

The Queensland Radio News

"Your Own Wireless Journal"

6^d



Vol. III.

Saturday, 1st OCTOBER, 1927

No. 9

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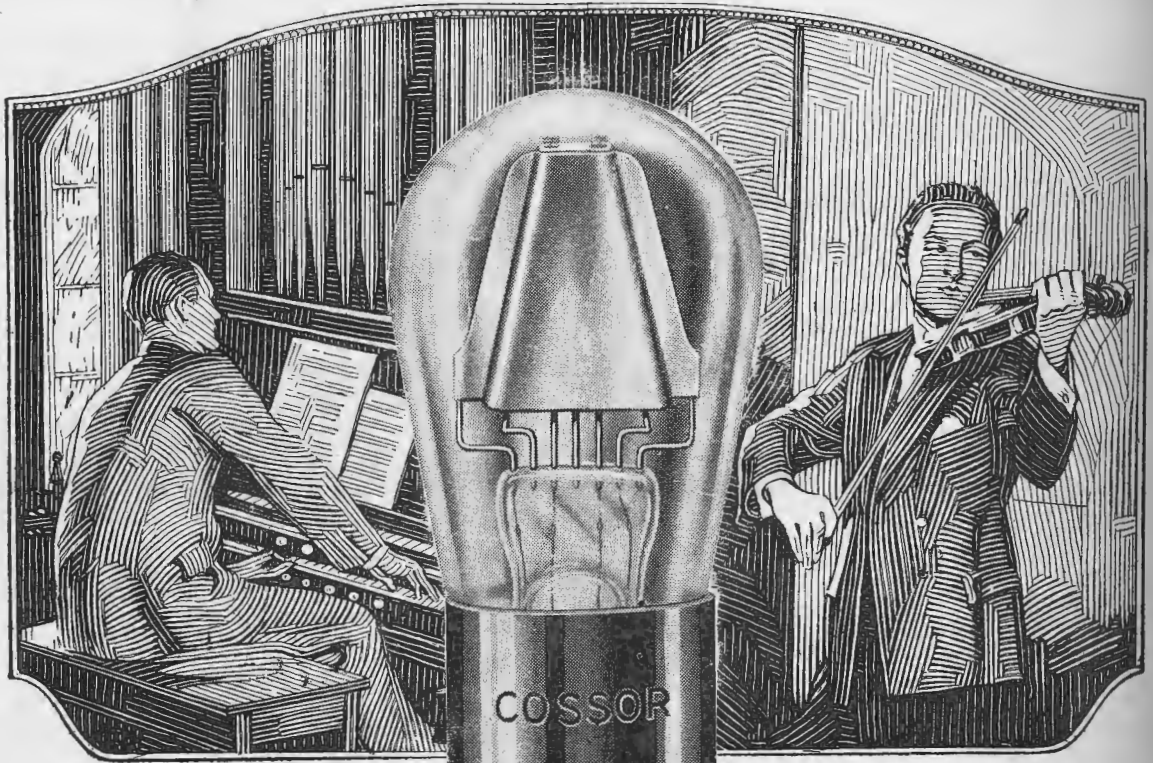
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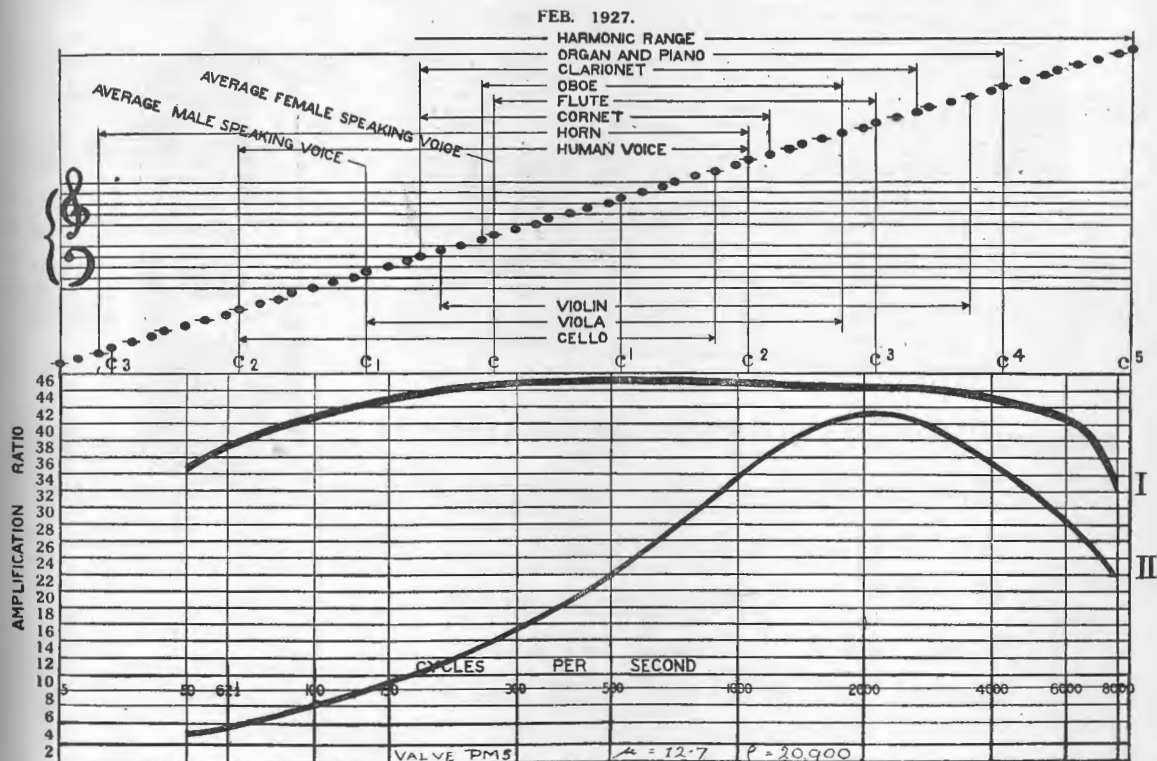
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Every Socket

Radio's sensational development has seen nothing more startling than the new de Forest Audions the latest development of Dr. Lee de Forest.

Now for the first time an American Audion can be purchased to suit the circuit.

Replace your older type with the DL4. Don't take our word for it, try them yourself. The decided improvements you will get will fully justify for same.

Dealers! we require agents everywhere



DL9, DL4, DL5
DL15, DL7, DL14
DL3.

INTERNATIONAL RADIO CO. LTD.

229 CASTLEREAGH STREET, SYDNEY.

RECEPTION OF DEMPSEY-TUNNEY FIGHT.

Mr. Geo. H. Smith, operator at V.I.B. Radio, reports loud-speaker reception of the ring-description of the recent Dempsey-Tunney fight from American short wave morse stations, using a constructed 3-valve short-wave receiver at his residence.

Mr. Smith states that best reception was heard from WBU (approx. 12 metres) and KEL (14 metres). Other stations heard were KZEN, 6XI, WQQ, WLL, all operating between 12 and 15 metres.

Beginning in at 11.15 a.m. Mr. Smith was kept busy following the descriptions of the preliminaries and the bout until 1.55 p.m.

It was stated that there were 120 telegraphists stationed around the ringside. Hundreds of well-

dressed ladies were among the huge crowd present. Some idea of the size of the arena can be visualised when it was stated that even from the 5 dollar seats situated some 800 feet from the ring, everything was plainly visible.

It was stated that Kearns, Dempsey's old manager, was not at the fight. Mrs. Dempsey, Jack Dempsey's wife remained at her hotel during the fight and requested that no one disturb her as she would await the results from her husband's own lips.

The receiver used by Mr. Smith was of a special type combining capacity and inductive coupling and utilising a three-coil circuit especially made for very low wave lengths.

Mr. Smith states that it is possible to receive any of the above stations any day as they are always on the air.

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Better than
the Best —
and
this is "IT"*



**3-Valve 'Blue Spot' Multidyne 'Telefunken' Receivers
Fitted with the famous 'Telefunken' Valves—Resistance Coupled**

No transformers to burn out or give trouble. We guarantee absolutely pure reception with no trace of distortion.

A THING OF BEAUTY and UTILITY.

PRICE: With "A" and "B" Batteries
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Supertone III. Telefunken Speaker ... £3-10-0
Marboloid Concert Speaker, £5-10-0 and £6-10-0

This Advt. is inserted on behalf of all Radio Dealers by

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The Supreme Insulation

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Dealers ! We Need Agents Everywhere

INTERNATIONAL RADIO CO. LTD.

229 CASTLEREAGH STREET, SYDNEY





Lower License Fees



VIEWED in the light of the listener, perhaps the most interesting and gratifying recommendation contained in the recently-published Report of the Royal Commission on Wireless, is that listeners' license fees be reduced.

The Commission, in its findings, stated:—

“That the Postmaster-General should reduce the listener's license fee by such amount as will give the listener-in the full advantage of any reduced royalties and also of any surplus in the amount collected by his Department and not utilised for the purposes of administration and research.”

The royalties referred to comprise patent rights on the transmitter—which the Commission recommends reducing from 5/- to 2/- per license—and copy-right fees, which are also stated to be excessive.

There is no denying the fact that the license fees in Australia have been high as compared with other countries. Twenty-seven shillings and sixpence may not be a very great obligation for the average citizen to meet, but it is a toll quite heavy enough to debar some folk from the joys of listening-in.

Another recommendation of the Commission that should make for lower license fees is the more equitable distribution of revenue among the “A” class broadcasting stations of the Commonwealth. There is not the slightest doubt that some of the privately-owned stations have been making handsome profits, and while these stations claim that the heavy license figures in Southern States have been brought about by their enterprise and by the excellence of the broadcasting services provided, the fact that these stations are operating in the most populous portion of the Commonwealth cannot be overlooked.

If the Royal Commission's Recommendations to the Government be adopted, listeners may safely look forward to lower license fees. True, the reduction may not be a substantial one, it will at least be one step towards bringing the Australian Listener's License on a par with those of other license-paying countries.

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The Wonderful Radio Technique Valves

We have just landed full stocks of these famous French Valves. On the Continent and in Great Britain they created a furore upon their appearance.

For distance-getting and tonal beauty Radiotechnique Valves are supreme. Try one and note the difference.

Detector -- 9/6
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.06 and .01—4 volts.

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The Cone Speaker is fast displacing the old horn type, because of its fuller and more natural tone and also because of its external beauty.

We have a splendid range of Cone Speakers at prices to suit all pockets. Call and have a demonstration.

**From 35/- to 75/-
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Have You Heard

The TELE-PHONOGRAPH?

A wonderful device that permits you to enjoy radio music at any time of the day or night—even if there are no stations on the air!

If you have a phonograph in your home you should have THE TELEPHONOGRAPH also, for by simply removing the detector valve you can play your records electrically and obtain the finest and most natural result.

Call for a free demonstration.

You'll Get Better Value and Better Quality at

Mick Simmons Ltd.

Queen Street (Opp. Town Hall.) BRISBANE

The Q.R.N.
**SPECIAL
 FIVE**



Plenty of Punch on All Stations

The task of choosing a really good five-valve receiver for home construction is not altogether an easy one nowadays. On every hand one reads of "new circuits," most of which are burdened with imposing titles that invariably end with "dyne."

However, when we get down to facts, we find that nothing startling has taken place during the past 12 to 18 months as regards circuit design, though it must be admitted that wonderful developments have taken place in other directions.

The total elimination of "A," "B" and "C" batteries, the introduction of high quality amplifiers and loud speakers may be taken as examples.

As we now have low frequency amplifiers and loud speakers that render almost perfect reproduction, it becomes necessary to turn our attention to the radio frequency amplifiers in order that we may utilise this excellent tone on the distant stations.

IN our opinion, many of the types of radio frequency amplifiers in general use are far from satisfactory; the principal objection being the non-uniform frequency characteristic.

Probably the worst offender in this direction is the usual form of neutrodyne. The amplification factor in the radio frequency amplifiers of these receivers sometimes varying as much as 30 to 40 per cent. over the broadcast band.

On the other hand, however, the neutrodyne method has the advantage, that if it is carefully designed and adjusted, unwanted oscillations may be balanced out on a wide band of wavelengths; this of course is very important, for if the radio frequency amplifiers are not stable the quality of reproduction will be very poor.

So, summing up, we find that the ideal receiver must have a radio frequency amplifier that is stable on all the wavelengths to be received, and at

the same time, have some means of keeping the amplification constant.

This at first sounds rather difficult, but it is not so, for we have only to design and construct our amplifiers so that unwanted oscillations will not be present, and then make the detector stage regenerative, so that, as the amplification of our amplifiers falls off, we are able to compensate for this falling off by means of the regenerative detector.

Simplified Tuning.

The well known split primary transformer system of coupling is used in this receiver, the two high frequency transformers being tuned by means of a dual condenser, while a single condenser is used to tune the aerial circuit.

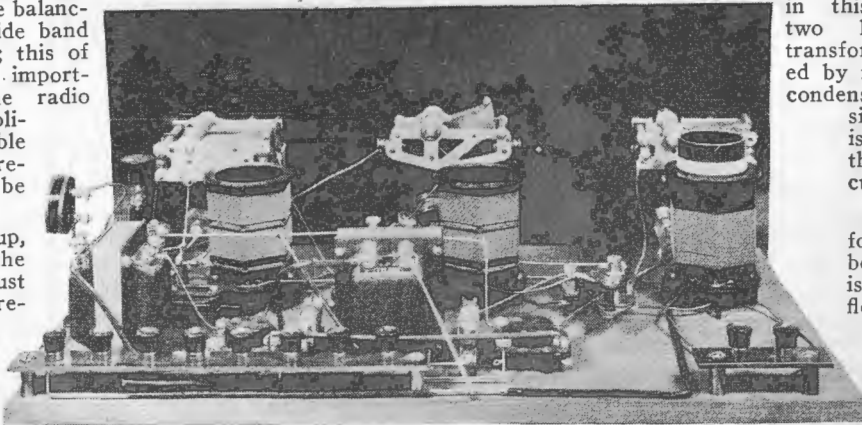


Fig. 1—The small aperiodic aerial coil is shown at extreme right. This coil should be adjusted to yield maximum selectivity with good volume.

This method was found to give the best results, as it is much more flexible than the usual three-gang condenser and also allows finer tuning. A small balancing con-

denser will have to be connected across one half of the dual condenser, its purpose being to compensate for any slight variations in the coil values.

Now to obtain maximum results, as pointed out at the beginning of this article, it will be necessary to employ some form of reaction; this reaction will naturally need to be smooth, otherwise tuning will be difficult.

Capacity reaction has been chosen in this case, as it is particularly smooth and does not seriously affect the tuning provided the right number of turns are used on the reaction coil and the tuning condenser is of the correct capacity (.00025 mfd.)

Ballast resistors are used to control the current passing through the valve filaments, thus doing away with the usual rheostats which, as a rule, require a good deal of attention.

Upon inspecting the diagrams it will be noted that the two radio frequencies valves are controlled by a ballast resistor in the same manner as the two audio valves, while the detector valve has its own particular resistance.

Vernier dials are fitted to the two main tuning controls. These dials are necessary when tuning in distant stations, as the tuning on this receiver is rather sharp.

The Coils.

The coils are probably the most important part of the receiver, so particular care should be taken in their construction.

These coils, that is, the aerial inductance and the two high frequency transformers, may be wound on standard size (2 1/2 in. diameter) bakelite tubing, but a good deal of time will be saved if moulded forms such as the type illustrated are used.

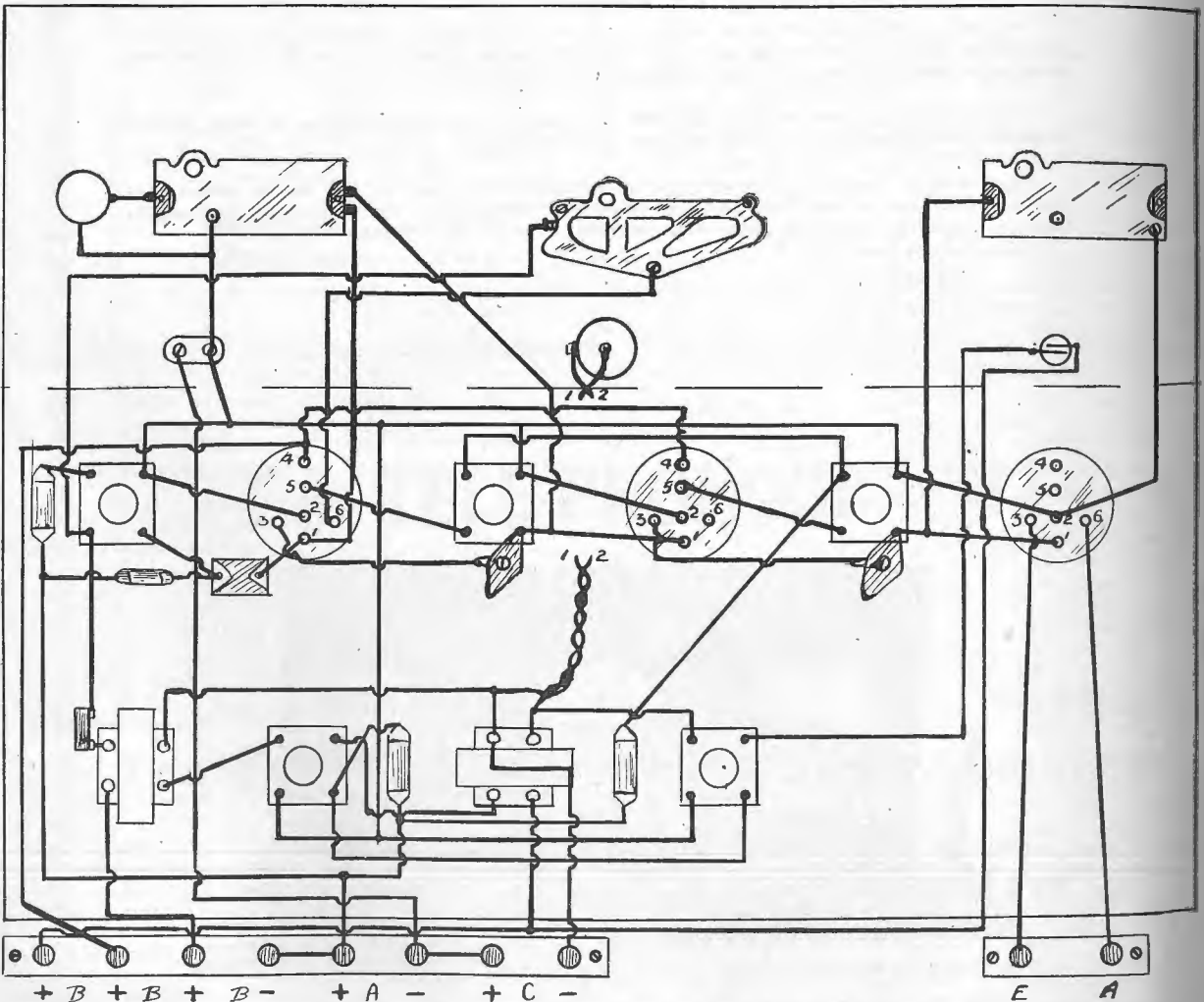


Fig. 2—The semi-pictorial diagram The numbers on the bases correspond with those shown in the circuit diagram, Fig. 4.

Formers of this type plug into a special base which is screwed to the base board by means of two suitable wood screws. These bases are fitted with soldering lugs and are numbered 1, 2, 3, 4, 5, and 6.

However, should the reader decide to use bakelite tubing for the coils the diameter of the tubing should not be less than 2 1/2 in., as this diameter with a 70 turn secondary winding (shunted by .00035 condenser) will cover the broadcast band nicely. The aerial former has 70 turns of 30-gauge D.S.C. wire wound on it, this winding being spaced 40 turns to the inch.

It is not essential, however, to space wind the coil if D.C.C. wire is used, as D.C.C. wire has much the same effect, the cotton acting as a spacer. If D.C.C. wire is used it should not be greater than 28-gauge, otherwise the required number of turns will not be got on the former.

A small coil of 20 turns of 30-gauge D.S.C. is wound on a piece of bakelite tubing, and is then slipped inside the aerial former. (See illustration Fig. 1.) This coil should be placed at the top of the aerial coil so that it may be drawn out, thus loosening the coupling.

Fig. 6 shows clearly the type of high frequency transformer that gave best results in the receiver. It consists of a secondary winding of 70 turns, a primary and neutralising winding of 20 turns each, which are bunched and placed in the middle of the second-

ary winding, and in case of the second transformer a reaction winding of 25 turns.

These windings should all be in the same direction, and care should be taken when winding to see that the silk insulation is not damaged.

A choke coil of approximately 85 MH should be connected between the plate of the detector valve and the (L.F.) transformer primary.

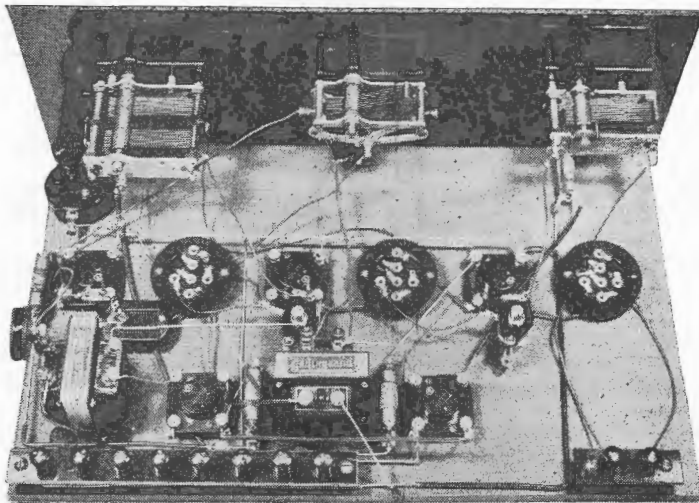


Fig. 3—General view of the wiring.

Constructional Details.

The construction of the set can be commenced by mounting the components in the panel and baseboard, assuming, of course, that the panel has already been drilled according to the panel diagram Fig. 5.

The semi-pictorial diagram and illustration give a very good idea of the arrangement of the components, so that the construction of the set should present but little difficulty to the experienced builder.

A point which is worth mentioning here, is that the neutralising condensers, if of the metal type, should not be mounted on the baseboard, as the leakage on the surface of the board is often sufficient to prevent proper neutralisation.

Probably the best method is to mount these condensers on the valve holder, as shown in the illustration.

Neutralising.

Neutralising is a matter of trial and error. A rule which might apply to one receiver will probably not apply to another.

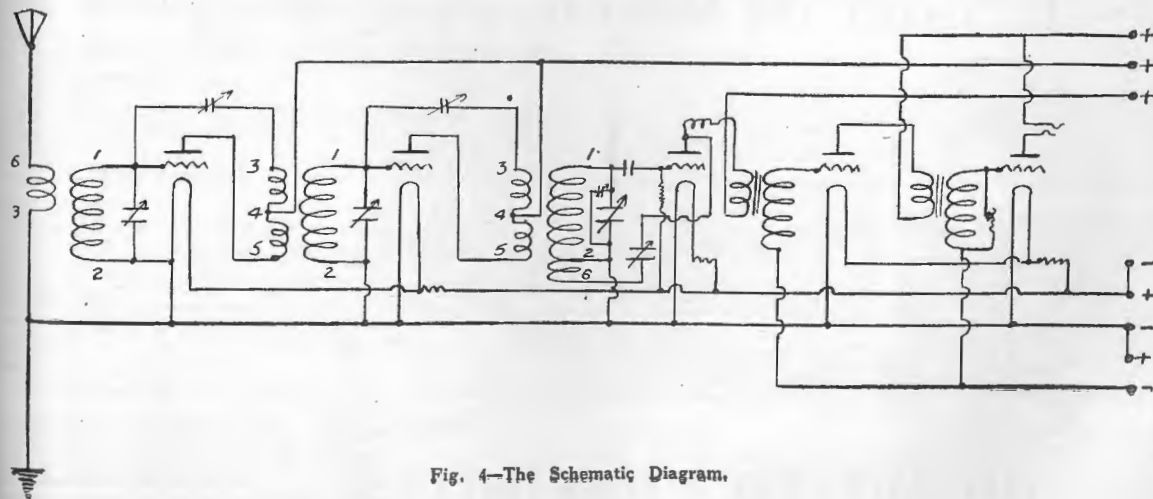


Fig. 4—The Schematic Diagram.

The best method of neutralising is to screw down both neutralising condensers. (The reaction condenser should, of course, be all out.) Then apply a moistened finger to the grid side of the condensers; if the set is oscillating a double plop will be heard. The condensers should now be adjusted until only a single plop is heard.

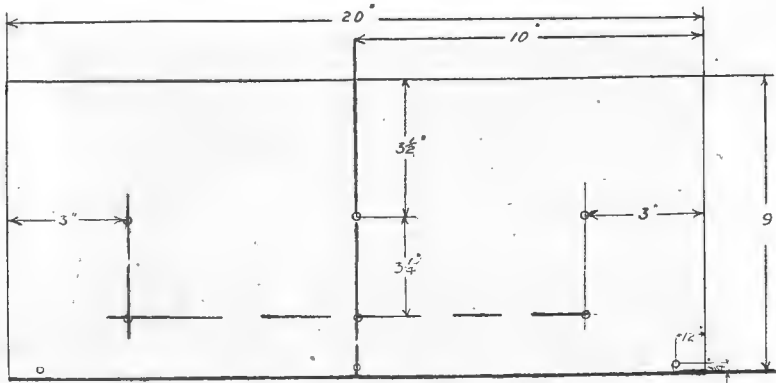


Fig. 5.

H.F. valves, 50 to 60 volts; detector, 30 to 45 volts; A.F. amplifier, 90 to 135 volts; grid bias, 4.5 to 9 volts

Valves and Batteries.

Osram DE8 H.F. valves gave excellent results when placed in the two high frequency and detector stages, while any of the well known makes of L.F. valves performed well in the audio amplifier.

The correct voltages for the various stages are as follows:—

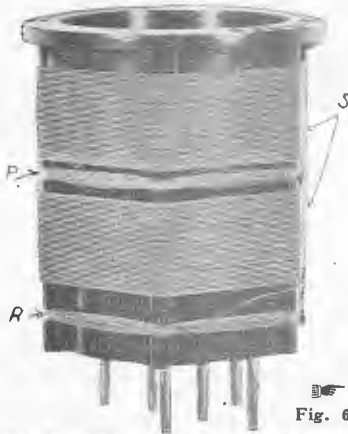


Fig. 6.—A "closeup" of the special H.F. transformer. The windings shown are: S, secondary; P, primary and neutralising winding; and R, reaction used only in the case of the second transformer

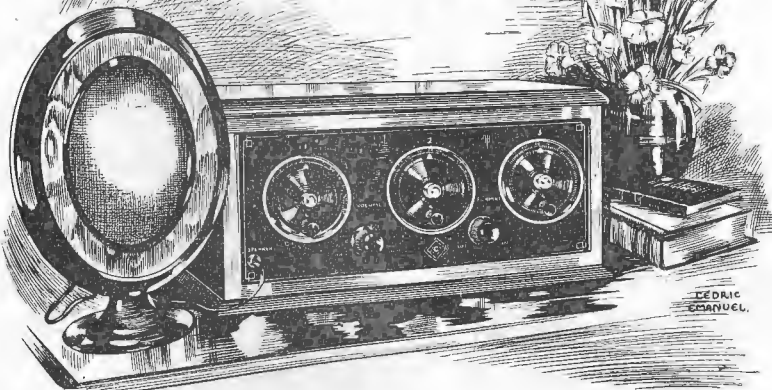
PARTS REQUIRED.

- | | |
|---|---|
| 1 Panel, 20 x 9 x 3/16ths | 1 Brachstat, Type 1B. |
| 1 Baseboard, 12 x 19 1/2 x 3/8 | 2 Brachstats, Type 2B. |
| 5 Benjamin Mounted Sockets | 1 Sangamo .00025 Fixed Cond. |
| 1 Pilot Dual Condenser, 17 plate | 1 Igranic Grid Leak, 2-meg. |
| 1 Pilot Centralign Cond. 17-plate | 1 K.I.N. Radio Frequency Choke |
| 1 Pilot Centralign Cond. 13-plate | 1 Term.'l. Strip & Supports 9 1/2 in. |
| 2 Telsen Radio Grand Audio Transformers | 1 Term.'l. Strip & Supports 3 1/2 in. |
| 1 B.M.S. S.C. Jack | 10 Belling-Lee Terminals, engrd. |
| 1 C/H Battery Switch | Quantity of Glazite Wire |
| 1 Emmco Stad, No. 2 | 1 Box Assorted Screws |
| 1 Igranic Midget Condenser | 1 Knob and Pointer |
| 2 Pilot Vernier Dials | 3 Colveen Moulded Bakelite Formers and Bases, 6-pin type. |
| 2 Ebro Neutralising Condensers | |

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5-VALVE

Broadcast Receivers



Give
Exceptional
Interstate
Reception

5-VALVE, in Cabinet (as illustrated), Supplied with 5 Best Quality Valves.

£10/10/0

Complete with Manhattan Junior Speaker.

£19/10/0

Call and Inspect this
Remarkable Value

RADIO SUPPLIES UNLIMITED

T. & G. BUILDING
ALBERT ST. BRISBANE

What the Royal Commission's Report Revealed

Will Their Recommendations be Adopted?

The Royal Commission on Wireless, which conducted an extensive tour of the Commonwealth some time while ago, recently presented their report to the Commonwealth Government. This report has now been printed, and copies may be obtained from the Government Printer, Melbourne at 1/3 each.

The report deals very fully with the problems brought up by the many witnesses who gave evidence during the inquiry. Needless to say, the Commission's recommendations are far too numerous and lengthy to publish in detail, but we reprint below the "Summary of Recommendations" that precedes the detailed report.

SUMMARY OF RECOMMENDATIONS.

Broadcasting and Relay Stations.

1. That the control of broadcasting stations should remain in the hands of the Postmaster-General as at present, subject to the administration of an Australian Wireless Committee as hereinafter recommended and to the following further recommendations.

2. That the Postmaster-General should issue no further "A" class licenses until he is satisfied that the available revenue and the need of a satisfactory service justify such issue.

3. That the revenue derived from listeners' license fees throughout the Commonwealth should be pooled and distributed as follows:—

- (a) Deduct therefrom the Postmaster-General's proportion to cover the cost of administration and departmental research;
- (b) Pay to each "A" class stations thereout the amount of £5000 towards working expenses;
- (c) Distribute the balance of the available revenue amongst the "A" class stations under and in accordance with the present regulations.

4. That the co-operation of the stations to effect interchange and improvement of programmes and more equitable distribution of revenue subject to strict control by the Australian Wireless Committee to secure efficient service to the public should be encouraged.

5. That the Australian Wireless Committee should deal with applications for licenses for relay stations on their merits and the Commission does not recommend any obstruction being placed in the way of such proposals and land lines should be made available at the lowest possible rental.

6. That until further research has been made into the relative merits of higher-power stations and relay stations, licenses for the former should not be granted. That research to determine this question should be put in hand as rapidly as possible.

7. That a re-allocation of wavelengths be made immediately within the present wavebands.

8. That the location of all existing broadcasting stations should be reviewed before the expiration of the existing licenses, and that it be referred to the Australian Wireless Committee to determine in each State the most suitable location for present and future broadcasting stations. In determining the position, the evidence of Electrical Commander Cresswell, and Messrs. Fisk and Beard, as to the grouping of stations, should be given serious consideration and the Defence Department should, in every case, be consulted.

9. That the provisions of Regulation 74 (under the "Wireless Telegraphy Act 1905-1914") should be rigidly adhered to and enforced.

That regulations should be framed restricting the advertising rights of "A" class stations, especially where "B" class stations are operating.

11. That regulations should be framed requiring all "A" class broadcasting stations to submit balance-sheets and accounts to the Postmaster-General for submission by him to the Auditor-General.

12. That "B" class stations should be limited to a transmitting power that will not seriously interfere with transmission from "A" class stations and that the Australian Wireless Committee should immediately proceed to fix a maximum power for "B" class stations.

13. That the number of "B" class stations should be strictly limited in proportion to the population in the area in the vicinity of the proposed sites.

14. That all broadcasting stations should be given clearly to understand that they have no vested right to the renewal of licenses at the expiration of existing licenses.

Licenses—Fees, Etc.

1. That the Postmaster-General should reduce the listener's license fee by such amount as will give the listener in the full advantage of any reduced royalties payable by the Broadcasting Companies to Amalgamated Wireless (Australasia) Limited and/or to the Australasian Performing Right Association Limited, and also of any surplus in the amount collected by his department and not utilised for the purposes of administration and research.

2. That where a person satisfies the Postmaster-General that he is a blind person, a license to establish and maintain a wireless receiving set should be granted subject to such terms and conditions and restrictions as the Postmaster-General may think fit, but without payment of any fee.

3. That it be referred to the Australian Wireless Committee to allot definite wave bands to experiment-

ers, and due consideration be given to the request of the Wireless Institute of Australia herein.

4. That the regulations should be liberalised to permit greater freedom of exchange of non-commercial messages between experimenters.

5. That in cases where an employer holds a dealer's listening license, he should be entitled to the issue to his employees of further licenses at reduced fees.

6. That regulations should be framed compelling radio dealers to keep a register in which shall be entered the names and addresses of all persons purchasing complete radio sets, and the types and prices thereof and that such register shall at all reasonable times be available for inspection by the officers of the Postmaster-General's Department.

Copyright and Performing Rights.

1. That persons broadcasting copyright musical works should be made liable to pay royalties to the owners of the copyright.

2. That the principles of Section 19 of the "British Copyright Act 1911," Act 1 and 2, Geo. V., Chapter 46 as expressed in the Schedule to the "Commonwealth Copyright Act 1912" (Appendix No. 1), should be extended to the broadcasting of copyright musical works by radio.

3. That, inasmuch as by Section 19 of the "British Copyright Act 1911," the royalty allowed to be charged (or demanded) is based upon the ordinary retail selling price of the contrivance used in the publication, and this of course cannot be directly applied to broadcasting, some other basis must be adopted.

4. That the Commonwealth representative at the International Conference should advocate that, so far as the Commonwealth is concerned, a limitation be placed on the royalty chargeable for broadcasting copyright musical works as follows:—

- (a) In the case of broadcasting stations receiving revenue from license fees, five per centum of the gross revenue of the broadcasting station, or alternatively, at the option of the owner of the copyright, fourpence per performance of each musical work;
- (b) In the case of broadcasting stations not receiving revenue from license fees, fourpence per performance of each musical work;
- (c) In both cases (a) and (b) no limitation should be placed on the number of copyright items which the broadcasting company may broadcast.

Patent Royalties.

The Commission is of opinion:—

1. That the charges made by Amalgamated Wireless (Australasia) Limited on broadcasting companies are excessive, and that they should be reduced to a royalty of 2s. on each listener's license.

2. That the charges made by Amalgamated Wireless (Australasia) Limited on radio dealers are also excessive and detrimental to the development of wireless services within the Commonwealth, and that they should be reduced to a royalty of 5s. on each valve-holder, such royalty to include one valve for each valve-holder.

3. That the attitude of the company with regard to claims for royalty on separate valves should be immediately defined, and the claims against traders should be abandoned so far as transactions on or previous to the date of publication of this report are concerned.

4. That the charges made by Amalgamated Wireless (Australasia) Limited on revenue earning "B" class broadcasting stations should be limited to 10 per cent of the gross revenue of each station.

The Commission recommends:—

1. That the Commonwealth Government should request Amalgamated Wireless (Australasia) Limited to comply with the requirements contained in the foregoing four (4) paragraphs.

2. That failing compliance with the foregoing requirements, the Commonwealth should take steps to acquire the shares privately held in the Company on just terms to the private shareholders.

3. That prior to the acquisition of shares, the company should be directed to take all steps to obtain an early decision on the validity of its patents.

4. That the recommendations of the Commission as to royalties on patents should be given effect to both as to future and also as to current licenses as from the date of the publication of this report.

Programmes.

1. That in States where there are two "A" class broadcasting stations, regulations should be framed to ensure that both stations will not during the evening sessions broadcast news matter, including sporting information, at the same time, and the stations should alternate the service periodically.

2. That the "A" class stations should be required to provide announcers who are proficient in the correct use and pronunciation of the English language.

Scientific Research.

1. That a special appropriation sufficiently large to enable the present problems in radio to be thoroughly investigated should be made available to the Council for Scientific and Industrial Research.

Education.

1. That broadcasting stations should be encouraged to include advanced educational matter in their programmes.

Land and Coastal Stations.

1. That all land and coastal stations should be acquired by the Federal Government and placed under the control of the Postmaster-General.

2. That the consideration, if any, to be paid by Amalgamated Wireless (Australasia) Limited for such stations shall be determined in the event of disagreement in the same manner as on the occasion when the said stations were acquired by Amalgamated Wireless (Australasia) Limited, special regard being had to the fact that the stations are being operated at a loss.

3. That Hobart Wireless Station (V.I.H.) should provide a continuous service, and should be utilised as a means of improving communication between Tasmania and the mainland.

4. That the attention of the Northern Territory Commission and the Postmaster-General should be drawn to the representations made to the Commission as to the need of further wireless stations in the Northern Territory.

5. That, provided sufficient guarantees of revenue are forthcoming, the Postmaster-General should erect and control transmitting telegraph wireless stations for the service of the country press and others requiring such services.

Weather Forecasts.

The Commission is of opinion:—

1. That if the Commission's recommendation as to land and coastal stations is adopted, namely, that they shall be acquired by the Commonwealth and transferred to the Postmaster-General's Department, the matter of securing the dissemination of weather forecasts and meteorological information will become the duty of that department, and no further recommendation in this connection is therefore necessary.

Defence—Naval, Military, Air.

1. That an Inter-Departmental Committee, consisting of representatives of the Naval, Military, and Air Forces, the Prime Minister's Department, the Chairman of the proposed Australian Wireless Committee, and the Wireless Services Officer, should be constituted to co-ordinate the various wireless services within the Commonwealth from the Defence point of view.

Fire Prevention and Police.

The Commission is of opinion:—

1. That no change is necessary in the Acts and Regulations governing wireless, so far as fire prevention and police are concerned.

Lighthouses and Radio Beacons.

The Commission is of opinion:—

1. That in view of the rapid development that is taking place in automatic appliances suitable for conveying wireless warnings, and in view of the conditions generally prevailing on the Australian coast, there is at the present time no justification for making any recommendation for further action that is being taken by the authorities now in control. Attention might, however, be given to the development above mentioned in automatic appliances.

Ship's Installations.

1. That, in cases where State legislation on the subject does not exist, representations should be made to the State Government concerned to bring vessels not trading beyond the limits of their respective States within provisions similar to those of Section 231 of the "Commonwealth Navigation Act 1912-1920."

2. That the Commonwealth Government should make representations to the owners of overseas vessels trading with Australia with a view to securing the publication on their ships of a larger proportion of Australian news.

Present Control and Future Development.

1. That Amalgamated Wireless (Australasia) Limited should be made liable for the payment of terminal charges, and that failing compliance with the Postmaster-General's demands in that respect, the Commonwealth should take steps to acquire the private shares held in the Company on just terms to the private shareholders.

2. That the position of the company with regard to the establishment of further beam services should be defined.

3. That the relationship between the Postmaster-General and the company should be more clearly defined.

4. That the provisions of the "Wireless Telegraphy Act 1905-1919" should be so amended as to enable the Postmaster-General's Department to more effectively enforce the regulations as to unlicensed listeners.

5. (A) That an Australian Wireless Committee should be constituted under the control of the Minister administering the Wireless Telegraphy Act, such Committee to consist of the Chairman, who shall be the Director of Postal Services for the time being, a Wireless Services Officer, and a Broadcasting Officer, and—

(i) That the duties of the Chairman shall be to supervise and co-ordinate all wireless and broadcasting activities within the Commonwealth with the exception of those under the control of the Department of Defence;

(ii) To convene meetings of the Australian Wireless Committee and of the proposed Inter-Departmental Committee for Defence purposes;

(iii) To convene at least once in each year on dates to be prescribed a conference between the Australian Wireless Committee and one representative from each of the following bodies:—

- (a) "A" class broadcasting stations;
- (b) "B" class broadcasting stations;
- (c) Wireless Institute of Australia;
- (d) Radio dealers and manufacturers;
- (e) Licensed listeners-in.

(B) That the necessary regulations to give effect to the foregoing recommendations should be proclaimed.

(C) That the duties of the Wireless Services Officer shall, subject to the control of the Chairman and the Postmaster-General, be the supervision of the working of all land and coastal stations.

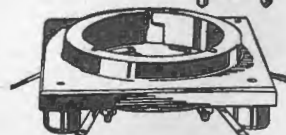
(D) That the duties of the Broadcasting Officer shall, subject to the control of the Chairman and the Postmaster-General, be the supervision of all matters relating to broadcasting.

LOEWE Multiple Valves

A Marvellous Advance in the Radio Art

Are meeting with exceptional success everywhere. Because of their high sensitivity and simplicity they permit of the construction of extremely powerful yet inexpensive local and long range sets, the ideal instruments for music lovers.

Sole agencies open for various territories, radio factors of good financial standing please apply.



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New "Pilot" Radio Parts

Electrically perfect, physically beautiful, and honestly built—these few words describe the new "Pilot" lines in a nutshell. "Pilot" has ever been a pioneer of radio design, and the fact that other manufacturers strive to imitate "Pilot" ideas immediately following their appearance upon the Australian market, is proof positive of their superiority.

Despite the mighty advancements made in recent years, it is generally recognised by those who have passed through the sad school of experience, that a great percentage of Radio Apparatus on the market to-day is electrically imperfect. "Pilot" Radio Lines are guaranteed to be electrically accurate. Use them in your next set and notice the improvement.

From your Dealer Direct from

UNITED DISTRIBUTORS LTD.

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And at Sydney, Melbourne, Adelaide, Perth, Launceston (Tas.), and Wellington (N.Z.).



"Pilot" Audio Transformer

(No. 371 Ratio 3½-1; No. 3712 Ratio 2-1)

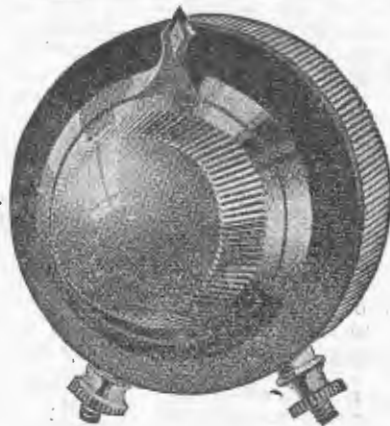
Especially designed to give the maximum amplification factor on all frequencies without distortion. The covers are molded out of insulating material of the highest grade, eliminating possibilities of short circuits or leakage between terminals. Pilotran can be used with all standard tubes, including power tubes.

PRICE 15/9

"Pilot" Rheostat

Adjustable—may be attached to panel of any standard thickness. Constructed with characteristic Pilot precision in all standard resistances. One hole mounting; ¼-inch shaft. Complete with arrow pointed knob. Made in the following values: 6-ohm, 10-ohm, 20-ohm, 30-ohm.

PRICE 3/6



"Pilot" Midget Condenser

(Illustrated Below.)

Neutrograd M.7, Capacity .000025. Compensates for variation in coil and condensers, resulting in balanced stabilised circuit. Especially important where unicontrol is employed. One hole mounting; standard ¼-inch shaft. Pointed arrow knob is an added feature. Made also in .00005 capacity.

No. M-7 (7-plate) 25 M. M. F.

5/6

No. M-13 (13 plate) 50 M. M. F.

6/6



"Pilot" Resistograd

The PILOT RESISTOGRAD is manufactured to meet the requirements in radio work for a variable resistance unit having the following requirements:—

- (1) Resistance range from practically zero to 30 million ohms (30 meg. ohms).
- (2) Ample capacity to carry heavy overloads of current without injury.
- (3) Insulated to withstand constantly more than 1000 volts.
- (4) Noiseless in operation over entire range.
- (5) Non-inductive.
- (6) Non-microphonic.

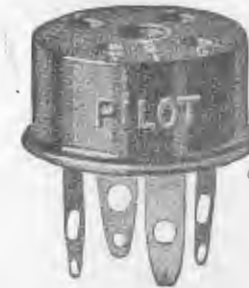
The special resistance material used in the Resistograd is contained in a hard Bakelite case thoroughly sealed. The ample and well-designed radiating surface of this unit permits rapid and effective dissipation of the heat generated. This insures operation for an indefinite period without overheating.

PRICE 8/6

"Pilot-Lite" Illuminated Dial



PRICE 12/-



"Pilot" Sub-Panel Socket

Compact Model

To meet the demand for an especially small size high-grade socket for sub-panel mounting; specially shaped high-grade phosphor-bronze springs. Takes a minimum of space and yields a maximum of efficiency.

PRICE 1/3



"Pilot" Art Dial

De Luxe Model.

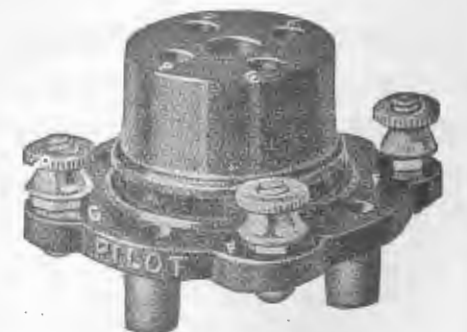
A 20th century artistic product that will dress up any receiver. This velvet-vernier tuning control adds efficiency and beauty to any radio set. Made the substantial Pilot way and will easily carry "gang" condensers without slippage or backlash. White and black figures in combination adapt the Art-Dial to clockwise or counter-clockwise condensers.

PRICE 7/6

"Pilot" Shockproof Universal Socket

Is cushioned on four specially tempered springs which act as shock absorbers eliminating vibration which causes microphonic noises. Assures perfect contact at all times. Accommodates all standard UV and UX tubes.

PRICE 2/3



Receivers from Various Countries Used in Australia

(By "Ray Dio.")

Probably no country has the variety of receivers that we have in Australia; variety that is in the sources of supply. In addition to many very excellent Australian-made sets, there is a wide choice available of imported sets and components.

It looks as if the American imports exceed those of all other countries, both in complete sets and component parts—Europe has been about eighteen to twenty-four months behind America in the development and production of wireless receivers until recently. Now there are signs of Europe catching up in progress. Not all of the European countries show that progressive tendency, of course. The countries where radio seems to have won the public popularity most widely are Great Britain, Germany and Russia. Strangely enough, France is not as well to the fore as might be expected.

Importation of Sets Desirable.

Some may deplore the fact that so much radio material is imported. They would like to see manufactures grow in Australia to such an extent that foreign sets would be unnecessary. However admirable a policy it is to encourage a new secondary industry—and, of course, it is admirable and desirable—the progress of broadcasting should not suffer thereby. It is stated by some proponents of that policy that a practically prohibition tariff should be placed on foreign sets, so as to allow the local industry to be developed.

That policy might be carried too far. The general public may not have the facilities now available of making a selection from a wide range of designs from different countries. It is desirable to allow listeners and home constructors to keep up with the advance of radio in countries where millions of pounds can be spent on research and development. That could be done, and the same reasonable facilities be given to Australian manufacturers.

British Policy.

England started off in 1922 by blocking the importation of sets for two years, and it is doubtful if the

policy was a wise one for the public generally. Since that barrier was removed, the British manufacturer found that they could give more attention to the manufacture of sets for export as well as for local use, but the British export trade in radio is being challenged severely by Germany—it always was, of course, America.

The exports figures for 1925 and 1926 show a steady advance by Germany and a decline both by England and America, and America exported £2,042,000 worth of radio goods in 1925, while in 1926 it decreased to £1,813,000. Great Britain's figures for the same years were £1,280,000 in 1925 and £1,266,000 in 1926. Germany on the other hand showed an increase as follows: 1925 exports amounted to £1,478,000 while in 1926 the figures were £1,581,000. It looks as if Germany is making a determined bid for the export trade. There are not many German sets so far in evidence, but apparently the sets are being manufactured in quantity and sent to other countries. We can safely rely on Australian traders to it that German sets, if they do come are of efficient design and economical price.

* * * *

QUICK WORK.

An instance of the rapidity with which urgent messages may be transmitted over huge distances was demonstrated on a recent Friday evening from 4QG.

A little boy, attending a boarding school in Brisbane, whose people resided in Cunnamulla, took suddenly ill. The doctor stated that an immediate operation was necessary. As the parents' consent was needed before this step could be taken, it was decided to broadcast an urgent message from 4QG requesting any listener-in in the Cunnamulla district to advise the child's parents to ring the hospital at Brisbane, to where the little patient was being conveyed.

A listener 25 miles out of Cunnamulla picked up the message and rang the parents, with the result that the mother was in touch with the hospital before the little boy arrived at the institution.

Altogether only ten minutes elapsed between the time the message was broadcast and when the mother spoke to the hospital matron.

As the operation was a very urgent matter, the radio message in all probability saved the little chap's life.

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'Phone C190.

A Simple Roll-Type Loud Speaker

A Sheet of Art Paper, a Cork, and a high-grade Telephone Unit is all you need

We recently received an advice from one of our readers, Mr. R. H. Webb of Cunnamulla, Western Queensland, who directed our attention to an article appearing in the July issue of "Radio News" (U.S.A.), describing the construction of a simple roll-type loud speaker which could be made at practically no cost, and which delivered exceptionally fine results. We looked up the issue referred to and tried the idea out ourselves, and found it to be a very good one. We now pass it on to our readers in the hope that they, too, will find it interesting to build and satisfactory in operation.

It is as well to state that this double cylindrical diaphragm type now to be described resembles in principle of Dr. Lee de Forest's Audalio speaker.

It delivers a full round volume, and is capable of very fine reproduction. In contrast to other paper-diaphragm devices, it is highly efficient and absurdly cheap and simple to construct.

Briefly, this reproducer consists of a sheet of heavy paper folded in the middle, with the two halves rolled into semi-cylindrical shape so that the end view is like an "m"; the outer edges being supported, while the centre of the crease floats on the diaphragm of a telephone speaker unit. This construction results in a quality of tone realised only by the best free-edge cones, with a slight increase in actual volume over horn-type reproduction.

The only materials essential to its construction are a high-grade telephone unit, a cork, and a sheet of heavy art paper, about 20 x 30 inches. The latter may be obtained in several shades at a print shop. When buying ask for a sheet of heavy art paper (100 or 120 lbs.), size 20 x 30 inches. The cost should be under the shilling.

narrow cork. (See Fig. 1.) This cork should be long enough to rest on the diaphragm of the phone without allowing the paper to touch the cap. -Cork, being of nearly the same density as paper, makes a much better acoustic link than metal.

Make a light, rectangular, wooden frame, about a foot wide and the length of the crease. (See Fig. 2-A). In the centre of the frame, fasten crosspiece to which the phone is to be attached. Mount the phone exactly in the centre, using the method of fastening best adapted to the unit. Now tack the free ends of the paper to the sidepieces and set the cork link on the centre of the diaphragm. (See Fig. 2-B.) The instrument may now be used in a horizontal position with good results.

If it is desired to use the speaker in a vertical position, by standing it on end or hanging it on the wall, the crease must be supported from the end-pieces by light rubber bands, both to give the cork a proper contact with the diaphragm and to prevent sagging of the crease. The diagram makes this clear. If a drop of glue is used to stick the cork to the diaphragm the tension on the bands need not be great.

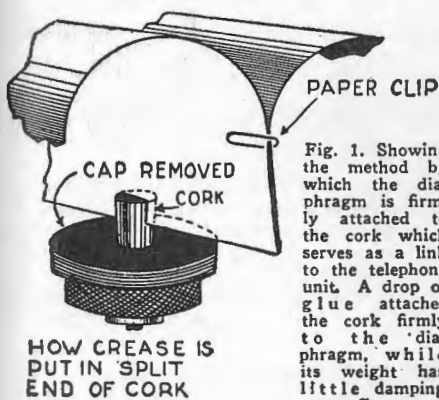


Fig. 1. Showing the method by which the diaphragm is firmly attached to the cork which serves as a link to the telephone unit. A drop of glue attaches the cork firmly to the diaphragm, while its weight has little damping effect.

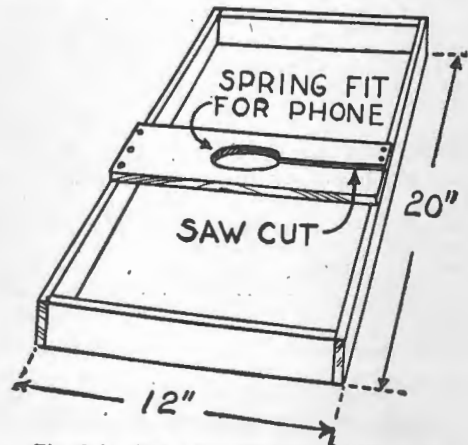


Fig. 2-A. The simple framework upon which the loud speaker is assembled.

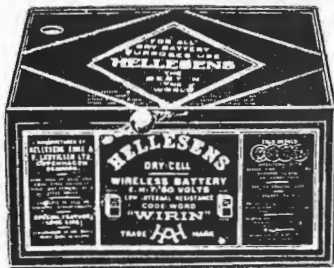
Construction is Easy.

Fold the sheet in the middle by placing one end true with the other and creasing the fold. If the paper has a different finish on either side, make sure that the side with the higher finish is on the outside. Fasten the edges together with wire paper-clips about two inches up from each end of the crease, in order to stiffen the crease. Mark the centre of the crease and insert it into a knife slit in one end of a long,

Finishing the Speaker.

The ornamentation of the finished product may be as simple or as elaborate as the constructor desires. If the paper is used alone, a neat row of inked swastikas may be used at each end.

In order to get the best possible tone from the speaker (assuming of course that the output of the



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Ordinarily for every twenty shillings you spend on dry cells you can safely count five shillings as being lost through deterioration. But now—by a new exclusive patent—Hellesen Batteries give a full twenty shillings worth of service for every pound spent.

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BRISBANE.

radio amplifier is distortionless) we must eliminate as far as possible, the distortion arising from the use of a stretched metal diaphragm in the phone unit. The best low-priced units are those in which a large diaphragm is supported between resilient washers, and in which the distance between the magnets and the diaphragm is adjustable. Simply unscrew the cap altogether and adjust the magnets until good tone and volume is had. The cork can now be made very short, resulting in better linkage, and may, if desired, be set on various parts of the diaphragm until the best point is found.

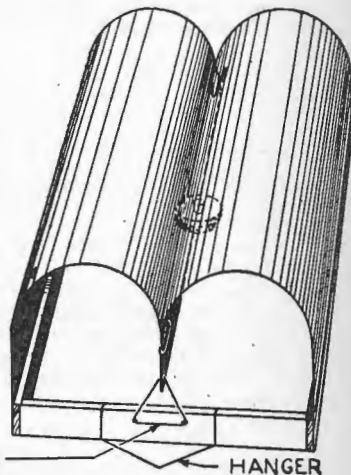


Fig. 2-B. The completed loud speaker, arranged for use on the wall, as viewed from the top. The position of the unit is indicated.

Powerful and Compact.

The efficiency of conversion by this speaker, of electrical energy into sound energy, is attested by the fact that the resultant sound is as loud and distinct all over the room as it is an inch from the membrane. As a result, excessively powerful signals are not necessary for good volume.

The rectangular construction of this loud speaker is admirably adapted for portable receivers, for the paper may be made removable from the sides, and folded flat, so that the whole may be packed in the lid of a suitcase. Another stunt is to use a single horizontal cylinder as a combination speaker and dust cover for an open-built set. A neat, compact outfit is the result. The phone should be mounted on sound-proof pads.

Popular Violinist

That popular little violinist with the appealing sonality, Maggie Foster, returned to 3LO Melbourne recently. Few artists have won such popularity on the radio. Thousands who saw her in vaudeville, and were captivated by her winsome personality, enjoyed her broadcast music. There is nothing great about it. It is like herself, sweet and entertaining.

Frenzied Radio

(By W. S. Hogg)

An air of suppressed excitement pervaded Dr. Slaughter's huge laboratory. Assistants, apparently entranced to the minute, rushed hither and thither, all intent upon their various duties about the mammoth piece of electrical apparatus which was, this very night, to send signal after signal hurling through space to Mars.

I had no desire to make a nuisance of myself by sitting in the way, still less to be trodden on by a half-delirious radio enthusiast. So I had esconed myself in a quiet corner, where I could watch the scene and meditate upon the peculiarities of life in general.

How little do we know of the hopes and aspirations of our friends, or of their life behind the scenes as it were. Here was Doc. Slaughter, for instance, whom for years I had regarded merely as an ordinary practitioner curing a few suffering humans of their (at a price), kill a few, perhaps, and certainly making a good thing out of all who became entangled in his web—who entered his surgery, I should say. I had never, at any time, suspected that his interest in radio went any deeper than listening to 4QG between writing prescriptions. I was forced to view the man from a different angle to-night. He, somehow, looked different, as he stood there barking crisp orders to his busy assistants. In place of the cold, calculating expression he habitually wore—as though he was trying to figure up the size of your bank roll—he wore an expression of grim determination and command; not unlike the fourth officer of a liner, when he knows the lady passengers are looking at him. I noticed, too, that he looked more rugged. Upon closer inspection I attributed this to the fact that his hair was thinning quite on end, probably owing to the electrified atmosphere. Also his tie was under his ear, his vest buttoned in the wrong holes, a felt slipper on one foot and a dancing pump on the other—altogether he had the appearance of a regular hard-boiled he-man, with no mother to guide him.

"Where is the Second Engineer?" he barked.

A strong smell of whisky approached rapidly. "Here, sir," said Mac., who was in the exact centre of the smell.

"Are all the cockroaches cleared out of the knick-knacks?"

"Yes, chief."

"Have the girdleleaks been securely plugged?"

"All soldered up with putty, sir."

"Are the whatnots full of the correct grade of lubricating oil?"

"Yes, Sir."

"Choke coils all unchoked?"

"All clear, sir."

"Electrolite lit?"

"Burning brightly, sir."

"Is the meteorological report to hand?"



"Yes, sir. There are a couple of isobars still open, and a bit of a disturbance going on in their vicinity. The cyclonic elements are in opposition to the anties, and a struggle is imminent."

"Ring the police—it is after 8 p.m., and all bars should be closed. Broadcasting report in yet?"

"Yes, sir. All stations have closed down with the exception of one in Scotland—broadcasting bagpipe music—and one in Russia sending out Bolshie propaganda. The engineers in charge of these stations advise that nothing on earth can stop them. An amateur station has been sending us threatening and badly spelt messages, but is off the air now."

"Very well," rasped Slaughter striking the oscillator with a meat axe, "let her flicker—we will work on a wavelength of two gas meters. That will be the length of an umbrella. Get your umbrella, Mr. McWhusky, and check the wavelength. Operator Keywangle, stand by your key. We will try them with the Correspondence School Inter-planatory Code. Let her go, operator! Fly at it!! Put some pep into it!!!

The eager young operator needed no urging. Flinging off his coat and throwing his braces off his shoulders, he rushed at the key and hammered away like a blacksmith on piecework.

"That's the stuff to give them," honked Slaughter, hopping up and down with excitement. "Hit her a good old sockdolger. Attaboy! put your back into it—make it snappy."

The operator gave his college yell, and redoubled his efforts.

The yell had yardly died away when McWhusky, looking pale and almost sober, dashed in. "I have to

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report, sir, that the starboard gridleak is leaking dangerously—the putty is not holding. Heaven help us in a night like this!”

Here was something to try the chief's manhood. Did he turn pale and go weak at the knees? Did he yell “All is lost—every man for himself?” Not on your life—not by a jugfull. What he did was to scratch his left ankle in a thoughtful way for a second, and then rap out his commands.

“Short circuit the ‘dodah’ and connect a bar of soap across the ‘ding bat.’ Let the soap be of Queensland manufacture or the State will be ruined. Carry on boys!”

The man's powerful personality, his indomitable courage, and his exact technical knowledge had averted what might have developed into a nasty situation. He had proved himself a man—the sort of man the Empire needs to carry her flag to the planets across the ether.

The operator dashed the sweat from his eyes, and again made a frenzied attack on the key. He was another man the Empire had need of to keep the flag flying when there is no wind blowing.

The excitement was intense. Were they reaching Mars? Were the Martians wise to their little game? No answering signal had come through yet, but it might come at any moment. Slaughter hopped up and down with excitement—the staff hopped sideways to avoid him.

Second Engineer McWhusky tottered in. “I have to report, Chief—”

“What!!” grieved Slaughter, “you here again!”

“Yes, sir. I have to report that the amateur station before-mentioned has just rung up, demanding us to shut down immediately. They are experimenting with a Marcel wave of the permanent type. They say that if we do not shut down they will come and shut us down for good and plenty. They appear to be in an excited state, sir.”

“Ah!” muttered Slaughter, knitting his brows and scratching his offside ear thoughtfully. “This matter requires tact. Did you give them a tactful answer answer, McWhusky?”

“Yes, Chief. I told them to go to—er—ump—well—”

“Very good. Tell them that I will not be dictated to by a mere tuppenny-halfpenny Marcel waver. Suggest they put a rat-trap across their intake and a vacuum cleaner across their output. If they don't know how, say I will send my youngest cadet to show them. And that's that.”

“Keep going, operator!” howled Slaughter. “Sock it to her; ginger up the action; stamp on the gas! Liven up!—this is no place to doze in. Where do you thing you are—in an opium joint?”

But the plucky young operator was spent. He feebly opened his mouth to give his college yell, croaked like a sickly pup, and sank to the mat exhausted—game to the last!



Simultaneously with the fall of the gallant operator, the two big laboratory doors were flung open with a crash, disclosing to the horrified gaze of the staff, two weird and fantastic figures, dressed in the height of Martian fashion. Peal after peal of demoniacal laughter split the ether, as they dragged up and set into position a wicked looking machine gun.

“Who the devil are you, and what you want here?” bellowed Slaughter. “Beat it back to your sideshow while the beating's good. Here, boys, chuck 'em out! Bend a bit of leap-pipe over their heams! Outski Hoof it!! On your way!!!”

“Hold on, old Fruit, not so much of the outski and all that sort of thing. You bone-headed boobs have been sending impudent messages to us Martians and kicking into our uncles' session like you owned Mars and then some. We are not going to stand for it, see? Not for a minute! We impigned ourselves on to the back of our carrier-wave and came along to clean up you bunch of pie-faced mutts. Do you get me? We're going to clean up this joint once and for all, see!” he laughed unpleasantly.

“You are a liar!” roared Slaughter. “I know you, curse you, you tight-coupled deadbeat. You are the Mad Ham of Brisbane and that other fool creature is your offsider the Mad Egg. Away with you! Back to loathsome den of howling valves!”

“That's torn it!” snarled the Mad Ham. “I'll take that from no man weaker than myself. Give them a burst, brother.”

With a fiendish laugh, the Egg swung the gun around. There was a deafening crackle, as a hail of bullets swept the laboratory. Assistants crumpled up and dropped in their tracks. Slaughter was a quivering heap on the laboratory floor. Heavens! how long before I, too, would crumple up like the rest. I tried to call out that I was not one of the gang, but no words could I utter.

Above the noise of the gun I could hear the villains' devilish laughter. Good God! I had stopped one in the wish-bone. Merciful Heaven! I had stopped another and yet another. This was the finish. What

would become of the family car now. Who would clean the spark plugs when I was gone? A review of my misdeeds passed before my mind. I had neglected to change the oil in the sump. Ah! too late! Too late!! I fell to the ground and shut my eyes on the awful scene. This was the end—ab-so-blooming-lutely!

"Come on, come on! Wake up, sleepy head! It's physical culture session this morning!" Another bullet struck me in the ribs. No it wasn't—it was my wife prodding me with the handle of a hair brush whilst she held the alarm clock to my ear. Outside on the good old gum-tree a jolly old Kookaburra was going through his morning exercises with astonishing vigour.

"My word!" I remarked as I sprang out of bed, "I'm glad to be alive. That was a most vivid dream—I must consult the 'Dream Book' to see what it means."

Radio and the Theatre

(By "Hello")

I was interested to read in a London paper recently an article by Reginald Berkeley, the capable author of the play which has become the sensation of London—"The White Chateau."

Mr. Berkeley is always interesting, but he wrote this time on a subject which touches listeners very nearly. His play did not begin life as a successful dramatic favourite; it was a poor orphan, started its career humbly in a broadcasting studio, and shot into

the ether with a prayer for its non-static reception. As such it appealed to a vast number of listeners.

The point Mr. Berkeley makes is one on which I have expressed myself many times. He says that his play would have had no chance ever to see a real London audience in the living, breathing, present flesh had it not been for the preparation given it by the broadcasting. No manager would have listened to it, except on the radio; no financial "butter-and-egg-man" as they call backers in the glorious United States, would ever have dug down into his pocket had it not been known to hundreds of thousands of wireless fans who clamoured for more like it.

And here is the reason for its success on the real stage. A radio play must forget all appeal to the eye, and address itself to the ear.

Mr. Berkeley wonders how theatre management have come to fear the radio as a menace to their business. Fighting the radio will do no good. It has come to stay, and by-and-by both it and the theatre and the concert promoter will come to work hand in hand for a mutual benefit.

ELECTRICAL EXPOSITION.

The All-Electrical Exposition which opened in Melbourne on September 10th, featured much of interest to wireless enthusiasts. In the uses of electricity there demonstrated, none has greater appeal than wireless in its many phases. 3LO Melbourne arranged an elaborate system of daily descriptions, so that the thousands unable to see the modern marvels of electricity were able at least to follow them through the eyes of trained observers.



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Diamond Radio Batteries are powerful, silent, and outlast any other make of Dry Cell. More than a million are manufactured in Australia annually. Every cell is guaranteed, and should a fault be found in any Diamond Dry



Cell it will immediately be replaced. Remember, a Radio Set is no better than its battery, therefore it is most essential to choose a battery that will give long and honest service. Such are Diamond Dry Cells.

RETAIL PRICE LIST

- "A" Buzzer Cells, 1.5 volt 2/9 each.
- "B" 60 volt Super B. Battery, 27/6 each.
- 45 volt Super B. Battery, 22/6 each.
- 60 volt Standard B. Battery, 18/ each.
- 45 volt Standard B. Battery, 15/ each.
- "C" 4.5 volt "Biaison" C. Battery, 3/3 each.

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Some Useful Practical Information on an Important Subject

(By "Positive.")

The following instructive article deals with a very important and frequently much-neglected phase of radio—the care of accumulators. It has been written by a battery man who has for many years been engaged in recharging and repair work, and his advice is based on this experience.

When your wireless set suddenly strikes work, or having started up normally after a period of rest, gradually becomes silent, where do you start looking for the trouble? Aerial leakage, valves, grid leak, transformers, condenser shorts? Only as an afterthought does one turn to the batteries. Secure in the knowledge that they have only been recently returned from the charging station, one is certainly entitled to assume that they are well up to concert pitch and good for months or weeks of work. With a more intimate knowledge of what actually took place during the alleged "charge," however, this assurance might receive a very rude shock. The accumulator is a very long-suffering piece of apparatus.

Incompetent Experts.

The ability to put up an electric bell or renew the battery in a pocket flash lamp does not necessarily qualify one for the title of electrical engineer. Nor do some so-called battery experts or owners of home chargers necessarily understand the art of accumulator charging; in fact, it is the exception rather than the rule. With an insufficient appreciation of their responsibilities and a thoroughly inadequate knowledge of their work, such people simply lure the unfortunate accumulator to its destruction without the least compunction. Now that wireless has extended their use so enormously, matters have become ten times worse. The accumulated experience of years does not seem to have taken the natural effect that it should.

Where the Owner Often Fails.

In fairness to both sides, let it be said that the charging station is not the only offender. There are occasions when the owner himself unwittingly ill-treats his accumulators most shamefully, and however much consideration they often receive at the charging station, they cannot be afterwards full restored. These are some of his sins, both of commission and of omission:—

- (1) Letting the terminals, especially those which connect the cells in the case of the screw type posts corrode to such an extent that they will not pass current. (This corrosion cannot sometimes be seen till the screw is removed) without cleaning and coating with vaseline.
- (2) Connecting an ammeter across the cells to see what current they will give, or what is called "sparkling" the cell.
- (3) Allowing the acid to get below the top of the plates.
- (4) Leaving the battery too long a time out of use without a freshening up charge.
- (5) Discharging battery to such a point that the voltage drops to zero.

(6) Allowing the cell to remain in a discharged condition.

(7) Neglecting to check up occasionally the specific gravity of the acid.

There are other minor offences, but these are the seven cardinal sins on the part of the owner.

Some of the Faults Which Occur.

What actually happens at the hands of some of the accumulator charging stations to the batteries entrusted to them hardly bears contemplation, but it speaks well for the robustness of design generally that they endure so much with so little comparative trouble. Instances are abounding where new cells, brought in for their first charge, have been filled with acid and then left standing until convenient to charge them—the surest way possible to set up incurable sulphuration.

Over-charging.

But the most frequent occurrence is that of rank over-charging. That is, charging at such a high rate that the acid is literally boiled out of the containing cases. Cases are by no means uncommon where the correct charging rate has been exceeded by five to ten times the normal amount, and naturally this spells total annihilation to any self-respecting accumulator. High tension batteries are almost worse sufferers than the low-tension cells. Very few outside stations have more than the slightest idea of the value of a "milliamperere," let alone the necessary instruments to measure such small charging rates. Many a time has the writer seen these unfortunate units being brought more or less slowly to the boiling point by the application of charging rates enormously in excess of the correct figure. The result of such criminal treatment is to force all the active material out of the grids, where it accumulated at the bottom of the jars. Even if this does not attain a sufficient depth to short-circuit the plates, it invariably leads to a seriously diminished discharge capacity, and the cell is always running down.

Some Useful Rules.

- (1) There are two distinct kinds of accumulators, (a) those having lead elements in dilute sulphuric acid, and (b) those with nickel and iron elements in an alkaline solution. The treatment is utterly different for each; therefore, do not take for granted which is which without examining the label.
- (2) The correct charging rate for all accumulators of the lead-acid type (which is more generally used for wireless) is one-tenth of the actual ampere hour capacity. Some types have the intermittent rate shown, but this can be ignored as far as wireless uses are concerned. In certain cases this may be slightly

exceeded at the commencement of the charge, but at the first sign of gas being given off too rapidly, the charging rate must be reduced. Lower rates than the normal are beneficial to the battery; higher rates are very detrimental.

(3) A full-discharged battery—that is, one in which the volts are down to 1.8 per cell—takes about 12 hours for a full charge at the normal rate of one-tenth the ampere hour capacity, no matter what size it may be. If the chemical conversion from the uncharged to the charged state could be carried out at 100 per cent. efficiency, it would naturally only take 10 hours. The extra two hours or so are necessary to make up for the unavoidable losses.

(4) Never work by rule of thumb of mere estimation of the charging rate. An ammeter of suitable range should always be used in the charge circuit, and if there is more than one circuit being charged from the same source, there should be a separate meter in each circuit.

(5) Be particularly careful always to couple up the positive terminal of the battery to the positive line of the charging circuit. A reversed cell is irretrievably spoilt.

(6) Do not take it for granted that the specific gravity of the acid is correct. The reverse is far more often the case. Test it with an acid hydrometer, one which shows the actual reading. The normal density of accumulator acid before it goes into a new battery is 1,200, and only the proper brimstone sulphuric acid must be used specially prepared for that purpose in

a discharged cell the gravity will fall to 1170 or lower. In a fully charged cell it rises to 1,200 again or higher. In cold climates a much higher gravity acid is used, because in winter, the electrolyte would freeze. In Queensland, of course, we have a tropical climate, and therefore work to a lower gravity, which of course prolongs the life of the accumulator.

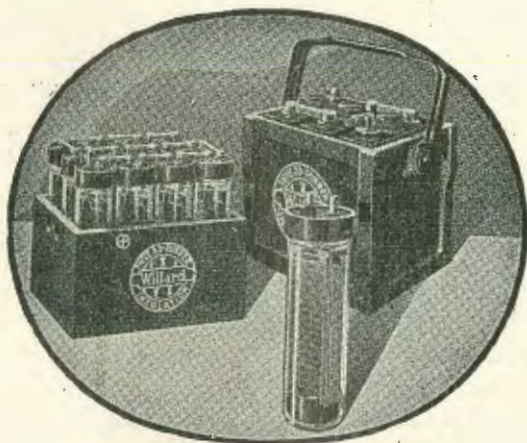
(7) The voltmeter is an essential item in all charging stations, but unless it is perfectly reliable it is useless as a test. A cell testing voltmeter should have a wide scale, ranging between 1 and 3 volts with spike contact for testing each individual compartment, not merely the voltage of the whole battery. A fully-charged accumulator gives 2.4 to 2.6 volts per cell at 1.8 per cell the danger signal is reached, indicating that an immediate recharge is essential. A cell left in this condition very quickly sulphates.

(8) Always "top up" the cells after charging if any of the plates stand up above acid level by the addition of distilled water. Never use tap water or rain water under any circumstances.

Of all the "Dont's" tabulated above the most insistent is the avoidance of heavy charging rates. Charging cannot be hurried up under any circumstances.

I have myself used accumulators both for "A" and "B" supply for a number of years, and have had no trouble whatever. In fact, my "B" batteries have been in use now eight months, and the plates are still a healthy colour.

Your Set cannot be better than your Batteries!



For better results and less battery cost you should instal

WILLARD RADIO BATTERIES

They're rechargeable; they give unfailing service, and they give the utmost in clear radio reception.

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Only through a fortunate purchase of a Liquidators Stock can we offer these 3 valve Sets, in Table Cabinets for the exceedingly low price of £3/19/6.

Full instructions are supplied with each set, showing how to connect valves, batteries etc. They are so simple a child could operate one. As the number of these sets for sale is limited remember that first come, first served!

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3 Yale Dry Cells, at 2/9	8 3
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Aerial Wire	2 6
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Total Cost, Complete with Instructions for Erecting £ 9 12 6

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45 Adelaide Street, BRISBANE

Next to Allan & Stark's

Why WE Chose

From a choice of over a dozen radio receivers offered by leading English, American and Australian manufacturers, we accepted the R.C.A. Agency because of several very good reasons.

We were seeking a receiver that would—

- (1) Give country clients good loud-speaker results from all Australian stations.
- (2) Be soundly and reliably constructed, obviating expensive "servicing."
- (3) Be simple to instal and to operate; reasonably selective, and pure in tonal quality.
- (4) Sell at a reasonable price.



MODEL 20 5-VALVE RECEIVER.
PRICE, £50/ COMPLETE.

R.C.A. Radio—

No other receiver embodied these attributes to such a marked degree as did R.C.A.

The reasons why WE chose R.C.A. Radio are surely reasons why you too should name this set as your receiver.

R.C.A. Receivers are the product of the brains of 200 eminent engineers, high-salaried professional radio men who planned and perfected this receiver in the mammoth R.C.A. laboratories.

And when you remember that the Radio Corporation of America is the world's greatest radio organisation, is it not logical to assume that the product which bears their trade-mark should be the very best that the world can produce ?

—and why YOU too should choose this Wonderful Set

Great Range

The R.C.A. Model 20 (5-Valves) delivers results that many seven valve super-hets cannot eclipse. It is the ideal set for the man in the country, for reception of distant stations can be received at sufficient strength to "drown" atmospherics.

Selectivity

R.C.A. Engineers claim this receiver to be twenty times as selective as the average set. It is selective at all wavelengths. Within close range of 4QG southern stations are tuned in with ease. Wavetraps are now quite unnecessary.

Pure Tone

Because of specially treated audio-frequency transformers, the highest known degree of tone fidelity is reached on an R.C.A. Receiver. This is but one of the many developments evolved by R.C.A. engineers.

Simple Tuning

No bothersome dials to tweedle with! No ugly bakelite panels!! The R.C.A. has but two drum-type selectors which reduce tuning to mere child's play. No tuning is needed. Country clients, twice at radio, report reception at all stations immediately following installation.

Secret Circuit

Of course the main reason for R.C.A.'s outstanding performance is the secret circuit design. This circuit was evolved and perfected only after months of research work by the army of scientists and engineers in the R.C.A. laboratories.

Advanced Design

Here is a set that will NEVER GROW OLD! The R.C.A. Receiver will ever be modern, because it is years in advance of its competitors in mechanical perfection, in cabinet design, and in down-right value. In fairness to yourself you MUST see and hear the R.C.A. Receiver.

Parts for Building the 'QRN' SPECIAL FIVE

1 Panel, 20 x 9 x 3/16ths	1 2 6
1 Baseboard, 12 x 19 1/2 x 1/2	0 3 6
5 Benjamin Mounted Sockets at 4/6 each	1 2 6
1 Pilot Dual Condenser, 17-Plate	1 14 6
1 Pilot Centralign Condenser, 17-Plate	0 13 6
1 Pilot Centralign Condenser, 13-Plate	0 12 0
2 Telsen Radio Grand Audio Transformers	2 2 0
1 B.M.S. S.C. Jack	0 2 9
1 C/H Battery Switch	0 3 9
1 Emmcostad No. 2	0 7 6
1 Igranic Midget Condenser	0 8 6
2 Pilot Vernier Dials	0 13 6
2 Ebro Neutralising Condensers	0 9 0
1 Brachstat, Type 1B.	0 4 9
2 Brachstats, Type 2B.	0 9 6
1 Sangamo .00025 Fixed Condenser	0 2 9
1 Igranic Grid Leak, 2-meg.	0 3 6
1 K.I.N. Radio Frequency Choke	0 4 6
1 Terminal Strip, 9 1/2 in., and Supports	0 1 3
1 Terminal Strip, 3 1/2 in., and Supports	0 0 9
10 Belling Lee Terminals, Engraved, 7d each	0 5 10
Quantity of Glazite Wire	0 2 6
1 Box Assorted Screws	0 3 6
3 Colvern Moulded Bakelite Formers and Bases, 6in. type	1 2 6
1 Knob and Pointer	0 1 0

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RADIOLA CRYSTAL SET	£1 2 6
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(Enclosed in Heavy Polished Case)	
Reliable 45v. "B" Batteries (Heavy)	£0 15 0
Torch Cases (good quality)	1/- to 3/6 each
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The Perfect SPEAKER For the PERFECT SET

Here is a different Loud Speaker, different in appearance and wonderfully different in tone. Round and rich, deep and full, each note floats from it in a manner that never tires the ear.

R.C.A. MODEL 100. £10/10/0





THE FOUR FIFTEEN ARRIVES!

[A415 SUPER DETECTOR]

UP with those signals—for the “Four Fifteen” is here! Philips new wonder valve is a triumph indeed. Test this statement by plugging it into the detector socket of your radio set. Previously inaudible signals will jump into life, and the just audible ones will now fill your speaker.

Now follow it with another “Four Fifteen,” and in an instant you will gain a new appreciation for Radio Reproduction.

Prove for yourself that this new Super Detector—First Stage Audio-Valve is all that it is claimed to be.

*To-day is not too early to say, “A Philips ‘Four Fifteen,’ please.”
You will never regret the impulse that made you say it.*



PHILIPS RADIO

PRICE .. 20/-

[Assoc. 7R14]

Meeting the Children

4QG Bedtime Storytellers appear "in the flesh" to delight the hearts of the children of Ascot and Ipswich

During September two interesting broadcasts were arranged by Station 4QG, when the combined bedtime story-telling staff gave two public entertainments.

The first of these was given in the grounds of the Ascot State School on Saturday, September 10th, upon the occasion of the annual show.

A very elaborate tiled-roofed stage was erected at one end of the swimming pool for the use of the story-tellers. As the photograph shows, the emptied pool provided good accommodation for a big crowd of kiddies, whilst the seating accommodation erected around the baths seated many hundreds more.

Uncle Ben & Co. provided a very unique and entertaining pro-



gramme, which was greatly enjoyed by those present and those who listened-in.

As each bedtime story-teller appeared upon the stage the children were asked to guess who they were, and this they did right royally. A rousing reception greeted each member of the party as they appeared in costume, and three cheers were lustily given.

The top photograph appearing upon this page shows a portion of the audience as seen from the stage. The second picture is a group of the story-tellers who appeared.

AT THE TOWN HALL, IPSWICH.

Whilst the success of the Ascot entertainment was great, still greater success attended the party's appearance at Ipswich.

This entertainment was organised and arranged by Messrs. W. Haigh & Co. Limited of Ipswich



The Mullard Master-Valve with the Wonderful P.M. Filament with English or U.X. Base Remains the Same Price - - - - 13/6

BUT

WHILE THE STOCKS LAST

the following previous types will be sold at reduced prices

- HF and LF Bright Filament 2/- each
- D SERIES 6/- each
- DFA SERIES 7/6 each

with English or U.V. Base

CHARACTERISTICS AS PER THIS TABLE.

	2/-	2/-	6/-	6/-	6/-	6/-	6/-
Type	H.F.	L.F.	D06 H.F.	D06 Det.	D06 L.F.	MD06	D3 H.F.
Filament voltage.	3.2—3.8	3.2—3.8	3.0	2.5—3.0	3.0	3.0	1.8—2.0
Filament current, amps.	0.6	0.6	.06	.06	.06	.06	0.3
Anode voltage	30—90	30—90	50—125	20—100	30—100	30—100	50—125
Total emission, m/a.	5	5	8.0	8.0	8.0	8.0	8.0
Impedance, ohms.	90,000	30,000	60,000	17,000	17,000	17,000	60,000
Purpose	Radio, also Resistance Coupling	Audio	Radio, also Resistance Coupling	Detector	Audio	Audio	Radio, also Resistance Coupling
	6/-	6/-	6/-	7/6	7/6	7/6	7/6
Type	D3 Det.	D3 L.F.	MD3	DFA0	DFA1	DFA3	DFA4
Filament voltage.	1.6—2.0	1.8—2.0	1.8—2.0	3.5	5.5	5.5—6.0	5.5
Filament current, amps.	0.3	0.3	0.3	0.35	0.2	.06	0.2
Anode voltage	20—100	30—100	30—100	50—100	50—100	50—100	75—125
Total emission, m/a.	8	8.0	8.0	20.0	25.0	15.0	15.0
Impedance, ohms.	16,000	16,000	16,000	7,000	8,300	13,000	27,000
Purpose	Detector	Audio	Audio	Power Amplifier	Power Amplifier	Audio	Resistance Coupling

Every Valve is guaranteed to function perfectly.

OBTAINABLE FROM EVERY RADIO DEALER IN AUSTRALIA

Also from

A. Beal Pritchett, Aust. (Ltd.), Sydney A. Beal Pritchett, Aust. (Ltd.), Melbourne
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and was held in the Ipswich Town Hall.

Long before 6.30 the hall was packed, while the crowd outside the building endeavouring to get inside was quite large enough to have half-filled the hall again.

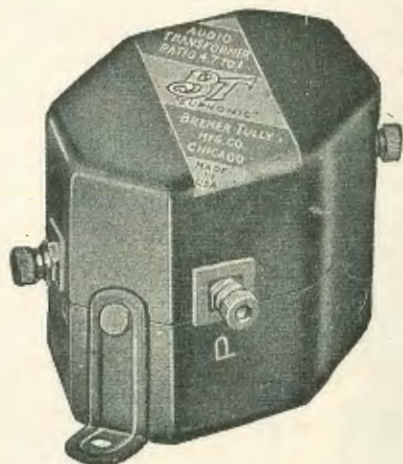
Arrangements at this function were more elaborate than at Ascot. The roomy stage was used to advantage, and at 6.30 sharp, Uncle Ben & Co. drove on to the stage in a very ancient and noisy Ford that stopped rather suddenly and threw the poor old "Professor" over the tailboard. Uncle Mike crawled out from the regions of the exhaust, but as Uncle Ben's weight on the running board caused one side of the body to collapse, Uncle Mike very wisely withdrew his head until things settled down a bit, venturing out some few minutes later.

Uncle Jim rode in on his cream pinto "Tony" (a real horse) who shook hands and "kissed" his master quite affectionately.

The Hawaiians, The Sandman, Grandfather, the niggers—all gave their "turn," and the children shrieked at their funny antics.

Seven o'clock came all too soon, but while transmission had ceased the party carried on with their entertainment until 7.30.

Streamers were thrown from the stage, and amid kisses, cheers and calls of "Come again!" the curtain fell.



The Bremer-Tully Euphonic Transformer

Practically since the commencement of radio there has been a continuous controversy, the relative merits of various systems of audio amplifiers, and the audio transformer has so far very successfully held first place in public opinion. Transformer coupling in practice has always been by far the most satisfactory method as it enables much greater amplification per stage to be obtained than with any other method, while it is generally more reliable and more quiet

in operation. Enthusiasts for choke and resistance coupling claim that these methods give a much truer amplification, and result in an improved quality of tone, and it must be admitted that this was so before the audio transformer reached its present high state of perfection. Now, however, there are several audio transformers which will give reproduction equal in tone and purity to any method of coupling, while retaining all the many advantages of the transformer types. Of these, the Bremer-Tully Euphonic Transformer is a very good example.

This transformer is a very solidly-built job, having a heavy iron core of generous dimensions, the core and windings being enclosed in a soft iron case. The transformer is built in two ratios, these being 2.2 to 1 and 4.7 to 1. While these ratios are below, the amplification per stage is quite equal to that obtained with cheaper jobs of higher ratios, as the Bremer-Tully primaries contain a large number of turns of wire and more closely match the impedance of the modern tube. The construction is unique in that the transformer is reversible. That is to say, the lugs for mounting on a base are such that the grid and plate terminals can be placed on either side, enabling all leads to be made as short as possible.

The amplification curve is very free from "bumps" and the voltage amplification varies only very slightly over the full range of speech frequencies. The tone obtained when they are used is practically perfect, and they are a job which can be built with every confidence in the very best of sets. United Distributors Limited are handling supplies for Australia.

Wrestling Norman

It is now generally acknowledged that Norman McCance by broadcasting descriptions of wrestling matches through 3LO Melbourne, has done more perhaps than anyone else to popularise that branch of athletics and place it on the map in Australasia. It is estimated that over half a million people in every part of the Commonwealth and New Zealand listen in 3LO Melbourne, to Mr. McCance's descriptions. Many thousands of people who previously knew nothing of "headlocks," "body presses" and "toeholds" now follow Norman with breathless attention, and an atmosphere is added of course by the microphone picking up the demonstrations of enthusiasm of those witnessing the match, whose barracking is heard as a background to Mr. McCance's description. This naturally lends colour and makes them all the more exciting to listeners.

Mr. McCance however, does not manage to keep every listener keyed up to a pitch of tiptoe excitement all the time. 3LO Melbourne has actually discovered one lady who evidently found the description of a recent match rather slow, but perhaps this was more the fault of the unspectacular wrestling. This lady rang up after the match was over, and wanted to know who won as she said she had "fallen asleep whilst listening to the description."

World Propaganda

(By "Ray Dio.")

During the past year signs have not been wanting of competition between the larger countries in the wireless business. Both in the propaganda, and in actual business, as reflected in export trade, has the evidence been striking of intense development.

Propaganda Stations.

High-power stations, for the purpose of sending out propaganda in the form of press messages, have been operated for some years in Europe and America, but Great Britain was slow in getting a really strident voice on the air. A moderately high power arc station was started at Leafield near Oxford in 1921, but it was not useful. The Rugby super-station was opened last year, so that Britain could shout as loud as the other countries. America had several moderately high-power stations—really trans-Atlantic stations—in 1918, but the opening of the station or group of stations at Long Island in 1921 was heralded throughout the world in true American fashion.

Short Wave Stations Intensified the Propaganda.

When the use of short waves becomes popular, the competition became greater. With great economics in power short-wave stations were started in America and Europe, and while their transmissions were primarily of an experimental nature—in order to test out thoroughly the new system—the opportunity was not lost to impress on the listening world the importance of the country in which the transmitting station was situated.

Now we find these short-wave stations being utilised for telephony as well as telegraphy. (The whole of the foregoing refers to telegraph signalling.) Particularly in the United States do we find many stations broadcast special programmes for English listeners arranging, at no inconsiderable expense, programmes for distant countries. Early last year the American stations broadcast special programmes for English listeners—to be re-broadcasted by the British Broadcasting Company's stations. Later on similar services were sent out for German stations to pick up and rebroadcast.

Then Australia was specially favoured with programmes from the principal American short-wave stations, and some of the stations transmitted special programmes on their normal wavelengths.

READERS

The Editor is always pleased to receive suggestions from readers. If there is some feature you would like to see added to QRN— or something you would like taken out—write.

British Programmes for Australia Wanted.

We have recently had some excellent transmissions from the now famous station of the Philips Valve Coy., PCJJ. And strangely enough, that station—as is the company's factory—is in Holland. There is yet no British station capable of broadcasting on a short wavelength for reception in distant Dominions. At all events, no such station has done any successful work in that direction.

The matter is in need of urgent attention, and it is refreshing to note that the press in England is taking the question up seriously. Station 3LO Melbourne, which has broadcast Dutch and American stations, is naturally keenly anxious to re-broadcast a British station, but while it does not exist the stations in other countries with a "world-voice" must be utilised.

Heard from 3LO



BOWER and RUTHERFORD,

Of the Tivoli Circuit, popular artists at 3LO Melbourne

The Argument for the Trickle Charger

By Dr. J. H. T. Roberts.

In this article I am going to deal generally with the interesting and important subjects of battery eliminators, which permit the high-tension and low-tension current for the wireless receiver to be obtained directly from the electric lighting mains, and also with the allied subject of battery charging.

In the battery eliminator proper there is no battery whatever (as, of course, the name of the device implies). Instead a system of choke coils and condensers is provided which merely serves the purpose of "ironing out the wrinkles" from the electric supply, so that no crackle or hum shall be heard from the wireless receiver when the current for the filament or the anode circuits is being supplied in this way. In the case of the current for the filaments, it will usually be necessary to employ also a stepdown transformer (if the electric supply be alternating current), or a suitable resistance (if the electric supply be direct current).

The Charging Switch.

Suppose, however, that we leave out of account for the moment the battery eliminator proper, and consider the very simple system represented by a battery (in this case, of course, I mean an accumulator), which has its terminals connected to the middle terminals of a double-pole double-throw switch, one end pair of terminals of the switch being connected to the electric supply, and the other end pair of terminals of the switch being connected to the filament terminals (or the H.T. terminals, as the case may be) of the set. It will be clear with this arrangement that, if the switch is thrown over into one position, the battery is connected to the set and disconnected from the mains, whilst if the switch is thrown over into the contrary position, the battery is disconnected from the set and connected to the mains.

Never Runs Down.

If the battery is never left standing idle—that is to say, if the double-pole double-switch throw referred to is always in the left-hand position or the right-hand position, and never in the neutral position—then the battery is always either charging or discharging. And, if we can so arrange matters that the battery takes up a charge, between one evening and the next evening, equal to the discharge which it has suffered during an evening's use, the charge and discharge will balance or compensate one another, and the battery may for practical purposes be forgotten; it serves the function of a very temporary reservoir, or a vehicle for transferring the electrical energy from the mains to the receiver. Thus, although an arrangement of this kind actually includes and depends upon a battery, and therefore cannot strictly be called a battery eliminator; it certainly can be called a battery trouble eliminator, inasmuch as the battery may almost be forgotten.

There is a great deal to be said in favour of the simple arrangement mentioned above, even as compared with the best and most elaborate battery eliminators. In the first place it is simple both in construction and maintenance. In the second place it

is inexpensive in first cost and maintenance, and its cheapness will still further be realised when I deal, as I shall do in a moment, with the actual size of battery which may be employed.

Some Surprising Calculations.

In the third place it surpasses any battery eliminator which has ever been devised, or probably which ever will be devised, on the score of smoothness and steadiness in the current supplied to the set. This will be obvious, for when the set is actually drawing its current supply the battery is entirely disconnected from the mains, and we have, therefore, all the well-known advantages of accumulator supply, so that this "battery eliminator" might, perhaps, with more correctness, be called a main supply "mains eliminator."

With this arrangement no choke coils or condensers are necessary. The only components which are required are, as I have mentioned, either a resistance, if the current is D.C., or a stepdown transformer with rectifier if the current is A.C. In the case of high-tension supply, even the transformer will usually be unnecessary. It should also be borne in mind that with a battery eliminator proper these components are equally required—that is, transformer and rectifier for A.C., or resistance for D.C.—so that, comparing the battery eliminator proper with the little battery device in question, we see that the small battery itself takes the place of the smoothing system represented by the choke coils and condensers, and, as I have already remarked, it carries out the functions of smoothing the current infinitely more efficiently.

Now we turn to the question of balancing the charge and discharge of the battery from day to day, and here a few simple arithmetical calculations will perhaps prove rather surprising.

Supposing you are using a three valve set, with dull-emitter valves consuming $\frac{1}{2}$ ampere each, which, I suppose, represents a fairly average case. The total current is $\frac{3}{2}$ ampere. Suppose, also, that the set is operated for an average of four hours a night; then the total ampere-hours consumed is 4 by $\frac{3}{2}$ —that is, 3 ampere-hours. We now have 20 hours left, until the same time next evening, in which to put back into the battery the 3 ampere-hours which it has lost. If we divide 20 by 3, we find that a current of approximately 1-7th of an ampere will be required, so that if a battery is put on steady charge at 1-7th of an ampere for 20 hours it will turn up at the same hour the next evening in precisely the same condition as it was when we started; it will have taken up 1-7th of an ampere multiplied by 20 hours—that is, almost exactly 3 ampere hours.

Consequently, we have to arrange matters so that when the battery is left on charge it is receiving only a very small current, and a few additional calculations will soon satisfy you that this current may be, in the majority of cases, between 1-10th of an ampere and $\frac{1}{2}$ ampere. It is very unlikely to exceed $\frac{1}{2}$ ampere, because $\frac{1}{2}$ ampere in 20 hours gives you 10 ampere-

hours, and there must be very few wireless sets indeed which will consume 10 ampere hours in a single evening.

An Important Point.

The very small current of, say, 1-10th or 1-5th of an ampere is obviously only a "trickle" of current, and it is for this reason that the battery charger delivering such a small current is known as a "trickle charger."

Now we come to what is an important practical question—namely, the question of size and cost. In the ordinary way the average wireless experimenter recharges his accumulator, say, every few weeks or so, and consequently he has to use an accumulator of sufficient size and ampere-hour capacity to operate the set for that time without its voltage dropping below the standard value. This may mean quite a large accumulator; many listeners use accumulators of 50 ampere-hours, or even 100 ampere-hours capacity.

Again, when the average listener comes to charge his battery, he wants to complete the charge in a matter of a few hours—at any rate, a day at most—and he has therefore to put back into the battery in the course of, say, 12 hours, the charge which it has lost during a fortnight or a month. Taking our original estimate of 3 ampere hours per night, seven nights a week, this works out at about 40 ampere hours in a fortnight. Forty ampere hours have thus to be put back into the battery in 12 hours, which means a charging current of 4 amperes.

It may be interesting to use an illustration which serves to bring out the comparison rather well. Suppose a man wanted to go from Brisbane to Toowoomba, say 200 miles, by motor car in 12 hours. He could either spend the first seven hours on other business or idle them away and then set out to accomplish the whole journey in the remaining five hours, which would require an average speed of 20 miles per hour; or he could set out at once and spend the whole 12 hours in getting there, which would only require an average speed of about eight miles an hour. He would get there just the same in either case, but in the first case he would need to employ a motor cycle or car, whereas in the second case an ordinary cycle would be sufficient for the purpose. (I am, of course, leaving out of account personal questions, such as the man's endurance, for simplicity of illustration.)

The Ideal Method.

Trickle charging is, in my opinion, the idea system of charging a wireless battery, for the battery subjected to comparatively small charges and discharges, which are much less likely to injure the plates and so to shorten the life of the battery than are the considerable depletions and subsequent over-chargings which fall to the lot of the average battery used in the ordinary way. Nothing could be simpler or more satisfactory than the arrangement of a small 20-ampere-hour-capacity accumulator coupled to a tiny trickle charger capable of delivering 1-16th to 1-4 ampere, the latter permanently connected to the electric light mains, with a throw-over switch so that the battery is either on the set or on the mains.

—"The Wireless Constructor."

"The Set of the Century"

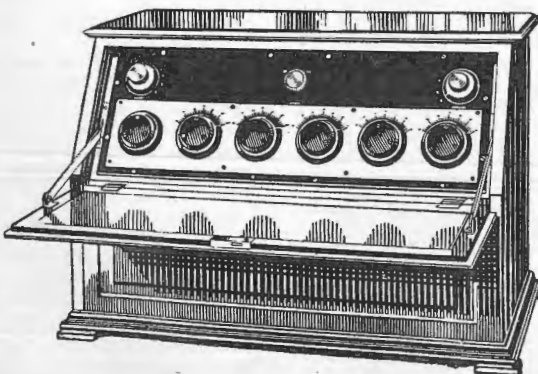
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tivity with simplicity of control. Reaction has been entirely avoided in order to obtain perfection in the quality of reception.

The Set possess eight valves, of which the first five are high frequency amplifiers, the sixth a detector, and the last two low-frequency amplifiers. Write for descriptive catalogue containing full information, prices, etc.



SPECIAL NOTICE.

New Zealand and South Seas Exhibition, 1926.

The Sterling Company were awarded the First Order of Merit (Gold Medal) for Wireless Receivers, Loud Speakers and Components shown at this Exhibition.

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The H.T. Charging Shop at the C.A.V. Battery Works.

The Portable Accumulator

By C.A.V.

Do the radio users of today and the manufacturers of radio equipment realise what they owe to the development of the small portable accumulator? I rather doubt it. If it had not been for the development of the accumulator largely brought about in the early days of the Motor Industry, it is to be doubted if the use of radio would have attained anything like its present dimensions.

The detailed care which is given to the manufacture of these articles by a large firm was forcibly brought home to us by the opportunity given of seeing the detailed process of manufacture at the C.A.V. Works at Acton, England.

The developments of these works is in itself a guarantee as the present waiting room virtually comprised the whole of the original premises. It is sufficient to say that the whole of the original premises will only hold a small portion of one day's output at the present time.

Many of our readers know to their cost there are many cheap Accumulators on the market but we think more and more it is being recognised that a reliable

article and not necessarily the cheapest in the first instance is by far the cheapest in the end.

The range of C.A.V. Batteries specially designed for Wireless work is extensive, and comprises high and low tension units of all capacities to meet the varied requirements of Government Departments and the buying public. It is no idle boast that C.A.V. Batteries for this purpose are second to none. The long experience of the Company is behind all their designs, and every unit turned out is first class quality and finish.

Low tension batteries are made in glass, celluloid and ebonite cases.

A full range of capacities is provided in each class and the units are put in 2, 4 or 6 volts.

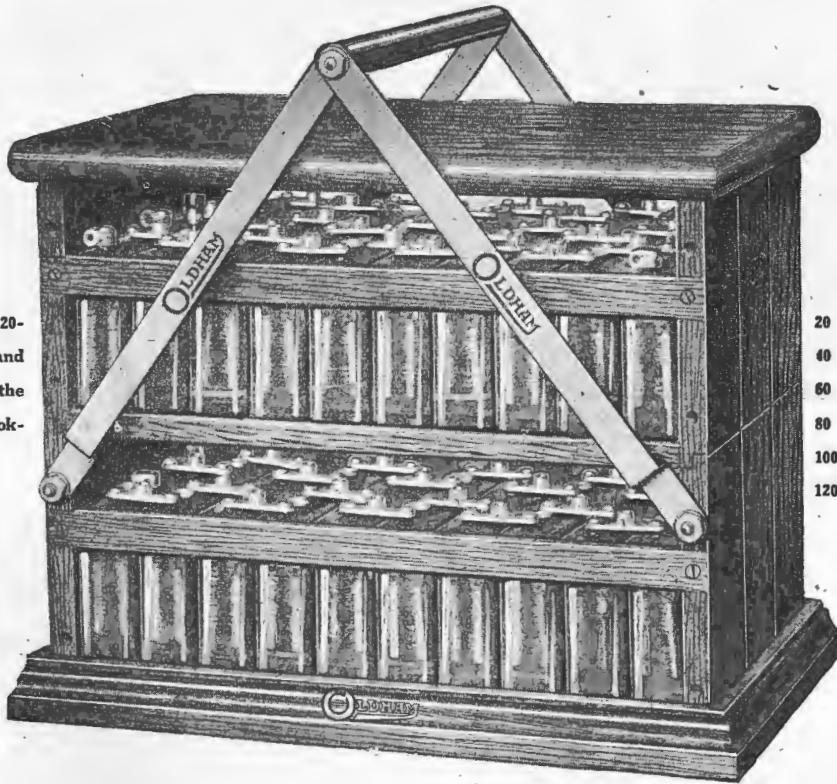
The plates used in these batteries are of proved durability, and give an even discharge of current. The terminal posts are made in a special alloy, and are so protected from the acid solution and the gases, that no corrosion of terminals can take place.

The C.A.V. High Tension Accumulator is a very good article to illustrate the point in question. A great majority of H.T. Accumulators marketed are somewhat cheaper but the sterling quality of the

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- 60 volt £4/10/- ea.
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C.A.V. article has resulted in steadily increasing sales.

The range of H.T. Batteries covers a wide field and the large demand for these batteries in 60 and 90 volts is sufficient proof of their uniform excellence. The design of the cells prevents intercell leakage and the plates give a steady noiseless discharge with the minimum voltage drop.

Every cell is carefully tested and conditioned by charge and discharge before it leaves the factory, and is therefore delivered to the customer ready for use.

A very special form of plate is used in the H.T. range which practically eliminates local action or the tendency to self discharge of the cell—the advantage being shown in the long period through which the cells will remain at work before charging is necessary.

Broadcasting Rebroadcast

An interesting feature of the recent world broadcasting experiment by 3LO Melbourne was the rebroadcasting of the programme by experimental station 3BY, which is controlled by Mr. Hector Holst at Babra Road, Caulfield. Mr. Holst's excellent transmission was greatly appreciated by thousands of listeners who did not have receiving apparatus to enable them to tune in direct to the short wavelength used by 3LO Melbourne to reach the other side of the world.

Wireless Equipment for Police

Wireless is a necessary auxiliary in a modern police force, and the N.S.W. police, not to be lagging in this respect, has lately had installed additional and more equipment for the tracking of misdoers.

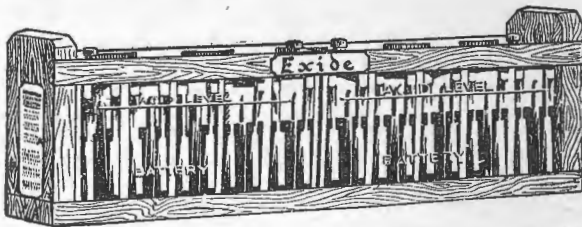
A 2 k.w. transmitter consisting of transmitting panel and rectifier has been installed by Amalgamated Wireless (A'sia) Limited at Pennant Hills Wireless Station. The apparatus was manufactured in Australia at the radio-electric works of A.W.A.

This apparatus is "remote controlled," for while the equipment is located at Pennant Hills, the control apparatus is situated at Police Headquarters in Phillip Street, and consists of speech amplifier, microphone, monitoring receiver and morse key. There is also a private telephone line between Police Headquarters and Pennant Hills Wireless Station.

By means of this apparatus it is possible for the police, who maintain their own staff of operators, to transmit messages either in Morse code or speech to the police patrol cars which are wireless equipped.

"HOW TO BUILD A "B" BATTERY ELIMINATOR.

Next issue (November) of "Q.R.N." will feature a "B" Eliminator article. Be sure to buy your copy.



EXIDE High Tension Wireless Battery Type WJ

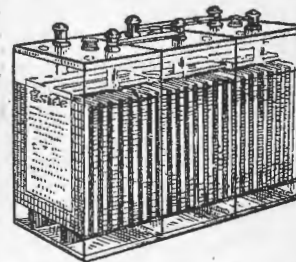
Although their initial cost is slightly higher, EXIDE Type W.J. High Tension Batteries are immeasurably superior in every way to dry batteries.

With reasonable care they will last many years, only requiring recharging at intervals of several months at a trifling cost. EXIDE W.J. Type Batteries have an actual capacity of 2500 milli-ampere hours, with a voltage of 20, and a mid-point tapping of 10 volts.

At all Wireless Stores or any EXIDE Dealers.

Exide WIRELESS BATTERIES

Exide BATTERY SERVICE (Q) LTD.
PETRIE BIGHT BRISBANE



EXIDE Low Tension Battery, Type CZ

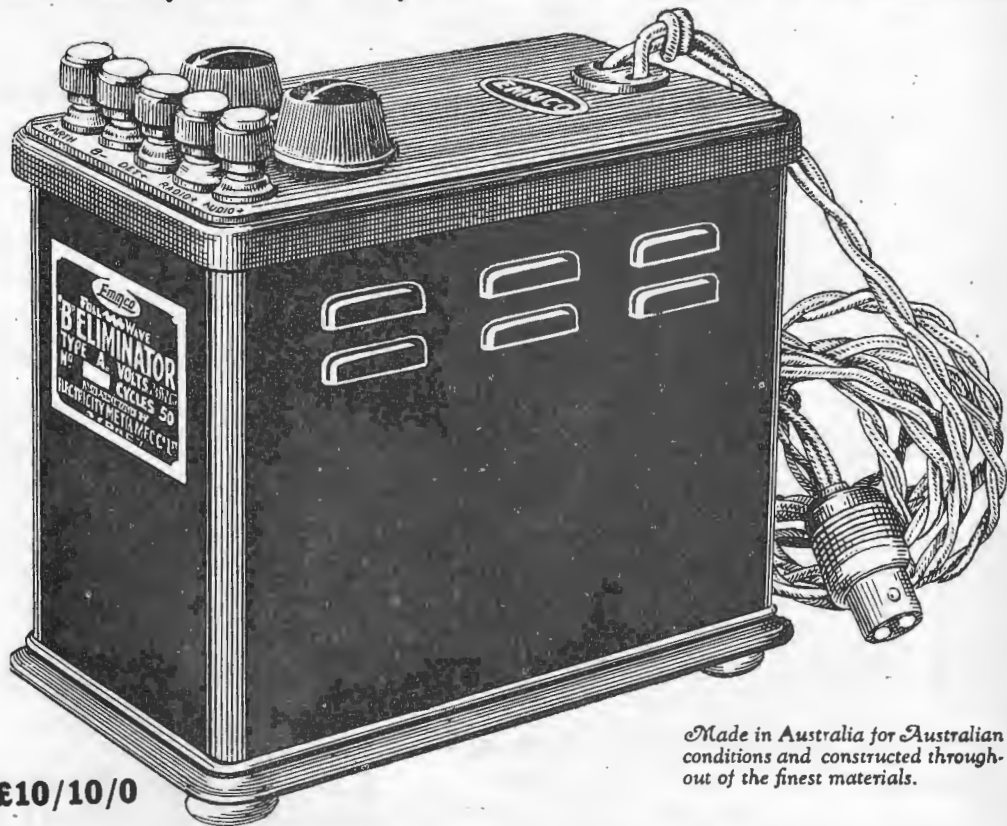
EXIDE WIRELESS BATTERIES are assembled in separate celluloid boxes. These boxes, as well as the cell lids, are made from the finest quality celluloid, because it has proved to be the best in over 30 years' experience.

The EXIDE LOW TENSION WIRELESS BATTERY, TYPE C.Z. (illustrated above) is made up in separate two-volt units in numerous capacities. They are suitable for use with any type of wireless valve. Ask for them by name.

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The Recent Empire Broadcast

2FC's Memorable Effort

The first attempt at Empire broadcasting was successfully carried out by Station 2FC upon the morning of Monday, September 5th, when Farmers Broadcasting Service, working in conjunction with the "Sydney Morning Herald" and Amalgamated Wireless (Australia), Ltd., arranged a special programme by Australian and visiting British artists from the studios.

The transmission commenced at 2 a.m., and lasted until daylight. Arrangements were previously made for the re-broadcast of this programme throughout the British Isles by 2LO London, and other stations of the B.B.C.; by the Marconi Company in Canada, South Africa and India; and by the Radio Corporation of America through a chain of stations in the United States.

Tremendous Power.

The power used in the transmission was over 20,000 watts, equal to that used by the world's leading broadcasting stations, and more than four times the power ordinarily used by "A" class broadcasting stations.

The messages transmitted included greetings from the Governor, the Prime Minister, the Premier, the Lord Mayor, the chairman of the Australian section of the Empire Press Union, Mr. W. M. Hughes, Dame Nellie Melba, and others.

Great Artist Sings.

Joseph Hislop, the world-famed English tenor, at present touring Australia, who has never broadcast before, refusing four-figure fees in England, sang in his historic programme.

The Artists.

A group of notable artists had been gathered together to take part in the musical side of this important broadcast. Among those who took part were (they are listed in the order of their appearance.)—Mr. Alexander Sverjensky (piano), Miss Carrie Lance (soprano), "The Four Waifs," Mr. Gladstone Bell (cello), Miss Mabel Batchelor (contralto), Mr. Lionel Lawson (violin), Mr. J. Pheloung (cornet), Miss Rene Maxwell (soprano), Mr. Frank Hutchens and Mr. Lintley Evans (pianoforte duet), Madame Emily Marks (soprano), Mr. Van Der Klei, Mr. Cunningham, the 2FC Instrumental Trio, Mr. George Carney, Mr. Hislop, Miss Wilson, Mr. Raymond Ellis, Mr. Cayabon.

How the Programme Was Received.

Reception generally throughout the British Isles was, in the minds of those who listened-in, very satisfactory, although the B.B.C., with characteristic conservatism, pronounced judgment upon the effort as being "fairly good."

The programme was best received between 5.45 p.m. and a little after 7 p.m., when it is safe to say that practically every Australian in the United Kingdom listened-in upon half-crown crystal sets or multi-valve de luxe sets.

Sir James Fairfax's opening greeting was heard letter perfect. The opening items were best. After a while atmospherics became troublesome at intervals, but they were never severe enough to drown an item. The Sydney G.P.O. clock was distinctly heard striking 3.

Approaching 7 p.m., an intermittent whistle became evident, which gradually became worse. This noise was due to a Swedish continuous-wave station getting off its proper wavelength. Finally the interference became so bad that the B.B.C. had to close down.

The experiment of relaying the programme from Keston was supervised by the research worker, Mr. Partridge, whose private station, 2KF, Wimbledon, is well known to all Australian amateurs. Mr. Partridge informed the Australian Press Association that the reception was far better than in the earlier trials. He thought that Keston would be able to improve the reception, but suggested that 2FC should try a wavelength of 25 metres, which, he said, would be less liable to atmospherics, though atmospherics would always be a trouble. So far Keston had not heard anything from Melbourne.

The verdict of the general public is reflected by the Press; summed up, the performance is regarded as an achievement rather astounding, but in the way of providing a regular concert programme a lot remains to be done.

Mr. Bruce's Message.

From the broadcasting point of view, the greatest feat of the transmission was the conveying of the Prime Minister's message from his home in Frankston (Victoria). The speech was sent over 600 miles of land line before being put on the air, and was received in London, a distance of more than 12,000 miles, so distinctly, that the Prime Minister's voice was clearly recognisable there.

Mr. Bruce, in his message, explained that he had been brought out of bed at 3 o'clock in the morning to have the pleasure and privilege of addressing a message to listeners in Britain on behalf of the Government and citizens of Australia. People wondered at the developments of the age in which they lived, the Prime Minister added, but what was yesterday considered miraculous would be the commonplace of to-morrow. So it was with wireless. They now recognised its advantages to mankind.

How Transmission Was Effected.

In an interview, Mr. A. S. MacDonald, Chief Engineer to Amalgamated Wireless, who was in charge of the broadcast, described particulars of the transmission. He said:—

"A number of precautionary measures were taken to ensure that there was no overloading on any part of the amplifier circuit. The output of the amplifier was passed through a step-down transformer, the low impedance side of which was connected with the line and also to a volume control indicator, which in-



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- usually caused by
faulty valves!*

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RADIO VALVES

dedicated to the technical attendant in charge of the transmission the maximum amount of volume that could be put on the line without over-modulating the transmitter. A specially constructed metallic aerial line conveyed the amplified currents from the studio to the transmitter at Pennant Hills. Included in the studio apparatus was a monitoring receiver, which was adjusted to the wave length on which the transmission was effected, and this immediately indicated to the technical attendant any defects occurring in the transmission. By means of special switching he was able to tell whether these defects took place before the voice currents left him or afterwards. This enabled a very close check to be kept on the transmission, and ensured a reliable transmission, as was demonstrated by the clarity and volume with which it was received in Britain.

The Power Equipment.

The transmission was from the short-wave station 2ME, constructed by Amalgamated Wireless for commercial purposes. The normal equipment of this station consists of the following sub-sections:—Sub-station step-down equipment, motor alternator, automatic regulators, rectifiers, and smoothing circuits. The step-down sub-station provides for the transformation of the high voltage incoming supply to a low voltage supply, for supply to the motors, which are direct coupled to the alternators. These transformers and motors are suitably protected by means of overload and no volt release. The output of the alternators is fed on to a switchboard, on which is accommodated a voltage regulator which maintains the output voltage constant under all conditions of load, being practically impossible to notice any change in output voltage even when the whole of the load is thrown off the alternator. The supply is led in turn to a step-up transformer, which steps-up the output voltage of the alternators to a voltage suitable for feeding on to the anode of the thermionic rectifier, the filaments of which are heated from current supplied by highly insulated step-down transformer. The heavy insulation in this transformer is provided to ensure that the high voltage current supplied by the step-up power transformer shall not find a path to earth through weak insulation. After being rectified in these thermionic rectifiers, which incidentally function in the same way as the detector valve of an ordinary receiving set, the current, unless smoothed would be pulsating, and would give rise to an objectionable humming noise on the carrier wave. This however, is prevented by means of the smoothing circuit, which consists of a very large inductance, the wire of which has sufficient cross section area to carry the output current, and condensers of sufficient dielectric strength and capacity to completely smooth or iron out the ripples which would otherwise occur. There are two rectifiers of this nature, each supplying a different section of the circuit. The output of these rectifiers is of the order of 7000 volts direct current.

Wireless Equipment.

The wireless equipment consists of three sections—master oscillator with amplifiers, magnifier, and amplifier. The master oscillator is housed in a box which is very heavily screened in order to prevent the oscillations generated by it being impressed on adjacent circuits. A three-electrode thermionic valve of 250 watt output is employed in this circuit, but is under-run to a very great extent. The output of this

is then passed through the amplifier associated with it, which amplify the oscillations thus generated to a sufficient extent to enable them to be impressed upon the grid circuit of the main amplifier. The magnifier consists of a circuit which employs two large output 3-electrode thermionic valves in association with a circuit special designed for the magnification of the oscillations impressed upon its grid. The direct current power supply for the plate circuits of this magnifier is association with the modulator, which employs a number of 3-electrode thermionic valves, specially constructed for the purpose of handling voice currents without distortion, their anode-grid current characteristics being a straight line instead of a line curving, as is the case with the usual type of valve. This straight-line characteristic is necessary to permit of what is termed 'the grid swing.' The output from the line which connects the studio to the station would in itself, be too weak to impress upon the grid circuits of these modulators. There is, therefore, interposed between them a series of three amplifiers, the purpose of which is to step-up the voice currents to a value sufficient to swing the grid of the modulators to the desired extent.

Aerial Equipment.

"The aerial equipment is very simple in itself, and consists of a vertical wire so phased that what is generally termed the ground component is eliminated, and thus all the energy radiated from the aerial is projected at an angle of approximately 45 degrees to the earth. The energy thus projected eventually meets with what is commonly termed the Heaviside Layer, and is reflected back to earth at an angle equal to the angle of incidence in exactly the same manner as a mirror reflects ordinary light. It might here be mentioned that the laws governing the transmission of light and radio energy are, exactly similar. Upon again reaching the earth, the energy is again reflected, and so on, in ever-expanding rings until the waves have encircled the globe. The first-mentioned upward projection and the consequent elimination of the ground waves gives rise to what is known among wireless experimenters as the 'skipp distance,' which, in effect, means the distance which is skipped by the waves in their first, and possibly succeeding, perambulations from the earth to the Heaviside Layer and back again.

"The successful combination of all the factors necessary for the transmission ensured the satisfactory empire broadcast, so that the speeches and music transmitted from the studio of 2FC were clearly heard by millions of listeners in Britain and Europe, owing to the relays of the British Broadcasting Corporation. Cablegrams received from other countries indicate that this historic broadcast was heard in practically every part of the world.

Further Experiments Likely.

"The engineers of Amalgamated Wireless assumed responsibility for the technical side, the transmission being under the supervision of Mr. L. A. Hooke (deputy general manager), and Mr. A. S. MacDonald (chief engineer). Tests for the Empire broadcast had been carried out nightly for a week in advance, and the arrangements were regarded as being as perfect as it was possible to make them.

"The suggestion of the engineers of the B.B.C. that the experiment should be repeated on a wavelength of 25 metres, has already been favourably considered. The matter is now being investigated by those concerned."

Notes from 3LO

(By Our Special Correspondent.)

LAUGH AND GROW FAT.

"Laugh and grow fat" has evidently been the motto of Mr. Syd. Fayne, the versatile humorist who is getting in training with an object of compelling listeners to Studio 3LO Melbourne to split their sides with mirth. They say that people who are ample of girth, have a distinct sense of humour, and, this being the case, Mr. Fayne must surely be the prince of fun makers, and, in no sense of the word, is he content to fill a small corner. His songs cover the type of humour that was so much in vogue 20 years or more ago (when a joke was a joke and everybody recognised it and laughed at it immediately) to the present day kind of subtle humour, where the audience has to be very "quick on the up-take"—so all classes of mirth-seeking listeners will be catered for. Mr. Fayne has been a successful member of the Melbourne concert world for some years past, and is all agog to get before the microphone to tell us one or two of his "specials."

SABBATH PROGRAMMES.

To maintain the specially high standard set by the Sunday programmes broadcast from Studio 3LO Melbourne, came the Bernard Heinze Trio on Sunday, September 25th, consisting of piano, violin and 'cello. The excellent musical fare provided by this artistic trio is too well known to need further comment in these pages, but their instrumental solos, duets and trios are often a revelation in technique, and are always a pleasing feature of the programme, especially to the musical student, who has an opportunity of hearing how the great work of the old masters should be rendered.

A POPULAR BARITONE.

Listeners will be glad to welcome Mr. Fred Walker to Studio 3LO Melbourne, for not only is he the fortunate possessor of a pleasing, well-trained, dramatic baritone voice, but has a most extensive repertoire of songs, many of them rare old favourites.

Mr. Walker is well known on the concert platform, and is a general favourite at "Smoke Nights." He has taken part in dozens of municipal concerts, and just after he sang at his last concert at the Melbourne Town Hall, it was burnt down, which cut short a long and promising Melbourne season. However, it's an ill wind that blows no good, and numerous country engagements followed, which helped to establish this popular artist in the good graces of a wide circle of music lovers.

FAME.

Once upon a time press interviewers were the only people, apart from social moths, who sought the glamour of famous people. With the advent of photographic illustrating the camera man joined the reporters. Then the cinema blossomed and the movie "shooter" came along with his cumbersome gear. Now broadcasters are added to the big list of those who add to the fame of the famous. Soon we will have the televisor, and then—what next?

AH! THE TELEPHONE.

Stories of being the scenes are always interesting to theatre-goers. Likewise listeners are usually anxious to know how things are done at 3LO Melbourne. Not many of the 500,000 people who listen daily to that station realise the most important part played by the telephone in the service of broadcasting. Not only is it indispensable in relaying outside programmes and ceremonies, procuring sporting results, and keeping in contact with the hundreds of artists always engaged in programmes, but it is used most extensively by listeners who continually ring up seeking information about a thousand and one things—many not in any way connected with broadcasting. So frequent are the calls that the telephone attendants at 3LO Melbourne, who have been specially trained at the Central Exchange, usually have one or two rings waiting to be answered. Many of the enquiries are trivial and annoying yet, withal, the attendants give a patient and attentive hearing, and reply courteously to all enquiries, whether they be connected with a dog or cat, the title of a song broadcast perhaps a month previously, the correct time, or the winner of the last race at Woop-woop. Verily, their task is unenviable, and they must often desperately shriek in their dreams: "Yes, we are doing the wrestling tonight."

ANITA SHAWE.

Another new artist engaged by 3LO Melbourne is Anita Shawe, who appears in songs and monologues. These, we believe, are Miss Shawe's first appearance since she left the stage to marry a Fitzroy (Vic.) merchant. She appeared here first in "No. No, Nanette" with Elsie Prince, and made friends of many playgoers. Romance cut short her stage career, but entertainers find it difficult to disappear altogether, and Miss Shawe probably finds broadcasting a nice middle way between the stage she has foresworn and the home-keeping career she exchanged it for.

A ROUMANIAN SINGER.

One night recently, while waiting for her turn at 3LO's world-broadcast programme, Saffo Arnay talked to me in her delightful broken English. Though married to one of our finest pianists, Mr. William James, the singer has not yet learnt to speak her husband's language without all sorts of pretty inflection that don't really belong to it. She told me that soon she hopes to sing at 3LO Melbourne in six different languages in the one night. This is somewhat of a feat.

Mdm. Arnay is a Roumanian herself, and she speaks English, Russian, German, Italian, French, besides her own Slavonic tongue. Pretty, appealing, gay, she is in real life very like the merry widow whose songs she has made so attractive over the wireless that the opera is to be repeated yet again at the beginning of this month. These opera studio productions rank among the most popular items of the 3LO Melbourne programmes.

Club Activities



RADIO CLUBS OF QUEENSLAND.

- AUCHENFLOWER AND DISTRICT**—Secretary, L. Cribb, "Frampton," Ridley Street, Auchenflower.
- CAIRNS AND DISTRICT**—Secretary, Mr. Tarbit, c/o Mr. Les. Fitzsimmons, Cairns.
- EASTERN SUBURBS**—Secretary, J. Burns, Longland Street, East Brisbane.
- GRACEVILLE**—Secretary, H. Carter, Cr. Molonga Terrace and Wylie Streets, Graceville.
- IPSWICH**—Secretary, S. J. Aspinall, Brisbane Street, Ipswich.
- SOUTH BRISBANE**—Secretary, W. R. Gilbert, Gordon Street, Coorparoo.
- TOOMBUL**—Secretary, T. Starkie, Sandgate Road, Nundah.
- TOWNSVILLE**—Secretary, E. J. Jefferies, Fletcher Street, West End, Townsville.
- WIRELESS INSTITUTE (Queensland Division)**—Secretary, Charles Dunn, Perry House, Elizabeth Street, Brisbane; telephone No. Central 7260; postal address Box 689K, G.P.O., Brisbane.
- WOOLLOOWIN**—Secretary, H. A. Jiear, Lisson Grove, Woolloowin.
- WYNNUM AND MANLY**—Secretary, P. J. Golden, c/o Trackson Bros., Ltd., Elizabeth Street, Brisbane.

Woolloowin Radio Club [oa-4WN]

"4 sail chp. mod. bung., all conv., Windsor district." Dozens of ads. of this type are certain to be seen in the daily press next year if 4FK Kenna ("Marconi" is his nome-de-klub) carries out a promise, or perhaps, one should say a threat, made at the club display in the recent Windsor Show.

4FK brought along a model death-ray plant which caused a small electric bulb attached only to an inductance coil to glow as soon as the ray was focussed on it. The coil was not connected to any other electrical circuit. When a small boy held a spoon in the path of the ray he could not prevent it from beating a tatoo on the blackboard. "Marconi" next announced that he hoped next year to demolish a few houses in the neighbourhood, and proceeded to give a miniature demonstration, picking on 4LJ to be a martyr for science. Immediately the ray was directed on Leo's pipe, out shot a nine inch flame and a 1700 cycle 1001 h.p. stenck filled the air. This may have been the exhaust from the death machine, but it was rumoured it came from 4LJ's pipe. If this was so, it is to be hoped that, instead of buying a rashly-promised new pipe for 4LJ, Harry Jiear will render a service to the community by merely buying him some cigarette papers and some decent tobacco.

4QG's afternoon and bedtime story sessions received on a set kindly loaned by the Thomas Radio Company, were very much appreciated, as was also a display of members' sets, to say nothing of our fifty-watt transmitting tube. Lest the eyes of the members of the Q.R.T.L. all turn green for ever and a day, let

me hasten with all speed, despatch and swiftness to explain that it was only ours on loan for the afternoon, and further, lest they should, with visions of working DX, be tempted to fare forth into the highways and byways of the world of pawnshops, hoping therein to be able to lease a fifty-watter for the week-end, that it was not from one of these that 4WN did borrow the tube, and that still furthermore, that the filament of the tube was detached from its leads. Peace to its ghost. Amen!

Since the last club notes were written, the third annual meeting has been held. The past year has been a very successful one, and particulars of the club's doings have been published month by month in this journal. The treasurer's report showed the finances to be in a very flourishing condition, and it was decided to immediately place a few pounds at the disposal of the Technical Committee for the purpose of additional parts for the transmitter. The following are the principal officers of the club for this year:—President, Mr. H. Jiear; past-president, Mr. H. Kington; patron, Mr. Jas. Love; secretary, Mr. C. J. Grant; treasurer, Mr. J. P. Love; assist. Secretary, Mr. V. T. Kenna. In addition to a strong General Committee, a Technical Committee consisting of the chief operator—Mr. C. Stephenson (4RG)—and two other A.O.P.C. holders, was again formed to carry out all work in connection with the club's experimental transmitting license. All queries relating to anything concerning radio, which are received by the club either by letter or from visitors to the club rooms, are handed over to this committee for attention and reply. No charge is made, and the queries are always welcome, as are also visitors. Members are in attendance at the club rooms, which are situated on the property of Mr. T. Thomas, Wilmington Street, Woolloowin, every Thursday night, and a visit involves no obligation to apply for membership, the numbers of which are limited.

A syllabus for the current year was adopted at the annual meeting, and included in it are debates, lectures and impromptu nights, as well as a junk sale and a mock trial. As our treasurer usually wields the hammer at the junk sales and collects 10 per cent. of all transactions for the club funds, members are sure to receive top prices for burnt out crystals and bent valves! Harold Walsh, one of our members, belongs to the legal profession, and is expected to lend and a mock trial. As our treasurer usually wields ask for his full fee of ten and six, it being thought that considering all we have not done him for he will only ask for six and eight cash.

Should the Toombul Radio Club members have been able to save up a few pennies after buying ice creams for the YL's, and buying a copy of the "Q.R.N." with the collection; or should they have had the luck, which I never have, to find one left behind by some thoughtless one, they will be interested to read that we can still spare a night to debate with them—if the YL's will let them come. If it would encourage them to come over, 4WN might even go so far as to ask the adjudicators to give Toombul the decision—I don't think! Anyway, Toombul, if the YL's can't do without you for one night, why don't you bring them over? Of course, the paint's nearly washed off the walls of the shack and there is no lino on the floor, or ceiling to the roof; still, it's miles ahead of 4TC!

Toombul Radio Club

Arrangements are well in hand for the radio display at the Nundah District Show, to be held on September 30th and October 1st in the showgrounds adjoining the Nundah railway station. A large number of entries is expected in the competitive classes, and in consequence, competition should be particularly keen.

A field day has been organised for a week-end immediately following the Nundah Show, and members are looking forward to a very interesting and instructive day's outing.

Not content with field days and displays at the local show, members have been discussing the advisability of organising basket picnics, week-end outings, and a score of other attractions for the coming summer months.

A few members are now "swotting" for some future A.O.P.C. exam., and maybe 4TC will soon have several new "fours" amongst its ranks.

The Toombul Radio Club meets every Wednesday evening at the residence of Mr. C. A. Walz, Eton Street and Sandgate Road, Nundah, and anyone interested in radio is always welcome to attend.

Queensland Radio Transmitters League

September has marked another milestone in the League's triumphal progress along the Highway of radio. First and foremost, the secretary (4LJ) started the series of lectures given from 4QG under the aus-

pices of the League, having in view the interests of the broadcast listener.

The lecture was very favourably received, and in addition to personal congratulations, letters have been received from several quarters, one in particular from Toowoomba being especially nice.

These lectures are non-technical, and will follow a progressive syllabus. They will continue for some months.

Another point favourable to the League was the fact that no sooner had the report of the Royal Commission on Wireless been published, than representatives of the daily press were telephoning the secretary asking for interviews, in order to obtain the views of the League.

It is noteworthy that the secretary's comments in the "Daily Mail" were printed first and verbatim. Altogether, the month has been a very successful one.

The League now has 20 regular subscribers to its journal, Q.T.C., and these include five from U.S.A.; one each from Victoria, New South Wales and West Australia, and in addition, the local and Queensland subscribers have managed to necessitate two reprints of No. 1 and one of No. 2. The Editor wishes it to be known that the fact of his having to go to press again—far from annoying him—makes him feel pleased, that the next issue will contain an extra page.

Any applications for enrolment as amateur observers or any inquiries regarding the League, should be addressed to the secretary, Leo J. Feenaghty, 4LJ, c/- Main Roads Commission, Fourth Floor, Diamond Chambers, Adelaide Street, Brisbane.

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A Letter from "Grandfather"

To My Dear Little Grandchildren:—

This is "Uncle Ben's" Corner, but between you and me (That grammar is bad, you all will agree); But we'll just let it pass whilst I tell you what's true: He said that I MUST write a few lines to you.

So I've pushed "Uncle Ben" from this corner this time, And you'll just listen-in to my little rhyme. So thus you will hear your "Grandfather's" voice In words just as good and words just as choice.



It is always a pleasure to speak to you, to write to you, and to think (as I often do) about you. I sometimes wonder if you think of me, and the few words I broadcast for your benefit whenever I am able to do so.

You should try and remember the lessons I endeavour to teach, so that you may learn that you can be happy, because you do the things that cause happiness.

You know that when you have been naughty you have not been happy, so never be naughty—that's what "Grandfather" means.

Wasn't that circus very funny the other Saturday night? Just fancy me walking on a tight rope and falling into the water. You must have laughed at the thought! But I didn't get very wet, for when anything heavy falls into a pool of water the water splashes out, and there's little left in the pool—the only little that was left that night was little ME!

Didn't they all laugh when they saw I wasn't hurt. I saw them all—"Uncle Ben," "The Professor," and little "Bright Eyes" and all the crowd in the circus tent. Never mind, there were other clowns there as well as "Grandfather."

And now let me send my love to all my grandchildren, with special remembrance to those who are laid aside on account of ill-health, both young and old, but who are able to enjoy the bedtime stories as well as the various programmes from time to time. God bless you all,

"GRANDFATHER."

"GRANDFATHER'S" COMPETITION."

BURIED QUEENSLAND TOWNS.

Here are a few sentences, and in each sentence there is a "buried" Queensland town. Can you find them? If so, write each down in the space under each sentence and forward same to the Editor, "Queensland Radio News," Box 1095N, Brisbane, marking each envelope "Grandfather's Competition."

In the event of more than one guessing correctly, the first and second prizes will be allotted to the first two drawn from amongst the successful grandchildren.

FIRST PRIZE—Cash prize 7/6

SECOND PRIZE—Cash Prize 5/

"Buried" Queensland Towns.

(One town contained in each sentence.)

(1) I saw him from afar and knew him at once.

Name

(2) A ram actually chased him out of the yard.

Name

(3) "Let us have all or a part of it," she said.

Name

(4) Bring all the smiling lads to next week's dance.

Name

(5) His harsh tones killed all the love she had for him.

Name

(6) The snake lay right across the track enjoying the heat of the sun.

Name

* * * *

RESULTS OF LAST MONTH'S COMPETITION.

Last month we asked our little readers to guess "Uncle Ben's" birthday. Although nearly two hundred attempts were received, no child guessed correctly. Of course we do not know "Uncle Ben's" birthday—that is a secret—but "Uncle Ben" (who opened the envelopes) tells us that the nearest guess came from:—

DOROTHY HYDE of Main Street, Woodford, Q.'ld., to whom the first prize of 7/6 will be forwarded.

The next nearest attempt was sent in by

BYRON JORNSON, 127 Lamberton St., Kangaroo Pt., to whom the second prize of 4/- will be posted.

"Grandfather's" competition (printed above) is a splendid one, and the hidden towns can be detected quite easily if you only look and think. Try your hand at it—you may be successful.

The Transmitting License

(By "Q.R.N.")

ARTICLE No. XII.

(All rights reserved.)

In this article, the last of the series on amateur transmitting, attention will be given to wireless telephony.

Readers who have followed the earlier articles should now have a good idea of the fundamentals of the science, and should be able to judge whether they are sufficiently interested in amateur work to construct and operate a small transmitter. The report of the Wireless Commission, published last month, gives hopes that the somewhat onerous restrictions placed upon the amateur transmitter will, in the near future, be relaxed. That such action would be followed by an immediate increase in amateur activities goes without saying—and an increase in such matters cannot but be for the good of wireless in Australia.

Wireless telephony offers attractions to many who are only in a lesser degree interested in Morse signalling. The one is not very different in essentials from the other, and a knowledge of the fundamentals of "brass pounding"—as work with the Morser key is familiarly called—suffices to a large extent in understanding phone work.

A good phone transmission postulates good modulation. Modulation may be defined as the process of impressing a secondary variable current of a frequency variable within the range of audible sound upon a pure continuous wave signal.

This continuous wave—or c.w.—signal is, of course, simply the type of signal emitted by an oscillating valve; for instance, a howling receiver or an ordinary transmitter while not being keyed.

When a key is used to convert the c.w. into Morse signals the result is known as I.C.W.—a simple abbreviation for interrupted continuous wave.

The shrill note of a c.w. or i.c.w. station emitting a wave with a large D.C. component is so distinctive to the ear and carries so well through static and interference, that more and more stations are aiming at this goal. Of course a certain amount of A.C. ripple, varying with the frequency of the supply, is not objectionable in telegraphy, and even a rough unrectified A.C. note is tolerated, but the danger here lies in the manner in which such signals tend to spread all over the waveband, thereby causing severe interference.

For phone work a pure D.C. output is almost essential, for even a slight ripple distorts the speech to a marked degree. The means of obtaining this direct current output from an alternating current source by rectifiers, filters, chokes, etc., have already been dealt with in this series.

Assuming that a transmitter is working and emitting a pure C.W. signal, how, then, is this signal to be modulated or changed into a signal having the form

of wave conforming to that of a definite audible sound?

There are three methods of modulation in general use among the amateur transmitters, namely, the absorption method, the grid control method, and the choke control method. The first of these three is in common use because of its simplicity, though, unless carefully controlled, its results are not completely satisfactory.

Usually the method adopted is to insert a microphone in the earth lead of the low-power transmitter. The carbon granules in the microphone form a high resistance path in the way of the high-frequency currents of the aerial system. The action of speaking into the microphone, of course, has the effect of so moving the diaphragm as to alternately compress and release the carbon granules. Now, as is universally known, the harder the carbon granules are packed together, the less the resistance in the circuit, and consequently, it is obvious that the impression of speech waves upon the diaphragm will have the effect of varying the resistance of the aerial system of the transmitter in a manner comparable to the wave form of the sounds uttered.

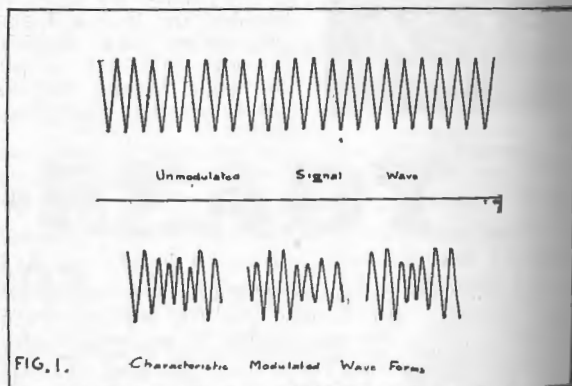


Fig. 1 shows in a diagrammatic way the wave form of an unmodulated signal and a characteristic form of the same signal after modulation.

Occasionally better results, by reason of the finer control, are obtained if the microphone, instead of being set directly in the earth lead of the transmitter, be placed in a closed circuit coupled to the aerial coil, as in Fig. 2. The effect is the same, for any variation in the fundamental resistance of the coupled circuit is reflected, by a process of induction, in a varying resistance in the coupled aerial coil. Readers who have considered the earlier article on induction

should have no trouble in following the necessary chain of reasoning. An arrangement whereby the coupling between the coils may be varied, giving fine control over the current in the microphone circuit is recommended. Very often, in practice, the coupled circuit is tuned with a variable condenser.

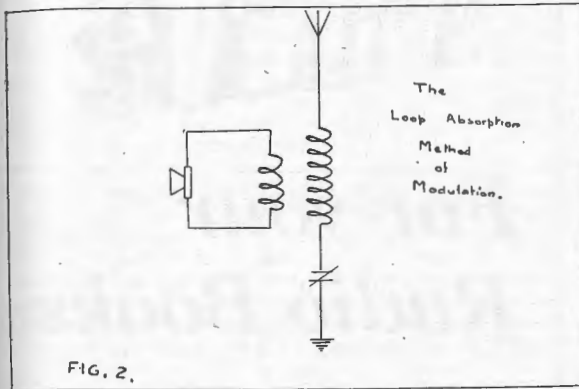


FIG. 2.

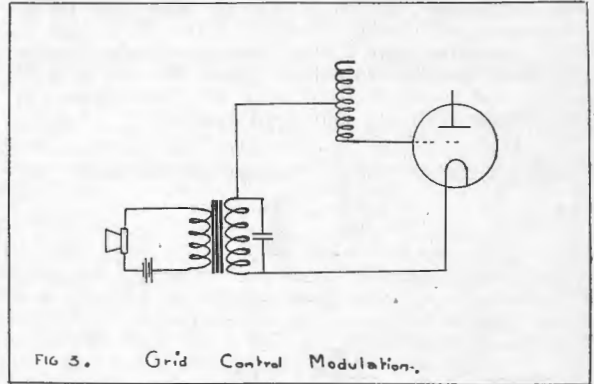
In grid control modulation use is made of a transformer known as a modulator transformer, and the general layout is as shown in Fig. 3.

The microphone is placed, in series with an energising battery, in the primary circuit of the transformer. To give some idea of the formation of the transformer, it may be said that commonly the primary consists of some 500 turns of 24-gauge wire, and the secondary of some 20,000 turns of fine silk-covered wire of, say, 40-gauge. As before, the operation depends upon the resistance of the microphone. As speech waves are impressed upon the diaphragm a varying current flows in the primary (or microphone) circuit. By induction, voltages of varying value are set up in the secondary winding, and these being fed on to the grid of the valve, set up variable potentials hereupon.

But now it must be remembered, from previous articles, that the plate current in a valve depends upon the obstruction placed (by the grid potential) upon the flow of electrons across the filament plate gap. In furtherance of this idea it will be realised that as the normal grid potential is varied by the super-imposed voltages set up in the secondary circuit of the modulator transformer so will the plate current vary. If the design and operation of the transmitter be carefully carried out the modulation of the grid circuit will follow exactly the form of the impressed speech waves, and as an ideal sequence the plate current, together with the aerial current, will respond in precisely similar manner.

In a theoretical transmitter the wave forms of the emitted speech waves will be replicas of the wave forms of the speech impressed upon the microphone borne along upon a C.W. component—the familiar carrier-wave. It must be realised clearly, however, that between the pure wave—the carrier-wave—and the modulated wave—the speech or music—is no inherent difference. The same valve produces the two forms though the modulated wave is literally distorted from its true form by the impressed speech frequencies.

The third method—by choke control—is relatively simple to explain.



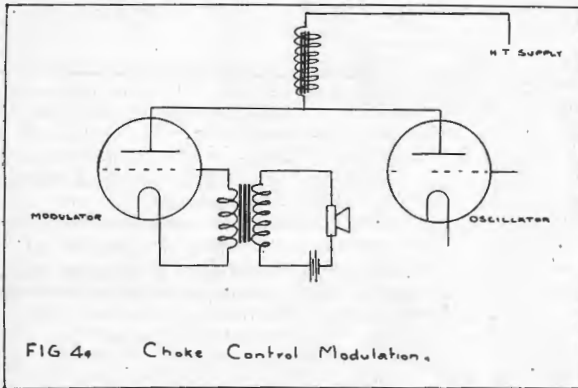
As will be seen in Fig. 4, a large iron-cored choke is placed in series with the power supply, and the plates of the modulator and oscillator valves are connected in parallel. The choke coil, for all practical purposes, sets a limit to the amount of current that can be drawn from the supply, and by the actions of the choke in preventing variance in this amount, this system is commonly known as the "constant current" system of modulation. The reason for this will now be explained.

As will be seen from the diagram, the microphone with battery and transformer, is connected into the grid circuit of the modulator valve very similarly to the previous case. The remainder of the circuit is standard. Suppose that all preliminary adjustments have been made, and that speech waves are impressed upon the diaphragm of the microphone. Then the varying voltages in the secondary of the transformer will, as before, affect the grid potential of the modulator valve. Thereby the plate current will be altered and on this fact depends the whole of the theory of choke control modulation. It will be remembered that it has been postulated that only a certain fixed amount of current will ordinarily be available through the choke coil. Then it is obvious that any variance in the plate current of the modulator valve, either above or below the normal value, according as to whether the grid potential be positive or negative, must be met from the only other source—namely, the plate supply of the oscillator valve.

Now, when the two valves are at rest, the plate current available will be shared by the two valves in a ratio depending upon the characteristics of the valves. So a sudden demand made upon the common reservoir of plate supply by the decreased plate circuit resistance of the modulator valve can only be met by a drain of corresponding amount from the plate supply of the oscillator. Thus it will be seen that speech frequencies impressed upon the microphone will react upon the oscillator valve, which is in turn feeding the aerial system.

A fourth system—though little used—is the wavelength change system of modulation. Its theory is simple; its practice hard. In this system an ordinary transmitter is used having a small two-plate con-

denser in the aerial lead. One of these plates is fixed and the other is attached mechanically to the diaphragm of the microphone, so that any vibrations of this diaphragm will cause varying capacities in the condenser and thereby changes in the wavelength of the transmitter wave. But these wavelength changes will occur in tune with the shape of the speech wave forms, and so the emitted wave will be modulated in accordance with the impressed speech.



The chief drawback to all modulation systems lies in the danger of causing troublesome sidebands—one above and one below the true wave. They are an essential concomitant of modulation and cannot be completely eliminated. However, close attention to transmitter design and operation will have the effect of keeping these sidebands within very reasonable limits.

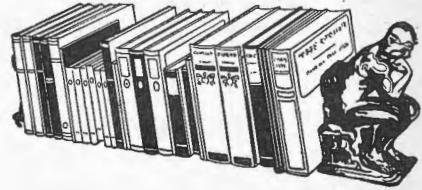
* * * *

Little now remains to be said. The series commenced just one year ago is now complete, and is sufficiently detailed to give readers a good chance of success in the examination for the Amateur Operators' Proficiency Certificate.

The published report of the recent Royal Commission seems to forecast a change in the regulations controlling Australian wireless affairs, and a relaxation of the vexatious conditions imposed upon the transmitting amateur seems to be up for consideration. If such relaxation be granted, a great increase in the number of stations on the air will at once be noted, especially if the long-sought permission to handle non-commercial messages be accorded.

Don't wait until all your fellow enthusiasts are in the game, make your own friends—per radio—in the other States and countries. Ninety-nine per cent. of the "hams" on the air are fine fellows to talk to, and the "brass-pounding" fever can never be cured.

If a Queenslander, write your queries to the Secretary of the Queensland Radio Transmitters' League, c/- of this journal, whose league exists only to advance the spirit of amateur radio. If not a Queenslander, write anyway.



For your Radio Books

Here are just a few which we recommend

- James, Amateur Wireless Valve Transmitters 12/- (post 9d).
- James, Home Constructors' Wireless Guide. . . 4/6 (post 5d).
- Lescarbourea, Radio for Everybody. 10/- (post 6d).
- Bangay, the Oscillation Valve, 8/- (post 3d).
- Ballantine, Radio Telephony for Amateurs, 11/6 (post 8d).
- Balbi, Loud Speakers—their construction, performance and maintenance, 4/6 (post 3d).
- Ainsley, Mast and Aerial Construction for amateurs, 2/- (post 2d).
- J. W. Robinson and G. Williams, Wireless, 3/6 (post 3d).
- J. W. Robinson, Story of Broadcasting in Australia, 1/6 (post 2d).

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AMONG THE AMATEURS

The most consistent thing on the air during the month was QRN! It was very bad on several occasions and of course seems to be worst right on top of that distant R2 station whose sigs we are vainly striving to copy. Such are the trials and tribulations of the life of an amateur.

Several notable achievements have been accomplished since last report. The first was the very excellent phone put over by Zedder 2AQ who might easily be mistaken for a local so QSA was he. His modulation was perfect and a rare thing for amateur phone, alas, one could quite easily follow each word of the gramophone records he played. FB om, I hope you read these notes and pat yourself on the back for me!

The next remarkable achievement was also the work of a Zedder. Heard oz-1AN whose sigs are usually QSA working local 4LJ at R3 with a pure DC note. Heard his report to the effect that his output at the time was a paltry point 7 watt! Have calculated that and find that Auckland his QRA is 1450 miles from 4LJ's shack and that means just a mere 2,071 miles per watt. Who says QRP? Also FB, AN, its a long time since we've heard of any such DX, QRP records.

Old 2 Cork Emma of Sydney Town is apparently saving this little piece of the terrestrial globe for a few moons for he was heard on a recent Sunday afternoon closing down for nine or twelve months. He was QSO EG-2OD, friend Simmonds of England, on phone and said he hoped to see him soon. Going broad, Charlie? Hope the EG's don't persuade you to stay!

Just a word or two of fatherly advice. Why call CQ umpteen times before signing? Three times three is a good rule and it avoids any trouble. It's very annoying to have to hang on to a CQ-fiend's sigs for minutes on end to find out who he is and then perhaps to have him suddenly decide that he wants to work. Cut it out and let's hear more signing. Make signing snappy, om's. While in a lecturing mood let it be noted that when working or calling a station with the same intermediate as yourself it is not necessary and, in fact, wrong to use the intermediate twice. For example oa-4ZZ calling oa-2YY, would say "2YY oa 4ZZ."

Very pleased to hear 3BQ back on the ether again after his disastrous fire. His note is still Xtal. Of the locals it is noteworthy that more and more are dropping a good note without impairing their volume. The latest addition to the near-DC ranks is George of 4GO. He has a DC note with a slight wobble. Must be the new tranny, eh? 4NW is still QSA and good. SB. He is the runner-up in the "most Yanks per night handicap." His 240 metre phone is reported from afar, and it is very good. A new comer to the fourths is 4RW with an AC note. QRA?

Say, Arthur, cut off about six feet from your sigs. OM and make the cut sideways! 4AW's note is getting rough these days—must be attending the Stadium, eh?

Isn't it just lovely to have lots of money? No less than three of the locals have blown up some perfectly good guineas in getting Bremer Tully short-wave kits and are most enthusiastic about the results. They really seem to increase the volume of sigs, and, of course, they are a decided acquisition to the set from the appearance point of view.

The Yellow Race is being heard again. AC and AJ stations are heard quite frequently of late. Hop in and get your war news direct from the front, gang. The oa-2 men are being QSO after nightfall, which shows that "Spring is Come" to quote from the cover design of QST some issues ago.

There is an ever-increasing number of Australian stations who are putting out QSA spacers. This leads to great confusion, and while it may obviate clicks locally, it's pretty hard cheese on the other fellow. About 33 metres there are no less than five loud spacing waves to be heard, but it is pleasing to note that none emanate from oa-4 men.

Taking one thing with another, as they do in the Pirates of Penzance, my guess is that 3ES is the most consistent and best Australian station. Although DX falls to his touch like ripe apples, yet he is always QRV to chat with an Aussie, and more credit to him for it. DX is all right, but charity begins at home.

Cheer up, gang, there's a good time coming. The Wireless Royal Commission has submitted its report, and it looks as if the amateur is at last to get something. Perhaps we may now build sets for a fixed band and make up an aerial without being under the necessity of cutting bits out of it every now and then to get on to another harmonic to land ourselves in the new band to which we have been relegated.

Have heard of a new Rathcon which is coming on the market, and which passes 350 mills. Gee! if it will stand about 1000 jolts it should sell like hot cakes, judging by the reception accorded to the BH 85 mill job.

The Bowen Air Force Station has been heard recently calling CQ under the label 5LX. Suppose 4YN or 4EC are the ops. It's a hard spot to land good consistent sigs. into is Bowen. The skip seems to upset things. Still as they have unlimited watts up there on LX they should have no difficulty in getting the Don X.

The boom in Fours which was particularly noticeable some six or eight months ago, seems to have fizzled. Why the great number of "silent keys"?

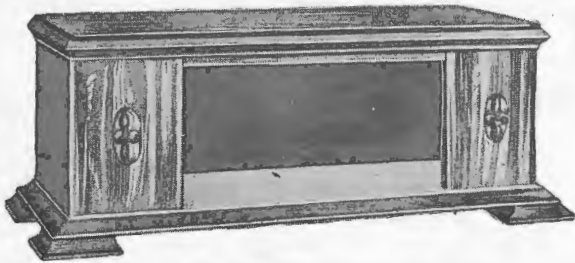


Illustration R.W. 100 is for a Three-Valve Set, the measurements being 15 inch x 7½ inch x ½ inch (Bakelite Panel Size.)

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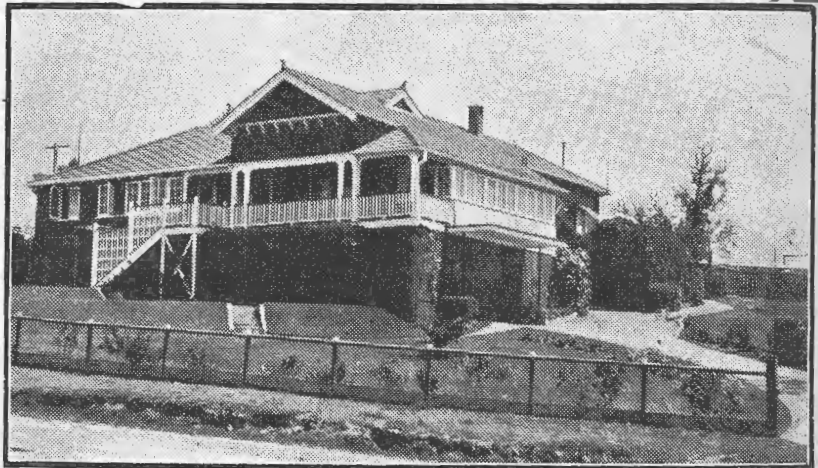
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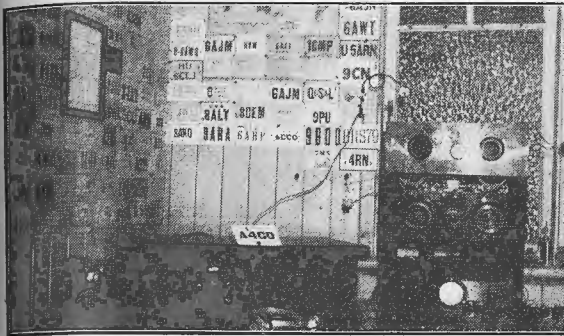
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STORES - NEAR EXHIBITION - VALLEY - BRISBANE

Liberal
DISCOUNTS
for Cash

Make use of the license men or it might take its departure, and then where would you be? The position seems to be reversed in the Fifth. There are at least nine new men on the air, and every one possesses a DC or vy gud RAC note. Good-o Fives!

Among the Q.R.T. Leaguer's

Two stations will be featured on this page each month.



OA-4GO.

This station, which is owned and operated by George Oxlade, of Newmarket, Brisbane, has been on the air since February, 1926. Communication has been established with U.S.A., Canada, Costa Rica, Chile, Japan, Borneo, Malaya, Hawaii, New Hebrides, and reports have been received of reception in Great Britain, India, British Guiana. On the left of the photo reproduced herewith is shown the short-wave receiver which, by means of Bremer Tully coil kit, tunes from 12 to 200 metres, using a seven-plate condenser. Two valves are sufficient for earphone volume on DX. The transmitter shown next is a tuned plate tuned grid circuit, and uses 35 watts on a UX 210 valve. Power is obtained from the 240 house mains, stepped up by means of a home-made transformer capable of delivering 2000 volts. Rectification is thermionic, using four Mullard DU 10 valves. The aerial is an inverted L 120 feet long, operated on the fifth harmonic with a 30-foot counterpoise. The same aerial is used for transmission and reception.



4CG.

The above photo depicts the apparatus at 4CG, which station is owned and operated by Cliff. H. Gold, Drake Street, Hill End, South Brisbane.

4CG first came on the air in June, 1926, and has been working consistently ever since. During this time much experimental work has been done—especially on the 5-metre band. The photo shows the set which is used for 20, 32, 80, and 250 metre bands. Of course, the set was designed to give greatest efficiency on the 32.6 metre wavelength, on which most work is done. The circuit used is the reliable old Hartley—around a U.X.210 tube, and power is generally about 35 watts input. Power is derived from a step-up transformer, which delivers 600 volts rectified A.C. after passing through 12 to 16 jars in bridge system rectifier. Filament current is supplied from the same transformer. The transmitting coils are wound with No. 12 wire and spaced with beads.

The grid-leak is a jar of water! Plate blocking condensers were also made on the spot from sheet glass and sheet zinc. The coils are also supported on sheet glass strips.

The receiver is at present a three coil job but may be changed any day! Most countries have been heard.

Considering the limited time the op. has to spare, DX has been very good. To date 14 countries have Alaska all districts in U.S.A. rdlu mrdwlu bwyp been communicated with including England, Sweden, Canada, Alaska, all districts in U.S.A., Hawaii, Straits Settlements, Japan, French Indio-china, New Caledonia, New Hebrides, all New Zealand and Australia and Philippines. Various ships have also been worked, most interesting of which was KNT, Zane Grey's yacht, "Fisherman."

4CG is always ready to co-operate with other stations in tests, etc., and will check wave-lengths at any time with a precision-meter.

When the Queensland Radio Transmitter's League was formed 4CG landed several of the "hard" jobs around the shack, such as Treasurer, International Contact Station, and Vigilance Officer, and is also a member of the Q.R.T.L. Traffic Branch.



A CROSS in this square denotes that your subscription expires with this issue.

Subscription 6/6 Year

Whispers from Maoriland

The football season has come to a close, and the Saturday afternoon listeners to 2YA will hardly be sorry. At Wellington the microphone is placed in the grandstand with, as can be well imagined, the most appalling results. One recent Saturday I listened in and heard hardly anything but the roars of the crowd. In fact the only intelligible sound that came through the speaker was from a very small boy with a very big voice who seemed to occasionally change seats with the announcer and cry to the invisible audience: "Programmes and cigarettes"

2YA must be more polite to be popular. The published programme is frequently not adhered to. This is easily explained, as some artists do not arrive as promised. But why not, at the commencement of the evening, announce the deletion of any particular number?

I do not think that bagpipes were meant to be broadcasted. Even my cat suddenly remembered that he had an appointment with a friend next door when the Wellington Kilties broadcasted "Sweet Alice Ben Bolt." (At least that is what the programme said it was.)

The possibilities of giving instruction by wireless are being tested by the Education Department. At present the tests are being confined to primary schools, but later on the similar instruction in technical subjects will be taken up, with the object of extending the benefits of technical education to country districts.

One of the objects of the scheme is to help teachers in remote schools. It is anticipated that it will be possible to broadcast lessons in certain subjects, and these lessons can be followed by the pupils and teachers, the latter using the blackboard where necessary. One result hoped for is that the Director of Music will be able to broadcast his instructions to the teachers and also demonstrate lessons. Even a lesson in arithmetic by wireless is not considered an impossibility. If a point is not made clear in the course of a lesson in this subject, all the teachers would have to do would be to write to the Department and the explanation would be broadcasted immediately.

With instructions by wireless in operation, the Department would be provided with a ready means of reaching teachers with instruction on various matters with the latest and best methods of working.

It is thought that a new discovery in wireless transmission and reception has been made by Mr. Frank N. Sinclair, of Scarborough, Christchurch. Shortly, the discovery is that without the aid of batteries or an ordinary microphone, a common crystal set with a pair of telephones can act as a wireless transmitter when coupled to an aerial which is placed close to an aerial of a valve receiver. The aerial of the valve set picked up by induction from the aerial of the crystal set music and speech delivered close to the crystal set telephones, though the latter were in a house 120 feet away, and the sounds were reproduced by the neighbouring valve set's loud-speaker.

The total number of licensed listeners in New Zealand in August was 26,232, and the radio dealers totalled 308. When 2YA Wellington commenced transmitting on July 16 there were 19,754 licensed listeners and 130 licensed radio dealers. The figures show an increase of 6478 listeners and 178 dealers. The effect on the number of listeners through the establishment of a high-power station is remarkable for brief a period as only seven weeks.

At a meeting of the Management Committee of the Canterbury Rugby Union, a letter was received from the Referees' Association, stating that the following resolution had been carried at its last meeting:—"That the association protests against the radio broadcaster's continued personal comments on the ruling of the referees."

Novice: One who listens to a programme without getting the name of the station. Expert: One who gets the name of the station without listening to the programme.

QUESTIONS ANSWERED.

On account of pressure of space we are unable to publish this column this month. Questions held over will, in this instance, be answered individually through the mail.

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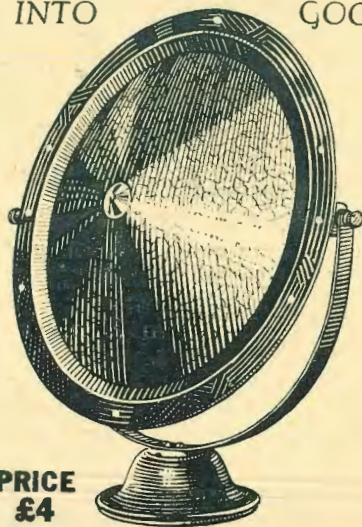
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