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Broadway, Sydney



Vol. 2.

June 8, 1923.

No. 23

The Australian Broadcasting Conference.

VERBATIM REPORT.

FIRST DAY.

Thursday, 24th May, 1923.

The Conference met at 2.30 p.m.

Present:

Commonwealth: Hon. W. G. Gibson, M.P., Mr. J. Oxenham, and Mr. J. Malone.

Firms and Representatives.

Faulding and Co. and South Australian Interests, Mr. L. C. Jones.

Amalgamated Wireless, Messrs. E. T. Fisk, L. H. Hoake, A. S. McDonald.

"Argus," Mr. Holtz.

Australian General Electric Co., Mr. C. G. Seely.

Australian Press Association, Mr. P. Hull.

Beattie, H. S., Mr. H. S. Beattie.

Bonham's Press Agency, Mr. W. H. Sweeting.

British General Electric Co., Messrs. Hirst and Muttet.

Brown, A., Mr. A. Brown.

Burgin Electric Co., Mr. O. Minogy.

Chambers and Co., Mr. J. A. Chambers.

Collas, J. T., West Australia.

Collingwood Technical School, Mr. Slater.

Continental Radio and Electrical Co., Mr. J. P. Taylor.

Cummings and Co., Mr. W. Cumming.

Edison Swan Electric Co., Mr. S. Rolls and Mr. Just.

Electrical Federation, Mr. Stevens.

Farmer and Co., Mr. S. E. Wilson.

"Herald" and "Weekly Times," Mr. R. E. Williams.

Hordern, A. and Sons, Mr. Pritchard.

Horrocks, Roxburgh and Co., Mr. Hanns.

Java-Sydney Trading Co., the Manager.

Lawrence and Hanson, Mr. Salmon.

Mardonald, D., Mr. D. Macdonald.

Wireless Weekly Newspaper, Mr. W. J. Macleardy.

Homecrafts Ltd., Mr. E. T. Muir.

Metropolitan Vickers, Co., Ltd., Messrs. Maling and Wilson.

Mutual Store, Mr. R. E. Chubb.

Myers Limited, Mr. H. Bennett.

New Systems Telephones, Mr. E. Holloway and Mr. H. Butler.

Milson, C. and Co., Messrs. N. J. Boyd and Cronie.

Norris and Skelly, Mr. C. W. Norris.

Prell and Co., Mr. H. Prell.

Radio Company Limited, Messrs. Basil Cooke and van Gelder.

Radio Communication Company, Mr. W. E. Sweeney.

Ramsay Sharp and Co., Ltd., Mr. H. Francis.

Reuters, Ltd., Mr. Barraclough.

Richardson, Orr and Co., Mr. H. Nathan.

Riverina Wireless Co., Mr. Jewell.

Taylor, G. A., Queensland.

Thwaites, E. J., Messrs. E. J. Thwaites and H. U. Alcock.

Warburton, Franki, Ltd., Mr. Montgomery.

Watson and Sons, Mr. W. King Witt.

Wertheim, H. Pty., Ltd., Mr. Herbert Wertheim.

Western Electric Co., Mr. B. B. Hungerford.

White, O., Mr. O. White.

Wiles, H., & Co., Mr. H. Wiles.

Wireless Institute, Messrs. T. P. Court and H. Maddick.

MINISTER'S ADDRESS.

The Hon. W. G. Gibson, M.P.: I am very pleased to see such a fine gathering at what is, I suppose, the most important meeting which has yet been held in Australia in connection with wireless broadcasting. I have no doubt that most of those present are connected, either directly or indirectly, with the distributing or receiving of wireless messages, and that your interests may be adversely affected if broadcasting services are not placed under a proper system of control. We have

Representatives at the Broadcasting Conference.



One of the Most Important Scientific Gatherings yet held in Australia.

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June 8, 1923.

WIRELESS WEEKLY

3

and object lessons in other parts of the world, such as America and Britain, which shows us very plainly how necessary it is that these services should be effectively controlled. I therefore deemed it wise, as the Minister who is charged with the administration of wireless in Australia, to take the initiative in this matter by convening a conference of all those persons who are directly interested in it. It was necessary that somebody should do that. The sooner it was done, the sooner we shall have broadcasting in operation throughout Australia. I believe that there is a big future for it. We have an immense field upon which to operate—probably it is too big a field to successfully cover. Its area is twenty five times as large as that of Great Britain, but its population numbers only one-eighth of the population of Great Britain. We have, therefore, a very extensive field to cover, and I feel sure that wireless broadcasting will be a very fine thing for the people of this country who regard such a service as a necessity. I am not, however, so sanguine in regard to the question of broadcasting for pleasure purposes. But I am satisfied that the broadcasting of information which means so much to people resident in the country, will be very successful in the future. I am present this afternoon, merely to open this Conference and to address a few remarks to you. After that, it will rest with you, to make recommendations to me which I shall go through very carefully and which I shall afterwards submit to Cabinet. When that has been done, we shall draw up regulations which will govern the distributing of wireless in Australia. I have no doubt that some of those who are present are here for the purpose of safeguarding their own interests. When we come to look at this question very closely, we find that broadcasting is not everything. The interests of the press, for example, are likely to be adversely affected, and we can hardly expect the press to gather together at great expense, a lot of valuable news, and to have that news read by everybody free of charge the next morning. There is no doubt that the interest of the press in this connection will have to be adequately safeguarded. The manufacturers of receivers, too, will need some measure of protection. The receiver, also, will require protection of some kind or other. But

I can hardly conceive of the whole country being flooded with receiving apparatus and of no permanent provision being made to give their possessors opportunities to receive wireless messages. There must be some permanency attached to transmission, otherwise we shall not get the results anticipated, especially in view of the fact that we have not the population which is possessed by other countries. I hope that this Conference will prove successful, and that from its deliberations something will develop which will provide Australia with a broadcasting system superior to any such system which obtains elsewhere. I think that we shall be able to learn a very great deal from the failures which have taken place in other countries, especially in America. I do not propose to go into details as to what you should do. No doubt, you have largely made up your minds upon that matter. I understand that you have already held a preliminary meeting at which you discussed certain details. I can only say that after you have debated the question fully, and have formulated a scheme for future broadcasting in Australia, that scheme will have the full consideration of the Cabinet and of myself, before anything is done. I hope that you will come to a satisfactory arrangement. Such an arrangement has been arrived at in Great Britain where there are only eight broadcasting companies in operation. In America there are more than five hundred companies engaged in broadcasting, and there, very great difficulties are arising from time to time. These of you who are present to-day possess some technical knowledge of this matter. I do not, but I realise that there is a great future for broadcasting and I hope that from your deliberations there will be evolved a scheme which will form the ground work of regulations designed to cover the whole field so far as receiving and transmission are concerned. Already, some fifteen hundred to two thousand licenses have been granted in Australia to persons who are receiving wireless messages. No doubt it will be necessary to provide for inspection of their instruments, so as to prevent them interfering in the future with broadcasting. Then, we have also issued licenses to experimenters. Broadcasting by wireless is only in its infancy, so far as this country is concerned, and

whilst we have no desire to hamper experimenters, we do not want them to interfere with those who are engaged in the work of broadcasting. There are quite a number of problems which will need to be solved before we can arrive at a determination in regard to the regulations which ought to govern broadcasting in Australia. There are, for example, such problems as the general control of wireless, the matter of wave lengths, of hours for transmitting, of transmitting fees, of licenses for the stations, of receiving licenses and of inspection of licenses. In addition, certain guarantees will have to be given in connection with services rendered, whilst there must be protection for the rights of persons whose interests may conceivably suffer because of broadcasting. There is also the question of what matter should be distributed. Of course, there is a wide field for broadcasting. The information thus supplied will include market reports, weather reports, sporting items, lectures—and I suppose even political speeches. Everybody does not desire to listen to sporting news, or even to a sermon on Sunday. By means of broadcasting, even stories may be distributed for the children going to bed. I take it, gentlemen, that you will go into all these matters, and suggest to me proposals which are intended to govern the whole position. It is absolutely necessary that the Government should control these matters in some way. At the present time, we control the earth and the sea, but it is now necessary that we should also control the air. The regulations which will be framed, will determine what matter shall be transmitted through the ether, with a view to avoiding interference with those who carry on this great work. There is no need for me to indulge in a long speech. I am here to assist you in every possible way. If my department is in possession of any information which is of value to you, it will be glad to supply it. Before I go further, if you desire to ask any questions, if you will be good enough to put them now, I shall be glad to reply to them. I thank you, gentlemen, for coming so far from the different States to be present at this Conference. I feel sure that we are laying the foundation of a great scheme for transmitting valuable information throughout the length and breadth of Australia. I hope that it will

WIRELESS WEEKLY

June 8, 1923.

not be many years before there will be installed in many homes throughout this country apparatus capable of receiving news and information of very great interest and value to the people of the Commonwealth. (Applause.)

Mr. G. A. Taylor: I have been asked to say a few words expressive of our appreciation of the action of the Postmaster-General in convening this Conference, and in asking us to suggest regulations for the future control of wireless broadcasting throughout Australia. He has conferred upon us a measure of freedom which we value very highly, especially in view of the fact that hitherto it has been the practice of Governments to frame regulations without consulting the business interests affected by them, and to allow those interests to get along as best they could with them. I have, therefore, very great pleasure in thanking you, Mr. Gibson, on behalf of this meeting for the freedom which you have given us in this matter and in congratulating you upon your action. I disagree entirely, however, with the suggestion which has been made that the press will be opposed to this movement. Speaking as a pressman—and I am the owner of eight newspapers—I welcome it, because it will disseminate the news gathered by the press into the most remote and unknown regions of this continent. This movement is not only a most important one to Australia, but it is a most important one to the Empire. Australia, as its past history reveals, existed through the ages until the rest of the world had prepared a stage for us. The rest of the world has now prepared a stage for our wireless development, and we are starting off to set an example to the Empire in this connection, just as we have set an example to the Empire in respect of other inventions. I trust that we shall set the Empire an example in connection with this newest invention. I have very great pleasure in moving:

That this Conference of the wireless authorities of the Commonwealth of Australia, desire you (Mr. Gibson) to kindly convey to His Majesty the King on this Empire Day, our deep respect and happy greetings. Representing as we do, the greatest and latest achievement of science, we feel that it is representative of that bond of affection which links the Dominion in one great Empire.

Mr. E. T. Fisk: I have very great pleasure in seconding the motion, and particularly in emphasizing what its mover has said about the action of the Postmaster-General in calling together those who are interested in wireless broadcasting for the purpose of suggesting a scheme to him, and of outlining regulations for the control of broadcasting services in the future. That to me, appears to be a very broad-minded method of dealing with the matter, and if we take what has been offered to us and deal with it effectively, I have no doubt that we shall arrive at something which will be satisfactory alike to the Government, to ourselves, and to everybody who is represented here to-day, and which will, at the same time, provide Australia with an effective broadcasting scheme. In saying that, I do not mean to imply that we can lay down a perfect scheme. Greater men than we are, have tried to do that and so far have not succeeded. But we can take advantage, as the Minister has said, of their experience and we can see how far we can go ourselves. Should we succeed in providing something better than they have, I think it is very probable that they will come and have a look at what we are doing, because they are all, more or less, in difficulties themselves over this great question of broadcasting. I have very great pleasure in seconding the motion.

Motion carried with acclamation.

Mr. Gibson, M.P.: I thank you very sincerely for the vote of thanks which you have accorded me. I feel sure that the course which has been adopted in convening this Conference is the right course. You, gentlemen, possess a technical knowledge of this matter of wireless broadcasting, and I have no doubt that you have followed up the achievements in that connection very much more closely than I have done. Time after time, requests have been made to me for the granting of licenses under which people would be able to transmit wireless messages. I refused those requests upon many grounds, but principally because we had not reached the stage when definite regulations had been laid down, nor did we know how services were operating in other parts of the world. In some instances, people were asking for something which would have been rather advantageous to themselves by en-

abling certain statements to go abroad with a view to making an attractive prospectus in connection with the formation of a company. What we desire to enter into this movement is companies with bona fides. Such companies will experience no difficulty whatever in securing licenses for transmitting. But the Government wish to see the movement placed upon a sound and genuine footing from the start. We shall then be able to proceed upon right lines. The message which you have asked me to transmit to the King, I shall gladly forward to His Majesty. Before you proceed with the appointment of a Chairman, I shall be pleased to answer any questions which you may wish to put to me, if it is within my power to do so.

Upon the motion of Mr. Collins, seconded by Mr. Hirst, Mr. G. A. Taylor was unanimously appointed Chairman.

The Chairman (Mr. Taylor): I appreciate the great compliment you have paid me, by electing me as your chairman, and as there is a lot of work to be done by the Conference, I shall endeavour to show my appreciation by the manner in which I handle the business. I hope that this gathering will be the great success which we all desire it to be. We are about to enter upon a discussion of the question of broadcasting in Australia. We all know that Mr. Fisk, who has taken a very prominent part in the development of wireless in this country, has just returned from the other side of the world. I left England in December last, and he remained there a few months longer. Consequently he saw a great deal more than I did. He has returned to the Commonwealth fully armed with information relating to all the developments in wireless throughout the rest of the world. He has evolved a scheme in regard to broadcasting which may well form the foundation upon which we can build, and which will provide us with something to talk about. I have much pleasure in calling upon him to put before you his proposals in connection with broadcasting in Australia.

Mr. E. T. Fisk: Before proceeding, I should like to know whether there is anybody else present who has any clear-cut scheme which he desires to submit. I do not wish to be the only ten leaf in the sink.

The Chairman: I think it better

that we should hear Mr. Fisk's scheme first, as he is the last man from the aerial seat of war. If any of you have a scheme of your own, you will then be in a better position to criticise him.

Mr. Fisk: In order to explain the scheme which I have evolved, it will be necessary for me to go into a certain amount of detail. Some of you are an fait with the subject of broadcasting, others are not, apart from what they have read. Consequently, it seems to me desirable that I should explain the possibilities of broadcasting, so far as I am able to do so. The Minister has touched upon the importance of this question in Australia and he has mentioned several most vital factors in connection with it. In the first place, he said that it must have permanence. He also said that from his point of view, the most important aspect of wireless broadcasting, is its usefulness in conveying information to the people in the country. We all agree with those two statements, and we must keep them in mind throughout our consideration of this subject. It seems to me that broadcasting is so entirely new, and its possibilities are so extraordinary, that it is difficult for anybody to grasp the subject in its entirety, without very careful study. But before going into that aspect of the problem, I should like to deal with the position of my Company, in relation to this question. As you are probably aware, that Company has been in existence in Australia for many years. It has contributed quite a lot to the building up of the wireless industry generally, and to-day it is a Company in which the Commonwealth holds the majority of the shares. Outside of that, a very great proportion of its capital is distributed throughout Australia. Therefore, it is an Australian Public Company, in the legal sense, but more than that, it is a Company formed for the express purpose of establishing and carrying on wireless services, and of developing the wireless industry in this country. In view of the constitution of my Company, it is necessary for us to look at any proposal for the control of broadcasting, not only from the standpoint of how far it will assist our business, but also from the standpoint of general development of wireless throughout Australia. That phase of the question had to be taken into

Continued on Page 12



Mr. J. MALONE
Chief Manager, Telegraphs
and Wireless.

Interview with Mr. Malone.

While in Melbourne attending the Conference, I had the pleasure of interviewing Mr. J. Malone, Chief Manager, Telegraphs and Wireless, generally known as the "Controller of Wireless."—Editor.

In reply to the suggestion that the experimenter or amateur who desired to assemble his own set to receive broadcasting, be given reasonable freedom and protection, Mr. Malone stated that he had already thought of that, and they would not be forgotten when the new regulations were drafted. Mr. Malone further stated that it would be of course necessary to go carefully into experimental licenses, so as to confine renewals of future issues, to bona fide experimenters only.

EXPERIMENTAL LICENSES.

No application for experimental licenses received after 28/5/23 will be dealt with until after the broadcast regulations have been gazetted.

THE AUSTRALASIAN RADIO RELAY LEAGUE.

The forming of the League has been a step in the right direction and comes just at the right moment. Shortly, when broadcasting proper commences, the experimental transmitter will have to turn his mind to more serious matters than

just transmitting music (though great thanks are due to him for the pleasure and entertainment he has up to now given to the thousands of listeners-in) and nothing could be better than the Relay League. The main object of the League, we understand, will be based on that of the American Radio Relay League, and that is to relay messages on low power and so link up Australasia and perhaps the Empire by wireless.

By carrying out this relay work using proper procedure the experimenter will not only be useful, should communication by telegraph be destroyed in any part of the Continent, but as a unit of defence he will be invaluable. During the great war any man who knew the least thing about wireless was rushed by the authorities.

We wish the League every success and know that the authorities will give it every assistance possible.

*Experimental Stations
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Tuesday: 7.30 to 8, 2MB; 8 to 8.30, 2MB; 8.30 to 9, 2GR; 9 to 9.30, 2DE.

Wednesday: 7.30 to 8, 2GR.

Thursday: 7.30 to 8, 2GR.

Friday: 7.30 to 8, 2KC; 8 to 8.30, 2BB; 9 to 9.30, 2DE.

Saturday: 7.30 to 8, 2GR.

Sunday: 7.30 to 8, 2CM; 8 to 8.30, 2CM; 8.30 to 9, 2CM.

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A Novel Tuner for Shutting Out Interference

From the viewpoint of the practical interests of the novice or amateur in the radio game, selective tuning in the variable coupler is a matter of the greatest moment; the more nearly zero the capacity coupling, the greater the practical value of the coupler in producing selective tuning.

In the Bureau of Engineering of the United States Navy Department there is a radio engineer—Alfred Crossley by name—who has rebelled against the conventional way of designing and building the receiving transformer or coupling arrangement. His creative effort has recently contributed to the radio science a variocoupler of novel conception, for which he claims the ability to achieve absolute zero coupling—an accomplishment not heretofore credited to any variable coupling device.



From Popular Radio.

The coupling arrangements used between primary and secondary radio circuits is generally known as a "tuner." However it is bandied across the counter in radio stores under various designations, "variocoupler," "loose-coupler," "honey-comb coils," "lattice-

wound coils," "stagger-woven coils," "basket-wound coils," "tuning coil," and "doo-lateral coils."

These various coupling devices have much in common in structural details. The primary coil ordinarily consists of approximately fifty turns of wire, tapped at each five or ten turns. The secondary coil or circuit contains from thirty to fifty turns of wire, the shape of the latter almost invariably being cylindrical. In addition to the inductive functions of these tuners the primary coil forms one plate of a condenser while the secondary circuit functions as the other plate. This is a detriment to good tuning.

In breaking away from this beaten path Mr. Crossley attacked the problem fundamentally from the standpoint of obtaining a high maximum and low minimum inductance in the coupler, and at the same time a minimum amount of electrostatic capacity.

There are two electrical constants found in a radio circuit—an electromagnetic field and an electrostatic field. Dr. Charles P. Steinmetz, the master electrical genius of the General Electric Company, in disclaiming the existence of ether waves, asserts "that the magnetic and electrostatic fields are usually combined, since where there is a current producing a magnetic field, there is also a voltage producing an electrostatic field." Thus the space surrounding a wire that carries an electric current is disturbed by the combination of a magnetic field and an electrostatic field. Static or frictional electricity—the kind that is produced when a strip of hard rubber is rubbed against a cat's fur, to cite an interesting instance—is a detriment to tuning between radio circuits and it is desirable to reduce it to a minimum value in a tuning instrument.

The efforts in previous designs of "loose" or variocouplers to retain

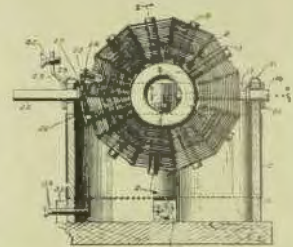


Fig. 1

a wide range of inductance and at the same time reduce the electrostatic capacity to a minimum have not as yet met with complete success. Professor L. A. Hazeltine, of the Stevens Institute of Technology, made a stubborn effort to "kill" the capacity effect between the primary and secondary circuits by substituting grounded windings over the latter circuit. Zero capacity coupling was not fully attained and the plan was abandoned.

Mr. Crossley, in his design of variable coupling, discards the cylindrical form common to prevailing types of secondary coils and substitutes a spider-web rotor. The latter contains a hard rubber hub, with tiny hard rubber spokes radiating from the centre. Interwoven in these spokes are the windings of the secondary coil. Approximately forty turns of wire are used in this spider-web rotor. In operation, maximum transfer of electric energy from the antenna circuit to the secondary circuit is effected when the plane of this spider web winding is at right angles to the axis of the primary winding. On the other hand, minimum or zero coupling is obtained when the plane of the secondary winding is approximately in line with the axis of the

coil or wire constituting the primary circuit.

The winding on the rotor of this newly designed vario-coupler is similar in design to the intricate webs fashioned by a spider; hence the de-

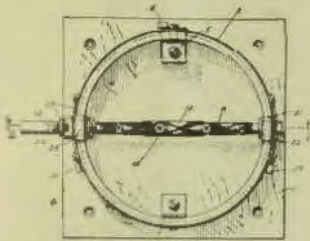


Fig. 2.

signation, spider-web vario-coupler. The instrument may be employed in a variety of radio frequency circuits. It is especially applicable for use in radio frequency amplification, a form or radio telephone reception that is becoming increasingly popular in a nation-wide broadcasting service.

This adaptation of the Crossley coupler is established by virtue of the ability of the coupler to reduce to a negligible quantity the passage of electrostatic energy from the antenna to the input circuit of the radio frequency amplifier. The device not only successfully prevents electrostatic coupling, a redeeming feature in itself, but further qualifies its claims to superiority as a coupling arrangement by imparting a maximum electromagnetic coupling. When used in the tuning circuit before a radio frequency amplifier the stator or primary winding is connected in the antenna sys-

tem proper, and the rotor or secondary winding is connected to the input circuit of the initial stage of radio frequency amplification.

If employed in Major Edwin H. Armstrong's regenerative or super-regenerative circuits, the stator may be connected in the grid circuit with the rotor in the plate circuit, forming the feed-back coupling.

The electrostatic capacity, at minimum coupling between the primary and secondary windings of this new vario-coupler, is less than one micro-microfarad. At maximum coupling, the electrostatic capacity between the two windings is five micro-microfarads.

In actual test at Washington when NOF, the Naval Air Station at Anacostia, with an antenna current of thirteen to seventeen amperes, was transmitting, both the primary and secondary circuits, employing this design of receiving transformer, were adjusted to the wave length of 412 metres. By obtaining zero coupling, this high-power radio telephone broadcasting station was tuned out completely. However, by merely moving the rotor of the coupler one degree or fractional part to the right or left of zero coupling, Anacostia was retuned in vigorous fashion; or, at will, NOF could be tuned out and Pittsburgh, Newark, Schenectady, or other far-distant broadcasting stations could be "copied" even while Anacostia continued its high power broadcasting service.

The selectivity of this tuning device, if we are to accept the claims made and results accomplished in preliminary tests, should be a boon for the reception of radio signals on bands of wave lengths closely approximating each other.

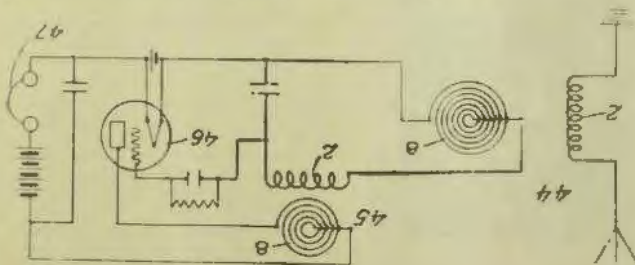


Fig. 3.



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Australian-Made Precision Instruments

The illustrations on this page depict two little instruments that will be of interest to all experimenters. No. 1 is a small wave-meter, having 3 inductance coils, giving it a wavelength range of 150 to over 2000 metres. It is fitted with a buzzer and battery for use as a transmitting instrument, and with a pair of clips for crystal and terminals for telephone for use, as a receiver. The method of obtaining the reading is an innovation. It is provided with a window, through which the rotating scale is read.

The inductances are fitted with contact plates which fit into spring clips on the face of the instrument, and they are wound in a special manner, which minimises errors due to self capacity. By the provisions of extra coils the range may be extended up to the longest wavelengths now used for trans-oceanic traffic.

No. 2 is a small direct current meter panel adapted for use on a valve set as a means of observing the conditions of all batteries, of determining the best current or pressure adjustments, of ascertain-

ing the characteristics of valves, etc., etc.

It consists of a sensitive moving coil milliammeter fitted with a set of resistances and shunts for six different ranges, a range selector switch, the necessary terminals for connecting the panel into both filament and anode supply circuits, and a two way switch for selecting the circuit.

The ranges provided are suitable for measuring on either transmitting or receiving sets, and include filament supply pressures, one range; filament current, one range; anode pressures, two ranges; anode milliamperes, two ranges.

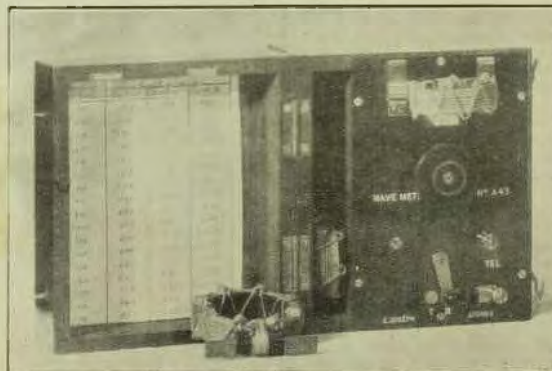
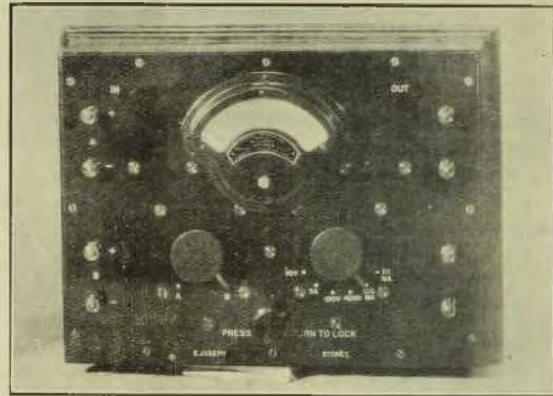
The readings on the circuits may be taken almost instantaneously, without altering any connections, merely by the use of the two switches, and the whole set is so arranged as to be proof against damage.

Provided the A and B supplies are connected up to the terminals as marked, it is impossible except by wilful misuse to switch incorrect ranges into use.

Both instruments are of superior construction and finish, having highly polished bakelite fronts and correctly designed switches enclosed behind the panels. They are fitted in polished maple cases, and may both be fitted with lock and key if desired.

No. 2 is fitted with a key of interesting design, by means of which the instrument, while still connected up to both circuits, may be cut out of action without in any way interfering with the action of the receiver or transmitter to which it remains connected.

Both instruments were made by Mr. E. Joseph, of Sydney. Mr. Joseph has quite a number of letters after his name, but being of a retiring disposition would sooner stand on the merits of the apparatus he constructs. We have no hesitation in saying that the two instruments illustrated, stand on equal footing with any apparatus of the same class in the world.



June 8, 1923.

WIRELESS WEEKLY

9

A Lamp Resistance for Accumulator Charging.

When charging accumulators from the mains, a system of resistance mats is sometimes used to cut down the current to a suitable value. This method strikes me as unwieldy and troublesome to rig up, besides leading to insulation weakness with so much exposed metal. I would suggest that a better method is to charge through a lamp resistance. In that case a number of lamps are coupled up in parallel and placed across the mains, the accumulators being connected in series with the circuit. Each lamp acts as a path for a certain amount of current, the aggregate of which passes through the cells, thus the amount of charging current can be varied accord-



Fig. 1

ing to the number of lamps in the circuit. Carbon filament lamps are generally used, as these have a lower resistance than metal filament lamps, a 32 c.p. carbon lamp on a 230-250-volt circuit allowing approximately a 3-ampere to pass, and twice that on a 110-volt circuit. If then 3 amps. charging current is required, it will be necessary to provide six or seven lamps on a 250-volt circuit. Old lamps that are still intact but too blackened for use will do excellently. The simplest way to rig up the bank of lamps is to mount seven back-plate lamp-holders on a 3ft. piece of 2-in. lighting casing, spacing them about 4 to 5in. apart. At one end fix two terminals for the battery connections T1 and T2 (Fig. 1). A length of 14/36's lighting flex, sufficient to reach to the nearest ceiling rose, is then connected, one end to terminal T1, the other end to the terminal of the first holder. Wire is now looped from this same terminal into the next holder, on to the next, and so to the last; whilst another piece of flex starts at T2 and loops into the remaining terminals of the holders, terminating at the end holder (Fig. 1). The casing can be fixed to the wall, the lamps inserted, and the polarity of the ter-

minals T1 and T2 tested with pole-finding paper and marked plus and minus, the positive of the accumulator being connected to the positive terminal on the casing and the negative of the accumulator to the other.

Charging will now proceed, the charging current being cut down as required by taking out the necessary number of lamps, deducting half an ampere approximately for each lamp removed.

An Efficient but easily made Intervalve Transformer.

Everyone has a use at some time or other for a low-frequency transformer. The average experimenter does not, however, feel justified in spending perhaps something over a guinea on one; and furthermore, may not be prepared to spend the same amount whenever he wants to add another stage of amplification.

The following brief description of a suitable iron core transformer, which can be carried into several stages if necessary, will be of assistance to those who wish to employ several L.F. stages in as economical a manner as possible. The transformer detailed here has the further advantage that it can be readily made with very few tools although the winding of the primary and secondary coils may prove a little tedious. An exact knowledge of the number of turns, whilst desirable, is not absolutely essential if the winding is laid on evenly, as the ratio of turns can be gauged by the depth of the respective coils.

The first essential is a bundle of iron core wires 6in. long and 1/4in. in diameter. These must be perfectly straight, and to make them adhere while the coils are being wound they may be immersed in hot paraffin wax, after having been bound with thread.

When cool they will form a rigid core rod. This must be wrapped for 2 1/2in. of its length at the centre with one layer of empire cloth. Two discs of stout cardboard, impregnated with hot glue so as to render them solid, must be cut out with an over-all diameter of 2in. and a centre hole of such a nature that

they will fit tightly over the centre core and wedge themselves firmly against each end of the empire-cloth wrapping. A coating of shellac varnish over the discs and centre of the core will assist in securing the whole.

A pinhole having been made through one of the discs close to the core, one end of a bobbin of No. 38 S.W.G. s.s.c. wire is passed through it and the core is wound to a depth of one-third the total diameter of the disc available for winding space.

This may be done by mounting the core in some form of holder and rotating the whole until the required depth of winding is obtained.

One layer of empire cloth is wrapped over this winding, the end having been passed through another pinhole in the same disc as the first one, and care must be taken to ensure the insulation overlapping the ends of the winding thoroughly.

A pinhole having been made in the other disc just above the empire cloth, the No. 38 S.W.G. wire is again passed through, and the remaining two-thirds space filled up flush with the top of the disc. A single layer of paper or empire cloth again will protect the outer layers from damage, and this may be bound on with thread or secured by a little Chatterton compound.

The four wires, which should be at least 6in. long, are then encased in rubber tubing, such as cycle valve tubing, which should be sealed to the end discs close to each pinhole by a spot of Chatterton compound to prevent damage to the fine wire from the iron core.

The core wires projecting at each end of the transformer should now be all bent inwards until they meet over the outside of the secondary winding; care must be taken to bring out the rubber-covered leads from the transformer and to mark them as follows: First pinhole, P1; second, P2; third pinhole, S1; fourth (or end of coil), S2. The core wires must now be bound down firmly on the outside of the secondary winding by wrappings of fine copper wire, and a touch of solder may be given to the joint to secure the binding.

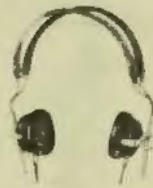
This transformer is easily mounted by screwing down under a hoop of brass, and may be used with high plate voltages safely.

KELLOGG RADIO APPARATUS

Kellogg Head Sets No. 69a



Phone

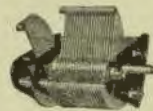


are 2400 ohms resistance. They are extremely light, and very small, but yet sensitive and efficient. The band, too, is specially adaptable, and the simple receiver holders, which are held in place on the part of the head band by the spring tension of the metal, can be instantly adjusted so as to place the receivers over the ears for the best hearing.

Kellogg Variable Condensers



Variable
Condenser



are constructed of plates of heavy aluminium sheet, of equal thickness. The stationary plates are securely mounted between heavy end plates of bakelite, and are uniformly placed so that the moveable plates occupy the centre space at all positions. The moveable plates are lapped to the shaft, and are uniformly spaced to fit between the stationary plates. The ends of the plates are bolted together, anchoring them securely, and preventing any plate from getting out of line.

This Condenser is of the Decremeter Type

Kellogg Variometers and Vario-couplers



Variometer



built in the factory of the Kellogg Switchboard and Supply Co., technically accurate and efficient, the KELLOGG Variometers and Vario-couplers give the manufacturer of wireless sets and the experimenter, professionally and amateur, the highest grade instrument that can be manufactured.

The stator and rotor shells are of heavy construction, with deep ribs, and formed of pure Kellogg Bakelite, an attractive brown in colour. Winding is properly proportioned, of well insulated copper wire, with

inductance values throughout the rotor travel of 180 degrees, of from 10 millihenry to 1.40 millihenry. Positive stops, part of the permanent mould, allow the full 180 degree rotation. Two terminals are provided for the rotor and three for the stator, this allows the KELLOGG variometers to be used to all known variometer circuits.

Every KELLOGG variometer and vario-coupler has both vertical and horizontal mounting plates of design convenient for attaching to panel or base board. WAVE LENGTH of the vario-coupler without the added diamond coil is approximately 600 metres, with the coil, approximately 2500 metres.

**We Stock other Lines, such as: De Forest, Remler, Mullard, etc.
Write To-day for Illustrated Catalogue and Price List**

BURGIN ELECTRIC CO.

Wireless Engineers and Suppliers

Trade Supplied

352 Kent St., Sydney

NEW LINES.

Mr. A. H. Treloar, of 280 Castlerough Street, has been fortunate in securing the representation for many wireless sets and accessories of proved design and workmanship. The lines he controls are very favourably regarded and well advertised throughout the world. Amongst the lines concerned are those made by the Sleeper Radio Corporation, the principal of which is Mr. M. B. Sleeper, who is the real friend of every experimenter.

Sleeper was one of the foremost of experimenters in the United States, and much of the advancement of wireless in America is due to him.

The most interesting for the beginner amongst the Sleeper lines is the Sleeper Radio Construction Sets. These sets are supplied from various prices unasssembled, and the purchaser is given an instruction book on how to assemble the sets; this should prove an attraction for the purchaser. Again, Sleeper issues every month the "Sleeper Radio and Modern Engineering," which is a highly intellectual work, yet easily understandable to everyone. Another piece of Sleeper's work is a book called "The Design of Modern Radio Receiving Sets." This is published from time to time, and is brim full of valuable information for young and old in the art of wireless.

Mention may be made here of the Springfield antenna cable, which is one of the late productions. This cable fills a long felt want in that it is braided copper of sixteen strands, each sixty-fourths of an inch wide. The strands are braided into a hollow cable about half an inch in diameter. The tensile strength is about one hundred pounds, which is sufficient to warrant its use out of doors, but it is strongly recommended for loops and portable antennae.

Another line worthy of mention is the square tinned copper wire and lugs, which enable the experimenter and others to have neat and tidy sets without a conglomeration of insulated wires all over the place.

Last, but not least, is the Electrad Diode Vacuum Tube, which is going to bridge a big gap for those who have crystal sets and want to convert them into tube sets. With the Diode vacuum tube the change

over can be made with only the cost of the tube itself, which is extremely low. This tube is operated on a maximum voltage of three volts in conjunction with a rheostat.

Mr. Treloar would welcome any enquiries for any of the lines advertised, and correspondence to 280 Castlerough Street will receive prompt attention.

RADIO COMPANY

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(near Circular Quay)

EARLY NEXT WEEK

Wanted.

WANTED—Young Man, about 19 or 20, with experience in salesmanship; must be a wireless experimenter.

Also Boy, just leaving school preferred, one interested in wireless will receive preference. Apply letter, to Wireless Supplies Ltd. c/o Wireless Weekly.

WIRELESS BOOKS

- Radio for Everybody, by A. Lesbonra. Price 10/8 posted.
- Radio Amateur's Handbook; informative work on Wireless Telegraphy and Telephony, by A. Collins. Price 10/2 posted.
- The Book of Wireless Telegraph and Telephone, by A. Collins. Price 8/- posted.
- Wireless Telegraphy and Telephony, by A. Morgan. Price 9/6 posted.
- Construction of Amateur Valve Stations, by Douglas. Price 2/3 posted.
- Lessons in Wireless Telegraphy, by A. Morgan. Price 2/3 posted.
- Crystal Receivers for Broadcast Reception, by P. Harris. Price 2/3 posted.

N.S.W. Bookstall Co. Ltd
76 George Street, City

Get Your Wireless Gear at Electricity House

387 GEORGE STREET (OP. STRAND). TEL. 2961 CITY.

Condenser Plates, 1/9 per doz.; Condenser Spindles, 2/9 per set; Condenser Ends, 1/9 pair; Honeycomb Coils, from 3/6; Honeycomb Mountings, 3/- each; Filament Resistances, 7/6 each; Calibrated Dials, 1/6 each; Knobs, 1/6, 2/-, 2/6 each; Contact Studs, 1/9 per doz.; Switcharms, 3/-, 4/6; Terminals, 6d. each; Phone Condensers, 1/6; Grid Condensers, 1/6; Variable Condensers, 25/-, 30/-.

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

Catalogues, 6d. each, including wiring and other diagrams. All makes of Telephones and Valves.

Crystal Cups, 1/-; Detectors, 5/- each; Loose Couplers, 40/-; Cabinets, Ebonite, Bakelite, and All-round Materials.

Complete Crystal Sets, £3/10/-, £6/10/-, £7/10/-; Valve Sets, from £9 to £35, 1, 2 or 3 valve; Radiotron Valves, 37/6; Vernier Rheostats, 15/-.

INTERVAL TRANSFORMER, 40/-.
Closed Iron Core.

UNDER NEW MANAGEMENT.

Works Manager: Raymond McIntosh.

General Manager: J. S. Marks.

All Communications to the Firm.

Continued from Page 5

consideration in dealing with broadcasting. As a result of having considered it from that point of view, I hope to explain to you a scheme which will avoid the disabilities under which other countries labor, but which will, at the same time, give practically all their advantage. I would like to deal first with the question of the permanence of a broadcasting service. That is a very important thing. If we are to have broadcasting from the point of view of the man on the land who wants information, I submit that he should also be glad to be supplied with entertainment to help him over the long evenings outback.

Mr. Gibson, M.P.: Has he any savings?

Mr. Fisk: Perhaps upon Sunday he may like to hear an occasional sermon. But the thing must be done upon a permanent basis. Hence we have to consider what has been done in other countries in that connection. To be permanent, this service must be satisfactory to the public who receive the broadcasting, and also to the people who supply it. If it fails upon either side, the service will cease to exist. So far as I am able to judge, the public demand a service which will supply certain information. But the greatest demand which they will make upon a broadcasting service is upon its entertainment side. That has been the experience elsewhere, and I think we shall find the same feature here. If we look around at our theatres and picture shows, we must realise that they are amongst the most permanent industries of this country, as indeed they are of any other country. If, therefore, we wish to give the man outback, market reports, weather forecasts, and other useful information, we must be sure that the fundamental principle of the permanence of broadcasting is established, and that, to my mind, is the entertainment side of it. I do not mean you to rely exclusively upon my opinion in that connection. There are just one or two extracts bearing upon this phase of the question

that I would like to quote. In an article published in the "London Times," of 9th April, it is stated:—

"If broadcasting is to achieve permanent instead of merely temporary popularity, it is essential that the programmes sent out, shall be as good as they can be made. With the assurance of first-class entertainment, and an efficient service of news, few people would be reluctant to pay for their pleasure, and it is conceivable that in the near future a steady income could be looked for from half a million sets."

At the present time, there is some dissatisfaction in England with the broadcasting scheme, which is operative here. One of the big points of dissatisfaction is to be found upon the entertainment side of that service. In dealing with it, and with the question of regulations, the "Evening Standard" says:—

"Of those who have obeyed the regulations by purchasing B.B.C. sets, paying the royalty on them, and procuring licences, many are complaining that the broadcast programmes are of an inferior quality."

Last year there was a big Conference held in America of all those who were interested in broadcasting, and some of the principal persons there dealt with this phase of the question as a most important one. Mr. Edwards, Manager of the Radio Department of the General Electric Company of America, in addressing Mr. Hoover, said:—

"It seems to me that radio is destined to play a very wonderful part in our national life. I do not believe, for instance, that there is any other one thing which will have the same influence on our agrarian interests as will radio. I speak with a little feeling personally, because I have a brother who is a farmer, and he would like a little something beyond his 14-hour day drudgery, in the way of entertainment. He also wants to know what the market is, and the weather reports. By the same token, the man in California would like to get advance information in a hurry as to

when the frost is coming on, so that he can get his standgers started."

Further on, he said:—

"I think anything in the nature of an educational programme, or crop or market report programme, would soon fail without something else to go with it that might justify public service."

Later on, he said very much what I have said, namely, that the factor which gives permanence to a broadcasting service, is the entertainment side of it. In other words, it is the entertainment side of the business which offers these other great advantages, particularly to the man who has to live upon the land.

I come now to what has been done in America and Great Britain. In America, as you probably know, broadcasting started without anybody quite realising what was going to happen. It was in June, 1921, when the Westinghouse Company demonstrated the possibility of wireless telephony apparatus by giving a few concerts by wireless. The thing caught the imagination of the people of that country, and spread like a timber fire, with the result that to-day there are something like 600 broadcasting stations in America, and about 2,000,000 people listening in. The thing got away before anybody had an opportunity to regulate it, and consequently there is chaos everywhere, and nobody is satisfied. There was another Conference held quite recently, which discloses what is the position in that country. Secretary Hoover, in dealing with the results of that Conference, said:—

"It was a 'step in ideal development' of measures designed to stop the existing air interference and confusion."

There you have, upon the authority of Mr. Hoover himself, the statement that confusion prevails in that country. You also have the authority of the Second National Radio Conference, which stated:—

"It desired to emphasise the

Continued on Page 18

CODET FOR GIRLS: Face Powders, Colognes, Perfumes, Soaps

Australasian Representative: NESTOR HERVEIN, 84 Q.V. Buildings, SYDNEY. Phone: City 2813



KURING-GAI DISTRICT RADIO SOCIETY.

The above Society held its postponed meeting on Tuesday last, May 29th, in the presence of a fair attendance, although it was obvious that many remained at home for 2 MR.

After the formal business of the meeting had been disposed of lectures were given by several members.

Mr. Phil Renshaw "broke the ice" with a very interesting talk on Broadcasting, and the many obstacles which are sure to be encountered in such an undertaking. He also spoke on the future possibilities of wireless in general, his imagination leading him to predict many wireless marvels in the future.

Mr. H. Wilshire also contributed towards the evening's entertainment with some enlightenment on electro-magnetic waves.

The remainder of the evening was taken up with questions and answers by various members.

The next meeting of the Society is down for Tuesday, June 12th, at 8.15 p.m. Buzzer practice will be held for 45 minutes prior to the meeting.

NORTHBIDGE AND DISTRICT W. E. SOCIETY.

At the Club-rooms on Wednesday evening, May 30th, at the conclusion of the general meeting, Mr. E. C. Beard continued his lecture on the "Elementary Principles of Wireless."

Although only formed a month ago this Club has a membership of 40. The attraction is that the Club-rooms are open to members each evening, a decided advantage for the wireless experimenter.

Lectures are given each Wednesday evening. Intending members are advised to communicate with the Hon. Secretary, Mr. A. H. Vincent, "Abbeville," Sailor Bay Rd., Northbridge.

A dance will be held at the St. Thomas' Memorial Hall, McLaren

St., North Sydney, on Saturday, 9th June. During the evening the use of wireless music will be demonstrated. This proposal awaits the decision of the manager of the Wireless Department, Melbourne.

BONDI RADIO CLUB.

A very successful meeting of the newly-formed Bondi Radio Club was held on the 29th of May, at 276 Birrell Street. The following were elected as office-bearers pro tem.: Hon. Secretary, A. L. Prince; Hon. Treasurer, C. B. Muir; Committee, Messrs. Rutherford, Stewart, Callaway, Sluce.

Several new members were enrolled, and the question of securing club premises and workshop was discussed.

It has been decided to hold a big public meeting and practical demonstration of wireless telephony and telegraphy, in the School of Arts, Bondi, on the 19th of this month. A fine multi-valve set will be installed for the occasion with a Magnavox, so the Bondi public will be given something to talk about. A number of prominent men have promised to be present, and the success of the new club seems assured. All

Aerial Gear

Cast Gun Metal SCREW-EYE, SHACKLE AND PULLEY BLOCK, complete, ready to screw to mast.

Also, Cast Gun Metal UNION SCREWS for tightening Guy Wires, in two sizes:—

Heavy, 5in. take-up, 3/8in. screw.

Light, 4in. take-up, 5/16in. screw.

No aerial complete without these essentials. Will keep the tallest mast straight and steady in all weather.

Obtainable from all leading Wireless Stores, or direct from maker.

Mast bands, screw-eyes, eye-bolts, and other brass or gun metal castings, also made to order by

V. Greenup

Brass Founder

119 Farr Street, Rockdale

ALL the latest American Wireless Journals and Books on hand.

STOCKS ARRIVING BY EACH MAIL

Back numbers on hand. Call in and inspect my stocks. Clockwork trains and toys of all kinds.

O'Sullivan's Electric Shop
296 Pitt St., Opp. W. & S. Board.

residents in the Bondi district desiring information regarding the Club are invited to write to A. L. Prince, Hon. Secretary, 269 Birrell Street, Bondi.

LEICHHARDT AND DISTRICT RADIO SOCIETY.

Members of the Leichhardt and District Radio Society are looking forward to the meeting to be held on Tuesday next, when a very interesting lecture on the subject of "Valves" is to be delivered by Mr. Connolly. A good roll-up of members is anticipated.

That the Society continues to go ahead is evidenced by the fact that the membership continues to increase steadily and, together with the three new members elected at the ninth general meeting held on the 5th instant, it now stands at 43.

Inquiries are invited from those interested in Radio work, but who are not yet members of the Society, and these should be addressed to the Hon. Secretary, Mr. W. J. Zech, 145 Booth St., Annandale.

BRIGHTON AND DISTRICT RADIO CLUB.

The second meeting of the Brighton and District Radio Club was held at 28 Durrant St., North Brighton, on May 3rd, and it is pleasing to state that the Club is now gaining new members fast. In view of the rapid increase, the president, Mr. H. Crago, retired from the president's chair in favor of Capt. R. P. Whalley, of Sandringham, who has become a member of the Club, and Mr. Crago was elected vice-president. The rules and regulations were read to the Club and adopted; it was decided to obtain a number of copies and place in wireless dealers' establishments.

The third meeting of the Brighton and District Radio Club was held at 18 Williamsby Avenue, North Brighton, on May the 17th. In the absence of the president (Capt. R. Whalley), the vice-president took the chair. Several new members were elected, including several foremost transmitting experimenters. A committee was formed to manage the affairs of the Club. It was decided to hold future weekly

meetings instead of fortnightly as previously. It was decided to forward a letter to the Brighton City Council for permission to use portion of the public buildings for the use of permanent club-rooms. One of the members (Mr. E. Busch) gave a lecture on his long-wave receiver, after which the Club members enjoyed a listen-in to some of the long-wave stations. Signals were received from NPM, NPO, LY, and NPG.

All communications to be addressed to the Hon. Secretary, 28 Durrant St., North Brighton (Vic.)

DAILY WIRELESS MUSIC.

From W. H. Paling & Co.

At last something definite has been commenced so that the great number of owners of receiving sets can have the satisfaction of keeping in touch with musical activities of the city and find recompense for their trouble and expense in installing these sets. Messrs. Paling and Co., the leading music suppliers, have collaborated with the New System Telephones to transmit a continuous supply of music. The license that has been granted to the New System Telephones by the Chief Manager of the Telegraph and Wireless and the "Amalgamated Wireless of Australia," expires next month, but during that period a considerable amount of pleasure will be given. In Paling's Concert Hall, microphones have been secreted, the wires carried upstairs to the top of the building on the 6th floor where a room has been erected and the aeriols put up.

The first experimental transmission took place on Tuesday night last, when Mr. Roy Agnew, the well known composer, who shortly goes home to London (after receiving a citizens' farewell concert), played from 7.30 till 7.45, several of his own compositions. At a quarter to eight the Philharmonic Society who were rehearsing in the Hall for the next performance of "Elijah," sung under the baton of Mr. Joseph Bradley, several of the well-known choral numbers, and all this was given out with very fine effects. Messrs. Paling and Co. reports that wires were received from their Queensland branches the next day saying that the transmission was excellent.

On Wednesday night Paling's monthly recital which is given on

Winter is Near

Radiators from 55/-

British Electric Globes 1/3 each

Electric Irons 20/-

J. J. Hoelle & Co.

57 Goulburn Street

Factory : 49 ALMA STREET, DARLINGHURST

the last Wednesday of every month of the winter season, took place and the whole evening's performance commencing at 8 o'clock and finishing at 9.45 was transmitted. Included in this were vocal and instrumental items. The success of the night from every point of view was the re-appearance in Sydney of Madame Emily Marks, the well-known Australian soprano, who has been singing in England and America for the past 10 years. Mr. Oswald Anderson, who was in charge of the proceedings, said that Madame Emily Marks was the first Australian to broadcast in America. "The Prayer," from Tosca, and Tosti's "Good-Bye" were sung with wonderful effects, and in the last number she altered the song by taking the last part an octave higher as arranged with her and Tosti in Italy some years ago. Report from the different centres were very satisfactory, and the clapping of the audience after this number was so deafening at Mr. Schultz's home at Longueville, they could not imagine for a few moments what had happened.

Other items that were transmitted with success were violin solos, by Miss Doreen Douglass; songs by Mr. Charles Larsen, the well-known baritone, and solos on "His Master's Voice" Gramola, the Autotone Player Piano, and the Electric Behning "Art-echo" Reproducing Player Piano. On the last named instrument, the "Etude," of Liszt as actually played by Harold Bauer gave very much pleasure. Operating on a wave length of 215 metres 10 watts, the radio engineer, Mr. Allsopp, from the New Systems Telephones, will continue to send out something every day. All those interested are invited to 'phone up Mr. Allsopp, City 8556, or Mr. O. Anderson, City 539, and keep in touch with them to see what is being sent out.

Further recitals and interesting concerts are in hand, and some of our leading singers will assist.

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

At the next meeting, June 14th, Mr. E. T. Fisk, Managing Director Amalgamated Wireless (Aust.), Ltd., will give an address on "Wireless matters abroad." Mr. Gregory will lecture on "The Tasmanian Hydraulic Scheme."

RADIO ASSOCIATION OF N.S.W.

A meeting of this association will shortly be called to consider the position regarding the result of the Broadcasting Conference.

NEW ZEALAND EXPERIMENTER'S EFFORTS.

83 AMERICAN AMATEURS LOGGED.

SPEECH FROM AMERICA.

Mr. R. Slade, of Timaru, New Zealand, holds a unique record of having logged 83 American amateur stations during 36 nights listening-in. A number of these stations have already verified Mr. Slade's logging.

Mr. R. J. Orbell, of Christchurch, New Zealand, reports having heard speech from KYJ Station, in Los Angeles.

FORT STREET BOYS' HIGH SCHOOL APPRECIATION.

To the Editor of Wireless Weekly
Dear Sir,
On behalf of the Executive of the Fort Street Boys' High School

War Memorial Fete and of the whole school, I wish to convey per your esteemed journal, my sincere thanks to Messrs. Crocker, MacLurean and Marsden, who so generously transmitted for the wireless concert stall.

I also wish to thank Mr. Harry Wiles, the well known Radio House of Goulburn Street, who lent most of the apparatus; and the Burwood Radio Club for their splendid transmissions, which undoubtedly made the concert a financial and educational success.

Yours etc.,

PERCY H. HUNTER
(2MY).

REPORT ON FORT STREET FETE WIRELESS CONCERT.

25th and 26th May.

Among the sideshows and various novelties of the Fort Street Boys' High School War Memorial Fete, the wireless concert was most prominent. It helped greatly to make the fete a financial success, and cleared away much of the doubt about Radio Telephony.

During the fete nearly 600 people patronised these concerts, and went away delighted.

WHEN THE Radio Bug Bites

AND YOU ARE LOOKING FOR RADIO "SIGNS."

HEED THE WORDS OF THE WISE.

This is what Mr. H. A. Warden, of Gilgandra, has to say about MYERS' VALVES, in a letter to us:—

"Using a High Frequency Amplifier, MacLurean's concert came through so clearly at times as to be distinctly heard by a person standing by with no phones on his head. Considering the distance, 310 miles, and the fact that only two MYERS' were used, I think the fact speaks for itself. For quiet working and clarity they easily eclipse any valve I have used, with the exception of an old audiotron of mine."

You all know Mr. Warden, late of Mungundl, as one of the premier radio men of Australia. We can show you the original of his letter at our place any time.

NOTE OUR NEW ADDRESS—

RADIO HOUSE

619 GEORGE STREET, SYDNEY

(Next Goulburn Street)

It is safe to say that many departed with the fixed intention of constructing a set.

Many stations were received, including 2IX, 2JAM, 2BB, 2CM, 2KC, 2GR, and 2LJ.

The wireless concert undoubtedly owed its success to the Burwood Radio Club, who transmitted continuously from 2.30 to 6 p.m., both afternoons, and during both nights filled in gaps, when the music was lacking.

A two wire "L" type aerial, 80 ft. long, suspended between the two wings of the building, was used.

The set consisted of a single valve detector panel, used in conjunction with a 3 valve Western Electric Audio Frequency Amplifier and a Western Electric loud-speaker.

Mr. Harry Wilcs, the well-known Radio House of Goulburn St., kindly lent the amplifier and loud-speaker, without which the concert would have been an impossibility.

The apparatus gave little or no trouble, and the Western Electric amplifying valves and loud-speaker did ample credit to their agents and manufacturers.

Many delightful records were heard, but "Everybody Calls Me Honey" proved a general favorite and came in perfectly.

The telephony was up to the usual standard and owners of transmitting stations may be congratulated.

A little interference at times was caused by VES and ships.

A CONDUCTING CEMENT.

Difficulty is sometimes experienced in obtaining a good electrical contact between a metallic body and a partial conductor, or some substance which cannot be soldered. For example, it is not always easy to obtain a connection to some types of grid leaks or anode resistances. A very good composition may be made from a powdered conductor, such as graphite, together with some binding material such as gum arabic. The graphite should be as finely divided as possible, and it may best be obtained by gently scraping a block of "black lead" such as is used for polishing stoves. A small heap should be scraped on to a piece of wood, upon

which the paste is made. Gum arabic is usually sold in small lumps, and this should be dissolved in water, until a very thick liquid is obtained. The process is somewhat slow, and it is advisable to dissolve the gum some time before it is to be used. The graphite is worked into a very stiff paste, with a small piece of wood, or an old knife blade, adding the gum drop by drop. The cement will remain in a workable state for several hours, but as soon as it begins to "crumble and break, it gives a rather indifferent contact. It is advisable, therefore, not to make more than is required for immediate use.

Ships you should hear this week nearing and departing from our coast.

- | | |
|---------------------|------|
| BARAMBAH | VJR |
| CANADIAN RANGER | XVF |
| CANADIAN SKIRMISHER | |
| | VGBW |
| EAST WIND | KEKB |
| KENT | ENI |
| MONTROSE | GCBY |
| ARENDSKERK | PDAA |
| EASTERN PLANET | KUPD |
| EURIPIDES | MSE |
| PARATTAH | VKU |
| TASMAN | PMZ |
| AENEAS | MFU |
| AUSTRAL PORT | VZT |
| CANADIAN IMPORTER | XWQ |
| CARPENTARIA | MHG |
| CITY OF CANTON | YSM |
| GAMARIA | GCZF |
| HATKHOLA | YUY |

A SIMPLE TWO-VALVE GENERAL RECEIVER.

The following receiver may be used for all wave lengths, but it may be particularly recommended for the reception of broadcasting.

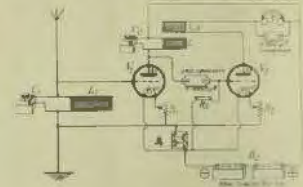
The accompanying photograph shows a simple broadcast receiver made out of purchased component parts. The materials required are as follows:—

- 2 variable condensers, preferably having a capacity of 0.0001 MF., although a smaller capacity will do.
- 3 wave-wound coils.
- 1 grid condenser.
- 1 fixed condenser having a value of about 0.002 MF.
- 1 6-volt accumulator, of not less than 30 ampere-hour actual capacity.
- A high-tension battery which

will give up to not less than 45 volts, and preferably up to 70 volts.

2 valve panels consisting merely of a valve-holder, four terminals, and a filament rheostat.

- 1 grid leak, having a value of about 2 megohms.
- 2 grid-leak clips.
- 2 valves.
- 1 pair of high resistance telephone receivers.



The price of these component parts does not amount to very much, but a very effective receiver may be built out of them, and the experimenter has the satisfaction of knowing that he can use them all for different circuits if he wishes to alter or expand his set.

The photograph shows the way the different components may be arranged on a piece of wood. They could, of course, be connected loosely on a table, but very often it is desirable to make a compact set of the kind illustrated.

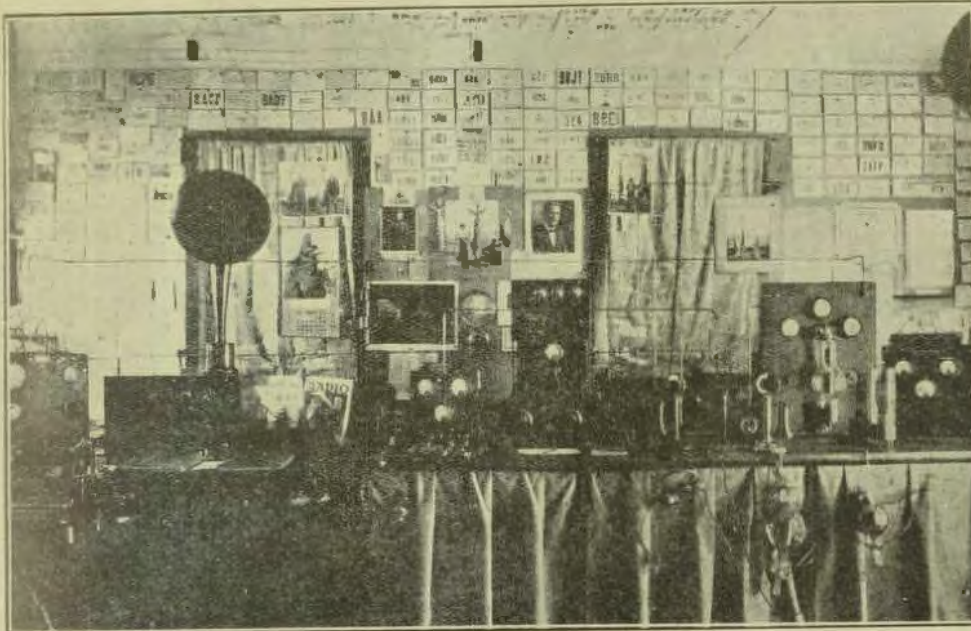
The wiring of the different component parts is shown in the circuit diagram.

For the reception of broadcasting the inductance L1 may be a No. 25 or No. 35 Igranite coil, while the coil L2 is a No. 50 Igranite coil, and the coil L3 is a No. 75. The advertisers in this journal who apply these plug-in coils will be pleased to inform any interested reader what values of coils should be used in the respective positions for different wave lengths. The numbers given relate to honeycomb coils, as these were the only ones at hand.

The set may be used for receiving signals of any wave-length by changing the coils.

It will be noticed that a re-action coil L3, is variably coupled to the coil L2. If, on bringing L3 close to L2, the signal strength is not greatly increased, the leads going to the coil L3 should be reversed. It is no good simply reversing the coil L3, because, when using plug-in coils, a reversal of the coil also

The Origin of the M-O-T-T Signals.



The New 6 ZW.--6 x AD. Station, Catalina Island, operated by Major Lawrence Mott.

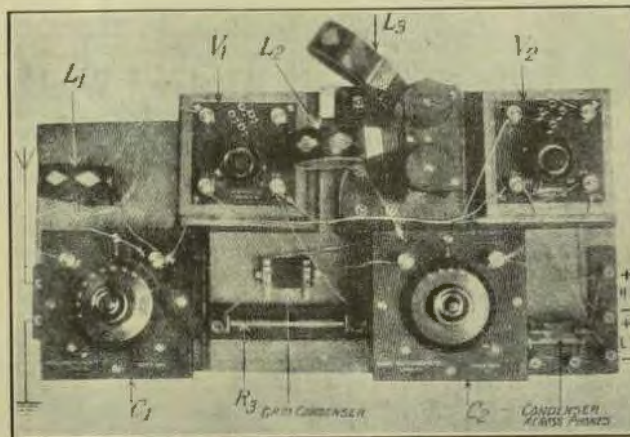
From "Radio," U.S.A.

automatically involves a reversal of the leads to the coil, so that the effect obtained remains the same. Honeycomb coils will normally be in special coil-holders, and the leads to the terminals on these coil-holders should be reversed in the case of the reaction-coil terminals.

If continuous waves are to be received the coupling between the coils L3 and L2 should be tightened until the second valve oscillates.

When receiving telephony or spark signals, the re-action should not be made too large. The filament of the valves should not be made too brilliant, as this tends to cause the set to oscillate.

Experiments may be carried out with the lower end of the grid circuit connected to the positive terminal of the accumulator.



Continued from Page 12.

limited facilities available for radio broadcasting and the uneconomic and tentative basis of present day broadcasting. The Conference urged the consolidation in each locality of those desiring the establishment or maintenance of broadcasting and those interested in broadcasting in that locality to the end that broadcasting conducted in each neighbourhood by such a local association will receive public support and be handled in an economic and permanent fashion."

You can see, therefore, that the American system, although it has an open field for broadcasting, has led to chaos, and that the people who are interested in the industry there say that it is upon a very tentative basis. In England, with a view to avoiding these conditions, the Government called into conference last year the manufacturers of broadcasting apparatus, and as a result, a scheme was devised which consists of the formation by the manufacturers of a broadcasting company which has the exclusive right to give broadcasting services throughout the United Kingdom. Further, the Government undertook that it would only license the public generally to purchase and use receiving apparatus which was manufactured by members of the Broadcasting Company. The adoption of these means has avoided the chaotic conditions which obtain in America, because in England there is only the one Company operating and nobody can interfere with it. But it is becoming more and more apparent each day, that this does not satisfy the public demand for broadcasting. One reason for this is to be found in the fact that a single service is endeavouring to cater for every taste in the community. We all realise how impossible it is to satisfactorily do that. There are other complaints against the scheme, but that is one of the great complaints. One service cannot possibly supply all the requirements of the community in this form of entertainment. It is very much like attempting to have only one theatre in London. The article in the "Evening Standard," to which I have already referred, says:—

"Largely arising out of this grievance, is the contention that the abolition of the monopoly would be in every way beneficial. The establishment of competition

would, it is asserted, lead to better programmes, and also cheapen the cost of apparatus."

Here, in Australia, we have practically a clean sheet. The Postmaster-General has called us together for the purpose of getting our advice as to what ought to be done.

We have also the experience of these other countries to guide us. They have got into difficulties themselves. They are not to be blamed for that, because there was no precedent to guide them. In England, the authorities had the precedent of America, but no other. Here, we have the precedent of those two countries, and we have to determine what we can do. As the Minister has already pointed out, Australia covers an area 25 times the size of Great Britain. In Great Britain it has been found necessary to establish eight broadcasting stations, and therefore pro rata, we should require to establish two hundred stations. In England, it is estimated that the cost of operating these eight broadcasting stations, without giving first-class programmes, is approximately £20,000 per annum each. Pro rata, the cost here would be £4,000,000 per annum.

A Voice: With artists?

(To be continued next week.)

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June 8, 1923.

WIRELESS WEEKLY

19

Wireless Daily News

PUBLISHED ON R.M.S. NIAGARA.

When the steward brings your "gondola" cup of tea to you in the morning on board the Niagara, he also (if you are a subscriber) hands you a copy of the "Wireless News," says a writer in "New Zealand Wireless News," published on board daily, and containing news from all the world broadcasted (in these waters) from the Pennant Hills Station, New South Wales, by the Wireless Press, Sydney. Such papers have for some time been a feature of ocean travel across the Atlantic between Europe and the States, and the Oceanic Company's boats on the Pacific, but the Niagara is the first of the Union Company's fleet to give passengers a daily summary of what is going on ashore. Consisting of eight pages, eight and a half inches by eleven and a quarter inches, "Wireless News" has six of them printed—mostly advertisements of Fiji, Hawaii and Canadian origin—and two of them are cyclostyled daily aboard the mail boat.

"This morning's news by wireless" is the heading under which the passenger lying in his bunk finds the world's doings in tabloid form. In the old days when people went to sea some cheerfully bade farewell to news and newspapers, and others did so regretfully. Today wireless holds the sea traveller in touch with the world whether he wishes it or not. Now, even the daily news sheet has tracked him to his bunk, and when he goes down to breakfast, the weather, the possible rum for the twenty-fours, and such shipboard chat give place to more solid longshore talk about the latest development in the Ruhr, the London pros and cons of Singapore as a naval base, and even such an item as "Wellington, May 4, Phyl. is Porter, of the 'Peep Show,' burned her arm and elbow owing to an electric wire fusing," can be found in the column.

Passengers on the Niagara, which arrived in Auckland recently, spoke appreciatively of the novelty of getting a newspaper with their matutinal tea, and the popularity of the little sheet is such that no doubt the Union Company will extend the innovation to other ships in the Vancouver run.

Amateur Calls

Victoria

Call Sign.	Name.	Address.
3 Q B	Brown, H. J.	327 Sebastopol Street, Caulfield. R.
3 Q C	Campbell, W. J.	State School No. 1554, Murnoo. R.
3 Q D	Clark, W. L.	24 St. Francis Street, Melbourne. R.
3 Q E	Diggles, Wm.	162 Eglinton Street, Kew. R.
3 Q F	Kennie, J. M.	6 Park Street, Northcote. R.
3 Q G	Farrar, L. W.	43 Winchester St., Moonee Ponds. R.
3 Q H	Feldman, J. F.	Forest Street, South Geelong. R.
3 Q I	Ernal, E. A.	120 Stokes Street, North Melbourne. R.
3 Q J	Mansell, A.	13 Campbell Road, Canterbury. R.
3 Q K	Hatters, W. L.	Commercial Road, Koroit. R.
3 Q L	Moller, H. V.	5 Stone Street, North Brighton. R.
3 Q M	Monichan, R. J.	23 Collins Street, Essendon. R.
3 Q N	Ridley, M. J.	20 Walker Street, Newport. R.
3 Q O	Schultze, J.	130 Glenferrie Road, Glenferrie. R.
3 Q P	Falconbridge, J. M.	19 Moffat Street, Brighton Beach. R.
3 Q Q	Palmer, W. V. F.	66 Treuery Crescent, Abbotsford. R.
3 Q R	Noonan, J. M.	High Street, Botherglen. R.
3 Q S	Mealy, T. A.	15 Shaftesbury Street, Essendon. R.
3 Q T	Watsons & Sons, Ltd. (— Witt)	117 Collins Street, Melbourne.
3 Q U	Watson & Sons, Ltd. (— Witt)	117 Collins Street, Melbourne.
3 Q V	Watson & Sons, Ltd. (J. T. Caldwell)	6 Church Street, Richmond. R.
3 Q W	Muir, J. A.	10 Young Street, Brighton. R.
3 Q X	Peakman, R. J.	Gardenia Street, Blackburn. R.
3 Q Y	Dunn, W. S. R.	42 Market Street, South Melbourne. R.
3 Q Z	Croer, J. K.	211 Mill Street, Ballarat. R.
3 R A	Chapman, W. E.	55 Warrigal Road, Oakleigb. R.
3 R B	Thwaites, W. J.	31 Sunnyside Avenue, Camberwell. R.
3 R C	Thomas, D.	31 The Avenue, Windsor. R.
3 R D	Bunker, — J.	Cowangie. R.
3 R E	Dixon, R. D.	23 Nelson Street, Mount Albert. R.
3 R H	O'Meara, J. A.	35 Cameron Street, Coburg. R.
3 R I	Arthur, J. B.	9 Hewett Road, Murrumbidgee. R.
3 R J	Rule, L. R.	25 Church Street, Canterbury. R.
3 R H	Orton, R. M.	16 Lock Street, St. Kilda. R.
3 R I	Wilson, R. G.	183 Nelson Road, South Melbourne. R.
3 R M	Lutgens, F.	24 Rathdown Street, Carlton. R.
3 R N	Barr, S. J.	"Isisford," Montague Street, Moonee Ponds. R.
3 R O	Grieve, M. J.	194 Osborne Street, Williamstown. R.
3 R P	Davies, D.	2 Swanston Street, Geelong. R.
3 R Q	Robinson, W.	55 Paisley Street, Footscray. R.
3 R R	Kinnear, W.	4th Avenue, Brunswick. R.
3 R S	Balfour, F. W.	Engineers' Quarters, Mental Hospital, Sunbury. R.
3 R T	Brown, E. C.	2 St. George's Avenue, Mount Albert. R.
3 R U	Obbfield, — E.	16 Bridport Street, Albert Park. R.
3 R V	Austin, L.	72 Osborne Street, South Yarra. R.
3 R W	Haig, W. J.	"Bemersyde," Emma Street, Glenhantly. R.
3 R X	Lawson, L. G.	45 Vincent Crescent, East Malvern. R.
3 R Y	Wilson, — A. G.	4 Webster Street, Ballarat. R.
3 R Z	Thomas, V. S.	21 Henty Street, Richmond. R.
3 S A	Thomas, G. M.	111 Station Street, Fairfield Park. R.
3 S B	Uncle, — H.	335 Victoria Street, Abbotsford. R.
3 S C	Upton, M. E. C.	22 Ash Grove, East Malvern. R.
3 S D	Pople, G. W.	146 Bromfield Avenue, Alphington. R.
3 S E	Crow, M. A.	95 Victoria Parade, East Melbourne. R.
3 S F	Gadding, J. C. C.	1 Meadows Street, Caulfield. R.

QUESTIONS

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*Glossary of Terms
Used in Wireless.*

A

A.C.—See Current.

Acceptor.—A circuit consisting of inductance and capacity in series, which has the property of offering low resistance to currents of the frequency to which it is tuned. Compare Rejector.

Accumulator.—See Battery. See ordinary.

Aerial.—The elevated wire or wires used for the transfer of energy from transmitting set to space or from space to receiver. The term is now extended to wires which are not elevated above the apparatus. (See below.)

Aerial, Directional.—Any aerial the shape of which causes a variation of signal strength according to the direction from which signals are coming. The frame aerial especially possesses this property.

Aerial, External.—The normal type. Well-known varieties are "L," or "inverted L," "T," and "umbrella," whose shapes are indicated by their names.

Aerial, Indoor.—A small aerial of usual type erected within the house; to be distinguished from the frame aerial.

Aerial, Frame.—A coil of wire of 1 to 50 turns wound on a large frame (say, 2 to 10 feet across), the two ends being used as aerial and earth.

Aether.—See Ether.

Alternating Current.—See Current.

Alternator.—See Generator.

Ammeter.—An instrument for measuring currents.

Ammeter, Hot Wire.—Depends on change of length of a wire when heated by current passing through it. May be used for all frequencies.

Ammeter, Moving-coil.—Depends on magnetic effect of current. Indicates direction as well as amount. Useless for alternating currents.

Ammeter, Moving iron.—Depends on magnetic effect. Does not indicate direction. May be used for low frequency A.C., but not high frequencies.

Ammeter, Thermo.—Depends on rise of temperature of wire. May be used for all frequencies.

Ampere.—Unit of current.

Amplifier.—An apparatus for causing weak currents to control a local power supply, thus producing larger currents. Distinguished from a relay by the fact that in an amplifier the local currents produced should be exactly proportional to the currents controlling them.

Amplifier, H.F. (High Frequency).—Use indicated by its name. Almost always employs valves. Also known as Radio Frequency Amplifier.

Amplifier, L.F. (Low Frequency).—Use indicated by name. Usually used to denote a valve amplifier, but the term really includes microphone relays, etc.

Anode.—Strictly, the point at which a positive current enters any piece of electrical apparatus. In valve practice a metal plate within the valve, the electron flow to which constitutes the output current. Term also used in X-ray and electrolytic practice.

Anode, Tuned.—A form of reactance intervalve coupling (see Coupling) comprising the use in the anode circuit of an inductance tuned by a variable condenser across it. Very efficient. The word "circuit" is understood, although strictly neither the anode nor the anode circuit as a whole is tuned.

Antenna.—See Aerial.

Aperiodic Circuit.—A circuit which, owing to high resistance or other causes, either has no natural frequency or is so highly damped that free oscillations cannot occur in it.

Arc.—When a circuit, carrying current, is broken a flame is seen at the break. This flame is largely used as a source of light, and also, under proper conditions, as a source of oscillations.

Atmospheric.—In wireless work a

current produced in the aerial by natural discharges of atmospheric electricity. Also known as "z's," "statics," or "strays."

Autodyne.—See Heterodyne.

Auto-jigger.—See Transformer.

B

Balanced Crystal.—A method of eliminating jamming and atmospherics requiring two detectors in opposition, one being maintained in its most sensitive condition, the other not.

Battery.—A chemical source of electric energy.

Battery, Filament.—Sometimes called "A" battery in America. The supply (usually an accumulator) of energy by which the filament is raised to a temperature high enough to ensure a sufficient electron emission.

Battery, High Tension.—Called "B" battery in America. The source of current in the anode circuit of a valve. Forms the supply for the valve output. Usually of small dry cells. Other sources of H.T. current are used, such as dynamos, etc., especially for transmission.

Battery, Primary.—In this case the energy is derived from a non-reversible chemical change in the materials. When the change is complete the battery is useless and is scrapped.

Battery, Secondary.—Also called storage battery or accumulator. A battery in which the change in materials is reversible. When the battery has been "discharged" it can be brought back to its original condition by forcing through it a current in the opposite direction to that which it gives itself.

Beat.—When two alternating currents of slightly different frequencies are impressed on the same circuit, the resultant current has the peculiarity of waxing and waning. The period of between two maxima is known as a "beat," and the number of beats per second is the beat frequency. It equals the difference between the two applied frequencies. Important in the reception of continuous waves. See also Heterodyne.

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June 8, 1923.

WIRELESS WEEKLY

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VALVES: Expanse "B," 35/-; Radiotrons, 200, 37/6; 201, £2; 202, £2/10/-; Myers' Detectors and Amplifiers, 35/-; Marconi "B," 35/-; V-24, 37/6; Mullard Ora, 27/6; D.E.R., 50/-.
PHONES: Brown's single, 25/-; Murdock's, 30/-; Bestone, 32/6; Trim's, 39/6; Western Electric, 4000, 42/-; 8000, 45/-; Baldwin's, £4/18/6; Brandes' Superior, £3; Brown's Loud Speakers, £5/5/-; Amplihorns, 12/6 each; Magnavox, £14/10/-.
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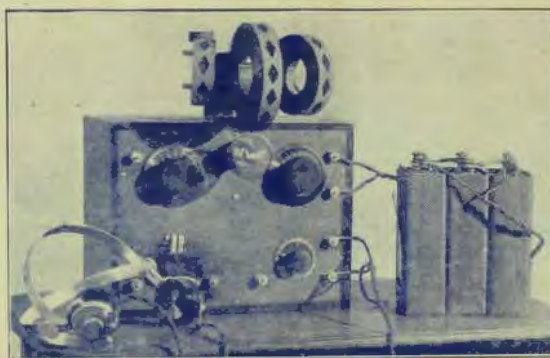
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