SPECIAL FEATURES

Verbatim Report of Broadcasting Conference

The Neutrodyne Receiver

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WIRELESS WEEKLY
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BROADCASTING CONTROL.

INTERFERENCE CHECKS.

Consideration by the committee appointed by the wireless broadcasting conference, which was held in Melbourne recently, of the draft regulations for the control of broadcasting was continued last week at the Treasury Buildings in camera. Part of the session the committee resolved itself into sub-committee for the discussion of technical portions of the proposed regulations. It is understood that the greater part of the five hours of the conference was devoted to the matter of wave lengths to be used for broadcasting purposes, and it was finally agreed to recommend that the available band of wave lengths be made far wider than purposed in the draft regulations. No fixed bands of wave length will be allotted to any class of station. The question of broadcasters' fees was also keenly debated, strong opposition being given to a suggestion in the proposed regulations that the fee to be charged to subscribers be specified in the broadcasting company's application for a license. The necessity for strictly supervising programmes to prevent the broadcasting of undesirable matter was realized by all, and this proposal was supported. Proposals for the supervision of receiving stations have also been supported.

The privileges to be granted to experimenters were the subject of some discussion, and it was decided to urge that when buying goods or apparatus, these holding experimental licenses be required to sign a declaration that they will not dispose of the apparatus to other private individuals. It was also decided to urge that provision be made for those holding a broadcasting receiving license to use receivers of their own construction, provided that the receiver complies with requirements for the prevention of interference and “peaching” on the concerts of companies to which no fee has been paid. The proposals for the control of the broadcasting of news items were again brought forward, and though considerable opposition was taken to a proposal in the draft regulations that the source from which news was obtained should be acknowledged by broadcasting stations, clauses for the protection of newspapers and news-collecting agencies were approved. After revision the draft regulations will be placed before the Cabinet for approval.
The Conference resumed at 2.30 p.m.

The Chairman: The committee which was appointed by the Conference yesterday to draft regulations for submission to the Government, met until twenty past six last evening, and also from 9.30 o'clock this morning until after 1 p.m. The various points of importance were thoroughly discussed, and as a result the committee unanimously agreed upon certain suggested regulations which I will read to the Conference. The proposed regulations are:

(a) A number of wavelengths to be allotted for broadcasting purposes, such wavelengths to be selected in respect of their suitability for stations of various powers and their suitability for standardisation of receiving apparatus, and subject to their not being required for public wireless, telegraph or wireless telephone services.

(b) Licences or permissions for broadcasting stations to be granted for all available wavelengths within a given area.

(c) Each broadcasting station to be licensed for transmission on one wavelength only, but transfers may be approved by Statutory authority.

(d) Licences to be issued under the Wireless Act to the public for receivers of design approved by Statutory authority and capable of receiving signals of one wavelength only, and incapable of variation without intentional tampering.

(e) Licences to be issued to sell or hire receiving apparatus to be bonded to local manufacturers and electrical or other traders.

(f) All licences to be renewed annually excepting in the case of broadcasting stations and trading concerns, which are to be for five years.

(g) Dealers and traders in wireless telephone equipment to be authorised to issue licences to all their customers who have paid their subscription to the broadcasting stations.

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

(i) The Government to take effectual measures to protect the industry.

(j) Dealers and traders only to supply receiving equipment or parts thereof in bundles of receiving licences.

(k) Dealers and traders must collect the first-year's broadcasting subscription on all receivers sold.

(l) That there shall be ample radio for competitive broadcasting services, it is unnecessary to place any limitations on the nature of the service provided. Each concessionaire may decide for himself the class of service that will bring him the greatest number of subscribers.

(m) Retailers to keep a record of all equipment sold, together with the names, addresses and licence number of purchasers, and to notify the submission to the broadcasting stations of any particular wavelength accordingly.

(n) Any person, company or manufacturer dealing in or using wireless equipment without a licence from the Government shall be subject to an adequate penalty.

(o) The administration or regulations governing broadcasting to be in the hands of a Board, having three representatives of the Government, broadcasting stations, and of manufacturers and traders.

The committee also drafted for submission to Conference three motions, the first of which provides—

That the Conference affirms the principle of preference to Australian, British and foreign apparatus in that order, on such terms as will encourage the use of Australian and British manufactured apparatus, and that this be the recommendation from the Conference to the Minister.

The committee unanimously resolved that the motion should be submitted to the Conference. It was also unanimously resolved, on the motion of Mr. Pitt, That this committee realises the necessity for protecting the principle of preference in apparatus and we forward herewith a memorandum drawn up and submitted to us by representatives of the press.

The third motion, moved by Mr. Curtin, and unanimously adopted, provides—

That this committee recognises the right of fully qualified persons indulging in beam file experimental work to be without
Mr. Halloway: With regard to regulation "d," a person taking the highest wave-length, or a high wave-length, should be able to take any lesser wave-length.

Mr. Mingay: No.

Mr. Halloway: Why not?

Mr. Fisk: The whole scheme would break down if that were done, because irrespective of the length of the wave, we have to protect one source from another.

Mr. Halloway: I have another suggestion that may get over the difficulty. If you pay for a high wave-length, say, $5, and you want to receive signals of a lesser wave-length, say, $2 10/-, you should be able to pay $2 10/- and receive signals of both wave-lengths. Of course, I am not pressing the suggestion, but I am only putting it forward for consideration.

Mr. Fisk: I appreciate the point mentioned by Mr. Halloway, but it is a matter that requires very careful consideration. It is desired to safeguard the various services, and at the same time provide facilities for taking signals of more than one wave-length with the one tuner. It is rather difficult to see how it could be worked out, but we might ask the Government to consider the point in applying the regulation. It is a matter of providing means whereby a person can buy a sort of universal receiver for all the wave-lengths, subject to the adoption of the necessary safeguards.

The Chairman: Mr. Fisk really suggests that the Government be asked to consider a regulation under which signals may be received on several wave-lengths.

Mr. Fisk: Yes. I suggest that a receiver may be used or licensed capable of receiving on two or more wave-lengths from two or more broadcasting stations, subject to a subscription being paid for each wave-length.

The Chairman: You suggest that regulation "d" be amended in that way?

Mr. Fisk: Yes.

Mr. Halloway: That will do.

Mr. Rowen: Does such an instrument exist, or would there be any mechanical difficulties involved in the production of such an instrument?

Mr. Halloway: There must be certain mechanical difficulties, but they can be got over.

Mr. Rowen: Does such an instrument exist at the present time?

Mr. Fisk: Yes. If any difficulties are experienced in the matter, I would suggest that the person concerned write to my firm, or to some of the other people who have technical staffs, for assistance and advice.

The Chairman: Regulation "d" as amended by Mr. Fisk is agreed to.

Mr. Halloway: Regulation "d" provides, "All licences to be renewed annually, excepting in the case of broadcasting stations and trading concerns, which are to be for five years." Does that refer to Government licences, or licences from Amalgamated Wireless, Ltd, and other companies?

The Chairman: There is no need to differentiate between companies.

Mr. Salmon: The regulation refers to "trading concerns;" would they be broadcasting trading concerns?

Mr. Fisk: They may be firms engaged in the sale of receiving equipment.

Mr. Mingay: Broadcasting stations are trading concerns.

Mr. Salmon: Trading concerns are to be licensed for five years, and they need not necessarily be broadcasting stations.
Mr. Fisk: No, they may be selling apparatus without wave-length.

Mr. Railton: Where does the word ‘annually’ come in? Does that apply only to receiving stations?

Mr. Fisk: To the general public. Regulation 14 I agreed to.

Mr. Cameron: I suggest that regulation 14 be amended to provide that the licence may be issued by the Government and not by concessionaires and authorised dealers. Then the Government will handle the money paid for licences and will pay the broadcasting companies.

Mr. Fisk: The suggestion may be a very good one, but it rather complicates the position. We are anxious to make the whole procedure as simple as possible, so that a person may go into a shop, buy his receiver, get his licence, and pay his subscription, at one and the same time. We do not want to make it necessary for a person to have to buy his receiver at one place, pay his subscription at another, and receive his licence at another. The procedure laid down in the regulation will also simplify the keeping of records of the people who possess receiving apparatus. When a man takes out a licence he must put his subscription for the particular wave-length he is going to need. Under the regulation as it stands, the trader who sells his apparatus will have the license, and at the same time will collect the Government for which I presume, will be a nominal one. Thus the Government will be notified that Mr. Smith, living at a certain address, has taken out a licence for a given wave-length, and the broadcasting station will also be informed that Mr. Smith has become a subscriber to the service of that station. The regulation as now framed was not intended to have the object of reducing any considerable difficulty.

Mr. Cameron: I do not see how the public are going to be protected from the unscrupulous dealers.

Mr. Fisk: The public will be fully protected.

Mr. Cameron: I do not think they will as the regulations stand at present. A dealer may sell a subscriber an old instrument quite unsuitable for broadcasting purposes, but if licence are issued by the Government, then the instrument can be properly inspected, to see that they are suitable. If licences are issued by the Government, the Government fee can be deducted from the amount paid, and the balance handed over to the broadcasting companies concerned. In that way the public will be fully protected, while the broadcasting companies will not be hampered in any way. As I read the regulation it only aids at protecting the dealers and the broadcasting companies.

Mr. Fisk: The dealers are not protected.

Mr. Cameron: The dealers and the broadcasting companies are protected as the regulations stand at present, but the public are not protected. I am not to see that the public get a fair deal. Yesterday the point was taken that the wireless regulations and motions were unanimously approved by the committee, they are open to amendment by Conference, but you must confine your remarks to the particular matter under discussion.

Mr. Cameron: Very well.

The Chairman: Do you desire to amend regulation 14?

Mr. Cameron: Yes, I move.

Mr. Brown: I second the motion.

Mr. Fisk: I do not think Mr. Cameron quite understands the position. The regulations provide that only apparatus approved by the Government may be issued, so that the issue of licences will really be done by the Government, through the medium of the trading concerns which are distributing apparatus. Anyhow working machinery will then be provided in that way, while the public will be protected from exploitation. Regulation 14 provides that any person, company or manufacturer dealing in or using wireless apparatus without a licence from the Government shall be subject to an adequate penalty.

Mr. Wilson: And regulation 14 provides that receivers must be of a design approved by the Minister, authority.

Mr. Fisk: Yes.

Mr. Wilson: In connection with the supply of electricity to Sydney, a contract with the Electric Supply Department of the City Council must be signed by the customer, and a deposit may then be required by the Council. In the interests of our business, my firm have found it advisable to carry out all the regulations and details on behalf of clients desiring light or power, because we are able to carry out all the regulations and details and arrange for the connection and pay the deposit, and take the risk of a clock behind the counter saying to Mr. ‘Have you bought your stuff, because if not, Mr. So-and-so across the counter is a very good man, and will allow you ten per cent. If you go to him.’

Mr. Fisk: That is no doubt that the public will be fully protected.

Mr. Cameron: I have in mind the unscrupulous dealer selling inferior and unsuitable apparatus.

Mr. Wilson: Will Mr. Fisk explain what is to happen to the amateur.
Mr. Norrie: As the regulation stands at present, the buyer of small parts must have a license.

Mr. Fisk: There is nothing in this regulation providing for him, but that matter will probably be dealt with later. Regulations 12 and 24 show that concessions are and dealers shall be authorised to issue licenses. There is also a heavy penalty.

Mr. Norrie: But what about people holding stocks today? Will they have to scrap them?

Mr. Fisk: We do not know what they are holding.

The Chairman: I think we are underestimating. Had better come to some conclusion. The regulation is really intended to assist the public as much as possible. The first deal with the amendment that only the Government should issue licenses.

Motion negatived, and regulation 12 adopted without amendment.

Mr. Brown: Does regulation 14 mean that unless a man subscribes to the broadcasting company he is not entitled to a license?

The Chairman: Absolutely.

Mr. Fisk: You have no use for a license if you do not subscribe to a service.

Mr. Brown: We understand that there are 3,300 to 2,000 holders of licenses today.

Mr. Fisk: Those are experimental licenses. We are dealing with broadcasting now, which is different.

Regulation 14agreed to.

Mr. Brown: I think that this regulation relates to the question of the Government control. If a man buys spare parts and assembles them himself, he can then go to the Government and obtain a Government stamp.

Mr. Fisk: We shall come to that later.

Mr. Brown: I think that it is in the interest of Government control.

Mr. Fisk: I wish to clear up the point regarding Government control. There is plenty of control here. The receiver is controlled, the man holding the receiving set is controlled by the license, and the manufacturer, the distributor, and the retailer are all under license, and consequently under control. Anyone who does the wrong thing to anyone else, or to the service generally, can be deprived of his license.
MAKE YOUR OWN
THE NEUTRODYNE RECEIVER.

A NEW PRINCIPLE IN RADIO FREQUENCY RECEPTION FOR NEUTRALIZING CAPACITY EFFECTS OF TUBES—TRUE RADIO FREQUENCY AMPLIFICATION APPARENTLY OBTAINED.

By ABRAHAM RINGEL.
(Member, Institute Radio Engineers).

Professor F. A. Houstine, of Stevens Institute of Technology, announced at a meeting of the Radio Club of America in Columbia University, the completion of his receiving set for this purpose. Professor Houstine traced the steps by which he claims to have finally eliminated the capacity coupling in the tube. He then demonstrated a number of receivers which embodied his scheme and called as witnesses a number of prominent inventors who testified to the results obtained.

Professor Houstine named his amplifier the "Neutrodyne" because in it he attempts to neutralize the capacity couplings of the amplifier tubes. It consists essentially of a tuned amplifier, which is static, neutralizing being effected by small capacity connected from grid to grid of successive radio frequency tubes. No potentialmeter is necessary, and the tuning is said to be quite simple.

It is equally effective on short and long wave lengths. Some performance of a typical amplifier which is illustrated in figure 1 is as follows: (1) 500,000 wave lengths, in an hour, it regularly receives Fort Worth, Texas, which is at 417 degrees and 2,000 miles away, while WEMP is working in New York City on 40 degree and only one mile away. (2) At another wave length, in say evening two prominent stations located in New York, both using similar sets, each received against stations in all districts. No external oscillator was necessary, CW being received merely by making the detector tube oscillate.

Capacity Coupling and How to Neutralize It.

Before going on to the description of various practical neutrodyne back-ups, the writer believes it best to explain the action of capacity coupling and the general method of neutralization.

Figure 1 illustrates the general method of neutralizing capacity coupling. There are two circuits, I and II, both connected to same common point, usually ground. If circuit I contains radio frequency energy, some of it is forced to get into circuit II, because of the capacity between I and II. This capacity is represented by C, and always connected by dotted lines, which indicates that there is no other electrical connection. Current will flow from A to B through C, in the direction of the arrow. To neutralize this action, the arrangement A-C-D-E-F-B is introduced, with a lead taken from the junction of the coils to the ground. The
Capacity Coupling in Vacuum Tubes and its Neutralisation.

Due to the internal capacity of the tube the amplified energy in the plate circuit may be fed back through this capacity to the grid and re-amplified, etc., until a state of oscillation is reached if the plate is almost in tune with the wave length of the grid circuit. The ordinary regenerative receiver which employs plate tuning (see figure 4), is a very common example of this. In radio frequency amplifiers we are likely to encounter in addition coupling capacities between various stages as shown in figure 5. Thus the radio frequency amplifier is not a true amplifier, since we reduce the actual amplification factor of the tube in order to stop oscillation, but depend on regeneration for proper functioning.

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In applying the methods of figure 1 to neutralise the grid-plate capacity, we obtain circuits of figure 6A and 6B. The method of 6A corresponds to that of figure 1A and of 6B to figure 1B. In the former, directly connected to the negative element battery and in the other through the B batteries to the same point. Figures 7A and 7B show how this is actually accomplished in a radio frequency amplifier. In this circuit, the neutralising winding is coupled to the grid coil and the neutralising capacity connected to the plate, which is the source of the direct current. In the latter case, the neutralising winding is coupled to the exciting plate coil and the neutralising condenser connected to the grid. The reader should note these circuits himself and compare them with figures 1A and 1B in order to satisfy himself absolutely as to their identity. Of course the equation given above still applies. It is important to have the windings in the proper direction so that neutralisation of capacity coupling is obtained. This condition results when the points A and B are of opposite polarity.

In order to stabilise a radio frequency oscillator it is simply necessary to connect neutralising condensers between successive grids of the amplifier—or successive plates. The polarity of the windings should be properly made in order to produce neutralisation—and the capacities themselves adjusted to the correct value for neutralisation.

Professor Hulstine prefers to use condensers between grids rather than plates because he finds it easier to produce a condenser of 1.5 micro-microfarads than one of 6 micro-microfarads (since he uses a step-up ratio of 1 to 4 in his transformers). This method of stabilising may be used with ordinary radio frequency transformers, where the ratio of turns is about 1 to 1. The neutralising capacity connected equivalent between grids or between plates is then 6 micro-microfarads.

There is no advantage, however, in using ordinary radio frequency transformers with their large effective resistance, since they will not function properly without regeneration. With a tuned radio frequency amplifier as here described, the adjustments are quite simple and the selectivity is greatly increased, because of the lower resistance of the coils. The wave length range with the circuit and coils described here, the range is from about 150 to 500 metres, with practically equal amplification over the entire band.

Professor Hulstine estimates that he has obtained a voltage amplification of about 11 per stage, which is beginning to compare quite favourably with the results obtainable with a tuned circuit.
Wireless Weekly

The author discusses the operation of a wireless circuit using a grid detune. The text explains the process of tuning, adjusting the detector circuit, and the importance of the secondary coil. Diagrams illustrate the setup and the electrical components involved.

In order to bring in a station, all dials are set approximately the same position (since the coils are alike). The last condenser is adjusted first, thus tuning the detector circuit. The second stage of amplification is then tuned, and finally the first. A little practice on the local transmitters will give the experimenter some idea as to the relative positions of the dials. If the positions for a 400-metre station are, let us say, 70 degrees on the last dial, 68 degrees on the second dial, and 72 degrees on the first, this relative position will be preserved in a fair degree. So that if a distant station at 365 metres is desired, the last dial will be reduced to approximately 65 degrees, the next to 64 degrees, and the first will be about 67 degrees. The adjustments are then slightly altered until the best results are attained.

Once these wave-lengths are logged, it is merely necessary to set the condensers at the recorded values and the circuit will be in tune.

For C.W. reception, the plate voltmeter is tuned in the usual fashion until a beat note of the de-
sired pitch is obtained. The best unit is altogether independent of the other adjustments, except the detector tuning which of course determines the frequency of oscillation, together with the position of the plate voltmeter. The first two stages, which control the radio frequency tuning merely vary the intensity of the received signal. Only when all the circuits are absolutely in tune, is there a slight change in the best note.

In the neutralyne the amplifier will not oscillate, as in the heterodyne, no adjustments, it is said, that can be made, except perhaps that of stabilizing condensers, will produce this undesirable condition. A stabilizing potentialmeter is of no value—since there is no need for one. The tuning of the neutralyne is as neat as a standard regenerative receiver, therefore no extensive adjustments are required. The panel, therefore, need not be shielded. All the circuits are given that only two stages of radio frequency amplification. It is not advisable to add another stage because of the difficulty in preventing stray couplings between the last stage and the first two stages, unless the last stage is thoroughly shielded. It is also very hard to

Fig. 14.

The wireless weekly: the hundred per cent Australian radio journal

The tubes used were amplifiers, and exceptional results were obtained. On the detector plate, receivers in all districts of the United States were logged in New York, and elsewhere in Texas, Kansas City, Minneapolis, Denver, were also heard. With a loud speaker and two stages of audio frequency amplification, Albertville, Georgia, was quite loud, with only a ground connection and no aerial of any sort.

3-Tube Reflex Neutralyne.

If one is necessary to apply a positive bias to the grids of the amplifiers in order to stabilize them, the neutralyne lends itself admirably to such an application. The main features of reflex circuits were described by the writer in an earlier issue of "The Wireless Age" (January, 1923) and there is therefore no need of going into more elaborate details.

Figure 14 illustrates essentially the circuit of figure 9 except that the first two tubes serve both as audio and radio frequency amplifiers. The incoming signal from the nation is amplified at radio frequency by the first and second tubes in the usual manner and then applied to the detector tube, which may or may not be regenerative. If considered regenerative, the neutralyne is not destroyed, the plate voltmeter is either short-circuited, or at minimum or removed altogether. The radio
frequency is rectified into audio frequency and applied to the grid of the first tube by means of a UV-712 amplifying transformer. The audio frequency is further amplified by the second tube, the plate current of which is used to control the plate circuit. Audio and radio frequency wattmeters are in series and it is necessary to have by-pass condensers of 300 microfarads connected across the plate circuit of the UV-712 transformers and across the telephone lines, so that the radio frequency currents will not be measured. The secondary windings of the UV-712 transformers have sufficient distributed capacitance for this purpose, and no additional condensers are necessary. The audio frequency wattmeters offer practically no opposition to the passage of the radio frequency currents. Amplifier tubes are used throughout. The plate voltage is furnished by four 6B batteries having 60 volts.

A radio amplifier in which both stages of audio frequency are re-tuned in the circuit, is generally quite noisy, so that the writer would not recommend it except to amateurs who are interested in experimenting or in making amateur circuits.

**4 Tube Reflex Midgetry Amplifier**

The best combination of reflex and midgetry amplifier is shown in figure 11. The first two tubes amplify at audio frequency which is rectified into audio frequency in the second tube. Neutrallizing condensers are connected between grids of the first stage and grids of the second stage. R.F. frequency is applied to the grid of the first stage and amplified in the plate circuit of the second stage, and applied to the grid of the first stage by means of a second radio frequency transformer. This circuit is probably the best reflex amplifier in the market, and can be applied to audio frequency stages. The circuit is illustrated in figure 14.

The layout of apparatus for such a set is illustrated in figure 14. The four-tube models are mounted on a long horizontal panel, on the under side of which are suspended the radio frequency transformers and the blocking condensers. The tube panel is supported by the vertical panel, which also contains the rheostats and tuning condensers, and also the variometer in the plate of the detector tube. The radio frequency coils, whose construction is shown in figure 12, are placed approximately six inches apart and inclined so as to make an angle of 45 degrees at the base. This is done in order to avoid inductive coupling between stages. All binding posts are in the rear.

The neutralizing condensers are connected from grid to grid as shown in the diagram and their connection is illustrated in figure 12.

The operation of this set is the same as that described previously.

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Round the Club.

CREATION RADIO CLUB.
Another usual business, Mr. C. W. Shale gave a very interesting lecture on "Wireless Waves." After this the Club members were instructed in Morse code.

The membership has now increased to 29.

The Hon. Secretary is G. Maxwell Dutton, "Cornwall," Highworth Street, Croydon.

NORTH SYDNEY RADIO CLUB.
The regular weekly meeting of the above Club was held at its building, corner of Alfred and High Streets, North Sydney, last Tuesday evening, 12th inst., when its transmitting panel was practically completed.

Members are constructing the various apparatus to be used in conjunction therewith, such as A.E. transformers, rectifiers, etc., and transmitting will commence at an early date.

Next Tuesday, Mr. Malcolm Grieve will lecture at the Club on some important matters interesting to wireless amateurs.

WIRELESS INSTITUTE OF AUSTRALIA (NS.W. Division), GENERAL MEETING.
On Thursday, 14th inst., a general meeting was held in the Chamber of Commerce Building, George St., Sydney, Mr. H. A. Storey was in the chair.

The business of the evening was a short address by E. T. Fisk, Eng., M.I.R.E., on the broadcasting station and a lecture by Mr. H. R. Gregory entitled, "The Tissington Hydro Electric Scheme."

Before calling on the speakers, the chairman welcomed Mr. Ralls, a visitor from Auckland, N.Z., who is a keen wireless experimenter, and takes a prominent part in the activities in the Dominion.

Mr. Ralls in responding gave some very interesting particulars of dealings in N.Z., and several illustrative anecdotes of how the broadcasting is conducted there. He extended a hearty invitation to any visitors to N.Z. to look him up at Ralls Ltd., Auckland.

The chairman then asked Mr. Fisk to address the meeting. In the course of his address Mr. Fisk drew attention to the necessity of making a start on some form of foundation, and indicated how the efforts of the Broadcasting Conference had done their utmost to achieve the most satisfactory ends for future working and at the same time provide for later amendments found necessary. With as little discussion as possible, Mr. Fisk re-iterated his personal sympathy with all genuine experimenters, and stated he would always do his utmost to protect their interests. He specially drew attention to his own close association with the experimenter by his membership in the Wireless Institute and looked forward to great future developments being made by Australians in view of the success attained by the recent Trans-Pacific Tests. He concluded by asking all present to preserve a very wide perspective and regretted so little was known to the rest of the world of the Australian successes and stated that he hoped the next low power tests would be between England and Australia.

As the time was too limited on the evening to do the business, Mr. Gregory's lecture was respectfully postponed till a future meeting.

LEICHARDT AND DISTRICT RADIO SOCIETY.
Members of the Leichhardt and District Radio Society held their usual weekly meeting on Tuesday, June 12th, at the Club-room, 176 Johnstons St., Annandale, when a very interesting and instructive lecture on "Vacuum Tubes" was delivered by Mr. A. C. Connolly. The lecture was supported by means of apparatus which Mr. Connolly had brought along with him for that purpose, and members spent a very pleasant evening. A feature of lecture was its clearness and its freedom from technicalities the result being that even the most raw beginner was able to understand clearly all the lectures had to say. At the conclusion of the lecture, and after Mr. Connolly had replied to a number of questions put to him, he was accorded a hearty vote of thanks.

The next meeting will be held on Tuesday next, and all interested are invited to be present. All communications regarding the activities of the society should be addressed to the Hon. Secretary, Mr. W. J. Zerby, 140 South St., Annandale.

KURING-GAI DISTRICT RADIO SOCIETY.
Mr. Mingay, who was to have lectured at the last meeting of the Society on the 12th inst., was unavoidably absent, but the breach was ably filled by Mr. K. Hill, who came forward at the last moment and delivered a very instructive lecture to those present at the meeting.

Mr. Hill who had no subject prepared, supplied much needed information on various subjects, and judging by the profuse note taking by members his advice was much appreciated.

Prior to the meeting the usual business practice was indulged in, but the response from members was very poor. Members who wish to avail themselves of the opportunity are particularly requested to do so.

The next meeting is down for Tuesday, the 26th inst., at 7.30. Booster practice will be held from 7.50.

Continued on Page 18.

FOR SALE— Cabinet Receiver set, 1000 Metres; Crystal Detector; 2500 Ohm Head Phone; Ready to receive. Price £2 10/6. Apply c/o "W.W."

Wireless Weekly

Leads with Wireless News

FIRST to publish Report of Broadcasting Conference
FIRST to publish Verbatim Report of the Conference
FIRST All Wireless Journal in Australia
To keep in step with Australia's Wireless Development
Subscribe to Wireless Weekly.
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VICTORIAN ACTIVITIES
(Ref. Our Special Correspondent.)

MELBOURNE NOTES.

Recent tests in low power valve transmission with New Zealand disclose the fact that communication can be easily maintained with this station with on power input of 10 watts. Several Melbourne experimenters have been heard well by a Mr. Bell, of Corsburn, New Zealand, and Mr. B. Bell (M7) was successful in maintaining communication in both directions with Mr. Bell, Mr. Bell and Mr. Newman (RM7) were both heard distinctly by Mr. Hall, and a few nights later a test was arranged with one of the two other transmitters which, however, was fruitless, as on the night in question Mr. Bell was unfortunately in hospital. A letter was received from a friend of Mr. Bell's stating that in the course of testing he had heard M7P very clearly. Mr. Bell has now recovered, and a series of tests will be carried out with New Zealand, commencing on the 12th instant, and results are eagerly awaited. The power input is limited to 10 watts, and as the distance has already been reversed by three stations, there seems no reason that all the transmitters in Victoria should not get across. Mr. Bell, the New Zealand amateur, has been clearly heard in Adelaide.

A meeting of the Broadcast Conference Committee with the Postmaster-General to consider the proposed regulations, on the 16th May, has been arranged, and the representative of the Wireless Institute of Australia has been invited to attend. It is proposed to alter certain of the experimental regulations, and a policy has been formulated by the Victorian Division in consultation with other sections, to deal with the question. The best way in which the Postmaster-General aligned to experimenters at the various conferences is to encourage, and experimenters feel content that their interests will be looked after at this meeting at which the Postmaster-General will be present in person.

The Malvern Section of the Wireless Institute is rapidly being organized, and rates and regulations have been framed for presentation to the section by an energetic committee. Mr. E. Mackinnon, the organizer, has had much experience in handling booths of this nature both in America and Australia, and it is felt that the Malvern Section, including as it does one of Victoria's leading experimenters and the President of the Victorian Division, should become one of the foremost clubs in the State.

The Brighton Section, which is being organized by Mr. Whittaker, a member of the Victorian Regional Council, shows great promise, and when the constitution of all these clubs into a Victorian Division is complete, a really powerful and well-organized body will be the result.

A. H. TRELOAR
Manufacturers' Representative
357 Castlereagh St., Sydney.

Managing Editor,
"Wireless Weekly."
35-37 Regent Street.

Dear Sir,

I have much pleasure in sending you this unsolicited testimonial to the wonderful medium I consider your newspaper to be as far as advertising is concerned. I might state in explanation of this that I have been hanged ever since your paper came off the press with cartridges for the lines that I have the pleasure of controlling, and positively state that all the agency propositions advertised were finalized the same day that your paper was published. Since then I have had numerous enquiries from people who state that they saw my advertisement in the "Wireless Weekly."

I do not think any paper in the Commonwealth can claim such results as this. I may say in closing that I advertise in numerous papers here, and never before have I had such wonderful results.

Yours truly,
A. H. TRELOAR.
LICENSES.

EXPERIMENTAL v. AMATEUR.

Mr. P. R. Rees, Hon. Sec., N.S.W. Division, W.L.A., gives his views:

The position now created by the inauguration of broadcasting is such as to give the man in the street much food for thought. The authorities have adopted the correct attitude in regard to the issue of experimental licenses, in that they are prepared to further these purely for this purpose until the broadcasting situation has been clearly defined.

It cannot be denied that the hasty rush of applications is not to the credit of Wireless engineers who are unacquainted with the requirements for an experimental license. The Radio Engineer has been given the facilities of the recently opened experimental station and has been in close liaison with engineers from the Scientific and Industrial Research Department. It is thus easy to understand why the rush has set in.

This is the first erratum to the Wireless Weekly, as its editor suggests: "A wireless station will be granted conditional use of wave lengths for experimental work." The author clarifies that the wireless station has received no licenses and has been granted experimental use of wave lengths.

He goes on to say that the authorities have issued licenses in error. The definition of an experimenter must be clearly defined and a utilitarian view is necessary for the public welfare.

The Wireless Weekly also lists the goods available from Radio House, such as Galena, Magnetite, Headphones, Condensers, Control Panels, and Valves.

The statement that does not read "Amateur's" article carefully, and that I knew Mr. Mac's views on telephony reception, is nonsense, and are not true. I do not know whether Mr. Mac earns a 'class' whether he receives telephony or not, but I will venture an opinion, and that is, if Madame Mehdi were to sing through the other tomorrow night, Mr. Mac would not care a 'class,' and hang on to his phone, but if I were to sing he would not care a 'class.' In regard to my statement that "Amateur's" article implies that a person concentrating his efforts on wireless telephony is a genuine experimenter, and his statement that the genuine experimenter only takes a casual interest in telephony. It is obvious that this latter statement is a typical error and represents the attitude of the rest of his genuine experimenters.

My contention is, that if the experimental license holder were to write to you on the subject of the above erroneous statements, he would not care a 'class.'
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Radio and Electrical Engineers

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The National Airphone
The Simplest Crystal Receiver on the Market
Filled with Two Interchangeable Units: Mixer Variable Condenser, Forever Gold Gem Detector.
All on a Movable Satellite Base WITH FULL INSTRUCTIONS
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STRONGLY MADE, EASILY OPERATED, ABSOLUTELY FOOLPROOF.
ONLAINABLE ONLY AT THE ABOVE ADDRESS.

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COMPARE OUR PRICES

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perintendent in New Zealand who received music and speech transmitted from Sydney but who only taken a casual or passive interest in tele
drome reception, he would not have accomplished this feat, and this gentleman in no sense entitled to be called a genuine experimenter as "Amateur"'s experimenter, although he, from "Amateur's" point of view, in having his idea on something of little practical value. "Amateur," to be consistent, must class this kind of experimenter as other than genuine. "Amateur's" statement that the Relay League had realized that tele
drome was only of casual interest, etc., is not correct. Mr. Charles
worth did make a statement similar to that referred to by "Q.R.N.," and there was considerable recent
ment at his remarks. Mr. Squire's was a guest, and his words remind us of "monstrosities" with telephony; sets were also mentioned, but as a matter of courtesy it was not ex
pressed. There were also "brain
hours," two of which I believe came from persons not holding transmitting licenses. Because a few and "hour or two," to Mr. Squire, it does not warrant "Amat
ter's" stating that the Relay League accepted his views. I do not con
ider the remarks referred to, made by Mr. Squires or Mr. Charsworth, were acceptable to the majority of transmitters present, as no other
speak or spoke in the same strain. These remarks caused many trans
mitters to think that their offers were not appreciated, and "Amat
ter's" statement referring to the Relay League appeared to support this view.

The tone adopted by your correspondent in reply to my letter is not just what one would expect from a wireless experimenter with whom one differs, and it is regrettable that he should think it to state that I dragged in Mr. Mac
nouran to prove the same, which I did not. Yes, Mr. "Q.R.N.," at

"Q.R.N.," the

suggestion is very strong, but not sufficient to prevent a man from giving his call. I know of one instance it is necessary to write under a mask for the same. When a statement is made which reflects upon one's character, he should, at least, have had the principle to put his name to it.

E. R. Crocker.
Radio Notes

RADIO CAN DO IT.

Train control by wireless has been tried with varying success in a few countries, but a new invention now being tested in America seems to be a step forward. Applying to either electric or steam railways, the invention provides for every person coming within range of the wireless telephonic system, a call by means of waves. The invention is that a train can be placed in the path of the engine and guided as if it were a eye. The train can be placed in the path of the engine and guided as if it were an eye. It can be placed in the path of the engine and guided as if it were an eye. It can be placed in the path of the engine and guided as if it were an eye. It can be placed in the path of the engine and guided as if it were an eye. It can be placed in the path of the engine and guided as if it were an eye.

Amateur Calls

New South Wales

Shaw, R. B., K 111 C., Smith St., Randwick, R.
Shedlov, E. L., K 111 S., Pacific St., Randwick, R.
Sheen, M. C., K 111 S., MacKenzie St., Randfield, R.
Hague, P. R., K 111 S., Waimano St., Randfield, R.
Hale, M., K 111 S., 135 Livingstone Rd., Marrickville, R.
Donaldson, F. W., K 111 S., Botany St., Randwick, R.
Davies, M., K 111 S., Oxford Street, Randwick, R.
Bent, R. W., K 111 S., Forest Road, Arncliffe, R.
Keynes, A., K 111 S., 59 London St., Paddington, R.
Silver, E. O., K 111 S., Gunning Rd., Coogee, R.
Ferguson, R. B., K 111 S., Peakford St., Randwick, R.
Goldstein, M., K 111 S., 2 West St., North Sydney, R.
Hackett, C., K 111 S., 22 Bourke St., North Sydney, R.
Ham, S. B., K 111 S., Robert St., Rose Bay, R.
Townsend, T. R., K 111 S., Gayford St., Chatswood, R.
Young, R. H., K 111 S., Chapell St., Strathfield, R.
Williams, R., K 111 S., 15 Hampden Ave., Ashgrove, R.
Lloyd, M., K 111 S., The Ave, Ashgrove, R.
Lloyd, R. H., K 111 S., 15 Hampden Ave., Ashgrove, R.
Amos, J. S., K 111 S., Q. Ave, Ashgrove, R.
Bennett, J. E., K 111 S., 31 Rods St., Waverley, B.
Johnson, W. L., K 111 S., George St., Glebe, R.
Lowe, J. W., K 111 S., Francis Rd., Glebe, R.
Gibson, A. H., K 111 S., 129 Lynd St., Glebe, R.
Dawson, C. H., K 111 S., 29 Lynd St., Glebe, R.
Bennett, J., K 111 S., 29 Lynd St., Glebe, R.
Young, J. C. A., K 111 S., 29 Lynd St., Glebe, R.
Dunmoll, G. P., K 111 S., 300 Stannage Rd., Petersham, B.
Mann, C., K 111 S., Canterbury High School Radio Club, Canterbury, R.

Germans in Sydney

A FEW VISITORS have recently arrived from the Fatherland. Amongst them are some of Famous BYNG BROTHERS

MECHANICAL STEAM :: ELECTRICAL TOYS ::

THE VERY BEST MADE

See them at

O'Sullivan's Electric Shop
296 Pitt Street, Sydney
WIRELESS WEEKLY

There was a good attendance, and the members displayed the keenest interest in the proceedings. A lecture was given by Mr. J. D. Harre, and a banquet preceded by Mr. N. Teyler.

The club holds its meetings every Wednesday evening. All communications must be addressed to the Secretary, Naremburn School Radio Club.

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Let us explain the New Broadcasting Regulations

Consult us before buying your Wireless Sets

Prices Moderate
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satisfied the Alexander Hamilton
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diligent efforts.

He is one of every man in Australia whose
pursuit and success are the
basis of today's

As for me, I accepted a position in "Maj Ready," a
branch of a large company, in July of last

I left for two years, during which time I found
myself

A single year without advancement
ought to be a danger-signal

My choice, however, was not advisable, and as I
was paid a salary that kept me from the


I began to wake up.

The first step was to think upon the
that the Alexander Hamilton
Institute was a

I changed my mind, and decided to

You are paying for this training
whether you receive it or not.

All through these years when he was "keeping
the wolf from the door," and was "gently will

The offers of any other representation

Maj Ready Company Business Services was

The making of this letter was a

I began to wake up.

The first step was to think upon the

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the wolf from the door," and was "gently will

Send for this book of success.

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Business

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New Zealand Address

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Questions and Answers.

T.A., Rose Bay, asks:

Q. (1): What does oscillating mean?

Q. (2): What does oscillations in calls with a view to thus determining their self-capacity?

A. (1): A current is oscillating when it is changing its direction of flow in a conductor alternately at a rate of over 20,000 times per second. When the frequency of an alternating current exceeds 10,000 cycles per second, it is said to be oscillating. The discharge of a condenser in a low resistance is in an amount of an oscillating current.

A. (2): The sensation of self capacity of calls and how to measure same is in a very difficult case, and as yet has never been satisfactorily answered. To attempt to answer this question would mean writing a text book.

P.R., East Minto, asks:

Q. (1): Would it be possible to pick up music and telephone with a crystal set (published in "Wireless Weekly", May 4th), 25 miles from Sydney, with a two wire in earbob 1/4, 50 feet high and 70 feet long?

A. (1): Yes

J.R., Sydney, asks:

Q. (1): What extra apparatus do I require to receive wireless messages than the following: Single side tuner of a wave 28 gauge enamelled wire, detector, chokes and batteries, potentialmeter 61 by 31, 4 volt accumulator, phone condenser, aerial two 20 feet long and 20 feet high, T type, one pair Murdoch's phone 3000 miles?

Q. (2): What apparatus would I require to make a single valve set? I have not yet sufficient funds to construct a crystal set as shown in "Wireless Weekly", May 11th.

A. (2): Any wireless advertising desire in "Wireless Weekly" will give you a complete list of parts required, with prices on application.

Radio Bug, Petersham, asks:

Q. (1): What gauge of wire do I require to construct a house-complex antenna coil?

A. (2): No further notices will be granted until after the broad casting regulations are gazetted. See Mr. Crawford, Radio Inspector, Mr. Amundsen Home, Pitt Street, City, in reference to passing 12 word a minute test.

C.G., Sydney, asks:

Q. (1): I have an extension from my phone terminal on a house-complex not running a distance of 30 feet into another room. The signals appear to be weaker through this additional wire than from the next direct line. If long phone leads have this effect would it not be possible to amplify signals by making them pass through a coil of wire between detector and telephone?

Q. (2): Does V.I.S. work with any other stations at any set time, or send any other regular signals besides the weather report at 8 p.m.?

Q. (3): I have often noticed in advertisements to join the bands from each wire of the aerial just before they enter the building. I haven't noticed any articles constructed this way, and would like to know the advantages of the scheme?

Q. (4): Would a twin wire inverted aerial, 55 feet tall, 60 feet high, of free feed, and 45 feet high at the other end, be classified as fair, good, very good, or excellent?

Q. (5): What in the advantage of a twin wire aerial?

A. (1): No. The fact is accountable because the long phone led set as a condenser shorting the phone, so low passing the radio waves length. A proper method, if long phone lengths, "good."

A. (2): Theoretically the sensitiveness of the aerial should be as low as possible. Consequently the frequencies should be brought right to the entry.

A. (3): If a short wave length reception, "very good." If for long wave lengths, "good."

A. (5): The advantage is an increase in capacity and a lowering of resistance. If the length is restricted capacity is an advantage.

Published by W. J. Macleary, of 45 Meredith St., Greenoaks, THE PROPRIETORS, at the offices of Publicity Press Ltd. 35/37 Regent St., Sydney.
**Wireless Experimenters’ Requirements**

**Apparatus and Parts with a Guarantee of 100% Efficiency**

- **DOUBLE SLIDE TUNERS** £1, complete with phone contactor detector panel.
- **LOOSE COUPLERS** £2, with detector panel, £2.10s.
- **LOOSE COUPLER PARTS**: Baseboard, 1/6; complete set of rods, 2/6; tubes, 6d. each; slider, 3/6; secondary sliding rod, 2/6 pair primary wire, 3/6; secondary wire, 1/6; 8 studs and stops, 2/6; secondary switch, 2/6; Crystal detector, 4/6; all loose coupler parts nickel plated.

**VALVE RECEIVING SETS** equal to any on the world’s market, from £16; complete with high and low tension flat aerial wire, insulators, ‘Phones, etc., with Verrier adjustments for Telegraphy, £1 extra.

- **SWITCHES** 2/6, 3/6, and 4/6 each.
- **CRYSTAL TUBE MOUNTED SETS** £7, complete with phones, aerial wire, etc.

**CRYSTALS**: German tested and guaranteed, 2/6; magnetic iron pyrites selenium, 1/6 each.

- **‘COLMO’ CONDENSER** Ready to assemble, £1.00, 7/6; £2.00, 8/3; £3.00, 10/6; £6.00, 12/3; £8.00, 15/6; £12.00, 19/6; assembled and adjusted, £9.00, £11.00, £15.00, £20.00; with Verrier control, 15/6 extra.

**TERMINALS**: Nickel from 5d. each, studs, 2/6, and 2/3 per dozen.

- **ERONITE TUBE**: 3 in., 31/4 in., and 4 in., diam., 12/6 per ft.; Rods, 3/6 each.

**REMILL APPARATUS**:
- **Potentiometers, 8/6; Rhoats, 8/6; Dial Rhoats, 12/6; Knob and Dial, 6/6;**
- **Relay Switches, 3/6 and 4/6; Q.S.A. Tapped H.V. Coils, 5/6 burn, 15/6;**

**VERNIER RHEOSTATS**: ‘Fads’ Type, 10/6 each.

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Measures 5 x 5 x 1.

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Ask your Radio Dealer to show you the Graham Products. If your Dealer cannot supply you, write direct to us, or better still, make a call.

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WE STOCK COMPLETE SETS OR PARTS TO BUILD YOUR OWN.

- **B.T.H. English Detecting, 35s.** Amplifying, 35s.; and Transmitting Valve, 40s./d.
- **Head Sets 2000 to 8000 ohms**, Crystal Sets complete with 4000 ohms; Head Set, 2/6.

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SYDNEY.
Just as the name MARCONI is associated with the development of Wireless, so is the name OSRAM with the development of Electric Lamps.

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