



Sure to Get it at Grace Bros.

It is Safer and Cheaper to Buy

The Best Wireless Set

Broadcasting will soon be in full swing.

Buy your set now and become an experienced operator before broadcasting actually starts. We are now in a position to quote for complete experimental transmitting and receiving Stations in the Country and will send our Wireless Staff for the installation and operation.

All enquiries fully answered by mail.

Send for our Booklet

“ALL ABOUT WIRELESS”

On receipt of 6d. in stamps we post it free.

GRACE BROS. LTD.

Broadway, Sydney

February 23, 1923.

WIRELESS WEEKLY

1

RADIO COMPANY.

Before making your set, both Transmitter and Receiver, consult us for Designs and Novel Apparatus.

Complete Valve Receiving Set

£14.

Comprising—Cabinet, 6 Volt C.A.V. Battery
Pair 2000 ohm Phones, 30 Volt "B" Battery,
and Mounted Honeycombe Coil.

COUNTRY ORDERS SPECIALLY CATERED FOR.

18 ELIZABETH STREET,
(Four doors from Hunter Street).

RADIO COLLEGE

POSTER HOUSE

Cr. Lang & Grosvenor Streets.

Special Morse Code Class price 5s per night

Full Correspondence Course £4 4s.

1 month Course fully Illustrated £1 10s.

Full 3 months Course including Morse
and Telephony £5 5s.

KNOW YOUR RADIO TRANSFORMER.

You will be able to get the best out of radio and audio transformers by understanding their separate functions. The radio transformer deals with currents oscillating at frequencies far above human hearing; the audio transformer works on currents pulsating at frequencies that correspond to the range of vibrations audible to the average person.

Both types of transformers consist of two coils of wire, one called the "primary" and the other the "secondary." The secondary coils of the audio transformer may have from three to 11 times as many turns of wire as the primary coils, the object being to obtain a step-up ratio between the two.

In the radio transformer, on the other hand, the primary and secondary coils have an equal number of turns, this being necessary because of the remarkable quality of reson-

ance that is encountered at high frequencies. With this arrangement, the amplifying properties of the vacuum tube are used to produce the necessary amplification, because of the fact that a small current in the grid circuit releases a large current in the plate circuit. The vacuum tube, therefore, is an amplifier in itself.

So far as high frequencies are concerned, the problem in radio amplification is to transpose the output of one vacuum tube to the input circuit of the other. Although there are three ways in which this can be done, experience has taught us that the method that uses transformer coupling is the best on high frequencies.

Our radio transformer is really nothing more than a coupled, tuned circuit that is in resonance with a very narrow band of wave lengths, taking the output of one vacuum tube on its primary and—by reason of the inductive coupling between its windings—transfer-

ring this to the secondary, which, in turn, impresses the current on to the grid of the next tube. Thus the radio transformer is a means of transporting the amplified result of one tube to the next tube for further amplification.

For successful operation of the radio frequency amplifying receivers, the transformer should have these characteristics:—

First, it should be completely shielded. Second, its coils should be wound in such a way that the capacity effect is at a minimum (reversal of the secondary leads sometimes produces this effect in badly designed transformers). Third, for the same reason, windings should be of as small a diameter as possible. Fourth, the number of turns should be just sufficient to produce the correct amount of inductance and capacity for the range of wave lengths for which the transformer is to be used.

A Talk With Wireless Weekly

Two months of the year 1923 are nearly finished, and we shall have **No Broadcasting**. Who is to blame? Is it the apathetic amateur? or is it the Broadcasting Company?

Wireless Weekly does not know who is to blame, but it does know this, that unless the amateur and the wireless dealer awake and get busy that months will elapse before we hear decent music in the air (always excepting Mr. Chas. MacIurean, of Strathfield, who has been and still is the only man who has given us first-class wireless music regularly).

Wireless Weekly appeals once more to all those interested in the science to clamour for Broadcasting. The Wireless Boom will never come till we have it.

BROADCASTING

Mr. J. W. Robinson, Edward Street, Concord, gives his solution.

Yes! the problem of broadcasting promises to be a very difficult one, and seeing that it vitally concerns every holder of an experimental license it can only be fully solved by a co-operative effort on the part of every amateur in Australia.

In England, where the population is many many times greater than in Australia and where there is a correspondingly larger number of amateurs it was solved only after much discussion and a good deal of delay.

In Australia where a comparatively small number of amateur stations are in existence, it is probably doubly or trebly difficult to suggest ways and means whereby the amateur wants in the direction of "broadcasting" may be fulfilled.

Many amateurs on first considering the question are apt to jump to the conclusion that the wireless companies should provide the concerts and the music. The wireless firms, they say, have everything to gain by the creation of a radio boom and why therefore should they not provide the means for popularising radio telephony. At first sight this appears to be a reasonable argument but a little consideration will show that it is not altogether a fair attitude to adopt. When a man purchases a gramophone he does not for one moment expect the music company with whom he

deals to supply him with records for ever and ever. He purchases his machine in the first place and then without argument buys whatever accessories he needs in order to provide him with music. This transaction bears a very close relationship to the radio business.

The wireless company is in business to supply him with apparatus and to make a profit out of doing so. Can he expect the company to supply the means for the operation of his set. Surely it would be just as reasonable to expect the radio firms to establish stations for the purpose of enabling amateur morse operators to learn the code. I am in no way connected with any wireless company and therefore do not write from a personal point of view. I am merely looking at the matter in a fair and square way and attempting to arrive at some conclusion.

However while the radio companies cannot reasonably be expected to do everything in the direction of broadcasting the fact that a radio boom will be to their financial advantage certainly does place them under an obligation to assist in some way. The suggestion that all amateurs be charged a certain amount per year for broadcasting is a very reasonable one but big difficulties appear to lie in its track. For instance, it would hardly be fair to charge any sum unless every amateur in the country was liable to make payment. This could only be effected by making the matter a government duty and having the regulations amended to provide for the fee for broadcasting

being included in the license fee. Is the Government likely to do this? I venture to say emphatically no. It is pretty safe to assume that the Commonwealth authorities find it difficult enough to administer the regulations properly, without worrying about the provision of broadcasting. Broadcasting is a form of amusement and the Government can hardly be expected to take control of it. The whole source of trouble in connection with the establishment of broadcasting may be summed up in one word, "finance."

If it were possible to establish a company which could charge each amateur a fee every time he "listened-in" in the matter would be a purely commercial one and we would have no difficulty in finding persons ready to invest their money for the sake of the profits. Such an arrangement is however obviously out of the question since there will be, in no sense, any profitable return for money expended as far as actual dividends are concerned. Our problem to-day is a difficult one inasmuch as it really amounts to finding money to establish something which will not return profits.

One solution has occurred to me and I do not think that it has been applied in any other country. Why not raise some of the money required by wireless advertising. At the present time the broadcasting of any advertisement by telephony is strictly forbidden. Would it not be possible for a body consisting of representatives of the amateurs and of the radio

February 23, 1923.

WIRELESS WEEKLY

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companies to go into the whole matter and discuss the broadcasting problem. A levy could be made on amateurs in the manner suggested by the article in "Wireless Weekly" last week but it would have to be left to the honour of the amateurs to cheerfully pay up. Defaulters could quit easily "listen in" without payment but this difficulty would have to be gone around rather than be overcome. The radio companies could do their share also as suggested but a large proportion of the revenue could be made out of "ether advertising." With the Government's consent, the intervals during a concert could be filled by laudatory remarks concerning "Stinkins Sumpitous Sausages," "Poits Patent Pills," etc. This perhaps appears ridiculous but nevertheless it is perfectly feasible. It is done daily in our newspapers and is done both daily and nightly in picture theatres all over the world. Intervals at picture shows are filled by a display not only of lantern slides but of moving picture advertisements. Revenue is collected in this manner and if the system were applied to wireless would it not be practicable? I admit that a very strict control would have to be kept on the broadcasting, but surely no stricter than that which is exercised by the managers of theatres who allow only a certain interval during the show to be occupied by the advertisements. The newspapers publish advertisements but the management see that the whole of the space in each issue is not entirely filled.

Any new idea or suggestion is always made the target for mirth and I venture to predict that many of your readers will regard my proposition in this light. Whether this be or be not the case, I make the suggestion in all seriousness, and would like to hear the views of other amateurs. I am an enthusiast and "broadcasting will be to my benefit as much as it will be to the benefit of my brother amateurs." I therefore am anxious to see it come.

While discussing this matter I have neglected to refer to the move by Grace Bros. in the direction of broadcasting. Every amateur must thank that firm for its concerts but when the matter is looked at in a cool and calcula-

ting manner, can the institution last? Grace Bros. is a business firm and the aim of its management is to make profits. Grace Bros. concerts have been organised for the benefit of the customers who flock to the various departments where receivers are installed for the purposes of hearing the music. The idea is a new one and is attracting a crowd. Grace Bros. management realises as well as we all do that it cannot afford to broadcast concerts for amateurs purely for the sake of its radio department.

In conclusion let me sum up. Broadcasting is not a matter to be handled by a company as a direct commercial proposition. Broadcasting will prove beneficial to two parties, the amateurs, and the radio companies. Can not the best solution be arrived at by a conference between amateurs and representatives of the radio companies?

Would it not be a step in the right direction if a public meeting of amateurs and radio dealers were called to discuss the whole matter. A sub-committee could then be formed to deal closely with the problem.

*

BAD FOR BANDITS.

The use of radio for running down law-breakers is not new. But a novel and dramatic use of it is being found, for it is thwarting the bandits of Mexico; here is a description from a former official of the American Chamber of Commerce in Tampico:—

It took robbery and violent death at last to bring radio into the Tampico oil fields as the new hope of the oil companies, and the rurales who are supposed to preserve law and order. The recent killing of one American, the wounding of two others and the taking of 42,000 pesos from a paymaster for the *Companias del Agwi* finally decided that organization to apply to the Mexican Government for a permit to install radio receiving and sending apparatus, for connecting its headquarters in Tampico with its sea loading stations and camps in the lower field, in the State of Vera Cruz.

Robberies have been of almost weekly occurrence in the great Tampico field, which takes in hundreds of square miles of jungle

in which, heretofore, the bandits have found it easy to outwit the "rurales." A gang of bandits that was recently broken up was armed with portable telephones and had been listening in on the private lines of companies; there is little doubt that the arrangements for the transportation of the payroll stolen from the *Agwi* company were discovered by the bandits in that manner.

The company had arranged to send the money over the most dangerous part of the trip by airplane, believing it could evade bandits in that way, but the bandits evidently had learned all the details of the plan, and held up the paymaster before he reached the plane where he was to have taken the airplane.

The Mexican Government has a monopoly on all telegraph and telephone communications, however, and it is only by special permit that any private company can transmit or receive messages. The great oil companies have such permits and all the principal companies have private telephone lines—the only long-distance telephone lines in Mexico. All radio outfits which cross the border, therefore, must be reported to the Mexican Government, and it is believed that the government can easily keep tab on all such equipment in territory under its control, so that it will be virtually impossible for bandits to listen in on the oil companies by radio. At present, the bandits know nothing of radio.

NEW RADIO BOOKS.

- Lessons in Wireless Telegraphy, by Morgan, 2/9 Posted.
- Experimental Wireless Construction, by Morgan, 2/9 Posted.
- The Construction of Amateur Valve Station, by Douglas, 2/3 Posted
- Crystal Receivers, for Broadcast Reception, by Harris, 2/3 Post.
- Wireless for All, by Scott-Taggart, 11d. Posted.
- Wireless at Home, by Donisthorpe, 9d.
- Mast and Aerial Construction for Amateurs, by Ainsley, 2/3 Post.
- Plans and Specifications for Wireless Telegraph Sets, by Collins, 2/3 Posted.
- Auto-Time Morse System, by Perry, 10d. Posted.

**N.S.W. BOOKSTALL CO.
LIMITED.**

RADIO FOR THE BLIND

Although radio has come to the universe as a novel form of twentieth century entertainment, there are other phases of wireless, apart from the purely amusement aspect, which shortly will bring their influence to bear on everyday affairs.

There is one form of radio which undoubtedly will brighten the lives of many thousands in all parts of the world, and that is the possibilities of the science where those who have been afflicted with loss of sight are involved.

Broadcasting "Good Cheer."

In a measure, broadcasting will develop into a guide, philosopher and friend to blind men who utilise its wonders to help alleviate the eternal darkness amidst which they move. Already it has been proved that it is possible for a totally blind person, with no more knowledge of radio than the average amateur, to operate a wireless receiving set, look after his instrument, accumulators and batteries, and manipulate them with great accuracy and without any sighted assistance.

It does not require a great deal of imagination to realise the boon that radio can confer on the sightless.

The turning of a switch and a blind man, either through the agency of a loud speaker or head phone, can enjoy broadcasted entertainment and listen to the happenings of the world, with similar ease to that of anyone possessing natural vision.

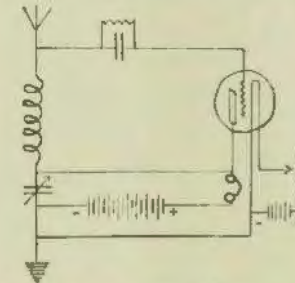
A Sixth Sense.

Radio to the blind can easily develop into a form of "sixth

sense" which in scores of ways will compensate the sightless for the loss of that which their unseeing eyes cannot appreciate.

The loud speaker will convey to them interesting speeches, lectures and discussions which, in the ordinary course of events, the blind could only assimilate through the somewhat laborious task of reading "Brail," excellent as that method of reading by touch may be.

One of the greatest hardships which faces the man who in his blindness has lost much of his



This is the well-known De Forest
Vacuum Tube Circuit.

power to move from place to place with the freedom of his more fortunate kindred, in his inability to frequent places of amusement without considerable difficulty.

It is here that radio provides for such poignant cases of misfortune an effortless and simple method of entertainment which necessitates nothing in the way of journeys full of difficulties and not unattended by hazard.

No Handicaps.

And from a deeper psychological standpoint there is little doubt that those who are sensitive concerning their affliction will be happier in the knowledge that with radio they miss nothing that others can appreciate. For the hearing rather than the sight is the primary sense involved in the enjoyment of wireless entertainment.

There will not be the happy laugh that accentuates to the blind man in a theatre or variety house the passing of a humorous gesture or buffoonery that his sightless eyes cannot observe. He will not be continually reminded of his disability by the audible sounds of enjoyment inspired in those who are moved by laughter by what they see rather than by the spoken word.

St. Dunstan's and Radio.

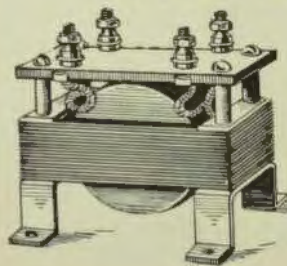
Already there is a keen wireless amateur afflicted by blindness who is championing the cause of the sightless where facilities for their enjoyment of radio are concerned.

Captain Ian Fraser, who was blinded in the war and who is the Chairman of St. Dunstan's, recently broadcasted a speech from Marconi House, in which he pictured the possibilities of radio as a form of entertainment for the sightless.

He asked wireless amateurs to help to guide one or more of the two thousand totally blinded ex-service men and those amongst the thirty-three thousand discharged from the Army on account of eye afflictions, who, in many cases, were passing through

(Continued on page 5, column 3.)

INTERVALVE TRANSFORMER.



CLOSED CORE—FOR AUDIO FREQUENCY AMPLIFICATION.

This Transformer, which is scientifically constructed, is of the shell type. It is simple, reliable and compact. Maximum results are assured. The complete measurements of this Transformer are 2½ x 1¼ x 1¼ in. It is provided with feet in order that it may be mounted in any desired position.

Price - 45s.

Postage 6d.

HomeCrafts Melb
P.H. McELROY.
211 SWANSTON STREET

HIGH-POWERED VACUUM TUBES FOR RADIO WORK.

High-powered vacuum tubes have recently been successfully used in transatlantic radio work, signals having been transmitted and received between Nauen, Germany, and Rocky Point, L.I. The tubes were of 20-kilowatt capacity. Development of these vacuum tubes has proceeded steadily from a beginning of .1 or 2 watt, up to the point where they now handle 20,000 watts. Tubes even larger than this are now under construction. One of them, designed for a capacity of 100,000 watts, promises to be fully as successful as those now in use, in addition to possessing a higher efficiency, because it will have such an enormous amount of power.

ACTION OF RADIO SWITCHES IMPROVED BY VASELINE.

While in a laboratory where radio-resistance measurements of great importance were being conducted, a visitor was much surprised to see one of the assistants apply a generous amount of vaseline to the points and blades of a rotary, or dial, switch. The action was slightly squeaky, and the lubricant was applied to overcome the scratchy effect and make the instrument operate smoothly and with good electrical contact. It was explained, that, paradoxical as it may seem, the use of vaseline on such switches had been found to improve not only the mechanical action but the constancy of the contact as well. This was discovered in an investigation where it was necessary to have a com-

mutator operated with extraordinary definiteness and efficiency. Everything had failed until the worker drenched the part with oil. Much to his surprise, the experimenter found that this produced exactly the effect he sought. Since that time vaseline has been found to be equally effective, and cleaner and easier to apply than oil.

RADIO FOR THE BLIND

(Continued from page 4)

"the terrible transition stage from defective sight to total blindness."

Those who are blinded, it is well known, develop a hyper-sensitive hearing; and for this reason they are, in a sense, better equipped for "listening in" to wireless than the average person. Also—and this is a reflective compliment to the success of modern design where radio apparatus is involved—the comparative simplicity of operation of a receiving set presents little or no obstacles to the sightless.

The Trimm "Professional" Head Set.

3000 Ohms.

A QUALITY PHONE AT QUANTITY PRICE.

Perfect Reproduction and Articulation at any Range.

Weight Only 10½ ozs.

Compare these specifications with any head set on the market at any price, and see why the TRIMM "Professional" is the biggest value in the Head Set Field: . . . Moulded Bakelite cases and ear caps, which will not warp or crack like cheap composition; no exposed metal parts to become tarnished; single bar Tungsten steel magnets formed to shape to insure uniform tempering and magnetizing; coils wound with maximum number of turns of No. 40 enamelled wire to full resistance of 3,000 ohms; reinforced terminals of stranded wire brought out from coil windings to solder on; coils covered with insulating cloth—no fine wires exposed; arrester gap across cord terminals; improved type head band covered with resilient tubing—comfortable, light weight and distinctive in appearance.

PRICE 39/6 each.

Obtainable from all Wireless Supply Houses.

Sole Australian Agents

O. H. O'BRIEN & NICHOLL (SYDNEY).

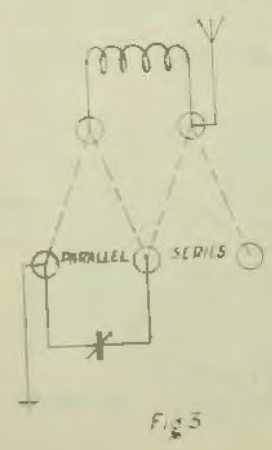
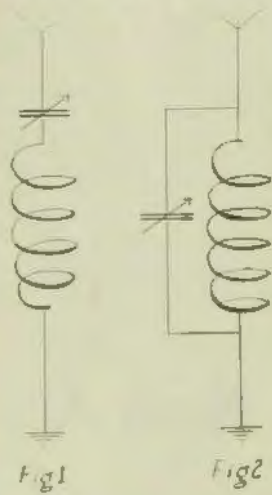
Phones: City 3302, 10592.

37-39 PITT STREET, SYDNEY.

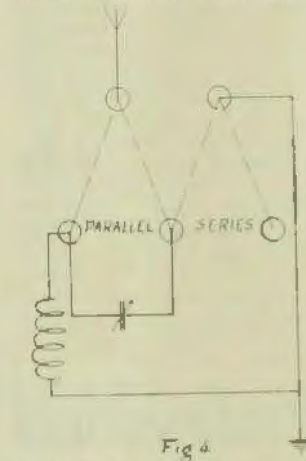
MAKE YOUR OWN

SERIES PARALLEL SWITCHES

POLDHO.
A condenser used in parallel in the aerial circuit increases the



wave-length. The wiring shown in the diagram is for a panel type valve or crystal receiver but if the experimenter has a hunch for loose wiring, the construction of a small ebonite panel will facilitate tuning with the condenser. A



double switch arm can be constructed or purchased fairly cheaply. The diagrams (fig. 1 & 2) illustrate the position of the condenser when in series and in parallel (theoretical); figs. 3 and 4 are alternative methods of wiring the condenser and the inductances.

VANCOUVER RADIO STATION

Latest advices are to the effect that the Canadian Marconi Company, in co-operation with the parent company in England, is contemplating the erection at Vancouver of a radio station which will permit direct communication with Australia. This would be one of the largest and most powerful radio stations in the world and would probably cost £40,000 or more.

TEST LAMP PREVENTS BURNING OUT COSTLY TUBES.

Every radio fan who experiments with new circuits can avoid the danger of burning out an expensive vacuum tube through short circuits if he will make it a practice to test the filament terminals of all sockets with an ordinary electric light bulb of the same voltage as the vacuum tube. Thus, when using a UV 200 tube, the test lamp is simply a 6-volt flash-light bulb.

If the wiring has become deranged or any mistake in the connections has been made, the test bulb, costing only a few pence, is burned out and not a vacuum tube. The rheostat should be tested at the same time, running the slider all the way around to see that there is nothing defective with it.

To mount the test bulb neatly, use an old vacuum tube base. Break the glass away and remove everything but the filament leads, which are then connected with the terminals of the small socket. The socket and base are moulded into one unit with tar or other sealing compound.

Anglo-American Book Shop.

WILLIAMS AND SON

(Late Hallams).

G.V. BUILDINGS

459 GEORGE STREET.

SYDNEY.

All the Latest Wireless Books and Magazines in stock, posted anywhere

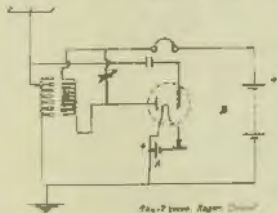
AN EFFICIENT SHORT WAVE REGENERATIVE RECEIVER.

The first thing to consider is the best and most efficient way of obtaining the necessary wave-length on which it is desired to receive signals.

The most usual is 600 metres, and this form of receiver works best on waves about that length.

The best results are obtained by using a variable inductance alone for obtaining the wave-length, as short-wave receivers all work best where inductance and not capacity is used to tune the primary.

In this particular piece of apparatus, tuning is best accomplished by the use of a solenoid inductance tapped on the units and tens principle. 110



turns of 24 gauge d.c.c. copper wire being quite sufficient if wound on a 4 1/2 in. former. The accompanying diagram shows hook-up.

The tuning arrangements can be either in the form of a loose-coupler or vario coupler, both being eminently suitable for the purpose.

The secondary of the tuner, in this circuit, acts as a reaction coil. It need not be tapped at all; but to get best results it should be shunted by a small variable condenser, a capacity of .0003 micro-farado being quite large enough.

A variation of this condenser results in an infinitesimal variation of the coupling, and

so, very good control over regeneration is obtained.

The grid condenser is just the same as the ordinary fixed grid condenser.

Excellent telephony on 250 metres was received using this apparatus, with a "Mullard" valve, and a 40ft. single wire aerial.

For 600-metre stations I have found this circuit unbeatable.

Just to show the results which may be had using this hook-up, I will enumerate some of the 600-metre stations which I have received using one valve only.—Perth, Geraldton, Port

Moresby, Macquarie Island, Chatham Islands, and many others. I have also heard the s.s. "Ventura" when two days out from San Francisco.

Books for the Model Engineer

- Model Steam Locomotives, 9/- post free.
- Model Electric Locomotives, 9/-, post free.
- Model Engineering, 11/- post free.
- Lists 6d.

O. BURNABY BOLTON
Daily Telegraph Building,
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RADIO SETS
and Parts to make your own

Send for Price List.

ELECTRICAL UTILITIES SUPPLY CO,
RADIO HOUSE
605 GEORGE STREET, SYDNEY.

Get Your Wireless Gear at
ELECTRICITY HOUSE

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

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

Murdoch's Phones, 35/-; Myers' Valves, 35/-.
Catalogues, 9d. each including wiring and other diagrams. All makes of Telephones and Valves.

Crystal Cups, 1/-; Detectors, 5/- each; Loose Couplers, 40/-; Cabinets, Ebonite, Bakelite, and All-round Materials.
Complete Crystal Sets, £3/10/-, £6/10/-, £7/10/-; Valve Sets, from £9 to £35, 1, 2 or 3 valve; Radiotron Valves, 37/6; Vernier Rheostats, 15/-.

INTERVAL TRANSFORMER, 40/-.
Closed Iron Core.

UNDER NEW MANAGEMENT
Works' Manager: Raymond McIntosh.
General Manager: J. S. Marks.
All Communications to the Firm.

Our Radio Yarn : THE REBELLION

"Hallo Ted," said his chum Frank, "are you doing anything this evening; if not will you come over?"

"Oh yes, I'll come over, but maybe I'll be a little late, for I'll be working overtime this evening, but I'll fly over in the Avro if its not too dark. Oh, by the way, have you finished your new valve set?"

"Yes, I've finished it all right, and I've added my idea which cuts out H.F. amplification, so if you come over at 8 o'clock sharp we'll try her out again. With my single valve, last night, and the phones lying on the table, I could hear music all over the room. We'll use 3 valves and a 'shrieker' this evening, so don't forget. So long."

"Put these phones on your head Ted, I have her all connected and only have to tune in. There's plenty of static."

"Yes, your right, there, but the traffic doesn't begin for 15 minutes yet," returned Ted.

"Yes, know, but I'm not listening for the traffic. I'm on 1575 metres waiting for Mr. Bank's '7x y2' to begin his transmission. He has made a few alterations in his set and is trying it out to-night. Hark! there's his wave." There was a pause while Frank tuned it in to its loudest point, then Ted broke the silence.

"Is it through? If he doesn't start till 8.15, we still have 12 minutes to wait."

"Keep quiet," said Frank suddenly, "somebody's trying to send speech and making a mess of it— Ah that's better. Hark! Ted did you get that? Listen."

Frank drew his pad and pencil towards him and began to copy down the words in shorthand. He never heard a message without making a copy of it, and this one was after the following:—

"Help! help! Please come to my assistance, I am in charge of Catarat Island, 160 degrees W, by 20 degrees S. The natives have rebelled, killed my wife and am sheltering in the barricade with my son and daughter. For heav-

en's sake send help, quickly. I can't hold out much longer. Help! help!"

Frank spun around in his chair and said excitedly to Ted, "Ted are you willing to fly to this island, if your machine is in working order?" "Yes, I'm with you, Frank I have enough petrol to take us there and back. I'll go and get her ready while you get some food for us, the man and his children and get some rugs and a big coat for yourself for it's a long way and it will be mighty cold. We'll take off from the road." "Righto," returned Frank, and each parted to do his amount of preparing for the trip.

Five minutes later the aeroplane was on its way south at something like 90 per hour and travelled until sometime in the morning and as it was still twilight, they could see where they were going. They continued for another hour or so and sighting a speck on the horizon made for it. "This ought to be it," yelled Frank through the speaking apparatus "We've about flown far enough haven't we?" "How long will your supply hold out for?" "Enough to get back to Fiji to restock." "Good, fly on, I'll observe," yelled Frank. He was as good as his word. He looked down at the island but could not make anything out, so he signaled to Ted to go lower. He then espied some natives jumping and dancing around a building, from which little puffs of smoke shot out as though from a gun. Ted signalled to Frank to descend and Frank took a sickening nose dive right at the heads of the unsuspecting natives who ran yelling into the bush. Then he circled round and round and landed in the big green in front of the house. No sooner had they brought their machine to a standstill, than a man with a child in each arm appeared in the doorway, and rushing out, fell on his knees before them and cried, "Thank God you've come, I could not have held out much longer it was for the kiddies sakes—"

and fell fainting upon the ground.

Ted leached some water and they put some spirits between his lips and when he revived, they turned the plane around and helped the man and kiddies aboard and started on the return journey.

Just as they were getting into the machine, Frank turned, grasped Ted's hand and said, "Another triumph for Radio."

Radio-Frequency Transformers.

Many dealers and consumers fear that present radio apparatus will become obsolete soon on account of changes in radio. However, consideration should be given to the development of other means of communication before passing judgment. The same basic principles still apply to the land telephone and telegraph. Refinements and additions have come, but the old apparatus still works. In radio the changes from now on are not apt to be basic ones. No doubt our present vacuum tube equipment will continue in use, although there will be numerous minor changes which will tend to make it far more efficient and satisfactory. One of these changes is radio-frequency amplification. The demand for greater reception range and the use of loop antennae require weak signals to be amplified to a greater degree. Additional stages of audio-frequency amplification are prohibitive on account of howling produced by the amplifying tubes and wiring acting as wave generators. By using radio-frequency transformers, however, the weak incoming radio-energy may be amplified before reaching the detector tube, after which audio-frequency can be employed for loudness. Fortunately, several excellent types of radio-frequency transformers have now appeared on the market, and without extensive changes most of the existing equipment on the market can be altered for radio-frequency amplification.

RADIO BROADCASTING IN CUBA AND PORTO RICO

from recently established stations is attracting much attention, according to recent 'Commerce Reports.' The Cuban Station is of 400-watt capacity and send out a 400-meter wave with a range of 2400 miles. Broadcasting from Porto Rico began towards the end of last summer, from a 250-watt set. The latter broadcasting station has been heard at points 2000 miles distant.

TRANSFER TUBES IN THE CIRCUIT.

Although vacuum tubes are now made in quantity from standard designs, no two are identical. In receivers employing more than one stage of radio frequency amplification, it will be found that reception will be greatly improved if the tubes are changed from one socket to another until the most effective combination is obtained. This holds true for audio frequency amplification as well as for radio frequency amplification.

INTERNATIONAL EFFORTS TO REDUCE RADIO INTERFERENCE.

Countries which are employing radio communication in rapidly increasing degree have been compelled to arrive at a mutual understanding in order to avoid interference and delay in traffic. Five different types of waves have been standardised which produce various amounts of interference at a given distance from the transmitting aerial, the decrement serving as a criterion. Thus radio telephony is to be carried on by waves ranging from 1550 meters to 1650 meters for fixed stations, and 300 meters to 340 meters for mobile stations, but the decrement of the waves used must not be greater than 0.005. For mutual benefit, continues "Electrical World," it is proposed to ask every nation represented at the next international conference in radio communication to supply particulars not only of stations in use, but also of projected stations that may be erected in the succeeding five years.



NORTH SYDNEY RADIO CLUB

A lecture of considerable interest to amateur and professional alike will be delivered at the North Sydney Radio Club next Tuesday night on the subject of "Amplification" by Mr. Raymond McIntosh.

Mr. McIntosh has had world-wide experience in all branches of radio telegraphy and telephony and is a well-known authority upon this particular subject.

The lecture commences at 8 p.m., and will be held at the North Sydney Radio Club's rooms, corner Alfred and High Streets, North Sydney.

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RADIO CLUB FOR MANLY.

A movement is afoot to inaugurate a Radio Club at Manly. The formation meeting has been called for Monday, 26th February, at 8 p.m., in the Presbyterian Hall, Raglan St., Manly.

METROPOLITAN RADIO CLUB.

The Metropolitan Radio Club held its annual meeting in the "Laurel Cafe," Royal Arcade, on 7th inst. A large number of members were present.

The main business was the election of officers, which resulted as follows:—President, Mr. C. Marsden; Mr. A. Atkinson, Vice-President; Miss F. V. Wallace, Treasurer; Mr. C. McKenzie, Secty.; Messrs. Cotterill, P. Sewell, McIntyre, and S. Atkinson, Committee.

It was also decided to change the night of meeting from Wednesday to Monday, to avoid interfering with meeting nights of suburban clubs.

Our next general meeting will be held in the "Laurel Cafe," Royal Arcade on Monday, 26th February.

Address letter to Secretary, c/o Miss F. V. Wallace, Royal Arcade, Sydney.

ILLAWARRA RADIO CLUB.

Another well-attended meeting of the club was held on the 15th inst., when three new members were elected. The marked increase in membership which the club has shown of late is very encouraging indeed, and is an excellent indication of the wide appeal which it has to radio enthusiasts in this area. The club is out to help each and every one, great and small, of the large body of experimenters

and enthusiasts in the big district embraced by the Illawarra suburbs, and hopes that one and all of these amateurs will show their appreciation of the efforts being made on their behalf by giving the Illawarra Radio Club their solid practical support.

Mr. Gorman (delegate) reported the proceedings of the last meeting of the Radio Association, when new rules had been adopted, the effect of which he explained. Mr. A. E. Atkinson also spoke on the present position of the Association, and said that in view of the amended constitution a re-election of the club's delegate became necessary. Following a discussion, Messrs. Hewett and Gorman were nominated for the position. The nominations were put to the ballot, resulting in Mr. Hewett being elected as the club's delegate.

The main feature of the evening was then put forward, being a lecture by Mr. Watkin Brown on "Crystals." The lecturer took the subject in two sections, firstly, crystals and their characteristics; and, secondly, the various minerals used as crystal detectors in wireless. It was shown that all crystals were classified into chiefly six systems, under one of which each particular crystal came according to its own peculiar formation or construction, and that the whole of the innumerable crystal substances known were governed by these laws. The distinct physical features of crystals of different classes were illustrated, and the various forms of crystal structure described.

Several excellent specimens of crystals were exhibited, including galena, magnetite (so-called, being really granular galena), iron pyrites, copper

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pyrites, zincite, bornite, molybdenite, carborundum, silicon, etc. The chemical composition of all these forms, and their properties and uses in wireless, separately and in combinations, was fully explained. It was interesting to note that most crystals were sulphides. Another rare crystal which had been used with remarkable results in wireless was stannite (sulphide of tin). It had yet to be discovered just why crystals were "sensitive," and it was a remarkable fact that of two pieces of crystal of a given species, containing, apparently, exactly similar physical features and make-up, one would be an efficient detector and the other would be absolutely useless.

The lecturer pointed out that there were a great many mineral substances with potential possibilities, and as yet untested with regard to their uses for wireless work, which left an enormous field for investigation and research, which would probably result in some remarkable discoveries of great value to radio science.

Mr. Brown's knowledge of mineralogy and crystallography enabled him to deal with the subject in an extremely interesting and instructive manner; many important facts were made known and altogether much interesting light was thrown on a subject, which did not, as a rule, enter into the considerations of the average experimenter, and gave a great deal of valuable food for thought. The generally much-despised crystal came in for some keen discussion, to the evident appreciation of all present.

Mr. Brown was accorded a hearty vote of thanks, carried by acclamation, and, in responding, offered to assist any

of those desirous of engaging in a little crystal research work.

The next meeting of the club will be held at the club room, 75 Montgomery Street, Kogarah, on Thursday, 1st March, at 8 p.m., when Mr. Gorman will recount his experiences of many years of experimental wireless work. A cordial invitation is extended to all interested to come along.

WOLLONGONG RADIO CLUB.

A meeting was held at the premises of H. Williams and Son, on Saturday last, with the object of forming a local club.

Keen interest was shown by those present, and a club was formed and named, Wollongong and District Amateur Wireless Club.

E. A. Williams was elected Hon. Secretary, pro tem. Next meeting will be held on Saturday next, when officers will be elected and arrangements made for monthly lectures.

The club commenced with 20 members, and it is expected to be 50 within three months. Temporary club rooms have been obtained. Everything points to success and something should be heard of local experimenters in the near future.

CAMPSIE AND DISTRICT RADIO CLUB.

The fifth general and business meeting of the Campsie and District Radio Club was held in the new club room, Starr Bowkett Hall, North Parade, Campsie, on Wednesday, 14th inst.

There was a very good attendance, buzzer practice being one of the items for the evening, after which Mr. Hobbs gave a very interesting and

instructive lecture on the construction of a loose-coupler, which was very much appreciated by the members, and a few good hints were obtained. At the conclusion of his address, Mr. Hobbs was accorded a hearty vote of thanks, which was carried by acclamation. A very busy time is expected for our next meeting, as a start is to be made to assemble the club's crystal set. Members are requested to try and be punctual to time, so that the business of the evening can be got through quickly.

All inquiries as to membership and to the club's activities should be addressed to the Hon. Secretary, W. Hughes, "Loch Venachar," Evaline Street, Campsie, or attend any of the meetings which are held every Wednesday evening, 7.45, at Starr Bowkett Hall, North Parade, Campsie.

Special Meeting.

At a special meeting of the Campsie and District Radio Club, held in the Starr Bowkett Hall, on Friday, February 9, at 8 p.m., now that a larger and more convenient club room has been obtained, it was decided that the club's set be gone on with immediately. Permission has been obtained to erect an aerial and a 65ft. mast is to be erected. Club's set to work as soon as permission is obtained, although their is plenty of work to keep the members busy for some time. Buzzer practice and a practical demonstration in the construction of a crystal set is the items for the next meeting.

A vote of thanks was passed by the members to Mr. Matthews for the donation of 5/- and parts of apparatus for the club's set; Mr. Shelton, the President of the club for the donation of £1; Mr. Allingham

for the donation of an accumulator, and also to Mr. Steel for the work and time he has given in obtaining parts of the club's set. It is of interest to note that the club has been formed just a month, and its membership has been more than doubled from the first meeting night, which was an attendance of seven; it has now twenty financial members, which goes to show the interest the science has in the district, and the activities of the club and its members. It has also to thank "Wireless Weekly" for some of its members in publishing the club's reports. Next meeting, Wednesday 14th, 8 p.m.

W. SUBURBS' AMATEUR WIRELESS ASSOCIATION.

The last meeting of the above Association, held at the club rooms, was devoted to buzzer practice and demonstration. During the last week no further work has been done to the club's transmitter.

Some good reception work has been carried out recently by the club, a Victorian amateur being heard. Signal strength about 5, music and speech being quite clear, and distinct modulation excellent. Further transmissions from this amateur are expected and hoped for. Working on single V24, without "B" battery, some really good results were obtained, all coast stations being particularly loud. Numerous ships were also heard, the signals being quite readable; strength 7, using 1 stage radio. Still using 6 volts, New Zealand was heard. This goes to show that the amateur, with a reasonable amount of patience and perseverance, has still quite a lot of interesting and useful work to do. Even now, while writing this report, two of the

members are listening to a myriad of stations working. Still using only 6 volts. Static under these conditions is noticeable for its absence. By the introduction of the "B" battery no static is found to be very bad, that is of course, using the original circuit. Amateurs are advised to give this method of working a trial, when they will be agreeably surprised at the results.

The club meets every Wednesday night at club rooms: Communications to be addressed to Hon. Secretary, 4 Child's Street, Lidecombe, who will gladly receive inquiries concerning the club, and information re amateurs' sets will also be gladly dealt with.

WAVERLEY AMATEUR RADIO CLUB.

Minutes of meeting of W.A.R.C., held 15th February. Mr. E. Bowman (President) in chair. A large number of members were present. Minutes were received; also correspondence. A letter from the Radio Association of New South Wales was received, and, in reference, Messrs. Howell and Lavington were appointed delegates to the Association. Mr. Thomson reported that the club's new tuner was finished, all except the cabinet, and would be brought along next meeting. Mr. Bowman and Mr. Thomson were accorded a hearty vote of thanks in connection with their work on the club's set.

The club will now be open to all members on Tuesday nights for buzzer practice and technical discussion.

Mr. Prendergast presented the club with another key and buzzer, and was accorded a very hearty vote of thanks.

G. Thomson, Hon. Sec., 87 Macpherson St., Waverley.

LEICHHARDT & DISTRICT RADIO SOCIETY.

Mr. F. Thompson delivered a very interesting and instructive lecture on the subject of alternating current before a well-attended meeting of the Leichhardt and District Radio Society, on Tuesday, February 13th. Mr. Thompson's handling of his subject was done ably and well, and the lecturer was accorded a vote of thanks by acclamation at the conclusion of his discourse.

The matter of the erection of an aerial on the Society's premises is still well to the fore, and it is expected that members will have the added advantage of a set at their disposal in the near future.

All inquiries relative to the Society's activities should be addressed to the Hon. Secretary, Mr. W. J. Zech, 145 Booth Street, Annandale. For the benefit of those who do not already know, it should be mentioned that the usual weekly meeting is held every Tuesday night at the club room, Victory Hall, rear of Methodist Church, Johnston Street, Annandale, when all interested are invited to attend.

USE ONLY HARD TUBES.

A soft or detector tube cannot be used successfully as an amplifier, because it is decidedly critical as to voltages. At present there is no well designed tube for radio amplification. As a result, transformers have been designed for tubes on the market.

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February 23, 1923

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