

WIRELESS WEEKLY

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FRIDAY, MARCH 20, 1925.

3^D

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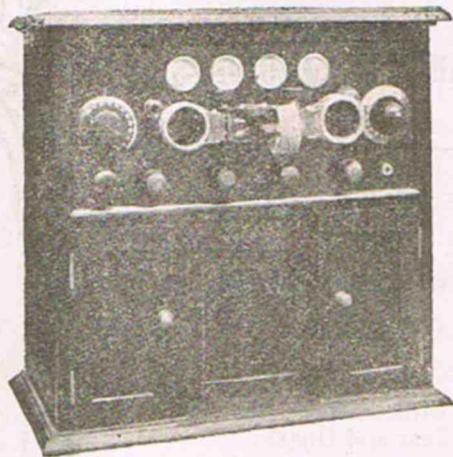
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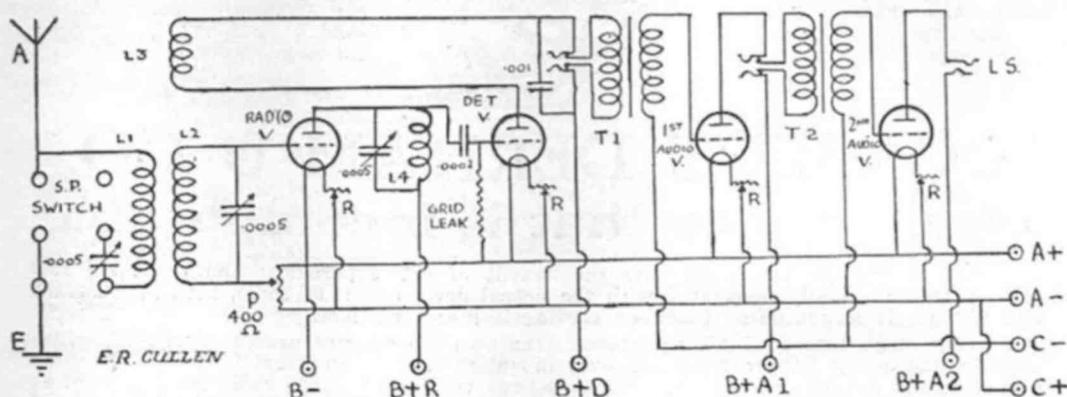
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4 Standard Valve Sockets (Nutmeg), 3/6 each	0 14 0
2 Signal Audio Transformers, £1/1/- each	2 2 0
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1 Frost 400 ohm Potentiometer	0 5 6
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11 Terminals, 4d. each	0 3 8
3 3-inch Dials (for Condensers), 2/- each	0 6 0
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1 Strip of Bakelite, 10 x 1 x 1/2	0 0 10

For city work 201A valves are preferable, necessitating, of course, a 6-volt accumulator as an A Battery. Two 42-volt B Batteries are essential, tapings being taken for the four different valves. We suggest 60v., 42v., 70v., and 84v. for the positive B's in the order named.

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.0005	10/6	.0005	13/6
.00075	12/6	.001	17/-
.001	13/6		
Duo Anode, .00025		20/6	

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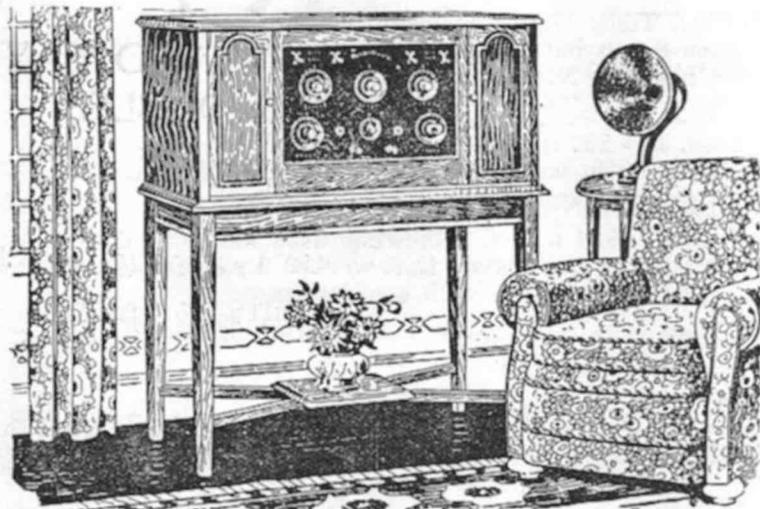
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.00075	33	"	16/6
.0005	23092	14/9
.0003	15	"	13/6
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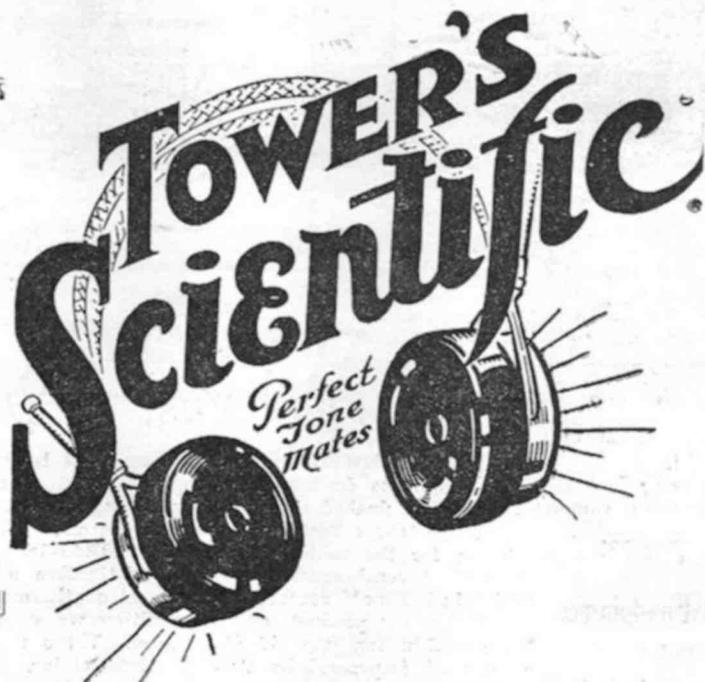
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Wireless Weekly

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Official Organ of the New South Wales Division of the Wireless Institute of Australia, with which are incorporated the Affiliated Radio Societies and the Australian Radio Relay League.

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VOL. 5 No. 21

MARCH 20, 1925

Editorial

PROPOSED DUTY ON VALVES.

THE application for a duty on thermionic valves used for wireless purposes is of the very greatest moment to all wireless enthusiasts, for the main reason that the immediate effect, if the Tariff Board granted such an application, would be an increase in the price of valves. The slogan "Support Australian Industries" when applied to wireless valves, opens up a very big field of argument. A protective tariff on any industry or product is presumably granted when the local manufacturer is able to cope with the fullest demands of the Australian market and when the local product is at least as good as the imported article.

Approximately eighty different types of valves are at present being imported into Australia and

each type has certain fundamental characteristics which render it quite distinct from others. In Australia at present about five different types of valves are being manufactured and it would appear that the net result of the Tariff Board's agreement to the proposed duty would be to penalise the eighty imported types in favor of the five locally manufactured. Hardly a compensating arrangement.

It would mean a duty of 35% on English valves which are at present imported free, and 45% in the case of American valves, now carrying a duty of 15%. Needless to say, if this extra duty is imposed, the retail price would have to be increased, or in other words, the public would have to pay. In the case of two valve sets and over this would obviously be a serious item.

It must be borne in mind also that vast sums are spent by British and American concerns in research work calculated to improve the efficiency of the valves now being manufactured and without questioning the efficiency of the locally made valves, it is extremely doubtful whether such work could be carried out in Australia, entailing as it would heavy financial expenditure and the employment of specialists such as Australia cannot boast of.

To say the least of it, the application now before the Tariff Board is premature. The wireless industry in Australia is but an infant, but it is growing rapidly. It is the plain duty of the Government to encourage those firms who have invested a lot of money in establishing that industry and to whom we owe broadcasting itself. A tariff on valves would simply throw added burdens upon these firms and would merely make broadcasting more expensive to the public.

HEARD NINE HUNDRED FEET BELOW GROUND.

Farmers' Broadcasting Station has received a most interesting letter written from Lithgow by Master Jack Jones, a youngster of twelve years of age. He states—"I was listening to you last night down 900 feet underground in a coal mine. I was using a 3-valve set and the result was very good, but I am not content with this and intend trying again with 5 valves. If more successful we will try and ring up the "Hello Man" during one of the intervals."

There truly seems to be no limitation as to the condition under which the advantages of wireless may be used.

HEADQUARTERS
Royal Society's House
5 Elizabeth St.
SYDNEY, N.S.W.

Wireless Institute of Australia

NS.W.  Div. Inc.

Incorporating the Affiliated Societies and The Australian Radio Relay League

Phil. Renshaw, Hon. Sec.
Box 3120 GPO Sydney
Phone B2235
A.P. Perrett Publicity Officer.

At the Executive council meeting, held at Institute Headquarters on Monday, March 9, a letter was read from New Zealand experimenters expressing the desire for the co-operation of Australians in a series of tests to take place somewhere in the region of 140 metres. The authorities there are adhering very closely to the regulations which only allow B class transmitters to work on 140 metres, and experimenters there are experiencing great difficulty in obtaining any replies to their calls.

The Executive Council have decided to take this matter up and organise a series of tests on wave lengths of approximately 140 metres. These tests will take place between May 1—10, both dates inclusive. The organisers, Messrs. Stowe and Cutts, are anxious that all transmitters who are willing to participate in these tests should get in touch with the Institute Headquarters as early as possible. It is proposed that the tests should take place on a range covering from 130—150 metres, and a schedule will be drawn up covering the period of the test. The scheme which the organisers have in view is that each transmitter should have a definite time allotted to him, 5 minutes of which would be on C.W.; 5 minutes on Tonic Train; and 5 minutes on phone. This would enable a thorough test to be made of each station.

The schedule will include nights set apart for New Zealand transmitters, and nights set apart for Australian transmitters. It is proposed to transmit a standard calibration signal on 140 metres previous to the tests so that transmitters can be adjusted to the required wavelength. As these proposals are only tentative it is hoped that all transmitters wishing to take part will communicate with Headquarters immediately giving the power of their station, radiation, type and size of aerial, and any other particulars. Let us all get together and make these tests a huge success.

All Clubs' Night.

The arrangements have now been completed for an "All Clubs' Night" to take place on Monday, March 30, 1925, at 8 p.m. The meeting will be held in the Royal Society's Hall, 5 Elizabeth

Street, Sydney, and two films by the Radio Corporation of America have been kindly lent by the Australian General Electric Co. Ltd. One of these films will deal with "Wireless," and the other will deal with the allied subject of "Light." As this will be the first time that these films have been exhibited in Australia an interesting evening is assured to all those who attend.

All members of the Wireless Institute of Australia, New South Wales Division, and all Affiliated Clubs are cordially invited to be present. Make a note of the date. Keep it clear of other engagements and come early to secure a seat.

The Silent Period.

A correspondent in this publication a week or so ago referred to the interference caused by experimenters with B.C.L's. It can be definitely stated that of all those who voluntarily undertook to observe the silent period, which includes practically all the transmitters in the Wireless Institute of Australia, New South Wales Division, by far the great majority are adhering strictly to their undertaking. The correspondent referred to above need be under no misapprehension as to the action which will be taken by members of the Institute in connection with this. In this connection, however, it should be borne in mind that where it is absolutely conclusively proved that no interference is being caused, there is no need for this silent period to be observed, but the transmitter should satisfy himself that this is really the case. This can best be done by personally visiting stations where interference can possibly be caused. It is interesting to note that the new regulations in America dealing with this phase of wireless activities state that silent hours will not be required of amateurs using a wavelength within the band below 80 metres, except where the transmitting station is so situated as to produce objectional interference with other services. It is also laid down that the use of continuous wave telegraphy only, will be permitted on wavelengths other than 150 to 200 metres and the antenna circuit must not be directly coupled to the transmitting circuit. This means that the use on short

waves of spark, phone, and those outright forms of I.C.W. obtained by mechanically interrupting the radio frequency circuit, such as by the use of a chopper or buzzer, are prohibited, but all forms of tube telegraphy including A.C. plate supply, rectified but unfiltered or partially filtered as well as generators and batteries are authorised. The great point is that key clicks must be eliminated. Conductive coupling between the antenna and transmitting circuits is absolutely prohibited, but inductive or capacitive coupling may be employed.

It will also be observed that no silent period will be required except in the individual case where a station cannot be adjusted so as to avoid objectional interference. It would probably be wise for all transmitters to satisfy themselves that their stations are not causing any interference with other services, and where this can be conclusively demonstrated there is no need for silent hours to be observed. At the same time it should be clearly understood that if experimenters do not take action themselves with a view to eliminating any cause for complaint from other services the authorities will undoubtedly take action.

The growing popularity of the more expensive but more efficient forms of broadcast receivers will render this an easy matter as far as the experimenters are concerned, but no stone should be left unturned to render any action on the part of the authorities in this respect, unnecessary.

QRM.

It was with regret that the Executive Council accepted the resignation of Mr. W. H. Newman as Chairman of the Delegates Council. This has been brought about by pressure of business and the Council have unanimously appointed Mr. R. C. Marsden, as Chairman of the Delegates Council in succession to Mr. W. H. Newman.

2JT has blown a five watter. This form of achievement is getting to be common among experimenters, and will soon not be worthy of comment amongst these notes.

Congratulations, 2RJ, on the accession of a "new transmitter."

Mr. L. T. Swain, President of the Newcastle Radio Society paid a flying visit to Sydney during this week.

5CM, E. N. Sagar, has been on a visit to Sydney, and was welcomed at Headquarters on Thursday last.

Mr. Lawton, Vice-President of the Queensland Division of the Wireless Institute, was also present.

Interstate and Country visitors will always be welcomed.

A. H. PERRETT. Publicity Officer.

Round the Clubs

The asterisk denotes clubs affiliated with the Wireless Institute of Australia (N.S.W. Division).

THE LEICHHARDT AND DISTRICT RADIO SOCIETY *

There was an excellent attendance of members of the Leichhardt and District Radio Society at the 29th monthly business meeting, held at the club room, 176 Johnston St., Annandale, on the evening of March 10th.

Interest in the proceedings was keen, and a considerable amount of important business was transacted, not the least important of which being the election of four new members. Minutes of the Delegates' Council Meeting, held on February 13th, were read and received, and a lengthy discussion ensued dealing with the various matters contained therein. These included such important matters as the proposed donation of a club shield to be competed for by the affiliated clubs and societies, the use of the Wireless Institute's library by affiliated club members, Radio Relay League matters, and a proposed "All Clubs' Night."

Mr. Zech gave members a brief account of the proceedings of the Waverley Radio Club's annual function held on February 24th, and spoke highly of the enthusiasm and good feeling which prevailed throughout on that occasion.

At the conclusion of the business on hand, Mr. S. P. Williams was called upon to deliver the 4th lecture of Syllabus No. 2. This took the form of a chat on "Short Wave Circuits," and Mr. Williams dealt principally with the Reinartz all-wave receiver. Its construction and handling were dealt with in detail, and the lecturer spoke very highly of the efficiency of this particular circuit with which he had had excellent results. At the conclusion of the lecture there was the usual batch of questions, after which M. Williams was accorded a hearty vote of thanks by acclamation.

Next Tuesday evening, the Society will conduct its 124th general meeting, when Mr. H. F. Whitworth, B.Sc., will deliver the 5th lecture of Syllabus No. 3. The subject on this occasion will be "Principles of Electricity and Magnetism," and on account of its importance, is bound to ensure a good roll up of members.

The steadily increasing membership of the Society is ample proof of the interest being taken in the experimental wireless movement, and local enthusiasts who have not yet joined its ranks are invited to communicate with the Hon. Secretary, Mr. W. J. Zech, 145 Booth St., Annandale, who will be pleased to furnish any information required.

STRATHFIELD RADIO CLUB *

The ordinary weekly meeting of this Club was held at the Club-rooms on Monday evening, 9th inst., and was very well attended.

After disposal of a few business matters the Secretary detailed to members present the scheme of improvement to club apparatus and organisation of classes and service being arranged by the newly formed Technical Committee.

This stimulated a healthy discussion, at the close of which members unanimously expressed their approval of the scheme and their appreciation of the Committee's efforts. A good deal of work is yet to be done before the suggested improvements can be effected, but reasonably good progress is being made. A special Club's demonstration set is being constructed on the removable unit principle, a container being provided in which up to 15 Units, each consisting of one or two component parts of apparatus can be assembled.

This will allow of the most complicated Receiving Circuits being quickly and clearly demonstrated before a large audience, and by its aid the principles of the action of various component parts can also be clearly shown.

As an aid to Lecturers and for general instructional purposes it should prove very useful.

The remainder of the evening was occupied with the usual Technical discussion, and an interesting talk by Mr. T. Harris on the operation of Regenerative receiving apparatus in order to obtain clear reception and good volume which proved very interesting.

Mr. Burman, of Western Suburbs Club dropped in for the evening and was cordially welcomed by members. We always appreciate visits from members of other Clubs.

Inquiries regarding the Club's activities addressed to the Hon. Secretary, 44 Bayard Street, Mortlake, will receive prompt attention.

CROYDON RADIO CLUB.*

The usual weekly meeting of the club was held at the club rooms, "Rockleigh," Lang Street, Croydon, on Saturday, March 7th, at 8 p.m.

We had a good attendance of members.

A gloom was thrown over the proceedings on account of the accident which befell two of our members, Messrs. Pickering and Thrum. A mast 70 feet high was in course of erection; the bottom section, on the top of which our two members were working, collapsed, and they were thrown to the ground. They were conveyed by ambulance to the Western Suburbs Cottage Hospital, and there treated.

We believe they are both O.K. again now, having got off with rather severe bruises.

The club wishes to thank the ambulance attendants and hospital staff for the treatment of Messrs. Thrum and Pickering.

The formal business of the meeting over, we attentively listened to the oration by Mr. Hamilton, which started on low loss sets.

Mr. Hamilton said he was of the opinion that a great many amateur experimenters were becoming low loss fanatics. The biggest loss, he said, in almost any set was in inefficient coils.

Mr. Hamilton made a plea for any or all transmitters to occasionally think of the people who could not read "20 per," and slow down a bit, to give the listeners a chance, as any who listened to these signals were potential experimenters.

"Insulator" also asked for any opinions regarding the course of action which would have to be taken to persuade those relatives of Ananias, who regularly receive 5XX on a single slider with aerial disconnected, return to their former hobby of fishing.

Mr. Hamilton's lecture was thoroughly appreciated, and his whimsical manner seemed to hold the interest of all members.

A lively discussion on low loss coils followed, and lasted until the close of the meeting, when refreshments were served.

Owing to the accident the beginners' Morse class could not meet, but it will be held at 7 pipemma every Saturday evening.

All inquiries regarding the activities of the club and applications for membership should be addressed to the hon. sec., G. Maxwell Cutts, 25 Malvern Ave., Croydon.

A. N. FITCH.

RAILWAY AND TRAMWAY RADIO ASSOCIATION *

The usual weekly meeting of the Railway and Tramway Radio Association was held at the Railway Institute on Wednesday, 11th March 1925. A lecture on "General Hints for the Construction of Wireless Receivers" was delivered by Mr. Minahan. The speaker treated his subject well and many points were explained by practical demonstration. The lecture was greatly appreciated by those present and many useful hints were gained. At the conclusion a hearty vote of thanks was accorded the lecturer.

On Wednesday, March 25th, Mr. Carter will lecture on the "Elementary Principles of Electricity and Magnetism."

The Association meets in the Railway Insti-

tute every Wednesday evening at 7.45 p.m., and any intending member is asked to come along. The Secretary's (Mr. W. L. Carter) address is c/o The Solicitor for Railways, 139 Phillip St., Sydney.

C. H. CLARK, Publicity Officer.

WOOLOOWIN RADIO CLUB (Brisbane)

Another very successful meeting was held by the above Club at its headquarters on Monday, 9th inst.

It is expected that the club will be removing from its present address within the next few weeks and the committee has been instructed to submit a report to the next business meeting.

The Club Secretary has been instructed to forward a challenge for an inter-club debate to the President of the Toombul Branch of the Radio Society of Queensland, which will doubtless be eagerly accepted. By this means it is hoped that the cordial feeling between these two clubs may be further strengthened.

After formal business had been disposed of a keenly argued debate took place on the question: "Is present day wireless transmission satisfactory from the listeners' point of view?" Messrs. Jear, H. Stephenson and Anderson scored a narrow victory for the "Ayes" over Messrs. Grant, C.

Stephenson and Blaikie. Mr. Buckley, of Albion, who had accepted an invitation to visit the club, acted as adjudicator.

The last item of the current syllabus will be given on Monday, 23rd inst., when a lecturette is to be delivered on "Wireless Valves."

The second series of debates and lectures will commence on April 13th.

The club still has room for new members, and all interested are invited to communicate with the Secretary (Mr. H. A. Jear) at Lisson Grove, Woolloowin.

MARRICKVILLE AND DISTRICT RADIO CLUB *

The usual weekly meeting of the above club was held at Marrickville School of Arts on Monday evening, 9th March, 1925, the President, Mr. W. L. Hamilton, occupying the chair.

There was a good attendance of members and friends.

Mr. Henry French who had lectured on the previous Monday night on "Resistance Coupled Amplifiers" was in attendance, having promised at the conclusion of his lecture, to bring his set along and let the members hear same. The set was tuned

(Continued on page 35)

RADIO SUPPLIES

WHY YOU SHOULD TRADE WITH

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RADIO TELEPHONY

By Wireless Weekly.

BEFORE describing the various circuits used for radio telephony it is almost imperative to understand the theory of sound waves.

Sound—Musical or Otherwise.

Sound may be defined as the sensation resulting from the action of an external stimulus on the sensitive nerves of the human ear. Atmospheric vibration is the normal and usual means of excitement for the ear; this vibration originates in a source called the sounding body, which is itself always in vibration when acting as a source of sound. The ear divides sound roughly into two classes—noises and tones, noises which are disagreeable or irritating and tones which are received with pleasure. Noise and tone are merely terms of contrast in extreme cases clearly distinct, but in other instances blending. Words spoken are multiple tones of great complexity, blended and flowing, mixed with essential noises. Tones are sounds having such continuity and definiteness that their characteristics may be appreciated by the ear, thus rendering them useful for musical purposes. These characteristics are pitch or frequency, loudness or intensity, and quality or tone colour.

The velocity of sound is about 1,132 feet per second.

Pitch or Frequency.

A sound is said to have a high pitch when its frequency is high. The middle octave of the piano has the following pitches or frequency:—

C	258
D	290
E	325
F	345
G	387
A	435
B	488
C	517

The term loudness explains itself. It is a comparative statement of the strength of sensation received through the human ear, and depends on the amplitude of the vibration.

Speech.

In the back of the throat of the speaker a sort of membrane known as the vocal chord is set into more or less continuous vibration by a breath. The quality of the resulting sound is modified in two ways, by altering the shape of the mouth with the tongue or otherwise, and thus causing a degree of

selective resonance and by actually starting and stopping the stream of sound. We are now in a position to consider how the sound waves produced by the voice of a speaker may be made to control the vibrations of the telephone diaphragms in a receiving circuit probably situated hundreds of miles away from the speaker. Let us first consider, however, what the note or tone received depends upon in the various systems of radio telegraphy.

In the spark system the note heard depends on the frequency of the spark, which again depends on

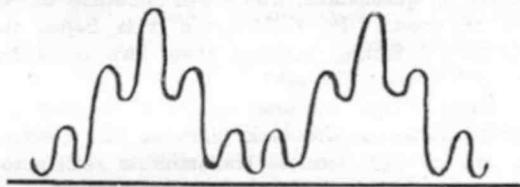


FIG 1.

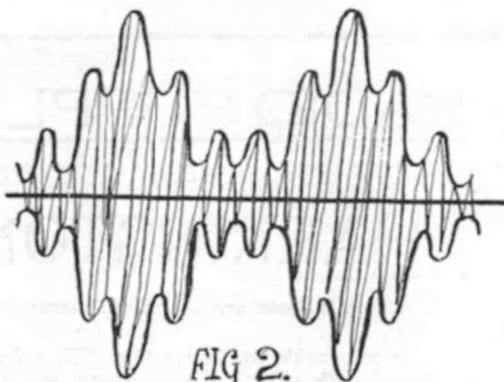


FIG 2.

the frequency of the alternator and the design of the spark gap. The high frequency wave is interrupted at definite intervals at audible frequency. With continuous wave systems the incoming continuous wave is modulated by having superimposed on it another wave differing slightly in frequency. With modulated buzzer as used in small power transmitters the wave is modulated at the frequency of the buzzer. In short, all transmitting systems employ a wave which is known as the carrier wave, whose frequency depends on the tuning of the transmitting circuit, and the receiving circuit is tuned to the same frequency in order to receive the signal

at maximum strength. The amplitude of this wave is varied or modulated at audible frequency either by the transmitting or receiving station, and the frequency of the modulation determines the note heard in the telephones.

Exactly the same principle is employed with radio telephony. A continuous, high frequency carrier wave is emitted which, if merely rectified, is turned into a steady direct current, and if heterodyned gives a steady high pitched note in the phones. By means of a microphone the voice of the speaker is made to vary the amplitude of this wave at the

produce a sound in the telephones similar to the original speech. The problems involved in radio telephony are very numerous. Some of the causes of speech distortion, however, may be summed up as follows:—

Certain sounds produce much higher frequency overtones than others, and consequently demand very rapid changes in the modulation. For example, the letter "S" always presents difficulties in ordinary telephone work. If there is an excess of inductance in connection with the modulating device it may not respond correctly to high frequency overtones, and an objectionable smoothing out of these overtones may occur so that the speech may become "drummy." Conversely, an excess of capacity in any speech circuit will exaggerate the overtones and the speech will become squeaky.

Iron cores as used in modulation transformers will also cause a further distortion (unless fitted with a large magnetic leakage), because of the hysteresis effect in the iron. Iron cores, which are probably quite satisfactory for handling low frequency fundamental tones, cannot reverse their magnetism sufficiently rapidly to deal with these high frequency overtones. Ford spark coils as used by a large number of experimenters suffer from the first defect mentioned, viz., secondary has too large an inductance. It has, however, one big advantage that makes it fairly efficient. It has a large magnetic leakage, being of the open core type. The large condenser must, however, be removed if this type of transformer is used for modulation.

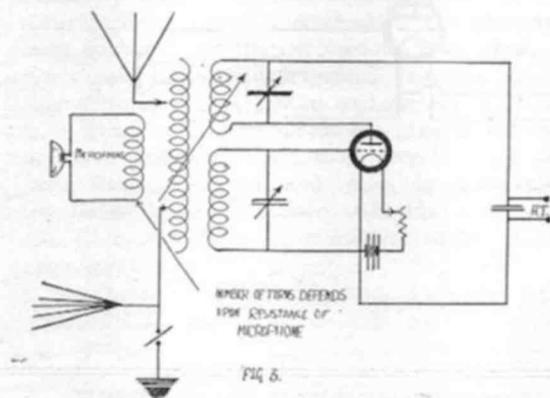
The Microphone.

The modulation control is effected by means of a microphone. Various designs are in use, but they are mostly based on the simple carbon granule type as used in land line telephony.

Circuits Used in Radio Telephony.

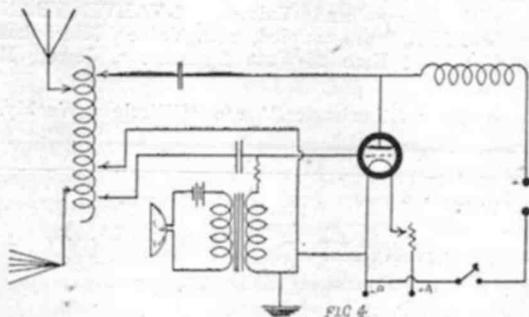
The various methods used of modulating the carrier wave may be described as follows: (1) Modulating the resistance of the aerial, known as loop modulation; (2) modulating the grid voltage of the oscillating valve, known as grid modulation; (3) modulating the anode voltage of the oscillating valve, known as tube modulation. The three systems together with the circuit diagrams are shown in Figs. 3, 4, and 5.

(Figure 5 is shown on next page.)



various audible frequencies which go to make up speech, and in consequence the telephone diaphragms in the receiver are moved correspondingly and reproduce the speech.

Fig. 1 represents the sound vibrations caused by some word being spoken. Fig. 2 shows the carrier wave rising and falling in amplitude in time with the speech modulation. If the wave is now received by a suitable receiver, the oscillatory current will be rectified into direct current, and the original curve of Fig. 1 will be reproduced and will therefore re-



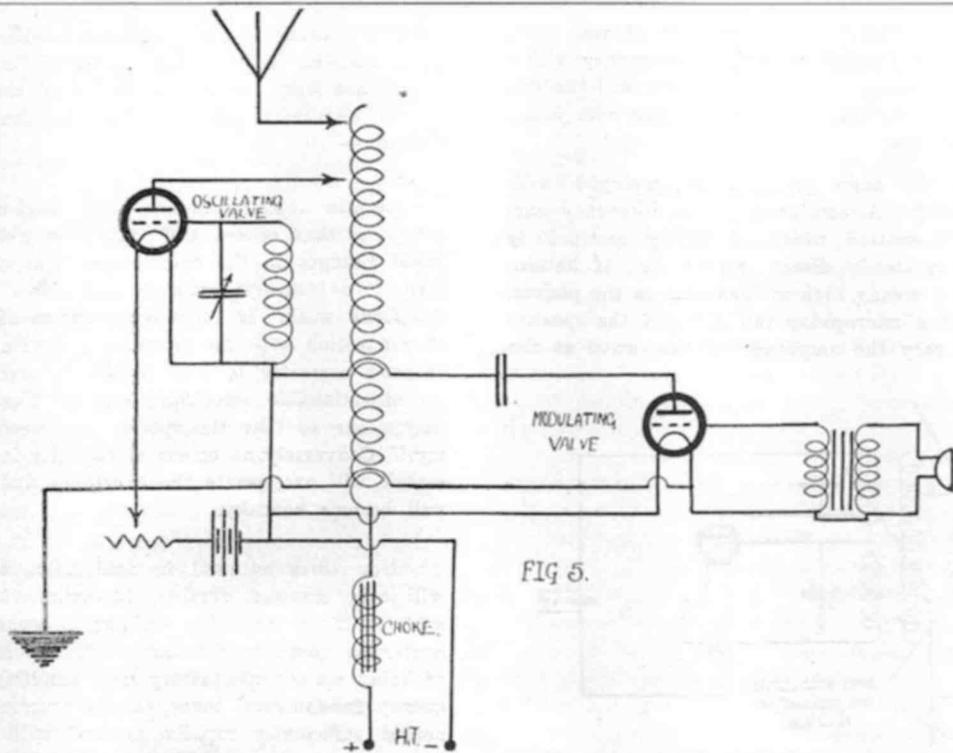


FIG 5.

NEW HIGH TENSION BATTERIES FOR OLD.

SOME time ago I was to give a demonstration to some friends of the wonderful broadcast qualities of the S.T.100 circuit. On the fatal night the high tension battery thought it would follow the latest craze, and consequently struck work. I was in a fix till, seeing a bottle of sal ammoniac on the table, I had a brainwave. The zinc cells were in good condition, and as there was plenty of zinc left I thought all the sal ammoniac in the cells must be used up. Why not put some more in them?

It was 7.30, and the friends were coming at 8. So I rushed to the kitchen and collared an enamelled flat dish, put some water in it, and made a fairly strong solution of sal ammoniac. Next, with the point of a compass, little holes were put in the zinc cells, two or three to each cell. Into the dish went the whole lot. There they soaked for 15 minutes. Only 10 minutes left. I wiped off all excess solution, and with a hot knife ran some wax into the pinholes. With three minutes to spare, back into a large cigar box it went, and on fearfully connecting up it certainly gave the kick of a mule.

The only thing that worried me that night was the mess and how long the battery would last. However, it was so pleased with its extra wages, it worked overtime for a month, making a total of 11 working months. I keep it as a souvenir. M.C.

MARCONI ON THE BEAM SYSTEM

Late last year Senatore Marconi gave an interesting talk at the Royal Society of Arts on wireless progress. Much of his talk, of course, was devoted to the short wave work in which so much has been done recently. A startling point brought out was that somewhere between 80 and 30 metres there is a radial change in transmission, for at the lower wavelength the usual increase of strength during the hours of darkness is no longer found, and in fact trans-Atlantic working is easier by day than by night.

WANTED TO SELL.—3-VALVE 3 COIL RECEIVER with Phones and Valves. 2-VALVE TRANSMITTER, loose coupled, with Valves, Microphone, Key, and Esco 25-Watt Dynamotor, Jewell Meters.

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SYDNEY

REGENERATION

PART I.

By E. JOSEPH.

WHAT is regeneration?

How is it used?

Why does a valve oscillate?

Of the three questions asked above, there is one the answer to which is "It does not." A valve never oscillates, although a certain looseness of speech has made it customary to describe a circuit in which oscillations are maintained BY a valve, as one containing an oscillating valve.

Let us ask a further question, "What do we mean when we say a circuit oscillates?"

We mean that an electrical disturbance has been created in it, which in its efforts to reach a state of stability causes a flow of electricity—or a rush of electrons—backwards and forwards in it.

As electrical oscillations are not directly detectable by any of our senses, we will consider mechanical oscillations, which are familiar to every one of us, and will reason from them to the electrical ones.

Mechanical oscillations are oscillations of a body as a whole. Electrical oscillations are those of the ultimate particles of which all matter is composed.

Before a system can possess the power to oscillate three conditions must be fulfilled. It must have mass—loosely referred to as weight. It must have elasticity, and the resistance to motion of the mass must not exceed a well-defined value.

Weight is the gravitational attraction of the earth acting upon a mass. A body weighing 1 lb. would, if removed to the moon, weigh only about 2½ ounces, yet its mass would remain the same. Removed to an infinite distance from every other body it would have no weight, yet its mass would be unaltered. To set any mass into motion requires the application of a force and the expenditure of energy. The energy is given to the body during the application of the force, is stored in the mass by virtue of the velocity of its motion, is utilised by the body in overcoming the friction or resistance to motion, and finally when all its stored energy has been so expended the body comes to rest.

Energy cannot be created or destroyed. It can only be changed from one form into another. All forms of energy finally reach the state of heat. The oft heard statement "Friction causes heat" thus explains itself. Electricity is a form of energy, being, as was stated above, "the motion of the ulti-

mate particles of which all matter is composed," and it is always lost as—or degraded into, as the engineer says—heat.

A heavy body, one possessing great mass, requires the expenditure of more energy to set it into motion with a given velocity than does a light one, but once set in motion it will travel further because of its greater initial store of energy upon which it may draw to overcome friction.

If we could possibly obtain a frictionless surface, and could remove the air, in passing through which there is friction, a body once set in motion would continue to move with undiminished velocity for ever, because there would be no loss of energy due to friction. These conditions are, of course, impossible to attain, but the conclusion is reached by reasoning from the known facts in the same way that a transmitter, although he cannot directly measure the length of the waves his aerial radiates, is able to determine their length indirectly.

The brakes stop a train because they rapidly degrade the energy of motion into heat.

Having assimilated the above, let us turn our attention to a mass suspended from a spring. Here are two of the necessities for oscillatory motion. Let the mass rest against a board set vertically—or almost so—in such a way that there is appreciable friction between them. If we pull the weight downwards we exert a force and, as before, we impart energy to the weight. As the downward movement is continued, the spring becomes extended and exerts an opposing or upward pull, which gradually increases with the extension. When this upward pull equals the applied downward pull, the motion of the mass stops. There being no motion, the mass has no energy stored in it. It is all held by the spring. If we release the mass the spring lifts it. As the velocity increases the spring gives up its energy to the mass, until, when the latter is at its initial position, the spring has none, the mass having taken it all. The friction against the board, against the air, and a small amount lost by molecular friction in the material of the spring have absorbed some energy. If there is any left over the mass rises past its initial position, compressing the spring as it does so. That is, it gives up the remaining energy to the spring, until when the spring has got it all the motion ceases. The spring again pulls the weight (downwards this time) until when the mass reaches

its initial position the energy has again passed to the mass.

So it goes on. At each excursion of the mass all energy not lost in overcoming friction passes from mass to spring or from spring to mass, the excursions getting less and less as the energy is absorbed by friction, until when it has all been "used up" all motion ceases and the weight comes to rest at its starting position.

It is evident that, if we reduce the friction by removing the board, the excursions will last longer. I do not mean to imply that they will become slower, but that there will be more of them before the system comes to rest, because the energy is not dissipated so rapidly. They will not decrease in amplitude so rapidly, their decrement will be lowered.

The actual time required per excursion is practically independent of the friction. It is determined by the dimensions of the mass and of the spring.

If we could eliminate all the losses in the system we should reach a state when the mass, once set oscillating, would continue to do so with undiminished amplitude for ever.

The most familiar oscillating systems are contained in watches and clocks. In the former we have a comparatively heavy rotatory body, the balance wheel, and a spiral spring. In the latter we have a swinging mass, and we utilise gravity to provide the elasticity of restoring force. The remaining mechanism consists of means for imparting to the oscillating system little "puffs" of energy to replace that lost by friction and of a counting device to record the number of oscillations made.

The little "puffs" of energy are obtained from a supply stored up when we "wind" the timepiece. Each oscillation is made in a definite time, so that by counting their number we are able to ascertain the time elapsed.

It will be clear that, if I can supply during each excursion just so much energy as is lost by friction during an excursion, the oscillations will continue with undiminished amplitude for just as long as the supply is maintained. This is well illustrated by a child's swing. We impart some energy to it by means of a push each excursion, and the amplitude of its oscillation lengthens until the loss of energy per excursion exactly equals that supplied.

The whole matter is briefly explained thus. A mass requires energy to set it into motion, and its motion cannot cease until it has given up all its energy to another body. A hammer drives a nail into a piece of wood because the energy stored in the falling hammer head is given up to the nail, which utilises it to force apart the fibres of the wood.

It is a curious fact that a body oscillating under

perfectly uniform frictional losses will never stop; the swings will get less and less, but will never reach zero.

(Part 2 will follow next week.)

Radio in Czecho Slovakia

According to information received by the American Radio Relay League from a correspondent in Czecho-Slovakia, a radio fan in that country was recently sent to prison for six weeks because he built a radio receiving set and occasionally sold parts without a license. The accused filed an appeal, but the court would not change its judgment on the sentence.

In order to obtain a license for operating a receiving set under the Government regulation of April 17 of last year, one must furnish a diagram of the set with a list of units employed, pay the tax, and advise whether the receiver was home-built or obtained from a manufacturer of radio equipment. The law of December 20, 1923, requires the applicant to be a subject of the Czechoslovak Republic and a permanent resident of the country.

Despite these requirements, there are at present in Czecho Slovakia approximately 1000 receiving sets. The correspondent further states that enthusiasm among listeners is not high, as Government recognition and privileges were long in coming and the present programmes are rather disappointing. Most of the receivers come from France, England, and Germany.

While the prices for radio parts and complete sets, he states, are about the same as those in the United States, they are far beyond the reach of many people, indicating that it may be a long time before radio becomes as popular generally among all classes of people as it is in America. There is a great demand, however, for radio text books and magazines.

The attention of Experimenters is particularly drawn to the announcement in the Wireless Institute columns concerning the All Club's Night.

SPECIAL NOTICE.

3OT (R. Cameron, Malvern, Vic.) sends his apologies to those receiving and transmitting stations who have sent him cards and letters and have received no reply. He has been so besieged by reports that he lost all record of QSL's answered. If those who have not been answered would drop a further line they will receive prompt attention.

Transmitting Licenses.

Last week we published a list of N.S.W. licenses. Cut that list and the following one out, and fasten it on the wall over your set:—

VICTORIA.

- 3 AB.—W. S. Weatherston, 23 Melby Ave., East St. Kilda.
- 3 AD.—J. A. Davey, 209 St. Kilda St., Brighton.
- 3 AJ.—C. Salamy, Timor St., Warrnambool.
- 3 AM.—G. S. Dohrmann, 2 Hopetoun Ave., Canterbury.
- 3 AP.—R. D. Morris, 61 Bealiba Rd., Caulfield.
- 3 AU.—S. H. Hilligan, 117 Autumn St., Geelong.
- 3 BD.—E. H. Cox, 28 Clarence St., Elsternwick.
- 3 BH.—C. R. Whitelaw, Stawell.
- 3 BL.—J. C. Fichett, Salisbury St., Balwyn.
- 3 BM.—H. K. Love, Ferneroft Ave., E. Malvern.
- 3 BP.—J. H. Hood, 6 Alexander St., St. Kilda.
- 3 BQ.—W. F. M. Howden, Hill St., Box Hill.
- 3 BS.—H. B. Sunter, 8 Lambert Rd., Toorak.
- 3 BU.—D. A. Connelly, Balaclava Rd., E. St. Kilda.
- 3 BY.—H. Holst, 27 Bambra Rd., Caulfield.
- 3 CB.—W. F. Sievers, 30 Lesney St., E. Richmond.
- 3 CC.—University, Melbourne.
- 3 CG.—R. C. Gurner, 55 Spence St., St. Kilda.
- 3 CJ.—C. W. Jamieson, 21 Carlisle Ave., E. St. Kilda.
- 3 CP.—C. H. Philpot, 206 Lava St., Warrnambool.
- 3 DD.—L. F. G. Osborne, Darling Rd., E. Malvern.
- 3 DF.—F. D. Short, 2 Mozart St., St. Kilda.
- 3 DL.—L. C. Falls, North Rd., Caulfield.
- 3 DP.—N. Culliver, 57 Simpson St., E. Melbourne.
- 3 DV.—H. S. Beattie, 1 Bishop St., Box Hill.
- 3 EF.—H. W. Maddick, Spray St., Elwood.
- 3 EM.—H. W. Doudney, 7 Dickens St., Balaclava.
- 3 EP.—J. Givens, 19 Logan St., Canterbury.
- 3 FH.—R. F. Hall, Glindabourn Ave., Toorak.
- 3 FM.—R. C. De Crespigny, 20 Black St., Mid. Brighton.
- 3 GB.—M. A. Glover, 24 Victoria Rd., Camberwell.
- 3 GG.—G. A. Gamon, 19 Lewisham Rd., Windsor.
- 3 GI.—F. G. Cresswell, c/o W. Terry, Loch St., Camberwell.
- 3 HB.—Sunshine Radio Club (H. S. Bird), Hampshire Rd., Sunshine.
- 3 HH.—F. H. Maughan, 15 Staniland Ave., Malvern.
- 3 JD.—J. E. Dane, "Wahroonga," Toorak Rd., Hawthorn.
- 3 JH.—F. H. J. Holland, "Cotswold," St. Kinnord St., Essendon.
- 3 JK.—J. K. Herd, Main St., Bacchus Marsh.
- 3 JM.—R. W. Bryson, 149 Eglinton St., Kew.
- 3 JP.—H. E. A. Michell, "Glenard," Kean St., Caulfield.
- 3 JU.—R. A. Hull, 38 Charnwood Rd., St. Kilda.
- 3 KJ.—W. E. C. Sawyer, 127 Mitchell St., Northcote.
- 3 KT.—L. M. Seccombe, 38 Motherwell St., Hawksburn.
- 3 LM.—Malvern District (W.I.A.), 16 Sutherland Rd., Armadale.
- 3 LP.—L. A. Paul, 137 St. George's Rd., Nth. Fitzroy.
- 3 LQ.—W. E. Downing, Henna St., Warrnambool.
- 3 LS.—R. T. Busch, 20 Wordsworth St., Moonee Ponds.
- 3 MA.—Amalgamated Wireless Co., 422 Little Collins St., Melbourne.
- 3 MB.—Amalgamated Wireless Co., Kooweerup.
- 3 MC.—S. N. Newman, 151 Mont Albert Rd., Canterbury.
- 3 MD.—Amalgamated Wireless Co., vicinity of Melbourne.
- 3 ME.—Amalgamated Wireless Co., vicinity of Melbourne.
- 3 MF.—Amalgamated Wireless Co., vicinity of Melbourne.
- 3 MI.—J. R. Alsop, "Nirvana," 28 Molesworth St., Kew.
- 3 MP.—S. V. Hosken, Queen St., Surrey Hills.
- 3 MS.—L. J. Moore, "Avalon," Railway Grovè, Seymour.
- 3 NN.—H. R. Brown, Yanac.
- 3 OT.—R. M. Cameron, "Manuka," Ceonil Cres., Malvern.
- 3 PR.—H. H. Blackman, 44 Osborn Ave., E. Malvern.
- 3 PS.—V. L. Smyth, McIvor St., Bendigo.
- 3 QW.—J. A. Muir, 10 Young St., Brighton.
- 3 RF.—C. H. Cordingley, 77 Bank St., E. Ascot Vale.
- 3 RS.—R. C. Shortell, 421 Inkerman St., St. Kilda.
- 3 RY.—W. A. G. Wilson, 16 Armstrong St., Ballarat.
- 3 SA.—L. R. Simpson, "Montana," Queen St., Ararat.
- 3 SL.—L. W. Southwell, c/o Mrs. Neal, High St., Seymour.
- 3 SM.—A. H. Gay, Warragul, Victoria St.
- 3 SW.—S. W. Gadsden, 5 Miller Grove, Kew.
- 3 TK.—T. W. Kilsella, Mayo Park, Lubeck.
- 3 TN.—A. H. Buck, 759 Glenhuntley Rd., Glenhuntley.
- 3 TU.—R. G. Leekie, "Clifstone," Bamfield St., Sandringham.
- 3 UI.—R. M. Dalton, 27 Orange Grove, Balaclava.
- 3 VR.—R. N. Abbott, St. Elmo Ave., Alphington.
- 3 VS.—O. J. Philpot, 26 Lumeah Rd., Caulfield.
- 3 WS.—W. M. Sweeney, 10 Foam St., Elwood.
- 3 WT.—W. L. Tressidder, 13 Nettle St., Bendigo.

- 3 XG.—Xavier College (Rev. P. J. Baker), Kew.
 3 XF.—M. Chaffer, 41 Norwood Cres., Moonee Ponds.
 3 XN.—W. G. Leaney, 12 Henry St., Northcote.
 3 XO.—F. J. Adams, 269 St. Kilda St., Brighton.
 3 XU.—Canterbury Radio Club, Whitehorse Rd., Box Hill.
 3 XW.—C. A. Cullinan, "Bayview," Diggers' Rest.
 3 YD.—C. W. Donne, "Ovalan," 3 Hughendon Rd., East St. Kilda.
 3 YN.—D. J. Harkin, 41 Carlisle St., Preston.
 3 YX.—B. Hardie, Missouri Ave., Garden Vale.
 3 YY.—A. M. Bush, 54 Brougham St., Bendigo.
 3 YZ.—A. McKeown, 54 Yarra St., Alphington.
 3 ZE.—K. W. McGregor, Lambert Rd., Toorak.
 3 ZJ.—C. L. Lempriere, Tarrara Rd., Vermont.
 3 ZK.—F. B. Bradley, Beach Cres., Sandringham.
 3 ZN.—M. S. Israel, 13 Dandenong Rd., Malvern.
 3 ZR.—L. Smith, 1 Byron St., Footscray.

QUEENSLAND.

- 4 AB.—W. F. Barden, McIlwraith St., South Townsville.
 4 AC.—L. Waters, Rankin St., Innisfail.
 4 AE.—Wireless Inst. of Aust. (Q. Sec.), (A. A. Stephens), Courier Bdg., Queen Street, Brisbane.
 44 AN.—E. M. Gibson, Kirkland Ave., Greenslopes.
 4 AZ.—F. V. Sharpe, "Ashton Hall," Old Sandgate Rd., Woolloowir.
 4 BI.—Junction Park Radio Club (F. Rosenokjar), "Carlisle," Long St., Fairfield.
 4 BN.—E. R. Cooling, Donation Lane, Toowoomba.
 4 CF.—C. Forteseue, Arthur St., Toowoomba.
 4 CM.—V. McDowell, Preston House, Queen St., Brisbane.
 4 CS.—J. A. Geraghty, Christian Bros.' College, Townsville.
 4 CU.—C. Walker, Devenport St., Clifton.
 4 CV.—N. E. Husband, Alan St., Charters Towers.
 4 CW.—A. T. Buck, Geebung, North Coast Line.
 4 DO.—A. L. Hobler, Lennox St., Rockhampton.
 4 EG.—E. E. Gold, Lindsay St., Toowoomba.
 4 EZ.—Qld. Inst. of Radio Engineers, Observatory Tower, Wickham St., Brisbane.
 4 FE.—Y.M.C.A. (A. L. Hinds), Edward St., Brisbane.
 4 FI.—J. C. Price, Bardon Estate, Paddington Heights, Brisbane.
 4 FK.—E. T. Mathews, 57 Annie St., New Farm.
 4 GC.—Radio Soc. of Q. (Maryborough Branch), (G. Creed-Jacobs), Nightingale St., Marybo'gh).
 4 GD.—G. F. Chilton, Radio Station, Townsville.
 4 HB.—H. E. Baker, Gowrie Station, Charlesville.
 4 LA.—L. M. Atkins, Cleveland Terr., Townsville.
 4 LG.—W. L. Gibson, Kirkland Ave., Greenslopes.

- 4 RQ.—Radio Soc. of Qld. (F. V. Sharpe), Trades Hall, Brisbane.

SOUTH AUSTRALIA.

- 5 AC.—V. R. P. Cook, 37 John's Rd., Prospect.
 5 AE.—J. M. Honnor, Alpha Rd., Prospect.
 5 AG.—W. J. Bland, Buller Terr., Alberton.
 5 AH.—F. L. Williamson, 25 Dequetteville Terr., Kent Town.
 5 AI.—H. H. Lloyd, 15 Trinity St., College Town.
 5 AV.—W.I.A. (S.A. Division), (C. E. Ames), 20 Grange Rd., Hindmarsh.
 5 BD.—F. E. Earle, 6 Bakewell Rd., St. Peters.
 5 BF.—F. G. Miller, Murray Bridge.
 5 BG.—H. A. Kauper, 20 Guiney Rd., Dulwich.
 5 BI.—S.A. School of Mines and Industries, North Terr., Adelaide.
 5 BN.—H. L. Austin, 8 Parade, Norwood.
 5 BP.—R. B. Caldwell, 53 Hughes St., Unley.
 5 BS.—Bedford Park Sanatorium (W. J. Davey), Sturt.
 5 CK.—S. C. Cusack, 54 Victoria Ave., Dulwich.
 5 CM.—E. N. Sagar, Railway Terr., Largs Bay.
 5 DA.—S. R. Buckerfield, 4 Regent St., Parkside.
 5 FT.—J. S. Fitzmaurice, St. Andrew's St., North Walkerville.
 5 HR.—H. Rhodes, 12 Goyden St., Kadina.
 5 JC.—J. H. Chesterfield, 45 Goodwood Rd., Wayville.
 5 KW.—K. Wadham, 2 Elizabeth St., Parkside.
 5 RB.—R. Bedford, Cottage Hospital, Kyancutta.
 5 RM.—R. M. Barker, 49 Newbon St., Prospect.
 5 SF.—S. F. Ackland, 74 John's Rd., Prospect.

WESTERN AUSTRALIA.

- 6 AB.—C. Cecil, 75 Duggan St., Kalgoorlie.
 6 AC.—J. Spark, Greenham St., Perth.
 6 AG.—W. E. Coxen, 306 Bulwer St., N. Perth.
 6 AI.—S. A. Shaw, 14 Station St., Guildford.
 6 AK.—University of W.A., Perth.
 6 AM.—P. Kennedy, 210 Walcott St., Mt. Lawley.
 6 BB.—J. C. W. Park, 29 Suburban Rd., Sth. Perth.
 6 BG.—Technical School (W. C. Hayman), 5 Melville St., Claremont, W.A.
 6 BH.—F. H. Burrows, 249 Heghesbury St., Subiaco.
 6 BN.—A. E. Stevens, 1 Ruth St., Perth.
 6 BO.—A. E. Grey, 97 Hamersley Rd., Subiaco.
 6 BR.—W.I.A. (W.A. Division), Central Fire Station, Perth.
 6 BW.—C. D. McLauchlan, 14 Clydesdale St., Victoria Park.
 6 CJ.—E. J. Darley, Darley St., South Perth.
 6 DA.—F. W. Saw, cr. Bexfordale and Bunbury Rds., Armadale.
 6 DZ.—E. W. Burrows, Station House, Eleanor St., Geraldton.
 6 RW.—R. W. Coxon, Chidlow St., Northam.

TASMANIA.

- 7 AB.—A. C. Smith, "Beulah," 21 High St., Launceston.
 7 AG.—J. C. Milne, "Askrigg," Gretna.
 7 AH.—F. W. Medhurst, Beach Rd., Lower Sandy Bay.
 7 AQ.—W. B. MacCabe, "Kismet," Clarence Point, West Tamar.
 7 AR.—C. F. Johnson, 33 Hill St., West Hobart.
 7 BH.—E. C. Sheldrick, Richards Ave., Launceston.
 7 BK.—T. A. C. Preston, Railway Rd., Queenstown.
 7 CS.—A. C. Scott, 14 Law St., Launceston.
 7 GD.—G. A. Douglas, Lochleven, Gormanston.
 7 JB.—J. V. Brookes, 20 Adelaide St., Hobart.
 7 OM.—R. D. O'May, "Elonera," Esplande, Bellevue.

DEALERS' LICENSES

NEW SOUTH WALES.

- 2 ZH.—New Systems Telephones Pty., Ltd., 280 Castlereagh St., Sydney.

VICTORIA.

- 3 JG.—Jones and Glew, 738 Sydney Rd., Brunswickwick.
 3 UD.—United Distributors Ltd., 592 Bourke St., Melbourne.

SOUTH AUSTRALIA.

- 5 BK.—Elec. Supplies Depot, 9 Rundle St., Adelaide.
 5 CB.—Newton, McLaren Ltd., Leigh St., Adelaide.
 5 GB.—G. Bailey, Mt. Gambier.

TASMANIA.

- 7 BN.—Wills and Co. Pty., Ltd., 7 Quadrant, Launceston.

"B" CLASS LICENSES

- 2 BE.—Burgin Electric Co., Kent St., Sydney, N.S.W.
 2 HD.—H. A. Douglas, Newcastle, N.S.W.
 2 UE.—Electrical Utilities, Storey St., South Roadwick, N.S.W.
 2 UW.—Otto Sandel, Victoria Rd., Bellevue Hill, N.S.W.
 3 WR.—Wangaratta Sports Depot (L. J. Hellier), Wangaratta, Victoria.
 5DN.—E. J. Hume, Park Terr., Parkside, Tasmania.

THE S.A. WIRELESS INSTITUTE'S BOAT TRIP.

VERY enjoyable evening's outing was spent on the Port River (Adelaide) on Thursday, 26th February, when members and their friends proceeded down the river on the Harbour Board's launch, Bobbie Burns. It was an ideal night for the trip, the water being as smooth as a millpond, and

almost complete absence of static allowed the reception to be fully appreciated.

The Bobbie Burns was secured for the trip by the courtesy of the Harbour Board, and the Institute is indebted to Mr. J. Christie, Government Dockyard Superintendent, for the erection of a temporary aerial. A short mast erected at the stern carried an aerial about 70 feet long. This was used by Mr. Hal. Austin, who with a four-valve set, using the Kauper circuit, was able to bring in the music at good strength. Mr. Harry Kauper had a four-valve set, which he used in conjunction with a frame aerial, while Mr. Fred. Williamson had a mysterious-looking set down in the bow of the boat. This was labelled "the stupor chlorodyne set," and was also used in conjunction with a frame aerial.

Music from 5DN and 5CL was picked up at good strength throughout the evening by all three operators. Reception from interstate stations was not attempted, as the trip was arranged solely as a social event, and nothing in the nature of an experiment was tried.

Among those who made the trip were Mr. R. B. Caldwell (president of the Institute), Mrs. and Miss Caldwell, Mr. Tom S. Bagshaw (vice-president) and Mrs. Bagshaw, Captain Weir (harbour master) and Mrs. Weir, Mr. J. Christie (dockyard superintendent), Mr. and Mrs. C. R. Churchward, Mr. and Mrs. R. M. Barker, Mr. Clem. Ames (hon. secretary), Mr. Frank Earle (assistant hon. secretary), Mr. H. W. Harrington (radio inspector) and Mrs. Harrington, Mr. J. T. Fitzmaurice (State engineer for the P.M.G.'s Department) and Mrs. Fitzmaurice.

The outing was very much enjoyed by all who made the trip, and all were sorry when the boat reached the Port again.

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BRINY REMINISCENCES

By "BRASSO."

However, back to our Cook's personally-conducted-saloon-all-the-way-and-no tips. The most happy recollections I have of the sea are concerned with the lovely tropical nights in various oceans, the gorgeous sunsets, the soft evening breeze, the blaze of stars and the big round moon riding along overhead, her track across the waters marked with beautiful silver light. Out there, leaning on the rail under the wing of the bridge I revelled in the wonderful transition from daylight to dark—away over to the west, the sun dropped swiftly through a sea of gold until its glittering edge seemed to rest like a great balloon upon the water. Quite suddenly it dropped over the rim of the Pacific—there was a brief period of clear light and then just as though someone had reached up and snapped the switch, the light vanished—and it was night. Perhaps half an hour later, the stars appeared and on the calm sea, each one threw its own silver path. I don't know why this particular period should induce sentimental feelings, but it certainly had its effect upon Mac, who, strolling up and down the bridge, warbled Annie Laurie, his voice rising to a horrible and heart-breaking crescendo on the top notes. Up on the foc'stle head the firemen also rendered vocal items designed to soothe the last moments of the dying day and in a mournful voice, some grimy coal heaver sobbed some pathetic ballad such as "Nobody Knows, Nobody Cares," the rest of the boys, in various honeyed accents, taking up the chorus until it seemed the whole world was attending a funeral.

"In the 'eart of a City wot 'as no 'eart," I found was the firemen's favorite on every ship, but instead of rousing my pity for the young lady who toed the bread line, it used to excite me to bursts of insane mirth, which was probably due to a distorted sense of humor.

Other favorites were: "Somewhere a Voice is Calling," "Good-bu-hi Forever," and "Parted." Nothing amused me more than the sight of a burly fireman, his eyes closed as though in a trance, intoning those immortal words, "Deerest, the diy is hended." Poor old Tosti, like Shakespeare, you have been murdered with your own art.

The two hours between six and eight o'clock in the evening constitute the most pleasant period of the day on a cargo vessel such as the "Barunga," because it is during that time that deck

and engineer officers fraternise. There is, on many ships a kind of veiled hostility between these two departments, with the wireless officer acting as a buffer and official receiver of complaints from each side about the other. Needless to say, if one is tactful one never repeats these things because it is a peculiar thing that no matter how broadminded a man is ashore, at sea he is usually the reverse, jealous of his status and quick to resent a fancied slight. This old-time friction between the deck and engine room is based upon many things which perhaps to the layman may appear somewhat childish, and you really must have a little practical experience of the sea, to fully appreciate their true significance. The deck officer has behind him hundreds of years of tradition and there is, of course, the fact that his is one of the most ancient and honorable professions in the world. Since the coming of steam came also the engineer, more or less of an interloper and quite naturally, after many years of ruling the roost at sea, it is somewhat difficult for the deck officer to adjust his ideas to the point where he can meet the engineer upon terms of equality, which is entirely the correct basis. Once let the engineer get the belief that he is being regarded in any other way and he will immediately trot out his arguments why he and not the deck officer should be regarded as the senior man. He points out that more practical and theoretical knowledge is required of an engineer officer than his brother of the deck—whereas the youthful navigation officer may quite truthfully retaliate by observing sarcastically, "While I'm on the bridge I am the boss of the walk." I once saw a champion brawl and the beginning of a life long enmity between a chief officer and a chief engineer through a casual jesting remark. It was during an engine breakdown in the Persian Gulf, and anyone who has been up there in the hot season knows that there is only one place hotter. The chief engineer in a torrent of perspiration emerged from down below and the mate suggested idly that it wouldn't be a bad plan to chuck the engines over the side and sail the ship! Skin and hair flew for quite awhile afterwards, and nothing ever reconciled those two to each other afterwards. When wireless was first

fitted to ships a lot of operators were blackballed by the deck officers, but in many cases I have no doubt it was their own fault. I always found that the golden rule, "Do unto others, etc.," was safe play, and almost invariably brought a ready response. On my first ship, upon which the mate did the purser's work, I voluntarily took over from him all the manifests and papers which he had to look after in his spare time. This little job occupied the silent hours of my watch, but it also brought me the mate's friendship, and at the end of the voyage, a ten pound bonus from the steamship company. No matter what ship it is, once the impression gets around that you don't think yourself too high and mighty to do a good turn to others, friendly feelings result.

However, on the "Barunga," mainly due to the old man's influence, there was no friction. The general meeting took place after dinner in the fourth engineer's cabin, where one could always get a game of bridge or dig up an argument about something or other, and many a world war we fought out there, the Mercantile Marine always proving the salvation of the nation. At quarter to eight, the big bell clanged once and all hands prepared to go on watch or to turn in.

About three days before arrival at Balboa, an island rose up over the horizon to the north. "Say," called the mate from outside my window, "ever read any of R. L. Stevenson's books?" "Yes," I answered. "Well, that's Treasure Island."

On the chart it was shown as one of the Galapagos Group, lying about 800 miles S.S.E. of Panama. Pencilled faintly against the skyline, it rose sharply up from the Pacific, and as we came up resolved itself into a fairly tall island, sloping sharply up from the sea and covered with vegetation to its summit. On the southern side was a small inlet, with the surf breaking lazily on a snow-white beach. There was no sign of life, and in the blaze of the tropic noon it was not at all difficult to imagine the shades of Captain Kidd and his piratical crew peering stealthily at us from behind the brow of the hill. One almost expected to see a frigate flying the Jolly Roger lying at anchor around the headland, but

all that was there to break the peace and quiet of the scene was the white foam creaming over the rocks with a muffled boom. A cluster of palms nestled close to the beach, and I searched them with a telescope hoping to catch a glimpse of a pirate's coat, but not even the sight of a half-buried treasure chest or a corpse swaying from a tree rewarded me. Something rubbed against my arm, and a low purring sound close to my ear warned me that the ship's cat was about to make love to me. As this process always left a few hundred hairs on my person, I made a pass at Felix with the telescope and left him to chase a wad of paper up and down the deck. Felix was so darned spoilt and overfed that he found little time to carry on the rat war. He had a penchant for pussy-footing it up and down the rail, but, despite the rolling of the ship, somehow managed to stick on board.

Three or four days after passing Galapagos we entered the Gulf of Pana.

about the most unhealthy-looking stretch I have seen. A steamy heat kept one in a continual bath of perspiration, and there was that peculiar dead feeling in the air which made breathing quite sluggish. Dead calm, the water had a curious leaden appearance, and the whole place seemed to be absolutely alive with sharks lazily floating just beneath the surface. I mistook their dorsals at first for driftwood, but closer inspection through the glasses revealed them as sharks of all shapes and sizes. We had quite a lot of fun pot-shooting at them with rifles, but it didn't seem to worry them much. The coastline was almost hidden in an asthmatic-looking mist, through which one caught occasional glimpses of mangrove swamps.

The Red Sea, the Gulf of Panama, and the Gulf of Mexico are the ancient homes of static. It simply descends in one continual roar, and one could almost imagine it bouncing off the roof like hail. Forty miles away from Balboa Radio Station, we could just about distinguish his signals and I think his power was something like 2 k.w. He worked all day long with two or three stations we couldn't hear and must surely have been using some elaborate filter devices to cut down static, unless the other stations were only a few



Keeping Cool in the Tropics.

hundred yards away.

About noon, the town of Balboa became visible through the heat haze, and a little while after our pick was dropped, a smart launch zoomed out and a U.S. naval officer stepped aboard, greeting us with "Hello, folks!" About everything and everybody around the Canal zone is liberally plastered with those two letters, U.S., just as though the whole outfit was one big publicity stunt. The stars and stripes took up about fifty per cent. of the scenery. It flew from any old thing that would support it, from the homely dredge churning up the silt from the canal bottom to the most elaborate residence standing up on its piles back off the banks. All the buildings are on piles, and are so constructed that advantage is taken of every possible means of ventilation. Each one



Pedro Miguel Locks.

was docketed U.S., and sported its flag. Every living thing moving on two legs chewed a wad of gum, but it was not until later on I spent some weeks in New York that I realised that as water is to the duck, so is gum to the American. On one occasion we were lying off Coney Island and were curious to learn the origin of a peculiar persistent rustling noise which appeared to come from the other side of the island. When asked about it, the pilot removed his wad and quoth, "That's the folks up town masticating gum." There are, of course, different ways of chewing it. The Bowery boy makes no attempt to hide it; he simply rolls it over and over like a cow chewing a cud. His more cultured brother chews it evenly and easily without ostentation, while his lady love kind of munches at it pensively. In New York there are natty little street stalls which sell nothing else but gum to the passers by. Gum and rubber tired gig lamps are the principal facial characteristics of most New Yorkers.

But back to Panama. De Lesseps, they say, tackled the proposition of building the Canal some time after he had completed the Suez, but malarial bugs and yellow Jack put the majority of his workmen under the ground and his failure broke De Lessep's heart. The Americans went out after the mosquito and fought him right on his front door step, eventually giving him the k.o. by sprinkling liberal doses of kerosene over his breeding places. The centre of the Panama Isthmus is one big valley, the mean level of which is, however, above sea level. This valley was pumped full of water. Ships passing in at one end are therefore first raised to the level of the inland lake and at the other end are lowered again to sea level. Entering the canal, she passes into lock No. 1. The gate is closed and water pumped in to



The Electric Mule.

raise her a certain distance. She then moves into lock No. 2 and is raised to the lake level; thence into lock No. 3, and so into the lake. The pumping in process is so rapid that one minute suffices to raise a ship six feet, and in order to keep her perfectly rigid, steel cables are run out fore and aft on each side, and attached to electric mules on the canal banks. These mules keep a steady strain on the cables, and also tow the ship from one lock to another. The whole process eats up an amazingly short space of time and there is an entire absence of noise and the bawling out of orders. About midway through the canal, the tall lattice work towers of the U.S. Naval Radio Station (NBA) climb three hundred feet or so into the air. This station works the United States direct on 7000 metres, C.W., and I have frequently heard his time signals, out on the Australian coast. They came in from 12/55 to 1 p.m., Sydney time and on a couple of stages of audio were easily readable. (To be continued)

INTERSTATE NOTES

VICTORIAN NOTES.

The Amateur Wave Band.

Probably my brother of South Australia will have chronicled the forward move made by the Institute in his own State in approaching the P.M.G. for a definite allocation of an amateur short-wave band. In response to this it appears that permission has been granted for six months to operate over bands of still lower wavelengths as well as 80 to 90 metres, and if the Institute wisely follows this permission up by arranging agreements among its members to observe religiously the necessary restrictions involved in this concession, the term of six months ought to be indefinitely extended when it runs out. Since tuning is exceedingly sharp on our present tuning contrivances for all waves below 200 metres, it has become the fashion to impute to short waves a selectivity that is not inherent in their own nature, but rather in the rough and ready apparatus devised for long-wave reception. Of course, if one uses a .0005 condenser to tune-in short waves he will find half a dozen stations within 10 metres of each other on a low wave band with just a degree or less between his condenser readings. If instead of a .0005 he mounts a .00005 and gets out of the pernicious habit of miscalling it a vernier, he will find his tuning has broadened with the broadening of the spacing between turns of his inductances, and will find interference just as prevalent from misconducted stations as when he ranged and raged about the broadcast bands. He will then be able to study "dialectic" (as a recent issue of a wireless journal calls it) to some purpose, and his dialectic gains will mount with his dialectic losses till a balance is again struck, and he seeks wavelengths still lower and language even more profound.

A Reduction in Broadcasting Fees.

As a consequence of Regulation 84, the annual license fee after July 17 next will be reduced from 35/- to 30/-, so that those who have borne the heat and burden of the rather inefficient first year of broadcasting will be consoled by a reduction of 5/- when they renew their licenses, while those who have waited or passed by on the other side and refused to act the part of Good Samaritan to the P.M.G. will be charged 5/- less than the enthusiastic pioneers. By dint of these open-handed concessions and rewards, on top of vigorous prosecutions of users of

crystal sets in selected suburbs, the department ought to open up a new era for the broadcasting companies, if not for those that merely listen in. It is idle to enquire whether Regulation 14 will also come into operation after July 17, 1925, as it has already been a year in abeyance. It reads:—

"Broadcasting Fees (2).

"14. (1) The waves emitted by any station licensed in Australia shall be as little damped as possible, and in no case shall the logarithmic decrement of a complete oscillation exceed two-tenths, except when sending distress signals or signals or messages relating thereto.

"(2) The coupling between the primary and secondary of the oscillation transformer shall not be closer than that which gives a difference of 5 per cent. between the mean wavelength and either of the two waves emitted by the coupled circuits."

In everyday language this simply means that waves that wander up and down the scale and play harmonics in the backyards of other stations are not permissible, and shall be suppressed whenever the P.M.G. feels like it. Making due allowance for sweet reasonableness, and remembering that some of the smaller fry among listeners-in have been prosecuted, it would be well for the P.M.G. to baste the other high contracting party with some of the same sauce.

More Amateur Distinctions.

To 3BU in recent notes was given, by a slip of the pen, the high praise of assisting in the re-broadcasting of KDKA, but although 3BU is a master in telephony, it was another St. Kilda man—3JU—to whom the credit was due, in collaboration with the late general secretary of the W.I.A.V.D.

In the vernacular these two successful experimenters are known as Messrs. Hull and Court, the first-named being a young architect, as are several others of our prominent amateurs, and the second another prominent experimenter who is on the wireless staff of the Western Electric Co. and shares with Mr. Max. Howden ("Maxwell" as his new friends persist in extending him to) the honour of being "technical adviser" to a paper that has often showed signs of needing a couple. Mr. T. P. Court has also undertaken to "talk" from 3LO on wireless topics, so those who know his characteristic style look forward to something special. The many occasions on

(Continued on page 26)

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(Continued from page 23)

which he and 3BQ have agreed to differ on technical points ought to be an earnest of interesting uncertainties in the advice they jointly and severally tender in their latest collaboration. A debate on the super-heterodyne, for example, by these two doughty experts, one of whom is as strongly for as the other is against it, would make interesting reading for those who know a little less (they could hardly know more) about the subject than either.

From an Experimenter's Point of View.

Applications have recently been made by genuine experimenters for experimental licenses, and for some reason they have been recommended by the department to take out a broadcast listener's license at the nearest P.O., as that would cover the experiments proposed. Since there seems to be considerable misconception in the minds of many people as to the nature of an experimental license, it would be to the public benefit if the controller were to make a fuller statement of what these licenses cover than is explicitly stated in the Regulations. In the minds of enthusiastic investigators there is the perfectly legitimate and deserving idea that they belong to a class distinct from those who merely listen-in without any attempt to advance the progress of wireless. On the other hand, an experimenter is undeniably not always experimenting, and is at any time liable to unbend sufficiently to indulge himself or his friends in some broadcast entertainment. For this last reason, it is understood, the department is expected by the broadcasting companies to be chary in issuing experimental licenses that carry the lesser fee of £1, of which only 10/- is divisible among the companies, to their manifest loss and grief. To overcome this, and still ensure to experimenters the distinction they covet, it has been proposed by some of them that the fee should be raised to the same figure and apportioned in the same way as the broadcast listeners' fee, which would in that case merely deprive the unimportant department of a mere 5/-, while still involving it in the same additional duties of supervision. On the other hand, the value of genuine experimenters both to the department and to the companies ought to be very evident, and once an experimenter has been definitely identified as such he ought to be presumed to be more or less a branch of the Public Service, and as such entitled to come under Regulation 68, which provides that "the P.M.G. may issue free of charge such number of broadcast listeners' licenses as he may consider desirable in the public interest." Certainly if an experimenter possesses expert knowledge and uses it to such good purpose year by year as the Regulations require he ought to be granted this distinction with-

out the broadcasters worrying unduly over the trifling loss of revenue involved. At the same time the department will soon have seriously to consider the establishment of a Chair in Wireless at the University, and not leave much longer to the haphazard experiments of outsiders the development of a science that has rapidly become as much part of the daily life of the community as dentistry, architecture, veterinary surgery, and a number of other minor studies that have been considered worthy of University recognition. Such a Chair, established to direct the experiment: of the eager young men who at present dissipate their energies in all sorts of futile tests without any knowledge of the principles of experimentation, would fill a most useful purpose. Both in Sydney and Melbourne, if not in other Australian Universities, as is well known, a great deal of excellent wireless work is at present being carried on, as it were, by stealth, under cover of general scientific research, that could be much more effectually concentrated into one special wireless course and subsidised from the heavy fees contributed by the interested public. To graduate under such a Chair would, indeed, constitute an experimentership worthy of the highest recognition.

JAZZ.

A correspondent has arisen in his wrath and impeaches these notes for speaking disrespectfully of jazz. Now, quite a number of estimable people like jazz, as he points out; so what is to be done? Of course, jazz is not music. It is a mood. Every schoolboy knows what mood means; there are the indicative mood, the subjunctive mood, the imperative mood, and finally the idiotic mood, in which jazz is written. Exactly why so many people think it is music would be idle to enquire. Possibly because it is played on musical instruments, as when a cat or a cake walks or a fox trots on a piano, but although such diversions are amusing they are not music. Some listeners-in apparently labour under the fond delusion that wireless was invented to transmit music, but, of course, that is not so. A little nonsense now and then is relished by the wisest men, and even Marconi likes to dabble in the Beam System, which, we are assured on very high authority, indeed (the W.I.A.V.D.), is not wireless. Similarly the Musical Society will agree that jazz is not music. But, for all that, a little jazz in moderate doses of 15 minutes or so might be tolerated by those who already have to put up with lectures, bedtime stories, sermons, stale news, and other vocal and instrumental items that help to swell the revenue of a great broadcasting station. All these, however, have their appropriate times, and the wee sma' hours ayant the twal' might well be set apart

for the straight and undiluted jazz that at present threatens to constitute the whole programme. 3LO has even created a special orchestra, appropriately to be known as the Statics, which will cause a lot of interference with those who listen-in only to Beethoven's sonatas and the bedtime stories. If only they had been taught to appreciate jazz in their youth they would not be so hypercritical.

The W.I.A. (V.D.).

Out of deference to a large and influential section of the community whose designation is spelt with the same letters, it has been decided to discontinue referring to the Victorian Divisional Council as the W.I.V.E.S. Instead, their official initials are hereby adopted, and they will be known as the W.I.A. (V.D.), which being interpreted stands for the Wireless Institute of Anywhere but Australia (Victorian Division). Readers may be surprised to learn that the A stands for Anywhere but Australia, but facts are stubborn things, and so are those people who think nothing in Australia is worth considering but themselves. Reference has already been made in these notes to the anti-Australian action of the W.I.A. (V.D.) in importing a wave-meter from abroad, and in giving preference to phones and other articles made in America rather than in England. Encouraged by the lack of interest shown in these

lapses by somewhat lethargic members, the executive has now made even a worse faux pas and has plunged boldly into meddling with politics, which are not properly within the sphere of a wireless institute. Occasions may, of course, arise when on the unanimous vote of all the members a move forward in a great national question of politics may be backed up by the Institute, but this is not now in question. The facts are that the executive, hearing that application was to be made by a Sydney manufacturer of valves for a protective duty to be levied on valves imported, hurriedly instructed Sydney delegates to oppose the application on behalf of the W.I.A. (V.D.), and have since been confirmed in that misdemeanour by the delegates in council. Whichever way one looks at it, this is a most reprehensible action on the part of the W.I.A. (V.D.) since the fact that one is interested in wireless does not ensure that he belongs to any one political party, and quite a number of good Australians believe in a policy of protection for Australian products. If the W.I.A. (V.D.) had ordered a few dozen of the locally-made valves to be made under strict supervision for sale among members, the move would have been a patriotic one and would probably have ensured the production of a valve second to none in

(Continued on Page 36)

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WITH OUR READERS

"GOOD MORNING, DEARIE!"

To the Editor.

Dear Sir,—In common with his class, "M.M." is woefully intolerant of anyone who dares dispute the claim of jazz to be called music and to come in at the front door instead of cooling its heels in the stable. Merely mention classical music to him and he rapidly bursts out at the seams with horns and a tail complete. For my own part, if a person likes to listen to jazz at a well chaperoned flapper's garden party, or in the safe security of a nursery, or more appropriately still in the monkey's cage at the Zoo, he has my full permission, so long as he behaves with proper decorum and does not put even the monkeys to shame, as they did who played "Hell's Bells." It will take me quite a long time to forgive 3LO for degenerating into jazz so much, merely to tickle the ears of the groundlings and forcing horrible noises on to those who pay good money for licence fees. Had I paid my licence fee in counterfeit notes I should certainly deserve to be prosecuted, and it would be a poor defence to claim that the notes were forged by trained engravers and that multitudes of people couldn't tell the difference and accepted them gladly. The fact that I am not a financial expert would not absolve me from knowing good notes from bad, and if after ringing the changes on any protesting victim I coolly remarked, "Well, you needn't take it if you don't like it!" my effrontery would justly be regarded to be as brazen as "Hell's Bells." I am the more surprised at "M.M." falling so far from grace since he resides in a suburb whose name is immortalised with the prettiest and most musical of bells, and I sincerely trust his infatuation will never land him in the acknowledged home-town of those other travesties on sweet music. The mere fact that he is capable of attributing to classical music the grotesque effect of making its listeners in "gurggle rapturously in peace" at once indicates that he should resolutely close down whenever 3LO begins to jazz, and should steel himself to listen with both ears erect when music even of the simplest sort adorns the programme.

Yours, etc.,

YOUR VICTORIAN CORRESPONDENT.

To the Editor.

Dear Sir,—Either 2JR is indulging in a little gentle leg-pulling or his vision is somewhat dulled by an abnormal estimate of his own importance. If the former, I personally am quite prepared to join in the laugh with the rest and to link him up as a good fellow; but if his accusations are to be regarded as serious, then he has rashly laid himself open (and incidentally the rest of the professionals) to a jab in the region of the centre of the nervous system. His reference to your editorial remarks in the former issue as "yellow journalism" is, of course, mere eyewash. I am not presuming to take up the cudgels on your behalf—your journal is too widely supported for you to worry about gutter attacks of this nature, and the mere fact that you had the courage to print 2JR'S statements shows that you yourself realise this—but I merely touch upon this to emphasise the meanness of commenting in such a strain upon your remarks, which were far from offensive, and were, I am sure, merely echoing the sentiments of your readers. His likening of the experimenter to a kind of parasite living on the brains of the professional is distinctly refreshing. It is a point of view which never before occurred to me, and I want 2JR to believe I am grateful for having shown it to me. I am quite prepared to do homage to scientists like De Forest, Marconi, and Fleming; but are they professionals? I think not. They may be regarded as a cut above such trash, because in the truest sense of the word they are experimenters. It is from them we gain the bulk of our knowledge, not from professionals, and whatever crumbs they may drop are avidly seized upon by professionals and devoured just as voraciously as 2JR would have us believe the experimenter chews the alleged professional crumbs. Whatever crumbs fall from the professional table would make scarcely as much noise in falling as a peanut at the Stadium on Saturday night, because the average professional is but a plodder himself and has no crumbs to spare. Nevertheless, I am conceding one point to our Australian professionals, and that is originality. There is no quality which merits admiration so much as originality. For instance, with all due and reverent apologies to a disinterred and slightly decomposed corpse, let us take the sealed set. Here was a professional product of the most outstanding originality. It was so utterly modern and so confoundingly original that it fooled British and American experts, who dared to even giggle at it. It was most unfortunate that its originality was a little damaged by the fact that professionals meandered over the job for six months or so before they could produce something that would

(Continued on Page 32)

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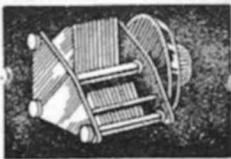
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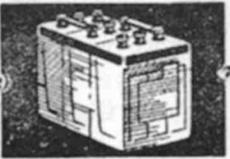
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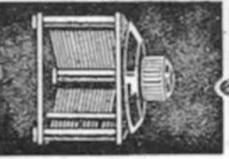
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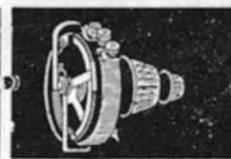
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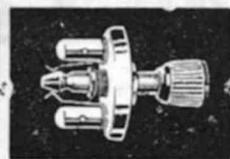
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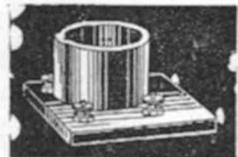
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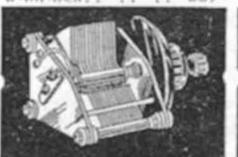
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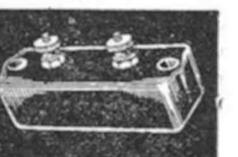
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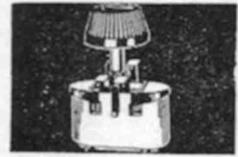
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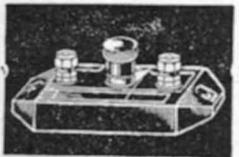
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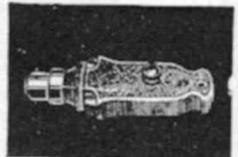
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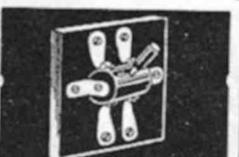
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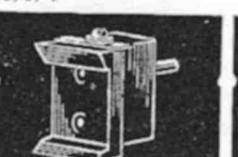
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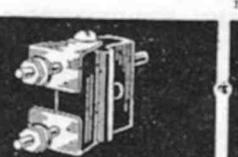
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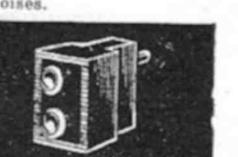
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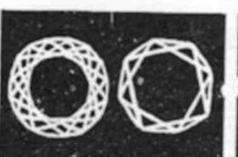
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(Continued from Page 28)

function. Here, no doubt, was a crumb—in fact, a whole loaf—that the experimenters could have picked up, but foolishly they allowed the opportunity to slip. If we may believe it, some of them actually had the nerve to refuse to touch it. Is another instance necessary? Now, 2JR, I put it to you. Come down off YOUR perch and show us the relation between the Australian professional as the bone-thrower and the Australian experimenter in the role of the small dog seizing upon it and tearing off the meat. You will observe I am raising the experimenter above the status of Lazarus, because any kind of a dog is a better fellow than Lazarus.

But to hark back to him. Are we to label the non-professional stunts of 2CM, the world's record of 3BQ, the constructive work of 2YG (not to mention others) as allied to Lazarus, and the hours of trying, the constant experimenting as the crumbs dropped by the professional who has shown them how to do these things? Or do they come under the heading of GENUINE and all others who have not performed these miracles as mere hangers on? What we might term Lazarus? If so, then I suggest that, to designate each and everyone as a Lazarus, the letter "L" be placed between the district number and the first letter of the call sign of each station. Thus, if proper supervision were ensured, we could expect to hear one night the elfin call of—2LJR.

I am, entirely without prejudice,

A VICTORIAN LAZARUS.

INTERESTING EXPERIMENTS.

To the Editor.

Dear Sir,—The following may be of interest to you and your readers:—

I have been experimenting exhaustively on transmitting without the use of any connections with aerial, counterpoise or earth, or the possible influence of the outside gear with the transmitter, and on Sunday last (8/3/25), at 4 p.m., I held tests with A.2BK on C.W. on a wavelength of 86 metres with an actual input of 12.9 watts, transmitting solely off the helix of the transmitter.

He reported my signals of quite good readable strength on C.W., and we held conversation by Morse for a period of 20 minutes with this test.

On the 9/3/25 at 1800 (daylight here and partially in New Zealand) I called Z.2AP, and also carried out tests with him in the same manner, but used a wavelength of 83 meters with an actual input of 13.2 watts. He reported to me that my signals were also of good readable strength, although he had had interference from the commercial station VLW.

I would like to know if any other experimenters have carried out any similar tests and the distances they have covered with the low power used at my station under similar conditions, as I am endeavouring to gather data on the possibilities of transmitting distances with certainty without the use of any outside radiating functionaries.

I again want to impress upon your readers that there was absolutely no possibility (as far as I am aware) of any influence of my outside gear coming within the possible contact, electrically or mechanically, with that of the transmitter. All possible care was taken to have all leads, switches, etc., of the aerial, counterpoise and earth taken well away from the actual transmitter; in fact, the nearest switch or lead was 8 feet away from the transmitter. I would be glad to carry out tests with any experimenter over a long distance on these lines.

Yours, etc.,

G. BARLOW, 2GQ.

Note.—You will see by my times that these were daylight tests, but the test with Z.2AP was carried out at 6 p.m. (daylight) here, and from what Z.2AP said, the night had barely closed in.

(To the Editor)

Sir,—“All men are liars.” Fishermen, for a long time, held the belt; but they are becoming believable individuals as compared with the wireless liar. I have met more “pretty joey's” who have received KDKA direct, than there are wires in a wireless set. I feel constrained to say that a lot of it is KIDKA.

A crank with a crystal at Hay
Sat right through a night and a day,
A-listening in
And heard a great din,
And thought it was KDKA.
But those in the know have to say
That the scratcher from Hay was a jay,
The din that he heard
Was a Woop-Wooping bird
Who was singing K.I.D.K.A.

W. P. YOUNG.

43 Wigram Rd., The Glebe.

To the Editor.

Sir,—In reference to the letter written by your correspondent, G. Vincent, in last week's issue, I would like to make a few comments.

Amateurs did agree to close down during broadcasting hours, and so far have kept their promises. I have in my possession a two-valve low loss receiver, and every night regularly during broadcasting hours

(Continued on page 34)

" Got It at Smith's "

CHEAP! Look in Our Windows

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RADIO STORES

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30s. each



D.V.3
Filament, 3 volts .06 amp.
Both Types Fit Standard American Socket.



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Plate Voltages, Amplifier 60-150 Volts

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Plate Voltage, 16-22 $\frac{1}{2}$ Volts, Detector
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Also at 91-93 Courtney Place, Wellington, N.Z.

(Continued from Page 32).

and all I listen-in, trying to increase my DX lists, and not once have I yet heard an amateur interfering with the broadcasting stations.

As your correspondent admits he cannot read Morse, then how is it that he can tell it is an amateur who persists in sending dots and dashes? Could it not be, for instance, V.I.S. of Pennant Hills or some other commercial station? And another thing, how is Mr. Vincent forced to listen to gramophone grinding when we would-be broadcasters are not allowed to transmit above 250 metres?

Wishing "Wireless Weekly" every success.

Yours, etc.,

A WOULD-BE BROADCASTER.

Summer Hill, 10.3.'25.

(To the Editor)

Sir,—May I be permitted to point out a few typographical errors in your issue of 13/3/1925, in connection with Wireless Phrases in Esperanto? As readers were advised to cut out these phrases and paste them in a conspicuous place over their sets, it will be just as well not to perpetuate the mistakes.

Page 22: Line 7, instead of keil setas read kiel estas; line 9, instead of signahay read signaloy; line 12, instead of hullo read hallo; line 14, instead of kiam read kiom; line 17, instead of atmosferajoj read atmosferajoj; line 24, instead of knar, koin read kvar kvin; line 27, instead of . . . ui toka read . . . iu loka; line 30, instead of Nu dankas vin sinjora for via report read Mi dankas vin, sinjoro, por via raporto.

Incidentally, I might mention that I am always willing to assist interested persons with any information about Esperanto, its uses in the wireless world, pronunciation, etc.

Yours etc.,

F. T. SIMON.

226 Avoca St., Randwick.

13th March, 1925.

WHY THE SLUMP IN WIRELESS ?

(To the Editor)

Sir,—“The Herald,” of the 9th inst., states that there are 29,534 Listener's Licenses in force in New South Wales. So that at 35/- per license, the listeners in this State alone have been taxed to the tune of £51,648. What for? Perhaps you, or some correspondent can tell your readers what the listeners are getting for their money, and approximately what it costs the Broadcasting Companies for the £50,000 in six or seven months.

Let's hope they are not making a loss, and don't forget in your costs to reckon the half guinea singers, and the gramophone and pianola records, because they all wear out in a few years.

I fancy our experimenters will weep when they hear of this £50,000 and remember they have to pay a license fee for giving us their programmes, valuable advice, and recent proof of the advantage of low wave lengths. Very few would object to a fee for good service, if we were getting it.

It seems this 35/- fee is a matter for the Dealers more than the Listeners, who will merely allow their licenses to lapse, and the Dealers will then wake up and agitate when it is too late, and Radio business is ruined. Who will lead a monster petition from Dealers and Listeners?

Yours etc.,

DESPERATE.

March 13, 1925.

“INSULATED” HANDS?

It was with extremely mixed feelings that we learned the other day of a remarkable feat performed by a well-known screen actor in the course of a recently released film, says an exchange. While a high-powered ship's spark transmitter was in operation the “star” pulled adrift the aerial lead-in cable, without, however, suffering any apparent discomfort! This sort of “dropped brick” is one of the things that does much to destroy the illusion of the cinema for the observant.

A CORRECTION

In our article last week on the construction of a power transformer please note the following alterations.

On Page Twelve, second column, the factor quoted as $B = 60,0000$ should read $B = 60,000$. This 60,000 is a permanent factor based on the flux density of good stalloy iron.

Diagram 3 shows 4,500 turns of No. 16 DCC wire. This of course should read No. 26 DCC wire. While these errors would be obvious to most readers we trust that no inconvenience has been caused.

Ex-Commercial Radiotelegraphist, at present otherwise engaged, desires position offering facilities use knowledge and ability. Address replies to “RAIO”, C/o. Box 92, G.P.O., Sydney.

(Continue from page 11)

in to 2BL and members were entertained with various items broadcasted by that station. The result bore out all that was claimed by Mr. French, the music, etc., coming in with plenty of volume on an "Amplion" loud speaker, but at the same time purity of tone was not sacrificed, there being a total absence of distortion. Mr. French was accorded a hearty vote of thanks which was carried in the usual manner.

Mr. Young, a visitor, delivered a short but exceedingly interesting talk on "Formulae relating to Wireless Measurements," his remarks being attentively listened to, and at the request of members kindly promised to come along at a future date and deliver a lecture on various matters dealing principally with "Fundamental Principles governing Wireless Transmission and Reception."

Members of other clubs are always assured of a warm welcome should they care to come along any Monday evening, and intending members are requested to get in touch with the Secretary of the Club, Mr. A. W. Hemming of 23 Central Av., Marrickville.

J. H. MARTIN, Publicity Officer.
Box 1091 G.P.O.,
Sydney.

WIRELESS INSTITUTE OF AUSTRALIA.

S.A. Division.

THE monthly general meeting of the South Australian Division of the Wireless Institute of Australia was held in the Prince of Wales Lecture Theatre at the Adelaide University on Wednesday, March 4th.

There was a large attendance, which was presided over by Mr. R. B. Caldwell.

A letter was received from the Western Australian Division notifying that the second annual Federal Convention would be held there in July or August, and requesting that a delegate be sent to represent this division. Mr. C. E. Ames (hon. secretary) was selected to represent this division.

In reply to a circular regarding the allotment of short wave bands for experimental transmissions, the N.S.W. Division stated that the controller had given permission to the amateurs to work on short waves for a period of six months, provided they acquaint the radio inspector of the times of transmissions, wavelength to be used, etc.

A telegram was received from the Victorian Division asking this division's attitude towards the movement to increase the tariff on imported valves. A reply was sent stating that this division strongly protests against any increase of tariff. A letter was

received from the New South Wales Division also on this matter, and stating that it had elected a delegate to represent the Wireless Institute at the Tariff Board meeting to oppose the movement. It was decided to write the New South Wales Division endorsing the action taken.

The advisability of having a publicity officer was discussed, and Mr. R. M. Barker was elected to act in that capacity.

In calling upon Messrs. Kauper and Austin to give their demonstration with short wave apparatus, the president thanked both gentlemen for their willingness to assist the Institute by giving lectures and demonstrations at the meetings, and also for the help given during the recent boat trip arranged by the Institute. The success of the reception during the trip was due to their efforts, and also to those of Mr. Fred. Williamson. Mr. Kauper thanked the members for the remarks of the president, and, with the help of Mr. Austin, proceeded to explain the manner of calibrating a short wave receiving set, using the harmonics of a transmitter of known wavelength. A local oscillator was used to demonstrate how the different harmonics could be received, and the wavelength found accordingly. Mr. Kauper explained the circuit used by him for short wave transmission, giving all the necessary details with regard to coils and condensers for short wave transmission. Messrs. Kauper and Austin were thanked for their interesting lecture.

BRIGHTON SECTION OF THE WIRELESS INSTITUTE OF AUSTRALIA.

At the last meeting of the above club a most interesting lecture was given by Mr. White, the subject of the lecture being "Heterodyne and Super-Regenerative Circuits." One of the most interesting circuits lectured on was the tropadyne.

The lecture for next week is to be given by Mr. Jupp, the subject of the lecture being "Simple Methods of Manufacturing Crystals," and at the next meeting Mr. Muir will construct a low loss receiver, which he has presented to the club.

Mr. West, who is in charge of an extensive lighting scheme which is being carried out in the new club rooms, now has the work almost completed.

The intelligence officer of the club, Mr. P. K. Trood, has arranged for a talk to be given each week describing new apparatus that is placed on the market.

Interested persons should get in touch with the secretary, Mr. W. Kerr, at the club office, 241 Bay Street, North Brighton; 'phone, X4861.

R. SURRIDGE,
Publicity Officer.

(Continued from Page 27.)

the world. But while prone to brag about the pre-eminence of its own members over all other amateurs, the W.I.A. (V.D.) prefers to mount up on the wings of the American eagle instead of using our own much more majestic bird.

3BQ Honoured.

As president of the Canterbury Club, Mr. Max. Howden was recently made the recipient of an address in old English text by the members of his club in recognition of his having broken fresh ground in long distance telephony, being the first Australian amateur to be heard speaking in England by wireless. In addition to this, he has been appointed "technical adviser" to what may be termed the local broadcasting organ, thereby attaining quite a giddy elevation for a Victorian amateur. For some reason members of the Victorian Division of the W.I.A. hold aloof from prominent positions in the wireless trade, or perhaps are not offered them, being in this respect different to their brothers over the border, some of whom attend to very important commercial wireless interests in their spare time, and doubtless if Victorian members were offered similar positions they would benefit the trade as much as their Sydney conferees have done.

The Victorian Division's Exhibition.

Definitely fixed for May 20-30, the Wireless Exhibition over here is now only nine weeks or less ahead, and it behoves every amateur to enter any piece of apparatus that he has thought fit to spend time and intelligence on constructing. There is a foolish tendency to hang back and conceal home-made apparatus that makes most amateur exhibitions look more like fraudulent imitations of the commercial article than genuine collections of what has been made for a hobby. Last year's exhibition was very successful in producing highly-polished examples of glassworking, woodworking, and metal working that would have been entirely creditable as the finished products of leading firms, but the real amateur contrivance was not so evident. Since the advent of broadcasting the home constructor has been grievously misled to consider his set home-made if he just screws together the bought components, or at least imitates them as closely as he can with home-made parts. On the other hand, originality outback has its native modesty intensified when it reflects that the suburbanite has so many advantages marked at sale prices in all the shops, so any genuine AMATEUR exhibits will be very well worth sending to the exhibition and will shine like a good deed in a weary world of bought parts. Particularly interesting would be sets, however rough, that have done actual duty outback as the result of home industry. There must be rough-and-ready sets up the

country that a wireless enthusiast would travel miles to see, because they actually DO the job and bear that badge of honourable service on the frontier that is worth all your polished bakelite and lacquered brass of the mere suburban smart set.

SOUTH AUSTRALIA.

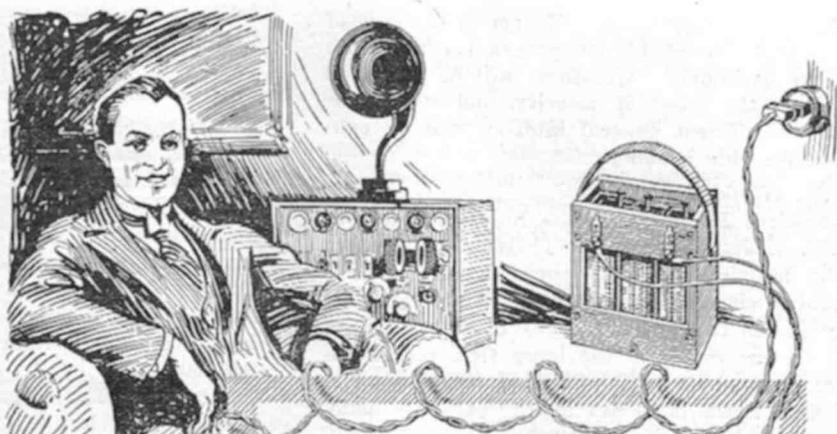
THE outlook for broadcasting in South Australia does not look very promising. 5CL has until the end of May to get on to full power, but so far nothing has been done towards building the new station; indeed, it seems that the site for the new station has not even been settled, but still they tell us that all is well. How they expect to achieve the impossible task of getting this station working to time is beyond comprehension. It is believed that the trouble is a financial one.

However, a mysterious individual has arrived from Melbourne, who boasts that he is the only man in Australia who can put this company in order. HE can certainly talk some (we hope he will not try out in front of the microphone), so all eyes are on this new arrival who is to be the saviour of broadcasting in South Australia. We trust that he may succeed. If he fails, what then? Another long delay. We sincerely hope that the Postmaster-General will not allow any more experimenting with broadcasting here; we are sick of it.

The transmissions from 5CL have shown wonderful improvement in quality since they installed their new microphone, but their strength is not by any means great.

Station 5DN still holds pride of place among transmitters in South Australia. Every Tuesday, Thursday, and Saturday he delights his audiences with first-class programmes of musical and elocutionary items. The wavelength of this station is now 313 metres; this is the wavelength allotted them by the P.M.G. for their B class station.

Listeners in this evening (Sunday) have been treated to one of the best programmes of instrumental items that has been heard in this State. The transmission was not from any broadcasting station, but was transmitted from experimental station 5DA (S. R. Buckerfield), Regent Street, Parkside. Where Buck got his extra power from for this transmission is a mystery. His music came in with great punch, and was beautifully clear. As the broadcasting station here does not condescend to transmit on Sunday evenings, this concert was very welcome, and Mr. Buckerfield deserves great credit for arranging such a splendid entertainment. All the performers this evening were well-known artists of repute, and listeners in owe them their heartiest congratulations for their performance.



When the Juice Runs Out

You do feel annoyed when the accumulator gives out just when you want it most—when a friend drops in to hear your set, or when your battery is away being charged.

Make up your mind not to let it happen again. With the Philips RECTIFIER you can charge your accumulator at home, on alternating current at a negligible cost and without trouble. It is always ready when you need it.

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Information

Conducted every week. Except in the case of subscribers a fee of 1/- is charged for not more than four questions. Questions will be answered by mail in the order of priority, and when considered of sufficient general interest, will be published under this heading.

F.M. (Rockhampton):

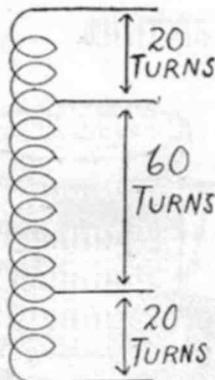
Question: Referring to the Reinartz described in W.W. of January 21st. (1) What wavelength will the detuning coil of 50 turns cover? (2) Is the fixed condenser (lamp flex) to be used in parallel with the tuning coil? (3) If the two point switch is thrown on to the lamp flex, is the 50-turn coil out of action? Similarly, if the coil is switched in is the lamp flex out? (4) How many turns in the detuning coil are required for 2FC?

Answer: (1) The detuning coil will not alter the wavelength very much. Your main tuning coil may be altered to suit any of the broadcast wavelengths. See reply to H.C.L. (2) The detuning coil is out of action when the switch is over to the lamp flex condenser and vice versa. (3) Yes. (4) See reply to H.C.L.

H.C.L. (Chatswood).

Question: Please give full details of a Reinartz receiver. I wish to build a 3 valve set, either on one panel, or detector panel with plug in two stage amplifier. Which would you recommend? Is it possible to put in a loading coil so as to receive local broadcasting?

Answer: Full details were published in W.W., January 23rd. We suggest you make up a single valve panel for a start. When you have this functioning O.K. on broadcast wavelengths you can



easily add audios. You will need to wind another main tuning coil to receive on the longer waves but the detuning coil need not be altered. Sug-

gest your main tuning coil be tapped as per the sketch below. You could use this coil as a basis to determine the correct number of turns for whatever wavelengths you want to cover. It would be a good plan to wind three or four coils, always remembering the ratio 1-3-1 as illustrated in the sketch.

E.K. (Paddington):

States he copied a circuit from an English periodical, showing the Tri-coil method of coupling adapted to the S.T.100. The only results he can obtain are with the following coils for 2BL: primary 35 turns, sec. 75., T. 50. With any other coils he gets nothing. He encloses 2 circuit drawings and asks if either of them is better than the S.T.100.

Answer: The tri-coil circuit should prove very much more selective than the straight out ST100 but like all other circuits where extra controls are made use of, would be hard to tune. We cannot recommend you anything better than the ST100 as described in W.W. of November 28th last. Excellent reports have reached us concerning this. This circuit should work a loud speaker satisfactorily on local broadcasting using only a loop. We suggest you try again with the straight out ST100, but be sure you get a crystal detector which will stand up to the volume this receiver is capable of handling.

R.P.R. (Temora):

Have decided to build a "B" battery on lines described in W.W., February 20th. Where can I obtain carbon rod? Are Leclanche cells suitable as "A" battery for dry cell valve? Would a .0005 plain variable condenser be suitable in shunt or should it be placed in series?

Answer: You should be able to obtain the materials referred to from any radio dealer advertising in this issue. Leclanche cells are quite OK for the purpose. Your coils will cover a large band of wavelengths if you use a series-parallel switch. It also may be obtained from any advertiser.

SCOTLAND YARD AND WIRELESS

It is interesting to note that the transmission of pictures is getting very great attention from Scotland Yard, who have been experimenting in cooperation with the New York police. The authorities at Scotland Yard have also developed a code for sending finger prints either by wireless or ordinary telegraphy, for cases where there is no prospect of sending the print itself as a picture.

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"Having received some of these Valves from you, we proceeded to test them. We considered the most SEVERE TEST we could give would be to use them as Amplifiers IN CONNECTION WITH OUR TRANSMITTER at Radio Station 2UE. This we proceeded to do, and are now perfectly satisfied, from the numerous reports on the quality of our music, THAT THESE VALVES AMPLIFY WITHOUT DISTORTION. We also find there is an ABSENCE OF MICROPHONIC NOISE. We find these Valves function at MAXIMUM AMPLIFICATION AT MUCH BELOW THEIR RATED FILAMENT VOLTAGE, and are altogether satisfied they fulfil the claims made for them by the Makers. —Yours faithfully, Electrical Utilities Supply Co. (Radio House, 619 George Street)."

TRUE BLUES ARE OBTAINABLE from most Dealers, including:—Wireless Supplies, Royal Arcade; Radio House, 619 George Street; E. R. Cullen, 96 Bathurst Street; Farmer's; Hordern's; Murdoch's; Mick Simmons'; Colville-Moore; Electricity House; Ramsay Sharp, 217 George Street North.

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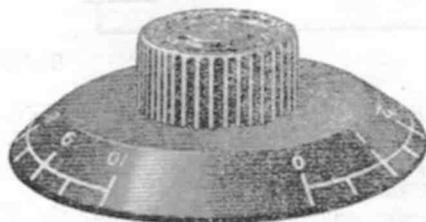
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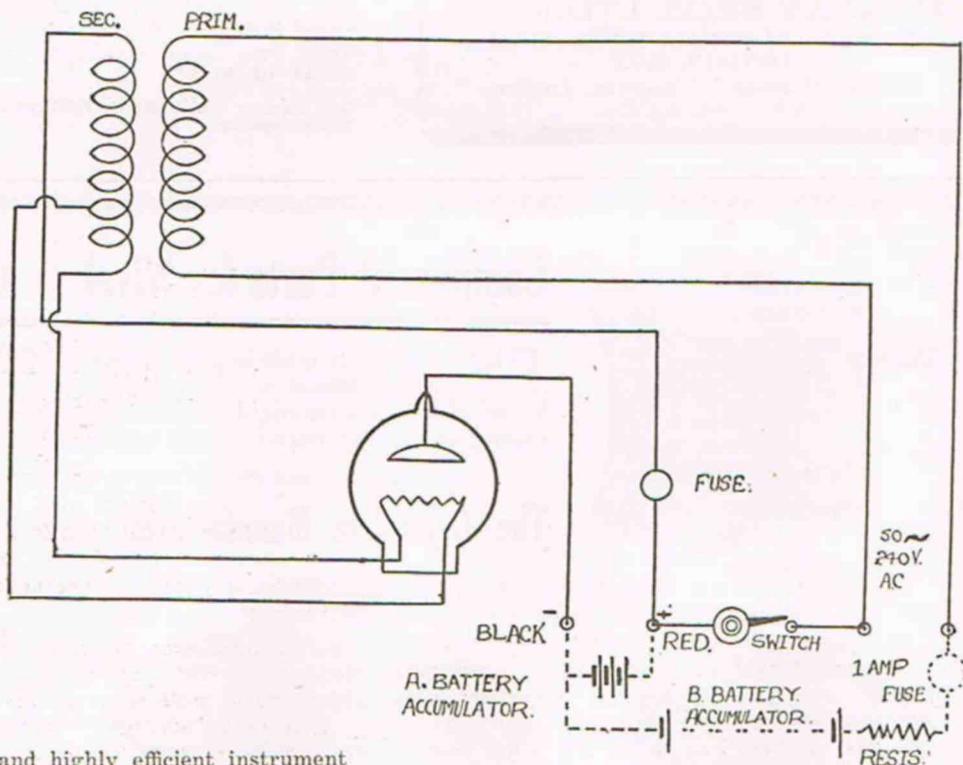


Mr. "Pat" Brown.

THE SPEED KING.

With the "National Drivers Championship" (U.S.A.) under his arm, "Pat" Brown has returned to Australia, the land of his birth. He has won more races on the speed tracks than any other driver. Last year he got the world's record at 154.11 miles per hour and lowered the record from San Francisco to Los Angeles, covering the 842 miles in 8 hours 42 minutes. Before that he lowered the record from Los Angeles to New York, 3738.3 miles, in 5 days 2½ minutes. "Pat" Brown has a whole list of other records to his credit, but he admits that he cannot travel as fast as Radio. He brought back with him from America an eight valve Flexodyne with which he has done some very good work. In company with Mr. W. Cottrell (2ZN) he has taken up the radio Business in Sydney.

Tungar Rectifiers



This well known and highly efficient instrument was primarily designed solely for charging radio "A" batteries. In some instances, however, where owners have desired to charge radio "B" accumulator batteries, these Tungars have been reconnected. The diagram above from a copy kindly furnished us by Australian General Electric Co., Ltd. (Agents for the Tungar) illustrates how the Tun-

gar should be reconnected to permit of the charging of "B" batteries. Tungars are widely used by radio enthusiasts so that this diagram will prove useful to those who have the good fortune to own one. By reconnecting as shown the Tungar will do the double duty of charging both A and B batteries.

LIGHTNING ARRESTERS.

To the Editor.

Dear Sir,—Having given Mr. Taplin his coup-de-grace, I passed over his dying depositions, in which he acknowledged my wit, but complained that I had twisted him into knots and allowed him the last word out of courtesy to a fallen foe. Now, however, comes along his echo, Mr. Stewart, full of sound and fury, and makes the same remarkable charge. I submit that I may twist like the lightning, running its victim to earth like a fish pursuing a worm, but not otherwise. He suggests the Stadium for me and Mr. Taplin, but there would be so many appeals to the referee because I hit my opponent in the jaw when he expected the blow to glance over his left shoulder that really I must decline the opportunity of giving Mr. Taplin a good hiding, especially as I might have to deal with the self-constituted referee, Mr. Stewart, after the K.O. When I survey that formidable run of letters and the portentous title of consulting engineer that forms the retinue of Mr. Stewart's signature to his letter, my bones turn to water and I want to run away. Since, however, he holds out an elm leaf with two caterpillars on it, and I am fond of natural history, please prop me up, somebody, while I point out that Mr. Stewart, too, gets no further than my first letter of Nov. 21st, and he leaves me no option but to castigate him as I did Mr. Taplin. His letter is very rude, and his interpretation of the pretty caterpillar story is absurd. Mr. Stewart would have us believe that a leaf can be both green and white all over and on both sides at the same time and in the same place. Now, no sensible caterpillar could swallow that, even after consultation with an engineer. Mr. Stewart whimsically assures us that lightning conductors and/or lightning arresters both conduct lightning. Has he ever tried them? From his last paragraph it appears that he is to be found under the bed during a thunderstorm, instead of flying kites like the late Benjamin Franklin. The reason I am so rough on both Mr. Taplin and Mr. Stewart is that they garble my statements when quoting them. The right way to conduct a discussion is to examine logically the statements of your opponent, but not to misquote him. Mr. Taplin's worst offence in this respect was to assert that I called lightning a superstition, whereas my statement was that lightning arresters are a superstition, which does not amount to the same thing. I offer this explanation in the hope that others will not be deterred from entering this discussion for fear I should be too rough on an honourable opponent. The facts contributed by VZ in the same issue as Mr. Stewart (p. 21) are very welcome, although how the catastrophes came about is not explained. The observations of M.M. on sparks from an aerial are also interesting, although the fact is

well known, but M.M. wants to remember that if he drew the sparks by disconnecting the aerial he thereby entirely upset the conditions of the problem and his conclusion about a spark-gap arrester does not follow. Has he actually drawn sparks with the aerial in siki in the absence of a gap, and then failed to draw them under the same conditions with a gap attached? Much of what is called experiment is vitiated by trying only one-half of an experiment and then jumping to a conclusion instead of patiently trying the other half. But the worst way of deciding scientific disputes is to thunder out pompous assurances such as that "when a house or aerial is STRUCK the evidence is destroyed." Nothing more unscientific and puerile could have been enunciated by an untrained schoolboy as this ultimatum from a consulting engineer, and I hasten to explain to Mr. Stewart that all I ask as evidence is for him to produce statistics of, say, one hundred houses destroyed or injured by lightning while aeriels were attached. We could then go into the matter, not hastily assuming that the aeriels were to blame or not to blame, and without bias for or against established authority, but merely applying logical methods to solve a scientific problem. While Messrs. Taplin and Stewart are undergoing a much-needed course of syllogisms to fit them for future encounters, may I appeal for evidence and opinions from others? I had hoped that Mr. Joseph would return to the subject that he passed over in his article on static because Mr. Taplin and I were still in holts. I am sure, Mr. Editor, that however else we differ, all will agree that no fairer field for these discussions was ever offered than is to be found in your columns, which all may enter unmaimed by that pencil of invisible blue that friend and foe alike have learned to dread elsewhere. Thanking you for this courtesy.

Yours, etc., ION.

M. Stanley Catlett, who is now broadcasting regularly from studio 2FC, is one of Sydney's best known tenors. Mr. Catlett has a very extensive repertoire and his works are appreciated by listeners-in.

Mr. Alexander Whitson, well known by his work on concert platforms in Sydney, is another artist whose baritone songs are much appreciated by listeners-in, who receive entertainment regularly from Farmers' 2FC Station.

SPECIAL NOTICE.

Referring to the advertisement on page 43 of this issue, headed 2ZN. Please note that the telephone number should read Randwick 845. This error was noticed only after a large number of that particular portion of the paper had been printed.

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Frozen in the ice for weeks within 11° of the North Pole, the "Zenith" Radio set taken by Dr. MacMillan on his recent expedition provided the famous explorer and his men with the only news obtainable of the outside world.

This set, carefully selected for its adaptability to any climate and condition, was equipped with both Radion panels and parts. Radion once again proved its matchless qualities under the most vigorous test any radio equipment was ever put to.

Radion will prove equally supreme in any climate. It is made expressly for wireless work and far excels any other material in the four main radio essentials, namely:

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4. Low Absorption of Moisture

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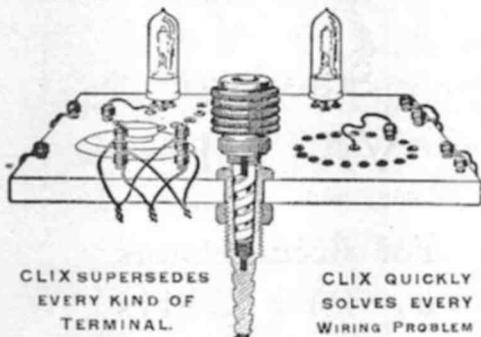
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200 Castlereagh St., Sydney, N.S. V.



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A SET constructed of the best parts, correctly and neatly wired, and backed up by service, **MUST** be efficient. Isn't it so?

Service covers practically every little trouble the set owner may bump. The true measure of Service inevitably brings satisfaction to the client.

Every set we make is backed by—Efficient Parts—Accurate Construction—Correct Design—the practical experience of Mr. W. Cottrell (2ZN)—and our guarantee that it will function satisfactorily. You cannot ask more—or for that matter—less.

Our activities cover the building of complete receivers and complete transmitters, and the rewiring or repairing of your present receiver.

Sets made for the trade.

"PAT" BROWNE & W. COTTRELL,
AVOCA STREET,
RANDWICK, N.S.W.

'Phone: Rand. 1232.

ARGENTITE CRYSTALS

KNOWN THE
WORLD
AROUND AS



THE MOST
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SOLD WITH AN ABSOLUTE GUARANTEE BY THE BEST RADIO DEALERS

Australian Distributors:

WELBY RADIO CO., 13 ROYAL ARCADE, SYDNEY.

PROCRASTINATION

IS THE THIEF OF TIME!

WHEN you keep putting a thing off, somehow it never seems to get done.

How often have you missed a copy of "Wireless Weekly" just because you forgot to call at the bookstall before they were sold out?

"Wireless Weekly" keeps you in touch with everything wireless.

Its columns of reading matter gives you information you can get from no other paper. Its advertisement columns keep you informed of all the latest apparatus arriving on the market.

Let it keep you up to date. Get it regularly by mail.

"SUBSCRIPTION FORM."

To the Editor,
"Wireless Weekly,"
12/16 Regent St., Sydney.

Please forward me for.....
months "Wireless Weekly," for which I
enclose.....plus exchange of
country cheque.

.....192.....

Signed.....

Address.....

Annual Subscription, 13/-, post free.

Just Arrived.

Standard VALVES

For Accumulators
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Prices
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David Jones' have secured large stocks of standard quality valves and now offer them at specially keen prices.

For use with Accumulators
Cunningham 301 A Valves
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Philips D, IV & DV. with
American type base
Price 15/-.

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Cunningham 299 Valve
with Bakelite base. Price,
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DAVID JONES'

for Radio Service

22 YORK ST. SYDNEY

RAMSAY RADIO RECEIVERS AND SUPPLIES

DUTCH 4 VOLT VALVES	12/-	"MARCO" Series Parallel Switch	8/9
"MARCO" Single Circuit Jacks	2/6	" Off and On Battery Switch	7/-
" Double Circuit Jacks	3/6	" Variable Grid Leaks	10/6
" Single Filament Jacks	3/9	R.P.M. Amplifying Units, Moulded, in	
" Double Filament Jacks	4/3	Brown Bakelite, Wired	£3/5/-
" 30 ohm Rheostats	7/-	R.P.M. Detector Units as above	£1/17/6
" Inductance Switches, 7 point		FOOTE Variotectors	10/-
to 11 point, from 8/9 to 10/6		" Fixed Dectors	8/-

Write for Catalogue No. 16. Special Discounts to Dealers on Marco
Parts. Write or call to

Ramsay Sharp & Company Limited

RADIO ENGINEERS,

217 GEORGE ST., SYDNEY.

This stock must be cleared AT COST !

On behalf of RADIO CO., LTD. in Liquidation

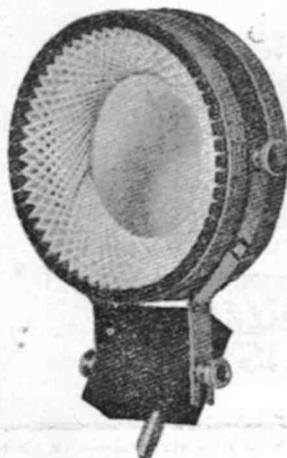
SPECIAL TRADE DISCOUNTS FOR CASH.

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COUNTRY INQUIRERS WILL RECEIVE IMMEDIATE ATTENTION

EDWARD FAHEY & COMPANY, 2nd Floor, 88 Pitt St., Sydney

DIAMOND SUNFLOWER LOW LOSS COILS



But the expert buys only the "DIAMOND SUNFLOWER," because—

1. Their inductance and sharpness of resonance touch 100 per cent., aiding long distance results.
2. Their self-capacity is practically nil.
3. Their high-frequency resistance lowest yet obtained.
4. Loss through Dead Ends cut clean out. Windings calculated to decimal of an inch, and all connections positive.
5. Maximum tuning possibilities obtained owing to the numerous angles available.
6. They are almost indestructible, being wound inside a robust ebonite former, but at the same time being neat and effective in appearance.

Obtainable from—

Farmers Ltd., Humphries Ltd., Electricity House, Radio House, and all
High-class Retail Stores.

Coil against Coil, "Diamond Sunflower" comes in first every time.

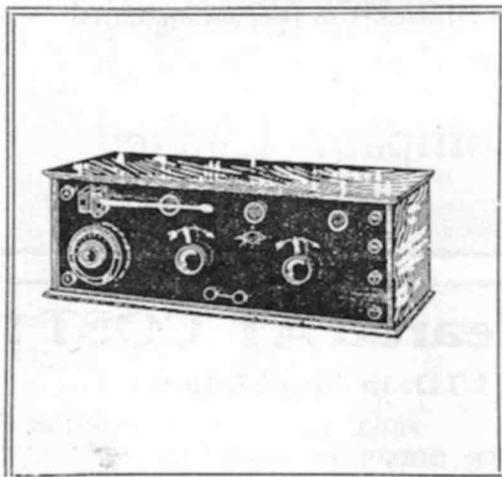
Sole Agents **EDWARD FAHEY & COMPANY, 88 Pitt St., Sydney**

Agents wanted everywhere.

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READY TO WIRE SETS

Genuine Radio Sets that will work



Our Ready-to-Wire Sets are complete with wiring diagrams.

No previous experience necessary to wire a COL-MO Ready-to-Wire Set.

Wiring takes Time and Time is Money

DO THE JOB YOURSELF AND SAVE MONEY

ONE VALVE SET:

Complete with Cabinet

£2/15/0

TWO-VALVE SET:

Complete with Cabinet

£4/10/0

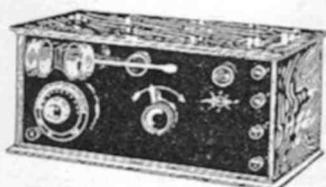
THREE-VALVE SET:

Complete with Cabinet

£6/5/0

COLVILLE-MOORE
WIRELESS SUPPLIES, LIMITED.
 10 ROWE STREET (NEAR HOTEL AUSTRALIA) SYDNEY

COL-MO LITTLE GIANT SETS

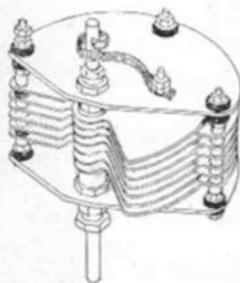


The Little Giant Sets are sold complete with all accessories, including aerial wire. The three valve Little Giant is complete with all accessories and Loud Speaker.

One Valve Set £7/10/-
 Two Valve Set £12/10/-
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THE LITTLE GIANT ALWAYS LIVES UP TO ITS NAME. A GIANT IN TONAL QUALITIES, EFFICIENCY AND SIMPLICITY OF OPERATION ARE FEATURES NOT SURPASSED IN LARGER HIGHER-PRICED INSTRUMENTS.

Col-Mo Low Loss Condensers



It is interesting to note that at last a GROUNDED ROTOR brass plate condenser of the LOW LOSS type has been constructed in Sydney. The construction is entirely of brass, having brass ends common to the Rotary plates, and electrically connected thereto by a pig-tail connection of brass flex. Absolutely no body capacity effects are possible with this condenser for in addition to the earthed end plates, the fixed plates are further screened by two extra Rotary plates. Designed on a straight line principle to facilitate accurate tuning.

COLMO LOW LOSS CONDENSERS are made in one capacity only .00025. This obviates the necessity of a vernier, thereby reducing high frequency losses. PRICE 16/-

Colville - Moore
Wireless Supplies, Limited
 10 Rowe Street (Opposite Hotel Australia) Sydney

Want to hear more stations ?

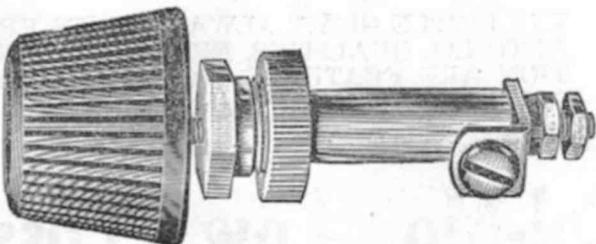
Old Man Ohm says it's easy if you know how to vary the resistance smoothly and continuously in your radio set.

Old Man Ohm knows all about resistance. He's the fellow who goes around measuring it.

The Marshall-stat is a great favourite of his, because it varies resistance, not step by step, but smoothly and uninterruptedly from zero to maximum. On the Marshall-stat, Old Man Ohm can get any resistance he wants with absolute precision.

So can you. And if you control the tubes in your receiving set with Marshall-stats you will hear new stations and clear up those which you hear only occasionally and then indistinctly.

The Marshall-stat is the ideal rheostat for radio work. It is compact in size (see full size cut), takes up very little room, and can be fitted anywhere.



Marshall-stat

Exact Size.

Its resistance discs are made of specially-treated material which is the result of years of experimental and research work by radio and electrical engineers. They are absolutely uniform throughout, and are so constructed and proportioned that breakage is impossible.

For smoothness of adjustment, there is nothing like the Marshall-stat. Take Old Man Ohm's word for it.

WHY OLD MAN OHM LIKES THE MARSHALL-STAT—

It requires only one hole in panel. Can be inserted in hole from which old rheostat is removed.

Vernier all the way—but only one adjustment to make.

Can be used with any tube or combination of tubes.

Working parts entirely enclosed in nickel-plated chamber.

Knob can be replaced with knob of your set.

Get it in the green, orange, and black box.

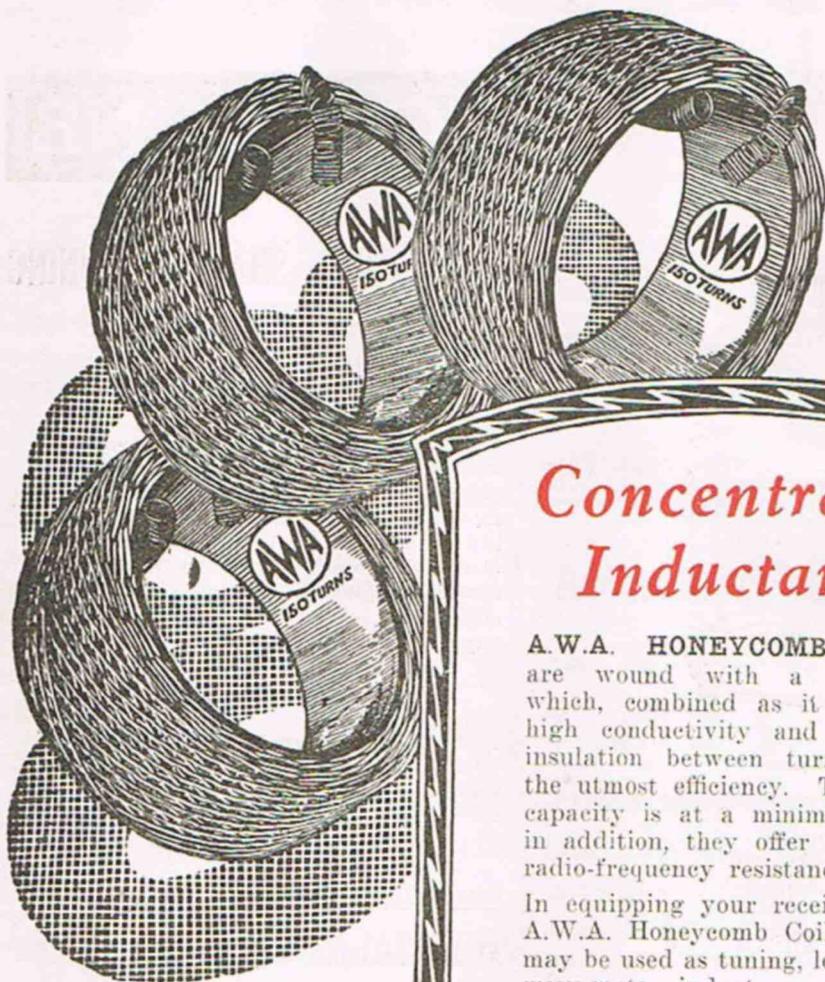
PRICE
10/6

PACIFIC ELECTRIC CO. LTD.

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Concentrated Inductance

A.W.A. HONEYCOMB COILS are wound with a precision which, combined as it is with high conductivity and effective insulation between turns, gives the utmost efficiency. Their self capacity is at a minimum, and, in addition, they offer very low radio-frequency resistance.

In equipping your receiver with A.W.A. Honeycomb Coils, which may be used as tuning, loading or wave-meter inductances, you secure maximum all-round efficiency. Each Coil is attractively boxed, a wave-length table being printed on every carton.

Procurable from all Radio Dealers

Amalgamated  **Wireless**
(Australasia) Ltd.

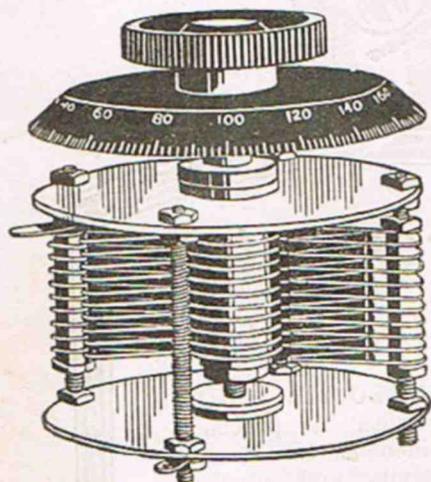
97 Clarence Street, Sydney
"Collins House," Collins St., Melbourne



PRODUCTS

GECOPHONE

MORE VOLUME — SHARPER TUNING



GECOPHONE Condensers
in capacities.

.0003	M.F.	Price, 17/-
.0005	"	" 21/-
.001	"	" 30/-

The expectations of the wireless enthusiast are fulfilled by the lasting accuracy and dependability of the GECOPHONE Condensers.

The all metal frame is rigidly constructed and the high-grade aluminium plates are closely spaced and accurately shaped and fitted. Insulation is at an absolute minimum, cutting out dielectric losses. GECOPHONE Condensers give the lowest minimum capacity. For mounting only one hole is required in the panel.

S.P. SWITCHES

Framingham high-grade series parallel switches for aerial tuning condensers, packed in neat boxes complete with ten contact studs and nuts.

PRICE, 5/-

AT ALL RELIABLE WIRELESS DEALERS

British General Electric Co. Ltd.

MAGNET HOUSE

154-6 CLARENCE ST., SYDNEY

And at

Melbourne, Perth, Adelaide and Brisbane

GECOPHONE Stands for Dependability in
Wireless Apparatus