represent Broadcasters until such time as we have Broadcasters, when we hope a suitable representative will be elected from Broadcast Companies.

How can Mr. Wilson represent the Retail Wireless Traders; neither Mr. Wilson nor his Firm have had experience in the retailing of wireless apparatus except perhaps in the sale of "Radio Rex."

It was quite understood at the Conference that the Advisory Board was to represent the interests above named, but no instructions were given the Committee to elect it, and we are still at a loss to know who really did elect them, but we do know that two of them are not representative.

This Advisory Board sat last week in conference with Mr. J. Malone (Chief Manager of Telegraphs and Wireless) who probably was of the opinion that it was in a position to advise him on wireless matters in regard to Broadcasting.

Wireless Traders of Australia, awake and demand your rights.

Don'ts for the Beginner.

Don't use a fierce contact between a crystal and the spiral spring, or "cat's-whisker," that connects it to the telephones. In most cases, the lighter the contact the better.

Don't use a thick "cat's-whisker." A thin wire with a fine point will enable you to obtain a much more sensitive contact than a thick wire which exhibits a minimum amount of springiness.

Don't continue to meddle with your crystal once you have secured a good contact. "Leave well alone." You can easily spoil an evening's entertainment by being over-ambitious in this respect.

Don't try to adjust your crystal with greasy fingers. In fact, you should try to avoid touching the crystal with your fingers at any time. You should be able to adjust the contact by gripping the insulated handle with which the "cat's-whisker" is usually fitted.

Don't use "low resistance" telephones with a crystal if you want to get the best results. It is desirable to have a lot of wire wound round the telephone magnets, in order to make the latter exercise a good strong pull on the diaphragms. Unfortunately, by increasing the number of turns of wire round the magnets, the total resistance of the wire is also increased. But this cannot be helped, and must be regarded as a necessary evil. Telephones of 8000 ohms resistance (4000 each ear-piece) are likely to give the best results.

Don't use a frame aerial with a crystal receiver; you won't hear a murmur. Neither will you hear anything if you connect a loud speaker to a crystal receiver. You will need at least two valves to operate a loud speaker.

Don't try to force a valve into its holder in the wrong position. Each of the four pins that protrude from the bottom of a valve is intended to fit into a special socket in the holder. To avoid error, the pins and sockets are both slightly "staggered," thus making it difficult to insert the valve in a wrong position. Before placing a valve in its holder, therefore, always see that the proper pins and sockets coincide.

Don't connect the leads from your accumulator or high-tension battery to the wrong terminals. A mistake of this kind may result in your valve, or your battery, or both, being seriously damaged.

Don't forget to switch off your filament accumulator when your set is not in use. Apart from wasting the current from the accumulator, the life of the valve will be shortened without serving any useful purpose.

Don't waste filament current unnecessarily when the set is in use. When first "switched on" a valve requires slightly more current than it does when it has been in use for a little while. By turning the little handle that varies the brightness of the valve, reduce the brightness to the lowest value that will enable satisfactory signals to be heard.

Don't use too much "pressure" or "voltage" from your high-tension battery. The various types of valve are designed to take a certain number of volts. Should this number be increased excessively, the efficiency of the valve is likely to be impaired.

Don't forget to send your accumulator to be recharged when it becomes "run down." An accumulator needs care. Don't leave it lying about "in idleness." When it has done its work, send it off to be recharged.

Don't expect your high-tension battery to last for ever. When your set is in use, there is a constant flow of current from the high-tension battery, which, sooner or later, must come to an end. When the battery is exhausted of its current it cannot be recharged, and must therefore be replaced by a new one.

Continued on page 5

WHAT WIRELESS MEANS.

A SIMPLE, NON-TECHNICAL EXPLANATION OF THE PRINCIPLES OF WIRELESS. HOW THE MICROPHONE TURNS SOUND WAVES INTO ELECTRIC WAVES.

There is nothing really baffling about wireless. It is not a complicated subject which may only be approached by those who possess technical knowledge. In fact, if you are thinking of taking up wireless for the first time, and want to understand quite clearly how wireless messages are sent and received, it will be to your advantage to have a free and open mind upon the subject. The smaller the number of preconceived ideas you have, the less will be the likelihood of your jumping to wrong conclusions. This is something which the beginner will do well to appreciate fully.

The understanding of wireless does not call for a special order of intelligence, or for a high standard of scientific training. Two things alone are needed: a little imagination and a little common sense. With this equipment you will have no difficulty whatever in obtaining a thorough grasp of the principles on which wireless is based.

If you have already committed the error of seeking initial enlightenment among the pages of some advanced text-book on wireless, you will probably be inclined to disagree with this view. You will, no doubt, have read quite enough about "condensers" and "inductances" and "detectors" to make you despair of ever understanding how any kind of wireless instrument works. If this is so, it is certainly a pity, but I am afraid the fault is mainly your own. You have begun the subject at the wrong end. Or perhaps it would be more correct to say that you have begun by plunging into the middle of the subject. Enthusiasm is a fine thing, of course, but it has lured you into the ancient error of trying to run before you can walk.

Put aside your text-book for the present, therefore, and do your best to forget all the wearisome jumble of technicalities with which you have stocked your mind. Be quite assured that you do not need to know all about the theory of a condenser or inductance or detector in order to understand how a wireless message is sent out from one station and picked up by another. In fact, it is utterly useless to bother about what these things are, or how they work, until you are quite clear in your own mind as to why such instruments should be necessary at all.

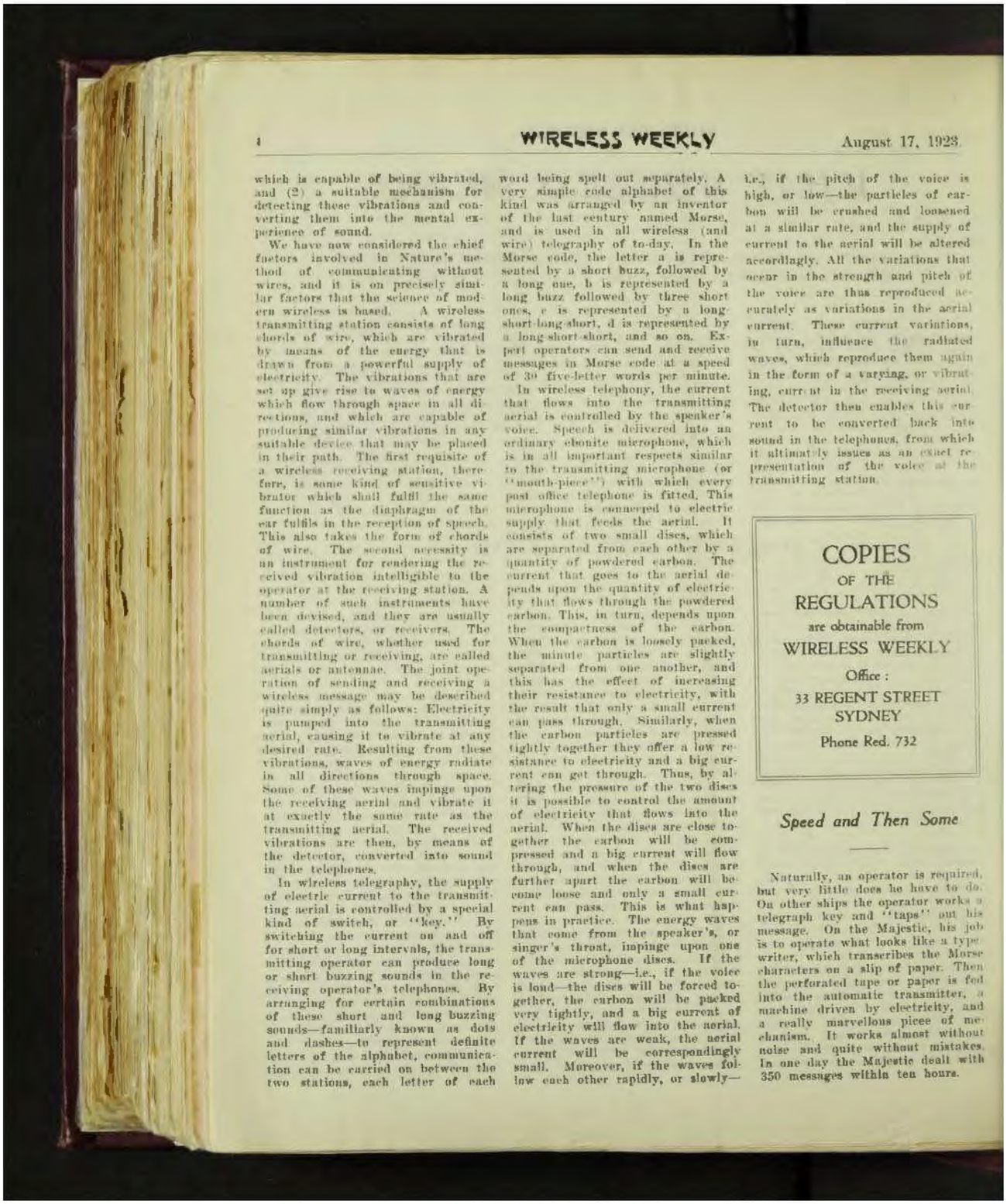
Let us "begin at the beginning" and see how far we can progress towards an understanding of the principles of wireless before it becomes necessary to call in the aid of technical terms and devices.

The oldest system of wireless, of course, is that by means of which ordinary conversation is carried on between two people. When my friend and I chat together, we are communicating by wireless in the strictest sense of the term, even though we may be sitting within a yard of each other. I transmit a message from my throat, and he receives it in his ears. How is this possible? What is it that enables us to converse in this way without wires? We are all so familiar with this kind of wireless that these simple questions are apt to be rather baffling. They are worthy of careful consideration, however, because Nature's miniature system of wireless is analogous in many respects to the more powerful one devised by man.

I perform the simple act of speaking by vibrating the "vocal chords" in my throat. When these chords vibrate, they send out waves of energy which travel in all directions through the surrounding air, in a manner similar to that in which waves travel outwards from the point of disturbance when a stone is dropped into a pond. In the latter case, however, the waves travel horizontally along the surface of the water, whereas the former travel in all directions, i.e., horizontally and vertically, as well as in all the intermediate directions. When these waves impinge upon my friend's ear they cause the little diaphragm within to vibrate in sympathy with my vocal chords, thus producing a definite sound in his mind.

If I vibrate my vocal chords slowly, the waves of energy will follow each other slowly through the air, and the diaphragm in my friend's ear will be vibrated slowly, the result being that he will hear a low note. On the other hand, if I vibrate my vocal chords quickly, the waves will follow each other at short intervals, and the diaphragm of my friend's ear will respond rapidly, giving rise to a high note. In each case the pitch of the sound which my friend receives depends upon the rate at which I vibrate my vocal chords. The higher the rate of vibration, the higher will be the pitch of the received note. If I wish to treat my friend to a little musical entertainment by running up the scale, I shall first of all vibrate my vocal chords slowly, and then, at intervals, increase the rate of vibration by definite amounts in order to produce the various notes of the scale.

There is another important aspect of this simple method of sending wireless messages. When two people converse the energy that passes from the speaker to the listener comes from the general store of life energy that animates the speaker's body. The complete transmitting equipment therefore comprises two main items: (1) a quantity of energy, and (2) chords which are capable of being vibrated by means of this energy. Again, the diaphragm in the listener's ear is not sufficient to produce the sensation of sound in his mind. Energy waves, or the vibrations which they set up, do not in themselves constitute the sensation which we call sound. Sound itself is really a mental experience. Nature has therefore endowed us with a very sensitive and delicate mechanism whereby the vibrations of the diaphragm are converted into the sensation of sound within the mind. The receiving equipment for ordinary conversational wireless thus comprises two main items also: (1) a diaphragm



which is capable of being vibrated, and (2) a suitable mechanism for detecting these vibrations and converting them into the mental experience of sound.

We have now considered the chief factors involved in Nature's method of communicating without wires, and it is on precisely similar factors that the science of modern wireless is based. A wireless transmitting station consists of long chords of wire, which are vibrated by means of the energy that is drawn from a powerful supply of electricity. The vibrations that are set up give rise to waves of energy which flow through space in all directions, and which are capable of producing similar vibrations in any suitable device that may be placed in their path. The first requisite of a wireless receiving station, therefore, is some kind of sensitive vibrator which shall fulfil the same function as the diaphragm of the ear fulfils in the reception of speech. This also takes the form of chords of wire. The second necessity is an instrument for rendering the received vibration intelligible to the operator at the receiving station. A number of such instruments have been devised, and they are usually called detectors, or receivers. The chords of wire, whether used for transmitting or receiving, are called aerials or antennae. The joint operation of sending and receiving a wireless message may be described quite simply as follows: Electricity is pumped into the transmitting aerial, causing it to vibrate at any desired rate. Resulting from these vibrations, waves of energy radiate in all directions through space. Some of these waves impinge upon the receiving aerial and vibrate it at exactly the same rate as the transmitting aerial. The received vibrations are then, by means of the detector, converted into sound in the telephones.

In wireless telegraphy, the supply of electric current to the transmitting aerial is controlled by a special kind of switch, or "key." By switching the current on and off for short or long intervals, the transmitting operator can produce long or short buzzing sounds in the receiving operator's telephones. By arranging for certain combinations of these short and long buzzing sounds—familiarly known as dots and dashes—to represent definite letters of the alphabet, communication can be carried on between the two stations, each letter of each word being spelt out separately. A very simple code alphabet of this kind was arranged by an inventor of the last century named Morse, and is used in all wireless (and wire) telegraphy of to-day. In the Morse code, the letter a is represented by a short buzz, followed by a long one, b is represented by a long buzz followed by three short ones, c is represented by a long-short-long-short, d is represented by a long-short-short, and so on. Expert operators can send and receive messages in Morse code at a speed of 30 five-letter words per minute.

In wireless telephony, the current that flows into the transmitting aerial is controlled by the speaker's voice. Speech is delivered into an ordinary ebonite microphone, which is in all important respects similar to the transmitting microphone (or "mouth-piece") with which every post office telephone is fitted. This microphone is connected to electric supply that feeds the aerial. It consists of two small discs, which are separated from each other by a quantity of powdered carbon. The current that goes to the aerial depends upon the quantity of electricity that flows through the powdered carbon. This, in turn, depends upon the compactness of the carbon. When the carbon is loosely packed, the minute particles are slightly separated from one another, and this has the effect of increasing their resistance to electricity, with the result that only a small current can pass through. Similarly, when the carbon particles are pressed tightly together they offer a low resistance to electricity and a big current can get through. Thus, by altering the pressure of the two discs it is possible to control the amount of electricity that flows into the aerial. When the discs are close together the carbon will be compressed and a big current will flow through, and when the discs are further apart the carbon will become loose and only a small current can pass. This is what happens in practice. The energy waves that come from the speaker's, or singer's throat, impinge upon one of the microphone discs. If the waves are strong—i.e., if the voice is loud—the discs will be forced together, the carbon will be packed very tightly, and a big current of electricity will flow into the aerial. If the waves are weak, the aerial current will be correspondingly small. Moreover, if the waves follow each other rapidly, or slowly—i.e., if the pitch of the voice is high, or low—the particles of carbon will be crushed and loosened at a similar rate, and the supply of current to the aerial will be altered accordingly. All the variations that occur in the strength and pitch of the voice are thus reproduced accurately as variations in the aerial current. These current variations, in turn, influence the radiated waves, which reproduce them again in the form of a varying, or vibrating, current in the receiving aerial. The detector then enables this current to be converted back into sound in the telephones, from which it ultimately issues as an exact representation of the voice at the transmitting station.

Speed and Then Some

Naturally, an operator is required, but very little does he have to do. On other ships the operator works a telegraph key and "taps" out his message. On the Majestic, his job is to operate what looks like a typewriter, which transcribes the Morse characters on a slip of paper. Then the perforated tape or paper is fed into the automatic transmitter, a machine driven by electricity, and a really marvellous piece of mechanism. It works almost without noise and quite without mistakes. In one day the Majestic dealt with 350 messages within ten hours.

MAKE YOUR OWN

High Frequency Amplifier Set.

The design of this high-frequency amplifier is such that it can very quickly be made up from components, and the instrument has a very good appearance when completed. It is simple and convenient to operate. The system of damping adopted is of special interest, and renders the complete four-valve receiver particularly useful for reception on broadcast wavelengths.

For the construction of this unit the following components are required:—

Anode circuit tuning condenser, 0.0003 mfds., air dielectric. It is a great advantage if this condenser is of precisely similar construction to that used for tuning the closed circuit, so that by using identical coils in the closed and tuned anode circuits, tuning will be made much easier as the two condensers will be operated together and be of almost identical setting.

Three-coil holder, similar in pattern to that used in making the tuning unit.

Valve holder.

Circular pattern filament resistance.

The arms and contacts of a double pole, two-position switch as used previously.

Seven terminals.

A piece of best quality polished ebonite, 5-16in. in thickness and of a size suitable for constructing a panel 18in. by 8 in., and a strip 18in. by 1in. The strip may be shorter, of course, but it is convenient to make it the full width of the panel so that additional terminals can be arranged to suit any special requirements of the user.

Hard wood base-board, 18in. by 6in. by 5-8in. Also another piece 7¼in. by 6in. by ¾in., which will form the end supports for the panel when sawn across diagonally.

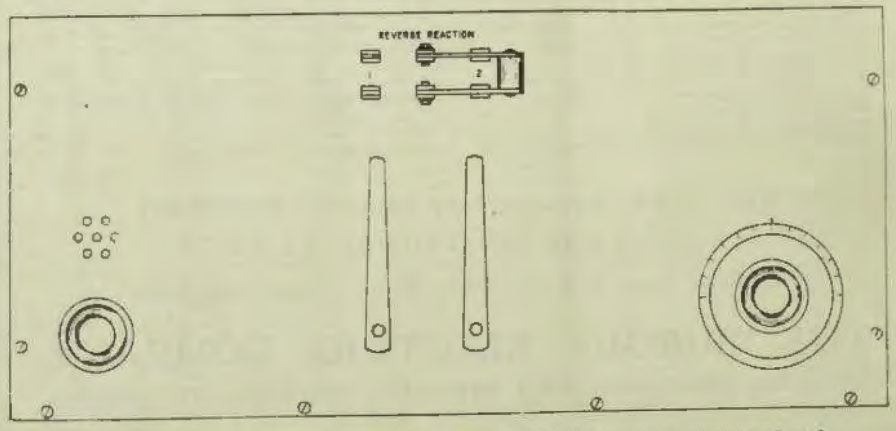
Twelve brass wood screws, 1in. by No. 6.

A piece of hard sheet brass, 3in. by 3in. No. 18 S.W.G.

Coil plug, such as is used for mounting home-made honeycomb coils.

Half pound No. 20 tinned copper wire and a quantity of insulating sleeving of various colours. (Make sure that the sleeving slips easily over the wire when purchasing.) The instructions for making up and assembling given in connection with the unit already made apply here, and need not be repeated.

The connections to the centre bracket of the coil-holder are in the plate circuit of the high frequency amplifying valve. On one side of this bracket is the holder which supports the reaction coil, whilst the other has one of its sockets connected to terminal No. 5, i.e., the L.T. negative and earth, when the H.F. switch is in the "on" position. By making a saw-cut into a coil plug, it is possible to secure to it a plate of brass or copper of about 1-16in. (or No. 16 S.W.G.) in



Front view of panel. The precise spacing of the components depends upon the patterns adopted.

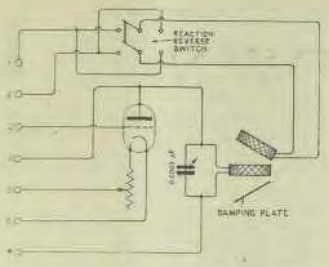


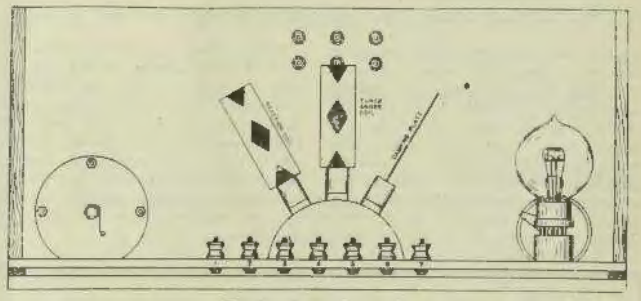
Diagram showing the action of the amplifier.

thickness. A lead is run from this plate so as to pick up contact with the earth lead in the socket. This plate serves a double purpose. In the first place, when at a distance of about 1in. from the anode coil it can be used for fine tuning when receiving on wave lengths below 400 metres. When, however, it is close up to the anode coil it will be noticed that the tendency to self oscillate, when the closed and anode circuits are in tune, is reduced. This is a very important refinement as, in practice, it will be found that slightly tighter reaction coupling may be used without critical oscillating effects and that the tuning of the anode circuit is less sharp, which is a very desirable feature when receiving broadcast telephony. Reacting on to the tuned anode winding, of course, limits the extent of radiation, but in spite of this, interference may still occur. The use of the variable damping plate allows for just such a degree of reduction of self-oscillation, as will prevent radiation even when the reaction coupling to the anode inductance is at zero and sufficiently flattens the tuning to eliminate, to a large extent, distortion in the reception of well modulated telephony. It must be remembered that telephony such as is transmitted by the British broadcasting stations is modulated in such a manner as to produce a number of side bands, and it is due to these oscillations of slightly different wave length, and of lesser amplitude than those on the wave length to which the tuning circuits are adjusted, that the pure transmission of telephony depends. The effect of the plate for the purpose of damping only occurs when it is hard up against the coil.

Apart from the introduction of this device into high frequency amplifier being described, it is a new feature worthy of attention by all those making use of the tuned anode method of high frequency amplification for, as already explained, it broadens the tuning which is normally so critical, and also further reduces the extent of radiation such as may be caused by a reacting or self oscillating high frequency amplifier.

From the circuit diagram it will be seen that a switch is provided for reversing the connections to the reaction coil. The advantage of this is that if coupled in one direction the coil may stimulate the production of oscillations, whilst in the other it has the effect of damping them out when suitably coupled. Thus, for receiving high power telephony at short range "reversed reaction" should be used, and for long distance reception the reaction coil may be coupled in a manner to produce a suitable degree of regeneration.

Provision is made for reacting on to either the anode inductance or the aerial circuit (according to whether, or not, reception is being carried out on broadcasting wavelengths) by simply transferring the

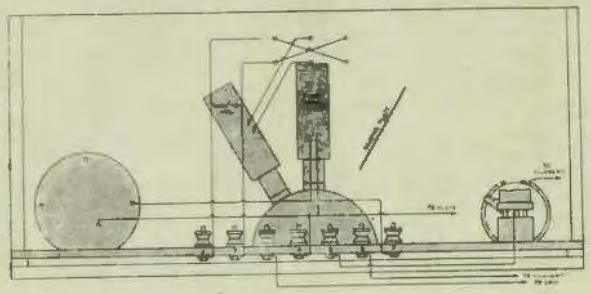


Back view of panel.

reaction coil from one socket to another, for it will be seen that the reaction sockets in the detector unit and the H.F. amplifier are paralleled across through terminals 1 and 2.

It may be suggested that the dimensions of the panel for this H.F. unit are excessive, and involve unnecessary expense. True, the components might be differently arranged and perhaps more cramped, but what must be remembered is the need for arranging the inductances associated with the H.F. valve amply spaced from those in the aerial and closed circuits. For economy the front panel, if desired, may be made of wood, as there are not many components that are actually in circuit attached to it. The change-over switch must, in this case, be mounted on an insulating base, and the spindle of the condenser (which, by the way, must be joined to H.T. positive and not the valve plate) should not make contact with the wood.

The following coils of the honeycomb type will be required for tuning to broadcasting wave-lengths. One "25," three "50's," three "75's," and one "100." This number of coils allows of the use of a "25," "50," "75" or "100" in the aerial circuit according to the dimensions of the aerial used. For the closed anode circuits, "50's" or "75's" are required, and the reaction inductance is a "75" or "100," according to which of these is not required for the aerial inductance.



The practical wiring. The leads must be rigid and well spaced.

Continued from Page 2

Don't discard your high-tension battery the moment it shows signs of being run down. It may be that there is just one "dud" cell in it, this being sufficient to reduce the strength of the battery as a whole considerably—just as one weak link in a chain reduces the total strength of the chain. If you have a "voltmeter" you can test each cell separately with it; if not, take the battery along to your local dealer, who will test it "while you wait."

Don't leave your instruments connected to your aerial during thunderstorms. The electrical charges collected by your aerial are apt to damage your receiving instruments. It is advisable, therefore, to disconnect your aerial down lead from the "aerial" terminal of your receiver and connect it direct to the earth lead. The receiving instruments are thus cut out of the circuit, and the aerial, being connected direct to earth, acts as a useful "lightning-conductor." An aerial-to-earth switch can be purchased for a few shillings. This enables you to "earth" your aerial at a moment's notice without having to make any hasty connections; by throwing the handle of the switch from one side to the other, the receiving instruments are automatically excluded from the circuit and the aerial joined direct to earth.

Don't use very high resistance telephones if you are working with three or more valves. The resistance of each ear-piece should not be more than 2,000 ohms if the best results are to be obtained.

Don't forget that, if you are "experimenting" with your telephones directly in series with the plate of a valve, there is a right way and a wrong way for connecting the telephone leads. If you reverse them you will find that signals are louder in one position than in another.

Don't imagine that by adding condensers and inductances you can make a ten-foot aerial as efficient as an eighty-foot one. Make your aerial proper as big as possible.

Don't disregard the importance of cleanliness as a factor in preserving the efficiency of a receiving outfit. Keep your instruments free from dust and moisture.

THE NEW "LOOK-OUT" MAN.

Enterprising owners of British steam trawlers of Cardiff, Milford Haven, Fleetwood, Hull and Grims-

by have inaugurated radio on board their vessels, and have found it most useful. Their trade, fishing, is more or less dependent on being in the right place at the right time, and many a fine opportunity has been ruined by the fleet being too far off for call until it was too late. Radio will solve this problem, at any rate, and information as to the state of the quarry, as well as the state of the markets, will now be forthcoming at all times. Fishing vessels abroad, in France, Norway, Sweden and America, report much of business value by wireless, and one haul which totalled twelve thousand pounds was brought about by a radio call directly indications of the shoal of fish were perceived. Vessels hurried to the spot, acted in concert, and reaped a very rich reward.

Ain't It So.

(By Harry E. Mali.)

There's a certain fascination
When you have the inclination
Just to hear some stuff that's broadcast somewhere near.
But the height of satisfaction
If you really look for action
Is to hear a distant signal coming clear.

First the early days with crystal,
When you'd gladly use a pistol
On the bird who said you didn't get the coast.
Then the day when with elation
You first got regeneration
And you heard a call from Cuba, was your boast.

There a certain fascination
When you have that inclination
Just to buy a set and listen with the rest,
But to scheme and save and barter
With some broom-wire for a starter
That's the way to get a knowledge of the best.

First the shaky old cat-whisker
Which would well nigh wear a blister
On your fingers while you're looking for a spot,
Then the regular progression
Till you reach the proud possession
Of a better set than ever could be bought.

When you make your last connection
You decide with deep reflection
That you've gone about as far as you can go,
Then some other bird devises
A new hook-up that surprises
And you're off as hard as ever.
"Ain't it so?"

ACTING ADVANCE AGENT.

Now that music publishers, copyright owners, etc., are all out for royalties from the broadcasting stations using their material, it is interesting to note that one of the largest music companies in America issued an emphatic statement to the effect that Radio had not had any bad effect upon their sales. At the Washington conference, held earlier in the year, it was suggested that broadcasting popular songs and selections interfered with the sale of them on gramophone records and piano player music rolls. But this particular concern has its own station, and finds that far from being a deterrent, Radio increases the demand, especially in the order-by-post department.

A Nation Builder is the Best Martial Sense

This interesting movement is likely to be a big factor not only in encouraging the inventive spirit of Australians, but that of the Empire generally, and there is no reason why it should not be made a feature of the discussions of the League of Nations; in fact, this suggestion has already been made and cordially agreed to by leading authorities.

It is interesting to note that the movement was started on the 8th December, 1921, before the members of the United Service Institution of New South Wales, when Captain George A. Taylor delivered an address on "Australian Initiative in Peace and War." In the course of his address, he suggested that a Board or Committee should be appointed for the purpose of encouraging and assisting inventors, and that if such an organisation were formed in Sydney within twelve months, he would donate one hundred guineas to the funds.

The Council of the Institution carefully considered this proposal, and invited a number of scientific and public bodies to a conference. The following organisations were represented at this conference, which was held on March 14, 1922: United Service Institution of New South Wales, the Institution of Engineers, Australia (Sydney Division), the Department of Technical Education, Sydney, Sydney Chamber of Commerce, Wireless Institute, New South Wales Chamber of Manufacturers, Australian Aero Club.

At the conference, the rules and regulations of the proposed Board were discussed, and it was decided to form an organisation to be known as "The Australian Inventions' Board."

When the proposals were brought before the Senate of the University of Sydney, the latter added approval and appointed a delegate.

The inaugural meeting of the Board was held on March 10, 1922, when Colonel Alfred Spain, V.D., was appointed Chairman, and Mr. Frederick Daniell, Honorary Secretary, and it was announced that the donation of one hundred guineas had been received from Captain Taylor.

The proposed work of the Board was discussed, and as little recognition seemed to be given overseas to Australian inventions and as the Australian market was too small for the best utilisation of the worth while, Captain Taylor decided to visit the older world and ascertain what was there being done regarding encouraging inventors, and also to see what could be done regarding the best protection of Australian ideas in Great Britain and later throughout the Empire, so that on his return the Board could begin armed with the experience of the older world. The Board resolved that until his return its active operations should be suspended. It was also resolved that while he was in Great Britain he should endeavour to form an organisation in that world centre which would act as an Empire headquarters for encouraging inventions and applying same to industry and help to build up a uniform patent law for the Empire.

During Captain Taylor's visit to Europe he investigated what was being done to encourage invention in Great Britain, France, Belgium, Switzerland, Holland, Germany and Italy, and on his return to Sydney his report was presented to the Board, which adopted it.

ENCOURAGING WIRELESS INVENTORS.

A NATIONAL MOVE.

Experimenters in wireless science are to have the first practical aid for development by the linking of the Wireless Institute of New South Wales with the Australian Inventions Encouragement Board (N.S.W. Section).

This Board was formed in 1922 by Mr. George A. Taylor, to stimulate and encourage the inventive spirit of the nation. Its objects and methods being to examine inventions submitted to it, and to report concerning their practicability and scientific soundness, and if satisfactory to help the inventor either financially or by helping to place his invention.

The wireless science will by this movement be particularly valuable. With the air jagged with a multitude of claims for patents and in a sense bewildering the person who wishes to excel, there is a possibility of the new movement helping to clear it somewhat and let the experimenter know where he stands.

Although it is understood the new movement does not take any responsibility regarding patent rights, yet there is no doubt that the standing of those claiming certain rights will become definitely and fairly established.

There seems to be too much mystery regarding patent rights in wireless, and the sooner the air is cleared the better for all concerned.

With regard to the Australian Inventions Encouragement Board, highest praise is well deserved. It is out to do good work for the man who is generally ignored, yet who is the man who is one of the greatest factors in a nation's progress, and so by helping the inventor it becomes a nation builder in the most practical sense.

FIRST TIME IN CANADA.

The pioneer Canadian railway train to pick up Radio concerts was one on the Winnipeg-Vancouver line of the Candian Pacific. With the co-operation of the railway officials a receiving set was installed in a "drawing room" compartment, with aerial and everything necessary. Between Winnipeg and Vancouver, despite the vibration of the fast-moving train, musical selections were picked up from Kansas City, San Francisco, Chicago, Minneapolis and Calgary. It was thought that the vibration might interfere with the aerial, and this was found correct, but only in some places, when hearing was next to impossible. On the whole the results were good and rapturously received.

NEW WIRELESS DEVICE.

Jamming Made Impossible. Outside Aerial Unnecessary. Cheaper Messages Promised.

An invention which, it is claimed, marks the most important advance in wireless telegraphy yet made, is to be tested this week by experts from the Air Ministry and the Admiralty.

In the words of the inventor, M. Yves Marrec, a Frenchman, it will reduce the cost of wireless messages by at least one-third.

Sitting in a noisy office in Holburn-viaduct yesterday a Westminster Gazette representative saw a wireless message from Long Island, New York, received and printed straight on to the "tape" of an automatic machine—a feat that has never before been accomplished.

The invention is to be put on the market by a British firm.

M. Marrec has produced an anti-parasitic machine designed to "cut out" entirely all noises that obscure the message actually being taken by the operator.

INTERFERING NOISES.

"Parasitic" noises have always been the great hindrance to the full realisation of all the possibilities of wireless. Any electrical action—a thunderstorm, an electric train, even the magneto of a motor car—has a disturbing effect and confuses the sound originally tapped out.

Over long distances, such as across the Atlantic, the cumulative effect of all these electrical influences is such as to reproduce at other end nothing but a long burring sound which can be deciphered only by experts.

M. Marrec, employing a supplementary apparatus consisting of a series of low frequency valves, is able to eliminate these obtruding sounds one by one, with the result that the message for which he is "tuned in" comes out as clearly as though there were only one operating station in the world. For, besides eliminating parasites, the apparatus completely suppresses every interfering message being sent out from other transmitting stations.

NO OUTSIDE AERIAL.

The "purified" message was received so distinctly yesterday that it could be heard several yards from the ear-piece.

M. Marrec subjected his machine to the most severe conditions. He chose an ordinary office in one of the noisiest parts of London, with electric trains and motor traffic running all around and under it. Moreover, he had no outside aerial.

In messages from America each letter has now to be repeated three times and each word twice, after which they still require to be deciphered by a keen expert. Now, said M. Marrec, a message need be sent once only, and it is recorded in ink on paper.

CAN BE USED FOR BROADCASTING.

Moreover, transmitting stations of immense power and great cost, such as the Government proposed to erect, could be replaced by a series of lower power stations transmitting automatically.

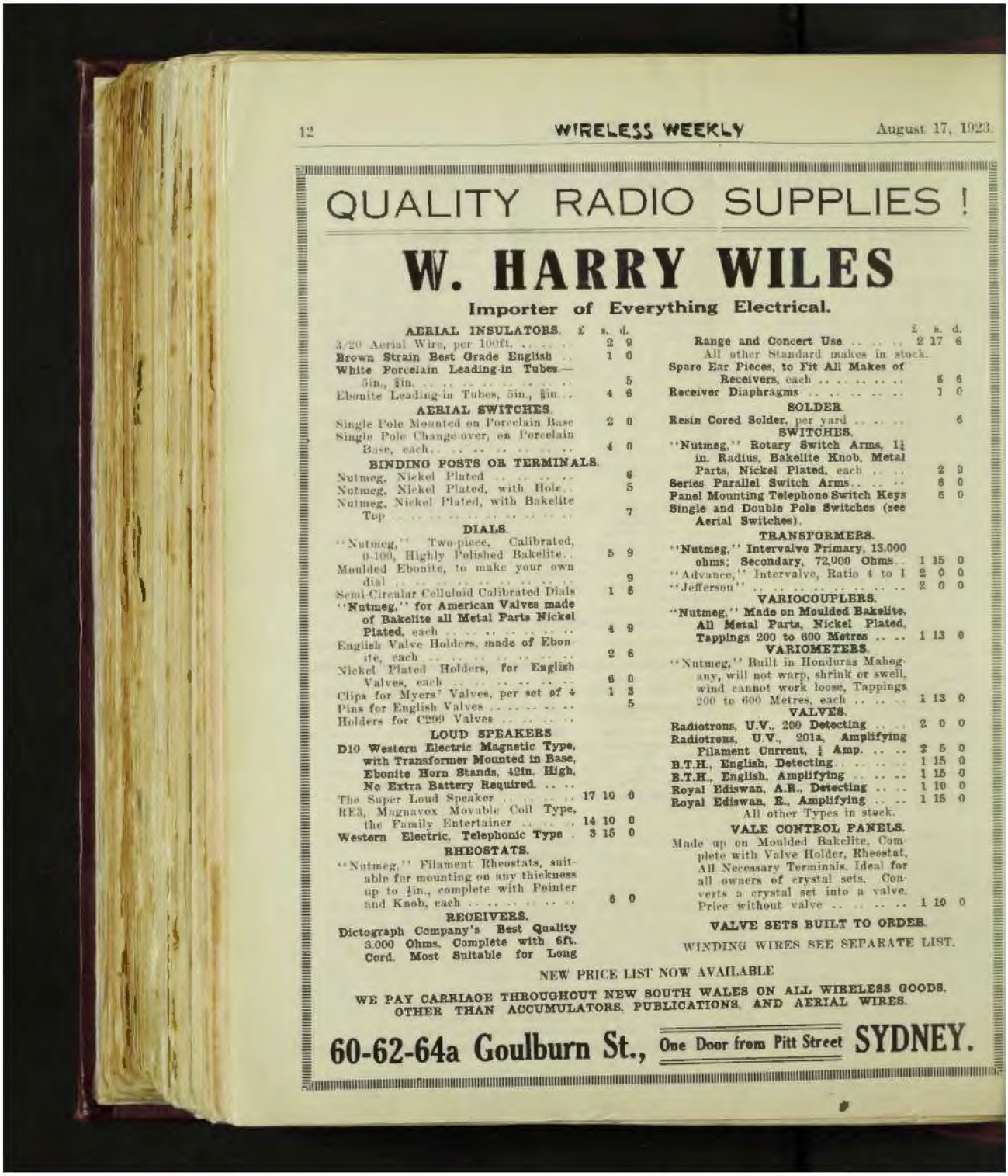
With further experiments the apparatus would be applicable to the broadcasting of music and speeches.

M. Marrec, who has worked for many years on the invention, is so sure of his success that although he cannot speak English he has brought his wife and family over here, and intends to make England his home.

—"Westminster Gazette."

ABSOLUTELY WORD PERFECT.

The wireless cabin of the s.s. Majestic now boasts of a wonderfully efficient high-speed sending and receiving radio outfit. The volume of communications has increased to such an extent of late, especially when the liner is nearing a port, that it threatened to become too much for the operators. The new auxiliary is automatic, and works by means of a Gell Perforator Keyboard for transmitting. The messages are first recorded on a tape; this is then dealt with by automatic means, and easily transmits from one to two hundred words a minute.



Amplifying Without Valves.

Before the advent of the thermionic valve, wireless signals were received in most instances by means of a crystal detector and high resistance telephones. Electrolytic, magnetic and other forms of detectors were employed, but the crystal remained the most sensitive and popular form of detector. To-day, with the thermionic valve detector and multivalve amplifiers in common use, the crystal receiver is looked upon by many as merely a toy.

It is a fact, of course, that the crystal receiver is very insensitive compared to a good thermionic valve receiver, yet it possesses one great advantage—that is, it requires no accumulator to maintain the electronic emission of the filament.

Where facilities for accumulator charging are available this advantage is not apparent, but there must be many thousands of people who to-day receive crystal sets, merely because they are unable to get accumulators conveniently charged. These people will realise the difficulty of entertaining their friends by means of a crystal receiver—many pairs of phones are a nuisance — and they long for a loud speaker. It is for these people that this article is written, as it is quite possible to work a loud speaker within, say, 15 to 20 miles of a broadcasting station with the aid of a relay and a few dry cells.

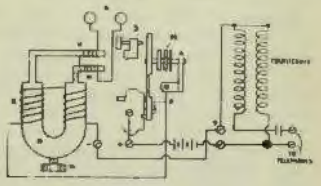
Before the war the Telefunken Company and others constructed relays whereby the feeble impulses rectified by the crystal were magnified. It will be obvious that any magnification is done after rectification by the crystal, and therefore a relay may be compared only to a low-frequency thermionic valve magnifier, and not to high-frequency amplifier. The effective range of the crystal set will not therefore be materially increased, but the signals already received will be magnified.

An instrument which performs this function is known as a relay, and it merely consists of a delicate reed which is actuated by the rectified impulses operating a special microphone, through which a current from a local battery of dry cells is passing. This latter current is much stronger than the rectified impulses and is made to work the telephones, the result being greatly increased signal strength than before.

Fig. 1 shows the wiring diagram of a Brown "G" type microphone relay.

Th relay consists of a permanent magnet N with pole pieces H, the latter being wound with coils through which the rectified oscillations flow from the terminals A that are in turn connected to the terminals on the crystal receiver. To these terminals high resistance telephones are normally connected.

A two-microfarad condenser is connected in series with A, to keep out steady currents. A steel reed P, held by a screw, is fixed in front of the poles of the magnet, its distance from the poles being adjusted by means of the screw W. When the reed is on the point of dropping against the magnets, that is to say, when its elasticity is just balanced by the magnetic pull, it is in its most sensitive position. S is a stop screw to prevent the reed from coming into contact with the pole faces, as it would then stick to



them. The reed when in use must not touch S, otherwise its oscillations would be damped.

M is a sealed microphone chamber containing two carbon-faced electrodes and nearly filled with fine carbon granules. The front of this chamber is screwed firmly to the reed, and the back is held by three grub screws in the insulated arm. The microphone is in series with a regulating winding K on the limbs of the magnet.

By the telephonic reaction of this coil the magnifying power of the instrument is intensified. A six volt battery is used with the relay, consisting of four large dry cells. The current flowing from this battery will not exceed 30 milliamperes, and hence a good dry battery will last for many months. It is usual also to fit a transformer to the output of the relay, so that low re-

sistance telephones of about 120 ohms may be used.

The diagram of connections shows that the receiver currents flow through the coils H on the poles of the permanent magnet. These coils, as it were, taking the place of the coils of the telephone receiver. In this case, however, instead of a diaphragm in front of the poles, we have the steel reed. The contacts in the microphone, at the back of and fixed to the reed, are joined in series with the local battery, the primary of the transformer, and the intensifying coils on the magnet. The vibrations of the reed act on the carbon granules in the microphone and cause telephonic changes of the current in the local circuit, which currents flow through the primary coils of the transformer, which act on the telephone receivers connected to it.

Very weak receiver currents will thus cause vibrations of the reed, and through it much stronger impulses of local current are made to act on the telephones. A second relay may take the place on the telephones, in fact, two or even three relays may be joined in series, the magnification effects being greatly increased in each case.

Relays of this type are difficult to make and are beyond the powers of the average wireless experimenter. They are not expensive to buy, costing little more than a single note-magnifier and valve, and there are still some ex-Army relays to be purchased for a few pounds, many being in quite a serviceable condition.

It will thus be seen that, with the aid of a relay, anyone not having charging facilities for his accumulators may rival his friend more fortunately situated. As previously pointed out, a relay will not materially increase the effective receiving range of a crystal set, but it will, at any rate, render signals, already strong enough to be received, audible on a loud speaker.

Relays require very careful adjustment and must be kept free from all vibration. When properly adjusted, a relay may rival a valve amplifier for clarity of magnification.

It should be emphasised that this relay will not increase the effective range of a receiver in any way whatsoever. For instance, suppose a crystal receiver is installed in the outskirts of London capable of receiving all the London broadcasting, the addition of this relay may enable the owner of the set to operate a loud speaker where before he was forced to use headphones. But it will not give him any greater range, and he will still be able to receive.

ABBREVIATIONS USED IN WIRELESS.

A.C.—Alternating current.
A.F.—Audio frequency.
A.T.C.—Aerial tuning condenser.
A.T.I.—Aerial tuning inductance.
C.—Capacity (in formulae).
C.W.—Continuous wave.
D.C.—Direct current.
D.C.C.—Double cotton covered.
D.F.—Direction finding.
D.S.C.—Double silk covered.
E.M.F.—Electro-motive force.
E.M.U.—Electro-magnetic units.
E.S.U.—Electro-static units.
H.F.—High frequency.
H.T.—High tension.
Hy.—Henry (unit of inductance.)
I.C.W.—Interrupted continuous wave.
L.—Inductance (in formulae).
.—Wave length.
L.F.—Low frequency.
L.T.—Low tension.
uF.—Microfarad (practical unit of capacity, sometimes abbreviated "mfd.").
M.—Metres.
M.A.—Milliampere (unit of current. One thousandth of an ampere).
Mhy.—Microhenry (one millionth of a henry, sometimes abbreviated "mic.").
R.C.—Reaction coupling.
R.F.—Radio frequency.
R./T.—Radio telephony.
S.C.C.—Single cotton covered.
S.I.C.—Specific inductive capacity.
S.S.C.—Single silk covered.
S.W.G.—Standard wire gauge.
T.T.—Tonic train.
W/L.—Wave length.
W/T.—wireless telegraphy.
.—Megohms (unit of resistance, one million ohms).
w.—Ohms.

Radio News from Far and Wide

That there is no limit to the distances and new fields Radio can cover is becoming more and more obvious every day. Because of certain inherent characteristics, this is easily understandable. For instance, owing to its simplicity and independence of artificial aids or mediums, radio communication is automatically freed from the tedious process of obtaining rights of way. Thus its stations take comparatively short time to instal. Also, as it uses the same medium which transmits light to us, it is quite feasible that we may yet be able to send forth messages for as great a distance as light travels, if the sending power be strong enough. At the present time Radio waves travel with the speed of light, that is some 186,000 miles per second.

This is no quicker than a telegraphic message, but has the added quality of radiating in all directions instead of only between given and wired points. Every Radio message can be heard at the same time by those on sea or under it, in a submarine, on land, down a mine, or in an aeroplane in flight. Other systems of communication cannot be universally applied in this fashion, for they are one and all dependent upon artificial means which are liable to interfere.

N.S.W. TRANSMITTING AND RECEIVING LICENSES.

2 A L	Cooper, A. E. C.	"Edale," Cecil St., Ashfield. T.
2 E C	Gorman, C. A.	31 Segenhoe St., Arncliffe. T.
2 Z A	Keogh, W. G.	11 Victoria Square, Summer Hill. T.
2 Z B	Balmain District Radio Society (P. G. Stephen)	9 Nicholson St., Balmain. T.
2 Z C	Lavington, F. M. E.	7 Blandford Ave., Waverley. T.
2 Z D	Brain, S. F.	85 Bland St., Ashfield. T.
2 Z E	Laker, F. J. F.	Harfleur St., Deniliquin. T.
	The following have removed to the addresses indicated:—	
2 D Z	Brock, M. B.	9 McKye St., Bay Rd., North Sydney.
2 M S	Packer, E. J.	124 Boulevarde, Dulwich Hill.
2 N L	Amateur Wireless Construc. School A. L. Dixon)	Dengate Lane, Ashfield.

SOUTH AUSTRALIAN DIVISION, WIRELESS INSTITUTE.

The usual monthly general meeting of the South Australian Division of the Wireless Institute, was held in the Classics Room of the University, North Terrace, Adelaide, on Wednesday, August 4th. There was a large attendance, which was presided over by Mr. Hambly Clark (president).

The minutes of the previous meeting were read and confirmed in the usual manner. Four applications for membership were received, including one from Professor Kerr Grant, Professor of Physics, at the Adelaide University.

Correspondence relating to the Australasian Radio Relay League was read and received, and it was decided that the South Australian Branch of the League should be brought into operation as soon as possible.

The Secretary gave a report on what had been done in regard to experimenters who have been logged by V1A for interference.

At the conclusion of the business a number of selections, transmitted by 5AG, Mr. H. L. Austin, of Norwood, and 5AH, Mr. F. L. Williamson, of Kent Town, were received on the University's receiving set, and rendered loud enough for all present to hear by means of a Brown's loud speaker, the music and speech coming in very clear. The receiving set was in charge of Mr. K. Milne.

A presentation of a gold Institute badge, suitably engraved, was to have been made to Mr. Reg. Dunstone, our late Hon. Treasurer, who is leaving shortly for Europe, but as the badge had not come to hand from the manufacturers, this could not be done, and a private presentation will have to take place.

LEICHHARDT AND DISTRICT RADIO SOCIETY.

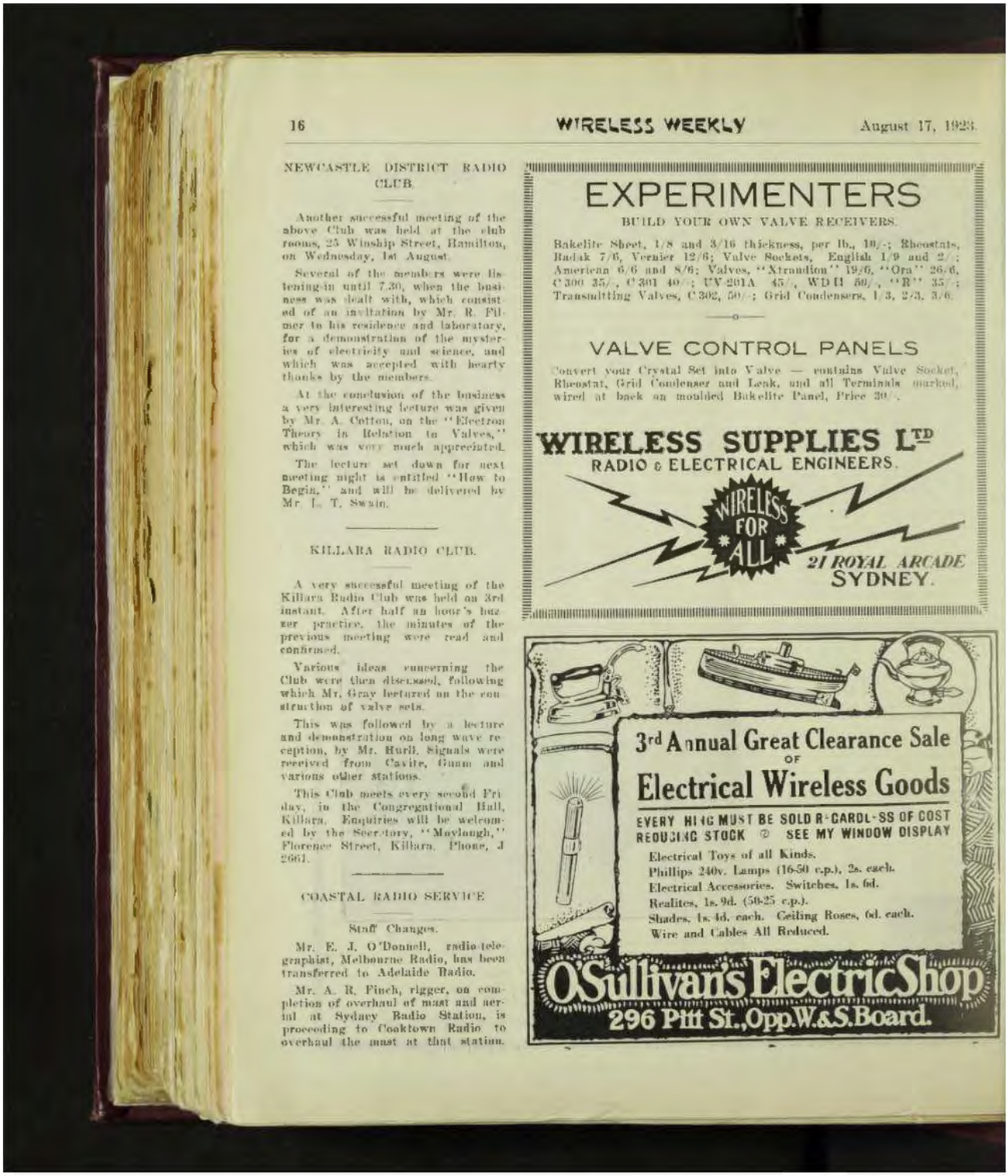
The eleventh monthly business meeting of members of the Leichhardt and District Radio Society was held in the club room, 176 Johnston Street, Annandale, on Tuesday, August 7th, when several important matters were dealt with, including the election of four new members.

That the Society continues to go ahead is evidenced by the fact that every business meeting sees a further increase in membership, which now stands at 49.

The Council is busy with arrangements for future meetings of the Society, and members are looking forward to good times ahead.

On Thursday, August 30th, a demonstration of radio communication will be given at the Annandale Theatre, in conjunction with another body which is holding a benefit performance on that date, and a successful evening is anticipated. Further particulars will be published in these columns at a later date.

All inquiries relative to the activities of the Society should be addressed to the Hon. Secretary, Mr. W. J. Zech, 145 Booth Street, Annandale.



NEWCASTLE DISTRICT RADIO CLUB.

Another successful meeting of the above Club was held at the club rooms, 25 Winship Street, Hamilton, on Wednesday, 1st August.

Several of the members were listening-in until 7.30, when the business was dealt with, which consisted of an invitation by Mr. R. Filmer to his residence and laboratory, for a demonstration of the mysteries of electricity and science, and which was accepted with hearty thanks by the members.

At the conclusion of the business a very interesting lecture was given by Mr. A. Cotton, on the "Electron Theory in Relation to Valves," which was very much appreciated.

The lecture set down for next meeting night is entitled "How to Begin," and will be delivered by Mr. L. T. Swain.

KILLARA RADIO CLUB.

A very successful meeting of the Killara Radio Club was held on 3rd instant. After half an hour's buzzer practice, the minutes of the previous meeting were read and confirmed.

Various ideas concerning the Club were then discussed, following which Mr. Gray lectured on the construction of valve sets.

This was followed by a lecture and demonstration on long wave reception, by Mr. Hurll. Signals were received from Cavite, Guam and various other stations.

This Club meets every second Friday, in the Congregational Hall, Killara. Enquiries will be welcomed by the Secretary, "Mavlaugh," Florence Street, Killara. Phone, J 2661.

COASTAL RADIO SERVICE

Staff Changes.

Mr. E. J. O'Donnell, radio-telegraphist, Melbourne Radio, has been transferred to Adelaide Radio.

Mr. A. R. Finch, rigger, on completion of overhaul of mast and aerial at Sydney Radio Station, is proceeding to Cooktown Radio to overhaul the mast at that station.

MARRICKVILLE AND DISTRICT RADIO CLUB.

The usual meeting of the above club was held in their new rooms, at the School of Arts, Illawarra Road, Marrickville, on Monday, the 6th instant, at 8 p.m.

Two new members were admitted.

An extraordinary general election was held to meet the demand of a re-organisation, the following officers being elected:—Patron, E. B. Crocker; President, W. L. Hamilton; Vice-Presidents, W. H. Weston, C. Trimmington; Secretary, A. W. Hemming; Assistant Secretary, W. Godbehere; Treasurer, G. W. Round; Publicity Officer, W. L. Hamilton; Librarian, F. Kirk; Trustees, W. L. Hamilton, W. H. Weston, C. Trimmington; General Committee, R. G. Ellis, A. Smith, H. W. McQuoid, R. Porch, J. Flindt; Technical Committee, W. H. Weston, W. L. Hamilton, F. Kirk, R. G. Ellis, C. Trimmington; Auditors, Messrs. Stiff and W. McLeod; Delegate, A. W. Hemming.

A hearty vote of thanks was tendered to the ex-President and ex-Secretary for their efforts in furthering the objects of the club. This was suitably replied to. It was announced that Mr. F. Basil Cooke would lecture to the club on "Resonance," on the 13th instant, the following Monday, 20th, being occupied by Mr. Wallace Best, in a suitable lecture.

BALMAIN DISTRICT RADIO SOCIETY.

The above society is still forging ahead, each meeting bringing new members. Keen interest is displayed at every meeting. A new series of lectures is to be given by the members of the Technical Committee, on the transmission of damped and undamped systems of telegraphy, together with their reception, and radio telephony transmission and reception. The latter will be practically demonstrated with the society's apparatus, which should soon be heard working again.

It may interest your readers to know that the society's Technical Committee have been experimenting with the above radio 'phone apparatus, which is capable of transmitting and receiving in the same manner as you would use an ordinary land line telephone, no change over switches being necessary, and only one aerial is used.

Whilst listening to experimental radio 'phone transmissions from well-known experimenters, Mr. Stephen was able to conduct tests by radio 'phone with practically little loss in strength of the other items being received.

The full details and photographs may be sent along to you at a later date.

The society's new experimental aerial is of the cage or sausage type, height being 40 feet by 80 feet, on rings 3 feet 6 inches in diameter, 6—3/20 stranded copper being evenly spaced around rings; the aerial having a minimum resistance; direct earth and counterpoise can be used at will.

During the past month many radio experimenters are of the opinion that they will only be granted a broadcasting receiving licence, so why not join a radio society, and take interest in their work whereby you may become educated enough to satisfy the Controller of Wireless that you are a bona fide experimenter.

There are many things for the experimenter to do. A copy of the objects of this society are attached, which should give all experimenters a bit of a lead.

TITLE.

This society shall be known as the Balmain District Radio Society.

OBJECTS.

(a) The bringing together of all those interested in the scientific development of matters appertaining to radio telegraphy and telephony, and the obtaining of an experimental transmitting and receiving license.

(b) The discussion by members on matters relating to the above, by means of lectures, demonstrations and the reading of papers.

(c) Experimental work in connection with the transmission and reception of damped and undamped waves; with further experiments concerning the improvement of existing means of reception by crystal and the means of controlling electrons as given off from sources other than those used in the present day electronic valve.

WAVE LENGTHS TO BE MEASURED.

Mr. Maclurcan's Station to be Utilised.

A certain amount of confusion and interference between experimental transmitting stations has occurred recently, mainly due to the fact that many station owners either make a guess at their wave length or measure it inaccurately.

It is very desirable that all wave

(Continued on Page 20)

The Australasian Radio Relay League

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

A representative meeting of the members of the Australasian Radio Relay League, was held in the rooms of the Royal Society, Elizabeth St., on Wednesday, August 8, the President, Mr. Chas. D. Maclurcan, occupying the chair.

A committee meeting was held prior to the general meeting, and several small matters of policy were decided upon. It was agreed that leading experimenters in each State be written to through the various Wireless Institutes and asked to form local branches of the Radio Relay League. A letter which had been drafted by the Organising Secretary was approved of and will be forwarded to experimenters in New South Wales. The question of the affiliation of the League with the Wirless Institute was brought up and it was decided not to affiliate at the present time, but to preserve the League as a separate body. The Secretary was instructed to write to the Postmaster-General advising him of the formation of the Relay League, and asking him if he would be good enough to formally approve of it.

Membership Fees

Considerable discussion took place concerning the question of membership fees and it was ultimately decided that they be raised to 10/- per annum for associate members, and 20/ per annum for active members.

This step was in one sense reluctantly taken by members. It is not the desire of the committee to fix fees which may prevent any member joining, and most of those present were of the opinion that the lower the fees, the larger number of members would be attracted to the League. It was pointed out, however, that the expenses incurred in connection with the running of the movement were very high and would not decrease, but on the other hand would increase with a larger number of members. Printing, stationery, postage, the preparation of test cards were said to entail considerable expense, and figures which had been prepared after very careful consideration were quoted showing that the revenue derived from the present membership fees would not be sufficient to cover the expense necessary to carry out operations successfully.

While the Council of the League regrets exceedingly the necessity for the increase, its members feel sure that experimenters will realise that the action taken was purely in the interests of the movement itself. It was felt that it would be much better to make fees higher and carry out work of the League in a proper manner rather than to risk becoming financially embarassed by a lack of revenue and therefore be compelled to curtail operations.

Members will realise that in the near future there will be considerable expense in the organising of stations, most of this being due to the heavy payments which will be necessary for postage.

It will, however, be generally felt that a movement of the nature carried out by the Radio Relay League will be of such vast importance to the experimenters generally that membership of it wil be well worth the revised fees.

Division of the State

The districts into which the State of New South Wales have been divided for the purpose of carrying out the work of the Australian Radio Relay League will doubtless prove suitable to the majority of experimenters.

In arriving at a decision regarding the allotting of the various sections, the Organising Secretary (Mr. S. Colville) and members of the Committee were faced with no small difficulties and the matter was thoroughly considered from every angle before a definite decision was arrived at.

One of the main problems to be considered was, of course, that of population. It would obviously have been unwise to have divided New South Wales into equal districts and to have had the majority of the stations in one of those districts only. Such a division would have resulted in much congestion and probably a certain amount of delay and interference.

Although some very effective and well managed stations are maintained in country centres, the greater portion of the amateur transmitting stations are situated either within or very close to the metropolitan area. This fact was taken into consideration and it was therefore decided to subdivide that area in three districts, to be known as Districts 1, 2, and 3 respectively.

The division was effected by taking the General Post Office as a central point. From this centre an imaginary line drawn outwards, across country to Richmond, thence across to Barrenjoey, and via the coast back to Sydney forms the boundary of number 1 district. The line from Sydney to Richmond also divides the number 1 district from the number 2 district, which is bounded by a line from Richmond to Camden and thence radially inwards to Sydney. The number 3 district is bounded by a line from Sydney to Camden, thence to Bulli and via the coast back again to Sydney.

The remainder of the State has been divided by using the lines of latitude ad longitude as boundaries. It is hoped shortly to publish a map marking off these districts so that all experimenters may have a visible division of the State. An explanation of the various divisions made by means of stating the latitudes and longitudes would convey very little information to the reader.

It may be briefly stated, however, that the following districts are covered by the divisions: No. 4, Central Eastern; No. 5, Middle North Coast; No. 6, South Coast, Southern and South Western; No. 7, North Coast and portion of North and North West; No. 8, Central and Central Northern; No. 9, Western and North Western.

No actual operations have been carried out; so far the main work of the committee has been devoted to the organising of the League. Much remains to be done in this respect shortly.

It would perhaps not be out of place if holders of experimental receiving licenses were again advised of the benefits they may derive from membership of the League. Not only will it make their work more interesting and give them code and procedure practice at a comparatively low rate of speed, but it will mean that they will have an active interest in a body which will unitedly represent their interests, and will place their views before the authorities should necessity demand that such action be taken.

Applications for membership may be addressed to Mr. S. Colville, Organising Secretary, 10 Rowe Street, Sydney.

FIJI DOES SOME RADIO SHOPPING.

Directly after the disastrous fire at Suva, the capital of Fiji, occurred, tidings of it were broadcasted everywhere. The news was received in England pretty soon, and a go-ahead engineer from Dennis Bros., the well-known Guildford firm of lorry and engine makers, was one of the first to pick up the message. He lost little time before sending a telegraphic tender of shipment of a turbine fire-engine, and after a few messages had passed between the Town Clerk of Suva and Dennis Bros., Fiji duly gave them an order for one machine. Less than four weeks after this it was on its way to its destination, in very good time for any other outbreak that may take place. The conflagration was responsible for fully £50,000 worth of damage. A letter takes well over a month to reach the British Isles from Fiji, so that once again radio shows its adaptability to business uses when a firm wants to be first in the field.

Amateur Transmitting Stations

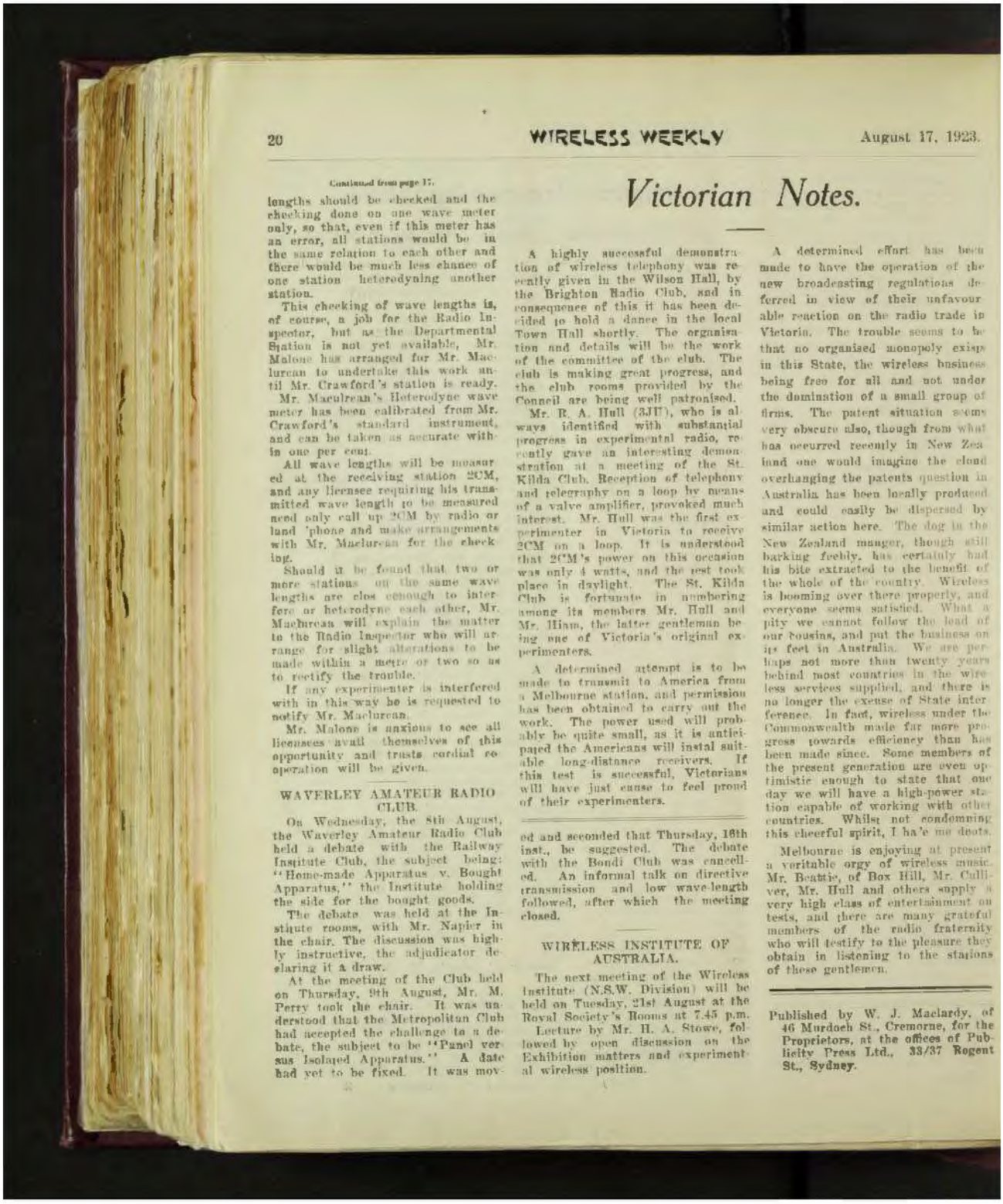
AMATEUR WIRELESS LICENSES: NEW SOUTH WALES.

Wireless Licences for experimental purposes have been issued during the month of May, 1923, to the following:—

RECEIVING ONLY.

Nature of Licence.	Name.	Address.
C	Smith, H. E.	28 Chatham St., Coogee. R.
C	Edwards, J. A.	Springfield St., Guildford. R.
C	Elmslie, K. A.	54 Shirley Rd., Woolstonecraft. R.
C	Byrne, J. L.	39 Barry St., Neutral Bay. R.
C	Matthews, A. E.	La Mascotte Ave., Concord. R.
C	Williams, T. W.	29 Centennial Ave., Randwick. R.
C	Weekes, J. O.	40 Wolsley Rd., Point Piper. R.
C	Grey, B. H. L.	37 Gillies St., Sydney. R.
C	Casas, J. R.	37 Arthur St., Kogarah. R.
C	Western Electric (G. W. Sturges)	192 Castlereagh St., Sydney. R.
C	Innes, G. D.	"Koonya," Boulevarde, Strathfield. R.
C	Barker, W. H.	Wallace St., Concord. R.
C	Barber, A. S.	36 Kintare St., Dulwich Hill. R.
C	Barker, A. E.	68 Bruce St., West Kogarah. R.
C	Wilkinson, F. F.	181 Rainbow St., Randwick. R.
C	Woodhouse, H. O.	46 Hill St., Orange. R.
C	Morison, A. E.	5 Drummoyne Ave., Drummoyne. R.
C	Thornley, J. R.	5 Dickson St., Haberfield. R.
C	Paradise, F. A. H.	Gordon Rd., Chatswood. R.
C	Denning, G. G.	William St., Rockdale. R.
C	D'Alton, O. H. C.	56 Dalton Rd., Mosman. R.
C	Moore, R. J. T.	6 Lower Wycombe Rd., Neutral Bay. R.
C	Deane, L. E.	"Booinbah," Havilah Rd., Lindfield. R.
C	Hatton, H. C.	Irene St., Abbotsford, Sydney. R.
C	Steel, A. E.	Claremont St., Campsie. R.
C	Summerhayes, G. S.	17 Bradley's Head Rd., Mosman. R.
C	Jamieson, R. R.	Pitt St., Parramatta. R.
C	Goncharenko, S.	88 Abercrombie St., Redfern. R.
C	Hecker, A. G.	Camp St., Temora. R.
C	Dodds, S. E.	55 Tweedmouth Ave., Mascot. R.
C	Bennetts, H.	102 Frenchman's Rd., Randwick. R.
C	Brown, D.	St. George's Rd., Bexley. R.
C	McCredie, R. A.	South Parade, Campsie. R.
C	deBeuzeville, W. P.	Simpson St., Tumut. R.
C	Wise, V. E.	Richard Rd., Bankstown. R.
C	Wilson, G. J.	Plumpton, Rooty Hill. R.
C	Wisdom, E. R.	13 Cook St., Randwick. R.
C	McCartney, H. P.	12 Australia St., Newtown. R.
C	Monk, H. A.	3 Smyth St., South Granville. R.
C	Bogan, W. H.	18 Plaistowe St., West Maitland. R.
C	Buchanan, C.	Burwood Road, Burwood. R.
C	Stockley, S. J.	26 Bristol Rd., Hurstville. R.
C	Cookson, R. G.	2 Booth St., Balmain. R.
C	Bombroffe, J. H.	157 Denison Rd., Petersham. R.

Nature of Licence.	Name.	Address.
C	Sindel, W. R.	"Langley," Griffiths St., Balgowlah. R.
C	Queensland Insurance Radio Club (J. Dillane)	Bridge & Pitt Sts., Sydney. R.
C	Gilbert, C.	Anzac Parade, South Kensington. R.
C	Robinson, K.	Hopetoun St., Bulli. R.
C	Muir ,C. D.	276 Birrell St., Bondi. R.
C	Leichhardt and District Radio Club (W. J. Zech)	81 Johnston St., Annandale. R.



Continued from page 17.

lengths should be checked and the checking done on one wave meter only, so that, even if this meter has an error, all stations would be in the same relation to each other and there would be much less chance of one station heterodyning another station.

This checking of wave lengths is, of course, a job for the Radio Inspector, but as the Departmental Station is not yet available, Mr. Malone has arranged for Mr. Maclurean to undertake this work until Mr. Crawford's station is ready.

Mr. Maculrean's Heterodyne wave meter has been calibrated from Mr. Crawford's standard instrument, and can be taken as accurate within one per cent.

All wave lengths will be measured at the receiving station 2CM, and any licensee requiring his transmitted wave length to be measured need only call up 2CM by radio or land 'phone and make arrangements with Mr. Maclurean for the checking.

Should it be found that two or more stations on the same wave lengths are clos enough to interfere or heterodyne each other, Mr. Maclurean will explain the matter to the Radio Inspector who will arrange for slight alterations to be made within a metre or two so as to rectify the trouble.

If any experimenter is interfered with in this way he is requested to notify Mr. Maclurean.

Mr. Malone is anxious to see all licensees avail themselves of this opportunity and trusts cordial co operation will be given.

WAVERLEY AMATEUR RADIO CLUB.

On Wednesday, the 8th August, the Waverley Amateur Radio Club held a debate with the Railway Institute Club, the subject being: "Home-made Apparatus v. Bought Apparatus," the Institute holding the side for the bought goods.

The debate was held at the Institute rooms, with Mr. Napier in the chair. The discussion was highly instructive, the adjudicator declaring it a draw.

At the meeting of the Club held on Thursday, 9th August, Mr. M. Perry took the chair. It was understood that the Metropolitan Club had accepted the challenge to a debate, the subject to be "Panel versus Isolated Apparatus." A date had yet to be fixed. It was moved and seconded that Thursday, 16th inst., be suggested. The debate with the Bondi Club was cancelled. An informal talk on directive transmission and low wave-length followed, after which the meeting closed.

Victorian Notes.

A highly successful demonstration of wireless telephony was recently given in the Wilson Hall, by the Brighton Radio Club, and in consequence of this it has been decided to hold a dance in the local Town Hall shortly. The organisation and details will be the work of the committee of the club. The club is making great progress, and the club rooms provided by the Council are being well patronised.

Mr. R. A. Hull (3JU), who is always identified with substantial progress in experimental radio, recently gave an interesting demonstration at a meeting of the St. Kilda Club. Reception of telephony and telegraphy on a loop by means of a valve amplifier, provoked much interest. Mr. Hull was the first experimenter in Victoria to receive 2CM on a loop. It is understood that 2CM's power on this occasion was only 4 watts, and the test took place in daylight. The St. Kilda Club is fortunate in numbering among its members Mr. Hull and Mr. Hiam, the latter gentleman being one of Victoria's original experimenters.

A determined attempt is to be made to transmit to America from a Melbourne station, and permission has been obtained to carry out the work. The power used will probably be quite small, as it is anticipated the Americans will instal suitable long-distance receivers. If this test is successful, Victorians will have just cause to feel proud of their experimenters.

A determined effort has been made to have the operation of the new broadcasting regulations deferred in view of their unfavourable reaction on the radio trade in Victoria. The trouble seems to be that no organised monopoly exists in this State, the wireless business being free for all and not under the domination of a small group of firms. The patent situation seems very obscure also, though from what has occurred recently in New Zealand one would imagine the cloud overhanging the patents question in Australia has been locally produced and could easily be dispersed by similar action here. The dog in the New Zealand manger, though still barking feebly, has certainly had his bite extracted to the benefit of the whole of the country. Wireless is booming over there properly, and everyone seems satisfied. What a pity we cannot follow the lead of our cousins, and put the business on its feet in Australia. We are perhaps not more than twenty years behind most countries in the wireless services supplied, and there is no longer the excuse of State interference. In fact, wireless under the Commonwealth made far more progress towards efficiency than has been made since. Some members of the present generation are even optimistic enough to state that one day we will have a high-power station capable of working with other countries. Whilst not condemning this cheerful spirit, I ha'e me doots.

Melbourne is enjoying at present a veritable orgy of wireless music. Mr. Beattie, of Box Hill, Mr. Culliver, Mr. Hull and others supply a very high class of entertainment on tests, and there are many grateful members of the radio fraternity who will testify to the pleasure they obtain in listening to the stations of these gentlemen.

WIRELESS INSTITUTE OF AUSTRALIA.

The next meeting of the Wireless Institute (N.S.W. Division) will be held on Tuesday, 21st August at the Royal Society's Rooms at 7.45 p.m.

Lecture by Mr. H. A. Stowe, followed by open discussion on the Exhibition matters and experimental wireless position.

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