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Vol. 2.

June 15, 1923.

No. 24

The Australian Broadcasting Conference.

VERBATIM REPORT CONTINUED.

FIRST DAY.

Mr. Fisk: That is the cost without high-grade artists. In England, they were getting the services of people from the Academies, practically for nothing. I can tell you from my own experience that the public appreciate high-grade performances very much indeed. But there is in this connection, a problem which is coming forward very rapidly indeed. The people who control most of these high-grade artists, have practically forbidden all of them to perform for broadcasting purposes, and I understand that the gramophone people have taken somewhat similar action. Simultaneously, the artists themselves are beginning to realise that when they perform at broadcasting stations, they are performing to audiences very many times greater than the largest audience at any one theatre. Madame Melba, at Convent Garden, received £300 nightly for singing to an audience of about 5,000 people. When broadcasting is established in Australia, if you ask Melba to sing to an audience of 50,000 people, what will it cost you? That is one of the problems which has to be overcome. The Broadcasting Company in England cannot afford to provide entertainments of that class without the payment to it of a very high sum. The result is that it can provide only very limited programmes. I have said already, that upon the same basis

of cost as obtains in Great Britain, we should require about £4,000,000 per annum to operate 200 broadcasting stations here. You can readily see that result cannot be attained. At the same time, we all know sufficient to realise that the people of this country demand a wide variety of services. If we can provide that wide variety of services, if we can satisfy all tastes as far as possible and insure the permanence of these services, we shall certainly satisfy the public. A great number of those present today are here to see how far they will be able to do business in broadcasting. Now, the more the public is satisfied, the more business you will be able to do. If you start with a scheme like the American scheme, which will break down, you will find yourselves stocked up with a great deal of apparatus, and then something will happen which will prevent you carrying on your operations. That will not be for your good, or for the good of the public. There are a great variety of services which can be provided by broadcasting, and the question is how they should be provided. I have said that proportionately to the number established under the English scheme, 200 stations will be required here. The area of Australia is about the same as that of the United States, where there are already 600 stations operating. The confusion which exists

there is not due to the fact that there are 600 stations operating, but rather to the circumstance that broadcasting has not been properly established and properly regulated. The points which I have endeavoured to make are first that the fundamental part of this movement is that it should provide an entertainment service. If it succeeds upon that basis, it will provide to the people in the country all the other services to which the Minister has referred, and the business which many of you want. Secondly, the public require a variety of entertainment. Some persons may desire information services exclusively. Here, we have a vast territory to cover, and we possess a comparatively small population. When you realise that the London Broadcasting Station alone—that is the station which serves the area within a radius of 150 miles of London—supplies a population which is nearly double that of the whole of Australia, you will realise the difference between the conditions which obtain there and those which obtain here. If we look around, we shall see that all the other entertainment services have been successful, provided they have given proper value for the money received. But here is our difficulty. If you pulled down the walls of all our theatres and had stages erected in our public streets, or in our parks, the theatres could not live very long. Somebody

remarked the other day that football is a sport which flourishes because the public are able to support it by paying to see football matches, whereas rowing can never reach that stage for the simple reason that there is no "gate" attached to it. That is the problem with which broadcasting is confronted. It is like having all our theatrical performances in our public parks where everybody would be able to see them. We cannot build four walls round a broadcasting service, because we cannot work within those dimensions. In America, and England, the services are limited to a very narrow wave-length. But anybody there can listen to any of the services without contributing properly towards them. Manifestly, things cannot continue upon that basis. In order to meet these conditions, I have drawn up for your consideration a scheme which will ensure permanence to this movement, which will permit of freedom of competition in the matter of providing various classes of service, and freedom for competition in the supply of apparatus. What I suggest is, briefly:—

(a) That a number of wave-lengths be allotted for broadcasting purposes. Such wave-lengths to be selected in respect of their suitability for stations of various powers, and subject to their not being required for public wireless telegraph or wireless telephone services.

(b) Licenses or concessions for broadcasting stations to be granted for all available wave-lengths within a given area.

Thus, if six wave-lengths are available, we should give them those wave-lengths, repeated as many times throughout the Commonwealth as the range of stations permit.

(c) Each broadcasting station to be licensed for transmission on the one wave-length only.

That is to say, the area of the band is marked out, and reserved to whoever operates that area.

(d) Licenses to be issued under the Wireless Act to the public for receivers of approved design, capable of receiving signals of one wave-length only, and incapable of variation without intentional tampering.

That provision is merely the equivalent of the provision which exists in the case of a man who wants electric light installed in his house. There is the electric power station which is ready to supply him with the "juice," and the supply authority will give him the "juice" so soon as he has made his house ready to receive it. Your house will be ready just as soon as you have installed the requisite equipment to receive broadcasting messages. You have to make it ready either for broadcasting station A, or broadcasting station B, according to your fancy, and to subscribe to that service.

(e) Licenses to sell or hire receiving apparatus, to be issued to bona fide manufacturers and electrical or other traders.

That is intended to give scope for competition in the supply of apparatus. Suppose there is an area in which there are three broadcasting services. Every one who wants to go into this business within that area will stock receivers of as many makes as he cares to stock, so that the public may get a selection of different makers' receivers for each wave-length. The only restriction imposed, will be that these receivers must comply with the regulations.

(f) All licenses to be renewable annually.

That is intended to ensure that the broadcasting services shall get their rents.

(g) Concessionaires to state in their application the annual charge they propose to make for their service, and to be authorised to issue licenses to all their customers who are equipped with approved receiving apparatus.

(h) Receiving licenses and renewals thereof to be withheld from all persons who do not pay the annual subscription to the broadcasting stations.

So that each year they may renew their licenses and collect their annual subscription, whatever it may be. If anybody does not pay up, the service to him will be terminated. He will be in the same position as the man who refuses to pay his gas bill. In the latter case, the gas meter is disconnected, and the man no longer gets the gas. If he tries to tap the main without the meter, he is breaking the law. Simi-

larly, if he attempts to tap the broadcasting service without having paid his subscription, he should also be breaking the law. He should be in just the same position as the man who climbs up to the window of a theatre for the purpose of seeing the performance within.

(i) Concessionaires to notify the Government of all unlicensed apparatus becoming known to them within their territory.

(j) Dealers and traders only to supply receiving equipment to holders of licenses, and only upon such terms as may be approved by the Concessionaires.

That is to say, they must see the concessionaire gets his proper fee for the service.

(k) Since there will be ample room for competitive broadcasting services, it is unnecessary to place any limitation upon the nature of the services provided. Each concessionaire must decide for himself the class of service that will bring him the greatest number of subscribers.

(l) Dealers to keep a record of all equipment sold and to notify the concessionaire for any particular wave-length accordingly.

For instance, if you were operating a service with a wave-length of 400 metres, every dealer within your range who sells a 400 metre receiver, must inform you that Mr. Jones or Mr. Brown, to whom he has sold it, has become a subscriber to your service. That is the principal reason for requiring dealers to be licensed.

(m) Concessionaires to notify the Government of the name and address of all their subscribers, and to pay to the Government the annual fee in respect of each license issued or renewed to subscribers.

The fee for the administration of this matter, will come out of whatever the concessionaire charges for his service. If he makes the charge according to his service, he will add whatever the Government requires to be paid for its license.

(n) No person or company to manufacture, deal in, or use wireless equipment for broadcasting purposes without a license from the Government.

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There are one or two other matters for which provision might be made. For instance, there is the question of the man who wishes to build his own apparatus. I see no reason why he should be prevented from doing so. That is one of the very great difficulties which have been encountered in England. If a man wishes to build his own apparatus, I see no reason why he should not be allowed to do so, in just the same way as a man is allowed to wire his house for electric lighting purposes. The latter has to act in conformity with regulations, and that is all that should be asked of a man who wishes to build his own wireless set. Finally, there is the experimenter, the man who is not interested in broadcasting but who desires to carry out experiments in wireless. To my mind, he should be allowed to cover as wide a field as possible, subject to his not infringing upon the broadcasting service by entertaining all his friends; I see no reason why he should be limited in his operations, provided that he is a bona fide experimenter and that is a thing which can readily be determined. The Postmaster-General, in opening the proceedings of this conference, made some reference to the press. He said that the press incurred a great deal of expense in collecting news from all parts of the world, and naturally did not want it broadcasted all over the country without receiving something for it. That is an interest which must be properly protected. To me, it is a new phase, one of which I had not previously thought. But it seems to be a very easy matter to provide for, in connection with the issuing of licenses. Any station giving a press service, must not supply press information without paying for it. Finally we have to do all we can to ensure the very best possible services in Australia from the entertainment side, and from the technical side. When you entered this room to-day, you heard a little broadcasting here. It was not a very good illustration of broadcasting, but to those who have not heard broadcasting previously, it showed that the thing worked. It also served to prove that unless we have properly designed transmitters for broadcasting — the ordinary telephone transmitter requires modification — and properly designed rooms in which to undertake broadcasting, the results are not satisfactory. That was the trouble exper-

imented here to-day. It was not the fault of the apparatus or of the men who put it up. Indeed, considering the small amount of time at their disposal, they did excellent work. I have now covered all the ground which I think it necessary for me to cover, and I am ready to answer any questions which you may desire to put to me.

Mr. Boyd: I should like to know in what way concessions will be given in regard to broadcasting wireless services. It is all very well to say that we can go ahead. But unless we are granted concessions in respect of patent rights, we shall not be in a very strong position.

Mr. Fisk: I am sure you will realise that it would be quite useless for me to put up a scheme such as I have outlined, if we were not prepared to grant every reasonable facility in that connection. We are quite prepared to issue, upon reasonable terms, licenses under which you will be granted the right to use our patent. The same thing applies to the press. I do not suppose that they will withhold their news. We do not intend to withhold the right to use our patents, and we shall issue a license to any concessionaire to do so, on reasonable terms.

A Voice: Does that apply to manufacture too?

Mr. Fisk: Yes.

Mr. Court: What amount of wave length is available to all concessionaires throughout the Commonwealth?

Mr. Fisk: That is a matter which, I think, must be determined when the regulations are drawn up. I have an idea, which I will embody in a suggestion when the matter comes up for consideration. If the Government accept the principle of the scheme which I have outlined, they should give as many wave lengths as possible, and the details can be worked out later. Possibly, that can be done by making available for broadcasting, a percentage of the wave-length within certain bands. That would allow for say, six competing services within every area.

Mr. Slater: Will you be good enough to visualise under your scheme, the nature of a service covering the whole of Victoria?

Mr. Fisk: I would prefer to deal with a scheme for the whole of Australia. What I have in mind is that under this scheme you will get some persons — they may be

theoretical people—who will put up the very finest type of station they can get. They will spend a large sum of money in erecting a station with considerable power. Naturally, they will engage first-class artists and pay them very high fees. They will endeavour to cover as large a range as possible. Other people will put up a smaller station and spend less money upon it. With the thing going properly, probably you will have around Melbourne, one, it may be two, high power stations capable of covering practically the whole of the State. You will also have two or three stations covering more limited areas, and probably one covering the city and suburbs. The first-class service will cater for most of the people in the State. But in the country towns, local companies will be formed, and in some cases the local authorities will provide the money with which to start the service. In still other cases, co-operative associations of farmers and squatters will provide a local service. So if the scheme goes properly, we shall have in Victoria a number of stations of various classes and grades. But the high grade stations will naturally be situated in Melbourne, because you cannot take high grade artists all over the country. I think that similar conditions will obtain in each State.

Mr. Brown: Will the number of transmitting licenses issued, be limited?

Mr. Fisk: It will be limited only by the number of wave lengths. If you have a station working on a wave length of 400 metres, you cannot grant a 400 metre license to anybody who will overlap that area. There will be a limitation, but it will be very, very slight, and I think that you ought to get a great number of stations.

A Voice: Does that apply to entertaining?

Mr. Fisk: You will have to leave that to the people who are running the service. They will require to provide a service which will satisfy their customers.

Mr. Brown: The answer really is that the number will be limited by the number of wave lengths that are available!

Mr. Fisk: Yes.

Mr. Cameron: Have you, Mr. Fisk, gone into the question of providing certain hours for certain stations? If one company is operating on a 400 metre wave length, why should

another company be restricted to something less than 400 metres? Would it not be possible to restrict the hours during which broadcasting may be undertaken for entertainment purposes? The farmer wants a little more than entertainment. He requires the market reports. Would it not be possible to permit of two distinct companies providing two distinct classes of service—one supplying entertainment and the other supplying news—to be broadcasted at different times.

Mr. Fisk: I have thought of that matter. It seems to me that the limitation of hours is somewhat similar to the limitation of area, and if somebody applied for a concession for a service he should describe what he is going to do with that service. If he is going to use a wave length for only three hours a day, it should be available for other people to use during the remainder of the period. But I think that that matter will be dealt with in the working out of the details. Nobody should be allowed to sit upon a wave length.

Mr. Jones: In respect of the licences to be issued in the city, I should like to know who is going to have first preference.

Mr. Fisk: That will be largely a matter of priority. The man who takes up a block of land in Collins Street, is allowed to remain upon it, so long as he uses it properly. It should be left to the controlling authority to see that the matter mentioned by Mr. Jones is properly administered. That authority might exercise some jurisdiction over the relative services offered, if several people applied at the same time. But I think that the thing will work out naturally.

Mr. Salmon: The interests of importers have not been mentioned at all. Will it not be necessary for importers to be registered in the same way as ordinary dealers?

Mr. Fisk: Anybody trading in broadcasting apparatus must be registered. The regulations in that respect ought to be analogous to the tobacco and liquor regulations.

Mr. Wilson: This matter has previously been discussed, and some of us had an opportunity of going through Mr. Fisk's scheme before the Conference assembled this afternoon. We listened very attentively to his remarks, and we are indebted to him for the great amount of thought which he has bestowed upon this matter. After all, wireless is going to be for the

masses as well as for the traders, and we must face it with one outlook. The public is going to demand broadcasting. There is no doubt about that. Apparently the Government will not supply the desired service, and therefore it falls upon the commercial community to furnish it. If the public want clothes, traders step in and supply them. To-day, the public are literally howling for wireless. We are faced with a very clear-cut issue. If broadcasting is to become an institution amongst us, who is going to supply it? Obviously we must follow the American system and get chaos, or we must establish a monopoly, as has been done in Britain, by allowing one company to undertake the entire service, or we must have free and open competition. Open competition is the only means by which we can secure any development. If we permit anybody to perform the picturesque feat mentioned by Mr. Fisk—that of sitting upon a wave length—we shall not allow this movement to develop. The figures given by Mr. Fisk show that any firm applying for a license to broadcast, must first put their hands into their pockets to the extent of from £5,000 to £20,000. No business firm will do that, unless it can get a return from its expenditure, and I do not think that any private individual will do it for pleasure. If we throw the field open, as has been suggested, we shall at once achieve our objective by insuring keen competition for our best class of service. Obviously, the firm which gives the best service will secure the majority of subscribers, but that service must be protected from persons who do not subscribe to it. The only way to prevent that, is to allot the wave lengths, as mentioned by Mr. Fisk, and to sell only instruments tuned to such wave lengths to the public. It is of no use a firm investing £20,000 in a broadcasting service if the public can purchase an instrument which will enable them to chop over from one service and take advantage of another service. I have given consideration to Mr. Fisk's proposal, and I am convinced that it is only one by which an adequate and just return can be ensured to the Broadcasting Company. If the individual subscriber desires half a dozen services, let him subscribe to the lot. If he does not, let him subscribe to one service. The next

point is that if we attempt to go in for a concentrated service which will be supplied by one company—as is done in London—we shall create a very dangerous monopoly, from which we shall probably have to take just that service which it chooses to give us, for the simple reason that nobody else will ever be able to face it. Here, we have an opportunity of securing a decentralised service. In Melbourne, Bendigo, Ballarat, Sydney, Brisbane, etc., any broadcasting service will be put in the position of having to maintain a certain standard. If A gives a bad service, and B provides a good one, it will not be long before the people will be demanding sets for the B service, and A will be forced out of business. I do not entirely agree with all Mr. Fisk's proposals, and I suppose that others present do not, but on broad principles, which are the only points to be considered at this stage, I am in accord with them. I move:

That this meeting affirms the principle of establishing decentralised broadcasting services on such a basis as will avoid interference and poaching, giving the right to independent companies to carry on such services on such terms as they can make the services successful, and under such regulations governing broadcasting, the sale of sets and the control of receiving sets as may be drafted in committee and adopted in Conference.

That a committee be appointed to draft regulations for submission to the Government with the recommendation that they may be adopted.

We have attempted to include up on the committee all the interests of which we can think. Mr. Taylor, our Chairman, has been nominated from a disinterested point of view. He has no interests whatever, in any company trading in wireless. Mr. Fisk, we all agree, will be the power behind the throne upon such a committee as that. We cannot do without his advice. Mr. Colias represents Western Australia, Mr. Boyd represents the Victorian retailers, Mr. Mingay represents the Wireless Institute, Mr. Hirst represents N.S.W. manufacturers, Mr. Sweeney represents the Victorian manufacturers, and I represent Farmer & Co., Limited, Sydney, as well as some other retailers who have asked me to represent their interests here. I suggest that if there are any other interests represented

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here the names of their representatives should be added to the committee. The committee should be charged with the drafting of regulations which should adequately protect every interest involved, including that of the public. Those regulations can then be submitted in the form of concrete proposals to this Conference, and may be adopted or rejected.

A Voice: Is there a representative of the wholesalers upon the proposed Committee?

Mr. Wilson: I represent Farmer and Co., of Sydney; Mr. Callas represents the pastoral interests; Mr. Boyd, the Victorian manufacturers; Mr. Jones, the S.A. manufacturers; whilst Mr. Hirst is the managing director of the British General Electric Company, and Mr. Sweeney is a Victorian manufacturer; Mr. Mingay is the Hon. Treasurer of the Wireless Institute, Sydney. Mention has been made of the press interests, and I think that they should be represented.

Mr. Maddick: Mr. Court and myself represent the Wireless Institute of Australia. We have direct authority from four States.

Mr. Wilson: Then I have very much pleasure in suggesting that you should join the committee.

I therefore move:

That the following committee be appointed: Messrs. G. A. Taylor, E. T. Fisk, J. T. Collins, N. J. Boyd, O. Mingay, E. E. Hirst, W. E. Sweeney, G. E. Wilson, L. C. Jones, H. Maddick.

The Chairman: This committee has been suggested as a basis upon which to build. Some of you come from the other States, and cannot remain for a week or a fortnight in attendance at the Conference. By getting down to a basis for discussion much valuable time will be saved. We shall be glad to add to the committee the names of any other gentleman who can be of assistance to it.

Mr. Brown: The people who are principally interested in this work are the general public. Are they sufficiently represented on the proposed committee? After all, the other representatives present are representatives of business men. But as the general public will pay for these services, they ought to be well represented on the committee.

Mr. Wilson: My answer to that statement is that business lives only because it provides for the needs

of the public. When it ceases to do that, it has to quit the field. If we draft regulations which will prevent people from getting a reasonable service the public will put its veto upon them.

Mr. Brown: In providing receiving sets, the mover of the motion suggests that the sets should be sealed.

Mr. Wilson: I did not suggest anything of the sort. I merely laid it down that this meeting affirms the principle of allowing individual companies to broadcast under regulations which the committee will frame for submission to this Conference.

Mr. Brown: But members of the general public will have to purchase a receiving set which is sealed to enable them to receive service from one company. Will they be required to provide a second set for receiving a service from a second company.

Mr. Wilson: I cannot answer that. It is a matter for the committee to consider.

Mr. Brown: It is a very important point.

Mr. Wilson: And the committee will give it proper consideration.

The Chairman: If you have a point like that in your mind, draft a regulation dealing with it, and submit it to the committee. We cannot frame regulations which will give all round satisfaction immediately.

Mr. Brown: I hope that I am not out of order in bringing the question forward. It seems to me that it is a most important point, and one which merits serious consideration.

Mr. Norris: All the names submitted in connection with the proposed committee are those of gentlemen representing New South Wales.

Mr. Wilson: No. There are Victorians, South Australians, and West Australians and Queenslanders upon it. New South Wales has only two representatives. We may regard Mr. Fisk as an Australian representative.

The Chairman: Wireless knows no boundaries. We are here in a common cause.

Mr. Norris: I nominate Mr. Just as the representative of the Victorian wholesalers.

Mr. Boyd: And I nominate Mr. Court as the representative of the Wireless Institute as a whole.

Mr. Wiles: I have much pleasure in seconding these nominations.

Mr. Holtz: I suggest that the mover and seconder of the motion might agree to include in it a paragraph providing that in the framing of these regulations the rights of those whose interests may be endangered or encroached upon by wireless broadcasting, shall be adequately safeguarded. The press has been referred to several times this afternoon. The Minister himself recognises the peculiar way in which newspapers and agencies for the distribution of news, will be affected by broadcasting. Mr. Fisk also recognises it. But the proposer of the motion, whilst mentioning the press, did so only as an afterthought. The Chairman remarked that the press would have no objection to the distribution of news to the farthest parts of this continent. That encourages me to urge upon the committee the desirableness of seeing that the interests of newspapers and of news distributing agencies, are properly protected. The necessity for which is thoroughly recognised in Great Britain. Licenses issued there are only issued upon the conditions that the news distributed is paid for.

An entrepreneur, or instrumentalist, or theatrical entertainer, must be a consenting party before that which he provides is made available for distribution. A newspaper is in a somewhat different category. There is possibly in the minds of the people the idea that when once news has been published in a newspaper it is public property, and that free use may be made of it. But for one man to tell another that he has read something in a newspaper is a very different thing from an individual appropriating that information and selling it. The latter act is called by a very ugly name. This fact has been recognised in Great Britain, and should be recognised by the committee which is to draft regulations for the proper control of broadcasting. Speaking for myself, for my office, and for the cable communication which emanates from that office, I am of opinion that proper provision should be made to safeguard the interests of the press. Cable services cost a very considerable sum of money. The obtaining of news by ordinary methods in the various States, also costs a good deal of money. I do not think that the Press Association would object to selling their news to broadcasting

Continued on Page 20

MAKE YOUR OWN

The Theory of Resistance Amplification.

THE VALVE AS AN AMPLIFIER.

We may best understand the amplifying action of a three-electrode valve by referring to Figs. 1 and 2, says "P.D.T." in "Wireless World." Fig. 1 shows a typical curve such as would be obtained by plotting anode current against grid voltage in an ordinary hard valve. In Fig. 2 an oscillatory circuit is connected across the grid G, and filament F, of a three-electrode valve V, which is supplied by the usual batteries B1 and B2. We will assume that the normal current flowing in the anode circuit is represented by y , Fig. 1, and it will be seen that this corresponds to approximately the mid-point of the characteristic curve. Now it is desirable that this should be the value of the anode current when the grid voltage is zero. In practice this condition can be obtained by adjusting the potential on the anode, that is, by making the value of the anode battery variable, and also by adjusting the filament temperature.

Let it be assumed that oscillations are set up in the circuit L1 C1, such as for example as would be the case if the circuit constituted an aerial tuning circuit of a wireless receiver. These oscillations will apply alternating potentials to the grid of the valve, thus rendering it alternately positive and negative with respect to the filament. If we assume that the potentials are due to an undamped oscillation of symmetrical wave form, and if we neglect the damping of the grid circuit and other disturbing factors, we shall see that the positive potential communicated to the grid will be numerically equal to the negative potential. The actual value of the potential will be dependent on the strength of the oscillation.

By referring to Fig. 1 we can



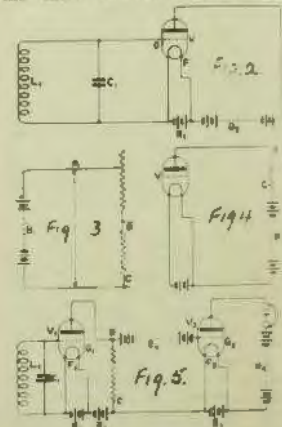
examine the effect of these potentials on the current in the anode circuit of the valve. We have previously assumed that the normal potential of the grid is zero, and that the corresponding anode current is represented by y , Fig. 1. We will suppose that the potentials applied to the grid are plus x and minus x respectively. We see that a potential of plus x on the grid causes the anode current to increase by a value z . Now, since we have assumed that the positive potential is numerically equal to the negative potential, and also that the portion of the curve upon which the valve is working is a straight line, the potential minus x causes a decrease in the anode current of exactly z . Hence we see that theoretically the variations of the anode current are exactly proportional to the oscillations in the circuit L1 C1. It is obvious that these current variations may be made to control the grid potential of a subsequent valve, and moreover the potentials applied will be proportional to the current variations. Since we are now dealing with comparatively large currents, the potentials applied to a subsequent valve in a multi-valve amplifier are considerably greater than those applied to the original

effect is produced in the anode circuit of the second valve.

In a resistance amplifier, a resistance is inserted in the anode circuit of the first valve and the variations of the anode current produce varying potentials across the resistance, which are then applied to the grid and filament of the second valve. We may best understand this action by regarding the valve in a rather different light.

THE 7-S VALVE AS A VARIABLE RESISTANCE

If we gradually increase the potential of the anode with respect to the filament we find that the anode current gradually increases, and similarly, if we increase the grid potential the anode current increases, as can be inferred from Fig. 1, provided, of course, the point of saturation is not reached. In other words, if the current through the same conductor varies it is



equivalent to considering the conductor as a variable resistance. Hence, for the purpose of our reasoning we may consider the anode circuit of a valve in a resistance amplifier to be composed of a fixed and a variable resistance, the anode filament path constituting the variable component. The anode resistance constitutes the fixed component, and it is the potentials produced across this which are applied to the next valve. We may best understand the production of these potentials by reference to Fig. 3.

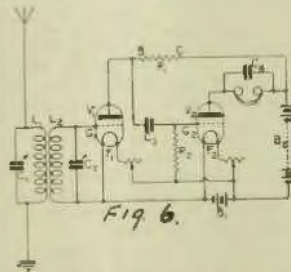
A battery of voltage V is connected across a variable resistance AB in series with a fixed resistance BC . Let us examine the potential across the resistance BC . We will suppose that the resistance AB is equal to the resistance BC . Then the fall of potential V , along the path AC , will be distributed uniformly along AB and BC , and hence the potential across BC will be exactly half of V . Suppose now the resistance AB is lowered the potential difference will still be V , but the distribution along the path AC will be altered. Since the value of AB has decreased there will be less volt drop along it, but since the total volt drop along the path AC is still V , the potential difference across BC will increase. Similarly, if the resistance AB is increased, the potential across BC will be decreased. It can be shown that the greatest potential variations will be produced across BC when the resistance BC equals the resistance AB , and therefore the resistance of an anode resistance should be about equal to that of the valve with which it is used. Fig. 4 is really analogous with Fig. 3, the variable resistance being replaced by the anode filament path of the valve, the value of which is varied by applying potentials to the grid.

A. THEORETICAL AMPLIFIER.

We will now consider the circuit shown in Fig. 5, in which the potentials produced across the anode resistance BC are applied to a second valve, either for further amplification or rectification. The anode circuit of valve V_1 comprises the battery B_1 , the resistance BC , and the anode filament path. Normally a steady electronic current flows round this circuit, and in practice there will be a potential drop across BC of something of the order

of 30 volts, due, of course, to the steady potential from the battery B_1 . If the grid and filament of the valve V_2 were connected directly across the resistance BC , G_2 would be at a potential of about 30 volts, thus rendering V_2 inoperative. In order to prevent this we can insert either an opposing and balancing battery B_2 , or if we wish to amplify pulsating or alternating currents we may insert a condenser.

Let us assume that G_1 is made positive by an oscillation in $L_1 C_1$. This potential will increase the anode current in V_1 , or in other words, we can say that the resistance of the valve has decreased, as previously explained. The increase of current through the resistance BC will naturally produce a greater potential across it. It might appear at first sight that the potential of G_2 would also become more positive. However, this is not the case, and we will understand this more readily if we regard the direction of the currents from the point of view of the electron theory. The increase of current in the anode circuit is due to an increase in the flow of electrons through the resistance from B to C . This means of course that the point B is now more negative with respect to C . Hence we see that by giving G_1 a positive potential, we give B a negative potential with respect to its



former value. Since G_2 is connected to B the potential of G_2 is made negative with respect to its former value. The potentials produced across the resistance BC are very much greater than those due to the original oscillation and hence when they are applied to V_2 the variations in the anode current of this valve are considerably amplified.

It is readily seen that when G_1 is made negative, the resistance of the valve increases, thereby decreasing the potential across BC



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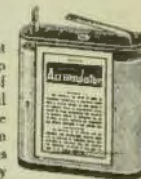


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and giving G2 a positive potential. It is interesting to note that the current variations in the anode circuits of any two consecutive valves are theoretically in opposite phase relation, assuming, of course, that they contain nothing but resistance. The circuit shown in Fig. 5 is really only of theoretical interest, but it serves to illustrate the principles involved. A practical arrangement is shown in Fig. 6, in which common batteries are employed, and the opposing grid battery is replaced by a condenser.

It should be remembered that the use of resistances in various circuits for various purposes is almost unlimited. However, in nearly every case the principle involved is fundamentally the same as that described above, and it would seem desirable, therefore, that every reader should be thoroughly acquainted with the subject, and it is hoped that these short notes will have served to remove any difficulties which may have existed.

LOUD SPEAKERS

Details of construction of a loud-speaker that embodies some novel ideas.

A point, already emphasised in previous articles, that should be borne in mind is that no matter how good the actual loud-speaker may be it can be completely spoiled by attaching it to a badly designed horn.

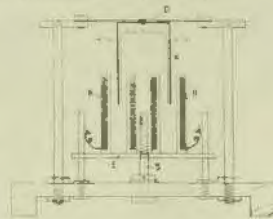
A well shaped wooden horn of correct design costs quite a lot of money, but it is sometimes possible to pick up a discarded gramophone horn. Do not, however, select one with too wide a "flair."

The best shape has a rather long "swan" neck, usually constructed of metal. The wooden part should be tapered gradually until near the mouth and then turned outwards almost abruptly, being finished perfectly round. Cardboard or papier mache is a very good substance, but the very best thing for sound is a horn made of "three-ply" wood.

An improvement on this construction is to replace the centre "ply" by lead sandwiched between the outside boards.

When choosing a horn avoid that kind giving a distinct tone when tapped. When gently tapped the ideal horn should give a dull sound not responding to any particular note.

The apparatus shown in Fig. 1 is a very good method of making a cheap and effective loud speaker. There are no permanent magnets, therefore magnetic inertia or "lag" is practically non-existent.



A mica diaphragm is used which is undoubtedly far superior to any other substance for reproduction of sound, especially speech. Very little lathe work is necessary. When once it is adjusted it will remain in position for a very long time, but in making up this piece of apparatus the most important thing to remember is rigidity. The parts must be well and solidly built and no part must be allowed to vibrate, except the diaphragm (D). This must be made of selected mica, best obtained from a gramophone supply stores. It should be of a fairly large diameter such as is used in "Pathe" sound-boxes. The aluminium strip which is fastened to the diaphragm should be cut out of a perfectly flat piece of metal about 3/8 in. wide, 2-1/4 in. long, and 1/16 in. thick. It should then be bent as shown in Fig. 1 (A). Care should be taken to keep the corners square; each leg should be 7/8 in. long spaced by 1 in. A very small hole should be drilled exactly in the centre. Before riveting on to diaphragm a small washer should be placed between diaphragm and aluminium pole piece.

It will be seen, therefore, the pull is in the exact centre, which is the most sensitive part. The pole should next be wound to within 1/8 in. of the end with No. 40 D.S.C. wire in a single layer. The solenoids can be made of sheet brass, the centre hole being 1/4 in. wide and 2 in. long, and sufficiently large to allow the armature to hang free and not touch the sides of the field-coil.

The length of the bobbins between the flanges should be about 1-5/8 in. The two bobbins are then mounted on to the brass disc E,

which can be made to rise and fall by means of the screw S. The bobbins B are wound with No. 38 D.S.C. wire; the more turns the better. This winding is not very important, but the gauge of wire used should be sufficiently fine for the bobbins to accommodate a good number of turns, otherwise the local battery used to energise these coils will run down very quickly.

To determine the correct gauge of wire and number of turns it will be necessary to try a few experiments. A variable resistance in series with the field coils is an advantage, for by this means a fine adjustment of current can be obtained. The whole instrument may be mounted in a metal case, provision being made for mounting the horn.

When fitting the diaphragm it is advisable to use paper washers on each side, preventing the mica from touching the metal rings. Good quality white blotting paper is the best substance to use. The tone is improved in many cases by fitting paper or rubber rings around the diaphragm case on either side.

FREE TO LADIES ONLY

At a Boston (Massachusetts) radio show one of the outstanding attractions was an announcement of free transmission of messages for any lady attending the show. There was some diffidence at first, certain of the fair ones imagining that their communications would be broadcasted. But as soon as one or two led the way, others followed, and the idea found great favor. The transmitting was carried out by arrangement with the American Radio Relay League and the Radio Inspectors' Office; the messages being actually transmitted to the nearest relay station, and thence to their destination.

MUSICAL TESTS.

The new System's Telephone Co's. Transmitting Station will be carrying out musical tests during the next few weeks. By permission of the Controller of Wireless and the Amalgamated Wireless Ltd. The usual time of commencement is 7.30 p.m., on a wave-length of 250 metres, and the days, Mondays, Wednesdays and Fridays as far as our representative could gather.

The tests are conducted from Messrs. Paling and Co's. Concert Room, and the programme arranged by Mr. Oswald Anderson.

June 15, 1923.

WIRELESS WEEKLY

REPORT OF COMMITTEE MEETING OF THE AUSTRALIAN RADIO RELAY LEAGUE.

Chairman: Mr. Phil Renshaw. The following were present: Messrs. Marsden, Crocker, Perry, Colville, Barling, Creston, Davis, McIntyre, Whitburn, Cooke, Renshaw, Maclardy, Best and Charlesworth.

After a correction, the minutes were confirmed.

Business arising out of the previous meeting's minutes, were a report from Mr. Maclardy on the position of the League with the P.M.G. Department, and the Wireless Branch. Mr. Maclardy said he had interviewed Mr. Malone whilst in Melbourne, and Mr. Malone was eager to assist the experimenters in the scheme. Mr. Malone was extremely sympathetic with the experimenter and wished to be their friend.

Mr. Cooke suggested that Mr. Gibson (P.M.G.) be the League's Patron.

Mr. Perry expressed the opinion that the Minister of Defence would be preferable to the P.M.G., as the League would be more of interest to military matters.

Mr. Colville asked would it be necessary to appoint a Patron, as he considered the League could control itself without the backing of either Military or Postal Departments.

After much discussion in which Messrs. Best, Maclardy, Perry and Marsden participated, Mr. Perry thought that the question of Patron should be deferred for further discussion.

Mr. Crocker said that it would be advantageous if the question was settled without much loss of time.

Correspondence was next read by the Secretary, which included a letter from Capt. Fry, expressing his apologies for his absence at the meeting. He also requested that the Committee consider Major Williams, Chief Signals' Officer of the A.I.F., as a likely person for Patron of the League.

Mr. Marsden moved that the correspondence be received. Mr. Colville seconded.—Carried.

Mr. Perry then stated that he was prepared to withdraw his objection to the P.M.G. as Patron, providing that the League had public backing and interest.

The report of the Hon. Secretary of the W.I.A., on the question of Incorporation was next read by Mr. Maclardy, at the conclusion of which the Chairman invited discussion.

Continued on Page 18

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Kellogg Headphones of 2400 ohms resistance are extremely light and though small, they are very sensitive and efficient. The band is specially adaptable, and the simple receiver holders being held in place on the part of the head band by the spring tension of the metal can be instantly adjusted into any position to give better hearing.

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Experimental Stations Transmitting This Week

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Monday	2GR	Reserved	2LI	Reserved	Reserved
Tuesday	2MB	2MB	2GR	Reserved	Reserved
Wednesday	2LI	Reserved	2DF	2JM	2GR
Thursday	2LI	2GR	Reserved	Reserved	Reserved
Friday	2DF	2BB	Reserved	Reserved	Reserved
Saturday	2LI	2GR	Reserved	Reserved	Reserved
Sunday	2CM	2CM	2CM	Reserved	Reserved

Times shown reserved may be procured by transmitters on application to Mr. Maraden, 2JM.

The following verse was published in "The Property Owner," 9/6/23, and refers to Rt. Hon. W. H. Hughes:

Some people who "talk wireless" are some I wish to knock;
I'll put them on my list, my comprehensive list;
Though they are quite "electrified," I guess they'll get a shock,
If I arrange my list. They never will be missed.
They say I "fixed up" wireless, and that they think they see
I gave a certain company a great monopoly;
"Oh, it will hamper enterprise," they shout in voices shrill;
They say the Fed'ral Parliament was coaxed to pass the Bill.
They do not see I'm on the Board to prove the deal is square;
And that there'll be no funny business while I'm sitting there;
The Managing Director on square dealing will insist;
He'll help me with my list—of those who won't be missed.

IN SHANGHAI, CHINA.

Shades of Chu Chin Chow! Shanghai is on the eve of having its own radiophone service, America has been in communication with China transmitting from Hillsboro, Oregon, to Shanghai, on an 8,400 metre wave length. The Federal Telegraph Company erected an experimental station there, to the intense delight of John Chinaman. The President of this Company and a party of engineers have been in China for some time and have just completed arrangements for more stations to work in connection with Shanghai.

So long as Shanghai does not broadcast any native music, this city has our permission to go ahead. "Static" doing its worst is only a mild form of Chinese singing, which is, to Western ears, an excruciating sound.

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FOR SALE.

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Amateur has for sale, various apparatus, giving up wireless. Write to F. Poole, 32 Cooraminta St., Brunswick, Victoria.

WIRELESS BOOKS

- Radio for Everybody, by A. Lescaur-bourin. 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 Telegraphy 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.

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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/-;

Cabinets, Ebonite, Bakelite, and All-round Materials.

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

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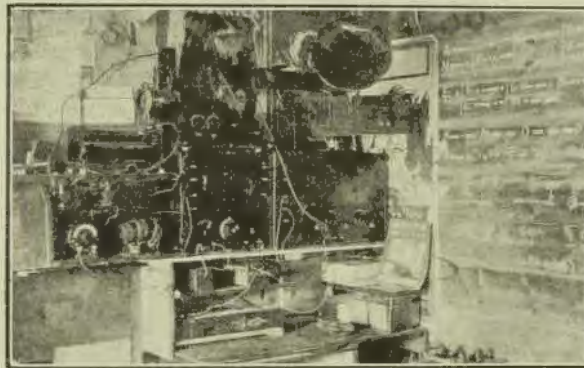
General Manager: J. S. Marks.

All Communications to the Firm.

Victorian Wireless.

By our Special Correspondent

MR. C. R. BIRD'S STATION, REV. MERTON, VICTORIA.



Mr. Bird informs us that he has no difficulty in picking up Sydney experimenters' music on one valve, and wishes to thank N.S.W. transmitters for the excellent music they dispense.
3EV station is 490 miles from Sydney, and 90 miles from Mel-

bourne. For short wave work, Mr. Bird uses a loose coupler, and for long wave, honeycomb coils. Valves are V24's, one detector and three audio frequency. "Wireless Weekly" is, of course, in evidence, being necessary to any well conducted station.

Attitude of Victorian Experimenters towards Broadcasting.

The Broadcast Conference and its outcome has been the subject of considerable debate amongst Victorian experimenters, and the general opinion would seem to be one of indifference. Experimenters in Victoria have had a surfeit of wireless music and many of them are capable of producing a high grade of music by radio themselves.

"Music in the air" is no wonderful novelty, and whilst some interest is shown by the newer members of the radio fraternity the older experimenters merely conjecture whether the class of music sent by the broadcasting stations will reach the standard of American and English companies.

As far as the experimental position in Victoria is concerned, exper-

imenters generally are satisfied with the work done by their representatives at the Conference and consider that if the Government leaves the Wireless Act as it is at present there will be no complaint. The question of wave length is agitating the minds of the many owners of transmitters and it is hoped that broadcasting operations will not interfere with existing arrangements. Much pleasure and appreciation has been expressed by experimenters with regard to the Postmaster General's remarks both at the beginning and conclusion of the Broadcast Conference, and it is considered with a favourably disposed Minister and a kind and sympathetic Controller—this being invariably the manner in which Mr.

J. Malone acts towards experimenters in Victoria as well as in other States, feel assured that their interests are in excellent hands and look forward to a very rosy future despite the much increased radio activity. It is hoped with the accession of a large number of "listeners in" that the ranks of the genuine experimenter will be considerably swelled and matter of distances effectively covered by the low power used.

Very great success has attended the efforts of Victorian experimenters in the reception of signals from the American Pacific coast amateurs, one leading experimenter having logged over 20 stations perfectly. A complete message has also been perfectly logged, and the outcome of the contest is awaited with great interest. The simplicity of the apparatus used by the most successful experimenter has evoked much comment, and it is considered that given suitable tuning instruments, some of the Americans could be received on one valve as has been done in New Zealand.

Melbourne has been suffering from a dearth of radiophone activity, owing to the Trans-Pacific Tests, but since the conclusion of these the air has once again been filled nightly with voice and music. There are ten radiophones working nightly in the metropolitan area and much interesting testing is being carried out. The better class of modulation of experimental stations as compared with some of the professional stations has been noticed by men well qualified to judge, and there is no doubt that the experimenter is contributing efforts of value in this direction.

The Postmaster General has recently approved of the appointment of two Honorary Radio Inspectors from the ranks of experimenters, and Messrs. H. W. Madgwick and C. R. Whitelaw, prominent members of the Victorian Division of the Wireless Institute, are the recipients of this honour. These gentlemen commenced their duties some little time ago, and have already amply demonstrated their worth to the Department. As they are both experimenters of long standing and understand the ways of the radio community they carry out their duties with tact and kindness. They are provided with a simple form of authority from the Department, and their duties consist of inspecting experimental sta-

Continued on page 19



CAMPBIE AND DISTRICT RADIO CLUB.

The 20th general and business meeting of the Campsie and District Radio Club was held in the Club Room, Hawe's Hall, Beamish Street, Campsie, on Wednesday, June 6th, at 8 p.m. Now that the club has obtained its license, it was proposed that the aerial masts be erected on Saturday, 23rd instant.

Mr. Mawson proposed that a question box be inaugurated into the club, which is to be available to all members, and their friends; questions would be answered every meeting night, and a debate of same, so as to obtain the different ideas of the members. Mr. Mawson delivered a very interesting and instructive lecture on "Condensers, their Construction and Capacity." Mr. Mawson explained his subject in very simple detail by diagrams. After his address, Mr. Mawson was accorded a hearty vote of thanks, which was carried by acclamation.

Next meeting of the club will be held on Wednesday, 13th instant, in the Club Room, Hawe's Hall, Beamish Street, Campsie, at 8 p.m.

All inquiries as to membership and to the club's activities, should be addressed to the Hon. Secretary, W. Hughes, "Loch Venachar," Evaline Street, Campsie.

SOCIAL EVENING.

The Campsie and District Radio Club held a social evening on Wednesday, May 30th, in Hawe's Hall, Beamish Street, Campsie, when members and their friends were invited to a very interesting and lengthy programme. Among the visitors were representatives of the Marrickville and Croydon Radio Clubs, to which special invitations were sent.

Light refreshments were served during the evening. It is the club's desire to hold a social evening the last meeting of each month, if the attendance at such are at all encouraging. The idea is to advertise the club, and also to encourage members. The club extends a hearty

welcome to members of other clubs should they care to come along and visit us.

MR. E. T. FISK ENTERTAINED.

On Tuesday, 12th instant, the Council of N.S.W. Division of the Wireless Institute, entertained Mr. Fisk at a luncheon. Mr. Phil Renshaw suitably welcomed the guest. Mr. Fisk, in responding, gave his listeners a most interesting précis of his trip abroad, especially in regard to the British Broadcasting Company's activities. He also discussed the new regulations proposed for broadcasting in Australia.

AUCKLAND WIRELESS SOCIETY.

The Society was brought into being to cater for the needs of a growing circle of amateurs residing in and about Auckland. His Worship the Mayor, J. H. Gunson, Esq., has kindly consented to accept the office as President for the current year. The following officers, assisted by a strong committee, have been elected: Chairman, Mr. H. S. Hartle; Secretary, Mr. E. G. Newman; Treasurer, Mr. A. S. Hill.

A programme of Morse practices and lectures has been drawn up.

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.

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

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

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296 Pitt St., Opp. W. & S. Board.

and a commencement was made on May 2nd, when Mr. G. McE. Salt, of the Physics Department, Auckland University College, gave an interesting and instructive lecture on "Amplification."

Already several interesting evenings have been spent listening in to foreign stations, amongst which NPG, NPL, NPM, NPO, VMG, VPD, and most of the Australian coast stations. Several of our members have been successful in tuning in your Mr. Macdurean's transmissions.

N.S.W. RADIO ASSOCIATION.

The next meeting of delegates to the N.S.W. Radio Association, will be held at Laurel Cafe, Royal Arcade, Sydney, on Wednesday, 20th June, at 8 p.m. sharp. The business of the meeting concerns particularly:

(1) A common club meeting night, so that arrangements may be made with transmitting experimenters not to transmit entertaining records, etc., in order that club members may not be distracted from their club lectures and demonstrations, which have a high educational value.

(2) To arrange for an all club's meeting, to be addressed by a prominent authority on the subject of "Broadcasting and Regulations Thereof."

(3) Discuss the inauguration of the Australian Radio Relay League, as to how it will affect the clubs.

(4) Consider arrangements for visits to Mr. Alec Hector's laboratory, for lectures, etc.

(5) Business generally which may be brought up by delegates.

It is hoped that all the clubs will follow the lead of those already affiliated. Remember, "Union is Strength," and we want a strong association in N.S.W. The Hon. Secretary is Mr. A. Atkinson, of 21 Balfour Road, Kogarah, from whom all information is available.

INSTITUTE OF N.S.W.

It is regretted that Mr. Pisk's address at the general meeting, on Thursday, 14th, will have to be postponed until July meeting, as he has been called back to Melbourne for a further session of the Broadcasting Conference.

The lecture on "Tasmanian Hydro Electric Scheme," will be delivered by Mr. R. Bighy Gregory.

KILLARA RADIO CLUB.

There were 21 present at the second meeting of the Killara Radio Club, 11 new members were enrolled. The President, Mr. Campbell and the Secretary-Treasurer, Mr. Gray, were absent. Dr. Greenwell took the chair.

The minutes of last meeting were read and confirmed.

Dr. Greenwell then read the proposed rules and regulations of the Club which had been drawn up by the committee.

After two alterations had been made they were accepted as the by-laws of the Club.

Mr. Hurl then gave a very interesting talk on the International Signal Code, and arrangements have been made to have buzzer classes for a quarter of an hour before each meeting.

Mr. Matheson, an expert on the code has kindly offered us his services and will give code practice at an interim meeting on Friday, June 8th.

Mr. Gill then gave a lecture on the elementary theory and practice of simple receiving sets.

Mr. Hurl at the close of this slightly added to what Mr. Gill had said.

Meetings are held at 8 p.m. in the Congregational Hall, Arnold St. fortnightly. The next meeting will be held on Friday, June 15th.

Intending members please communicate with Mr. A. H. Gray, Moylough, Florence St., Killara.

DRUMMOYNE RADIO CLUB.

The above club held their eighth general meeting on May 30th at 216 Bridge Rd., Drummoyne, at which there was the usual good attendance of members. There being no special lecture for the evening, the members had a general discussion and some buzzer practice.

The young citizens of the district are spreading the news of the club as four new members joined now making a total of 31.

This club is one of the many that have joined in with the Radio Association and doing their best to help the authorities.

We hope soon to give a few items of reception of wireless music at an entertainment to be held here shortly. The Hon. Secretary, H. G. Lucas, "Colombo," Tavistock St., Drummoyne, will be pleased to give any particulars re the Club.

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British Electric Globes 1/3 each
Electric Irons 20/-

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CROYDON RADIO CLUB.

Last Saturday the Croydon Radio Club enjoyed a wireless concert transmitted by Burwood Radio Club. Other stations heard were 2JM, 2BB and 2DS.

Later in the evening American Stations were heard by using 2LF, one H.F. stage, and a Brown's loud speaker.

The Club meets every Saturday at 7.30 p.m. at "Rockleigh," Lang St., Croydon.

All communications will be answered by the Secretary, G. Maxwell Cutts, "Carwell," Highbury St., Croydon.

AUSTRALIAN MADE 3-COIL MOUNTING.

The 3-coil mounting is solidly constructed in ebonite and brass, and may, therefore, be mounted on either an ebonite or wood panel, without loss in efficiency. If desired, the back plate may be removed and used as a template to fix the spring contacts to your existing panel. Owing to the unique construction, the unsatisfactory practice of using a connecting wire from a fixed to a moving point has been done away with, thus eliminating any possibility of a broken connection. Positive contact is at all times maintained by broad contact strips of brass, steel spring forcing these strips into a steady contact, throughout the full movement of the coil. These springs, while ensuring a good contact, also bear on the pivotal mounting of the plug, holding the coil firmly at the degree of coupling you desire. The plugs are provided with two screws and nuts for bolting to any former or coil, and may easily be adapted for either pancake or honeycomb coils. All plugs are interchangeable and reversible, thus making them available for experimenting with various circuits.

These mountings are manufactured by O. White, 122 Macaulay Rd., Kensington, Melbourne.

TEST WITH NEW ZEALAND.

An amateur wireless test, under the control of the Metropolitan Radio Club, will be carried out between amateurs in New Zealand and Australia, commencing on August 4th, and finishing on August 18th. This test is open to all holders of an experimental licence, both receiving and transmitting. Entry forms are procurable at all local radio shops. Entrance fee, 2/6.

NORTH SYDNEY RADIO CLUB.

The usual weekly meeting of the above Club was held at its building corner of Alfred and High Streets, North Sydney, on Tuesday night last, and the construction of the Club's transmitting panel was further advanced and should be completed at the next meeting.

In view of the interference and jamming by amateurs, which has presented itself of late, the Club took this matter up strongly with its members at a previous meeting, and the importance of the necessary knowledge of the use of wave-meters, their technique and construction was stressed and members were asked to proceed with individual construction of such apparatus for their own stations.

At this meeting those who had prepared their sets brought same along for calibration, preparation of charts and general experimenting—it is thus felt by the Club that its members will now just know where they are in the ether and that risk of interference with other experimenters has been reduced to a minimum.

ILLAWARRA RADIO CLUB.

There was another good attendance at the 24th meeting of the

Club held on 5th inst., when two new members were elected.

After routine business had been disposed of Mr. C. A. Gorman delivered an extremely interesting and enlightening lecture on "Radio Frequency Amplification in Long-Wave Reception." This is a subject to which the lecturer has given a good deal of practical study and attention, and he was thus enabled to give a very thorough and lucid exposition of the various factors involved. Various methods of radio amplification were gone into, including the one using tuned transformers, and also that using all inductance (variometers) and no capacity, as well as many other means. The various important points to be watched in these experiments were dealt with in detail, including the construction of transformers, variometers and other units, and the various methods were well illustrated throughout by circuit diagrams, which were fully described. The lecture had a very practical appeal to members, who were able to obtain quite a lot of very useful data on this subject, and at the conclusion Mr. Gorman was accorded a hearty vote of thanks to which he responded.

Mr. Gorman will continue his lecture on "Radio Frequency Ampli-

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attention" at next meeting, when he will deal with the use of same in short wave reception from 200 metres upwards, and go fully into the constructional details of the apparatus required for this purpose, and from his recent practical experience in this connection the lecture should prove of great interest.

Some proposals are now under consideration by which it is hoped to give the members more club-room facilities, and more frequent opportunities of gathering together. It is proposed that a general business meeting, of which a special lecture will be a feature, shall be held every alternate Tuesday as heretofore, and that the Club-room be available to members every other Tuesday for free and open discussion, questions, testing of sets and apparatus, buzzer practice, work on the Club's set, etc. This will give members an opportunity of meeting once a week, and it is thought will be a great advantage. The new order will come into operation early in the Club's new year (July), and further details will be announced later.

The next meeting of the Club will be held at the Club-room, 75 Montgomery St., Kogarah, on Tuesday, 19th June, at 8 p.m., when Mr. Gorman will continue his lecture on Radio Frequency Amplification on Short Waves. A cordial invitation is extended to all members and others interested, particularly members of other Clubs, to be present on this occasion.

Any information concerning the Club may be obtained from the Secretary, Mr. W. D. Graham, 44 Cameron St., Rockdale, who would be pleased to hear from anyone desiring to become a member of the Club.

LEICHHARDT AND DISTRICT RADIO SOCIETY.

Members of the Leichhardt and District Radio Society held their ninth business meeting on Tuesday, June 5th, at the Club-room, 175 Johnston St., Annandale, when four new members were elected. Several important matters were discussed including that of affiliation with the Radio Association of N.S.W. This was discussed at considerable length and, finally, it was unanimously decided to carry out the affiliation at once. The question of an alteration in the Society's meeting night was also dealt with, but, to enable those absent to express an opinion

on the matter, it was decided to defer a decision until a later meeting. Inquiries regarding the activities of the Society are welcomed, and should be addressed to the Hon. Secretary, Mr. W. J. Zech, 145 Booth St., Annandale.

"WIRELESS FOR ALL."

Wireless men must agree that the decisions arrived at at the Broadcasting Conference recently seem to indicate that before long wireless will be within the reach of all.

The new company, Wireless Supplies Ltd., of 21 Royal Arcade, Sydney, realising the position, has adopted this slogan: "Wireless for All," and they sincerely hope that their conclusions are correct.

Wireless Supplies Ltd. advise us that they are introducing the new "Katak" products, which are manufactured by the Clapp Eastham Company, into Australia. This apparatus has a world-wide reputation for sturdy construction and dependable results. Another line that should be of interest is the famous National Airphone. This is a compact crystal receiver of rugged construction and fitted with the much discussed "Everset Gold Grain Detector."

Wireless Supplies Ltd. are fortunate in having secured the services of a practical man as its manager, in the person of Mr. Raymond Evans.

Pre-war experimenters will remember Mr. Evans under the call sign of XAZ, he having been an ardent experimenter since 1911.

Taking radio up professionally early in the war he joined the civilian service of the Department of the Navy and was for some time stationed at the Wireless Workshops, Randwick, where he gained an insight into the design and construction of modern wireless apparatus. Later he went to New Guinea on installation work, being engaged in the installation of Samarai and the remodelling of Port Moresby Stations.

In the latter part of 1920, Mr. Evans found himself stationed at Garden Island, being engaged in the testing and calibration of wireless apparatus, and electrical instruments in the laboratory attached to the electrical engineers' department.

Readers of Wireless Weekly also may remember him as the writer of several articles, mainly constructional, which appeared in their magazine some little time ago. Sea, Land and Air and Radio News have

also published many of his articles. Like most experimenters he can always find time to talk Radio, and should you happen to be in a similar frame of mind you can find him at 21 Royal Arcade, Sydney.

To the Editor of Wireless Weekly.

Dear Sir,—I read with interest in your last issue a letter written by Mr. E. B. Crocker in which he complained that in a recent article which appeared in the "Sydney Morning Herald" a correspondent who called himself "Amateur" had made some statements regarding genuine experimenters which called for comment. Mr. Crocker stated that the implication in the article in question was that a person who concentrated on wireless telephony was not a genuine experimenter. He also stated that in the article in the "Herald" there was a statement to the effect that the recently formed Relay League realised the above remarks.

I, too, read the article to which Mr. Crocker refers, and cannot for one moment see why or how he can take exception to the statements it contained. To begin with, Mr. Crocker appears to have taken the article merely on its own without associating it with any current events in the wireless world, to have half read it, and then to have rushed into print with some complaint about it. The article was, if I remember rightly, published on the morning of the Broadcasting Conference, and was not a discussion of wireless generally but rather a discussion of what those who attended the Conference would have to bear in mind when arranging for broadcasting. After reviewing the history of broadcasting in other countries and mentioning the difficulties which beset broadcasting in Australia, "Amateur" referred to Mr. Fisk's scheme and said that if the details which were published the previous day regarding it were adopted "it would not be welcomed by a section of the amateurs." "Amateur" then mentioned the experimenters who have devoted much time to a study of wireless and have constructed receivers capable of receiving on all wave lengths. He asked what would be the position of these experimenters. Would they be expected to pay broadcasting fees for all wave lengths? (It must be borne in mind that at the time the article

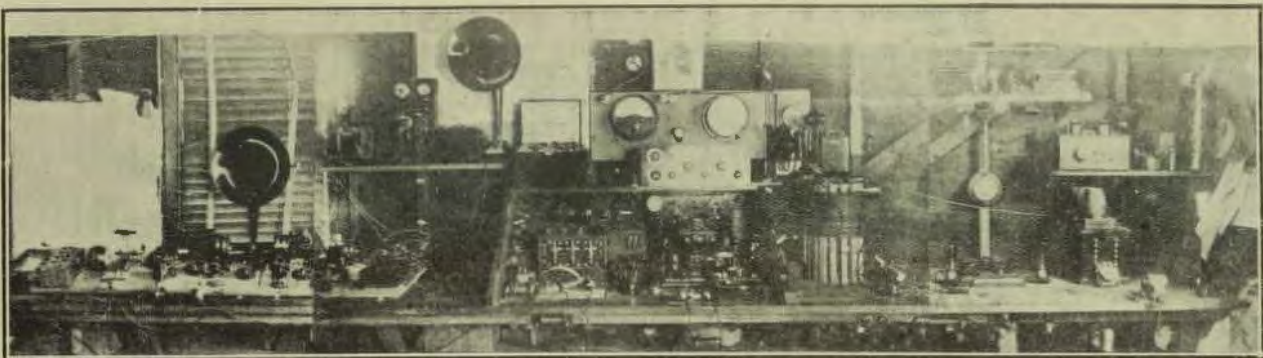
June 16, 1928

WIRELESS WEEKLY

17

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

IN AUSTRALIA



2C.M.

was written no statement regarding the position of the experimenter had been made. Later Mr. Flak pointed out that experimenters' interests would be safeguarded.) Later in the article the writer said, "There are many experimenters who are not interested in wireless telephony except in a casual manner—large numbers of leading experimenters are not at all anxious of receiving telephony realising that it is a pleasant pastime, but that its practical value to them is not great—regarded from the view of the genuine experimenter it is of casual interest only. The recently formed Relay League realised this and its members recognise that if they are to become an asset to the country they must concentrate their efforts on continuous wave telegraphy."

Now, how could any man possibly interpret that as being a statement

to the effect that a man who interests himself in telephony is not a genuine experimenter. The article was not an argument as to who was a genuine experimenter. It was a review of the position of all persons likely to be affected by the broadcasting proposals. Mr. Crocker's contention to the effect that it defined the telephony fan in the manner as suggested in his letter is to my way of thinking ridiculous.

Mr. Crocker then lets his imagination carry him still further and makes a statement to the effect that no such remarks were suggested at the Relay League meeting. He is quite right in one way. No person would be so foolish as to say that a man is not an experimenter simply because he receives telephony. His memory must have failed him sadly, however, when he stated that the League did not

mention the matter. Your issue in which Mr. Crocker's letter appeared supports me and proves his statements to be inaccurate. On page 5, Mr. Crocker will read that Mr. Squires, an American operator, who was the guest of the evening "stressed the necessity for concentration on C.W. Telegraphy, and told members not to waste time 'monkeying' about with 'phone sets.'" You, sir, were at the meeting, and will remember the chorus of "Hear, hear!" which greeted this remark. Methinks in fact that your own choice helped to swell that chorus and also the voice of Mr. Colville, who was chairman. Was Mr. Crocker reading "Q.S. T.," the American League's journal when Mr. Squires spoke or had he forgotten Mr. Squires' remarks when he wrote to you? Furthermore, had he forgotten that somebody (Mr. Charlesworth, I think—

although I may be wrong) said that the experimenter to-day was not worth a snap of the fingers, and that Mr. Crocker argued with him across the table. I am not arguing as to whether the telephony expert is an asset, but I merely quote the above to prove that Mr. Crocker was wrong when he said that the subject was not mentioned at the meeting.

Again, Mr. Crocker quotes "our leading experimenter" to bolster up his criticism. No doubt he refers to Mr. Maclurean. Nobody would be foolish enough to do anything but praise Mr. Mac, and other leading experimenters for their (more or less) excellent transmission, nobody can fail to realise the good work they are doing—but that is not the point. Mr. Crocker dragged in Mr. Maclurean to cloud the issue. Why did he not go further and quote Mr. Mac's views on the matter in "Amateur's" article? Mr. Crocker knows as well as I do that Mr. Maclurean does not care a cuss whether he receives telephony or not. Mr. Mac's concerts charm us, we admire his modulation, we are thankful for the conspicuous absence of his hum, but all the while we realise that his telephony work comprises but a small portion of his wireless labours.

Not Mr. Crocker should have been fair. He should have read the article carefully before he criticised it.

Yours etc.,

"Q.B.N."

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

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NORTHBRIDGE AND DISTRICT WIRELESS EXPERIMENTAL SOCIETY.

The above Society held a well attended dance on Saturday night, the 9th inst., at St. Thomas' Memorial Hall, North Sydney, and during the evening received a programme of wireless music, transmitted by 2LI (Mr. Cook).

The antenna consisted of a single wire 100 ft. long suspended from the roof of the hall to a neighboring tree.

The Society used its own recently constructed 4 valve high frequency amplifying set coupled to its own 4 valve note magnifying set which it also constructed during the preceding week by the Society's members. The result was very satisfactory as regards reception, but noises in the hall caused by an over-anxious audience militated to a great extent against the best sound results being obtained in the hall, but the Society is very confident of further success in future demonstrations.

A magnavox was used and the Society is well pleased with the results it gave.

At present the Society is experimenting with a telephony transmitting set and the interest evinced by its 30 odd members is very keen. The Club-room is very well attended, particularly so on Wednesday evenings, when Mr. Beard, a member of the Technical Committee, conducted his series of lectures. Members come from Chatswood, Willoughby, North Sydney, and Neutral Bay as well as from Northbridge, thus demonstrating the bold wireless telegraphy is gaining on those who desire to assist in experimental phases of wireless by making the subject their pet hobby.

A temporary license to transmit has been granted from the 1st to 16th June, the Station's call sign being 2BP.

Amongst the very keen technical workers of the Society are Messrs. Beard, Forsythe, Larsen (sen.), and Woolridge, who have spent many hours in supervising the construction of the very fine receiving and transmitting sets which the Society now possesses.

Intending members may receive all particulars on application to the Hon. Sec., Mr. A. H. Vincent, of Sailors' Bay Road, or the President, Mr. L. E. Forsythe, at "Hoylake," Sailors' Bay Road, Northbridge, where the Society's Club-room is situated.

Continued from Page 9

Mr. Best asked that each clause be dealt with separately for discussion.

This was done, and the report was considered very satisfactory.

Mr. Marsden said he appreciated the way in which the Institute had come forward to help the League, and moved a motion of appreciation. Mr. Colville supported and seconded the motion.—Carried unanimously.

Mr. Cooke moved, Mr. Maclardy seconded, that the report be received.—Carried unanimously.

Mr. Perry moved that a committee of three be appointed to confer with the Institute in regard to incorporation. Seconded by Mr. Colville.—Carried.

The following were nominated for the sub-committee:

Mr. Colville, moved by Mr. Best, seconded by Mr. Maclardy.

Mr. Marsden, moved by Mr. Cooke, seconded by Mr. Perry.

Mr. Maclardy, moved by Mr. Cooke, seconded by Mr. Colville.

Mr. Best, moved by Mr. Marsden, seconded by Mr. Renshaw.

Mr. Crocker, moved by Mr. Colville, seconded by Mr. Charlesworth.

Mr. McIntyre, moved by Mr. Marsden, seconded by Mr. Perry.

A ballot was taken and the following were elected: Messrs. Colville, Maclardy and Crocker.

Mr. Perry moved that the three members of the same sub-committee draw up rules and regulations for submission to the committee for approval. Mr. Cooke seconded.

Mr. Maclardy moved as an amendment, that some suggestions of Mr. Colville's be read and discussed by the committee, before Mr. Perry's motion was put. The amendment was seconded and carried.

The Chairman then called on Mr. Colville to read some rules and regulations which he had drafted from the constitution of the American Radio Relay League.

Mr. Best spoke on the expenses of administration, and also on the question of membership. He expressed the opinion that full membership should be transmitters, and that they should pay more in fees than those members who only had receivers. The members who operated only receiving apparatus should be classed as associate members.

Mr. Perry's motion was next put before the meeting and carried.

Mr. Cooke moved that only the holders of transmitting and receiving licenses be eligible for full membership and executive officers.

Mr. Best seconded, and the motion was carried.

Mr. Maclardy moved that every member of the League must be a member of a Club or Institute. Mr. Perry seconded.

The Chairman pointed out that the incorporation of the League in the W.I.A. would make every member of the League a member of some status (to be defined later) of the W.I.A.

Mr. Maclardy said he had overlooked this point and withdrew his motion.

Mr. Crocker moved (as an instruction to the sub-committee) that only the holder of an experimental license be eligible for membership at all. Mr. Cooke seconded the motion and was carried.

Mr. Marsden moved that a vote of appreciation of one of the youngest members of the League, Mr. Jack Davla, on his success in transmitting by voice to Melbourne, using 5 watts. Mr. Cooke seconded and Messrs. Best and Colville supported. The motion was carried by acclamation.

The Chairman expressed that a management committee should be appointed to arrange a working scheme.

Mr. Cooke moved that Mr. Colville be asked to put forward a definite scheme of management at the next committee meeting. Mr. Maclardy seconded the motion and was carried.

Mr. Perry donated a map of the city and suburbs for the use of the Organising Secretary.

This concluded the business for the meeting, which closed at 10.30 p.m.

Victorian Wireless

Continued from page 12.

tions and reporting irregularities. They have not the power of the stipendiary inspectors, naturally, but there is no doubt that illegal radio practices will be kept down and experimental work thus considerably facilitated. Mr. C. R. Whitelaw, whose station is at Mooroolbark, Victoria, sends out very slow Morse signals on Sunday mornings to enable beginners to get practice, and this has been availed of by many experimenters.

Victorian Notes.

Many Radio Clubs are being organised in this State and the Victorian Division of the Wireless Institute of Australia realising that union is strength, have been early afield and arrangements are now well in hand for the affiliation of the various Clubs forming in suburban centres. Geelong, Brighton and Malvern and Box Hill—all of which are prosperous and influential centres—have agreed to affiliate with the Victorian Division of the Institute, and machinery is now being devised to give these Clubs equal representation on a Central Council for the State. A plan of organisation very similar to the Returned Sailors and Soldiers' League is now under consideration, and will probably be adopted with certain necessary modifications. Under this plan the whole of Victoria will be able to act—should an occasion arise—as one body, and to date, the relationship of the various Clubs with the Institute has been most cordial. The whole plan is in short a policy of decentralisation which will preserve the entity of each individual Club, but which will bind the units into one collective body.

A series of relaying tests is now being organised in Melbourne by several amateurs who have been prominently identified with many demonstrations carried out in Victoria, and it is hoped that success will follow this ambitious plan. Several transmitters have successfully worked both ways with a New Zealand station whilst using only five watts of power, and stations have also been worked in Adelaide. This test will be carried out by all the leading transmitters in conjunction and should prove very instructive in the experimental section of the radio community will become a very powerful body.

It is felt that the status of the experimenter must be well defined and it is realised that a licensee must possess definite qualifications and be engaged in genuine experiment.

It is realised that properly conducted broadcasting will prove a very great boon, and experimenters are willing to co-operate with the companies operating to ensure that each party shall carry on without interference.

The development of regulations is being watched with keen interest, and if necessary the rights of experimenters in Victoria will be fought for.

Leading Victorian experimenters have expressed their entire approval of the action of the Wireless Institute delegates at the Conference, and most Victorians feel that the incidence of broadcasting will not curtail their activities in the slightest.



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Continued from page 5

agencies for distribution. But that is a matter for a business arrangement, and their rights should be adequately safeguarded. I do not suggest that the press should have a representative upon the committee, but certainly its interests should be kept in mind.

Mr. Wilson: I have very much pleasure in asking leave to amend my motion by adding to it the names of Mr. Just, Mr. Court and Mr. Holtz. I thoroughly appreciate what Mr. Holtz has just said. I spent my early life upon the press, and I have a very warm spot in my heart for it. I think that it should be represented upon the committee. (Motion amended accordingly.)

Mr. Holtz: I did not want that at all.

Mr. Wilson: Mr. Holtz will readily understand that the interests of the press cannot be better served than by those who are actively engaged upon it. I would further suggest that if there are any other special interests which require to be protected, regulations in respect of them should be framed and sent along to the committee.

Mr. Holtz: I appreciate the suggestion which has just been made, but after all, I am a very busy man, and I am not particularly concerned with the details which the committee will discuss. If the mover and seconded of the motion will act upon the suggestion which has been made, that will suffice.

Mr. Wilson: We shall put you upon the committee. Then, if you can manage to squeeze a few minutes out of your time to come along to the committee meetings, we shall be very much obliged.

Motion, as amended, agreed to.

The conference, at 4.15 p.m., adjourned until the next day, Friday, May 25, at 2.30 p.m.

The second day's proceedings will be continued next week.

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June 15, 1923.

WIRELESS WEEKLY

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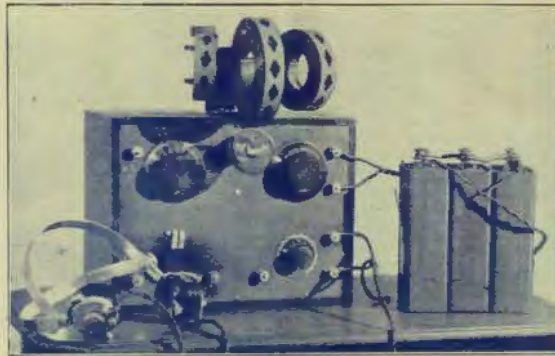
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