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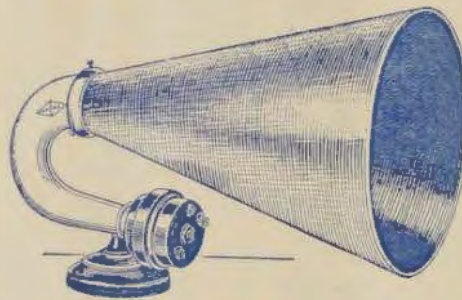
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Adjustable Diaphragm

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MAIN FEATURE

Radio and Acoustic Engineers claim that Murdoch Loud Speaker give a perfect reproduction, due to the Fibre Horn, and which does away with tinniness.

Thordarson's New Transformer Red Label 6 to 1 Ratio .. 45/-

The Ideal Transformer for Crystal and the first stage of Amplification

Knobs and Dials as Illustrated, 5/6; Transformers: Jefferson, 40/-; Thordarson Black Label, 3 1/2 to 1, 40/-.

Thordarson 6 to 1 Ratio A. F. Transformer.

The ideal two step amplifier has a Thordarson 6 to 1 ratio transformer on the first step.

This is a new product—recently perfected and is distinguished from our 3 1/2 to 1 ratio transformer by the red lettering on the top plate. It gives unusually high amplification without distortion, the core having twice the cross-section of the ordinary transformer.

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For best results and perfect reproduction of signals, the 3 1/2 to 1 ratio transformer should be used on the second step. Used together in this way, these two transformers give exceptionally loud signals, yet in perfect modulation.

All silk insulated wire used throughout.



The Universal Electric Co.
244 Pitt St., Sydney



Vol. 2.

July 27, 1923.

No. 30

WHO IS AN EXPERIMENTER?

Who is the experimenter? How will he be defined is the burning question among a great number of persons who have wireless sets to-day.

Webster tells us "He is one who acts or operates in order to discover some unknown principle or effect, or to test, establish or illustrate some suggested or known truth."

Whether Webster will be taken as the authority to define who are to be experimenters, we do not know, but we do know that nine out of every ten small boys who buy a crystal

set or parts to build a set, do not have it very long after they hear signals before they start to experiment either for better or worse, and we contend that these young Australians are experimenters, and should not only be protected, but assisted in their experiments, and we feel sure that the authorities will see that they are allowed to have their Crystal Set.

TRANS-PACIFIC TESTS.

A reply to our last week's leader appears on pages 17 and 18.

Roster for Week ending 1st 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, 26	2 ZG	2 ER	2 JM	2 GR	2 FA
Friday, 27		2 DS			
Saturday, 28..	2 DS	2 JM	2 ZG	2 ER	2 GR
Sunday, 29..	7 to 8 2 GR		8 to 9 2 BB		9 to 10 2 JM
Monday, 30 ..	2 ER	2 GR	2 ZG		
Tuesday, 31 ..		2 JM	2 GR		
Wed. Aug. 1..	2 GR	2 ZG	2 ER	2 GR	

Vacant times may be booked by Transmitters by ringing Red. 732 between 9 a.m. and 5.30 p.m. daily. 2WV will be transmitting during the Luncheon Hour each day

“ IF.”

A FEW REMARKS ON WHAT I SHOULD DO, AND SOME OF THE THINGS I SHOULD AVOID, IF I WERE STARTING WIRELESS AGAIN.

Some people have become interested in wireless through the agency of a friend or some other person who is experienced and more or less competent to guide them in their search after knowledge and instructive recreation. Others may not be so lucky; others, again, may grow interested as a result of the purchase and operation of a concert receiving set, and wish to blossom forth from the "broadcaster's" stage to real experimental work. To such as these, I cannot help thinking my own experience may be of some value. Being of an inquisitive nature, and having a mechanical training not used or catered for in my daily occupation, wireless offered me a constructive hobby in a new and interesting form.

If I had not bought one book and stuck to it and faithfully observed the author's instructions, I should probably have been successful in some degree with my first effort. But this I did not do; many and various publications did I read, ranging from instructions for making a crystal set from articles commonly found in lumber sheds, etc., to the most elaborate technical treatise on seven-valve amplifiers. Unfortunately, the volumes were not accumulated in progressive order, but rather as they happened to come to my notice on bookstall or booksellers' shelf. The chaotic condition of mind may be imagined when I say that they were all read, but only semi-digested, as they came into my possession. As a consequence the first detector, representing hours of work, was a hopeless mixture of all I had read about crystal receivers. I had got dozens of crystals, which mostly got mixed in the wrong boxes, and the bench was a jumble of wires, batteries, water rheostats, and aerial tuning inductances two feet long with three sliding contacts; also there was a soldering-iron permanently on a gas ring for crystal changing. And yet I knew so little about it that my earth wire was fixed to a plate standing in the water of an earthenware siphon

drain, carefully insulated, that is, except when the drain overflowed, which it did not.

In any case, I was sitting for hours fiddling with the set, using low resistance "disposal" phones, diaphragms covered in rust, with, as I discovered later, a broken cord to one earpiece.

However, all the blame for lack of signals was laid at the door of

about earths, and it struck me that if the house side of a big system of water was not all that was desirable in the earth line, a few pints of water down a drain could not be of much use. This was duly remedied, and that night I got my first signal, one of the two ever obtained, as it was a powerful Admiralty station about five miles away, who later made me shut off whenever he started up. It was not much use as an effort, but the following morning, when retailed for general information, it had magnified from a hoarse scratch almost to the proportions I was later to receive it in.

At this time, too, I joined the local Society, and I consider this was the most important thing I ever did in the wireless line. During the period covered by the above, I had obtained a wireless magazine, but must admit that very little of the subject matter was understood by me, and judging by the queries submitted, there were numerous others situated as myself. But I saw an announcement to the effect that there was a flourishing society in the City, and that they were open to accept new members. I decided to join; the actual value of the subscription was soon recovered from certain dealers in gear, who had an arrangement with the Society, while the information and advice which I obtained was worth very much more; the first result was a visit by one of the experimental members with a portable set to test my aerial.

It was upon this occasion that I obtained my second signal on the crystal, most of my impediments were removed from the "set": the inductance was deprived of two of its slides, a telephone transformer was substituted for the large bundle of wire, insulating tape and iron wire which I proudly imagined would make my 120-ohm phones give loud signals, and with two sets of phones we heard a coastal station eighty miles away. I might have got more signals from that crystal set, but its doom was settled within the next few minutes. My



MR. H. A. STOWE.

Hon. Radio Inspector, Northern Suburbs.

the crystal, and I asked the P.M.G. for permission to use valves. About now things took a turn for the better.

In reading up about valves to decide what was to be incorporated into the valve panel I was proposing to make, I found out a bit

newly-found precursor proceeded to test the aerial, and I was listening to what appeared to me to be most of the C.W. stations in the world, with a few spark stations thrown in, and was somewhat taken aback when informed that these were only a few, on or about the same wavelength, and we were just making up our minds which one to listen to.

We finally decided on a good loud one, and found it to be an American station; by this time I had quite made up my mind that this was what my war-time habits forced me to call "the stuff to give 'em," and by the time my magician left me I had found out enough about valve sets to pick from my "library" a volume which contained detailed instructions for the construction of a tuner and valve panel suitable for my requirements.

By my next appearance at the Society, I was almost ready to operate; my high-resistance phones had been delivered meanwhile, and by the following week could report results. The single layer inductance had to go, and was replaced by honeycomb coils. One mid-day, casually switching on the filament and trying my new coils, I heard speech

(Continued on Page 20)

AN INTERVIEW

"This week is a history-making period in Australian Wireless, as it will see the gazetting of the Regulations for Australian Broadcasting," said Mr. George A. Taylor, President of the Association for the Development of Wireless in Australia, New Zealand and Fiji, in the course of a chat with our representative.

"It will be specially important to Australia as it will bring the blessings of wireless over the whole of our Continent. Already a number of companies are arranging to broadcast information as well as musical and other entertaining items, the Broadcasting Regulations giving them every facility for efficient working.

"In this respect much credit must be given to the Postmaster-General, the Hon. W. G. Gibson, for the open-handed way that he has invited those best qualified to draw up efficient regulations; and when the story of the success of Australian wireless comes to be written, Mr. Gibson should be given considerable credit for it.

"It should also be mentioned that there is another important individual behind Australian wireless, Mr. J. Malone, Chief Manager of Wireless and Telegraphs, who is most enthusiastic about all that pertains to the best development of wireless, and whose valuable assistance, those interested in wireless in Australia are ready to acknowledge. The officials connected with wireless, including Mr. Crawford, are also to be well-wished, as they have been ever ready to give help to investigators, and in the administration of the Regulations, it is hoped that every consideration will be given the officials who will have no easy task in satisfying so many and so varied an army of enthusiasts that the new epoch in Australian Wireless will develop."

The inauguration of official broadcasting in Australia will be an interesting event in the history of Australia, hence it will be celebrated by special messages being forwarded. A special wave length will be announced in the daily press, on

Broadcasting Regulations

We are informed that the Broadcasting Regulations will be gazetted on Thursday, 26th inst., and will come into force on Wednesday, August 1st.

Copies of the Regulations will be obtainable in about a week's time at the Treasury, Commonwealth Bank Buildings, Martin Place, Sydney. The price is 1s.

See W.W. for Regulations next Wednesday, 1st August.

which the special messages will be transmitted, and on the same wavelength, particularly appropriate musical programmes will be rendered by which all "listeners-in" can be entertained.

New "Duo-Vertical" Winding

In making a three coil spider web tuner, amateurs have often been dissuaded from completing the job because of the great size of form needed for the coil with the greatest number of turns. Take a tuner, for example, in which the primary has 35 turns, the secondary 50 and the tickler 80 turns. Using No. 22 S. C. C. copper wire, the radio amateur finds that he can get 25 turns to the inch, measuring at right angles to the direction of the winding; 80 turns means a little over 3 inches of winding, which in turn require a form over 7 1/2 inches in diameter.

This is too large to handle and to mount conveniently, and in searching for a better way to wind the tickler coil, a radio experimenter hit upon a novel plan, details of which are described and illustrated in this article. Instead of providing one extra-large disc for the tickler winding, he made two small discs and put them side by side on a temporary shaft, as shown in the diagram. For uniformity's sake he made this double form the same size as the primary and secondary forms. Then he made what is described as a "duo-vertical" winding. That is to say, he wound identical coils side by side in a vertical line, doing it in such a manner that the inductance effect is the same as with one coil.

Winding clockwise, he first completed one full turn on the disc nearest him as he held the double form in his left hand. He wove the wire in one slot and out the next, alternately crossing in front of and behind the various sections. Then, instead of continuing on for

OF INTEREST TO THE EXPERIMENTER.

We have a few partly constructed laboratory sample sets which we are prepared to dispose of to the genuine experimenter at a reasonable figure. A visit will convince you that this is a genuine offer, open for fourteen days only.

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165 KENT STREET, SYDNEY.
(near Grosvenor Hotel)



MR. W. T. S. CRAWFORD
Radio Inspector, P.M.G.'s Department, who holds the 2nd highest position as a Government official in the Wireless Administration of the Commonwealth.

Mr. Crawford hails from Bendigo, Victoria, and has been connected with Cable, Telegraph and Wireless services since 1897. During the war, and until 1920, he was a Radio Lieutenant in the R.A.N. Radio Service.

The position he now holds as Radio Inspector for New South Wales and Queensland entails the inspection of ships' wireless installations, examining of operators for their tickets, control of experimenters in N.S.W. and Queensland and when they come into force, administration of broadcasting regulations. In these duties he is ably assisted by Mr. T. Armstrong (A. R. I.)

Mr. Crawford, as we have previously stated in these columns, holds the admiration and respect of all those engaged in wireless both professionally and experimentally, and has given quite a lot of his valuable time in assisting experimenters with their technical difficulties.

the second turn on the first disc, he crossed over to the second disc and completed the first full turn on that. Then he came back and made another turn on the form nearest him, crossing to the rear to do the same to the disc in back. Back and forth, in and out, first a turn on this disc, then a turn on this disc, then a turn on that, until the required number had been made.

Ships of the Commonwealth of Australia.

Adelaide	GABC
Aeon	VKF
Alabama	VJM
Albion	VKD
Anzac	GARD
Arcturion	VJV
Aramac	VJJ
Arawatta	VKV
Aroona	VKE
Ashridge	VXP
Arstralbrook	CGM
Arstralerag	VZQ
Australford	CGE
Australglen	CGD
Australia	GABY
Australmead	VZW
Australmount	VZY
Australpeak	VZS
Australphnia	CGB
Australpool	VPZ
Australport	VZT
Australrange	CGA
Bakara	VJS
Baldina	VHZ
Bambra	VXB
Barambah	VJB
Barunga	VKA
Barwon	VXM
Biluela	CGR
Biagera	VJD
Bombala	VHP
Bonah	VJQ
Boorara	VJT
Brisbane	GABH
Bulla	VJP
Buniyong	VIQ
Burwah	VKZ
Calulu	VZV
Camira	VZA
Canberra	VHO
Canlara	VZC
Ceduna	VZM
Century	VKK
Cerberus	VKG
Chronos	VKI
Cockburn Sound Base	VKR
Cooco	CGM
Cooluma	VZPB
Cooma	VJE
Corio	VXO
Cycle	VZBX
Delungra	VNT
Diga	VXE
Dikera	VZD
Dimbaola	VBL
Dinoga	VXU
Dongarra	VJW
Dromana	VNP
Dumosa	VXV
Dundula	VXW
Echunga	VJU

To be continued each week.

July 27, 1923.

WIRELESS WEEKLY

5

How to Make a 48-volt B Storage Battery.

By C. R. EVANS.

The amateur who uses upwards of 100 volts on his plates is faced with a real problem in regard to B batteries. Not only is a considerable initial outlay necessary, but they must be replaced in a few months if dry batteries are used, as run down or partially run down dry cells produce a most annoying crackling in the receivers, which, by the way, many beginners charge to static.

The batteries described here may be constructed at a cost under that which would be paid for dry batteries, and best of all they may be recharged with any type charger when the voltage drop becomes noticeable.

The materials necessary to construct a 48 volt unit, are listed below. The battery plates, wood separators and the acid may be obtained at any battery shop, and your druggist can supply you with the test tubes:—

2 pieces sugar pine board, 13 in. x 6 in. x 1 in., 2 pieces sugar pine board, 7 in. x 6 in. x 1 in., 3 positive battery plates, 3 negative battery plates, 4 wood separators, 24 glass test tubes, 1 quart sulphuric acid, 1300 sp. gr., 5 ft. No. 14 tinned copper wire.

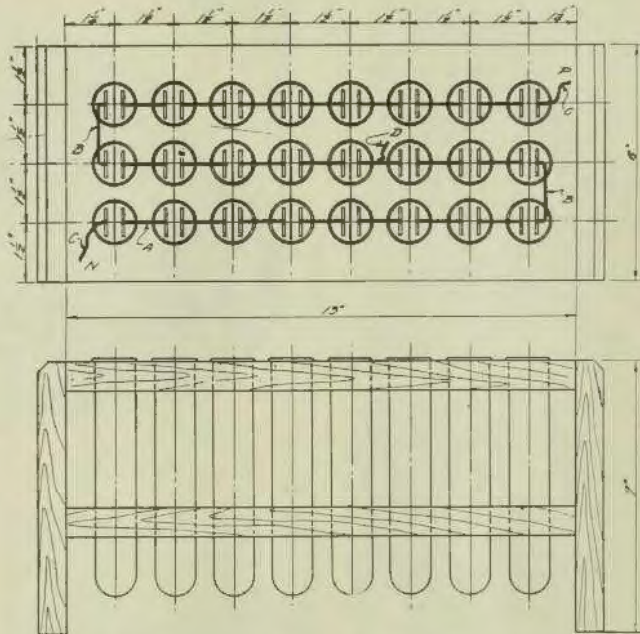
You will also need a small quantity of battery wax and three Fahrenstock clips. The wax may be obtained from the tops of old dry cells or discarded B batteries. The clips can come from the same source.

The first step is to drill 24 one-inch holes in each of the larger boards, making three rows of holes, 8 holes to the row (Fig. 1) and leaving a half inch space between each hole. Make a tube rack by screwing the two short boards on the ends of the longer ones, placing one of the long boards about three inches below the other (Fig. 2). Upon dropping a test tube in each hole it will be found that the rim on the top of each tube holds it in place.

The next job is to cut each of the battery plates into eight strips $9/16$ in. wide by $5\frac{1}{4}$ in. long. Be sure to cut the strips across the plates—NOT up and down—as the former method allows each of the

small strips to contain a number of unbroken cross sections. Use a thin saw with fine teeth if possible, as a coarse saw may break off small chunks of the active plate material. When finished you should have 24 small positive (brown) and 24 negative (grey) plates. The plates should now be prepared for

to each remaining negative and positive plate (Fig. 1c). Also solder a clip to the wire connecting one of the pairs of plates (Fig. 1d). Use as little acid or paste as possible when soldering. Cut the wood separators into strips $\frac{1}{4}$ in. wide, and drop a strip into each test tube. Melt the battery wax until it is



soldering, by filing or sand-papering one end of each until it is bright.

Cut 21 pieces of the tinned wire $1\frac{1}{4}$ in. long, also 2 pieces 2 in. long, connect up 21 pairs of plates by soldering one end of one of the short pieces of wire to the brightened end of a positive plate and the other end of the wire to a negative plate (Fig. 1a). Connect two more pair with the longer wire as shown in (Fig. 1b) with their faces parallel and in line with one another. Solder a Fahrenstock clip

of the consistency of syrup and dip the tops of each of the pairs of plates with its connecting wire, into the melted wax to a depth of about $\frac{1}{4}$ in. Be sure the wax is hot, otherwise too much of it will adhere to the wire and plates. CAUTION: Dip quickly; if left in the wax too long the heat may loosen the solder. It will be necessary to paint the wax on the single plates with clips attached also on the pair of plates that have the clip soldered thereto.

(Continued on Page 29)

MAKE YOUR OWN

Multi-Layer Coils.

A Consideration of Further Useful Types of Multi-layer Inductances, Including One Which has not been described hitherto.

THE LATTICE COIL.

Taking into account its efficiency and its ease of winding, the "lattice" coil is perhaps the most suitable multi-layer for general amateur use. Its construction is very simple, for it is merely a layer-by-layer winding, the layers of which contain a small number of turns, and are separated by a special zigzag spacing turn, the coil being in the form of a disc of diameter up to 5 in., and thickness up to 1 in. (Fig. 1). A section of a portion of a lattice winding is given in Fig. 2.

The method of winding by hand is simple: A "former" is used, which consists of a wooden cylinder, say, 1½ in. in diameter and 2 in. long, in which are driven two radial rows of pins say twelve in a row, the pins being "staggered" in the rows, and the rows separated by a distance depending upon the thickness of the coil to be wound (Fig. 3). Suitable pins for the purpose may be made by cutting No. 16 or 18 galvanised iron wire into lengths, or one can use slender wire nails, or the pins which joiners call "sprigs." The method of winding is to commence by putting on a zigzag turn round the outside of the pins, as shown in plan in Fig. 4 (a). On the completion of this turn the wire is wound on in a single layer across the former (Fig. 4 (b)), then another zigzag turn is put on, to be followed by another layer, and so on alternately until the required number of turns has been wound on. The coil is then well soaked in melted paraffin wax, taken out and drained as completely as possible, allowed to cool, and removed from the former by extracting the pins (with a pair of pliers) and pulling out the first zigzag turn,

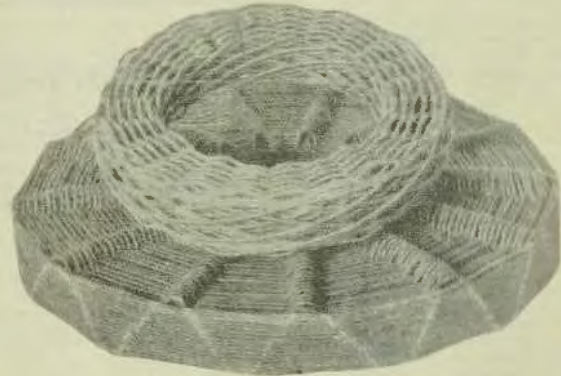


Figure 1.

after which it will come away easily.

It will be found quite a simple matter to wind a set of lattice coils, especially if former can be mounted on some sort of spindle (or chucked in a lathe, of course), so as to be easily revolved, and they will be found very satisfactory for medium and long wave tuning. Data for a set to cover approximately 1,000 to 20,000 metres are given below:—

Coll.	Turns.	Turns per Layer.	Wire.
1	200	10	24 d.c.e.
2	300	15	24 "
3	400	20	26 "
4	500	25	26 "
5	750	25	30 "
6	1,000	30	30 "
7	1,250	30	30 "
8	1,500	40	30 "

Diameter of former, 5 cm.; number of pins per row, 12; distance between rows of pins (i.e., thickness of coil); coil 1, 1 cm.; coils 2-5, 1.5 cm.; coils 6 and 7, 2 cm.; coil 8, 2.5 cm.

The data given, it should be explained, have been worked out to give a good compromise between compactness on the one hand, and efficiency on the other; if greater compactness is desired, it can be obtained at a slight sacrifice of efficiency by winding coils 1-4 with No. 28 d.c.e. wire, and coils 5-8 with No. 32 d.c.e. wire.

MODIFICATIONS OF THE LATTICE COIL.

I have found that the lattice coil is exceedingly useful as a starting point for the origination of new systems of coil winding, a little ingenuity sufficing to produce quite

a variety of such modifications.

The two examples which follow are the most useful of the various types which I have obtained in this

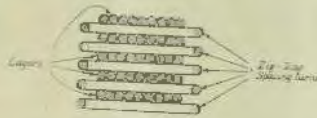


Figure 2.

The first coil is of the flat disc or pancake type, which is convenient for some coupling purposes, and is intended to replace the basket coil, over which it has considerable advantages in mechanical strength, compactness and quickness of winding. It is simply a lattice coil of two turns per layer, those two being spaced apart, as shown in section in Fig. 5. It is wound upon a former which differs from the one already described in that its two rows of pins are only 7 or 8 mm. apart, and the method of winding is as follows: First the zigzag turn with which every lattice coil begins, then a turn straight round close against the pins on one side of the former, across on a slant to the other side, and then one turn round against other pins. Fig. 6 shows these first three turns, and should make the matter plain. After this, zigzag spacing turns alternate with layers composed of two straight turns until the coil is finished. On the completion of the coil tie the last turn lightly to the zigzag one beneath it with thread

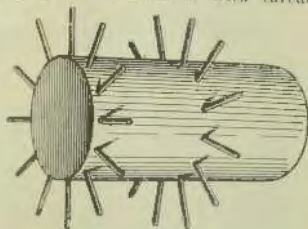


Figure 3.

at two points, wax the coil and remove it from the former as before. It should perhaps be mentioned at this point that with all multi-layer coils it is generally worth while to tie the first turn to the one above it, and the last turn to the one beneath it to eliminate any tendency to unwind. (Note: In the case of lattice coils "first turn" does not mean the zigzag turn which is put on at the commencement of

winding, since this is always intended to be pulled out after the coil has been waxed, to enable one to remove it from the former.)

The second type is one whose use for all short wave purposes I strongly advocate, since it is distinctly the best multi-layer coil which I have yet tested. The system of winding is such that the

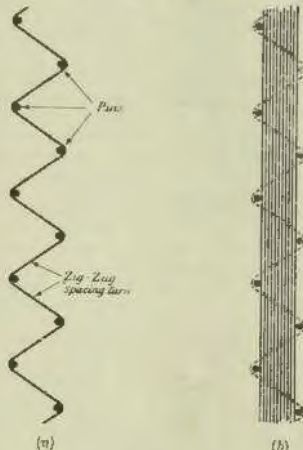


Figure 4.

superimposed turns are separated by quite as great a space as in the popular duo-lateral coil, and they are separated electrically by smaller differences of potential. This system was originated very simply from the preceding one by applying the duo-lateral principle and "staggering" the turns which come vertically above each other, as shown in section in Fig. 7. Instructions for winding this coil are scarcely necessary, the only points requiring

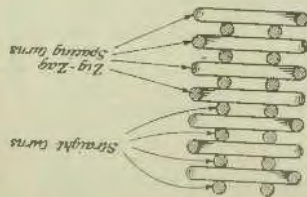


Figure 5.

mention being, first that the straight turns are placed in position by eye, which will prove quite easy when once the first three-turn layer has been put on. Second, that all the straight-turn layers must commence



100 Pages. 100 Illustrations

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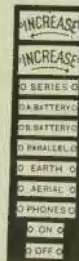
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Wireless, Electricity, Model Engineering, Telephony, Model Aeroplanes, Fretwork, Electrical and Mechanical Toys, Novelties and all Popular Hobbies.

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FOR YOUR SET



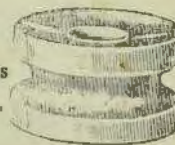
These neat little name-plates add greatly to the appearance of any W/T set. They are made of Brass, and have Pin Holes for Fixing. All titles illustrated, and the following additional ones are available:

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Aerial Insulators

(Real or straw type)



This is the correct type for insulating the aerial; two or more in series will improve the insulation.

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on the same side of the former, and all must finish on the opposite side. Thus, it will not do to begin a three-turn layer on the right and

easily wound by hand upon a former resembling that used for lattice coils, the only difference being that many more pins are required



Figure 6.

finish it on the left, and then begin the succeeding two-turn layer on the left and finish it on the right. The reason for this will become plain when the first coil is wound.

Coils of this type, by the way, are not upon the market, nor, so far as I am aware, are they likely to be.

HONEYCOMB AND DUO-LATERAL COILS.

The honeycomb coil in its improved form, the duo-lateral, is generally regarded as one of the best of multi-layer coils, and it is therefore regrettable that it is such a tedious and difficult one to wind. By hand it must be regarded as an impracticable task to wind anything but the smaller sizes, the large ones requiring either a coil-winding machine or an inexhaustible stock of patience. Small coils can be fairly

for the duo-lateral. Such coils are usually somewhat superior to those produced by a machine, since one can wind much thicker gauges of wire by hand than a machine will deal with satisfactorily, and can, therefore, produce a coil of lower resistance and lower internal capacity (the latter resulting from the greater spacing between turns caused by the thicker wire).

It is almost impossible to convey a clear idea of the nature of the honeycomb and duo-lateral systems by verbal description, and I must invoke the aid of some diagrams. The essential characteristic of both systems is that the wire in passing round the former travels slantingly from side to side of the coil. On the completion of each revolution a fresh turn is begun at a point a few degrees ahead of, or behind, the spot at which the previous one started. In the

case of the honeycomb any convenient number may be used, according to the closeness of winding desired (the larger the number the closer the winding). It is worth noting that the number of turns per layer is fixed by the number of pins "counted" in crossing over; in the example figured it can be ascertained by actual enumeration that each layer consists of twelve turns, which is twice the number of pins "counted." This rule holds good for all honeycomb and duo-lateral coils, irrespective of the number of pins on the former, and is very useful when one is designing, say, a series of coils to have specified numbers of turns. For example, suppose one has to wind a coil of 70 turns, and wants to know how many pins to count, and how many layers will be needed; try five layers:—

$$70 \div 5 = 14$$

$$14 \div 2 = 7$$

Therefore, count 7 pins in crossing over, thus obtaining 14 turns per layer, and wind on five layers. If greater openness of winding were required, to give a coil of greater bulk and extra low self-capacity, one could put the same number of turns into seven layers, which would require ten turns per layer, and therefore one would have to "count" five pins at each cross-over.

Trimm "Professional" Head Set 3000 Ohms
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The number of pins on the former may be any convenient figure, from 10 to 20 in each row, in the case of the honeycomb, but has to be one of certain definite numbers in the case of the duo-lateral. This latter coil is of a very similar cel-

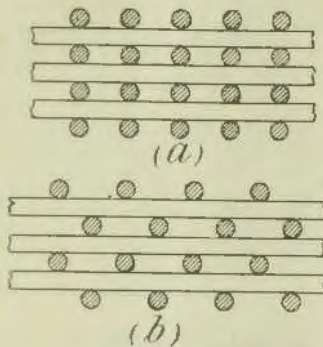


Figure 7

lular structure to the honeycomb, the difference being that in the duo-lateral the turns in one layer do not lie exactly above those in the one beneath, but come over the spaces between them. Fig. 9 shows this difference by means of sections through (a) a honeycomb, and (b) a duo-lateral winding. It is evident that the latter has nearly three times the space separating the turns in a vertical direction, and its capacity is, therefore, lower. The reduction is sufficiently considerable to make the duo-lateral almost universally used, the simple honeycomb now being rarely met with.

The actual difference in winding



Figure 8.

which produces the duo-lateral formation is difficult to describe, and, besides taking much space, would be of little interest or assistance. If the experimenter employs the following data and winds a coil, he will obtain a clearer idea of its structure than many pages of description could give him. To construct the duo-lateral winding, it is

necessary to use a former upon which the pins are separated by an odd number of degrees. Thus, 24 pins per row (48 in all) will fulfill the requirements. Also, certain fixed numbers must be counted at each cross-over in winding. Those most commonly used are 6, 7, and 9.

One or two points deserve mention concerning the practical details of winding. It is desirable to tie the first and last turns above and below respectively at two or three points with thread, to prevent any unwinding of the coil during the operation of mounting on a plug when finished. In order to be able to remove the coil from the

former easily after it has been soaked in wax and cooled, it is essential to make use of some such device as to wind upon the former a single layer of sewing cotton before starting the coil. Fasten the two ends of the layer of cotton where they will be easily got at, then after waxing the coil and extracting the pins, you can pull out the cotton and the coil will slip off quite freely. Finally, great care should be taken to drain all superfluous wax out of the coil, lest the interspaces of the winding remain filled with wax when cool, which would, of course, increase the self-capacity considerably.

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C	Crosbie, L. H.	65 Cheltenham Rd., Croydon. R.
C	Trinity Grammar School (R. H. Chown)	The Boulevards, Dulwich Hill. R.
C	Carmichael, H. T.	244 Wardell Rd., Dulwich Hill. R.
C	Clough, J. C.	Springdale Rd., Killara. R.
C	Alsop, J. H.	10 Wallaroy Crescent, Double Bay. R.
C	Taylor, J. H.	464 Darling St., Balmain. R.
C	Weymouth, H. T.	Wunulla Rd., Edgedcliffe. R.
C	Slater, R.	31 Lackey St., Summer Hill. R.
C	Page, C.	79 Macquarie Rd., Auburn. R.
C	Pitcher, J. E.	115 Macquarie Rd., Stannmore. R.
C	Oloff, F. W.	126 Carrington Rd., Randwick. R.
C	Roach, H.	Melford St., Hurlstone Park. R.
C	McDonagh, L. V.	Boyce Rd., South Randwick. R.
C	Way, C. R. O.	Old South Head Rd., Rose Bay. R.
C	Paul, H. G.	Redman Rd., Dee Why. R.
C	Tufnell, G. R.	36 Cragend St., Sydney. R.
C	Allen, H.	Burwood Inn, Merewathey, Newcastle. R.
C	Darnell, A. E.	14 Eden Ave., Enfield. R.
C	Dean, C. F.	Forsyth St., Willoughby. R.
C	Gow, T. V.	Dudley St., Lidcombe. R.
C	Smith, A. J.	27 Station St., Harris Park. R.
C	Rhodes, L.	First St., Baularon. R.
C	Proctor, G.	Middle St., Greenvell. R.
C	Perdriau, W. J. S.	47 East Esplanade, Manly. R.
C	Smith, F. L.	Falconer St., Hyde. R.
C	Small, F. W.	262 Old Canterbury Rd., Summer Hill. R.
C	Field, L. V.	Junee Reefs. R.
C	Walcot, E. R.	Denning Lane, Tamworth. R.
C	Whalley, J. S.	15 Mandolong Rd., Mosman. R.
C	Todhunter, F. S.	Weston St., Harris Park. R.
C	Howard, W. S.	68 Melody St., Coogee. R.
C	Jones, S. W.	3 Lea St., Croydon. R.
C	Nichols, J. R.	16 Wentworth St., Randwick. R.
C	Macrow, S. A.	Chr. Peel & Fitzroy Sts., Tamworth. R.
C	Magnusson, V. St.G.	182 Anzac Parade, Kensington.
C	Bell, E. A.	145 Newland St., Waverley. R.

VICTORIAN NOTES.

By T. P. COURT

The dinner given by the Box Hill Radio Club to Mr. Max Howden, the winner of the Trans-Pacific Test, passed off very successfully. Some prominent guests were present, including Mr. Malone, the Controller, and Mr. Greenwood, M.L.A. Mr. Malone, in congratulating Mr. Howden on his wonderful achievement in logging 22 of the 23 stations heard, gave a reassurance to all experimenters that they would be well looked after in the future. Mr. Love, the President of the Victorian Division, and the President of the Trans-Pacific Test Committee, also spoke. During the evening wireless music was transmitted by Mr. N. Culliver, of East Melbourne, and Mr. Beattie, of Box Hill. Mr. Howden was presented with a silver salad bowl from the Club by Mr. Malone.

Essendon and East Kew are the latest clubs to be formed, and both these sections have applied for affiliation. St. Kilda Section had a very well attended inaugural meeting last week, some very prominent experimenters being present. It is expected that this Club will become very strong, as it is in a perfect nest of experimenters. Mr. D. Shurt, the energetic secretary, whose address is Mozart Street, St. Kilda, will welcome new members.

A meeting of the Victorian Division of the Institute was held on the 17th, at 547 Collins Street. Owing to the very inclement weather the attendance was not so good as usual, only about 50 members being present. A lecture was delivered by Mr. T. P. Court, on the Electron Theory and Practical Applications, which was received with great attention by the audience. Mr. Court appealed for lecturers to come forward, stating that there were many members of great experience and technical knowledge in the Institute, but they seemed to shrink from lecturing in public; he hoped they would overcome their modesty and give items on future syllabi. No business was done at this meeting, as the work of re-organisation and affiliation is purely the work of the divisional committee, pro tem.

Mr. D. Connelly has recently been successful in obtaining a transmitting license, and soon his voice will be added to the nocturnal radio conversations. Mr. Connelly made himself very popular about the time of the last elections by broadcasting the progress counts from the front lawn of his home through a large Magnavox, which soon attracted a highly interested crowd. It seems that the only people in this large continent of ours who do anything to "boost" wireless are experimenters; it is a great pity some of the business concerns do not give an up-to-date public demonstration.

An apparent deadlock has been reached in Melbourne over the broadcasting situation. Everyone is apparently "lying low." The idea is to let the other fellow do the actual broadcasting, and we will be quite happy to sell receiving sets (adequately sealed to his wavelength) on the strength of his transmission. The only drawback is that the broadcasting firm is liable to drop quite a large sum of money, and the philanthropist has yet to step forward. It has been definitely stated the Amalgamated Wireless Ltd. will not broadcast, and in view of this it seems very strange that this company should have taken such an active part in the broadcasting conference. My own opinion is that there never will be successful broadcasting in Victoria under the present scheme, and the American system is infinitely preferable. Meantime, prominent "amateurs" are giving highly successful entertainments by radio, and the dealers, etc., are reaping the benefits by increased sales. When the "amateurs" get "hep" and stop these free concerts the bottom will fall out of the experimental trade unless the dealers and traders show a little activity and give some shows of their own. The main trouble seems to be that electricians are handling the wireless business, and they simply do not possess the requisite "radio" knowledge. A weekly concert sent out on a "Hilarion" is the sole profes-

sional contribution to radio entertainment. The abovementioned instrument apparently plays gramophone records but owing to the quaint pronunciation of its name by the operator I have been unable to ascertain its identity.

Mr. M. Howden (3BQ) has some very enthusiastic remarks to make concerning the neutrodyne. He said recently he had been unable to receive VTB in daylight with remarkable strength and with entire absence of distortion. Mr. Howden simply placed the tiny condensers from grid to grid and adjusted them. This is good news to all far undoubtedly tuned radio-frequency amplification is the most sensitive receiving device extant and its last drawback has been removed by "neutrodyne" condensers.

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BOOKS ON WIRELESS

Elementary Principles of Wireless Telegraphy, by R. Baugny, in 2 vols., Price 4/9 per vol., posted.

How to Make a Wireless Set, by A. Moore, Price 3/6, posted.

How to Build Amateur Valve Stations, by P. Coursey, Price 2/3, posted.

Lessons in Wireless Telegraphy, by A. Morgan, Price 2/3, posted.

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July 27, 1923.

WIRELESS WEEKLY

11

Who Owns the Ether?

To the Editor of "Wireless Weekly"

Dear Sir,

Since the commencement of the discussion relating to broadcasting, and more particularly since the Broadcasting Conference met in Melbourne, many statements have been made by representatives of commercial radio concerns to the effect that "they have no desire to restrict the genuine experimenter."

I view these statements with a certain amount of disapproval, because, in my opinion, they seem to indicate that some people hardly seem to grasp the wireless position clearly. Furthermore, they seem to indicate that the impression has been created that the Australian experimenters are in some way under an obligation to the companies, or that the radio companies are to be the authorities who will decide just what freedom shall be granted the experimenters.

Of course, the radio companies can not be blamed for repeatedly making the statements I write about. The fault is perhaps more a fault of the amateurs who do not look at the matter in its true perspective, but who perhaps imagine that the radio companies are all-powerful concerns who have the power to, and are out to smash the experimental movement.

In your columns of a week or two ago, a statement of the sort I mention was made by Mr. O. F. Mingay, who went to some trouble to point out that there had not been any indication of a desire on the part of commercial interests to restrict the experimenter. Later, however, Mr. Mingay hit the nail right on the head by stating that the matter of the limitation of wave lengths was a matter for the Government and the experimenters themselves.

Wireless in Australia is controlled by the Government, as is the case in other parts of the world. It is the Government's duty to control the ether, to control the various classes of stations, and to take the necessary steps in regard to the allotting of wave lengths. If some people are interested in commercial transmission they must approach the Government and get permission

in the form of licenses to work on certain wave lengths. If others are interested in broadcasting they also approach the authorities and receive licenses to carry out the work. Similarly, if those who are interested in wireless from an experimental point of view desire to receive permission to maintain stations, they, too, make application to the authorities controlling the ether.

In view of these facts, why is such a lot being said; firstly, by the experimenters themselves regarding what the commercial concerns may do, and, secondly, by the commercial concerns regarding what they do not intend to do. It seems to me that we waste very much valuable time in talking about the things which do not matter.

When it comes to a question of freedom for amateurs, we must remember that under the laws of the land the commercial companies can no more fix wave lengths for amateurs than the amateurs can fix

wave lengths for commercial or broadcasting services.

Experimenters do not need to go the radio companies to ask for wave lengths. The Government is the controlling body, and decides just what is to be done. The administration of the wireless laws of the Commonwealth in the past, and also at present, reflects the greatest credit on the authorities, in spite of what may be said to the contrary. I hold an honorary Government appointment, but I am not speaking now as an official or semi-official, but purely as an experimenter.

I am not hitting at the radio companies. I have many friends in them; friends whom I admire on account of what they have done for wireless. I am not speaking as a biased experimenter. I am simply making a few straight out statements of facts.

If, however, we realise that what I have said forms the basis of any further discussion, we can quite easily see that there is one important point which amateurs must observe. The commercial companies may have more influence than the amateurs, and may wish to secure privileges which the amateurs consider should belong to them. As the commercial concerns are well or-

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Murdoch's 'Phones, 35/-; Myers' Valves, 35/-.

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ganised, it behoves the amateurs to put themselves on a footing so that their views may be properly placed before the authorities also.

At the present time there is not a body in this State which can speak on behalf of the amateur movement. This fact was proved during the recent visit of Mr. Malone, when a handful of amateurs talked matters over with him, but beyond stating that they represented amateurs' views generally, they were silent.

The recently formed Australasian Radio Relay League promises to become a movement which will meet requirements in this direction. It is affiliated with the Wireless Institute, its active membership embraces most of the leading experimenters who transmit, and its associate membership many who hold receiving licences only. The league, if it meets with the support which it undoubtedly deserves, should soon be in a position to represent the amateurs generally should an occasion arise when such representation would be desirable.

It is NOT a question of fighting the commercial companies. Personally, I do not think that it will be

necessary for experimenters to fight them. I think that relations between the two should be very harmonious. As far as I am concerned, I have no desire to fight any radio company. At the same time I have certain interests in the ether. I hold certain views regarding the wireless movement, and I do not hesitate to say that they are shared by a large number of amateurs. Consequently I think that when any matter which directly concerns the amateur movement comes before the authorities, then the movement should be in a position to provide representatives who can say, "We represent the amateurs."

J. W. ROBINSON.

Retail Radio Traders

A Talk by Mr. C. E. Forrest, of New Zealand.

Last Thursday evening a number of Retail Radio Traders met, and listened to Mr. Forrest speaking on "Broadcasting in New Zealand." He told them how broadcasting had been started by a small number of traders, using 15 watts

power, and how enthusiastically their free service has been received, and that their power has now been increased to 250 watts. Also the splendid way the listeners in had responded to their call for voluntary subscriptions.

Mr. Forrest told how the Broadcasting Company they formed had been threatened, and warned by newspaper advertisements, but as no proofs of the right to stop them had been produced they continued merrily along, and are still going strong.

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Encouraging Wireless Invention.

An interesting point in connection with wireless development was featured at a recent meeting of the Wireless Institute of Australia (New South Wales Division), when Mr. George A. Taylor gave a short address on the question of affiliation of the Institute with the British Science Guild with which is associated the Board to Encourage Australian Invention.

Mr. Taylor pointed out that Board were being formed throughout Australia; in fact throughout the Empire, to encourage invention, for inventors had not had that encouragement due to them particularly in Australia.

Although an Australian, Lawrence Hargrave, has solved the problem of human flight as far back as 1889, yet last year that honor was given to a Canadian. The revolving cylinder engine was invented by Hargrave in 1889, yet it was credited to a Frenchman in 1912; whilst the first motorless-

aeroplane was made and flown in Australia in 1909, yet as recently as last year the same shaped machine was flown in Europe for the first time and featured in the Australian press as something new.

The same apathy existed regarding wireless, for as far back as 1910, wireless messages were sent between moving trains in Australia, and drawings were sent by wireless at the same time; yet when last year a Danish inventor sent sketches by wireless he was acclaimed as a world-wonder.

To give better encouragement to Australian inventors the Board that was established to help inventors, has formed a Wireless Section, and at the recent meeting of the Wireless Institute, after Mr. Taylor's address on the matter, a unanimous vote was carried that the Institute affiliate with that Board so that the Board may give best financial and other assistance to any inventor in wireless science.



ILLAWARRA RADIO CLUB.

The first annual general meeting of the Illawarra Radio Club was held at the Club-room, 75 Montgomery St., Kogarah, on Tuesday, the 17th inst., with a fair attendance, and much important business was transacted.

After routine matters had been dealt with, the main business of the evening was entered upon.

The Secretary's annual report from unavoidable causes not being available, this was deferred till next meeting.

The Treasurer's financial statement for the year was read to the meeting and discussed, and disclosed a very satisfactory state of affairs on the year's working. Although expenses had been somewhat heavy (being the Club's first year) we are able to show a fair credit balance, and this, together with the annual subscriptions which will now be coming in will soon put the Club into a very comfortable position financially.

Mr. A. Atkinson then moved his motion for the rescission of present Rule 24 and the substitution thereof of a new Rule, the effect of which was to bring all members on to the same financial footing on the 1st July in each year, by payment

of the whole or a proportionate part of the annual subscription (according to date of joining). This would effect a very desirable squaring of accounts at the beginning of each financial year, and all were agreed as to the necessity for same. The new Rule was accordingly carried unanimously.

Mr. S. Atkinson then spoke to his motion which proposed the elimination of Technical Committee and managing of whole of Club's affairs, both business and technical, by the Business Committee, with the Club's license holder as technical adviser. The proposal provoked a lively discussion, several prominent members of the Club voicing their views on the subject fully, and the consensus of opinion did not favour the proposal. On being put to a vote it was decided

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by 16 to 1 that the present rule providing for both Business and Technical Committees should stand. Election of office-bearers for the new year then proceeded.

The following gentlemen were re-elected unopposed, viz.: President, Mr. C. D. Cuthbert; vice-Presidents, Messrs. I. R. Hewett and A. E. Atkinson; Hon. Secretary, Mr. W. J. Graham; Hon. Treasurer, Mr. J. W. Mann.

There were four candidates for the Business Committee, of whom three were to be elected. A ballot was taken resulting in one being elected, and the other three running a dead heat. To get over the deadlock thus caused, it was decided to appoint one of these gentlemen to the Technical Committee, for which there were only two nominations; Mr. S. Atkinson was selected and accepted this position. The election of the two Committees resulted as follows: Business Committee; Messrs. W. J. Smith, W. T. Watkin Brown and J. R. Sollenger. Technical Committee; Messrs. C. A. Gorman (Club License Holder), F. H. Kirkby and S. Atkinson (one more to be elected).

The remainder of the evening was taken up in discussion of various matters of more or less importance, chiefly concerning the Club's proposed activities for the ensuing year.

The next meeting of the Club will be held at the Club-room (as above) on Tuesday, 31st July, at 8 p.m. All members are particularly asked to attend, and others interested are welcome.

The Secretary would be pleased to hear from anyone desirous of joining the Club, or to supply information concerning same to anyone interested. His address is 44 Cameron St., Rockdale.

LEICHHARDT AND DISTRICT RADIO SOCIETY.

The 39th general meeting of members of the Leichhardt and District Radio Society was held at the Club-room, 176 Johnston St., Annandale, on Tuesday, July 17th, when many important matters were discussed. Arrangements were made for a lecture in the nature of a travelogue, illustrated with a number of lantern slides, to be delivered by Mr. W. J. Zech at the following meeting.

Members are particularly requested to attend the final meeting of the month to be held on the 31st,

as a big roll up of members is desired for that occasion.

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

WESTERN SUBURBS WIRELESS AMATEUR ASSOCIATION.

At the meeting of the W.S.A.W.A. held on 18th inst., at the Club-room Mr. Burman lectured on Inductance and Capacity, and Mr. Challenger on Electricity and Magnetism.

At the next meeting to be held on 1st August, Mr. Rawlinson will lecture on Primary Batteries and Mr. Hoile on Valve Theory. During the past fortnight the Association has been entertaining folk to hear wireless music; many of the prominent citizens have had their minds filled with surprise when they realised the possibilities of telephony. It was by the courtesy of Mr. Raymond Evans, of Wireless Supplies Ltd., that a Brown loud speaker was lent to the Association during these entertainments. The music purely filled the Club-room from the Brown loud speaker. It is hoped to again entertain the Auburn public with a wireless concert to be held shortly. The arrangements are now well in hand and it is hoped to prove a success. The Association has now entered its third year of existence, and proposed to have their second annual function in the Auburn Town Hall. All interested are invited to attend next meeting, and any information re wireless will be given if correspondence be addressed to Hon. Secretary.

The usual weekly meeting of this club was held in their hall in Perry Street, Marrickville, on Monday, 16th inst.

After the business of the meeting had been disposed of, the President called on Mr. E. B. Crocker well known as 2BB, to deliver a lecture on transmitting. Mr. Crocker, on taking the floor, was greeted with a hearty applause, and his lecture was one of great interest. To assist him, Mr. Crocker brought along his transmitting set which proved to be the most interesting exhibit yet shown in the Club-rooms.

MARRICKVILLE AND DISTRICT RADIO CLUB.

The usual weekly meeting of this club was held in their hall in Perry Street, Marrickville, on Monday, 16th inst.

After the business of the meeting had been disposed of, the President called on Mr. E. B. Crocker well known as 2BB, to deliver a lecture on transmitting. Mr. Crocker, on taking the floor, was greeted with a hearty applause, and his lecture was one of great interest. To assist him, Mr. Crocker brought along his transmitting set which proved to be the most interesting exhibit yet shown in the Club-rooms.

He outlined a short history of his own initiations into the transmitting field, ably pointed out the

difficulties which beset the path of the average transmitter, and explained how he had managed to overcome a great many. Before closing his lecture the speaker suggested that the club should hold a debate on the subject: "What constitutes an experimenter?"

Mr. Primmington, the chairman, interesting contribution, also stated in thanking Mr. Crocker for his in that this suggestion was invaluable and that the club would act on it.

Prior to the closing of the meeting, Mr. Crocker was unanimously elected Patron to this club, and appointment which is very popular.

It was also announced that the club very shortly intended moving to more central club-rooms, the first night in which would be taken up by Mr. Basil Cooke in a lecture on "Resonance."

Intending members are invited to get in touch with Secretary, R. G. Ellis, 40 Park Rd., Marrickville. High and Low Resistance

WIRELESS INSTITUTE, (Queensland Branch.)

A general meeting of the Queensland Wireless Institute was held on the 13th July, and various alterations in the personnel of the officials resulted:

Mr. A. N. Stephens (formerly Pinkenba Radio Service) was elected as Hon. Secretary, and Mr. H. Maddick, Queensland, Manager for the Edison and Swan Co., was elected as Hon. Treasurer.

All communications should now be addressed to the Hon. Secretary, at "Radio House," Adelaide St.

Both gentlemen are well known in the wireless circle in Brisbane, and it is considered that in conjunction with the President (Mr. A. G. Jackson, who is well known throughout Australia as a scientist of no mean order), assisted by many other officers of the Institute, that members in Queensland can now look forward to all concerned working hard to further their interests and radio in general, as soon as funds will permit improvement in apparatus.

RADIO ASSOCIATION OF S.A.

A meeting of the Radio Association of South Australia was held at the offices of Newton, McLaren Ltd., Leigh St., Adelaide, on Wednesday, July 11th.

The chair was occupied by the President, Mr. D. Eardley McLaren.

A great deal of discussion on the

July 27, 1923.

WIRELESS WEEKLY

15

result of the Broadcasting Conference took place. Mr. Jones, the delegate to the Conference, explained several matters of interest. A letter was received from the President of the Society for the Development of Wireless in Australia, New Zealand and Papua, asking that a branch be formed in South Australia. It was decided that a thorough investigation should be carried out with regard to this matter before any step be taken to form a branch in this State.

**WIRELESS INSTITUTE,
S. A. DIVISION.**

The monthly general meeting of the S.A. Division of the Wireless Institute was held in the Classics Room at the Adelaide University on Wednesday, July 4th. Mr. Humbly Clarke presided.

Four applications for membership were received.

A copy of part of VIA's log was presented by the Secretary, this was procured by request of several members who have been logged by that station for interference. A number of our members are of the opinion that they are being victimised by the radio station, who seem to use all means in their power to identify any experimental station who they know to be working.

It was decided that the Chief Manager of Telegraphs and Wireless (Mr. J. Malone) be communicated with with a view to a solution of this trouble.

The radio station is always being jammed by experimenters using the 200 metre wave, while other experimenters who listen in on the 600 metre wave length can never hear them.

The formation of a branch of the Radio Relay League was discussed, and it was decided that a committee be selected to draw up the constitution of a branch here. Owing to the amount of business in hand there was no time for a lecture to be given at this meeting.

Our next meeting takes place on Wednesday, August 1st, when nominations for officers for the coming year will be accepted. A large attendance is desired.

RADIO SOCIAL AND DANCE.

A social and radio dance was given by the members of the South Australian Division of the Wireless Institute of Australia, on Thursday, June 28th, in the Royal Institution

for the Blind Hall, at North Adelaide.

There was a much greater attendance than was expected, close on 300 being admitted.

The music for the dancing was transmitted from the station of Mr. H. L. Austin (5BN), of Parade, Norwood, who owns a five-watt set. A special latest model concert gramola and records were kindly lent by Eddy's Ltd., for the transmission.

The receiving set was in charge of Mr. L. C. Jones. After supper, which was catered for on a large scale, the chairman took the opportunity of saying farewell to Messrs. H. A. Kauper and R. M. Dunstone. Mr. Kauper is well-known to all South Australian experimenters, as well as to a number of the Interstate amateurs, for the excellent programmes of music which he transmitted from his station, 5BG, almost every evening.

The radio dance was the first ever to be held in South Australia, and created great enthusiasm. A great deal of interest was centred in the first official wireless set used in South Australia, which was exhibited on the platform.

This set was an old Marconi coherent set, which was used in 1900 by the late Sir Charles Todd, in experiments conducted by the Post Office officials, between Adelaide and Henley Beach.

**WIRELESS INSTITUTE OF AUSTRALIA,
N.S.W. DIVISION.**

The next general meeting will be held at Royal Society's Hall, 6 Elizabeth Street, Sydney, on Monday, 6th (sixth) August, at 7.45 p.m.

It is expected Mr. Lacey will give a demonstration of high frequency electricity, and it is hoped the chief radio officer, S.S. Narkunda, will be present, and say a few words relative to direction finding.

All members should reserve the date, and make a point of being present on this evening.

TRANS-PACIFIC TESTS.

We regret that through a typographical error in last week's issue, in publishing the official correspondence handed to us by Mr. Kenshaw, the wrong date was printed on the letter addressed to the New South Wales Division of the Wireless Institute from the Waverley Amateur Radio Club. The date should have read 23rd November, 1922, instead of 25th November, 1922, as printed.

MR. HECTOR'S LECTURES.

On Saturday evening, 14th inst., a party of experimenters (two from each club, and two from the Institute), visited Mr. Hector's beautiful "Colour Music" Laboratory, at

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Greenwich. To say that Mr. Hector's demonstration was amazing is to use too simple a term. Those who attended were taken back at the novelty and the beautiful setting, and felt an indefinable "something behind it all" which cannot be expressed in words. This has been a life-long hobby with Mr. Hector, and the result so far achieved shows that he has left no stone unturned to bring it to a success. Those who go later on will appreciate this.

Mr. Hector has expressed the desire that instead of each club going separately, each party should be made up of two members from each club until all who desire to attend this wonderful demonstration have visited his laboratory.

In moving a vote of thanks to Mr. Hector, on the 14th, Mr. Renshaw stated that in deference to Mr. Hector's wish, future parties will be made up as he suggested. The next visit will be in the latter part of August, and all clubs intending to send their two representatives are requested to kindly notify Mr. A. Atkinson (Hon. Sec., N.S.W. Radio Association), 31 Balfour Street, Kogarah, as soon as possible, as not more than thirty or so can be accommodated at any one time. The date of the visit will probably be the 25th August, but as soon as Mr. Hector advises whether this date will be suitable or not, notice will be inserted in "Wireless Weekly."

N.S.W. RADIO ASSOCIATION.

The delegates will meet at Laurel Cafe, on Wednesday, 1st August, at 7.45 p.m. sharp, not on 30th July, as previously advertised.

All clubs represented on the Association are requested to instruct their delegates regarding any matters they require brought forward.

Those clubs not yet affiliated should join up at the earliest possible moment.

Remember, "Union is Strength," and we have an excellent cause.

A. ATKINSON,
Hon. Secretary,
31 Balfour Street, Kogarah.

VICTORIAN STATE COUNCIL.

To the Editor,
"Wireless Weekly."

Sir,
Under the heading of "Victorian Notes" I observe from your last issue that the Victorian Division of the Wireless Institute of Australia has "not without a pang" expired. I may say that I have been closely

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watching the unsettled condition of club affairs for a considerable time, and am not altogether surprised at the turn events have apparently taken. It has long appeared to me that Victoria is a "house divided," and although the report as published indicates that a harmonious combination is taking place, I feel sure that the organisation necessary to properly conduct the affairs of all the sections under this State Council will be impossible unless they are fortunate enough to have an experienced secretary, who is a man of leisure, and can devote his full time to the matter. Some eighteen months ago a more or less identical scheme was prepared in New South Wales, but after mature consideration local experimenters decided that the various clubs and societies should not lose their identity, and shortly afterwards many of the local clubs formed the N.S.W. Radio

Association. This Association's executive consists of delegates (one to every fifty members), and has no power to interfere with the domestic government of any club, but exists for the purpose of undertaking important communications and negotiations with the authorities, controlling matters of general policy as affecting all clubs, and arranging matters of mutual interest, and adjusting differences amicably.

This N.S.W. Radio Association has been on its trial for some time now, and has proved that it has the confidence and support of all the societies, and whilst leaving the clubs free to conduct their own affairs, preserves that bond of union so essential to the band of experimenters whose existence is without precedent in this world's affairs.

The wisdom of the N.S.W. Division of the Wireless Institute in preserving its identity throughout

has not been lost on local experimenters. All the clubs are aware that the N.S.W. Division is an exceedingly well-governed institution, and they appreciate the fact that this division is their great friend and ally in matters affecting experimenters as a whole, and has fought hard in the general interests with no desire for reward other than to give mutual satisfaction.

Personally I think our Victorian confreres are making a mistake, if only from a policy point of view; but, whatever happens, they can rest assured they have our best wishes for success, and I personally hope that if they find the innovation of the State Council too cumbersome they will drop it before it strangles itself.

PHIL. BENSCHAW,

Chairman, N.S.W. Radio. Assn.

TRANS-PACIFIC TEST COMMITTEE REPLIES.

(To the Editor)

Dear Sir,—The Trans-Pacific Test Committee, N.S.W. Division, have read and considered the several questions asked by you in your paper of the 19th inst., and I have been instructed by the committee to furnish you with the following replies:

The committee's answer to question No. 1 is: "The Committee notified Mr. Gorman that he had been awarded the first prize in the test and were taking steps to arrange a suitable meeting to present him with the prize, but the Committee received a letter from Mr. Gorman stating that he was not satisfied with their decision, and claiming other prizes. This naturally delayed the presentation."

The answer to question No. 2 is: "The obvious reply to this is contained in our answer to question No. 1."

The answer to question No. 3 is: "This is also embodied in the answer to question No. 1, the matter still being in abeyance."

The answer to question No. 4 is: "The Committee were actually making arrangements to call a big meeting of all experimenters to present Mr. Gorman with the prize; but the Committee had to cancel their arrangements as explained in our answer to question No. 1. Their idea was to have an All-Clubs' Night in Sydney for the presentation of the prize, but now if circumstances permit, and Mr. Gorman is agreeable, the Committee purpose presenting the prize at the

forthcoming Exhibition, to be held in the Town Hall, at which he will get all recognition due.

The answer to question No. 5 is: "No; the Committee are of the opinion that Mr. Gorman has not won any other prize than the one allot-

ted; but in fairness to Mr. Gorman are appointing an adjudicator agreeable to both parties, whose decision is to be final.

Yours faithfully,
(Signed) G. W. Tatham,
Hon. Secretary.

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(To the Editor.)

Dear Sir,—In what manner has Gorman been treated? Is a question which I have asked many experimenters for some time past. No one could supply an answer and nothing had been published on the subject until the issue of Wireless Weekly of the 13th inst.

It was with much regret that I read of the manner in which the Trans-Pacific Committee proposed to allot the prizes. To my mind, their action is to say the least, discourteous and unfair.

Here we have amongst us a

young amateur who has certainly made history, who has certainly, in my opinion, won all the prizes excepting £2/2/-, under Section 4. He has proved himself to be the best long distance receiving amateur in our midst, and is worthy of every encouragement. But is he being encouraged? Could the action of the T.P. Committee be construed as encouraging. From what appears in your paper the answer to this is in the negative.

Let me ask the T.P. Committee through your columns the following questions:

(a) Do you think you are exactly exercising the trust reposed

in you by all amateurs?

(b) If so, do you think amateurs will again enter into competitive tests of this nature if the correct allocation of prizes is to be avoided?

Perhaps in view of the scant returns the Committee do not think they are legally bound to present Gorman with the prizes he has justly won, but are they not morally bound? Had any of the better known experimenters been in Gorman's place, would they have delayed in presenting the prizes? I, for one, do not think so.

Yours etc.,
W. L. Hamilton.



ON the Trans-Atlantic telephone test when the American Telegraph and Telephone Company's officials in New York addressed a distinguished assembly of experts and others at New Southgate, London, Western Electric Head Receivers and Western Electric Loud-Speaking Receivers only were used at the London end for the reception of the messages.

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WIRELESS WEEKLY

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The Australasian Radio Relay League

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

Now that so much attention is being focussed by wireless amateurs on the Australasian Radio Relay League, many experimenters who are the holders of receiving licences only are wondering what the League offers them, and what benefits they may secure by becoming associate members.

As is generally known, the Relay League was instituted for the purpose of establishing a chain of amateur wireless stations throughout the entire length and breadth of Australasia, a chain of stations which will be continuously in operation, and which will be a national asset in case of emergency.

At first sight it certainly appears as if the actual work in connection with such an undertaking must be carried out by those amateurs who are in the possession of transmitting licences, and who are maintaining and operating transmitting stations. The actual transmission of messages must, of course, be undertaken by these amateurs, but it must not for one moment be imagined that the League will offer something attractive only to transmitters.

The holder of a receiving licence will find much in the League to interest him, and furthermore, he will be able to take an active part in its operations as far as reception is concerned.

Consider the position of the experimenter to-day. Many amateur stations are transmitting speech and music and no difficulty whatever is experienced in receiving this class of wireless communication. As far as telegraphy is concerned, there is, however, very little traffic which caters for the amateur who wishes to "listen-in" to code messages.

The ship and store stations are certainly working almost constantly, and can be tuned-in with very little effort, but the speed at which transmission is effected is, in nine cases out of ten, too high to enable the amateur to listen to them. The average amateur has no desire whatever to "tap" any of the private messages which pass between commercial stations. If he can identify

these stations and know what sort of traffic they are handling, he is satisfied. Under present conditions, however, he is hardly able to read even the preamble to radiograms, and hears many stations without being able to state exactly just who they are.

It will generally be conceded that the most satisfactory part of an amateur's operations in connection with reception consists of the hearing of a station, the identifying of it, and the knowledge that his set has at any rate the range sufficient to enable him to receive from that station if no further. It is safe to assume that a large majority of the amateurs to-day have no definite knowledge of just from what distance they can receive messages. They are told by "somebody who knows" that the Adelaide station has a certain kind of note, and that very often it is heard more plainly than the Melbourne station. The next time they listen-in they fancy that the note of the station whose messages they can hear is the note described to them by that "somebody," and they therefore form some vague idea that they have heard Adelaide. The work they have put in on their sets would, however, be far more greatly repaid if they were able to actually read the preamble of the message despatched, and to know definitely that they had heard Adelaide.

Here then is where the Australasian Radio Relay League will fill a long felt want. All its messages will be despatched in the manner as prescribed by the regulations. The procedure in regard to the calling of stations will be adopted, and the preambles to all messages will be sent in exactly the same manner as are the preambles to commercial radiograms. Transmission will, however, be carried out at a low speed (say ten or twelve words per minute, a rate which many amateurs will not find it difficult to pick up messages. Even those who are not Morse experts will surely be able to identify the call letters of the station which will be transmitted thrice, and even if they do not copy the whole of the

message they will be able to know from which station the Morse has come.

It may be said that as some of the League members will be transmitting nightly, and that as their messages will be liable to be picked up by any amateur whether he be an associate member of the League or not, that no good can be obtained by joining the League.

This would be true if the League officials did not intend to specially consider the wants of associate members.

As was explained in last week's Wireless Weekly, special cards will be available to members, and reports will be made on these cards. The question of the promoting of tests and competitions will be considered seriously by the executive, and it is hoped to be able to provide prizes which will be well worth competing for by associate members. Under a comprehensive scheme which it is hoped will be inaugurated almost as soon as the League commences operations, it will be in the interests of the holders of the receiving licences who are members of the League to carefully compile logs of all traffic which is handled by the League.

The advantages which will thus be secured by associate members are obvious. Not only will they receive practise in reception but they will be afforded constant buzzer practise under conditions which will remove much of the irksome drudgery associated with the learning of the code under present conditions. Their reception will have a new interest added to it. Instead of sitting for hours at a set listening-in to traffic which is being handled at a speed which prevents them reading it they will be able to concentrate on the code transmissions of the Radio Relay League members, will be able to compile proper logs, and will find that their nights spent with the receivers on their ears will become much more pleasant than is the case at the present time.

Another matter which should prove attractive to them is that for a small fee they will become members of a body which is out to

safeguard their interests. At the present time no body or club can speak on behalf of the New South Wales experimenters. The Radio Relay League will be able to perform this function.

Bearing in mind the many advantages which the League offers to both active and associate members there should be no need for any hesitation on the part of holders of either receivers or transmitters in immediately throwing in their lot for the movement.

The fees for full membership amount to 10/- per annum and for associate members 5/- per annum.

Applications for membership may be addressed to any of the following:

Mr. S. Colville (Organising Secretary), 10 Howe St., Sydney.

Mr. W. J. MacLardy (Hon. Treasurer), Editor Wireless Weekly, Box 378, G.P.O., Sydney.

Mr. R. D. Charlesworth (Secretary), Box 378, G.P.O., Sydney.

Continued from page 3.

Starting at the left hand tube nearest to you, place the negative plate with clip attached, in the tube. In the same tube place the positive plate of one of the pairs, allowing the negative plate of this pair to drop into the adjoining tube on the right. Continue in this manner until the end of the row is reached, when it will be found necessary to use one of the pairs connected by the longer wire. Work to the left as the second row, placing the pair of plates with clip at-

tached, between the 11th and 12th tube from the starting point. This gives you your 22 volt tap for detector tube. If 18 volts are desired, place this pair of plates in the 9th and 10th tubes. Be sure plates in each tube are separated by the strip of wood separator, also be sure you have a negative and a positive plate in each tube. Mark the tube where you first started, N, and the last tube, P.

Fill the tubes to within 1 in. of the top with the sulphuric acid, and charge at a quarter ampere rate for ten hours. It is a good plan to discharge the battery rather rapidly after the first charging and recharge before using.

As evaporation is rather rapid, I make it a practice to inspect the battery each week and fill tubes to their proper level with distilled water. These batteries will work satisfactorily for ninety days or more without recharging, but to make sure I charge for three hours on the first of each month.

As near as I can determine, these batteries have a capacity of about two ampere hours. My voltmeter shows about 54 volts from the 24 cells when fully charged.

An excellent acid resisting paint that will also help prevent leakage between cells can be made by dissolving old phonograph records in denatured alcohol. A pint of alcohol will dissolve about five records. As it takes about a week for the records to dissolve, the mixture should be kept in an air tight jar

to prevent the alcohol from evaporating. A little varnish added to the mixture will give a gloss to the paint.

Continued from page 3.

in German, followed by music; without hesitation I had found LP on 2500 metres. In the evening, with the same setting, I heard FL, but somewhat faintly. For several days I heard no more; I was fully occupied on a second valve panel for the addition of a stage of H.P. amplification with reactance capacity coupling.

For a time I was content. During this period liberal quantities of Bangay, Coursey, 'Wireless Weekly' and others had been taken in daily doses, and henceforward my trouble ceased to be in the same category as heretofore.

Therefore, I say that if I were starting again, in view of my past experiences, I certainly should not proceed on anything like the same lines as I did. Had I got to the valve stage without the guidance and advice which I received at the Society, I know what I should have been; a general nuisance, which is putting it mildly. Consequently, my course would be guided by the following general rules:—

(1) Join a Wireless Society; not necessarily the nearest or the cheapest; if there were a choice, one with apparatus and facilities for serious work and a good syllabus of lectures.

(2) Allow the Secretary to guide my reading according to my stated requirements, not being above tackling the elementary principles, nor too modest about my ultimate aims.

(3) Before either purchasing or constructing any apparatus, discuss it with others, making sure it was really what I required and the most efficient of its kind.

(4) Let all the accumulation be in such form that it is easily added to, preferably on the unit system.

(5) Except for a special duty, have all apparatus and components capable of rearrangement.

Rules 1 and 2 are of great importance and the remainder a natural corollary.

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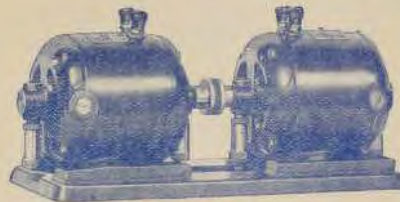
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