

WIRELESS WEEKLY

July 29, 1928

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Vol. 2.

July 20, 1923.

No. 29

Questions We Would Like Answered by the Trans-Pacific Test Committee.

Why has Mr. Gorman, who won the above amount of prize money in the Trans-Pacific Test Competition, not received it?

Why has the official notification that Mr. Gorman won the Test not been handed to the Press for publication.

The Trans-Pacific Test finished in May last and early in June the logs were opened and a few days after it was known definitely that Mr. Gorman had won, but up till the time of writing not one word has been given out officially.

Why was Mr. Gorman not given public re-

cognition for his excellent achievement?

Has the Test Committee considered the position they have placed themselves in by not handing Mr. C. A. Gorman the prizes, £21/10., which is considered he fairly won?

THOSE EXPERIMENTAL WAVE LENGTHS.

Experimenters are to have their transmitting length increased. The new figures are 100 to 250 metres as stated by Mr. George A. Taylor in his lecture before the Radio Association. A report of this lecture appears on page 2.

Roster for Week ending 25th July, 1923

	7.30 to 8.0	8.0 to 8.30	8.30 to 9.0	9.0 to 9.30	9.30 to 10.0
Thursday, 19	2 LI	2 ER	2 GR	2 JM	2 ZG
Friday, 20	2 BB	2 KC		2 ZG	
Saturday, 21.	2 DS	2 JM	8.45 to 9.15 2 LI	9.15 9.45 2 GR	
Sunday, 22 ..		9 to 8 2 LI	8 to 9 2 KC		9 to 10 2 JM
Monday, 23 ..	2 ER	2 GR	2 ZG		
Tuesday, 24 ..	2 GR	2 JM	2 ER	2 GR	9.30 to 10
Wednes. 25 ..	2 BB	2 LI	2 GR	2 ER	2 ZG

The "Wireless" Experimenter and Australian Opportunities.

By GEORGE A. TAYLOR.

Being an Address before Radio Societies of N.S.W., Department of Public Instruction, 12th July, 1923.

Mankind is moving fast with the development of scientific research; the air, land and sea have been conquered; and to-day we have risen far above the earth, and on the ether wave have entered into the eternal. The "magical" has become the "practical," and so a new era in the history of humanity has commenced.

With wireless a field of remarkable possibility is opening with such rapidity that we must exercise keenest care that we do not become bewildered with the glorious outlook and cause chaotic conditions.

Already in the older world particularly in America, has confusion reigned, and it would be a sorry day if anything of the kind happened in Australia, as in no other country can wireless be of such utility. With systematic and widespread broadcasting, much can be done to brighten the dullness of family life for the outback pioneers who are building up our great nation; whilst in the cities broadcasting can give an added sweetness to home life and strengthen the family ties that mean so much in the building up of a great and worthy nation.

But before discussing those regulations it would be well to look over the field of previous operations and note therefrom how Australia can profit by the mistakes of older lands and start out with the scheme that has been designed to best help what we all have at heart—the best development of wireless.

When it was ascertained that wireless telephony was possible, the world looked on with wonder-open eyes, and America rushed into the new field with wild enthusiasm. The United States Government, in its desire to please the populace, hurriedly arranged for the issue of licenses both for receiving and transmitting; manufacturers flooded the market with sets.

In fact, up to 3rd February, 1923, that month, over 1,000,000 amateurs' licenses had been issued.

Wireless was rushed into almost every field of public interest, so much so that one firm advertised it as being of value to urge hens to lay more eggs, the advertiser stating that a radio set in his fowl house increased the number of eggs from 58 to 78 for every 100 fowls!

One can therefore understand the jamming of waves and the consequent aerial pandemonium that existed in America.

Great Britain, however, did not rush matters. John Bull, ever staid and steady in his judgment, hesitated and watched while the radio mix up of the younger nation across the Atlantic.

I happened to be in England at this period of indecision. I later saw the English scheme begin to develop when the British Postmaster-General announced that he would divide the country into eight or ten areas, and give the same number of the most responsible manufacturers the right to work those stations. Some thirty or forty applied for the rights, but when the cost of erecting the stations and the expense of good programmes came to be considered, the majority of the applicants for broadcasting rights declined to go further, and joined with the six of the leading firms which formed one broadcasting company, with a nominal capital of £100,000; the revenue of this company to be a half share of the license fees the Postmaster-General collected from the public, and a fee of ten per cent. on the selling price of each apparatus sold by the various manufacturers; the Post Office license being 10/- per set per year, and the manufacturers' license only a royalty fee of each set, no set being installed without a license, and each set to be approved by the Postmaster-General.

All manufacturers had to join the Broadcasting Company, the shares being £1 each, with £50 deposit if necessary.

The Company pointed out that as there was a possibility of installing a minimum of 500,000 sets within a

few years, which would represent work to the extent of five or six million pounds, most of which would go in wages, and so help to relieve unemployment, that labour had to be specially trained, whilst there was a risk in erecting the broadcasting stations amounting to about £120,000, and supplying programmes that would cost anything from £150,000 to £200,000 per year; and as there was a serious danger of foreign competition from countries with collapsed exchanges, the Postmaster-General was asked for at least two years' protection from importation.

So broadcasting began in Great Britain. Amongst the conditions under which licenses were issued was one that all types of receivers should be constructed for the reception of signals of any wave length, but must not contain a valve or valves so connected as to be capable of causing the aerial to oscillate; in fact, every possible precaution was taken to prevent interference.

There was a great rush for licenses, but it was not long before there were complaints. Many alleged experimenters who made their own sets were suspended from having experimenters' licenses because there was no ten per cent. on the cost of the apparatus coming to the Broadcasting Company who thus lost a definite amount of revenue.

It should, however, be mentioned, that the genuine experimenter is not in any way objected to by the Company, which mentioned that it desired to encourage him in every way, as the General Manager said, "without the experimenters we would not be in the position we are in to-day."

The experimenter, therefore, is an important factor in Great Britain, but he is a very small party compared to the vast numbers of amateurs who make their own sets and apply for experimenters' licenses but if refused, do not bother about licenses, but enjoy "the

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tening-in" without paying any fee whatever.

The British system, therefore, had definite faults. It could in a sense be called a monopoly because it could give whatever programmes it liked—though in justice to it, it had always given the best; and there was no check on the amateurs that could fix up their own sets and "listen-in" or jam.

On my return to Australia, I immediately got in touch with the principal representatives of wireless interests. The Association for the Development of Wireless was soon formed, and the Postmaster-General was approached for a conference of wireless experts in order that suitable broadcasting regulations be devised in order to avoid the difficulties and mistakes of older worlds. That conference was arranged to take place in April, but as Mr. Fisk, who had taken a prominent part in recent Australian wireless matters, was on the way to Australia from England, it was considered advisable to wait his return to hear his views, considering he was the last to leave the older world conditions. The conference opened in Melbourne on Empire Day, at which there were present 58 delegates, and they very generously appointed me Chairman.

The business opened with the request as to whether anyone present had any clear cut scheme they desired to submit, Mr. Fisk pointing out he did not desire to be the only one, as it was open for anyone to submit propositions.

I put that request to the meeting, so that whatever decision may be arrived at, there could not be any after remark made that no one had the opportunity.

The Conference, however, desired to hear Mr. Fisk's scheme, and to utilise it as a base upon which to build the proposed regulations; so Mr. Fisk's scheme was discussed, amended and rebuilt; a committee being appointed to draft the regulations for submission to the Government, which committee after several hours' keen discussion, drew up a set of regulations which were handed to the Postmaster-General, so that the regulations could be framed upon them for gazettal.

I must say it was a remarkable Conference; all members being imbued with the importance of the task before them, and it was most satisfactory to see the whole affair being discussed with such keenness,

so that I am pleased to record my deep respect and thanks for the members who worked so ardently for the science they had at heart. Some days after the committee that drew up the regulations were invited to Melbourne by the Postmaster-General to consider the manner in which the regulations had been framed for gazettal, and these regulations were thoroughly discussed, and twenty amendments made.

I may point out when the result was handed to the Postmaster-General he was generous enough to agree to all, with one exception—the range of wave lengths—the Government proposing a certain limitation. The Committee, however, desired a wider extension of that limitation to almost ten times the length they were asked to agree to. The Postmaster-General generously met our amendment by extending the range of wave lengths about seven times.

There is, therefore, no reason for any statement that every opportunity was not given for the widest consideration of all interested in wireless development; although certain traders evidently had second thoughts with regard to what they approved of at the meeting, and have since met and protested.

The Postmaster-General has, however, given his assurance that in the event of any of the regulations being found unfair to anyone, steps would immediately be taken to have them altered; hence I trust that the traders who may be at present dissatisfied, will link together with the Association formed throughout Australia for developing wireless, so that all can work together with the one great object.

The latter is an important point, for it is not desirable to see wireless companies being formed and shares being sold as has been done in other spheres, when after a short period through mis-management or other reasons the company fails and the money subscribed by shareholders has been lost. In such cases the blame would not be placed upon the company's mismanagement, but in an indirect way unfairly placed against wireless.

Another protection that the regulations will ensure is that transmitting companies only be licensed provided expert operators be engaged for controlling the transmission gear.

Power to be applied for may cover between 500 and 5000 watts, and the wave lengths may be selected

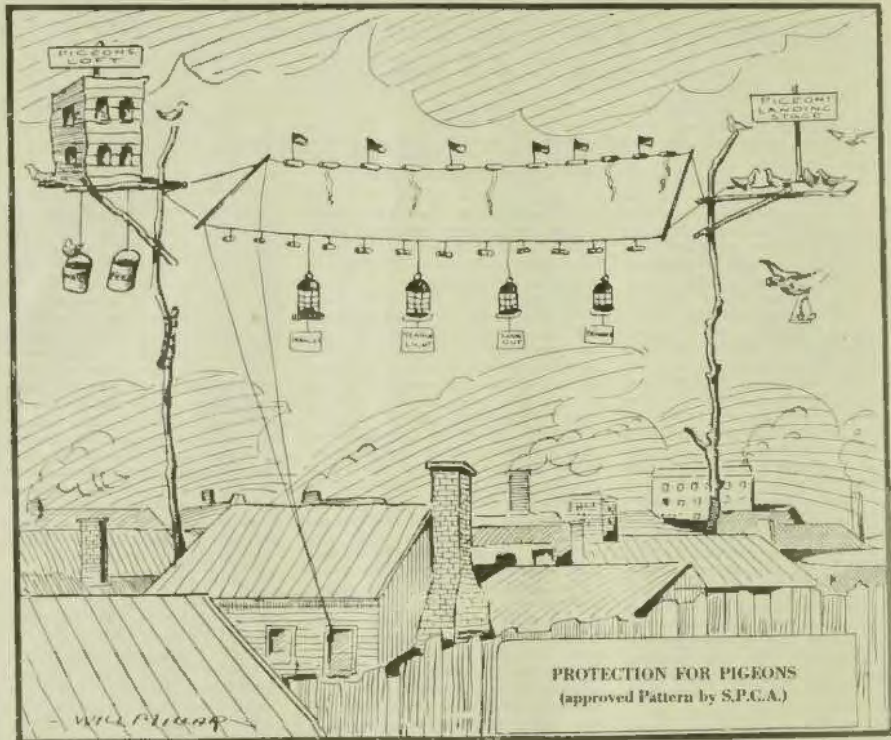
from 200 to 3500 metres, provided they are not required for other purposes. The receiving station licenses are proposed to be 10/- per year, together with an annual subscription payable to the transmitter. Tests of sets will be made by authorised officers for the prevention of oscillations, also interference with the apparatus, such as increasing the anode battery by changing the valves or other essentials. After approval the type will be given a registered number, and the manufacturers or users, in the case of sets made up by users, will see that all sets comply with the approved type before they are sold or used.

In the case of standard aerials tests will be made by the officers of the Government on an elevated aerial 100 feet long. A person who desires to receive from more than one station may have his receiver altered so as to respond to the wave lengths of other stations. The receivers' license may be removed from his address shown on the license to any other address not exceeding 20 miles distant radially; if desired to be removed beyond 50 miles the consent of the Minister and the Broadcasting Company concerned must be obtained.

I must emphasise the fact that in the whole of the proceedings the experimenter was kept in mind, a special resolution being passed that;

This Committee recognises the right of fully qualified persons indulging in bona fide experimental work to be without any hindrance, except as prescribed in Statutory Declaration No. 169 of 1922, such right to be kept in mind in the allotment of wave lengths, subject to the experimenter giving an undertaking that he will not poach on broadcasting services.

It will be understood that qualifications for experimenters must necessarily be high, and though the wave lengths upon which they will be granted permission to operate will probably be between 100 and 250 metres, I have been assured that in any special cases a longer wave length will be allotted. In fact, an experimenter who can prove that a very long wave length is necessary will have that wave length allotted to him without any hesitation. If long distance relay work is being considered by the experimenter, and the short wave is unsuitable for the work, I am sure there would be little difficulty in ob-



It was suggested at the Broadcasting Conference (Vide Verbatim Report, W.W., Vol. 2, No. 27, page 3) that Corks should be strung every 18 inches on all Aerials as a protection to Pigeons which might strike the wires in flight. Our artist suggests the above type (covered by various patents)

taining permission to utilise the longer wave length.

I am also informed that the present holders of licenses will not be interfered with, as they are looked upon as experimenters, though future applicants for experimenters' licenses will have to convince the authorities that their desire is genuine, and not for casual listening in to broadcasting programmes.

The experimenter, therefore, has nothing to fear and everything to expect to assist him in the new arrangements that are to be issued regarding the development of wireless.

The reason why the restricting of wave lengths is necessary is that

there must be a fair field given to transmitters, and it must be borne in mind that certain wave lengths have also to be used for commercial, shipping, naval and military uses.

In this respect Australia is treating the experimenter much better than Great Britain, for in the latter country he is barred between the hours of 5 p.m. and 11 p.m., whilst in Australia there is to be no time limit for him.

To-night we have with us the officials of the Wireless Institute of New South Wales, an Institute that is doing great work in winning best attention to experimenters in wireless development. Amongst them I may mention Mr. Machirean, the

President, whose concert transmissions have been warmly appreciated for a considerable time past; and also Mr. O. Mingay, who is in charge of the demonstration to-night, formerly a divisional officer in the engineers, and who shortly after his return from the Great War joined the firm of Burgin Electric Company. He is the Hon. Treasurer of the Wireless Institute, as well as Hon. Secretary of the Association for Developing Wireless. He is using a three valve receiver, his apparatus consisting of an Armstrong circuit, comprising a detector and two valve amplifiers, with a Western Electric loud speaker.

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THE CRYSTAL MENACE.

"The Broadcaster" has discovered a new danger in the "listening-in" world as yet unknown to many and for the first time brought before amateurs for their consideration.

Since the advent of broadcasting the lot of the wireless experimenter has been hard, much having been said concerning the interference of broadcast reception by the incautious use of valve receivers. At present this annoyance has considerably abated, but, however, a fresh trouble is now perceived and unless remedied may cause more serious jamming in the future than already noticed in the past writes R. H. Brown in the "Broadcaster."

The offender in the present instance is the common "crystal set," usually supposed to be entirely harmless, however used.

In the first case the trouble can be detailed as follows: The valve receiver is adjusted, we will suppose, to the reception of C.W. transmission from another amateur station. All goes well until the operator of the local crystal set comes on watch. Immediately he connects his aerial to the apparatus the valve receiver at the adjacent station ceases to oscillate. This, of course, stops the C.W. reception, which can only be regained by an increase of reaction and a readjustment of tuning. All may now be well, unless the crystal operator makes any change in his wave length. Should he do so, the wave length of the valve set immediately changes and the C.W. from the transmitting station is again lost. As will be seen under these conditions the reception of C.W. presents considerable difficulty.

The interference to the reception of telephony is of a slightly different character, and in the case of reception of faint signals of considerably more annoyance. The valve receiver, to obtain the loudest signals, is adjusted to the point where the maximum amount of reaction, without oscillation, is obtained and reception commences. After a time we will suppose the crystal receiver comes into operation and immediately the valve receiver falls considerably from the oscillation point. To once again receive, the

reaction is tightened and a readjustment of tuning is made. This will remain in force only so long as the crystal set's wave length is steady. Should the wave length be altered in any way, however, the valve set immediately oscillates violently and the reception of telephony is rendered impossible.

During transmission the interference by crystal is unfortunately very great, affecting as it does both power output and wave length. Stability of wave length is absolutely essential, on the part of the transmitter, as the slightest variation will cause interminable readjustment on the part of the receiving station. In this case the wave length is very unfortunately situated, being as it is 440 metres, and therefore of very high frequency. The slightest change of stray capacity or inductance is sufficient to vary the wave length a metre or two, as well as rendering the modulation unsteady. The absorption of energy by the aerial of the crystal station can quite easily decrease the power output of the transmitter by 50 per cent., a serious matter when the experimental power output is limited to 10 watts.

The introduction of loosely coupled and closely tuned circuits may serve to minimise if not eliminate the growing danger of interference. The interference or "jamming" of experimental stations would be greatly minimised if the crystal operators discontinued listening-in at the termination of the Broadcast programme, instead of endeavoring to pick up experimental stations carrying out tests. It should be noted that to avoid giving undue trouble to transmitting stations, the aerial of the crystal set should be connected across a lightning arrester, and not directed to earth as is the usual practice. The reason for the above is that the aerial when connected directly to earth, and if situated in close proximity to the aerial of the transmitting station, will provide an extremely easy path to earth for the current radiating from the transmitting aerial, and thus greatly decrease its effective range of communication.

The interference by crystal of a

valve receiver when in tune for reception of C.W. is very apparent. The valve receiver is radiating a very feeble wireless wave of a continuous character the whole time C.W. reception is being carried out. This feeble current leaves the aerial and immediately encounters the aerial of the crystal set, whence by way of the inductance and crystal it reaches earth. This leakage causes a load on the valve set, and unless the reaction is increased the set ceases to oscillate. Any variation of reaction causes a slight variation of wave length which must be counteracted by retuning. The results referred to above were noted in a case where the experimental aerial was situated in a parallel position approximately 10ft. from the aerial of the crystal set. The loss of power during transmission was sufficient to reduce the effective range to 10 miles, whereas the normal range was estimated at 40.

Interference will be greatly minimised between aerials of close proximity, if one aerial is placed at right angles to the other. In this position the mutual induction between aerials is placed at right angles to the other. In this position the mutual induction between losses during transmission would be only a small percentage of the output.

It is extremely interesting to note that it was while experimenting with one of these microphones that David Edward Hughes, an American electrician, stumbled upon what was probably the first actual demonstration of "wireless." He had previously noticed that the microphone was sensitive to what he called "sudden electrical impulses" from the atmosphere, the source of which he assumed to be the spark coil which were frequently used in his laboratory. To make sure that this was so, he set a coil working in his window, and took the microphone, with a small battery attached, down the street. He was astonished to find the sounds still audible at a distance of over 500 yards. This was really a spark transmission though Hughes was unaware of the real nature of the phenomena at the time. He brought it to the notice of a number of prominent scientists,

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MAKE YOUR OWN

Rectifier for Charging Radio "B" Storage Batteries.

By KENNETH M. SWEZEY.

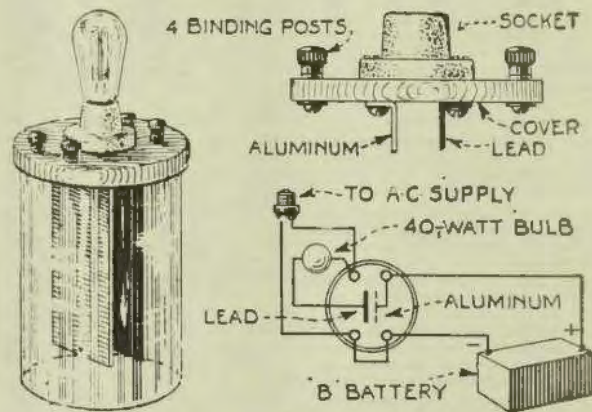
All storage batteries require direct current for charging. In most city homes, however, alternating current is found because it can be distributed by the electric light companies more easily than direct current. Therefore those who have radio sets or other appliances requiring small storage batteries have to carry their batteries to a charging station, unless some means is provided for rectifying the current at hand.

Rectifiers of the Nodon, or electrolytic, type are the easiest for the amateur to construct, although not very efficient for any but the smallest currents. Radio B batteries, or other batteries requiring but little current, can be readily charged with the rectifier to be described. The parts can be assembled at small expense and with little difficulty.

The exact size of the parts used is not of great importance, but the dimensions mentioned can be followed to advantage. Obtain a battery jar or other jar, 3 in. in diameter, and 6 in. deep; one strip each of lead and aluminum about 1/16 in. thick, 2 in. wide, and 6 in. long; 4 binding posts; a standard lamp socket; a 40-watt bulb; a wood cover for the jar; a connecting plug, and a length of wire sufficient to reach to the outlet to which you connect the rectifier; and 1 lb. of ammonium phosphate.

It is very important that the ammonium phosphate and the aluminum strip be as pure as obtainable, otherwise the rectifier will work poorly, if at all. The solution is made by dissolving the half pound of the chemical in two quarts of water.

The construction is clearly shown in the illustration on this page and very little explanation is necessary. The wood cover had best be painted



How the rectifier is assembled and connected for charging a small radio B storage battery

with pitch or asphaltum varnish, also all the joints, to prevent corrosion.

Bend one end of each strip at about the half inch mark. Drill two holes in each of these bent ends and attach the strips to the under side of the cover, about 1 in. apart, with brass screws as shown.

CONNECTING THE RECTIFIER.

Next, mount the four binding posts, two on each side, on the top. Fasten the socket in the centre. After the rectifier is wired, the solution may be poured in the jar, to within about half inch of the top, and the rectifier will be ready for operation. If the cover fits very tightly, it will be necessary to drill

one or more vent holes to allow the gases to escape.

Be sure that the aluminum plate of the rectifier is connected with the positive or "plus" pole of your battery. Otherwise you might ruin it by charging in the wrong direction.

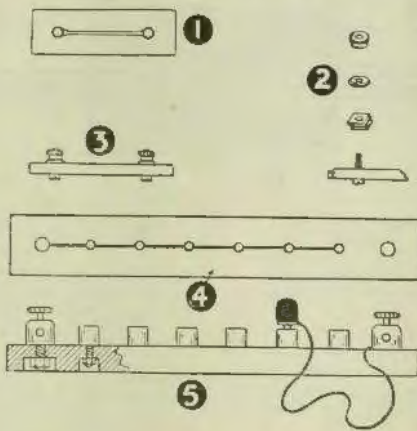
The size of batteries vary, but, when using a 40-watt lamp, a medium size battery can be fully charged in half an hour; others in proportion.

Be careful that the screws inserted on one side of the cover do not come in contact with screws projecting from the other side, as this might cause a short circuit. To prevent the creeping of the electrolyte, heat a little paraffin oil on the surface.

The Construction of Radio Components.

By O. J. R.

Telling you how to make several efficient types of grid leaks, a low frequency intervalve transformer.



A grid leak, or grid resistance as it is sometimes called, consists of an element made up from an intimate mixture of conducting and non-conducting substances, placed in the grid circuit of a valve receiver to serve as a by-pass for the high frequency currents which would otherwise collect on the grid of the valve.

The simplest form of grid leak consists of a graphite pencil line drawn between two terminals mounted on a strip of ebonite or other insulating material. This very simple device will usually give satisfactory results providing the resistance value of the pencil line is suitable for the valve and circuit in which it is employed. This, of course, is a matter of experimenting with lines of various widths. The construction of such an instrument is a very simple matter. Obtain a strip of 1/8 in. ebonite, about 1/2 in. wide and 1 1/2 in. long, and drill two holes for the terminals about 1 in. apart. Cut a small groove along the surface of the ebonite between the two holes and widen the groove at each end where it merges into the holes. (See Fig. 1).

With a fairly soft lead pencil draw a line along the groove and apply the lead freely in the widened portions. Cut out two small wads of soft tinfoil, and punch a hole through the centre of each large enough to slip over the terminal screws. Pass the terminal screws through the holes in the ebonite (Fig. 2), slip on the tinfoil wads, pressing them well into the enlarged parts of the groove, screw down the clamping collars and hold these firmly while the terminal screws are tightened up from underneath with a screw-driver, then place the two terminal nuts in position. A little experimenting will determine whether the pencil line is too narrow or too wide, and when the best results are obtained disconnect the instrument and apply a coat of thick shellac varnish along the groove. A side view is shown in Fig. 3.

A VARIABLE GRID LEAK.

The advantages of a variable grid leak will be obvious. In the one about to be described an Indian ink line is employed as the resistance element. A piece of 3/8 in. ebonite, about 5 in. long and 3/4 in. wide, is

Here are some Real Good Radio Books

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A book that gives you not only clear diagrams for all kinds of telephone and telegraph receiving and transmitting sets, but simple descriptions of each circuit shown and spaces for notes of results obtained.

How to make Commercial Type Radio Apparatus

This book describes in detail many commercial types of spark and vacuum tube telephone transmitting and telegraph and telephone receiving equipment of all kinds. The experimenter will be able to get a world of ideas for design and construction of his next piece of radio equipment from the very clear description and the 96 clearly illustrated figures.

Construction of Radio Phone and Telegraph Receivers for Beginners

Radio men can follow the data in Radio Phone and Telegraph Receivers, with full confidence because each piece of apparatus described was first made, tested, and found efficient before the final design was accepted. Special Receivers, both crystal and audio, are shown in detail. Regenerative circuits as well as audio and radio frequency amplifiers are described with clear photos, diagrams, and working drawings, prepared especially for the novice and the man who wants to receive the radio telephone broadcast. A special feature is the phonograph type radio set, and the loud speaker. Fully illustrated.

Construction of New Type Trans-Atlantic Receiving Sets

Several types of simple receiving sets are described, with detectors and amplifiers to accompany them. Suggestions are also given for operating relays and reproducing the signals on a phonograph. In addition there is some valuable data on home-made wavemeters for testing and experimenting.

Ideas for the Radio Experimenter's Library

In this book, the amateur, experimenter, and novice, will find a wealth of information which will be of great aid in the solving of the many problems that constantly confront the radio enthusiast.

Design Data for Radio Transmitters and Receivers

The only book that gives tables and data, designing, receiving and transmitting apparatus, so that you need no knowledge of mathematics. It's the first book a beginner buys after he has learned the use of his 'phone receiver.

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drilled is shown in Fig. 4, the two end holes being provided for two terminals, and the other holes for six ordinary contact studs. All holes are well recessed underneath to accommodate the guta. A fairly thick Indian ink line is drawn along top surface of the ebonite between each hole with the exception of the space between the last two holes. (See Fig. 4.) A small hole is drilled in the top of each contact stud large enough to take an ordinary wander plug as used on H.T. batteries. The isolated terminal is connected to the wander plug by means of a short length of flexible wire. The other terminal makes contact with the first ink line which is in series with the contact studs. A small washer, made from several thicknesses of soft tin-foil, should be placed under the shoulders of the studs and first terminal to ensure a good contact with the ink lines.

The general arrangement of the instrument is clearly indicated in Fig. 5. It will be seen that different values can be obtained by simply changing the position of the wander plug. The correct value of a grid leak in a rectifying circuit is a very critical point, for the maximum signal strength is entirely dependent on the leak. Experimenting with different leaks made up in a haphazard way is a tedious job. All this trouble can be obviated by means of a few simple adjustments if a variable leak is used. Properly constructed the instrument just described should be very efficient, and its cost should not exceed 1/2, since the small amount of ebonite required is usually to be found in the scrap box, and the wander plug and flexible lead retrieved from an old H.T. battery.

A LOW FREQUENCY INTER-VALVE TRANSFORMER.

The construction of an interval transformer presents few difficulties, providing one is possessed of plenty of patience and an average amount of skill. Winding approximately 15,000 turns of wire on the secondary will naturally require more patience than skill, but this is not such a difficult matter as is generally supposed. When the exact quantity of wire required is known, it will not be necessary to count the turns, and so the matter becomes less complicated. The quantities of wire required for the component to be described have

been worked out as accurately as possible to give a step-up ratio of 5 to 1.

For the primary winding 11 oz. of No. 38 single cotton or double silk covered (latter preferably) wire will be required, and for the secondary winding 1oz. of ditto, No. 47.

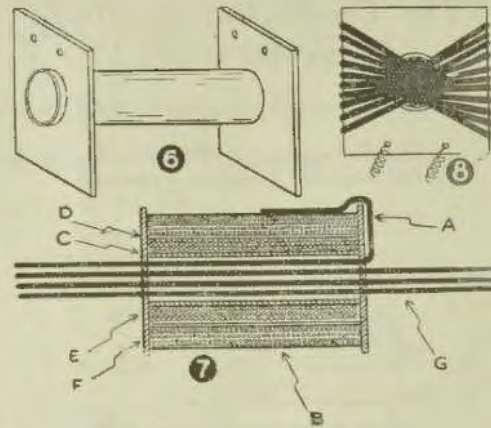
The bobbin or former (Fig. 6) is made entirely of fibre or other insulating material, and comprises a tube, 5/8 in. in diameter by 1 1/4 in. long, glued into two supports or flanges so that a small portion of same projects from each flange, and about 3/32 in. in thickness. The flanges should be 1 1/4 in. by 1 1/4 in. Two small holes are drilled in each as shown for the end of the windings, which can be attached to terminals if desired.

No. 38 wire is wound evenly on the bobbin to a depth of 1/8 in. A very thin sheet of waxed paper should be placed between each layer. This forms the primary winding of the transformer, and the two ends are taken through the holes in one of the flanges and carefully marked I.P. and O.P. (In primary and Out primary.) The beginning of the winding will, of course, be the I.P. and the end the O.P. Two or three layers of waxed paper should be wrapped round the winding, and the No. 47 wire carefully wound over this in the same manner to a depth of 3/16 in. taking the ends through the two holes in the other flange and making them I.S. and O.S. (In secondary

and Out secondary.) Some good adhesive tape should be wound all round this winding.

The core consists of a small quantity of No. 28 (or nearest) S.W.G. soft iron wire, cut into 4 1/2 in. lengths, and packed tightly in the tube as shown in cross section in Fig. 7. Force as many wires as possible into the tube. The nearer they are to each other, i.e., the tighter they are packed in the tube, the greater will be the efficiency of the instrument. The projecting ends of the wire are bent over the flanges in two bunches in the manner indicated at A and bound down to the adhesive tape covering B with another length of tape.

For the sake of clearness only four wires are shown in the diagram. The flanges and tubes are shown at C; D indicates the waxed paper between the primary and secondary winding; E, primary winding; F, secondary winding; A, method of bending over core wires; G, core wires; and B, adhesive tape covering over secondary windings. Fig. 8 shows an end view of the completed instrument. The resistance of the primary winding, which comprises some three thousand turns, is approximately 250 ohms, and that of the secondary winding, have about fifteen thousand turns, 9,000 ohms. This gives a step-up ratio of 5 to 1, and if carefully constructed this component will be very efficient when coupled to a low frequency amplifying valve.



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Continued from Page 3

all of whom, however, attributed it to the effects of magnetic induction. Nevertheless Hughes felt that he was on the track of something new, and was in the midst of further experiments when, in 1889, Hertz made known the results of his research in the same subject, and definitely established the existence of radio waves.

It was improved in several ways. Edison's carbon powder was very susceptible to adhesion, or "packing," under the influence of unduly heavy vibrations, and this led to acute distortion in reproduction. Pencils of carbon attached to the diaphragm, and pressing, from the free end, on a button of carbon, were tried and gave much louder, but not clearer, results. As many as twelve separate pencils in one microphone were used, but it was not until granules of carbon were used that results, as we know them to-day, were obtained. A good microphone contains hundreds of granules, and these ensure a multiplicity of electrical contacts which give much more faithful reproduction. Packing has to some extent been obviated in a very ingenious way. To the centre of the diaphragm is fixed a tiny carbon plunger which moves forward with each vibration and thus keeps the granules in a loose state. But the trouble has not been entirely eradicated, and not infrequently the erratic behaviour of the granules is the cause of unpleasant jarring and distortion in the receiving set. Actually the whole principle of the microphone is electrically unsound, for transmission is made through the loose contact of the granules, though the nature of the sound waves makes the likelihood of a more rigid method being found seem very small. Still, one never knows! Reluctance to accept things as they sound has often proved the incentive to man to attempt the seemingly impossible.

L.B.P.

SOME POINTS IN THE SELECTION OF RADIO HEAD SETS.

During the past six months there have come into being numerous different makes of head sets, and as is to be expected, some are good and some not so good.

The internal construction of most head sets appear to be similar, and they are all rated by their ohmage, 2000 or 3000, or whatever the case

may be, from which little can be judged as to the quality of the phones.

Those experienced in radio are able to separate the chaff from the wheat, but the average lay enthusiast or beginner is placed at a disadvantage unless advised with regard to the main points in the construction of a good head set.

It is not generally understood by the novice that the high resistance of telephones is due to the necessity of getting a very large number of turns of fine wire in limited spaces; therefore the fact of stating that telephones have a high resistance say 4000 or 6000 ohms in itself means very little.

What actually counts is the number of turns in the coils. It should be emphasised that resistance figures mean little, for telephones may be even wound with resistance wire to give a very high resistance, but the number of turns would not be there and inefficiency would be the result.

It is obvious that for best results the head set should be wound with copper wire preferably enamelled,

instead of silk covered as this allows a greater number of turns in a given space and therefore provides for a stronger current variation.

The "Trimm Professional" head set claims to have incorporated in their design many points which go towards the production of a highly efficient head set.

The magnets, which are made from Tungsten steel are provided with soft Swedish iron pole pieces, the bobbins of which are wound with a great many turns of No. 40 enamelled copper wire to the full resistance of 3000 ohms.

The makers claim that on account of the close and compact method of winding and careful adjustment of pole-faces and diaphragm during construction, these phones give perfect reproduction and articulation at any range of audible frequency. They should therefore be admirably adapted for use on telephony and music.

Messrs. O. H. O'Brien and Nicholl of 39 Pitt St., Sydney, are the distributors for the Trimm head sets.

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VICTORIAN NOTES.

By our Special Representative.

A meeting of the Malvern Section was held on the 10th instant, with Mr. B. A. Golding in the chair. After brief business was disposed of, Mr. Court, one of the committeemen, delivered a lecture on "Earths and Aerials," which was received with much appreciation by those present. Mr. Masters, the Honorary Secretary, pointed out that there would be a lecture at every general meeting of the Malvern Section in future. As the constitution of the Malvern Section has been framed and adopted, this Club should go ahead by leaps and bounds, and the great organising experience of its Honorary Secretary, Mr. B. J. Masters, both in America and Australia, will be a great asset. At present this Club is meeting at the Prahran A.N.A. Rooms, where the next meeting will be held on August 14th. Meanwhile the committee is looking for suitable accommodation in the district.

Canterbury and St. Kilda Sections are holding meetings this week, and the reports from the respective Honorary Secretaries, Mr. C. Bohrmann and Mr. F. D. Short, indicate much enthusiasm in their districts. The affiliation scheme appears to be succeeding far beyond the biggest hopes of the promoters. Fourteen radio clubs have come into being around Melbourne in the last month or so, and it is expected that all these will come into the affiliation scheme. As soon as the affiliation is complete the Old Victorian Division of the Institute will cease to exist as an organisation, and the new State Council come into being. It is not without a pang that some of the foundation members of the old Institute will see their Club expire, but they look forward to bigger and better things in the future, and find consolation.

Mr. Benno Moiseivitch, the famous pianist, played several numbers in a special room at Collins House, which were broadcasted out by the Amalgamated Wireless Ltd. on their De Forest Radiophone.

Reports concerning reception of the music vary greatly, but it is universally agreed that this transmission was infinitely better than the broadcasting by the same Company of Mr. Spivakovsky's music a year or so ago. However, it is understood that the De Forest set is not suitable for the transmission of music, as the microphone is designed for speech only. Miss Gladys Moncrieff is to sing for broadcasting purposes shortly, and experimenters are eagerly awaiting the entertainment. This lady has a soprano voice, which type is very difficult to modulate well. We sincerely hope that when broadcasting starts in real earnest in Melbourne the services of competent broadcast operators will be secured, as we have had to listen to some very dreadful efforts in the way of music transmissions. The voice of the announcer should also be considered, as an unsuitable type means bad reception. The operator of one station heard regularly in Melbourne possesses a voice whose cadences are positively ladylike, with the result that many of his announcements are unintelligible. The pronunciation of the titles of items seems to present insuperable difficulties to this gentleman.

Mr. N. Culliver (3DP) has now established an almost regular broadcasting scheme. Live artists sing and recite through the medium of his radiophone, and a large circle of appreciative listeners are frequently entertained. Many letters of thanks and comments are received by this gentleman from grateful listeners. Very varied programmes are sent out, and a comic recitation recently provoked much laughter among experimenters. Mr. Culliver is to be heard nightly on a wave length approximately 370 metres, and the station can easily be distinguished by the extremely sharp tuning.

A Bath Heater for 25s.

"THE SHEIK" CHIP,
A Heater of Quality at a Low Price.

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

Western Electric

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192 CASTLEBRAGH STREET, SYDNEY

July 29, 1923.

WIRELESS WEEKLY

11

Trans-Pacific Tests.

Referring to the Victorian Notes, appearing in your last issue, it would appear that the N.S.W. Division of the Institute was not interested in the inauguration of the Trans-Pacific Tests.

The following official correspondence will, I think, disprove this. Further, on reference to the dates it will be observed that it was on the 27th November the N.S.W. Division indicated its support to the movement, whilst a letter dated 28th November, from the Waverley Amateur Radio Club was the first intimation this Division received that the matter locally was not to be directed by them. It was a rather humiliating position for the Victorian Division to place us in, but we were sufficiently generous to keep quiet about it, and very much regret the necessity for correcting the wrong impression created by the Victorian Notes last week.

PHIL. RENSHAW,

Hon. Sec., N.S.W. Div. W.I.A.
10/7/23.

Melbourne,
8/8/22.

Mr. P. Renshaw,
Sec., Wireless Institute,
Box 3120, G.P.O.,
Sydney.

Dear Sir,

This division has fallen in with a plan I have proposed to arrange with American amateurs to test the possibility of amateur Trans-Pacific Transmission on a power of 1 K.W., and wave length of 250-300 metres.

I have had a reply from America stating they are very anxious to conduct the test.

I have been appointed at the head of a committee to investigate and carry on this test, and I should be very glad to have your Division's co-operation in this matter.

Kindly reply at your earliest.

Yours faithfully,

H. KINGSLEY LOVE,
For Trans-Pacific Radio
Test Committee.

27th November, 1922.

H. Kingsley Love, Esq.,
"Lindum,"
Ferncroft Avenue,
East Malvern, Victoria.

Dear Sir,

I am in receipt of your letter of 8th August last, which I regret has not been answered owing to my long illness, stating that the Victorian Division has fallen in with your plan of arranging with the American amateurs to test the possibility of amateur Trans-Pacific transmissions.

I note you have been appointed head of the committee to carry on this test, and I would be very glad to receive full details by return of post so that same may be placed before our members at the earliest possible moment.

Yours faithfully,

P. RENSHAW,
Hon. Secretary.

"Lourdes,"
Nelson Bay Road, Bronte,
25th November, 1922.

The Secretary,
Wireless Institute of Australia,
N.S.W. Division,
C/o W. P. Renshaw, Esq.

Dear Sir,

We have been asked to organise

BOOKS ON WIRELESS

Amateurs' Book of Wireless Circuits, by F. Haynes, Price 3/10, posted.

100 Radio Hook-ups, by M. Muhleman, Price 2/3, posted.

How to Tune Your Radio Set, by M. Muhleman, Price 2/3, posted.

How to Make Radio-Phone Receiving Sets, by E. Lacault, Price 2/3, posted.

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

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476 George Street, City

in this State for the carrying out of the reception of the amateur Trans-Pacific Radio Tests, which are to begin in the new year.

We would be pleased if you would co-operate with us, and invite your Institute to send delegates to a conference with our Club, to be held in the Christ Church Hall, Pitt Street (opposite the Central Railway Station tower), at 8 p.m., on Wednesday, 6th December, 1922, when we will put the proposition before them, and would be pleased to hear their views and any suggestions they may make.

Get Your Wireless Gear at Electricity House

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Condenser Plates, 1/6 per doz.; Condenser Spindles, 2/9 per set; Condenser Ends, 1/9 pair; Honeycomb Coils, from 1/6; Honeycomb Mountings, 3/- each; Filament Resistances, 7/6 each; Calibrated Dials, 1/6 each; Knobs, 6d., 9d., 1/-, 2/- each; Contact Studs, 1/3 per doz.; Switcharms, from 1/6; Terminals, 6d. each; Phone Condensers, 1/-; Grid Condensers, 1/-; Variable Condensers, 25/-, 30/-.

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

Catalogues, 9d. each, including wiring and other diagrams. All makes of Telephones and Valves.

Crystal Cups, 1/-; Detectors, 5/- each; Loose Couplers, 40/-;

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Complete Crystal Sets, from 27/6; Valve Sets from £9 to £35, 1, 2, or 3 valve; Radiotron Valves, 37/6; Vernier Rheostats, 12/6; Rheostat Knobs and Dials, Polished Bakelite, 4/-; Condenser Knobs and Dials, 4/6.

INTERVALVE TRANSFORMER, 40/-
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You will agree that this is a very important matter, and affords a great opportunity for the long suffering amateurs to show what they are made of, and we trust that we will have your co-operation.

Please advise us as soon as possible how many delegates you will be sending. Enclosed find copy of letter from W.I.A., Melbourne.

Yours faithfully,
(Sgd.) F. H. HARVEY,
Hon. Sec., W.A.R.C.

2nd November, 1922.

F. Harvey, Esq.,
Hon. Secretary,
Waverley Amateur Radio Club,
Nelson Bay Road,
Bronte, N.S.W.

Dear Sir,

In reply to your letter of 27th October, this committee notes with appreciation the steps you have taken to further the organisation for the carrying out of the Trans Pacific Radio Tests in your State.

A short time ago we wrote to Mr. Burroughs, asking that a committee be formed to deal with the

whole matter for N.S.W., and thus keep all correspondence between us in the one channel. We note you have formed a committee of five, and take it they will deal with the entire work for your State, on which basis we will work with them.

Regarding the number of valves required to successfully receive American signals, it is thought that the greatest possible number should be used, which, of course, will depend upon atmospheric conditions, local interference, and other elements of obstruction. This, we think, can be discovered only by experiment. We have a sub-technical committee, whose duty it is to advise on all such matters. A circular embodying their views is being prepared, and a copy will be sent you as soon as possible. We have not yet commenced transmitting, other routine work in connection with the said test having occupied up to the present all our available time, but we will write you again on this point later.

We have to-day received a long letter from America, which comes close to completing with them arrangements for carrying out the

test. We have, however, asked them to postpone the date of commencement to 1st May next, as receiving conditions in this country are better at that period of the year.

Please use your best endeavours to get sets built, and your experimenters organised to handle the work, as early as possible. A preliminary test will be conducted between America and this country by a Federal Telegraphic Co's. station in Buffalo, U.S.A., beginning the latter end of this month into December.

Yours faithfully,
H. KINGSLEY LOVE.

120 Watt Dynamo, 15 volts, 8 amps.
Built for hard work.

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W.D. 11. works off a 1½ volt dry cell. With two of these cells connected in parallel, and worked for two hours per evening, 170 hours of service can be obtained. Price, £2/10/-.

DE FOREST AUDION TUBE, D.V. 6. A Detector and Amplifier, takes 3 to 5 volts on the filament, consumes ¼ ampere, and a plate voltage of 45 to 120 when used as an amplifier, and 22½ to 45 when used as a Detector. Price, £3.

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4 V V	Brooker, N. E.	Jersey Rd., Artarmon. R.
5 V W	Bereli, F. C.	Springwood Av., Springwood. R.
6 V X	McIntyre, D. G.	Livingstone Av., Fybble. R.
7 V Y	Lawson, Wm.	Mimora Rd., Bankstown. R.
8 V Z	Taylor, K. A.	La Mascotte Av., Concord. R.
9 W A	Urquhart, G. L.	41 Prince St., Grafton. R.
0 W B	Cooley, Miss E.	52 Lord St., North Sydney. R.
1 W C	Kaplin, J. R.	41 Fitzgerald St., Waverley. R.
2 W D	Neve, N. R.	9 Laura St., Newtown. R.
3 W E	Maidment, V. F.	46 Kays St., Marrickville. R.
4 W F	Moore, D. O.	75 London St., Enmore. R.
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7 W I	Holmes, H. P.	78 Vale St., Lithgow. R.
8 W J	Faneourt, G. R.	Fraser St., Randwick. R.
9 W K	Spooner, E. E.	28 Chandos St., Ashfield. R.
0 W L	Gaffard, E. C.	2 Bowler's Av., Rockdale. R.
1 W M	Page, F. R.	Leithurst Rd., Orange. R.
2 W N	Lett, F. J. N.	176 Johnston St., Annandale. R.
3 W O	Storm, L. C.	24 Ocean St., North Bondi. R.
4 W P	Hawkins, N. J.	Reginald Av., Belmore. R.
5 W Q	Hamilton, W. L.	64 Premier St., Marrickville. R.
6 W R	Cleveson, L.	Balfour St., Woodahra. R.



WESTERN SUBURBS AMATEUR WIRELESS ASSOCIATION.

Following is the report of the second annual meeting of the W.S.A.W.A. Following preliminary business, the election of officers took place, resulting:—President, R. S. Burnan; Vice President, F. B. Wade; Hon. Sec., Geo. R. Challenger; Treasurer, J. Hoile; Technical Committee, Messrs. Challenger, Wade, Wetton Hoile and Burnan. Further arrangements for the annual function are being dealt with by Messrs. Gow, Burnan, Wade, McEvoy and Wetton.

At the meeting to be held on 18th instant, Mr. Burnan will lecture on "Inductance and Capacity"; and Mr. Challenger on "Magnetism and Electricity." This will be the first meeting of the new year, and visitors are particularly requested. The syllabus will be drawn up for publication in due course.

THE KURING-GAI DISTRICT RADIO SOCIETY.

Although adverse weather conditions prevailed, and the meeting was left in darkness until a candle was procured, owing to the failure of the electric light supply, the Society had a very successful meeting last Tuesday.

The portion of the evening usually taken up by a lecture, was devoted to questions, the main sources of information being Messrs. O. F. Mingay and H. A. Stowe.

Following this a very spirited discussion took place on the broadcasting position which was led by Mr. O. F. Mingay.

At the next meeting of the Society, to be held on Tuesday, 24th July, Mr. Best, the well-known experimenter, has kindly consented to deliver a lecture on transmitting circuits.

Buzzer practice, conducted by Mr. Hilton, will take place as usual from 7.30 to 8.15 p.m.

All members are specially requested to be present, as the subject with which the lecture deals has not yet been dealt with.

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LIEUT. R. H. FRY (2KC).

An error occurred in our last issue, in which we referred to the above gentleman as Captain, under the heading of Experimental Transmitting Stations.

CROYDON RADIO CLUB.

Following is an outline of the discussion among members of the Croydon Radio Club of your last week's foremost item, namely, the "Band of Wave Lengths."

Our Club representative interviewed Mr. Maclardy, of Wireless Weekly, and was shown a telegram in reference to the subject which said, "Except in special cases."

That was one thing we took exception to. Why should there be any special cases. There is no reason for it. If the band of wave lengths is good enough for one, it should be good enough for all transmitters.

Now we have all seen a terrible lot in the papers about this question, "Is the experimenter going to be tricked," but in our opinion we think it would be better to wait until such time as the regulations come out, and then back up a movement which is to give the experimenter what is due to him, although the "Radio Association" have already sent a telegram saying that they protest against it.

No doubt the alteration will mean a lot of inconvenience to those experimenters who have worked for six or eight months and have their sets pretty well efficient but as they are all experimenters it should not make much difference what range they work on.

Now in America there are thousands of transmitters whilst in Australia, so far, there are only about one hundred. The Americans only have an average wave length of 200 metres, but we never hear of them complaining of short range, so why can't Australians do as well as the Americans on the 200 metre range?

At the conclusion of the discussion a motion was carried that we would stand by and await further developments.

Chas. W. Slade,
Vice-President.

WIRELESS MUSIC FROM PALINGS.

The transmission of music from Paling's Concert Hall continues, much to the appreciation of the many listeners in. Last week's artists included the following:—

Miss Myra Gillou, a new dramatic mezzo from Tasmania; Dan Scully, violinist, from Cyril Monk Studio; Miss Eileen Ford, violinist; Miss Mary Lang McDonald, contralto; Jean Grant, soprano. The outstanding item was a quartette from Rigoletto, sung by Miss Jean Grant, Miss Lang McDonald and Clem Williams, and A. Swallow. The Welsh Choral Society which is busy rehearsing for the Death of Minnehaha, gave out several choral numbers, and solos by members of the Society were given out by Miss Amy Don, Miss Agnes Steel, and Mr. Wilfred Thomas. Reports have been received from all centres saying how clear the music was.

One of the features that is suggested for the near future is to give our nursery stories and melodies for the young folk at bedtime. This will mean the desirability of installing loud speakers in the various homes so that the whole family circle can get the benefit of the music going through.

LEICHHARDT AND DISTRICT RADIO SOCIETY.

The 38th general meeting of members of the Leichhardt and District Radio Society was held at the Club-room, 176 Johnston St., Annandale, on Tuesday, July 10th, when, in spite of the severe weather prevailing at the time, a number of enthusiasts assembled together to hear Mr. Watkin Brown lecture on the subject of Crystal Rectifiers.

The lecture proved to be an intensely interesting one, and it was made more so by reason of the fact that it was illustrated by means of a number of very fine specimens of rectifying substances which Mr. Brown had brought along with him for that purpose. Altogether, a very pleasant evening was spent by those present, and when a vote of thanks for the lecturer was called for, members expressed their pleasure in no uncertain manner.

On Thursday next, July 19th, a very interesting experiment is to be carried out, when the Society's orchestra will journey to the residence of Mr. E. C. Marsden (2JM) for the purpose of dispensing music to be transmitted from that well known experimenter's station at Edgecliff. It is also probable that a number of vocal and instrumental items will be arranged, and the result of the test is being looked forward to with much anticipation by all.

The Society meets every Tuesday night, and inquiries relative to its activities are welcomed, and should be addressed to the Hon. Secretary, Mr. W. J. Zech, 145 Booth St., Annandale.

WIRELESS WEEKLY MAY BE LATE.

Owing to the probable Gazette of the Broadcasting Regulations, Wireless Weekly's next issue may not be on sale at the bookstalls, etc., till Friday.

A SCOTCH NIGHT AT 2BR.

E. B. Crocker (Marrickville) A series of tests took place on Sunday night last at the above station.

Experiments with concertina and bag pipe selections were carried out successfully. The items transmitted through the ether between 8 and 9 p.m. on night mentioned were as follows:

Scotch selections on concertina by Mr. Gardiner; tenor solos, Bonnie Mary of Argyle and Annie Laurie, by Mr. Hamilton; Boys of the Old Brigade, by Master W. Timming; selection on bag pipes, by Mr. Taylor; piano solo, Sabbath Chimes, by Miss Crocker; comic Scotch song, I'm 94 To-day, by Mr. Taylor, and a recitation, The Burial of Sir John Moore, by Mr. Valentine.

Reports received stated that the items came in distinctly and with strength, and considering this station only uses 1.5 watt tube, with an aerial smaller than any other transmitting station—the results are creditable.

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

The next general meeting of the N.S.W. Division will be held on Monday, August 7th, 1923, at Royal Society's Hall, 5 Elizabeth Street, Sydney, at 7.45 p.m.

It is expected that a demonstration of high frequency electricity will be given at this meeting, so all members are advised to keep the date clear, and make sure of attending.

N.S.W. RADIO ASSOCIATION.

A meeting of the delegates from all affiliated clubs and societies will be held at Laurel Cafe, Royal Arcade, Sydney, on Monday, 30th July, at 7.45 p.m. sharp.

There is special business to be disposed of at this meeting, including the appointment of a representative of the Association to the Honorary Advisory Committee of the Wireless Institute, in connection with their exhibition to be held in Sydney Town Hall basement, at the end of October next.

Clubs and Societies not yet affiliated are advised to send a representative to this meeting with a view to early affiliation.

CROYDON RADIO CLUB REPORT

The last meeting of the Croydon Radio Club was held at "Rockleigh," Lang St., Croydon, on Saturday, July 7th, when there was a fair attendance of members.

Correspondence was received from Mr. Trevor Watkins, of Tasmania (7AA is his call sign), who wished to carry out tests in telephony and C.W. with the club at some future date.

Mr. Lees, a member of the Club, had been in Melbourne during the week, and visited the station of Mr. Holtz (3BY) who also wished to carry out tests with this Club.

Mr. Hull, of Melbourne, expressed his willingness to test with the Club.

After this the members discussed the question of the Band of Wave Length, which are to be allowed to experimenters.

Strong C.W. was received from Mr. Holtz (3BY) at 9.30 p.m., using one valve. 2DS (Jack Davis) transmitted the message back to Mr. Holtz from the Croydon Radio Club.

American stations were heard quite loudly, using loud speaker and one detector valve and two audios.

All communications in connection with the Club should be addressed to G. Maxwell Cutts, "Carwell," Highbury Street, Croydon.

NEWCASTLE DISTRICT RADIO CLUB.

At the last meeting of the Newcastle District Radio Club, held on the 4th July, the Secretary announced that as there was a considerable amount of business, the lecture arranged for that evening would have to be postponed.

After some discussion about the amount of the funds being absorbed in rent, Mr. Denny, a member of the Club, voluntarily donated the use of the Club-rooms, rent free, for six months to allow the Club to utilise the funds in completing

the transmitting set which is a long felt want in this district. Mr. Denny was accorded a vote of thanks with acclamation.

The sum of £2 was voted for the payment of a large table which was recently added to the Club's furniture and which has proved a great acquisition.

Authority was given to adjust the Club's aerial to suit spark test transmission on Sunday afternoon, and which was picked up by members and others in all parts of the district very satisfactorily.

The following time table has been adopted by the Club:

7.30 to 8.30—Listening in.
8.30 to 9.30—Lecture.

9.30 to 10.30—Listening in.
The Club intends to have another transmitting test on Thursday night, at 9.30, on 230 metres.

KILLARA RADIO CLUB.

The fifth general meeting of the Killara Radio Club was held on 6th July. After half an hour's buzzer practice the meeting was called to order, Dr. Greenwell taking the chair.

A lecture on constructional data was then given by Mr. Wyatt Gill. After this Mr. Gray talked on the elementary principles of the valve, and this lecture is to be continued at the next meeting.

The Club meets fortnightly on

Friday nights, at the Congregational Hall, Florence Street, Killara. All enquiries regarding the Club will be gladly received by the Secretary, "Moylough," Florence St., Killara. Phone: J2661.

BONDI RADIO CLUB.

Members are hereby notified that the above Club will meet at their new Club rooms, at the corner of Park Parade and Bondi Road, every Tuesday evening, at 8 o'clock. In-coming members are cordially invited. The Secretary, Mr. A. L. Prince, 269 Birrell Street, Bondi, will be pleased to answer any communications.

NORTHBRIDGE AND DISTRICT WIRELESS EXPERIMENTAL SOCIETY.

A committee meeting of the above Society was held on Wednesday, July 11th, at the Society's rooms.

Minutes of the previous Committee meeting were read and confirmed. A general discussion took place amongst the members present regarding the finance of the Society. It was decided to leave the matter in the hands of the Finance Committee, and to report to the members at the next meeting.

Persons desirous of joining the Society are requested to get in touch with the Hon. Secretary, A. H. Vincent, "Abbeyville," Sailors' Bay Road, Northbridge.

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THE QUALITY RADIO STORE
619 GEORGE ST., SYDNEY. Phone City 1487.

N.S.W. Experimenters meet Mr. Malone.

An informal but representative of experimenters met Mr. J. Malone on Tuesday afternoon last, and discussed with him their views regarding experimental wireless in Australia.

Many most interesting views were put forward on behalf of the experimenters.

Those present were Messrs. Colville, Crocker, Maclardy, Renshaw and Stowe.

Mr. Malone answered all the numerous questions put forward, and cleared up many fears that were in the minds of the party.

The above mentioned experimenters, with the addition of Mr. M. Moore, afterwards entertained Mr. Malone at dinner in the Wentworth Hotel, where wireless was fully discussed from all points of view.

Mr. Malone, when interviewed later, stated that he had been delighted in meeting and hearing the views of these well-known N.S.W. experimenters, and that it was pleasing to know that a body had been formed among experimenters which would assist the department in the control of wireless in regard to experimental work.

TO THE EDITOR.

Dear Sir,—With reference to the demonstration held in the Educational Hall, on Thursday, the 12th inst., I wish to draw your attention to the disgraceful way in which my name was brought in to give the impression that I was too selfish to give my time to Mr. Marsden for the transmission of music for the demonstration.

It is a gross misrepresentation of the facts and I demand a public explanation from Mr. Renshaw Mr. Mingay and Mr. Marsden. Firstly Mr. Renshaw for making the statement he did to the meeting that it was due to my selfishness in not handing over my time to Mr. Marsden; Mr. Marsden for his statement to Mr. Renshaw to the effect that I would not give him part of my time, and Mr. Mingay for his operator stating that my transmission was not worth listening to. I might state that I have interviewed both Mr. Mingay and Mr. Renshaw and both disclaim any knowledge of such statements but this does not satisfy me, and I

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insist upon a proper enquiry, otherwise I will take further action.

If Mr. Renshaw did not give those instructions how was it that any transmission was not received? If Mr. Renshaw is right, then all I can put it down to is inefficient handling on the part of the receiving operator or gross exclusion of my transmission, for what reason I do not know.

There is another matter which I would like to bring under your notice, and that is the mutterings and unwarranted rumours re my testing times. No doubt you have noticed that I have been going quite a lot lately and this has led to various uncalled for, unjust criticisms from my fellow transmitters. I have never asked for any extra times, and the only time I have tested is when my name has been on the Roster, and when the Roster has not been filled. Even when it has been my

Roster time I have asked the various transmitting stations if they would care to take my time, but there has been no response, just the dog in the manger attitude, "If I can't go, no one else shall."

I have been told from other sources that my transmitting is not worth listening to, but I will leave that question to the general public of listeners who will no doubt decide for themselves whether it is or not but I may state that I have been heard in New Zealand as well as nearly every State in Australia.

I may venture to say that it may be the fact that those who do not get me properly cannot handle their receiving sets, and I suggest them taking a course of lessons on the subject from say the Radio College, Burgin School, or the Murrumbidgee School, who would no doubt enlighten them on the art of tuning in telephony.

July 20, 1923.

In conclusion I wish to emphasise the fact that I am an amateur experimenter and my transmissions are purely in the nature of experiments. I do not pose as an expert, but am willing to learn and am always pleased to receive fair criticisms, but I resent the unfair and unjust, sarcastic comment to which I have been subjected to since I started experimenting.

Yours etc.,

J. S. MARKS.

Call 2GR.

Sydney,

July 10th, 1923.

"Wireless Weekly" Newspaper,
The Editor,

Sir,

With regard to the inquiry from Victoria, "Why don't New South Wales Experimenters Listen-in?" I would like to express my views on the subject.

As most of us are aware, there is a range of mountains between New South Wales and Victoria, in addition to great tracts of metalliferous country. The absorbing qualities of these media are too well known to deserve comment. The waves emitted from the low-powered Victorian transmitters only reach New South Wales in a very attenuated state, and their reception is exceedingly difficult, in fact, almost impossible. Some of our leading experimenters have been able to hear Victorian stations when using super-sensitive apparatus, but only under those circumstances. On the other hand, the higher-powered—and I think we may justly claim—more efficient transmitters located in this State, seem to carry over the intervening country, and are easily audible in Victoria. The fact of certain Victorian stations communicating with New Zealand seems to point to "freak" atmospheric conditions during the various tests, and I do not think it likely that this communication could be carried on right throughout the year, leaving absolute "X's" out of consideration.

There are comparatively few experimental stations in Victoria, and the "howling valve" form of nuisance is comparatively unknown there. Around Sydney the interference from this source is terrific and this alone would drown out experimental signals from Victoria.

Hoping this explanation will make matters clear to our radio brothers in Victoria, and thanking you.—

Yours, etc.,

"2X."

July 9th, 1923.

"Wireless Weekly,"

Dear Sir,

In the leading article of your magazine for July 6th, there appears the statement that the experimenter has been tricked by the low-

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ering of the transmitting wave-lengths to a band below 200 metres. This opinion seems very prevalent amongst experimenters, as can be evidenced by the broad statement in the 7/7/23 issue of the "Evening News," to the effect that short wave lengths are unsuitable for long distance relay work. If the transmitting fraternity would only think a little, they would welcome this change instead of "putting on sackcloth and ashes" over DX work.

Previous to December 1st, 1922, the usual wave length allotted for experimental work was between 1000 and 1500 metres, and after the abovementioned date a change was made to two bands, viz., 150 to 250, and 410 to 440 metres. All observant experimenters noted a great change in signal strength for the better when this alteration was made, despite the half baked theory that long waves carry further than short ones. To many this remains a mystery, but if the laws of radiation are applied to the problem it becomes quite simple. The radiation from an aerial varies directly as the square of the effective height, and inversely as the square of the wave length. As the physical dimensions of the usual experimental aerial are limited for space and financial reasons, the height can be considered as a constant factor, leaving the wave length as the variable. If the power input is kept constant the radiated energy will increase fourfold by decreasing the wave length to half of its original value. In fact, the nearer the aerial is operated to its fundamental wave length the greater will be its efficiency, both as regards transmission and reception.

According to the latest information available from the American Radio Relay League, all the real worth while experimenters have been investigating the possibilities

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of transmission with wave-lengths as low as 50 metres. The technical experts of the A.R.R.L. report better results with less power input on 100 metres than is obtained with the transmitter all out on 200. In addition to these go ahead experimenters, the large broadcasting companies in America are also investigating this band of wave-lengths. The Westinghouse station, KDKA, situated at East Pittsburgh, has successfully transmitted radio-phonograph music with a wave length of only 80 metres to its experimental station at Cleveland, Ohio.

In addition to the greater radi-

ation efficiency, there is a marked scarcity of static, and interference from commercial arc and spark stations. Also look at the wealth of information that is available to us as the result of the experience of our American co-workers in radio, as well as the special short wave apparatus they have designed.

Australian experimenters should show that they, too, are willing to be the pioneers in a new field, and not be content as the majority in Sydney are at present, to just pump music indiscriminately into the ether.—Yours, etc.,

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The Australasian Radio Relay League

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

The great amount of interest which is being displayed by wireless amateurs in the recently formed Australasian Radio Relay League seems to indicate that the movement will not fail in its objects through any lack of support by experimenters. On the other hand the numbers which have linked up with it, or have expressed their intention of linking up, with it seem to point towards success.

The objects for which the League were formed, and the useful purposes which it will serve when once in actual operation, were fully discussed in last week's Wireless Weekly, and it is safe to assume that they met with the approval of nearly all wireless men.

The Organising Secretary of the League (Mr. S. Colville) and the members of the Committee have not allowed matters to remain in a nebulous state, and some of the rules under which it is proposed that the League shall work, and the manner in which the traffic will be handled have already been formulated.

DIVISION OF THE STATE.

As far as New South Wales is concerned, it is proposed to divide the State into nine districts. Three of these districts will cover the Sydney and suburban areas, and the other six will embrace the remainder of the State. Each district will be under the official supervision of a district organiser and assistant organiser who will arrange all local tests and supervise all official relays passing through their districts. These district organisers will also collect all reports and forward them to headquarters, be responsible in their respective districts for the co-operation in all League matters, recommend or report on new members, and arrange for the affiliation of Radio Clubs with the League as far as lies within their power. It is hoped that the District Organisers will be members of one or more Radio Clubs in their respective divisions.

HANDLING OF TRAFFIC.

The actual handling of messages, which of course will comprise purely experimental or test matter, and

will not under any circumstances contravene the already existing laws regarding radio communications, will be carried out in the same manner in which commercial stations handle messages. The rules and regulations contained in the Postmaster - General's Handbook will be adhered to, and the routine adopted by land or ship stations in calling each other, the use of international abbreviations, the preamble of and symbols regarding the various portions of the messages, the end of messages and end of transmission signs, etc., will be strictly enforced by the executive.

It is not difficult to imagine the immense amount of good which the League, working under such rules, will do. Its members will, after a little experience, become experienced operators who, while not in any way attempting to usurp the rights of commercial operators or commercial companies, will be trained and ready for service at a moment's notice in time of national emergency.

Log sheets will be furnished to members and on all of them particulars regarding the work carried out at the stations will be recorded.

Q.S.L. cards (acknowledgment) will be available to members and too much importance cannot be

placed on their scientific value. If a new station opens it will have the advantage of the whole organisation of the League, members of which will be listening-in and will be prepared to furnish the needed reports without delay. In this manner information which is valuable to every owner of a transmitting station will be available in a comparatively short space of time.

In the relaying of messages, English language only will be used. Every active member of the League will be asked to strictly adhere to the working rules and if unable to work the schedule, to immediately report to his organiser or to arrange for some other station to act for him.

"The strength of any chain lies in its weakest link," is an old saying which only too strongly applies to the League. Successful relaying can only be effected by keeping every link of the chain in perfect working order and members of the movement are going to endeavour to adopt as their motto the words, "We always get through."

With the ardent support of both active and associate members there is no reason whatever why the Australasian Radio Relay League should not become one of the most, if not the most, important movements in the Australasian Wireless World.

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the arrival of the Perfect Condenser. Absolutely the last word in Variable Condenser Construction. Continuously variable from .00001 to .001. See this wonderful instrument at:—

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He is being assisted by Mr. Raymond Shaw, who has had wide experience in our new science, and by Mr. Marsden (Edgecliffe) and Mr. Marks (Rose Bay), who are transmitting this evening.

While mentioning these gentlemen, I have in mind other experimenters who realise that with wireless we are entering an age of great possibility. We are about to adopt a set of broadcasting regulations that will give ample opportunities for transgression, but we must all unite to prevent any such unfairness; hence must push ahead with radio societies and leagues, which leagues and societies must be linked together with the Wireless Institute, and finally with the great Association for the Development of Wireless, with each member of all the associations pledged to see that a fair deal is given to all concerned with wireless development, particularly regarding the encouragement of inventions, for Australians have not been fair to their experimenters, and many great achievements have been won for the first time in Australia for which credit has been given to other parts of the world. It is with the desire to encourage the experimenter that the Australian Inventions Board has been formed as a branch of the British Science Guild, so that the experimenter in wireless as well as other sciences can get quickest and best remuneration for his achievements.

In this respect the Australian branch of the British Science Guild is out to help the experimenter in wireless both financially and by the best placing of any discovery; for with the development of wireless particularly we have a science that knows no national boundary, and with its speed of encircling the globe in one-fiftieth of a second, it more than anything else is a symbol of the brotherhood of humanity.

In respect to the brotherhood of humanity, I was particularly touched during my recent visit to Geneva by great work the League of Nations was doing regarding bringing that brotherhood to practical utility, and during my stay at the Congress the question of the nations of the world discussing the best encouragement of wireless and other sciences, so struck me that I have been encouraged to visit Geneva at the conference after next (in 1924) at my own expense, at which this aspect may be brought forward.

It will, however, be necessary for the next Congress, which will be held this year, to have a motion passed thereat that the universal encouragement of wireless and other sciences should be a subject for discussion at the following Congress, and in that respect I would be glad if this meeting would agree with me that it would be opportune for the coming League of Nations Congress (1923) to agree to a motion being passed thereat that the universal encouragement of wireless and other inventions should be discussed at the Congress of the League of Nations in 1924. (Applause.)

After the Chairman (Mr. Rendshaw) had moved a vote of thanks to Mr. Taylor, which was carried, Mr. Mlogay moved the following motion:—

That the representatives of Radio Societies here assembled desire that the universal encouragement of wireless and other sciences should be considered by the League of Nations, and that a motion be passed at the coming Conference that the matter be placed for discussion at the Conference in 1924, and that Mr. George A. Taylor be an Honorary Delegate at same. This was seconded by Mr. Maclardy, and carried unanimously.

NEW AUSTRALIAN "B" BATTERY.

One of the many difficulties experienced by the experimenters to date has been the obtaining of a suitable means of the detector and amplifying valves. This difficulty has now been overcome in the V.E.M. "B" battery which is an Australian made product. This battery has a plug connection on the positive lead for the detector, and also for the amplifying and instantaneous charge of voltage can be made by these plugs so that all valves may be worked at their maximum efficiency. The taps commence at 6 volts and continue in 1½ volt steps up to 40 volts. The whole battery is enclosed in a solid case and one particular feature is that it carries a guarantee for 12 months except when deliberately short circuited. The Bargin Electric Co., of 352 Kent St., Sydney, are the N.S.W. agents, and they advise that the retail price is £2.

RETAIL WIRELESS TRADERS.

A meeting of the above is called for Thursday, 19th inst., at 8 p.m., to be held in the Royal Society's Rooms, Elizabeth Street.

Mr. Forrest, of New Zealand, will address the meeting on Broadcasting in New Zealand.

SEEING BY WIRELESS.

What will the future developments of radio bring to us? Professor Low has some definite ideas that are put before you in this article.

Wireless vision, which is literally seeing by wireless, at first thought seems quite impossible. The transmission of sound by wireless is one thing, the sceptic may suggest, but the instantaneous portrayal of a view is most decidedly another, writes A.M.L. in "The Broadcaster."

Let that sceptic consider this point, however. It is important, and it once shows the probability of the successful transmission of vision in the future. To obtain even a rough idea of words spoken by wireless telephone millions of different tones are used. Every slight inflection of the voice which is reproduced involves the use of many variations in the disturbance of the ether waves.

It was for this reason that the earliest and simplest form of telegraphy by wireless, i.e., the dot and dash system, was maintained for so many years and will continue to be maintained indefinitely. For accuracy of transmission it cannot be surpassed, since only two variations are employed, namely those secured by "on" and "off" movements of the transmitter.

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WIRELESS WEEKLY

July 20, 1923.

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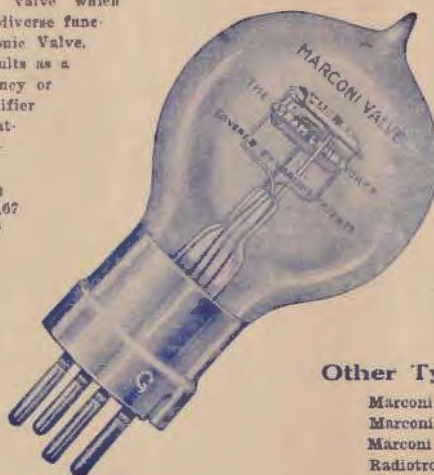
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