

# WIRELESS WEEKLY

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VOL. 5. No. 17.

FRIDAY, FEBRUARY 20, 1925.

## 3D

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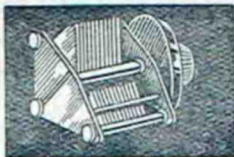
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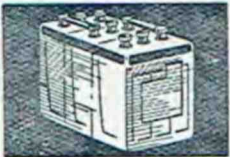
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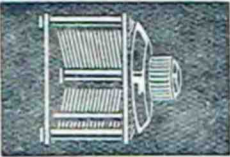
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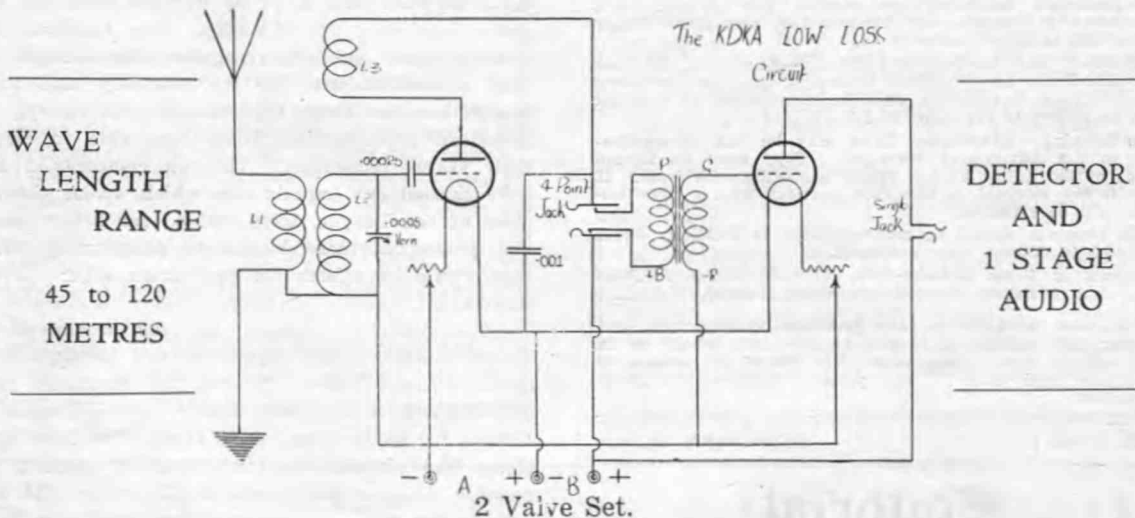
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Official Organ of the New South Wales Division of the Wireless Institute of Australia, with which are incorporated the Affiliated Radio Societies and the Australian Radio Relay League.

**Editor: A. W. Watt.**—The Editor will be glad to consider Technical and Topical Articles of interest to Australian Experimenters. All Manuscripts and Illustrations are sent at the author's risk, and although the greatest care will be taken to return unsuitable matter (if accompanied by stamps), the Editor cannot accept responsibility for its safe return.

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**Agents in Great Britain.**—The Colonial Technical Press Ltd., Dudley House, Southampton Street, Strand, W.C. 2...

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VOL. 5 No. 17

FEBRUARY 20, 1925

## Editorial

THOSE who really have the experimental cause at heart will welcome the announcement on the Wireless Institute pages elsewhere in this issue. At last something seems to be moving, and this paper welcomes the revival of interest in this subject, which constitutes one of the most important things associated with the Institute and with experimenters generally. Its real significance, unfortunately, does not seem to be appreciated by most transmitters, and previous attempts to organise the League and to start it functioning have been defeated by one thing only—apathy. The fact that three or four efforts have already met with failure, however, does not show that there is no place for the League, or that it is unwanted, but merely that the organisers have failed to impress upon amateurs the true significance of the League and what it stands for. Provided it were generally supported it would become one of the most important protective and progressive amateur organisations. But the support must come, not from N.S.W. alone, but from every State in the Commonwealth, and from every experimental transmitter. It has been argued that the relaying of messages is not experimenting, but in reply to that it might be stated that if the sole purpose of the League was to

QSR traffic, then its existence would not be justified. There is much more valuable work which could, with benefit, be handled by a properly organised and active union of amateur transmitters.

In the first place, we want a chain of amateur stations through which an urgent message may be passed from one side of Australia to the other at any time—day or night. That is the first objective. We have already been afforded several striking illustrations of the value to the American community of the American Radio Relay League, and in this issue appears an account of how a member kept a daily paper supplied with news by wireless when the telegraph lines were out of action. The American Government have publicly recognised the League and paid several tributes to its efficiency and value. Solely due to their organisation and unity, the American experimenters have been able to elevate their status immensely. Through co-operation they have carried out experiments which, under the auspices of the League, have yielded far better results and proved of more benefit to amateurs generally than would have been the case under other circumstances.

The American League has the whole of the United States at its finger-tips, and it requires no fertile imagination to picture the enormous value this is to the Government should they call upon the League for its services. Over there, they have something like sixteen thousand members against our possible three or four hundred. But even with that number we could make our Australian Radio Relay League just as efficient and just as useful.

And this important point must not be overlooked: With a fully organised League and with every transmitter a member, the transmitters would have a representative body which would be a powerful factor, not only with the Government, but with the public. There is no room for Interstate or individual jealousy in this matter. The Australian Radio Relay League is a body of which every experimental transmitter should become a member. The time for the establishment of the League is here and now; in our own interests we cannot afford to postpone it any further.

THE palm this week undoubtedly goes to 2GQ, Barlow, Armidale, N.S.W., as the first Australian to work America on one five watt tube. It seems almost incredible, but it is upon record that three Americans were actually worked with this extraordinarily small power. Needless to say, the efficiency of his station must have been got down to a fine art to enable these results to have been achieved by 2GQ, and all experimenters will congratulate him in having put up an entirely new and unbeaten record for Australian transmitters.

Congratulations, 2GQ!

HEADQUARTERS  
Royal Society's House  
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# Wireless Institute of Australia

N.S.W. Div. Inc.

Incorporating the Affiliated Societies and The Australian Radio Relay League



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

## Australian Radio Relay League.

The Australian Radio Relay League is a movement which is of great interest to all experimenters, particularly to the transmitting section, therefore it is necessary that enthusiastic experimenters should assist this movement to their full extent. The work of the Australian Radio Relay League is unlimited and will be of great benefit to all. Nothing will help the experimental movement so much as such a body, as every experimental section is catered for. Under proper organisation the D.X. Ham has a much better opportunity of carrying out useful long distance work with a far greater number to hear his transmissions, as a certain time will be set apart for relay work when D.X. Hams will specially endeavour to receive signals from distant stations being sure that these signals are transmitted.

The success or failure of such a movement depends entirely upon the co-operation of experimenters in this direction. Valuable experimental research can be carried out, as relay work will not necessarily consist of sending and receiving messages, but certain technical data will be thus available to the benefit of the transmitter and receiver while transmission is being conducted, and much should thus be gained which cannot be so if merely individual test is made.

Every transmitter willing to co-operate with this movement should at once get in touch with the Honorary Secretary, New South Wales Division of the Wireless Institute of Australia, Box 3120, G.P.O., Sydney. A practical start has been made, and if others co-operate the movement will be a huge success. Great work has already been done by the Australian experimenter, and greater work is to be done by him in future, so see if we cannot all pull together and show other countries what Australian experimenters are capable of doing.

Concerning this Radio League business. It might be said, "What is the use of stirring into life something which has died three or four times?" But don't forget sooner or later the League will go ahead by leaps and bounds, and

it is due to the hard work put in by Messrs. W. J. Robinson and P. Spencer Nolan and others that the track has been blazed even as far as it has gone up to date.

The genuine experimenter will appreciate the seriousness and importance of such a scheme as the Australian Radio Relay League. It has a national significance which cannot be estimated, but future results will show that the aims of a few with grand ideas and great ideals for this country were more than justified. To run a Relay League successfully means individual work for every operator concerned. This work may at times be tedious; but, then, don't we sometimes get tired of eating our meals, even?

We must look at it from a different angle to that in which we look at most concerns. It is not what we are going to get out of the League that is going to count, but what we are prepared to put into the League that is of paramount importance. The reward of the present generation is satisfaction in paving the way for posterity, and although danger might not encroach on our shores for many years, yet who can say that there will not be a war within the next six months? It is during such a time of stress the League will count, and in times of peace we must prepare.

Mr. Malone expects us to prove that the League can be a success, and instead of chopping us off short with the words, "You shall not have a League," he has used his discretion very wisely and left it to us to prove or disprove our ideals in this connection. Delay is dangerous; action is vital. Consider carefully; act immediately.

PHIL. RENSHAW,  
Hon. Sec.

## QRM.

2BF has been silent lately. It is rumoured that his mast collapsed in the recent gales.

2DS has brought back a collection of string and butts from 3rd district. On show at 2DS.

Our "Insulator" has been recovered. He was not so far away, after all.

Hecker, of Temora, is getting an eye full of the Sydney experimental stations.

Has anybody heard the modulation from 2ZG's new microphone?

The Wyles of Broadcasters' are far-reaching. Wiles' Wonderful Wireless.

2JR is watching the short wave development, and has his own ideas how it should go on.

2HM is still in the clouds. Every other Ham is lower down.

4AN is the only live transmitter in Queensland. Cheerio.

The only State that matters in the Commonwealth is Victoria. Vide Citizens' Consolidated Radio Call Book of America.

London Broadcasting has nothing out of Sydney. Latest files to hand show that listeners-in in London complain about the quality of the programme. We never hear any complaints in Sydney.

J. W. Robinson, 2RN. He's now in Sydney. Returning to Bananaland next week. We wonder what his four will be.

Publicity Officer will in future conduct this column. He has returned from holidays very refreshed. Look out for good stuff next week.

Waverley Club is holding high revel on the 24th. Don't go unless you have an invitation. It is a very exclusive club. Howell we manage it.

Has everybody forgotten KGL? A gum-drop is the prize being offered to the first station reported hearing him by 2CM. Marshmallow's in Radio.

Have you ever seen the leaning tower of Pisa? If not, a very good substitute is 2GM's new mast.

Most Broadcast listeners are suffering from Kdkaitis.

#### PUBLICITY OFFICE.

## Round the Clubs

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

### STRATHFIELD AND DISTRICT RADIO CLUB \*

*[Editor's Note.—We regret that this report was inadvertently held over from last week.]*

The weekly meeting of the above Club was held at the club rooms, corner Albert Road and Duke Street, South Strathfield, on Monday evening, 2nd inst.

The attendance was very good indeed and indicated the increasing interest of members in the club's activities. Our friend and radio bug has also been very busy of late in this locality and as a result two new prospective members came along

to see if they could find anything to interest them at the club, and one old member of the now-active variety turned up and promised to repair the error of his radio ways in future.

A very interesting evening's entertainment was provided by our President, Mr. A. F. Jacob, who brought along his home-made 'high-loss' short wave receiver to try out on the club's aerial, and to demonstrate how cheaply a really efficient compact, and easily portable receiver can be constructed. The circuit used consisted of the ordinary tri-coil detector and one step audio with untuned aerial employing home-made coils wound on the low loss principle, and two dull emitter valves. No special low loss apparatus other than the coils was used. The panel at one stage of its career was a board from a packing case, condenser hand capacity effect was eliminated by using the bottom of a preserved fruit tin as a screen, and the condenser itself was of the very ordinary type with additional vernier plate.

Considerable ingenuity was displayed in the design and construction of the tuner, and considering the inferior materials used the appearance of the finished article was very satisfactory. To demonstrate its efficiency Mr. T. Harris took charge of its operation, and succeeded in getting N.Z. amateur stations at such strength that they were readable some distance from a loud speaker, and with 3 sets of phones connected up at once 6BUR, an American amateur transmitter was easily readable. The demonstration was a convincing object lesson on the "High Loss" theory, as well as showing the remarkable efficiency of present day low power short wave transmissions.

Morse practice and the usual general discussion terminated the proceedings.

Practical demonstrations will be a regular feature of this club's activities in future, and from time to time lectures on the theory of various pieces of apparatus will be arranged. Correspondence addressed to the Hon. Sec., Mr. K. Campbell, 44 Bayard St., Mortlake, will receive prompt attention.

### STRATHFIELD AND DISTRICT RADIO CLUB \*

The weekly meeting of the above Club was held at the club rooms, corner Albert Road and Duke Street, Strathfield, on Monday evening, 9th inst. The meeting was very well attended and the proceedings very interesting. The first business of the evening was the admission of two new members after which some time was taken up in a healthy discussion on the merits and demerits

(Continued on page 7)

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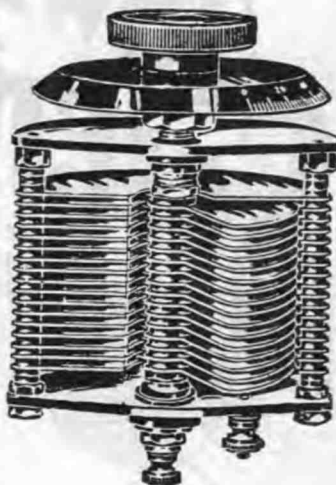
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(Continued from page 4.)

of the suggested scheme for clubs taking an active part in experimental research work as outlined briefly at last Delegates' Council Meeting of the Wireless Institute.

Opinion seemed very much divided on the subject, and our Delegate's instructions regarding the attitude he is to take up at next meeting of the council are by no means too definite. However, it is to be hoped that some definite scheme can be formulated by the Delegates' Council, in keeping with the desires of members of affiliated Clubs whereby the Clubs can enter in a competitive spirit in some general scheme of experimental research work. There is plenty to be done and the average club should be in a position to find a few experimenters willing to work in their club's interests.

The remainder of the evening was taken up with a short lecture on the Construction and operation of efficient Crystal receivers, illustrated with apparatus by Mr. P. H. Turner-Makin, and the exhibition of a low loss tuner by Mr. Allen Smith, which was satisfactorily tested on the Club's aerial. Morse practice for beginners and an interesting discussion of technical points by the more advanced members completed the proceedings.

Regarding the "high loss" set exhibited by Mr. A. F. Jacob at the last meeting, he reports having received KDKA very strongly, and several low power American Amateur stations at readable strength on this set, during the week on his own aerial. These facts are vouched for by experimenters who were his guests at the time and who were able to read the Morse signals received. Considering the remarkably cheap and apparently inefficient materials of which the set is constructed, it certainly gives remarkable results and convincing proof of the wonderful efficiency of short wave low power transmission.

Correspondence regarding club's activities addressed to K. Campbell, Hon. Sec., 44 Bayard Street, Mortlake, will receive prompt attention.

#### SPECIAL NOTICE.

On account of pressure of space, the Information Column had to be omitted this week.

#### RAILWAY AND TRAMWAY RADIO ASSOCIATION.\*

[Editor's Note.—We regret that this report was inadvertently held over from last week.]

The Railway and Tramway Radio Association is making steady progress. 1924 was a very successful year, many new members joining up. It is the committee's aim to make 1925 even more successful.

A juvenile section of the Association is being formed and it is hoped that many young people will gain the full benefits of lectures which are being arranged for their benefit. At the last meeting it was decided to instal a low-loss receiver and this should be in working order for next meeting.

A buzzer class has been formed and all members are enthusiastically practicing the Morse Code.

It is hoped that early this year the Club's transmitter will be in operation, when some very interesting experiments will be carried out.

Under arrangements made by the Wireless Institute of Australia, Club Delegates' Council Lecture Committee some very interesting and instructive lectures have been given. These lectures were very much appreciated by the members.

Arrangements are being made for more of these lectures to be given.

Enquiries regarding the Association's activities will be welcomed by the Hon. Secretary, Mr. W. L. Carter, 129 Phillip St., Sydney.

C. H. CLARK, Publicity Officer.

#### BRIGHTON SECTION OF THE WIRELESS INSTITUTE OF AUSTRALIA

A most enjoyable evening was experienced by members of the above club last Thursday evening at a smoke night, tendered to the President of the club, Major R. P. Whalley, who on the 11th of February, is to be married to Miss L. Elleson, a lady member of the club. Mr. Parker was asked, on behalf of the club members to make a presentation of a dainty tea set, to Major Whalley and Miss Elleson to mark their esteem on this memorable occasion.

A lecture was also given by the Hon. Secretary and the Hon. Assistant Secretary, Mr. Kerr and Mr. Muir, the subject being aerials and their erection, the lecture was illustrated by means of a lantern and slides. This novel method of illustrating lectures was warmly appreciated by members who passed a hearty vote of thanks to the lecturers at the termination of the lecture.

Last Thursday's meeting also marked the last meeting in the old club-rooms which were in the Wilson Recreation Hall, Middle Crescent, North Brighton. All future meetings of the club are to be held in the new club rooms situated in the Higinbotham Hall, at the Brighton Library Building.

(Continued on page 41, column 2)

**FOR SALE:** Two stage audio amplifier in polished maple cabinet, complete with Marconi R valves with plug and jacks to use Detector, 1st stage audio and 2nd stage audio. Will sell for half price for quick sale—£7/15/-. Charles Walker, Clifton, Queensland.



## WITH OUR READERS

To the Editor.

Dear Sir,—Amidst all this orgy of reception of KDKA, I beg to report something different. This station was first picked up on my single tube Reinartz on 24/1/25, and has been heard practically every night since then.

However, here's the rub. Since the 28/1/25 I have been able to log him without aerial or earth. Using this arrangement his carrier is quite strong, music is distinct, and the announcement, "KDKA here," is at all times audible. I might mention that the aerial is earthed during this reception, so everything is O.K. in that direction.

The reception of amateurs without aerial or earth is becoming a regular thing here. My DX list for this type of reception now stands as follows:—

N.S.W.—2GQ, 2HM, 2RJ, 2CS, 2CR.

Vic.—3AP, 3BD, 3OT, 3BM, 3TM, 3JH, 3JH, 3BQ, 3LM, 3BP, 3HH, 3EM.

Qld.—4AN.

S.A.—5LO, 5BG.

N.Z.—1AA, 1AO, 2AC, 2AP, 2XA, 4AA, 4AG, 4AK.

U.S.A.—6AWT, KDKA.

Thanks very much for the Yank QRA's o.m. It was almost impossible to get them before.

With regard to the several modifications of my Reinartz receiver, I do not desire to publish these at the present time, but should any genuine ham desire to know them, I will be pleased to inform him either personally or by letter.

73's,

LAWRENCE E. DEANE,

Radio A—1863.

To the Editor, "Wireless Weekly."

Dear Sir,—During the past few days, and while we have been engaged on KDKA, I notice the appearance of several letters in the press from various people stating that their reception of the American station was affected when using a loop aerial, while some claim that the signals were unaffected by the disconnection of aerial and earth leads.

These results are perfectly natural, and do not, as suggested, form a world's record.

It must be remembered that with all short wave receivers the aerial is aperiodic, the coupling or transfer of energy to the tuned circuit being made by a few turns of wire in series between the aerial and earth; consequently, if the aerial is earthed or left free, there is sufficient coupling to transfer energy. This is even the case though the receiver be moved to any part of the room. When, however,

the apparatus is removed altogether from the influence of the aerial, the signals will cease altogether.

It was my experience when using a loop on KGO that the signals were strong when the loop was within the influence of the aerial, but they became very much weaker when the apparatus was removed to a remote spot.

The foregoing remarks are based on the results of my experiments, and may prove of interest to your readers.—Yours truly,

RAYMOND ALLSOP,

Radio Engineer,

New System Telephone Pty., Ltd.

Radio Station 2YG, Byron Street, Randwick.

To the Editor, "Wireless Weekly."

Sir,—Just a line to let you know that interest in wireless matters is growing apace up here. The value, help, and instruction gained from your paper has contributed largely to the success of local enthusiasts. A radio club—the Dubbo Radio Club—was formed last October, and we have now some 30 odd members. One of the objects of the club is the making of a 5-valve set with loud speaker for use for the educational session if re-commenced, for the hospital patients from time to time, and for the club and townspeople generally. The case and panel we have completed, and subscriptions are being obtained locally for the parts.

An item in your paper a short time ago asked for long distance crystal reception results. Farmer's (Sydney) concerts have been heard throughout plainly on a single slide set using home-made variable condenser (brass foil inside and outside a glass lamp chimney) and Q.S.A. crystal. The home-made condenser has been replaced by a 23 plate variable, with the same results. This does not seem to be "freak" reception, as six or seven similar sets were made by boys here and good results achieved, given a good aerial and a good night. Since then, however, valves have been added as the "bug" bit deeper, and the P1 and ST100 are most used now. A suggestion I would like to make is to publish a list of the letters such as QRM, QSA, 2SL, etc., with their meanings, as several juniors (and seniors) are a little puzzled by some of them.

I have a 2-valve ST100 set, made to the circuit given in "Wireless Weekly" of November 28th. I am using the alternative circuit, with only 30 volts on the plate and the negative of the B battery to

(Continued on page 28)

# RADIOELECTRIC CRYSTAL VALVE SETS

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# STATIC

By E. Joseph.

**T**HE greatest hindrance to the effective use of radio, the cause of most of the complaints levelled at broadcasting, the factor least understood, and therefore most difficult to deal with in any radio telegraph or telephone system, is the effect of atmospheric electrical conditions, generally known as "Static."

The vague ideas and the strange opinions held concerning it call for some measure of explanation. An opinion which seems to be general is that a static-causing condition existing anywhere on the straight line between the transmitting station and a receiving one, even though such condition exists several hundred miles from either station, causes defective reception, although the local conditions may be perfect. If the conditions existing midway or thereabouts had this effect it would necessarily follow that interference would be so bad between stations that it would be almost impossible for transmissions and receptions to be carried out at the same time if the lines of transmission cross each other.

This is not the case. The conditions existing at any place or point on the line of transmission, which, by the way, is usually, although not necessarily, always a straight line, do not adversely affect a receiver unless such conditions exist in the locality of the receiver. For example, 3LO may transmit during a violent thunderstorm over Melbourne, but reception in Sydney from 3LO may be perfect. It is only the conditions in the vicinity of the receiving aerial which matter. Static may be divided into four main classes: (1) direct instantaneous effects caused by a charged cloud suddenly discharging itself to earth via the aerial—a lightning discharge for example; (2) inductive discharges when a lightning flash either from cloud to earth or between two clouds at some distance from the receiver, is powerful enough to induce a charge in the aerial. This is exactly the same as the effects on each other of two coupled circuits; (3) conditions existing on what is apparently a calm and perfect night, usually when the dew point is low—that is, when the atmosphere is dry and a gentle breeze blowing. This causes the air to become charged by friction between the molecules. The charged air passing the aerial gives up its charge to it and the charge leaks to earth causing more or less damped train of waves

in the aerial circuit. The aerial thus behaves in a somewhat similar manner to that which it is assumed an ordinary lightning conductor does; (4) a condition of charged rain-drops impinging on the aerial during their fall and giving up their charge to it in a way similar to that explained in No. 3.

These four conditions are fairly easy to distinguish. The first is of course unmistakable, and may do serious damage to the aerial or its supports and to the set and perhaps—although there appears to be no record of such an occurrence—to the operator. It is not proposed to describe any methods of protecting the apparatus against disaster from this cause, as the subject has been and is still being dealt with at some length and with some acrimony in the correspondence columns of this journal.

The second class causes crashes to be heard at intervals and usually occurs during a storm at a short distance from the receiver. If the disturbance is near enough for the lightning flashes to be seen, it is noticeable that at the instant of the flash, a crash is heard in the phones and a few seconds later the thunder is heard outside the phones. This really means that two claps of thunder are heard, the first transmitted electrically (by radio) and the second a sound transmission through the air.

The third class is weaker, but frequently most troublesome because an almost, or sometimes quite, continuous crackling is heard. This is prevalent to a greater or lesser extent throughout the year and is usually worse in hilly country. It is not generally known that the air is always charged and that its potential rises with the height. The normal difference of potential between the air at ground level and that at say a height of only 5 feet (in the space near one's head) is several thousand volts! The layers of air must therefore be carrying a charge like the plates of a condenser and any alteration of the height, that is of the distance between the plates, must cause alterations in the potential. Is it not generally realised that a condenser with say 1/4in. between its plates and charged to say 100 volts becomes charged to a much higher pressure if the top plate is insulated and then lifted further away from the bottom plate? This is quite clear if we remem-

er that a condenser stores up energy in its charge. The amount of energy depends upon the capacity and upon the charging pressure. If then I store up a given amount of energy and then reduce the capacity by increasing spacing of the plates, the pressure must rise, because the amount of energy is not reduced. Therefore, as a layer of air rises, its potential rises also, and if it moves up into a position where its potential becomes greater than is normal for that height, it will give up some of its charge at the first available opportunity. If this opportunity occurs when it passes an aerial we get the crackling sound.

The fourth condition gives effects which may occupy any position between those due to 2 and 3, or may combine them. Quite big sparks may sometimes be drawn off an aerial during a rain-storm. I have noticed sparks two inches long jumping an opened earthing switch at intervals of a few minutes and know of at least two cases where persons have experienced severe shock on touching the lead in from an aerial which has been left insulated. There is, by the way, another erroneous belief regarding "static." It is that reception at some wavelengths is more susceptible to it than at others. This is really incorrect, although observations on any aerial would lead one to assume that it is correct.

An aerial appears to be more susceptible to static interference when tuned to a wavelength near its fundamental (or natural) wavelength or any harmonic or sub-harmonic of it. "Static" has no wavelength. Even when due to an oscillatory discharge—and most lightning flashes are oscillatory—the damping is so great that resonant effects are barely noticeable. Briefly, their resonance curves are very flat. I am sorry I am not able to couch this in language which would be more easily understood by the very large number of beginners in radio. To them decrements are unknown quantities because they have no opportunity of listening to anything except undamped waves which have no decrement. The "old timers" who for years had nothing but spark stations to "tune in" will perhaps understand it. The regret just expressed in on account of my readers and I also regret on my own behalf also this time, that I am unable to explain how "static" may be eliminated. I am not able to make a "static eliminator," although I understand that there is a gentleman in Sydney who has made one and who gave a demonstration of its utility recently before representatives of a prominent firm handling radio sets and material. The demonstration turned out quite successful for the demonstrator, but somewhat

less so for his audience. Certain steps may be taken with the object of reducing the trouble.

(1) The use of an aerial circuit which is well damped. Try introducing resistance by means of a rheostat in the earth lead. This will cause the oscillations set up to die away rapidly instead of being persistent. (2) Do not connect the aerial directly to the rest of the receiver. Use coupled circuits and keep the coupling as loose as possible. This will prevent the non-persistent oscillations from transferring much energy into the secondary. (3) Use "low loss" coils supplemented with reaction to decrease the damping of the secondary circuit and of any succeeding circuits. This will cause them to be very selective then; (4) slightly detune the aerial. The static will take the wavelength to which the aerial is tuned. The signals will not. The secondary will respond vigorously to the signal current to which it is tuned but only feebly to the static to which it is not tuned. (5) Do not try to get very loud signals. Audio Amplification will magnify "static" just as much as it does music and the irregular discordant crashes of the former prevent the regular rhythmic variations of the latter from being heard. Finally, remember that in listening to telephony one is watching for variations in pitch and intensity of sound, but in telegraphy only to the presence or absence of sound. The latter is perceptible through a far greater amount of interference than the former.

The various modifications detailed above will of course reduce signal strength but after all "legible" music or signals of strength 6 are preferable to discord of strength 60. As a matter of fact a very large proportion of users of radio sets are concerned to a far greater extent with getting maximum volume than with getting purity. They seem to prefer quantity to quality. In proof of this we have the use which is made of "push pull" amplification. Undoubtedly this will give enormous amplification without seriously increasing distortion, but let it be tried the other way—that is, to produce increased purity without greatly increasing volume and the results are astounding with a properly arranged and controlled set.

Before closing I must mention one little fact which I fear I have overlooked. When a set is adjusted for maximum amplification and is just below the point of oscillation a static discharge and sometimes a particularly strong signal will throw it into oscillation. This state may die out on the cessation of the cause. It all depends upon the adjustment. The filament current and the grid

leak and condenser have some bearing on this point. The setting should be such that the point on the filament rheostat at which the set breaks into permanent oscillation as current is increased, is as nearly as possible the same as the point at which oscillation ceases with decreasing current. There should be no "trigger" action which may be noted for example if a RF valve is given too much grid bias by means of its potentiometer, so that if we gently raise the filament current until it starts oscillating, we may reduce the current considerably before oscillation ceases. Under the former condition a "static" may set the valve into oscillation and re-adjustment is required to remove it, whilst under the latter the oscillation will cease of its own accord as soon as the causative agent ceases leaving the valve free to reproduce without distortion.

H.J.R. (Crow's Nest) and several others: Nothing doing until you observe the conditions mentioned at the head of this column. A subscriber is one who receives the paper direct from us by mail.

## Don'ts for those who Radio

By "Reo."

**D**ON'T blame the set. Blame the broadcasting station. Then you feel more confident you know how to handle it.

Loud speakers were not meant to blow tiles off roofs. Don't try to.

Don't regenerate unto others because you would not like others to regenerate unto you.

Don't strike matches on your panel. The piano is much better.

After you have rendered "Yes, We, etc., etc.," "It Ain't Gonna Rain No Mo," and other classics on your detector tube, don't go round to your DX friend in the next street and ask him if he liked them—that is unless you can run faster than him.

Soldering flux was not made to wash radio sets. Don't leave it smeared round yours.

Don't laugh when you are in a shop and someone comes in for a filament for a 201A or a vernier for his transformer. Remember, they used to pull your leg once.

Don't use more than three stages of A.F. unless you want your set to sound like two elephants doing eurythmics on the tin roof of a boiler factory.

Don't get disgusted and give your set to the kids to make a billy cart of (condenser dials make excellent billy cart wheels) because the man next door tells you he pulled in a station on one tube

that you can't get sitting on all four. You may not be as good a liar as he.

Don't build a super de luxe Rolls Royce receiver and expect to QSL Mars. Some of 'em wouldn't work on 2BL's roof.

Don't put everything except your shaving mug on the panel of your set. The less unnecessary junk you use the more distance you cover.

Don't test asthmatic B batteries across your valve filament. Buy a new battery—it's cheaper.

Don't take much notice of the average small town radio dealer unless he can prove himself. Nine times out of ten he ran a fish shop before he took on radio.

Don't drop valves on the table or the floor when you take them out of the set. Once may be all right but 99 out of 100 times, usually results in the decrease of a perfectly good toob.

Don't handle your set the same way as you do the lawn mower. Treat 'em gentle—they work better.

And, last but not least, and this is for you Low Loss Lawrence, and you Super Het Horace, don't affect that DX look; don't you get a valve-set air when talking to the humble crystalite. Rather try to help him than discourage him. He might get on the air some night with a set that will make yours look like diamonds in a pawnbroker's dust bin.

### A FRIENDLY GRIP.

Here is an extract from a letter from one of our subscribers. It speaks for itself:

"Your very helpful letter arrived this morning and I wish to thank you for it. Honestly, I now feel that I am working in a clear atmosphere instead of a mist of uncertainty. We must all learn from those who know a little more than ourselves. Many thanks."

"Wireless Weekly" is now on the air under the call sign 2WW. The present power is 10 watts, and the wavelength 165 metres. Station is located at 15 Cairo Street, Suspension Bridge, Sydney. Operator: A. W. Watt.

Reports from listeners will be appreciated. Hours of testing usually after 11 p.m. week days and at odd hours on Sundays.

Cecil C. Sainty, Vauluse, Sydney, has received a card from U1CMP—IPL, 32 Clarence Avenue, Bridgewater, Mass., reading as follows:—"Would you please tell the rest of the gang to QSL if they have heard us or when they happen to? Would be very pleased."

# THE VICTORIAN WIRELESS INSTITUTE

(To the Editor).

Dear Sir,—In connection with a communication signed by "Untrammelled Member" and published in your magazine on January 30th I was instructed by my Council at its meeting last night to request you to be good enough to publish the following facts in connection with the Constitution and activities of the Victorian Division of the Wireless Institute of Australia.

## The Constitution.

The constitution was adopted on the 20th day of November, 1923, and rule 3 states that "The governing body for the State of Victoria shall be composed of two delegates from each of the affiliated sections, to be known as the council, and the office-bearers shall be elected by ballot from these members by the delegates."

Rule 10 provides that "No rule or part thereof shall be rescinded, altered, or no new rule added, except by a three-fourths majority of the delegates present, and notice of motion having been given at a previous meeting."

This means that no alteration of the constitution, or in fact change of policy, can be made except with the expressed desire and authority of a majority of the members of the Victorian Division; provided, however, that the various sections are properly represented by delegates at all meetings of the council, and that these delegates carry out their duties by keeping their various sections fully acquainted with the activities of the division.

It is hardly fair to blame the council as a whole (the majority of the delegates being a conscientious body of enthusiasts) for the neglect of their own particular delegates in not keeping them fully acquainted with everything that goes on in the council chamber. In future members should be well-informed, as a publicity officer has been elected to provide the press with full reports of all our meetings and general activities.

## Grading.

At a general council meeting held on September 23rd, 1924, the delegate from Malvern formally gave notice of motion that at the next meeting he would bring forward a motion that the members of the Victorian Division should be divided into four grades. It was pointed out that this was practically the only association of this kind in which the members were not graded in some manner.

At the general meeting on October 21st it was unanimously agreed by the Council, or in other words by the members of the Division themselves, that membership should be in four divisions or grades as follows:

### Students.

To embrace all those who take any interest whatsoever in radio, irrespective of whether they hold a license or not, and in no case will any examination be required for admittance of a student member to the Institute.

### Associates.

Any person whose knowledge of wireless is equivalent to that required by the Government for an experimental operator's certificate is eligible for this division. If such application cannot satisfactorily prove his qualifications to the Executive he MAY BE required to pass either a written or oral examination.

### Fellows.—

Available to all those whose qualifications are equivalent to those required for Associates and who can prove that they have carried out some genuine experiments in wireless telegraphy.

Associate members are those who may be interested in radio or in the Institute, but have not any of the above qualifications.

This means that our ranks are open to all and sundry and everyone has the same and equal privileges and benefits, the only gain at the present time being that those who spend a certain amount of time in study and experimenting obtain a small amount of prestige amongst their fellow members and the general public.

The application form is the same that has been in force in this Division since 1910, with the exception that several personal questions have been deleted.

### Institute Activities.

Besides individual members creating records by establishing fairly regular wireless communication with all parts of the world, the Institute is inaugurating a series of schools of instruction under competent instructors, for the benefit of those members who wish to obtain an experimental operator's license, or merely to increase their knowledge of Radio. The first school will commence in the first week in March for which there are still vacancies.

The Division has purchased a block of land at Ashburton and as soon as we have collected

enough funds or equipment will commence the erection of a high powered experimental station, and will then be in a position to calibrate sets or equipment and also carry out some worth-while experiments.

The second annual exhibition is to be held at Wirth's Park in May or June, and every facility will be given to amateurs to exhibit their work and compete for various prizes for sets and equip-

ment. From present indications and reports from the Exhibition Committee this present exhibition is going to be the biggest thing of the kind yet held in Australia, and the Council is again relying on all sections and members supporting it as well or even better than they did last year.

B. JERMYN MASTERS,  
Hon. General Secretary, W.I.A., Victorian Division.

## Amateur Co-operation with Newspapers

*This little story, which reached us from the A.R.R.L. Headquarters, will be found very interesting. Never before has the value of the amateur to the community been more fully demonstrated.—Editor.*

WITH all telegraph lines connecting with the Associated Press national news sources out of order following a heavy snowfall, the "Decatur Herald" (Decatur, Illinois), a morning newspaper, went to press as usual with all important news events fully covered through the timely assistance of amateur radio. Five front page stories under various date lines distributed between New York and Los Angeles carried the head "By Amateur Radio."

In a subsequent issue, after the rush and excitement of the emergency had subsided and the wires had been repaired, the "Herald" carried a detailed story of the most unusual incident in its history under the heading, "Radio Amateurs Responsible for 'Herald' A. P. News." This graphic story of news-gathering under the most trying circumstances told how Mark Spies, of Decatur, and W. C. Fowler, of St. Louis, youthful operators of private telegraph transmitting, worked "nine-hour watches" for two nights in order to keep the people of Decatur in touch with news of the outside world.

In all newspaper offices no event is more dreaded than an accident which cuts off all contact with vital news sources, and the wires, usually so busy, suddenly grow silent. Immediately every facility of the paper is used to cement the break. In this case there appeared to be no solution until Herbert B. Rickards, radio editor of the "Herald," got in touch with Spies, of the American Radio Relay League, who reported by telephone that he had "raised" an amateur in St. Louis and was prepared at that moment to receive dispatches from the A. P. Headquarters in that city.

Inside the newspaper office the "Herald" editorial staff awaited impatiently every piece of copy that came to it through devious sources via the tele-

graph code and the ether. Despite the extra difficulties caused by the storm throughout the Mid-west, the St. Louis office of the Associated Press faithfully turned over the news to Fowler as it came in over the wire. One story stated that Illinois Central train No. 17 was lost somewhere in the snowstorm between Chicago and St. Louis; another described the Los Angeles murder trial of Kid McCoy, ex-pugilist; while a third told of the feverish advance in the New York market.

Each one of these dispatches was of a nature to warrant front page space, and the "Herald's" editors wrote off the headlines and sent the copy to the composing room as fast as it was received from the amateur radio station a few blocks away. In Spies' radio room things were by no means running smoothly. The weight of ice on the aerial wires caused a pull on the lead in, which broke the window and let the cold north wind into the room. There was nothing handy to stop up the hole, and Spies could not leave his receiver for some time to repair the damage. He turned up his coat collar and stuck to his work.

In addition to these difficulties," declared Radio Editor Rickards in describing the event in the "Herald," "fading made frequent repetition necessary and reception uncertain. Both operators, however, 'stuck to their keys,' working continuously without stopping for supper, and rendered a service which is perhaps unprecedented in the history of amateur radio."

"Communication at both cities was carried on under conditions that would try the patience of the most experienced commercial radio operator. Ice rendered the telephone service unreliable in St. Louis, and on several occasions the power source of the transmitter at Fowler's station failed entirely."



# The Construction of Your Own "B" Battery or "B" Accumulator

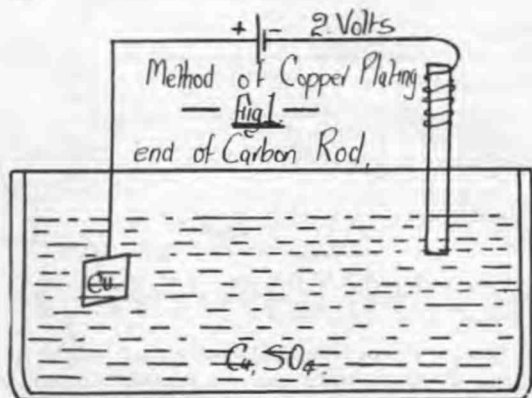
By "Wireless Weekly"

PROBABLY more than 50 per cent. of the foreign noises which readers are constantly complaining of emanate from faulty or run down H.T. Batteries. The two types of home constructed "B" batteries described here are very easily made and should cover the conditions of both town and country readers. This form of H.T. battery is not only efficient, but if kept clean is noiseless. No. 1—The Primary Cell Type.

This type needs no recharging, but occasionally requires new zinc plates and new solution added.

## Construction.

Small glass test tubes, 4in. or 5in. long by 1in. in diameter, should be purchased, also a quantity of 1/4in. carbon rod, a sheet of 1/8in. zinc and some sal-ammoniac. Quantities will, of course, depend upon the voltage "B" battery you intend to make up. The success of a battery of this type depends upon obtaining a sound electrical connection to the carbon rods. The best method of doing this is to copper plate the tips to which the connection can later be soldered. See Fig. 1.

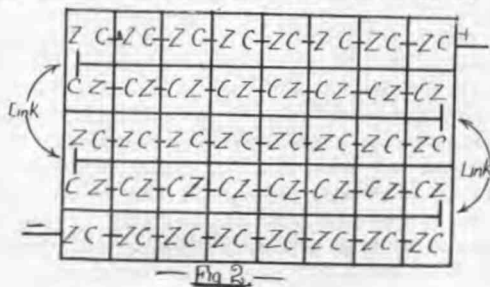


## Copper Plating Tips.

A small quantity of pure copper sulphate (recrystallised pure) is dissolved in water and the solution acidulated by the addition of a spoonful of sulphuric acid. Now place a small piece of copper inside your container (which may be of glass or earthenware) connect the copper to the positive terminal and a two volt accumulator and

the carbon rod to the negative terminal. The electrolytic action will now cause a deposit of copper to form on the end of the carbon rod. This process of copper plating is continued until a substantial film has been deposited, after which the rod is washed in water to remove any traces of the electrolyte. After sufficient copper rods have been plated they should be thoroughly dried, then thinned ready to attach the connecting wires. The voltage per cell is about 1.2; thus 40 cells will give approx. 50 volts. When you have decided how many cells you intend building, and have your copper plating and tinning finished, you should cut the same number of zinc strips as you have carbon rods; they should be cut out of 1/8 in. sheet zinc, 4 1/2 in. x 3/4 in. and 1 in. The end of the zinc should now be bent at right angles for a distance of about 1/2 in. and then soldered to the copper tips which have previously been tinned.

The soldering operation should be carried out with a very hot iron. This method of plating and tinning appears to be rather complicated, but obviously gives an extremely efficient contact and is therefore to be strongly recommended. A useful arrangement of the cells is five rows of eight cells, the containing case for which is about 16in.

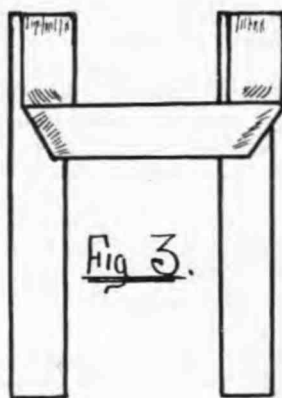


Arrangement of Battery

x 6in. This is made on the principle of a bottle crate and has 40 compartments to take the test tubes. The box should be made of hardwood about 3/8in. thick, built to a depth of 3 1/2 in. The partitions should be made from strips of three ply wood 1/8in x 1 1/2 in. the actual size depending upon the diameter of the test tubes you use. It is a very good plan to paint the case well with hot paraffin wax.

### Solution for Primary Batteries.

About half saturated solution of sal-ammoniac should be poured within about one inch of the top of the test tubes. The best method of mixing solution is to keep adding sal-ammoniac to two pints of water, until no more will dissolve in the water; then add two more pints of water to this. This sal-ammoniac solution has a tendency to creep up the carbons and form a thin film between the rod and the connection. To prevent this it is necessary to coat the tops of the carbons and zinc plates with some insulating compound such as paraffin wax, enamel or shellac.



### Assembly.

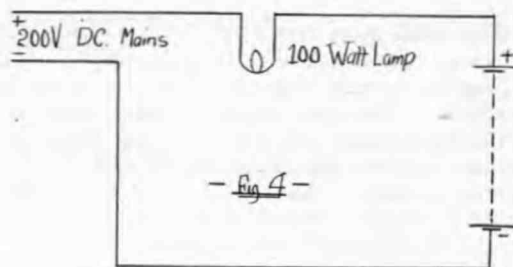
The battery can now be assembled: We will assume that you intend building up 50 volts; you will, therefore, have 40 rods and 40 plates. We will call the first cell of the first row No. 1, and the second cell No. 2, and so throughout the rows. The carbon of one pair goes in Cell No. 1 so that the zinc goes into cell No. 2. This is continued along each and every row as per diagram No. 2. Each row of cells can be linked together with pieces of stout wire joining the end of the carbon of one to the end zinc of the next. This will, of course, only be necessary if each row of cells is more than about  $\frac{1}{2}$  in. apart as the ordinary link will only span  $\frac{1}{8}$  in.

The construction of an anode (or plate) battery along these lines we are sure will well repay the user, as by adopting this method the following important advantages are obtained: Behaviour even on heavy loads warrants the time spent and it has extraordinarily long life without any renewals. Every pair of elements is free to be removed; any cell can be removed without disturbing the others, and lastly, every part of the battery is perfectly

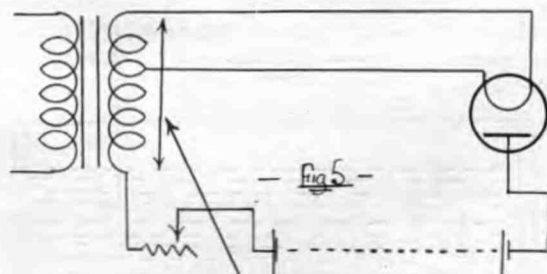
accessible for the purpose of cleaning, renewing the solution, or replacing worn zinc plates.

### No. 2—"B" Accumulators.

As an alternative to the use of primary batteries for plate current supply, miniature accumulators may be used, providing means are at hand



for recharging them. It is quite within the scope of an amateur to construct an efficient battery of this type. It should be remembered, however, that the output current of this type is not as good as that of the primary battery, so that for transmitting where fairly large plate currents are used, the primary cell type would probably prove the best. The voltage, however, of a secondary cell or accumulator is nearly twice that of a primary cell; we shall, therefore, only require about half the number of cells used for the Leclanche or primary battery. Here again, however, the accumulator differs in that the voltage falls from 2.2 volts to 1.85 volts, when recharging is necessary.



*Voltage across secondary must exceed voltage of B battery. Plate of valve goes to negative. Transformer goes to positive after passing through 20 ohm variable resistance.*

### Construction.

The general form of the battery can be modelled on that of the Leclanche type previously described. A suitable box should be made to take 25 glass test tubes, 4 in. x 1 in. and placed within the compartments as before. The cells should be

filled with sulphuric acid of specific gravity 1200 to within about 1 in. from the top. When the plates are inserted it will be found that the acid is now at the required level. The plates are cut from sheet lead  $1/8$  in. thick and  $1/2$  in. wide, cut into strips  $7\frac{1}{2}$  in. long. These strips are bent into the form of a U, the length of each leg being about  $3\frac{1}{2}$  in., the bend therefore being about about  $1/2$  in. It will be found that those two dimensions enable the lead U to just fit into two consecutive cells. Twenty of these lead U's should be placed in the glass tubes as described in connection with the assembly of the Leclanche battery. As before we require four larger U's for connecting the rows together. These are made from strips 10 inches long and are bent as in Fig. 3.

### Charging.

The method of charging will depend upon the available power. For the benefit of our readers we are covering as large a field of charging plants as possible.

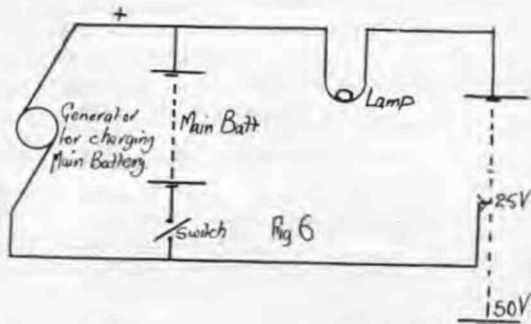


Fig. 4 shows a charging circuit from 200 volt D.C. mains. The voltage, however, is immaterial as long as it exceeds the voltage of the battery to be charged. The lamp which is used in the form of a resistance to obtain the necessary current for charging, should, however, be one suitable for the voltage used on the power mains. Care should also be taken to find the positive and negative and remember that positive goes to positive and negative to negative.

### 1st. Charge.

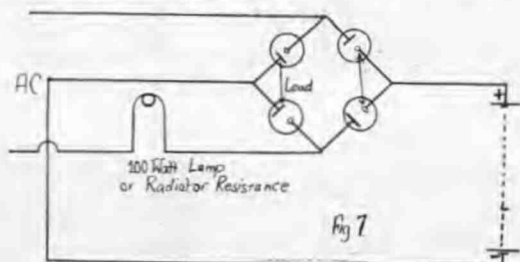
The two supply leads are connected respectively to the first and last plates of the battery; the action of the current is to cause a deposit of of chocolate coloured lead oxide to appear on the plate connected to the positive lead. On discharging, this plate will be the positive terminal and will always be recognised by the chocolate appearance. The forming process should be continued for about 30 minutes when the cells should be discharged through a lamp of high resistance.

After being charged and discharged in this manner for 3 or 4 times they may be used in a receiving set and after a continuous charge for about an hour should produce enough current to supply two valve for about 2 hours. As the condition of the battery improves by charging and discharging the amperage will increase and thus the same current can be withdrawn for much longer periods. We have an ordinary lead sheet grid accumulator which is three years old and which will supply the plate current for five English valves for a whole evening's use after half an hour's charging.

Fig. 5 shows the Tungar rectifier means of charging B accumulator.

Fig. 6 shows the 32 volt D.C. lighting plant installed in some of our country reader's homes. It will be readily seen that if the generator is stopped, the main battery will charge the B battery; care should be taken, however, to only charge half the battery at a time as the battery to be charged must be of less voltage than the battery or power mains charging it.

Fig. 7 shows the electrolytic rectifier. Materials required for the rectifier are as follows: 4



glass jam jars, saturated solution of Borax in pure distilled water, small quantity of pure aluminium, and lead sheeting  $1/8$  in. thick. Cut strips of about  $9\frac{1}{2}$  in. long by  $1/2$  in. wide, form into shape of U, and place them in jars as per Fig. 7. Before using, each cell should be formed by connecting them in series with 100 watt lamp. The lamp will gradually get dimmer as the forming of plates takes place. When it is about half brilliancy the plates are in a "fit state to charge your battery. Keep the temperature down. The best way to do this is to make short quick charges. Keep the aluminium clean. It may be cleaned mechanically or by treating with acid. Thoroughly wash the aluminium before putting it back into the cell. It is a good plan to place all the aluminium plates in a strong solution of nitric acid for half an hour and then thoroughly wash. Those readers who have been experiencing difficulty with their rectifiers will be wise to follow this plan the next time they clean them out.

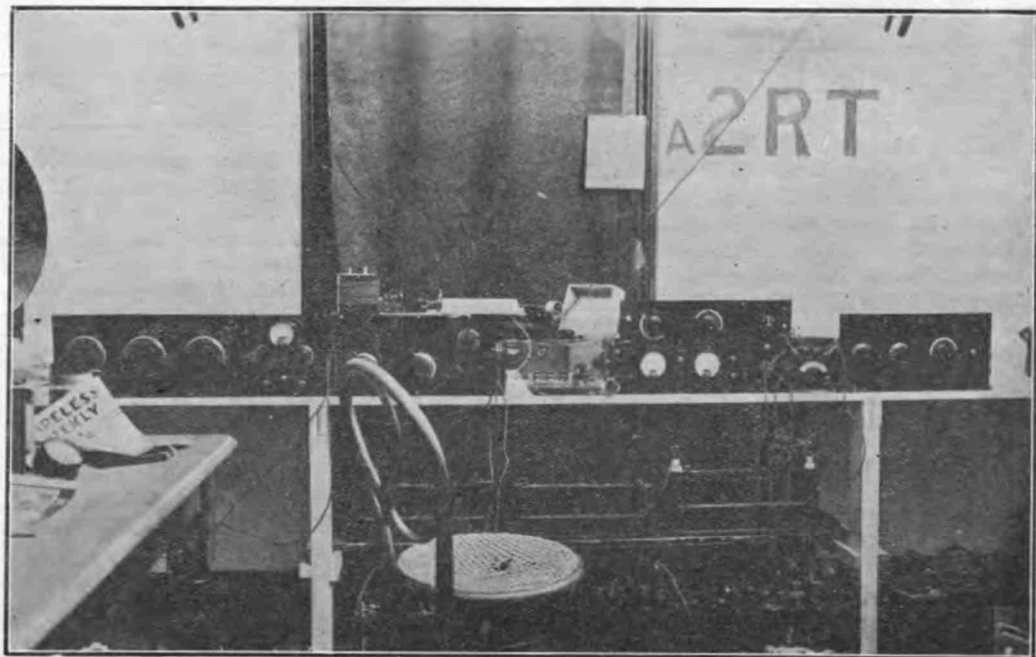
## MY EXPERIENCES AT GOULBURN

By H. K. JAMES (2XA).

GOULBURN has long been regarded by radio manufacturers as a place where it is useless to sell sets, as, strange to say, every set that has been installed in the township has not given anything like the results that it would give two hundred miles further on. With this in mind, I thought that Goulburn would be an ideal place for me to go in order to gather data on fading, absorption, and the general peculiarities of "blind" districts.

As mentioned in "Wireless Weekly," I set off for Goulburn laden with small parts—a low loss 50-200 metre Reinartz receiver and my 1925 model five-valve broadcasting receiver. When I arrived at Goulburn it was a little early for amateurs, so I hooked up my broadcast set. The results were very gratifying, 2FC coming in with such strength as to rattle the speaker, and 2BL slightly weaker. The QRM and QRN at Goulburn is very bad, and it seemed as if all the electric motors on earth were

doing their best to drown the signals. At 7 p.m. I set up the low loss set, and was rewarded by hearing 2HM chatting to someone. All through my stay fading was very pronounced, and it was very peculiar to hear 2HM's fone swinging in and out (strength 5). I then heard 2XN on phone with very good strength (the loudest fone from Sydney I heard), about strength 4 on a single valve. The next I heard was 2JM on fone (strength  $3\frac{1}{2}$ ), the fone being very clear, but the distance showed up the fact that he used a.c. somewhere; in fact, all Sydney transmitters had a kind of rattle with their fone. After this I got to work on the transmitter, and was delighted to obtain 600 m.a. aerial current on 180 metres. I gave a call, but no one answered. I found that this was due to a badly swinging wave making the note unreadable. The next day Mr. Turner and myself rigged up a counterpoise and made general improvements everywhere. That night



The station constructed by Mr. James at Goulburn.

we found that we could obtain an aerial current of 650 m.a. at 150 metres, of 500 m.a. at 130 metres, by using the counterpoise without an earth. The counterpoise was only a small affair, consisting of five wires about 30 feet long two feet above the iron roof, and enclosed by brick walls; it was not underneath the aerial, but about 20 feet to one side—a very poor counterpoise, indeed. After 10 p.m. I called CQ, and was rewarded by 2HM coming back immediately, saying that I was very QSA with very good note. My power at the time was 300 volts (supplied by accumulators), at about 25 m.a. After working for about an hour 2HM gave a general call on my behalf, but as it was past midnight, and as anybody who was still going was grinding out gramophone selections (I won't mention names), I went to bed.

I have not mentioned that I was staying at the residence of Mr. R. Turner, of Goulburn, and it was in a great measure due to that gentleman's co-operation that I was able to make a success of my tests.

## BREVITIES

By R.J.H.C.

**T**HE local chemist had a receiving set installed in his shop. A country customer entered and while being served asked the source of the music she heard. She was informed of course, and in addition was told that the latest cricket scores were on top of the cabinet. She walked over—read them carefully, turned the sheet over, and then:—“Isn't it wonderful—fancy them coming out already written like that!” she said.

Overheard—an explanation of static: “That noise!—oh that's due to the pressure of air on the wireless waves.”

A local resident was erecting an aerial. When it was completed it was noticed he had two lead in wires—one from each end of the aerial. When asked the reason for this peculiar construction he replied, “When I want Melbourne I use this one—it's nearest to that place, and when I want Sydney I use the other.” Of course you've seen birds using your aerial, and it is rather amusingly annoying to hear a full throated Kookaburra proclaiming his presence while you below are chasing that elusive station. But have you had the experience of my friend, the other evening at dusk? In vain he sought to tune in the market reports with hardly a sound from the set. He tested this and he tested that, and all without success. When I arrived on the scene—well, you know his feel-

ings! But do you quite know them when he was informed that a pair of magpies were perched on his single wire, double insulated L—one magpie astride each insulator and thus providing a magnificent earth? They have been there for over an hour!

### INTERNATIONAL RADIO ASSOCIATION.

**T**HE fourth bulletin of the above Association contains many interesting items. Of course the aims of this Association, as before mentioned, are to facilitate relations between radio users of all countries per the International Language Esperanto; to publish a Radio-review; to encourage the publication of radio literature in Esperanto; to co-operate with national and international bodies in every manner possible. “Worthy of mention are the Wireless Journals which officially support Esperanto. ‘Hungarian Radio Review,’ the sole radio gazette of Hungary, which publishes a chronicle of events in Esperanto every issue: ‘Radio News,’ U.S.A., the most important radio gazette of the world with a circulation of more than 400,000 copies monthly: ‘Radio News,’ Canada, a very important Canadian paper which publishes a course of Esperanto: ‘Wireless Weekly, the most important Australian Journal; and ‘Experimental Wireless,’ an important British monthly. Besides, there are many radio journals which publish articles about Esperanto.”

Already there has been issued an Esperanto-Radio Dictionary. Full particulars have been published in the December issue of the International language journal. The first congress of the International Radio Association will take place at Paris at the same time and place as the amateur and juristic congress (an account of the latter appeared in Wireless Weekly some few issues back.) The membership fee is 25 French francs. All radio enthusiasts desirous of participating in this congress are requested to write direct to Dr. Pierre Corret, 97 rue Royal, Versailles, France.

The last item of interest is a special call to radio users to join that much needed Association. The yearly subscription is 1/-. Radio persons who are interested in this Association are urgently requested to write to Hon. Sec., Australian Section, 150 Georges River Road, Croydon Park. N.S.W.

Telephone B 5925

**CHARLES D. MACLURCAN**  
Consulting Radio Engineer

Pratten Building,  
26 Jamieson Street,  
SYDNEY

## A New Valve

THE "A.W.A. 99,"

A NEW valve which is in great demand by both experimenters and broadcast listeners-in is the "A.W.A. 99," manufactured in Australia at the Sydney Valve Works of Amalgamated Wireless (A/sia) Limited.

It is of the dull emitter type, and operated with an expenditure of filament current of only 0.06 of an ampere. A dry cell may thus be conveniently used for filament lighting. In valves for use with dry cells it is of the greatest importance that the filament current be as small as possible, and that at the same time the characteristics of the valve should not be sacrificed in making this reduction in current. The A.W.A. 99 fully meets both these requirements.

The filament is of tungsten, but differs from the older type of tungsten filament in that the power consumption and operating temperature are much lower. Thus the new filament at normal temperature is a dull yellow, while the older filaments burned at a white heat. This lower operating temperature, of course, ensures long life.

In order to operate at such low current it is necessary that the filament wire be very fine, and it is interesting to note that the filament of the A.W.A. 99 is only about one-fourth as thick as a human hair.

The A.W.A. 99 is designed to operate from a 3-volt dry battery, but accumulators may be used if proper care is taken to reduce the voltage at the filament terminals to 3 volts. On account of the small filament current of the A.W.A. 99 the ordinary 4 to 10 ohm rheostats are of no use for a single tube and higher resistances must be used.

A variable resistance of 30 ohms should be used with one valve, 20 ohms for two valves, and 10 ohms for three valves in parallel.

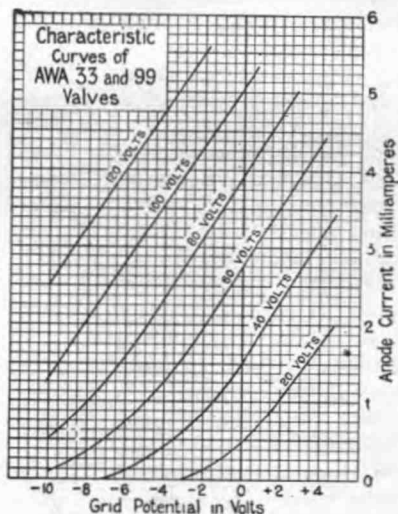
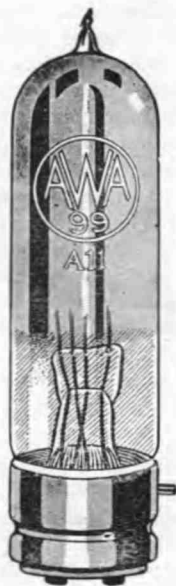
Compared with the ordinary type of receiving valve the A.W.A. 99 is quite small, being one inch in diameter and slightly over three inches in length.

The electrostatic capacities between the electrodes of the A.W.A. 99 are very small, and for this reason this valve is an exceptionally good radio frequency amplifier, and best results are obtained with about 45 volts on the plate. It also functions well as an audio frequency amplifier with from 40 to 80 volts on the plate, and a small grid bias which secures minimum distortion.

In addition to its uses as a radio and audio frequency amplifier, the A.W.A. 99 functions very efficiently as a detector, but no more than 45 volts should be used on the plate.

The A.W.A. 99 is very well exhausted, and can be relied upon to give uniform and quiet operation throughout its life.

The A.W.A. 99 has standard bakelite UV199 base.



# INTERSTATE NOTES

## VICTORIA

### Reception of KDKA.

**T**HEY hustle things somewhat in America, and the best laid plans of mice and men who are not Yankees, gang aft aglee when the hustle is only on one side. The Melbourne "Herald" was leisurely announcing in one issue of its weekly wireless paper that it was making arrangements to conduct experiments with America and promised full particulars later. Before the very next issue, the experiments had been half concluded and "all Australia" had listened in to KDKA and some had even heard him. Some of the reports were interesting to read. Remarkable achievements on a crystal set with full loud speaker effects were only to be expected but genuine results on one valve only, were not quite so expected. Of course, if you get signals on three valves you get them on one, but it depends a great deal on your telephones, whether they are then audible. It also depends on a quick and trained ear that can pick out a voice from the heart of a static barrage. Given these gifts, you will hear KDKA even on one valve. You will not, however, hear it so consecutively as to be able to assert that you heard Mr. J. A. M. Elder, or any other gentleman with initials equally as appropriate. As a matter of fact the "speeches" broadcast were apparently read by one and the same operator into a cold unfeeling microphone that endowed every orator with the same American accent. The writer heard it both ways, on a one valve set and also by favour of Mr. Grove, on a full low loss tuner with three valves and a loud speaker, and realised more than ever before the profound meaning of that magnificent line "the surge and thunder of the Odyssey," for if ever a voyager through the ether encountered surge and thunder, then indeed KDKA did, in its Odyssey to Australia. At times the crash and hurtle of the static obliterated the message out of all resemblance to human words, and one felt that if Mars were speaking, he could not be more martial or more incoherent and blustering. We have now heard KDKA on 63 metres, and the main conclusion from this so-called first experiment must be that the old tradition that short waves are innocent of static is exploded for ever. The explosion was the most notable noise heard on KDKA's wavelength.

### H. K. Love Lectures to the W.I.A.

Before an audience fit but few, the genial President of the Victorian Section of the W.I.A., Mr. H. K. Love, delivered a lecture after the monthly tea, held at Anzac House. His subject was systematic experimenting and under that heading he grouped a number of suggestions for the betterment of organised research work. Enquiries into the relative merits of different styles of aërials, counterpoise, earths; the minimising of interference not only from neighbouring sets but from trains, trams, lifts, etc.; increasing selectivity so as to enable more transmitters to operate within a limited waveband; developing short wave sets; better national and international organisation; more attention to telephony study of Esperanto. These were the main points of a most interesting and informative lecture that covered a very wide waveband of suggested amateur activities. Unfortunately only about twenty members heard this important lecture, and this paucity of attendance in itself showed how futile such generalisations are at present. However, some interesting facts were referred to by Mr. Love, among them being (a) the elimination of interference in a city cafe by the use of a counterpoise instead of an earth; (b) further experience of low loss tuners shows that they are no more efficient in practice than the usual former-wound coils; (c) signals on short waves come in as well from transmitters having long aërials as those with low fundamental; (d) 1CMP (a woman transmitter in America) comes in as loudly as anyone, though using only single-wire aerial and single-wire counterpoise; (e) short waves are not definitely the best, after all.

We know more about them than we do about long waves; (f) radio frequency is not really known to be useless on short waves. The Yankees said it was no good on 200 metres, a year or so ago, but we Australians disproved that, so we may also discover how to use H.F. amplification successfully on short waves; (g) Australia needs to adopt an exclusive wave band of our own British stations work between 90 and 100 metres, the big Marconi station so easily heard on Sunday morning, being about 93 metres; American stations typically transmit between 75 and 80; so that since no one at present has adopted the band between 80 and 90 metres it should be allotted to Australians. It is not possible in Mr. Lowe's opin-

son, to do amateur work on the higher wave-bands above 10,000 metres, owing to the cost and length of aerial involved.

#### W.I. Monthly Tea.

Sitting in state around an empty square some dozen gallant delegates and three or four private members of the W.I.A. made an onslaught on the tea which was to have cemented social intercourse between members of the Institute. The high losses were attributed to interference from KDKA, whose advent on the local ether has been hurriedly announced on the same night as this other auspicious event. In the circumstances socialities were limited, although pleasantries once or twice went around the tables. The chief item on the menu was to have been the presence of Mr. Malone, Controller of Wireless, but an apology for his absence brought a sigh of relief from those who like to honour with a full attendance, such a distinguished guest. The only way to get a full attendance at such functions is undoubtedly to send out personal reminders to individual members or even to sell tickets beforehand.

#### Side Issues of Mr. Love's Lecture.

"Mr. Maclurcan can show pictures, diagrams, and date of all the experiments he makes. His log book is a most remarkable document. He notes everything."

Mr. Love: "As far as reception goes, the low loss tuner although theoretically better brings in no more stations than the old former-wound coils. I don't know whether Mr. Howden agrees with me."

Mr. Howden: "No, I don't."

Mr. Love: "Well, the finest signals I have ever heard were at 3BQ, and if he calls his set a low loss I'm a Dutchman. Getting round and seeing other fellows' sets is the finest thing out to improve your education. If a fellow differs with you that only shows that more research is needed. There are so many favourable reports but none of them are comparative. Everything appears to be QSA and we get no further."

#### W.I.A. Administration.

Mr. Love's rebuke at his monthly lecture to members who raise questions of administration instead of confining themselves to experimental topics was somewhat of a boomerang, as of course we are not to accept either administrative or technical points as pure gospel when promulgated by official authority. The ill feeling about the new conditions of membership, which is revealed in a

letter appearing in Wireless Weekly of January 30th has resulted in the loss of many members who simply drop out of the ranks and attend meetings no more. There have also been formal resignations, notably that of Mr. H. E. Grove, Vice President of the Canterbury Section, whose interest in wireless is undoubted but who feels aggrieved because of the examination clause in the new membership form. It was urged by the Organising Secretary, that examination would be waived in the case of members known to be efficient; but Mr. Grove holds that there should be no respect of persons, as favouritism is likely to creep in. This view appears to be sound, and as Mr. Grove has had considerable experience as President of the Institute of Engineers and on other important committees, his opinion is worth considering. Incidentally it came out at a discussion at a general meeting of the W.I.A. that any two delegates may alter the constitution by giving notice of motion to that effect at a council meeting. If the other delegates neglect to inform their sections or are absent, then the motion may become law at the next Council meeting, provided a majority of the delegates are complaisant enough to vote Yes. In a democratic community like Australia one would like to see such a Star Chamber method made impossible by an adverse vote of all the Sections. It is evident that if the Executive reserves to itself the right to examine or not, then the sections lose their status as sovereign bodies, and of course anyone who is persona grata or persona mala with the Executive could be admitted or excluded entirely without reference to his merits.

#### W.I.A. Experimenters' Class.

It is proposed to form a class for the purpose of providing a series of lectures that will enable students to work up to the standard of passing the official examination for the experimental license. It appears that either Mr. Court or Mr. Hull will conduct the class, but at the time of writing this has not been settled one way or the other. It might perhaps be better if both gentlemen took a hand, and it would certainly be more satisfactory if a syllabus of the proposed course were made available. At present it is as vague as the departmental requirements themselves. Another aspect also is that apparently country experimenters are to be left out in the cold, or perhaps the P.M.G. is expected to be more lenient with those remote from civic centres. There are some interesting experimenters outside Melbourne and suburbs, although of them one seldom hears, and it is somewhat remarkable to compare N.S.W. with Victoria in this respect. In fact one might



almost say, the comparison lies between N.S.W. and Melbourne only. The recent editorials on country transmission must be of extreme interest to dwellers out back in the Mallee and Gippsland settlements, and a big field awaits the Institute if it would only wake up to its opportunities and be of service to the whole State instead of merely to a handful of suburban wireless hobby-horse riders. Why not rope in a few boundary riders?

#### Lightning Arresters.

Following a discussion on lightning arresters at Canterbury Section, at which Mr. H. E. Grove, the Vice-President, complained that his signals also were arrested by a standard American type, the section deputed Mr. A. J. Stocks (who was the winner of the Wireless Exhibition Prize for the best constructed set) to make up an arrester on lines suggested by Mr. Max Howden and himself. The result was submitted to W.I.A. at its monthly meeting and was very favourably commented on. It is a choke coil of about half a dozen turns of SWG12 copper wire, with a spark gap formed between two heavy brass rods turned to a fine point. It is proposed to submit this to the Fire Underwriters with a request for their approval, as it was agreed that even if lightning arresters are ineffective they at least conform to the requirements of insurance, and this one would be as efficient as any.

#### SOUTH AUSTRALIA.

THE most talked of event in radio circles in and around Adelaide during the last two weeks has been the reception of music, speech, and C.W. signals from KDKA—the broadcasting station of the Westinghouse Company of Pittsburgh, U.S.A. Remarkable results have been obtained on all kinds of set from low loss receivers up to tuned anode receivers. The transmissions were received here with such strength that one could hardly realise they they could possibly be transmitted at so great distance away. The remarkable absence of "Joey's" was a feature of the reception, this being due no doubt to the fact that very few owners of sets were aware that this station could be received on an ordinary two or three valve set with the right coils. The tests of this station has proved remarkably successful and it is to be hoped that they will continue.

#### Short Wave Bands for Experimenters.

Short wave bands have been allotted to the experimental transmitters in the United States and many European countries and very little is now being done on the 200 metre band, and remarkable distances are being covered by means of the short

wave, so it is high time that experimenters in Australia put their heads together and approached the authorities with the idea of getting a band of short waves say 80 to 90 metres allotted to them. This matter was brought up at the last meeting of the South Australian Division of the Wireless Institute of Australia, when it was decided to get in touch with the other Divisions for the purpose of bringing the question before the proper authorities.

At the present time special permission has to be obtained before one can make use of these short waves, and this is only given for short periods. What we want is a permanent allotment of short wave band, and we hope that every club will take this matter up and go for the short waves.

#### 5DA Works 6AKW.

Mr. S. R. Buckerfield, of Parkside (5DA) has been successful in working two way communication with 6AKW (L. R. Potter, 120 Maple Avenue, Fullerton, California). The test was carried out between 12.45 and 1.30 a.m., and lasted three quarters of an hour, having then to be abandoned on account of approaching daylight in the United States. 5DA was using a two valve low loss receiver and his transmitter was radiating 1 amp. Mr. Buckerfield was working on approx. 90 metres on C.W.

#### Station 5CL.

The transmissions from the Central Broadcasting Company are very inconsistent—one night it is very good and the next it is not worth listening to. Now that the A class license has been obtained it is about time that things were changed. 5DON N.

This station which has been noted for its remarkable clear transmission has fallen back somewhat, their strength is not what it used to be, and they waste a lot of time between the items. We hope that these matters will be rectified and that 5DON N will retain all the popularity which he has gained by his past performances. Broadcast listeners are anxiously awaiting for the promised lowering of 3LO's wavelength. Some time ago it was stated that his wavelength was to come down to 850 metres; this would be a boon to all, as the static would be much less pronounced on the lower wave.

2FC comes in well when static does not interfere but this is not often during the summer months.

6WF is fast becoming a favourite here; his transmissions are remarkably clear and as his evening programme starts up just when the Melbourne and Sydney broadcasting stations close down, he is much sought after.

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- Glass enclosed, all sizes, 1 to 6 megohms, each 2/- and . . . 2/6
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- Bradley Leaks . . . . . each 13/9

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- Detector Arms, N.P. each . . 2/-
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- Glass Enclosed (unmounted), 4/-, 4/3, 5/-; (mounted) 7/-; twin mounted, 9/6.

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WIRE  
No. 40, 3/9; 42,  
5/9.  
Vernier Mounts.  
Senior, 19/6.  
Junior Mounts 15/-  
WIRE: 2in., 1/6;

### PHONES.

Phones .. 20/-  
.. 25/-  
ohms .. 25/-  
ohms .. 27/6  
Clarke, 4000  
.. 32/6  
ohms, Continen-  
tal .. 27/6  
100 ohms, Con-  
tinental .. 27/6  
Portable .. 32/6  
.. 37/6  
.. 35/-  
.. 37/6  
.. 44/-  
.. 45/-  
.. 60/-

### INSULATORS.

English, superior glazed: Reel, 4d.;  
Egg, 4d.; Shell, 5d. and 8d.;  
Strain, 8d.

### JACKS AND PLUGS.

Single Circuit Jacks .. 3/3, 4/6  
Double Circuit Jacks .. 4/-, 5/-  
Frost Plugs .. 4/6, 5/-, 6/-

### LOUD SPEAKERS.

Amplions .. £4, £5, & £6/12/6  
Manhattan, 75/- and .. £8  
Magnavox, £8 and .. £10/10/-  
Sterling .. £2/17/6, £4/15/-, £9  
Western Electric, £2/19/6, £7/2/6  
and £17/10/-.

### LIGHTNING ARRESTERS.

Junior, 4/6; W.E., 5/6; Control, 7/6

### POTENTIOMETERS

5/6, 6/9, 7/-.

### METERS'

Pocket Type, 0-50 Volts, each 12/-

### RHEOSTATS.

6 ohms .. 4/-, 5/6  
30 ohms, 5/-, 5/6 and .. 7/6  
Bradleystats .. 13/9

### SWITCHES.

S.P. Aerial .. 2/-  
S.P.C.O. Aerial .. 3/-  
Series Parallel .. 3/6 and 5/3  
Battery Switches, 4/- and .. 4/3  
Inductance Switches .. 1/6, 2/6

### SOLDER.

Resin Cored, yard .. 6d.

### TRANSFORMERS (Audio or L.F.)

Nutmeg .. 20/-  
Jefferson, Star .. 22/6  
Jefferson, 41 .. 30/-  
A.W.A. .. 30/-  
K. & C., .. 32/6  
All American .. 30/- and 32/6  
Burndept .. 37/6

### TERMINALS.

N.P. Medium, with holes, each 4d.  
N.P. Large with holes, each .. 5d.  
Bakelite Tops, each .. 5d.  
Engraved, set of 8 .. 4/6

### VALVE RECEIVING SETS

Complete Stocks of all parts for  
home construction

### VALVES.

Mullard, Dry Cell Type (Hard),  
Detector or Amplifier, Eng-  
lish Socket .. 30/-  
Ediswan, do. do., English Soc-  
ket .. 30/-  
Marconi DE3 do. do., English  
Socket .. 32/6  
Philips D1 (Soft) Detector,  
English Socket .. 15/-  
Philips D2 (Hard) Amplifier,  
English Socket .. 15/-  
Philips E (Hard) Amplifier,  
English Socket .. 15/-  
Philips D5 (Hard) Amplifier,  
American Socket .. 15/-  
Philips B2 (Hard) Detector or  
Amplifier, American Socket, 22/6  
Philips DVI Double Grid (Soft),  
English Socket .. 22/6  
Philips BVI Double Grid, Dry  
Cell Type (Hard), English  
Socket .. 35/-  
Radiotron or Cunningham (Hard)  
Detector or Amplifier, Ameri-  
can Socket .. 30/-  
De Forest (Hard) Detector or  
Amplifier, American Socket, 30/-  
W.D. 12 (Hard) Detector or Am-  
plifier, Dry Cell Type, Ameri-  
can Socket .. 30/-  
A.W. 99, Dry Cell Type (Hard),  
199 Socket .. 30/-

### WINDING WIRES (Enamel)

On 8 oz. Reels.  
20g., 2/-; 22g., 2/-; 24g., 2/1 per  
reel.  
On 4 oz. Reels  
26g., 1/3; 28g., 1/5 per reel.

### DOUBLE COTTON

on 8oz. reels.  
22g., 2/3; 24g., 3/-; 26g., 3/3  
28g., 5/-; 30g., 5/6 per reel.

### PANEL WIRE.

N.P., per yard .. 3d.  
Square N.P. .. 3d.

A portion of our Price List R5. Complete Stocks of all Radio Supplies stocked. Write for Price List R5.

# STATIONS HEARD

Cecil C. Sainty, Village High Road, Vaucluse, Sydney:—

**U.S.A.**—1CMP, 1CAB, 1DA, 1PL, 2AG, 2BRB, 2ABT, 2RK, 3AU, 3AW, 3YV, 4GA, 4IO, 4OA, 4SB, 4XE, 5UK, 5MI, 5AKN, 5CN, 5ONT, 5QY, 5ZA, 6AHW, 6AOI, 6AMO, 6AWT, 6AKW, 6AO, 6BCL, 6BIR, 6CCT, 6CGO, 6CGW, 6CRX, 6CW, 6CMS, 6BUK, 6BUW, 6EKY, 6EW, 6ILY, 6LO, 6MS, 6RN, 6VC, 6XI, 7PM, 7LS, 8CPY, 9AA, 9AWT, 9AQ, 9BCJ, 9BDW, 9BX, 9CDQ, 9CIP, 9CJ, 9CJC, 9DAW, 9DNJ, 9DQU, 9ZA, 9ZT, 9ZTW, KGO, KDKA.

**Mexico.**—1B, BX.

**England.**—2KF.

Several other stations, either English or French, were heard at the same time and wavelength as G2KF, but were not readable owing to QRN and faintness.

\* \* \*

D. E. White, 25 Kerr's Road, Lidcombe, N.S.W. Used 3-valve set, one r.f., detector, 1 a.f., self-constructed and mounted on wood:—

**N.S.W.**—Fone: 2HM, 2JS, 2RJ. L.C.W.: 2BY. C.W.: 2GQ, 2CR, 2WS.

**Victoria.**—Fone: 3LO. C.W.: 3HH, 3BD, 3BQ, 3BM, 3OT, 3JU, 3JH, 3TM.

**Queensland.**—C.W.: 4AN.

**South Australia.**—Fone: 5DN. C.W.: 5BG.

**West Australia.**—Fone: 6WF.

**New Zealand.**—C.W.: 2AC, 2AP, 4AK, 4AG.

**U.S.A.**—Fone: KGO, KDKA.

\* \* \*

S. L. Thrum, 60 Orpington Street, Ashfield.

Used one valve, P1 circuit:—

**N.S.W.**—2CR, 2GG, 2YA, 2HM, 2JS, 2CS, 2WS.

**Queensland.**—4AN, 4CM.

**South Australia.**—5BD, 5BF, 5AD, 5AG, 5DA, 5JC.

**New Zealand.**—4AA, 2AC, 4AK, 4AG, 4AL, 1AO,

1AA, 1AG, 2AP, 2AG, 2AQ, 2AE, 3AG.

**Victoria.**—3JH, 3BM, 3XF, 3OT, 3EF, 3BD, 3GB,

3TM, 3BG, 3BM, 3SL, 3EN 3JU, 3XO, 3AP.

**Mexico.**—BU.

**U.S.A.**—1ER, 2BGI, 3ADB, 5AKN, 5ZAI, 6AWT, 6VC, 6AO, 6EW, 6CBB, 6CGW, 6CMU, 6CSO, 6WP, 6AHP, 6AAO, 6EB, 6ZP, 6CNL, 6OI, 6CW, 6BAC, 6BUR, 6CQL, 6CCT, 6ARY, 6WL, 6MS, 6OF, 6BIP, 6CTC, 6CMS, 6NX, 6LJ, 6AC, 6CTO, 6ASE, 6GD, 6WR, 6GI, 6ABX, 6APW, 7LS, 7FD, 7ADF, 7ER, 9ZT, 9AB, 9CGN, 9XI.

Mr. W. L. Woolnough, "Callabonna," Florence Street, Killara, N.S.W., again sends us a very good list. He asks if this is a record. We should certainly say it is. They were all heard within half an hour, and after sunrise. No earth was used:—

5.23 a.m.: g2NB.

5.25 a.m.: g2KF.

5.28 a.m.: g2OD.

5.30 a.m.: g2FU.

5.33 a.m.: g2SZ.

5.41 a.m.: g2JF.

5.46 a.m.: g2NB (again).

5.49 a.m.: g2JF (again).

5.51 a.m.: g5MA.

2OD was the loudest, and the other strong ones were 2KF, 2SZ, and 2FU.

He has heard several of them before, and other Europeans heard include the following:—

**British.**—2LZ, 2NM, 2SH, 5MO, 6NF.

**French.**—8SSC.

**Dutch.**—O LL, O NL, NSF.

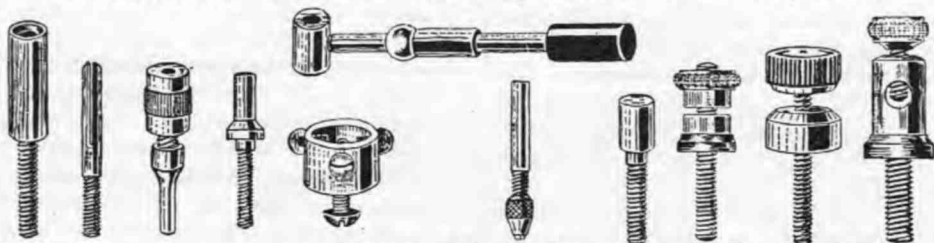
**Unknown.**—OCDJ, GHH.

## SPECIAL NOTICE.

In our issue of September 19, 1924, we published an article entitled "A Low Loss Coil Former," showing the method of winding low loss coils. We are now informed by the Sydney solicitors of Graham Wireless & Electric Company, that the latter company are owners of patent No. 10477, relating to an invention for "Improvements in Inductance Coils." It is stated that the coils referred to are covered by patent rights and that the publication of this article without any mention of Graham Wireless & Electric Co's patent, might easily lead readers to believe that they are entitled to make coils as described in this article. It is also stated that the manufacture of the low loss coils described in the issue of September 19 would be an infringement on the patent rights referred to, rendering persons so infringing to an injunction and damages.

Such is the power of radio that, while entertaining Japanese listeners, radio fans in Australia, New Zealand, and Tasmania a recent early morning broadcast from KGO nearly started a neighbourhood row in Honolulu, two thousand miles from the station.

## Terminals, Contact Studs, Nuts, Screws, Etc.



Terminals, etc., Brass and Nickel Plated Assembled, Nut and Washer  
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Phone :—Holborn 535.

Price List on Application.

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### RADIO SETS AND REQUISITES

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A FEW DOORS FROM THE G.P.O.

CRYSTAL OUTFITS..	From 25/-	Operative within a radius of	25 miles.
ONE VALVE SETS ..	From £5/10/-	" "	" up to 100 miles.
TWO TO SIX VALVE SETS	From £28/0/0	" "	" 5000 miles.

IMPROVE YOUR CRYSTAL SET BY ADDING

OUR ONE VALVE AMPLIFIER—COSTING ONLY £7/7/—READY FOR CONNECTING UP—  
IT WILL INCREASE THE VOLUME TREMENDOUSLY—AND THE RANGE UP TO 100 MILES.  
OR OUR TWO VALVE AMPLIFIER AT £10/10/- COMPLETE—OPERATES A LOUD SPEAKER

—WE SELL—

The Famous FROST Parts and Fittings—All Makes of Valves, Phones and Loud Speakers.

The **Sterling** Sets - Loud Speakers - and Phones. Every kind of Crystal  
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Wireless Concerts and News, daily from 12 till 5.30 p.m.

PRICE LIST FREE.

(Continued from Page 8.)

the negative of the A (not to the positive as shown in the book). With this I regularly receive 2BL, 2FC, and 3LO, and this week I have been getting 4CU, a Queensland station, using 50 and 75 turn coils. I am writing him re the reception, as I am wondering what wavelength he is working on. We have solved the "A" battery problem by using UV199 valves and Leclanche cells. Owing to the low amperage required by the valves, we have found that three Leclanche cells in series works one and two valves, while four in series works three valves. More than these we haven't yet tried out properly, but the others have been in constant use on several sets for the past three months and are working splendidly. Hoping the "Wireless Weekly" continues its good work and excellent help.—Yours faithfully,

L. O. JOHNSON,

Hon. Secretary.

C/o Public School, Dubbo.

[Editor's Note.—The list of abbreviations was published in "Wireless Weekly," Aug. 29th, 1924.]

\* \* \*

To the Editor, "Wireless Weekly."

Dear Sir,—I am one of the unfortunates—and I trust there are not many—who are not privileged to ask questions through the columns of your journal and obtain a reply because I have not recorded my name as a subscriber. I use the word "unfortunate" advisedly, because for the last 12 months or so I have not failed to procure my weekly copy of your excellent journal. It has been said that "it is better to be born lucky than rich." Let me assure you, first, that I am not rich. That does not worry me. I have enough of this world's goods to satisfy my hunger, spend money on wireless, and at the same time keep a roof over my head. My misfortune, however, is the last-mentioned roof. It varies from galvanised iron to shingle, slate, and tiles. It may one week cover a boarding-house in which I find myself; another it may cover an hotel in Brisbane, where I am sheltering from the elements. Again, it is in Mossvale or Bathurst. I sit on an exact replica of the "wishing carpet of Bagdad," and know not the day nor the hour when some genie exercises the prerogative of wishing me afield, and hey, presto! I am there. No; I am not a "commercial," Mr. Editor. I doubt if you can claim a true "commercial" among the ranks of amateur wireless fiends. Yet I am as ubiquitous as one. There are times when I sleep under my own roof for 60 days in succession, but I know not when that may be. So you should see that if I subscribed to your excellent journal and allowed it to be posted to me, I

would probably never receive a copy. I hear you murmur that 1/- will righten matters. Have you, Mr. Editor, ever tried to pay 1/- to anyone at a distance? You are a busy man, so am I. To pay you that 1/- I must first get a postal note—a nasty task and only suitable for disciplining the office boy! But during the day I never think of it. I only remember when I am at home at night monkeying about with a five-valve set, endeavouring to pull in Jupiter or an equally absurd distant station. At that hour postal officials don't work; I refrain from mentioning what they do during other hours; and I cannot procure the elusive 1/- note. And what private house in which the head has his own office ever has 13½d. lying idle in postage stamps? I can truthfully say my house contains not a pennyworth. I am given letters to post unstamped, and the junior typiste does the rest.

Don't tell me to get "W.W." addressed to my office! It would get lost amongst the other technical journals which are piled up therein and only get hasty scansion. I want "W.W." in my home at night, and the only way I can do that and not miss a word of an issue is to buy it wherever I may be, and if I can. Sometimes I have to wait till I reach Central Station on my return journey. What are you going to do about it, Mr. Editor? I want to know a lot about the "Beam System," but I am not privileged to ask. Perhaps you would put one of your staff on the question and turn out a decent length article for inclusion in your journal. I am sure there are many of your readers like myself who would be interested.—Yours faithfully,

"STICKYBEAK."

[Friend, your letter reduced the staff to tears, and almost disorganised our office system for a whole day. If you can't send stamps or a postal note, what about a native bear or a pet kangaroo? Your statement regarding commercials is incorrect, because we have a number of them on our mailing list. Fire in your queries re the beam system.—Editor.]

\* \* \*

To the Editor, "Wireless Weekly."

Dear Sir,—I see in last week's "Wireless Weekly" a question from W.B.R., Newcastle, re a set to suit his position (being close to the power mains), in which he states that the 11,000, 6,600, and 2,200 volts were 25 cycles, and the 415 50 cycles. I quite believe he thinks he is right, but I should like to say that the 11,000, 6,600, and 2,200 are not on 25 cycles, but only the 6,600 is. I just write this, as I am in the Electric Light Department, and know

what we have. I have been a reader of your paper since I first took up wireless, and have noticed how it has grown in size. I get it every week without fail; IT'S GOOD. Would you kindly send me the address of Mr. W. A. Stewart, who wrote an article of interest to me on "Push Pull Audio Frequency Amplification," and oblige?—Yours faithfully,

WILLIAM GARFIELD HUGHES.

Hobart Road, New Lambton, Newcastle.

[Editor's Note.—Any writer in this paper may be reached by addressing c/o "Wireless Weekly."]

#### LIGHTNING ARRESTER.

To the Editor.

Dear Sir,—“Ion's” return to the attack made very laughable reading, and I must say that as an effort at wit it was a success.

Although I am pleased to discuss such a subject under reasonable conditions, it is futile for me to attempt it with one who repeatedly contradicts himself, and when cornered distorts his previous assertions as having a meaning different to that given.

I can only conclude that “Ion” still believes lightning to be a superstition, and that he does not read the daily papers as well as “Wireless Weekly.” The following extract from the “Sydney Morning Herald” of Jan. 27th (only one of many such frequently appearing in daily papers) may be a surprise to him:—

“Maitland.

“Exciting incidents occurred in the very heavy storm that broke over the town about 6.30 o'clock on Friday morning. Heavy thunder and vivid lightning accompanied the storm.

“Fred Woodall, a horse driver, received a shock in a blinding flash which played over his horse and harness, and which left that animal in a dazed condition for about an hour. Three council employees engaged in street cleaning were stunned for a time, and their shovels, brooms, and scoops were knocked from their hands.

“At Lorn a wireless set was struck, the current afterwards travelling down a pole and charring it. Lightning also smashed the insulators at Mr. Wills' residence, and all the electric globes in the house were rendered useless.

“A breadcarter, while opening his cart door, was thrown back and stunned. The horse took fright and ran into a fence, and bread was strewn in the road. In the same locality a resident came across a cat that had been killed; the hair had been burnt off the whole of its body.

“The lightning was the most severe experienced in the district for a long time.”

Yours faithfully,

H. E. TAPLIN.

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We have an up-to-date factory that can handle the above work assuring absolutely only the **best workmanship** and **minimum cost**. Headphones loud-speakers, R.F. Transformers, etc., rewound, special low loss coils wound, condensers adjusted, rheostats rewired, etc., in fact any work from the construction of a simple crystal set to an eight valve super hetrodyne. We have a first class engraving plant and will undertake work for private individuals or the trade.

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## QRA?

- 1AF—Harvard Wireless Club, Har. Union, Cambridge, Mass.
- 1AJX—F. I. McKay, 1750 Northampton Street, Holyoke, Mass.
- 1ARJ—G. B. Harper, 155 Adams St., Milton, Mass.
- 1CME—R. D. Kneeland, 63 Pond St., Georgetown, Mass.
- 1CMO—L. A. Jones, Bourne Street, Keneebunk, Me.
- 1CMP—W. E. Jackson, 32 Clarence Street, Bridgewater, Mass.
- 1DA—F. Wigglesworth, Bridge Street, Manchester, Mass.
- 2ABT—G. C. C. Freisinger, 219 W. 81 St., N.Y. City.
- 2BGA—C. Rigaud Jr., 2134 Amsterdam, N.Y. City.
- 2CJB—M. B. Downs, Pasadena Hotel, 61 St., and Broadway, N.Y. City.
- 2CVJ—R. Hart, Elm Street, Hartsdale, N.Y.
- 2KX—R. W. Hendrickson, Jr., Littleworth Lane, Sea Cliffe, N.J.
- 2MC—R. W. McMann, 380 Riverside, N.Y. City.
- 2PB—B. Tyler, 79 Winthrop St., Brooklyn, N.Y.
- 3AB—A. B. Goodall, 1824 Ingleside Terrace, Washington, D.C.
- 3AU—M. L. Walsh, 819 W. Lexington, Baltimore, Md.
- 3AW—S. M. Brenner, 5025 Walnut Street, Philadelphia, Pa.
- 3OT—I. B. Smith, 904 Lindenwold Avenue, Amble, Pa.
- 3WS—S. C. Palphreyman, 610 Highland, Palmyra, N.J.
- 3YV—University of Virginia, North Avenue, Baltimore, MD.
- 4GA—G. H. Lehmann, 504 College St., Decatur, Ga.
- 4IZ—W. Moore, 339 Plant Avenue, Tampa, Fla.
- 4XC—B. W. Benning, 50 Whiteford St., Atlanta, Sa.
- 4XE—W. B. Short, 679 Spring Street, Atlanta, Ga.
- 5CV—J. S. Brown, 340 Lasker Street, Waco, Tex.
- 5EPH—No record.
- 5EWE—No record.
- 5MI—D. J. Connolly, 1022 E. 17th Street, Birmingham, Ala.
- 5ONT—No record.
- 5UK—C. A. Freitag, 8520 Forshey Street, New Orleans, La.
- 6AC—J. W. Little, 879 47th Avenue, San Francisco, Cal.
- 6AG—Dr. and Mrs. A.A. B. Wessels, 4015 Hillcrest Drive, San Diego, Cal.
- 6AHW—W. Woodward, 227 Arroyo, San Leandro, Cal.
- 6ALD—R. T. Tuggart, 666 Mendocino, Atladena, Cal.
- 6ALV—O. Zimmerman, 1926 Park Street, Alameda, Cal.
- 6AMO—H. M. Wollam, 164 E., 56th Los Angeles, Cal.
- 6AVO—W. H. Phillips, 905 York Street, Vallejo, Cal.
- 6BBT—K. Walton, 418 2nd Avenue, Upland, Cal.
- 6BCL—C. Buffum, Box 52, Pacific Groove, Cal.
- 6BIR—J. E. Brandlin, 206 S Brown St., Napa, Cal.
- 6BPF—W. Delph, 2503 E. 16th St., Oakland, Cal.
- 6BUK—C. G. McGonomy, 122 S Cedar St., Clandale, Cal.
- 6CFT—H. W. Leighton, 286 E. 49th St., Los Angeles, Cal.
- 6CKA—J. D. Baker, 510 You Street, Sacramento, Cal.
- 6CMQ—H. R. Whaley, 648 Columbia Avenue, Poma, Cal.
- 6CMS—W. H. Hardy, 4928 7th Avenue, Los Angeles, Cal.
- 6CQC—No record.
- 6CST—No record.
- 6CSW—No record.
- 6CTB—No record.
- 6CTC—No record.
- 6CW—H. C., Hand, San Carlos Street, Carmel Cal.
- 6EKY—No record.
- 6ILY—No record.
- 6LO—W. E. Munford, 2018 27th St., Sacramento, Cal.
- 6NX—C. A. Simmey, 1757 Vista Del Mar Avenue, Hollywood.
- 6MS—A. G. Lundeen, 1558 E. 48th Street, Los Angeles, Cal.
- 6MA—L. O. Fassett, 4326 Balboa Street, San Francisco, Cal.
- 6ROL—No record.
- 6RV—H. R. Bradford, 447 S. 12th East St., Salt Lake City.
- 6XI—S. G. McMeen, 683 Los Robles Avenue, Pasadena, Cal.
- 7DF—C. Nageta, P.O. Box 62, Thomas, Wash.
- 7LS—Unassigned.
- 8BQ—H. M. Walleze, 234 Vine St., Milton, Pa.
- 8GQ—R. Moore, 365 Morrison Avenue, Columbus, O.
- 8WD—C. J. Jenks, 72 Clinton Avenue, North East Pa.



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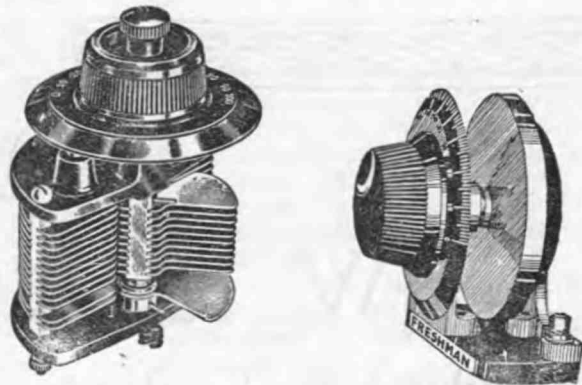
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# CONDENSERS

We have just landed in a shipment of Freshman and Southworth Variable Condensers; at prices which will prove attractive.

Freshman Mercury Variable Condensers will stand up to 8000 volts without arcing. Suitable for use in either a transmitting or receiving circuit. Fitted with Vernier knob and dial.  
.0005 and .001 . . . . . 35/- each

## SOUTHWORTH

Finished in Mahogany Bakelite. An excellent piece of work.  
.0005 Plain . . . . . 15/-  
.0005 with Vernier . . . . . 25/-  
.001 Plain . . . . . 17/6  
.001 with Vernier . . . . . 28/6

## ENGLISH CONDENSERS.

.0005 Plain . . . . . 9/-  
.001 Plain . . . . . 12/-  
.001 with Vernier . . . . . 14/-  
Duoanode—for 2 stages R.F. . . . . 21/-  
Call and hear ULTRA Loud Speakers (adjustable) .. £2/15/-

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# NEW CIRCUITS!

*Watch E. R. Cullen's Announcements*

*A New Circuit will be portrayed  
each week*

**E**XPERIMENTS with new circuits are a source of continual interest. In future, each of our weekly announcements in the "Wireless Weekly" will feature a new circuit, illustrated by an explanatory diagram. Clip them and keep them. Mr. Hamilton, our Service Man, will gladly give fuller information if necessary.

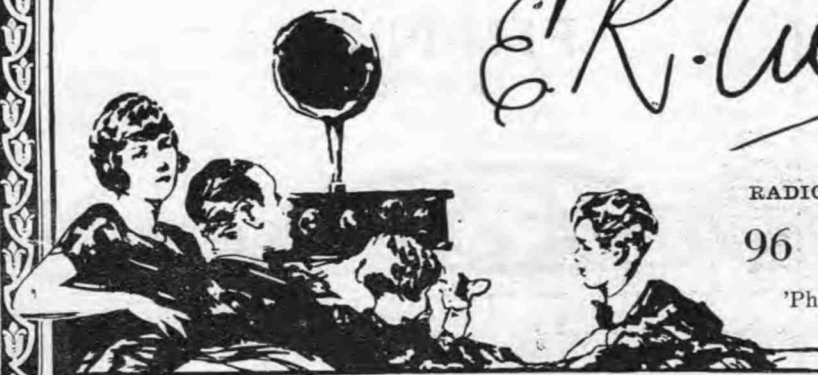
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*E. R. Cullen*

RADIO & ELECTRICAL STORE,

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# THE WESTON RADIO PLUG IS INSTANTLY OPERATED

## BY A PRESSURE OF THE FINGERS

### To Fasten

To fasten, push the phone leads into the openings of the plug as shown. Positive contact is instantly obtained — nothing to unscrew or put together.



### To Release

To release, hold the plug as shown. Push in the projecting metal tongues and pull at the same time on the leads. Requires only a pressure of the fingers.

## RADIO WESTON PLUGS

**A**BOVE all else the Weston Plug is simple. There is nothing that needs to be taken apart. No tools are required. Changing from Loud Speaker to Phones, calls for only a pressure of the fingers and an instant of time. Contact is absolutely positive.

**T**HE same care is exercised in the manufacture of these plugs, as in Weston Precision Instruments. Each plug is tested electrically and mechanically before it leaves the factory. Being instantly transferable, one Weston Plug can be used in place of two ordinary plugs.

Sales Representatives:

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307-11 Kent Street, Sydney.

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### RADIO - TELEGRAPHISTS' INSTITUTE OF AUSTRALASIA.

79 Pitt St., Sydney,  
12th February, 1925

(To the Editor)

Sir,—As you are already aware the Radio Telegraphists' Institute recently approached the League of Nations through the International Labour Bureau, Geneva, protesting against the attempts that were being made by International shipowners to lower the margin of safety of life at sea provided by the International Convention of 1914; particularly relating to Wireless Telegraph installations in ships.

Australia has adopted the highest standard in the world by reason that the marine wireless service conducted throughout the Australasian Merchant Service is higher than that demanded by Law, and it has been so for some years.

It is to prevent the lowering of this standard this protest has been made, and I have much pleasure herewith in submitting for your information, and acknowledgement and thanks received from the International Labour Bureau, Geneva.

I am also directed by the Radio-Telegraphists' Institute to thank all those associations, organisations, public bodies and prominent public men, who reposed sufficient confidence in the Institute to allow us to make representation on their behalf.

Yours, etc.,

S. TOOMBS,  
General Secretary.

### LEAGUE OF NATIONS.

International Labour Office,  
Geneva, 6/1/25.

Sir,—I have to acknowledge with thanks your letter of 22nd October, enclosing a statement of the point of view of the maritime organisations of Australasia, on the resolutions of the sub-committee on ports and maritime navigation on the question of radio-telegraphy at sea. I have read this important statement with much interest.

Although, as you are aware, the revision of the regulations relating to wireless telegraphy at sea is not being dealt with by the International Labour Office, but a Committee of the League of Nations, the International Labour Office is doing everything in its power to obtain representation of the point of view of the organisations of persons employed on board ship, and it therefore welcomes your action in sending it the observations of the Australasian organisations.

The International Labour Office has already been in correspondence with the International Federation of Radio-telegraphists on the same subject, and has forwarded its observations to the League

of Nations with the request that they should be laid before the body competent to deal with the matter. I have sent your statement to the League of Nations and requested that it should also be laid before the competent body.

Yours, etc.,

(Sgd.) ALBERT THOMAS.

### RECENT N.S.W. LICENSES.

- 2AR—W. H. Hudson, 1 Terrace Road, Dulwich Hill.  
2AV—A. W. Thurston, Argyle Road, Penhurst.  
2BH—Broken Hill Technical College, Broken Hill.  
2BN—F. W. Kimpton, Brunswick Street, Ballina.  
2CU—Dallas D. Campbell, Ulmarra, N.S.W.  
2DJ—F. B. Cooke, "Dachargh," Namoi Road, Mosman.  
2EC—E. C. Crough, 26 Spencer Road, Mosman.  
2HS—Hooker and Sturman, 42 Jersey Road, Woolahra.  
2JR—Joseph G. Reed, 29 Kensington Road, Summer Hill.  
2LM—Leslie M. Wilson, Corran, via Marsden.  
2MR—John E. Stewart, Gorriek Street, Mayfield.  
2WW—"Wireless Weekly," 15 Cairo Street, Suspension Bridge.  
2YJ—A. R. Sainsbury, "Kermanshah," 6 Wallaroy Street, Concord West.  
2ZJ—A. W. Simpson, Greendale, Duri.

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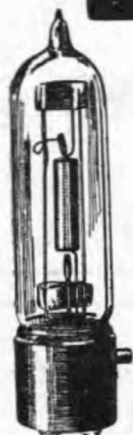
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He certainly deserved what he got. Said there'd be no show and dinner to-night. They would listen to the Wentworth Orchestra broadcast over the Wireless, a deck-chair apiece in the cool of the summer evening. At first he thought his decision was rather risky—her manner being sadly disinterested, but "Brandes" stepped into the breach. The "Matched Tone" brought the varying items with such distinct and rich even-toned purity the Featherweight Headband rested with such comfort on her dainty head that her Wireless adventure proved most entertaining. Now there is only one deck-chair occupied.

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*Matched Tone*  
TRADE MARK  
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(Continued from Page 30)

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 9AA—C. T. Read, 507 W. 62nd Street, Chicago, Ill.  
 9AQ—M. Street, 807 S. 3rd Street, Champaign, Ill.  
 9AW—J. Banks, 3255 Walter Street, Maplewood, Mo.  
 9AXS—O. C. Miller, R.F.M.L. Marshall, Minn.  
 9BHY—L. P. Megginson, 28 Orchard, Webster Groves, Me.  
 9BMX—L. W. Still, 1136 E. Seranium Street, St. Paul, Minn.  
 9BX—Unassigned.  
 9CDQ—F. Nagel, 621 Vine Street, Paris, Ky.  
 9CIP—F. & D. Weyerhaeuser, 480 Grand Street, Paul, Minn.  
 9CJ—R. Wahlmann, 3257 Fremont Avenue, St. Louis, Mo.  
 9CJC—J. C. Mosby, Jr., 425 Fairlawn, Webster Groves, Mo.  
 9CPO—N. H. Schensted, Brooten, Minn.  
 9DAW—C. M. Braum, 3832 S. Elliott, Minneapolis, Minn.  
 9DGV—F. J. Faltico, 1078 S.E., 21st Street, Minn.

- 9DJE—A. Sodergoen, 1557 W. 69th Street, Chicago, Ill.  
 9DMJ—D. W. Fowles, 4940 Botanical Avenue, St. Louis, Mo.  
 9DNJ—D. E. Maxham, 720 W. Grove Street, Mishawaka, Ind.  
 9DQU—M. C. Spies, 1538 N. Edward Street, Decatur, Kans.  
 9QW—S. B. Deindner, 13th and Willow Sts. Ottawa, Kans.  
 9ZTW—No record.

#### MARCONI D.E. 5 VALVE AS TRANSMITTER.

An interesting "low power" transmission to America was effected by Mr. D. B. Knock, British 6XG, on December 16th, when he established two-way communication with the American 1BHM using as "transmitting" valve a Marconi D.E.5. Good signals were reported by 1BHM, and messages were exchanged on 102 metres. Unfortunately soon after contact had been established Mr. Knock's 12-volt accumulator supplying current to the M.L. anode converter began to run down, and communication was cut short. The actual input at 6XG was 10 watts, with a plate voltage of 500, yielding an aerial ammeter reading of 0.4 of an ampere.

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**A**FTER many costly experiments to determine the type of horn which would give unqualified satisfaction, Ediswan achieved perfection in the TELEVOX. The clear, rich tone of this perfected Loud Speaker proved to music lovers that the unique principles adopted in its design were the means that eliminated all harsh strident distortion.

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(Continued from page 7)

ings, Bay Street, North Brighton.

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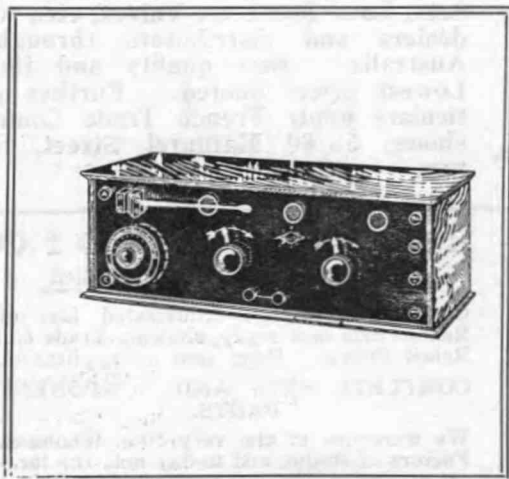
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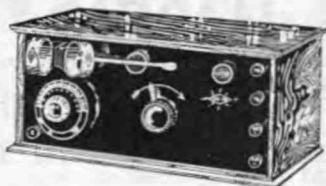


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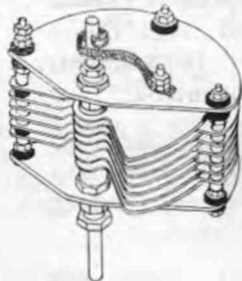


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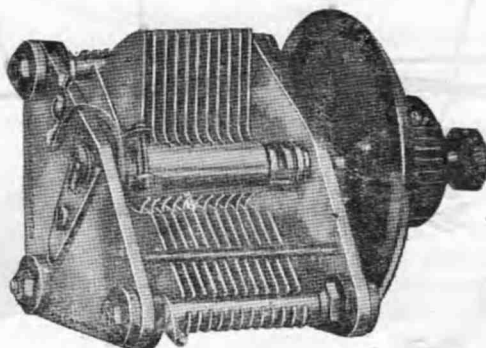
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- 7.—All sketches will be returned to competitors at the close of the competition, together with a list of the prize-winners. The Australian School of Sketching cannot be held responsible for any sketch which may go astray in the post.

- 8.—Sketches must be accompanied by an entrance fee of 1/6 (one shilling and sixpence) in postal notes (please do not send stamps or coins).
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- 10.—Sketches received insufficiently stamped will not be accepted. All packages should be sealed and bear letter rate of postage (1½d. per oz.).
- 11.—Competitors agree to accept the decision of the Artists of the Australian School of Sketching as final and conclusive.
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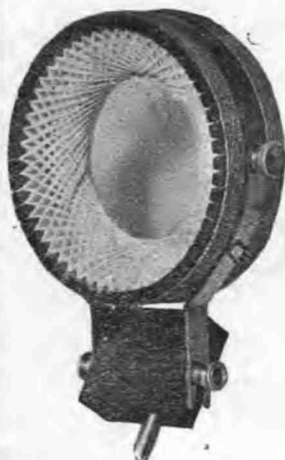
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K. & C. 4-gang V.T. or U.V. 199 Sockets .. 26/9

K. & C. Products are genuine and carry the Manufacturers' Guarantee.

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Obtainable at all Dealers

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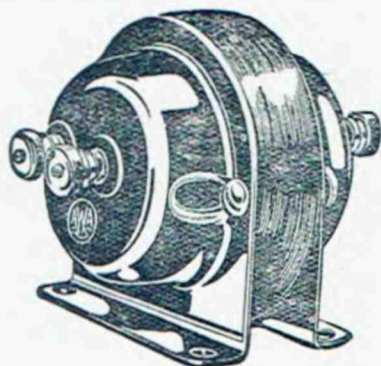
**PACIFIC ELECTRIC Co.**  
LIMITED

87 CLARENCE STREET,  
SYDNEY.

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SOLE AUSTRALIAN DISTRIBUTORS

# Reasons why you will be satisfied with this Transformer



It's an  
  
 Product

In the construction of an all-Australian-made low-frequency transformer, Amalgamated Wireless have spared no effort to produce a thoroughly efficient instrument.

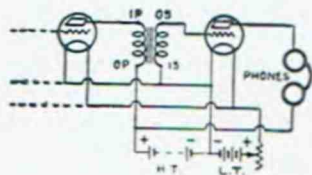
Each AWA Transformer is subject to a 1000 volts insulation test between windings and casing, and between the windings themselves; any one not giving infinity reading is rejected. Low self-capacity and the special arrangement of primary and secondary coils, gives uniform amplification over the whole band of useful frequencies.

It is an ideal Transformer for low loss work.

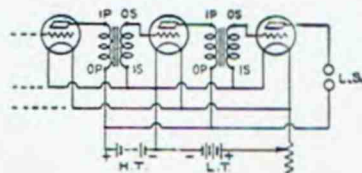
Automatic-machine wound, the windings are standard; inductance values are measured on individual transformers, and each one is tested against standard for signal strength. Both windings are covered by an insulating, non-hygroscopic varnish, giving absolute protection against atmospheric humidity. A comparatively heavily-gauge wire is used to minimise the possibility of break-down, and there are a sufficient number of turns to bring the natural frequency of the windings above the audibility range, preventing "blasting."

Made in two standard ratios—5-1 and  $3\frac{1}{2}$ -1. Price, with polished black finish .. .. 30/-

Also supplied with a polished nickel finish. Price .. .. 32/-



Showing arrangement of A.W.A. Transformer in one stage low frequency circuit.



Showing A.W.A. Transformer in two stage low frequency circuit.

Made in Australia by

**Amalgamated**  **Wireless**  
 (Australasia) Ltd.



## A Good Concert

Run-down Batteries need not be the reason for missing any broadcast programmes. There is no excuse for allowing your Battery to run down and spoil the evening's entertainment.

The **TUNGAR** doesn't cost much, and it charges the starting and lighting battery in your Automobile also.

The **TUNGAR** Battery Charger makes it a simple matter to keep your Storage Battery tuned up. With it you can recharge your Battery at home and at little cost.

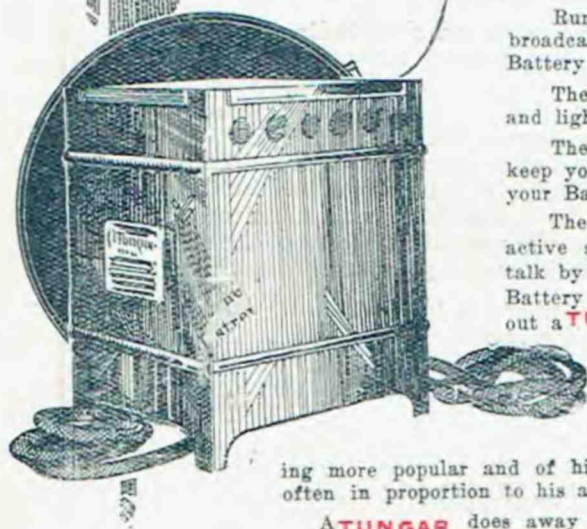
The owner of a Radio Outfit does not care to have an inactive station. He may miss some long-awaited concert or a talk by some famous speaker, yet he misses those pleasures if his Battery is too weak to give sufficient strength to the receiving. Without a **TUNGAR** he is obliged to disconnect the Battery, which must then be brought to some service station. Most Batteries are too heavy to be easily carried out.

Under these circumstances it is often several days before the charging is done. All this time he is missing many programmes which are daily becoming

more popular and of higher grade. This situation arises frequently and more often in proportion to his activities in Radio.

A **TUNGAR** does away with all these troubles at very slight expense.

Send for our new **TUNGAR** Booklet ET for Radio work. It will explain the simplicity of the **TUNGAR**



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