

WIRELESS WEEKLY

July 6, 1923.

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# **GRACE BROS. LTD.**

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Vol. 2

July 6, 1923.

No. 27

## THAT HERRING.

### HAVE THE EXPERIMENTERS BEEN TRICKED?

We are told on good authority that the experimenter will have a maximum wave length of 200 metres to work on.

If this is correct, then all the promises that were given both before, at, and since the Broadcasting Conference have been broken.

A number of prominent men, who have a say in wireless matters have from time to time been asked, "What wave length

will the experimenter be granted?" and they have invariably answered the question by drawing a herring across the trail in the statement that "the experimenter would be protected."

If 200 metres has been allotted for experimental transmission, then the experimenter has been tricked, and we call on the Postmaster General to honour his promises and give the experimenter his due, which is nothing less than 280 metres.

### The Roster.

Mr. R. C. Marsden (2JM) has given up the Roster. Mr. Marsden deserves the thanks of all transmitters for the time and trouble he has gone to while keeping the Roster to make it a success.

Wireless Weekly is now conducting the Roster, and will be pleased if transmitters will kindly ring up and book their times. Bing Redfern 732 (9 a.m. till 5.30 p.m.).

We desire if suitable to transmitters, to book times from Wednesday to Wednesday.

Mr. MacLardy (3HP) hopes to have his private telephone installed by next week, where he can be communicated with after 7 p.m.

#### TRANSMITTERS ON 250 METRES

We will be pleased if transmitters on 250 metres will notify us of the times they are transmitting each week. We are continually receiving requests from listeners-in.

#### ROSTER.

Week ending July 8th.

Monday: 7.30 to 8, 2ER; 8 to 8.30, 2UW; 8.30 to 9, 2GR; 9 to 9.30, 2ZG; 9.30 to 10, 2DS.

Tuesday: 7.30 to 8, 2UW; 8 to

8.30, 2JM; 8.30 to 9, 2GR.

Wednesday: 7.30 to 8, 2BB; 8 to 8.30, 2UW; 8.30 to 9, 2GR; 9 to 9.30, 2ZG.

Thursday: 7.30 to 8, 2GR; 8 to 8.30, 2ER; 8.30 to 9, 2GR; 9 to 9.30, 2JM; 9.30 to 10, 2ZG.

Friday: 7.30 to 8, 2BB; 8 to 8.30, 2DS; 9 to 9.30, 2UW; 9.30 to 10, 2ZG.

Saturday: 8 to 8.30, 2GR; 8.30 to 9, 2BB; 9 to 9.30, 2GR; 9.30 to 10, 2ZG.

Sunday: 7 to 8, 2KO; 8 to 9, 2GR; 9 to 10, 2JM.

2 WV transmits every day between 12 and 1.30, on 200 metres.


  
*The Australian Broadcasting Conference.*
  
 VERBATIM REPORT CONTINUED.

SECOND DAY.

Mr. Holloway: Who is to prove that it is taken from a published source?

Mr. Holtz: That has to be proved when it occurs.

Mr. Cromie: If I buy a penny half penny "Herald," am I entitled to telephone the information to my friends?

Mr. Holtz: You may do so, but if you charge for it, or receive payment, you are stealing news from the "Herald."

Motion agreed to.  
The Chairman: The final motion is one of vital importance. It is:—

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

Mr. Court: I have two amplifying amendments to attach to that. The first is:—

That a definite band of wave-lengths be allocated to experimental stations, and that such band shall be kept inviolate from the operation of broadcasting services.

Mr. Maddick: I second the amendment.

Mr. Fisk: I think that what Mr. Court has put forward deserves some consideration, but that consideration is a matter for the Government. It has been laid down here that a number of wave-lengths shall be allocated for broadcasting purposes, and we have not stipulated what these shall be. We have laid down the manner in which they shall be arrived at, leaving the Government free to consider all other interests which are entitled to be considered in regard to the wave-lengths available for use.

Mr. Court: Nevertheless, I would like to see that amendment incorporated in the recommendation

submitted to the Government. I desire the department concerned to have it brought under their notice. We wish a band to be kept absolutely inviolate. No matter where it is, we want to be assured that it belongs to us, and that no powerful company can take it away.

Mr. Collas: What about the Government?

Mr. Court: I cannot see how they could do it.

The Chairman: There must be a control.

Mr. Court: I want to stress the fact that we have not millions of pounds of capital behind us, but we are about three thousand or more strong in this Commonwealth, and deserve a hearing. We have spent thousands of pounds in the accumulation of apparatus, and have made contributions to the progress of wireless. We are not actually an income producing asset to the Commonwealth, but we have our place, as we proved in the late war. Therefore, we want consideration. I do not wish to leave anything to chance. Then I have a further amendment, as follows:—

That the experimental licenses shall not in any way come under the provisions and conditions of the broadcasting regulations. We do not want the broadcasting company to embody anything in its regulations which will apply to us. We prefer that the control be left entirely to the Government, and that no recommendations from this Conference shall jeopardise our position.

Mr. Fisk: I do not think anyone denies that good and valuable work has been done by the experimenter. I am a friend of the experimenter, and I want to see that good work continued. But for a definite band to be allotted, as suggested, and never used for any other purpose, would tend, in my opinion, to create all sorts of problems and difficulties. For instance, I might just as logically demand that certain bands be reserved for all time for the exclusive use of my company; the

shipowners might make a similar demand, and the broadcasting people might also make a far-reaching request. We are anxious to protect the interests of bona fide experimenters, and to give them as much assistance as possible. I suggest to Mr. Court that it would not be right to be present or future experimenters to a particular wave-band. My idea is that the experimenter should be allowed a range covering practically all the wave-lengths, and should be free to experiment within that range providing he does not interfere with the service to the public.

The Chairman: That is very fair.  
Mr. Court: If we get that we will be thoroughly satisfied.

The Chairman: Let it go at that.  
Mr. Fisk: The principle should be affirmed, and I think it is affirmed in the motion which provides:—

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

That motion does not limit the wave-lengths that an experimenter can use, but only requires that he shall be engaged in bona fide experimental work. Genuine experimenters need have no fear that their interests will not be adequately safeguarded.

Mr. Court: Mr. Fisk certainly deserves our thanks for the support he has given us in the past. But this is not the first Conference of the kind I have attended, and my experience tells me that the motion as it stands may be given many and varied interpretations.

Mr. Fisk: The Government will have control.

Mr. Court: I want to make it perfectly clear that we do not ask the Conference to say here and now

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## WIRELESS WEEKLY

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that the experimenter is to have a definite hand, but we do ask for some protection in the future. We want to be on all fours with a small broadcasting company. If that company applies for a wave band of 400 to 500 we should be able to apply for a band of say 200 to 250. I think the motion should be amended to read that provision shall be made for a band of wave lengths for the experimenter to be held inviolate from the operation of broadcasting services.

Mr. Collins: As a sympathiser with the experimental side of radio work I urge Mr. Court not to press this matter too far. I can assure him that the whole of our sympathies go to the experimenters, who have done great work in the past, and of whom we expect even bigger things. But to ask for a band of wave lengths is to seek something that we cannot conscientiously recommend, because we do not know exactly what the Government in its wisdom will enact. However, Mr. Malone is listening to this discussion, and I feel certain that in advising the Minister he will keep particularly in mind the interests of the experimenters. I would therefore ask Mr. Court not to press the matter, but to reply upon the motion put forward.

The Chairman: I think Mr. Court should be content with that assurance.

Mr. Court: I am prepared to withdraw both my suggestions in view of the assurance given by Mr. Fisk and Mr. Collins; I trust that the sympathy expressed now will be even more strongly manifested in the future.

Motion agreed to.

Mr. Wiles: I have been asked to draw attention to the possibility of homing pigeons being exterminated if provision for their protection is not made in connection with the erection of aerials. Members of the Conference may laugh, but the men who keep homing pigeons are more numerous than the men who have sets for listening and otherwise. Pigeon owners value their birds just as much as experimenters value their apparatus. I move:

That in the erection of aerials provision be made for the protection of homing pigeons.

During the war, as the result of cable messages, the military went around to homing pigeon owners at night and commandeered their pigeons, and ships left Australia car-

rying large consignments of birds for service at the war zones. That illustrates how necessary it is to safeguard the pigeons from damage through aerials. I understand that in England it is the practice to put corks on the aerials; it is a very simple operation and costs practically nothing. It must be remembered that homing pigeons are more valuable from a monetary point of view than the wireless apparatus we have at the present time.

Mr. Mingay: What about loop aeralals?

Mr. Collins: There is more in the suggestion put forward by Mr. Wiles than would appear on the surface. I suggest that you, Mr. Chairman, request Mr. Malone to inquire into the matter. This Conference is not in a position to come to a decision with regard to it, because there are many facts connected with the practice in England with which we are not acquainted.

Mr. Court: The single wire aerial is not so inconspicuous here as it may be in England. I myself bear a scar from a single wire, although it was not an aerial. I was riding a horse when the wire caught me under the chin and pulled me off. If it had been a wireless aerial I would have seen it half a mile off. My own aerial is easily visible for a mile and a half. I would say that if a pigeon is so short-sighted as not to notice the aerial, that is its own funeral. The modern wireless aerial is on the antennae system, and is visible for a considerable distance. My own aerial has been up for many years, and I have never known birds to fly into it, but dozens of pigeons have roosted upon it, proving conclusively, that they must have seen it. In England the single wire system is in almost universal use in connection with experimental broadcasting stations, and it certainly is not as clearly visible from a distance as the antennae system.

Mr. Boyd: Telephone, telegraph, and electric supply wires are not strung with corks every 18 inches.

Mr. Wiles: No; but the aeralals will probably be placed upon buildings.

Mr. Boyd: Not necessarily.

Mr. Wiles: It is only asked that reasonable provision be made for the protection of homing pigeons. It is not suggested that a man who put his aeralals only as high as a

clothes line should string corks or anything else upon it.

The Chairman: The motion has not been seconded and it therefore lapses.

Mr. Fisk: I have pleasure in proposing that a hearty and sincere vote of thanks be accorded to the Chairman for the work he has done, and the time he has spent in connection with this Conference which has for its object the creation in Australia of a broadcasting service of a more advanced nature than the services of other countries.

Mr. Boyd: I second the motion. Motion agreed to.

At this stage the Postmaster-General (Mr. Gibson) entered the Conference Chamber.

The Chairman: Mr. Gibson, I am very proud to tell you that after a considerable amount of brain effort on the part of the delegates present, some broadcasting regulations have been drawn up, which are respectfully submitted to you with the fervent hope that you will give them favourable consideration. I can assure you that since we last saw you we have been continually at work in bringing these suggestions as near perfection as possible. We do not say that we have reached perfection, but we have drawn up some regulations which we think are unique, and particularly applicable to this grand Commonwealth. I have pleasure in presenting these to you, and, in doing so, it is my privilege to move a cordial vote of thanks to you for the free hand which you have given us in this matter. We feel that we are under a great debt of gratitude to you for the confidence which you have placed in us.

Mr. Cooke: I second that motion.

Mr. Wilson: I have very much pleasure in supporting this vote of thanks to the Minister. We have been given consideration from start to finish, and have not been hampered in any way. The Minister has said to us: "It is your business; go to it, and tell us what you want." If we are given what we have asked, the Minister must certainly be acquitted of any charge of not giving us a chance to say what we wanted. As has been said, the suggestions are not perfect, but we hope that they are the nucleus of a working arrangement, and that not only the broadcasting services, but the general public will some day appreciate the excellent opportu-

Continued on Page 20

# WIRELESS

*An Interesting Lecture by F. Basil Cooke, F.R.A.S., before the  
Real Estate Association of N.S.W.*

Mr. Chairman, Ladies and Gentlemen. — Before your Chairman addressed you this evening you heard an item of music sent by wireless from Paling's Concert Hall, and received on a single wire going from here to the top of the Hotel Australia. I propose to briefly explain how that music was sent and carried to here and how we were able to amplify it to be heard by you all. Before attempting to do so however, I wish to take this opportunity of expressing my appreciation to Paling's who have very kindly arranged a concert for us, and to the New Systems Telephone Co., for doing the transmission.

Your Association is very wise in beginning to take an interest in wireless, because if Australia follows the rest of the world, your future clients will be asking for a house with an aerial and will seek advice upon aerial construction from you. One sees daily in English and American papers advertisements reading something like this: "Wanted, Bungalow, with Wireless Aerial," or in the "to let" column, "Up-to-date flat, 5 rooms, etc., wireless installed." We will shortly be seeing the same class of advertisement.

Before proceeding, I should like to state that I am entirely in your hands, and would welcome any questions or suggestions. I want to give you a few outlines of what is occurring in the wireless world, and to-night or any other time I am always available to render you any assistance in my power.

In the first place you should know that there is nothing dangerous or mysterious about wireless. The science has suddenly sprung into prominence as filling a long felt want, but it is merely a practical application of ordinary electrical principles. Some of you probably remember when the first telephone was installed, and what a wonder it was, but now it is merely a necessary adjunct to our

daily occupations. The world has accepted it and has grown with it until it is an absolute necessity. Wireless is about to go through the same stage. At present it is a novelty, but I venture to say that in a few years it will have become an absolute necessity. If my conjecture is correct, then it behoves us all as business men to become accustomed to it and forestall time by trying to utilise its benefits now and not wait until we are forced to.

Let me now give you a brief lecture on the fundamental principles governing the operation of wireless. Imagine a pool of water and drop a small pebble in the centre. Little waves immediately commence to extend outward, each wave becoming feebler and feebler until finally they disappear. I wonder if you have ever noticed that the distance between any two successive waves is constant. That is if we measure the distance between the crests of two successive waves that will be the same distance between any other two successive waves. This distance is called the wave length. Let us now leave our water for a moment and look farther afield. If we look up at the sky on a clear night we see little points of light which we call the stars. The stars as you know are many billions of miles from us and consequently their light has to be conveyed to us. The medium which brings the light we call ether. The light comes in the form of waves of ether. The great heat of these stars agitates the ether and sets up waves which travel outwards until they finally reach us. In this case the waves travel at the stupendous rate of 186,000,000 miles per second and the wave length of the light is only a few millionths part of an inch, and from some of the stars it takes hundreds of years for the light to reach us.

We now come to a very interest-

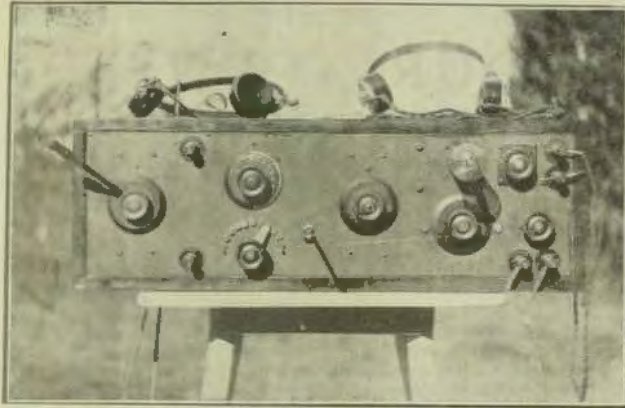
ing fact, and that is if we analyse the waves reaching us we find there are a number of different waves all together, all of a different wave length. If we take one single wave and cut out the others we get heat, and so on. The combined effect is simply white light and heat.

Now then, we find that the difference between different colors is only a difference of wave length. When the wave length is just too great for our eye to perceive it, we get heat. When the wave length is just too small to be seen we get ultra-violet rays and X rays, which we all know are used so much in medical science. When the wave length reaches about one inch we begin to get wireless waves.

From the foregoing, therefore, you see that the only difference between wireless waves and light waves is the difference in wave length. The wireless band extends to about 5 miles or so. After that we get into another sphere which has not yet been explored.

I would like you to allow me here to digress and introduce another term called resonance, as this effect plays such a very important part in all branches of physics including wireless.

Suppose you have a board supported at one end counter; ever principle like a spring board. Now you all know if you want that board to vibrate to its maximum you jump on it at regular intervals until it finally breaks. Again suppose you have a very heavy pendulum like a huge piece of stone at the end of a crane. If you desire to set this into vibration you must push it always at a definite time until it behaves as you wish. The same principle is applied to a swing. In the two examples mentioned, you know if you jump or push at any odd times you will not produce the desired result. The effect of applying a small force regularly to a vibrat-



Mr. E. Norris, 4CK, Toowoomba, Queensland.

log body in time with its natural period of vibration is called the principle of resonance. Resonant effects are many and varied. I have seen a wine glass shattered to powder by a violinist bowing a certain note which happened to be in resonance with the wine glass. Further, if any of you have sufficient time and patience you could fall the Town Hall with a pea shooter by shooting peas at it in resonance with its natural period of vibration. I propose now to show you a couple of experiments in resonance which I feel sure will make this matter quite clear to you.

Returning now to wireless, the receiving station is so arranged that it is in resonance with the transmitter. In this case the maximum results will be attained, and all stations sending on other wave lengths will have very little effect. You thus see how it is that a receiving station can hear the transmitter he desires, to the exclusion of all others. Before concluding I wish to emphasise the importance wireless is going to play in the future home life of Australia, and you as real estate men must embrace this new idea and incorporate it in your future activities. The embryo landlord naturally comes under your attention, and if we interpret the signs of the times correctly you must realise that your future clients are going to ask for suitable

sights from a wireless point of view. As you are called upon more and more to consider the wireless aspect you will find it necessary to know something about this fascinating subject, and now is the time to begin.

PEACE TIME "FRIGHTFULNESS."

Although any number of factories in and around Berlin are actively engaged in making parts or even complete receiving sets, radio "fans" in Germany are few and

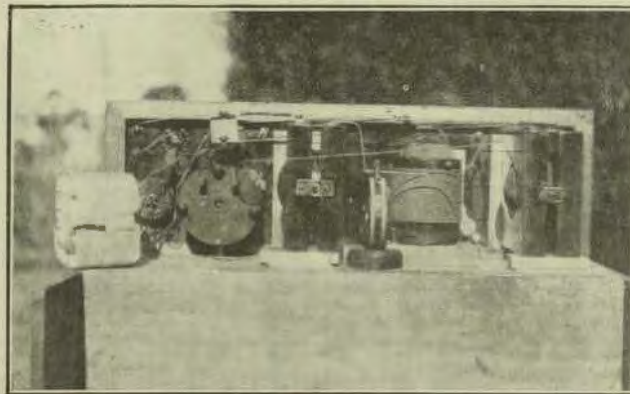
far between. Even the manufacturers are hampered, for vacuum tubes are almost unobtainable, and all or nearly all the receiving sets are operated with crystal detectors. The German Federal Post Office Department, which controls all the commercial stations, has also supreme command over any private installations, which they themselves put up and keep in order. Only in exceptional cases is the private individual allowed to erect his own aerial or plant, and then he has to get a licence from the Post Office Department. The fee for this varies according to the size of the installation, but the minimum is 2,000 marks per annum. This makes it a luxury beyond the man in the street; but besides the cost all sorts of entirely unnecessary and irksome restrictions are placed upon the would-be owner of a radio telephony apparatus.

ROUND THE RADIO WORLD.

All things come to him who owns a receiving set. Art, science, music, knowledge of every kind, are included in the more or less blind bargain to which every radiophan enters when he adjusts his valves.

FOR SALE

Single Coil Honeycomb RECEIVING SET, without phones, 7/6. Wave-length 450-700 metres. A Morris, 38 Lochner Street, Hobart, Tasmania.



# MAKE YOUR OWN

## The "How" and "Why" of the Telephone Receiver.

(By E. Joseph)

Amongst the thousands of experimenters and listeners in at radiotelegraphy and telephony, how many are there, we wonder, who have a clear conception of how and why their telephone receivers are able to emit sounds of a predetermined pitch, and for a predetermined length of time?

The telephone receiver is a wonderful piece of apparatus, wonderful in its simplicity, its sensitivity and its permanence of design.

In construction it is amongst the simplest of all pieces of electrical apparatus. Its sensitivity is marvellous, far exceeding that of the most sensitive galvanometers. The latter can only be used in an electrical laboratory, specially situated so as to be far removed from numerous artificially produced disturbing effects, and is even then subject to similar disturbances produced naturally.

The telephone receiver, however, is a robust piece of apparatus, immune in itself from practically all disturbances, or interference with the proper performance of its duties, capable of being transported from place to place with the certainty of giving consistent results. It will give audible evidence of the existence of a current as small as one six thousand millionth of an ampere.

$$\frac{1}{6,000,000,000} = 166 \times 10^{-9} \text{ ampere}$$

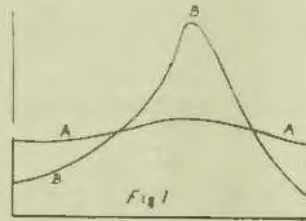
Apart from a few special designs, such as Brown's, Baldwin's, and the latest conception, the Magnavox receiver, it has suffered no radical modification in design since its invention by Dr. Alexander Graham Bell. The dimensions and shape of its parts have been altered, but all the principal features of Bell's telephone are retained to-day almost in their original form.

An examination of a telephone receiver will indicate that it consists of a permanent magnet, two small coils of insulated copper wire wound on the poles of the magnet, or on soft iron extensions of them, a thin iron diaphragm or disc, and a case to contain and protect these parts and to carry the terminals and other external fittings, these latter

is only feebly damped has only a small range of frequency of vibration over which it may be used with a fair degree of sensitivity. That is, while it will give a large response to impulses tending to set it into vibration at its natural frequency, it gives a very small response to impulses somewhat removed from this frequency, and as it is the vibrations of the diaphragm which produce sound, if the impulses are able to produce only small movements only a feeble sound is heard.

As we may say, we shall have a "monotone" telephone receiver or one responsive to sounds of one particular pitch only.

Diagram 1 illustrates this. Curve A may be taken as representing the behaviour of an ordinary strongly damped diaphragm, and curve B that of a feebly damped or "monotone" diaphragm. The vertical distance of a point on the curves from the base is a measure of the strength or amplitude of the vibration produced by an impulse of constant strength having a frequency indicated by the horizontal distances. Note the great height of the "peak" of the curve B at its natural frequency, indicating great sensitivity, but note also how rapidly



consisting only of means of holding the receiver in the desired position.

Its action must be considered from two points of view, the mechanical and the electrical.

As regards the former, the diaphragm which nearly, but not quite, touches the magnet poles, constitutes a body possessing mass and elasticity, and is therefore capable of free vibration at a rate or frequency determined by the ratio of these quantities. It is therefore a "tuned" and in some cases a "tunable" body. Due, however, to its large area compelling it to move a large body of air as it vibrates, it is very considerably "damped," and, like all circuits and apparatus with much damping its tuning is therefore not very sharp, and its sensitivity at its natural frequency is not so great as it would be in the absence of damping. This, however, is not a disadvantage, rather the reverse in fact. A diaphragm which

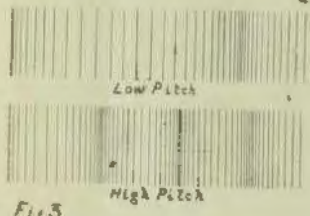


idly the curve "falls away" as this frequency is departed from. Notice that curve A has, at the natural frequency, only about half the amplitude of curve B, indicating that the vibrations of the ordin-



any diaphragm are only about half as great as those of a monotone telephone for the same impulse. Again note that in the case of curve A, considerable departures from the natural frequency may be made without seriously altering the amount of vibration.

A telephone diaphragm having a curve like B—not, of course, being bent or dished, but having its behaviour represented on paper by such a curve—would give very fine results if used to receive signals



from a spark transmitter working with a spark frequency agreeing with its natural frequency, or on a continuous wave receiver in which the "beat" frequency agrees with it.

Clearly, however, B would be useless for the reproduction of speech or music because they consist of complex vibrations, made up of frequencies varying roughly from 100 to 3000 or 4000 per second, and the reproduction of speech or music consists of the exact duplication of both the frequency and the amplitude of the sound made at the transmitter.

The conclusion we must come to is that increasing the damping causes a more faithful reproduction of the sounds, but a decrease in the volume.

It is necessary to decide what shall be the natural frequency of the diaphragm. The figure must lie between the limits given above and should be near the mean frequency of audibility. Physicists and telephone engineers have decided that a value of 800 to 1000 per second gives the best results. This can be attained either with a small and thin diaphragm or with a larger and thicker one.

The smaller the diaphragm, the more sensitive does it become to feeble impulses, but the sooner does it reach the limit of volume of sound it may produce, for the diaphragm when vibrating must be

come dished first in one direction and then in the other, and the resistance to "dishing" increases very rapidly as the amount of "dishing" is increased. Let diagram 2 represent a diaphragm seen "edgewise." Normally it lies flat as at A, a certain impulse causes it to vibrate between limits, BB, but doubling the strength of impulse does not double the distance between A and B. Even four times the strength will not double it. We see, therefore, that to give large volumes of sound we must use a larger diaphragm, which then fails to respond satisfactorily to weak impulses.

To listen to the weak signals from a distant station, a small diaphragm is the better, while to permit an audience to listen to a radio concert we must "amplify," and then use a large diaphragm to utilise the more powerful impulses then available.

Why does the movement of the diaphragm produce sound?

Sound consists of recurring impulses or pulsations of air impinging upon the drum of the ear, that is it consists of a wave motion in the air, which, however, differs from

wave motion of water, or from electro-magnetic (or light) waves in that sound consists of a wave of compression and rarefaction, of a "longitudinal" movement of the particles of air in a direction parallel to the path in which the sound travels, while water waves consist in "transverse" motion, or motion

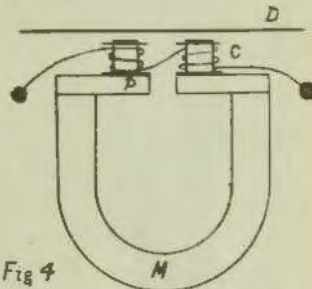


Fig 4

of the particles at right angles to the direction of travel, as also do light and electro magnetic waves. Waves in water, however, consist in motion of the particles in a vertical direction only, but light waves usually—but not always—consist of

# Radio.

**GUIDE and Instruction Book**

This is a unique book which all progressive Radio Experimenters should have.

If you want to know where to get the right apparatus, if you want to know how to construct a set, if you want to know what it will cost:

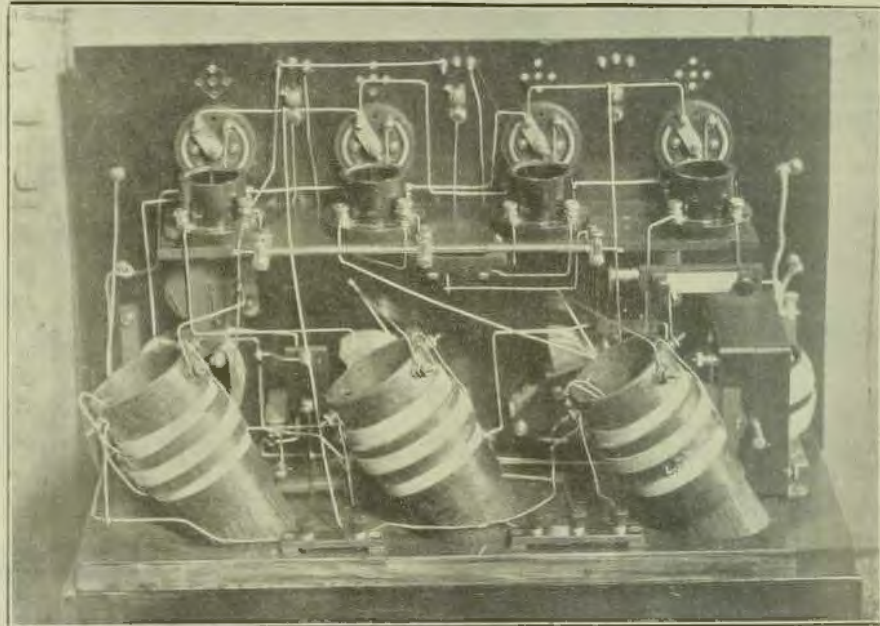
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### The Neutrodyne Receiver



A contemporary recently published a Photo. of American origin, showing the Neutrodyne Receiver. The above Photograph shows a Neutrodyne Receiver built by Mr. Chas. MacLurean (2CM), using the same directions as published in Wireless Weekly, Vol. 2, No. 25 (22/6/23). Mr. MacLurean speaks glowingly of the results obtained.

motions in all directions at right angles to the direction of propagation.

The subject of wave motion is a very fascinating one, but it cannot be dealt with here and now. The author hopes at a later date to say something on the matter.

Diagram 3 illustrates two imaginary views of a wave of sound—of one pitch only—emanating from a source A. If we could see the air and its motions we should see in a section of it the layers approaching and receding from each other as at B and C. That is, the layers would be varying in distance from their neighbours, and this variation would be regularly propagated outwards from A.

When a telephone diaphragm vibrates it imparts to the air in its

vicinity small pushes and pulls which are immediately transmitted to layers lying further out, and so the conditions of diagram 3 are set up. These variations in air pressure finally enter the ear and affect the drum.

Sound travels with different velocity in different mediums. In air, with which alone we are at the moment concerned, it travels approximately 1100 feet in one second. Its wave-length is then given by dividing 1100 feet by the frequency. This is indicated by the length  $\lambda$  in diagram 3. The frequency is given by dividing 1100 by this length  $\lambda$ .

The "pitch" of a sound is determined by its wave-length or frequency, while its volume is controlled by the degree of expansion and contraction of air. At the dia-

phragm these are represented thus: The pitch by the rate at which the diaphragm vibrates, that is by its frequency, and the volume by the amplitude of the vibrations.

A sound may be simple or complex. It may consist of vibrations of one frequency only, or of a combination of frequencies any or all of which may be varying at any time both in number and magnitude.

In transmitting intelligence electrically, whether with or without wires, we cause by some means, into which space will not permit us to enter, a current of electricity to change in value (or in value and direction) so that these changes if plotted as a curve will agree as closely as possible with a curve representing the sound

producing or controlling them. These currents are, through a more or less complex chain of apparatus, caused to pass—or to control—another current passing through the coils on the poles of the receiver illustrated in diagram 4, where M is the magnet, PP the poles, CC the coils, and D the dia-

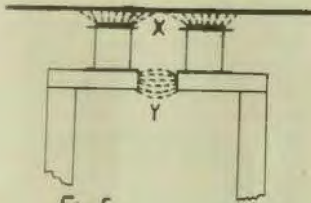
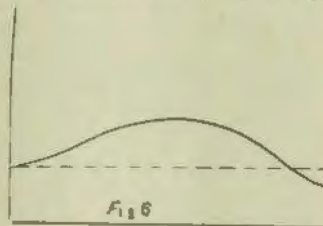


Fig 5

phragm. The diaphragm is normally attracted towards the magnet, which, of course, has "lines of force" in the space between and near its poles. Those—or rather a few of them—are indicated in diagram 5. The lines marked X pass from pole to pole via the diaphragm, and are the cause of the attraction. Those marked Y pass across in space. The pull on the diaphragm will depend upon the value of X. In any permanent magnet the total number of magnetic lines X plus Y is practically constant. The current passing through the coils will exert a magnetic effect. If the cur-

rent varies in value only, but is constant in direction, it causes a X and Y, due to the varying assistance, or resistance offered to the



passage of the lines through the iron in the coils. If the current varies in value and direction, there is a varying assistance and resistance, the final effect in either case being to cause a variation in the pull on the diaphragm agreeing with the variations in the current. The curve representing the movements of the diaphragm is therefore a more or less exact copy of that representing the sounds primarily producing or controlling them, and similar air vibrations are set up to affect the ear.

THEY "WANT SOME MONEY."

The very latest form of royalty for musical composers and copyright owners is this. The American Society of Composers, Authors,

and Publishers have decided against broadcasting songs and selections free. They are fixing a scale of fees to be paid by all stations from whence concerts are given. Ranging from two hundred and fifty dollars to double that amount, the charges will vary according to the location and status of the station. This applies only to copyrighted songs and music, but as most people like to be up-to-date, it seems as though there's nothing to be done but pay up and look pleasant.

TRANS-OCEANIC BROADCASTING.

No longer a possibility but a fact is trans-oceanic broadcasting these days. Last year, in November to be exact, the Vice-President of the Radio Corporation of America, in the course of an address he gave, prophesied that in time to come the inhabitants of one continent would be able to "listen-in" to broadcasting from another continent. In less than twenty-four hours the forecast was fulfilled! The feat alone is surprising enough, but its future developments are boundless. Transatlantic broadcasts are now an accomplished fact, and it will soon no longer be absolutely necessary for artists, statesmen, potentates and princes to spend their time making world tours.

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## VICTORIAN NOTES

*By our Special Representative*

In connection with the Ideal Homes Exhibition and the associated exhibits experimenters expected to see some of the latest wireless gear demonstrated in connection with the series of concerts sent out from various sources. They were disappointed, however, as only three firms were represented, and only one of those gave satisfaction to a lay audience, and his music was entirely supplied by an amateur radiophone. Much disgust was expressed by lay members of the public at the queer sounds issuing from some of the loud-speaking devices, weird squawks and howls being freely mingled with the music (7).

Another feature was the very poor quality of the modulation from various professional sources. In short the radio part of the exhibition was a triumph for the local experimenters whose music transmissions were freely availed of by all the wireless demonstration stands. The display was not at all imposing and the whole affair was not calculated to inspire the public with the vast benefits likely to accrue from the possession of a broadcast receiver.

Very successful public demonstrations were recently given by JDP and 3JU. The former transmitted to Geelong where his music was received and amplified so as to be audible to a large number of people. A characteristic of this station is that its signals can be amplified without distortion. This station's work was largely used by the demonstrators in the recent Herald Ideal Homes Exhibition. 3JU transmission was to a greater distance and consisted largely of CW. The city worked was Ballarat and the local Club was able to hear and read Mr. Hull without difficulty.

3JU (Mr. Hull) and 3BY (Mr. H. Hoist) recently carried out a very interesting test in radio-telephony. They worked their stations "duplex" that is they so arranged their sets that simultaneous talking and listening was possible thus giving the radiophone all the advantages of the ordinary telephone and doing away with the necessity of shutting down the transmitter when

receiving. It is claimed that this is the first time "duplex" has been worked in Victoria but this is very doubtful. The method used consists of shielding the receiver from the radiation of the transmitter which is rather difficult to do effectively.

A highly interesting meeting of the Victorian division of the Wireless Institute was held on the 19th June and was attended by over 200 people. The features of the evening were a report by the Institute Broadcast Conference delegate (Mr. T. P. Court) on the experimental situation in view of the incidence of broadcasting and a report by the President of the Trans-Pacific Radio Test (Mr. H. K. Lovv).

Mr. Court gave a brief outline of his actions during the various committee meetings and general meetings and stated he was of opinion that the experimenter had nothing to fear from the Broadcasting Companies as the regulations simply did not touch on experiment-

al work at all. Mr. Court corrected a rumour that experimenters were not allowed to sell home-made apparatus by stating that the proposed regulations placed this restriction upon broadcast licenses only. The views of the Institute were received with acclamation at the general meeting of the Broadcast Conference and he considered it had been a great boost to the Institute that they had received an official invitation to be present and



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

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July 6, 1923.

## WIRELESS WEEKLY

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that their delegate was elected to the committee.

Mr. H. K. Love then presented his report on the results of the Trans-Pacific Test which were highly satisfactory. He went into detail regarding the task he had had in getting the organisation arranged, and explained that owing to the secret code words having been sent to him despite his definite request that they should be sent to the Controller only he was debarred from competing in the test. He was successful, however, in hearing several of the American stations and considered the success of his idea sufficient recompense for all his trouble.

The large audience were deeply interested in the report, and Mr. Love (President also of the Victorian division) received great applause at the termination of his address.

The President then spoke re affiliation of the various clubs operating in Victoria with the Victorian division of the Institute, and said that to date there had been no hitch in the preliminary negotiations and that he expected at the next general meeting to tell members that every radio club in Victoria had been united in a State organisation. The title of this body he hoped would embody that of the Wireless Institute of Australia, Victorian division, but that was a matter for the special conference of delegates from all radio clubs in Victoria.

There appears to be considerable apprehension among dealers in Melbourne that the new regulations controlling broadcasting will have a prejudicial effect on the sale of experimental radio apparatus, owing to the number of restrictions imposed. It may be pointed out that

the broadcasting regulations do not in any way interfere with the handling of this class of business, but it is to be expected the Wireless Telegraphy Act and Regulations thereunder will be more rigidly adhered to than in the past. The writer is fairly well acquainted with the experimental business in this State and is of opinion that it will be given fresh impetus by the activity of broadcasting companies and the dealers and manufacturers will thus profit rather than lose by the operation of the stations in the various centres. Undoubtedly experimental licenses will be more difficult to obtain, but the standard set for qualification is not unduly high, and any serious experimenter should easily pass the qualifying examination. A recent deputation to the Postmaster General from various firms interested in radio in this city to protest against the regulations were told that they were already in the hands of Cabinet and that they had had full opportunity of protesting at the Broadcast Conference but had not exercised their rights at the proper time. The Postmaster-General pointed out that if the regulations did not work well in practice they could be altered.

The gazettal of the regulations is expected very shortly, and we may yet see broadcasting established on a large scale.

## AURORA'S A LADY.

It is fortunate for radio "fans" that the Aurora Borealis is an intermittent institution. Scientists have just put it upon record that the "Northern Lights" exercise a decided influence upon radio apparatus. Whilst this phenomenon lasts, the efficiency of radio apparatus is seriously affected, even the transmission of signals being rendered difficult. So that we may infer that Aurora Borealis does not like anybody in the vicinity to "answer back," a trait universally acknowledged to be a privilege of the fair sex. The Aurora Borealis, though, might prove useful this side some times (when there is an overdose of "jamming"). Only, unfortunately, we cannot very well induce "her" to pay us a visit!

Dear Mr. Editor.—Things are looking dangerous in WDI Town. Notices have been posted everywhere to this effect: "Safety First—beware of the storage crowd."

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Electrons Electric Waves and Wireless Telephony, by J. Fleming. Price, 10/-, posted.

Wireless Component Parts, and How to Make Them, by B. Jones. Price, 2/3, posted.

Experimental Wireless Construction, by A. Margan. Price, 2/3, posted.

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WIRELESS WEEKLY

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WAVERLEY AMATEUR RADIO CLUB.

At the meeting of the Waverley Amateur Radio Club, held on the 21st June, with Mr. Howell, in the chair, it was decided to hold the club's concert on the 21st July, at St. Luke's Hall, Varna St., Clovelly. It was also proposed, and carried, that Mr. Crawford be written to for permission to conduct a wireless telephony demonstration on that date. Mr. Marsden (2JM) has kindly consented to transmit. The hope was expressed that radio enthusiasts would support the entertainment. Mr. Marsden delivered an interesting talk on various matters at the conclusion of the meeting.

NORTHBRIDGE AND DISTRICT WIRELESS EXPERIMENTAL SOCIETY (2BF)

The Society still continues to make good progress. The membership now exceeds 40.

The Society's Club Room is splendidly patronised, practically every evening in the week, but especially so on Wednesday evenings, when the usual lecture and demonstration is on tap.

On Wednesday, 13th ult., just prior to his departure with H.M. Fleet, Mr. Beard gave a very interesting lecture on reception, and demonstrated with the club's 4 valve set. As the lecture happened to coincide with the Vancluse Progress Association concert, the members who attended were well rewarded.

On Wednesday, 20th ult., another member, Mr. McSkimming, gave a very valuable practical demonstration on the manufacture of valves and the elements in same. The members who attended this lecture came away feeling that they had added some elevation to the bumps of their wireless knowledge.

The Society's set is operating every evening, and very fine results are being obtained per magnavox.

It might be interesting to readers to know that the Society's aerial

consists of a 76ft. mast, carrying 3 cage or sausage aerials, two being used for reception and one for transmission, and has proved very successful for simultaneous working.

Some single valve sets are now being constructed to enable individual members to experiment at the club rooms, and the Executive is seriously considering the extension of the room.

As the temporary permit for transmitting expired the Society is now eagerly awaiting the issue of permanent license so that it can carry on transmission tests.

BONDI RADIO CLUB.

Two hundred people attended the Bondi Radi. Club's demonstration and meeting held at the Bondi-Waverley School of Arts on Tuesday, 19th ult. The chairman was Mr. H. Goldstein, M.L.A. The Hon. C. Oakes, M.L.A. and Mr. Fisk were also present, and both addressed the meeting. Mr. Fisk gave a very interesting lecture on the principle of radio telephony.

Excellent music was received from Mr. Marks (2GR) and a lecture by Mr. P. Renshaw from 2JM. Mr. Marks' transmission was worthy of great praise and came through very strongly.

The set was operated and supplied by Mr. R. Shaw, and comprised 3 valves and Magnavox.

A very pleasing evening was spent and was much appreciated by all present.

All interested in the activities of the Club please write to A. L. Prince, 269 Birrell St., Bondi.

LEICHHARDT AND DISTRICT RADIO SOCIETY.

Owing to the inclement weather which prevailed on Tuesday, June 26th, it was thought advisable to postpone the lecture which was to have been delivered by Mr. Raymond Macintosh. The few members who had braved the elements, however, were not altogether disappointed, as they were treated to a programme of music rendered by members of the Society's orchestra, and a real good time was spent by all present. Before dispersing, a hearty vote of thanks was tendered to Mr. Macintosh for coming along, and a suggestion was made that an invitation be extended to members of the North Sydney Radio Club to visit the Leichhardt and District Radio Society at an early date. The suggestion was adopted, and the in-

itation tendered to Mr. Macintosh to place before his club in due course.

The test which was to have taken place on Tuesday, July 3rd, between Mr. R. C. Marsden (2JM) and the Leichhardt and District Radio Society has had to be postponed until Tuesday next, the 10th, and every confidence is felt in the result. On that date music, dispensed by the Society's orchestra, will be transmitted from Mr. Marsden's station, and it is also probable that a number of vocal and instrumental items will be rendered as well.

The Society's meeting place is 176 Johnston St., Annandale, and all communications should be addressed to the Hon. Secretary, Mr. W. J. Zeeh, 145 Booth St., Annandale.

WHY DON'T NEW SOUTH WALES EXPERIMENTERS LISTEN IN.

"Why don't New South Wales experimenters listen in; we are continually calling your numerous transmitting stations," writes a correspondent from another State, "and it is very seldom we get a reply. We are beginning to think that the New South Welshmen have not paid sufficient attention to their receivers."

Our correspondent is in a sense right. The N.S.W. transitter does not listen in sufficiently when he finishes his test (Roster), the principal reason being that the next man (Roster) has started his test, and so interferes to a certain extent with his reception, to say nothing of the local valves. To our correspondent we say: You have not the same difficulty in receiving New South Wales stations as we have in receiving yours, for the following reasons: (a) N.S.W. transmitters as a whole send out much stronger signals; (b) for every local howling valve you have we have about five.

THE WIRELESS INSTITUTE OF AUSTRALIA.

N.S.W. Division

The Council will meet on Thursday 5th July at Wentworth Hotel, Sydney, at 7.30 p.m. Business of meeting—exhibition arrangements.

The next general meeting will be held on Thursday, 19th inst., when a special lecture will be delivered by Mr. Apperley. Further particulars will be announced later.

AUSTRALASIAN RADIO RELAY LEAGUE.

The first general meeting of the

above League was held at the Royal Society's Rooms, Elizabeth St., on Thursday, June 28th. Mr. W. J. MacLardy acted as chairman. Rules and regulations as drawn up by the committee, were placed before the meeting, and after discussion were carried unanimously. The scheme for management, procedure, etc., was placed before the meeting by Mr. S. V. Colville, and after discussion and amendment was carried unanimously.

The question of the wave length to be allotted to experiments was then lengthily discussed, and it was decided to send the following urgent telegram to the Postmaster-General:

"General meeting Australasian Radio Relay League request information whether experimental transmitters will be limited maximum wave length two hundred metres, if so, vigorously protest."

Up to the time this paper went to press, no reply has been received. The following are extracts from rules and regulations, etc., of the Australasian Radio Relay League:

**OBJECTS.**

To associate all persons, bona fide experimenters, directly interest-

ed in the transmission and reception, and reception only, of W/T signals and for the purpose of establishing a chain of stations for the effective relaying of experimental messages between members.

To provide a centre for the distribution of information, instruction, and advice on all matters pertaining to W/T communications for the purpose of encouraging: (a) the correct procedure in transmission and reception; (b) the handling of experimental test traffic.

To establish and maintain a body of trained W/T operators, which body would at all times be of national service.

**CONSTITUTION.**

The first committee and officers of the League shall be:

- President: C. D. MacLurean.
- Vice-Presidents: W. P. Renshaw, E. B. Cooke.
- Hon. Secretary, R. D. Charlesworth.
- Hon. Organising Secretary, S. V. Colville.
- Hon. Treasurer, W. MacLardy.

Committee: Messrs. Crocker, Whitburn, Fry, Marsden, Barling, Per-

ry, Best, Davis, McIntyre and McIntosh.

**Membership:** Only those persons who are holders of experimental licenses shall be eligible for membership. The membership shall be divided into grades, viz.:

Members—Experimenters operating transmitters and receivers.

Associate members—Experimenters operating receivers only.

**Charter Members.**—Experimenters who attended the inaugural meetings of the League and have signified their adhesion to the rules.

**Subscriptions:** The fees payable yearly shall be 10/- per annum for members, and 5/- per annum for associate members.

**MUSTER NIGHT.**

All clubs are notified that the N.S.W. Radio Association has fixed Thursday, July 13th, as muster night, when Mr. Geo. A. Taylor, M. W.I.A., will address all club members at the Assembly Hall, Education Department Building, Loftus and Bridge Streets, Sydney at 8 p.m.

The subject matter of Mr. Taylor's address will be, "Broadcasting Regulations and their effect on Experimenters."

Mr. Taylor was chairman of the recent Broadcasting Conference in Melbourne, and has a lot to say to experimenters and their friends.

All club members are specially invited to attend this meeting irrespective of whether their club is affiliated with the Association or not, as the greatest interest is centred in these regulations.

It is hoped to have a receiver set and magnavox at the meeting in order to demonstrate what the experimenters are doing in a practical manner by receiving music and telephony loudly enough to be heard by all in the hall.

Don't fail to attend, and the privilege is extended to each club member who attends to bring an interested friend with him.

**GREAT MACKEREL BEACH EXPERIMENTS.**

Some little time ago we published some details of Mr. Renshaw's doings at his bungalow, "The Shack," on Mackerel Beach. We are now in a position to confirm the fact that he is commencing experiments from there in earnest.

On Saturday, 23rd June, accompanied by Messrs. Reg. Charlesworth, Eric K. Burke and J. Ad-

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WIRELESS WEEKLY

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nam, all enthusiastic experimenters, Mr. Renshaw left town early, and by 3 p.m. all was in readiness for a very comprehensive test extending over the whole week end. The testing was particularly to ascertain transmission faults existing in the various experimental transmitting sets in the metropolitan area, allowing any faults existed. Mr. Renshaw has been taking particular interest in the experimental transmissions from his station at Roseville, and conceived the idea that he was too close at hand to form a satisfactory estimate of the quality of the various tests, with the result that he decided to get further afield. The results were astonishing and provided excellent data for future work in this direction.

The receiving equipment was most critical in adjustment and operation, the aerial being a single 3/20 wire, 250 feet in length, with a 40 ft. lead in using two variometers and single radiotron detector valve, two condensers being in series with the aerial. The circuit proved efficient beyond all expectations, enabling the most selective tuning to be obtained. Thus each individual transmitting station was in turn under observation and as all 600 metre traffic was completely tuned out (and also in fact stations only a few metres apart) it was possible to concentrate on the one man, and

tended to thoroughly investigate transmission difficulties and faults in order to obviate trouble when matters get into full swing.

Mr. Charlesworth's enthusiasm (as Hon. Secretary of the Relay League) can easily be understood, and Mr. Renshaw was greatly assisted by him in the recent tests, and both are busy with future arrangements for testing on more comprehensive lines.

By means of land line the party at Mackerel were in touch with Mr. Marsden, 2JM and results were communicated to him on the Sunday afternoon, when an arrangement was made for a special transmission in code (telephony) which was carried out with much success by 2JM at 7.45 p.m., immediately prior to Mr. MacLurean's transmission.

Endeavours were made to get in touch with the metropolis on C.W., but all calls remained unanswered, owing apparently to the small power used. However, that will soon be rectified and will then make the task of these experimenters somewhat easier.

During the Sunday afternoon (June 24th) no less than eight Sunday transmitters were "in the ether" on and off all the time, and although almost overlapping, they were each studied with everything else out.

Victorian experimenters came in

for dissection, and were also sized up, indicating the possibilities of an "observation station" properly designed and exercising a certain amount of control over experimental transmissions. By using bank wound coils, Cavite and other distant stations, including Awanui, etc., were all logged.

Mr. Renshaw deplores the lack of procedure which obtains amongst experimental transmitters locally which, viewed from a little distance, is more than ever apparent, and looks forward with confidence to the Relay League taking this matter up very seriously, thus saving much very valuable time.

As the Wireless Institute transmitting and receiving license 2IH is now located temporarily at Great Mackerel Beach, experiments will be periodically carried out between there and Sydney, including 2DE, mentioned before, and we look forward to hearing more about same in the future.

WIRELESS MUSIC FROM PALING'S CONCERT ROOM.

Experimental transmissions are still being conducted from Paling's by the New Systems Phonos netting under a temporary license from the Amalgamated Wireless of Australasia Ltd. Last week's concerts were given with even greater success than formerly. On the 20th June, Madame Ada Gee's pupils gave a

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60 Watt Dynamo, 15 volts, 4 amps. ready to assemble, £3/10/-.

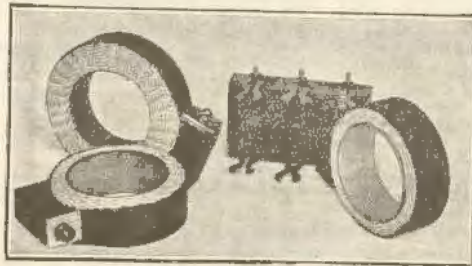
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thoroughly examine audibility and modulation 2CM and 2JM left little to be desired, but that is more than can be said of the remainder of the transmitters. During the preceding week the Wireless Institute (2IH) conducted some tests with 2DE (Mr. Renshaw's station at Roseville) and these tests were continued whilst Mr. Renshaw was at Great Mackerel. It has been found necessary to carry out certain investigations of a preliminary character in view of the intention of the Institute to do all in its power to push on matters in connection with the Australasian Radio Relay League, thus it is in-

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recital. Miss Mary Judd, violinist played solos, and Mr. A. Kerr, cornet champion of Queensland, played "The Rosary," and other popular numbers. Roderick Tiernan, baritone, and Miss Muriel Humphries, soprano, completed a very interesting programme. On Friday, 22nd June, Mr. Roy Head, pianist; Ronald Potter, baritone; and Roy McKinlay, tenor, appeared. Mr. McKinlay is a well-known tenor from Brisbane, who has been engaged by the Sydney Philharmonic Society to sing in Elijah. He sang with splendid effect Liddle's "Farewell," a new Maori song and finished up with a new fox trot song, "Joan." A record by "His Majesty the King and Queen" was given out with splendid effect. On Wednesday, 27th June, the whole of Paling's monthly recital was transmitted, commencing at 8 o'clock, and continuing until 10 o'clock. Over 20 items were given out, including solos by Miss Elsie Peerboss, soprano; Stanley Catlett, tenor; E. J. Wood, baritone, and violin solos by Miss Mary Judd, with accompaniments on the Behning and Autotone Player Pianos. Mr. Oswald Anderson conducted the proceedings, and explained that by arrangement with the New Systems phones a listening in set had been installed in the Highland Society's rooms that evening, where they were holding a smoke concert. The whole of their musical programme was being obtained by radio from Paling's. To make the effect more realistic for the Highland Society's evening they sent their Pipe Major to Paling's Hall, where bag-pipe selections and appropriate melodies were transmitted. The hall was crowded and every item was enthusiastically received.

Mr. Norman S. Odgers, Charters Towers, Queensland, writes stating that 2CM comes in strongly on one valve. Last Sunday he heard 5BG—Mr Cooper, Adelaide—calling 2CM, after he had finished his usual Sunday night's transmission.

Numerous reports reach us from all over Australia, mentioning 2CM, 2JM, 2GR, 2DS, 2EB, 2KC, 2BB, speech and music being heard clearly. New Zealand reports mentions 2CM, 2JM, and 2GR.

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July 6, 1923.

WIRELESS WEEKLY

17

AND OTHER PLACES.

Belgium, until now limiting herself to receiving from high-power stations abroad and transmitting to various European points by land wire, has put up her first large station for internal international traffic. This high-power erection is at Bruges, and will allow the radio service scope for development in all directions. Belgium will no doubt send her messages to foreign countries this way.

Japan is linking up various islands that comprise the Empire by radio telephony and telegraphy. The end of the old year saw the first communication across the Chosen Strait. Fukuhau and Fusan are the chief stations, and the first to take advantage of them were the coast cruisers and other craft operating there. For wireless inland the Daido Electric Power Co. of Nagoya, purposes to build stations for their own use. Should the Government sanction this, the general public will eventually be invited to use the system.

THE FALL OF THE ROCKET.

Radio will soon replace the rocket or "flare" as a means of communication between lifeboats in action and the land base or the vessel in danger. Possibly this may destroy some of the romance of the old fire-work system, but it is infinitely more practical and will save more lives. The rockets and bombs could only show approximately the positions of rescuers and rescued, and could give no real details of the trouble. The fixing up of the necessary antennae mast, etc., on a lifeboat was a matter of some difficulty, for a heavy sea made short work of it, and the aerials did not live long once the lifeboat approached a large vessel, for the smaller boat naturally rolled against the big one and good-bye aerial. To meet this, a new antenna was devised, which is practically a loop aerial which needs no masts.

MODERN BANDITTI.

Mexico is noted for its bandits (amongst other things, of course) and robbery with violence is an almost weekly occurrence in Tampico. The hundreds of miles of jungle which lie between the oilfields themselves and in the lower field of Vera Cruz and Tampico (their headquarters) form capital hunting grounds for banditti. One gang in particular evaded the rurales (the preservers of law and order) for many months by hiding in the jungle. It

was found that they had portable telephones, with which they "listened in" on the private wires of the Oil Companies, thus learning the arrangements for the sending of money to meet the weekly pay roll

at the stations. Thinking to outwit the thieves, the Agusi Company managed to have an aeroplane meet the paymaster on the fringe of the jungle and fly him across to the camp.

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### "Q.R.N." Again

To the Editor of Wireless Weekly

Dear Sir,—I read with interest the letter written by Mr. E. B. Crocker and published in your issue of June 22, in which refers to a letter written by myself and published the previous week. I do not propose to start our argument all over again; such an action would serve no useful purpose. I would however, like with your permission, to refer to one or two points raised by Mr. Crocker and to clear up some misunderstandings which have apparently arisen.

First of all may I state that I regret very much that Mr. Crocker should have considered my letter ungenerous, and the tone I adopted "not what one would expect from a wireless experimenter with whom one differed." In his original letter to you Mr. Crocker expressed certain views with which I differed. I wrote to you pointing out that I thought Mr. Crocker was wrong. Perhaps I was little sarcastic, but, Sir, in a discussion arising from a difference of opinion beliefs are generally expressed in a plain and sometimes blunt manner. Had I been speaking to Mr. Crocker, I would probably have used even stronger terms and I do not think he would have taken exception to them.

In his latest letter he expresses the view that "when a statement is made which reflects on one's character" I should have had the principle to sign my name. I can assure him that purely personal reasons necessitated my using a non-de-plume. You, Sir, will readily un-

derstand that there are times when it is not desirable to sign one's name. However, my name and address are in your possession, and while I do not wish them to be made public, I have no objection to you handing them to Mr. Crocker when next you speak to him. This, I think, demonstrates that I wish to be fair, and I feel sure that when Mr. Crocker sees my name he will realize that I had excellent reasons for signing myself "Q.R.N."

I would also like to assure Mr. Crocker that I did not in any way reflect upon his character. I admire him and admire the work he

has done for the wireless movement far too much to do anything like that, and far from casting any reflection on him would be the first to take his part were any such reflection made. I say this in all sincerity and feel sure that Mr. Crocker will believe it.

Then again there is another little point. Mr. Crocker stated that the remarks at the Relay League meeting caused many transmitters to think that their efforts are not appreciated. Any such thought should be at once cast aside. The vast crowd of amateurs which listen in to amateur transmission is ample

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Among the men enrolled in the Alexander Hamilton Institute there are more than 24,000 business heads. The Institute welcomes inquiries from such men, but this particular page is not addressed to them. There are nearly 25,000 directors, secretaries, and treasurers on the Institute's rolls, but this page is not for such officials. Neither is it for the wise young man who is perfectly satisfied with himself and his business equipment; who knows that the only reason he is not paid twice as much is because he has never been "given a chance."

This page is a personal message to the man who has responsibilities, who feels secretly that he ought to be earning several hundred pounds more a year but who simply lacks the confidence necessary to LAY HOLD ON ONE OF THE BIGGER PLACES IN BUSINESS. We would like to put into the hands of every such man a copy of a little book that contains the seeds of self-confidence. It is called "Forging Ahead in Business," and it is sent without obligation.

We have in mind, for example, a certain man who is now chief accountant of a great company. Until he was thirty-one years of age he was a book-keeper. His employers had made up their minds that he would always be a book-keeper. His wife was beginning secretly to wonder. Worst of all, he was himself beginning to lose faith.

He sent for "Forging Ahead in Business"; without any great hope in its results, he enrolled in the Modern Business Course and Service. The first few months of his association with the Alexander Hamilton Institute were a revelation to him. He found himself being initiated into departments of business that had hitherto been a mystery to him. He was learning the fundamentals of purchasing, of merchandising, of advertising, of office and factory management, and corporation finance.

He began quietly to make suggestions to the officials—suggestions that surprised them, because they had ceas-

ed to expect anything from him. They revised their estimate of his capacities; when the position of chief accountant became vacant he was given his chance. And recently, in an important tax matter, he argued against the position of the company's own solicitors—basing his argument on principles which the Institute had taught—and by proving his point succeeded in saving the company £12,000.

The self-confidence that the Institute gave him has transformed that man. He will be a director of that great corporation; and at 31 he was condemned to be a book-keeper for life.

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*Continued from page 3*

ity which has been given to all to be heard in the matter of providing a national service.

Mr. Pisk: I desire to add a few remarks in support of the motion, and wish particularly to thank the Minister for giving us an opportunity of dealing with the matter in this way. It has enabled us to lay before him a proposal which has been unanimously accepted. That is a great thing, because so many different interests are represented, and we have had so many different points of view. Yet, in this short time, we have been able to arrive at a concrete scheme. In a few years' time, when we have the system working successfully throughout Australia, we shall all feel very proud of Mr. Gibson for the manner in which he enabled us to put forward these proposals.

Motion agreed to by acclamation.  
Mr. Gibson (Postmaster General): Mr. Chairman and Gentlemen: I think that this is a very memorable meeting, and I hope that to-day you have laid the foundation of something which will be historical as far as Australia is concerned. I also hope that it will not be long before we have a broadcasting system throughout the length and breadth of Australia, which will be great service both commercially and socially to the people of this wide continent. It astounds me to hear your Chairman and other speakers say that you are unanimous. I hope that it is so. I thought yesterday that the best plan was for the discussion to be absolutely free from any Government control. Had I been in the chair, I would have been a party to something which you had done. Now you are to blame if there is anything wrong with the scheme. A Postmaster General is generally criticised a good deal, and is blamed for what he does and does not do, but in this case the blame lies upon your own shoulders. I hope that you have drawn up a scheme which will be an absolutely sound foundation for the proposal to broadcast and receive in the Commonwealth. Further, I hope that you have safeguarded the interests of those people who certainly have rights in this connection. I will go very carefully into the whole of these matters, and, at the very earliest opportunity, regulations will be drawn up to govern the whole system of broadcasting by wireless. When that is done, you will be

practically operating under the scheme which you have laid down yourselves. I have no doubt that you have gone closely into the position in other countries such as America and Great Britain, and I feel sure that you have also safeguarded our experimenters in this country, from whom we may hope to get something which will add to the usefulness of this system of wireless. I thank you for the vote of thanks you have accorded me. Anything that I have done has only been my duty.

The Conference terminated at 4.45 p.m.

*Continued from page 18*

proof of the appreciation of the efforts of those holding transmitting licenses. Anyhow, I am glad Mr. Crocker admits that the matter was referred to at the Relay League because previously he denied that any remarks were made. (You see, Sir, I simply cannot help arguing!)

Both Mr. Crocker and myself have used Mr. Mac's name, and I suppose he is wondering what he has done to deserve it all. As a matter of fact I know that he has already expressed the opinion that if many more letters are written the amateurs will be wanting to know the colour of his shirts!

Now let me draw to a close. I have avoided further argument in connection with telephony v. telegraphy because my previous letter contained all I have to say. When all is said and done, Mr. Crocker and I have merely had a difference of opinions, we have each aired our views. In any movement, particularly in the wireless movement, difference of opinion is an asset. Open discussion brings out many views which otherwise would not be uttered. My respect for Mr. Crocker has not diminished because I have had an argument with him, and I know that he will view me in a similar light. We have both learned something of each other's views, and the amateurs who have read our letters have perhaps been interested in both. May I again say that my remarks concerning Mr. Crocker's letter were not made to cast any reflection on him? I sincerely hope that in the near future he will write to you on some matter which has my support so that I can (under my own name) endorse his sentiments.

Yours etc.  
"Q.R.N."

A recent call on the Publicity and Wireless Departments of the British General Electric Company Ltd., Magnet House, 154 Clarence St., revealed to us that this well known electrical house intends taking up the matter of wireless supplies on a large scale to meet the increased demand which is about to evidence itself in the wireless world in Australia.

In addition to the formation of a special department, new counters have been erected on the Company's first floor, and we feel sure that every attention will be paid to enquiries regarding their Geophone wireless apparatus — apparatus which has made a name for itself by reason of its high grade quality and efficiency in Great Britain, and which will without doubt be a household word in Australia.

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Their standard is one of quality and not of price, and consequently they are not the cheapest in initial cost; but quality must always be paid for, and the best is the cheapest in the long run.

Published by W. J. MacLardy, of 46 Murdoch St., Cremorne, for the Proprietors, at the offices of Publicity Press Ltd., 35/37 Regent St., Sydney.

July 6, 1923.

WIRELESS WEEKLY

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WIRELESS WEEKLY

July 6, 1923.

# MARCONI VALVES

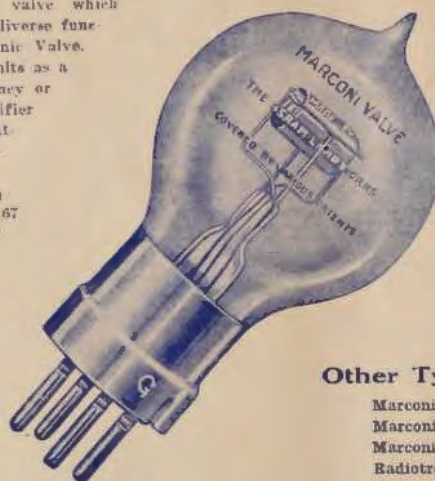
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