The Queensland Radio News

"Your Own Wireless Journal"

6D.

Vol. III. Thursday, 1st SEPTEMBER, 1927 No. 8

Registered at the General Post Office, Brisbane, for transmission by Post as a Newspaper.

Just Plug into Your Electric Light Switch!

No Batteries Required!

The Very Latest in

"ASTOR"

5-Valve Wireless Sets which we sell at £50 Complete with all Accessories.

Awarded First Prize at Recent Exhibition

Also the Very Latest

5-Valve Neutrodyne Set

Which Completely Shuts Out 4QG and Brings in any other Station at will

£26

Selected Accessories £11/17/10 Complete

Loud Speakers from £2

2-Valve Sets £7 complete **3-Valve £13/10/0 complete**

We Allow 10% Wholesale Discount on all Wireless—Write for List—
All our Sets carry our Full Guarantee

We are Sole Agents for the "ASTOR" Sets in Queensland and we are open to appoint Live Country Agents

Written Guarantee and Log Card accompanies each Astor Set

Queensland Pastoral Supplies Ltd.

BOWEN STREET (off Ann St., nr. Fire Brigade), BRISBANE. **PHONES: 5410 (4 Lines).**

A "Wireless Alphabet"

A FOR ANNOUNCER, with voice clear and mellow,
Which surely denotes—a jolly good fellow.

B FOR THE UNCLE with plenty of go,
And the three artistes the children well know.

C FOR THE CRYSTAL SET, always proved true,
No static, dictortion, which makes one feel blue.

D FOR DIRECTOR, both genial and terse,
Hope he won't mind being put into verse.

E FOR THE ENGINEER, a master of craft,
Well skill in the intricacies of his part.

F FOR THE FUTURE, with secrets untold,
Perchance greater wonders "Radio to unfold.

G FOR THE GUINEAS which artists scoop in,
Who're lucky enough, 4QG's favours to win.

H FOR THE HUMOUR which ne'er fails to stir
Listeners to mirth: Irish "brogue" or Scotch "burr."

I FOR THE INTEREST in which thousands share,
When 4QG Station is all "on the air."

J FOR THE JUNIORS, who, due to the sessions,
Surely can't fail to learn many good lessons.

K FOR KOOKABURRA, who sometimes we fear
Listens to things he's not meant to hear.

L FOR THE LISTENERS, who fill many roles,
Yet "One single thought holds thousands of souls."

M FOR THE MUSIC, which steals soft and clear,
The works of great masters charming the ear.

N FOR THE NEWS fraught with gladness or sorrow,
Telling of things both to-day and to-morrow.

O FOR THE ORCHESTRAS varied and grand,
The alluring Hawaiian, Sympony, and Band.

P FOR PROFESSOR, whose voice is so gruff,
Which, tho' heard seldom, gives always good stuff.

Q FOR THE QUESTIONS so often quite hard,
And cannot be answered by "Wizard" or "Card."

R FOR THE RACES, Boats, Speedway and Turf,
For rambles and rocks, whereon beats the surf.

S FOR THE SANDMAN, always dubbed "Sandy,"
Whose musical skill is surely most handy.

T FOR FAMED TONY, a wonderful steed,
For one day he's fat, the next wants a "feed."

U FOR THE UNIVERSE o'er whose dominions
Greetings are wafted on magical pinions.

V FOR THE "VENTURES" or Radio "Stuns" new,
In science or trade, the bench or the pew.

W FOR WIRELESS, for Wisdom and Wit,
The three one can find will, somehow, all fit.

X FOR XENOPHON, a scribe and a sage,
Would he be a back number in "Radio Age"?

Y FOR THE YOUTH in which "Radio Yet" talks
To what dizzy heights will it reach when age walks?

Z FOR THE ZEAL which surely must stay,
Till the sun fails to rise on the newly born day.

—E. A. WEITEMEYER, Sandgate.

FERRANTI

British-Made

AUDIO FREQUENCY

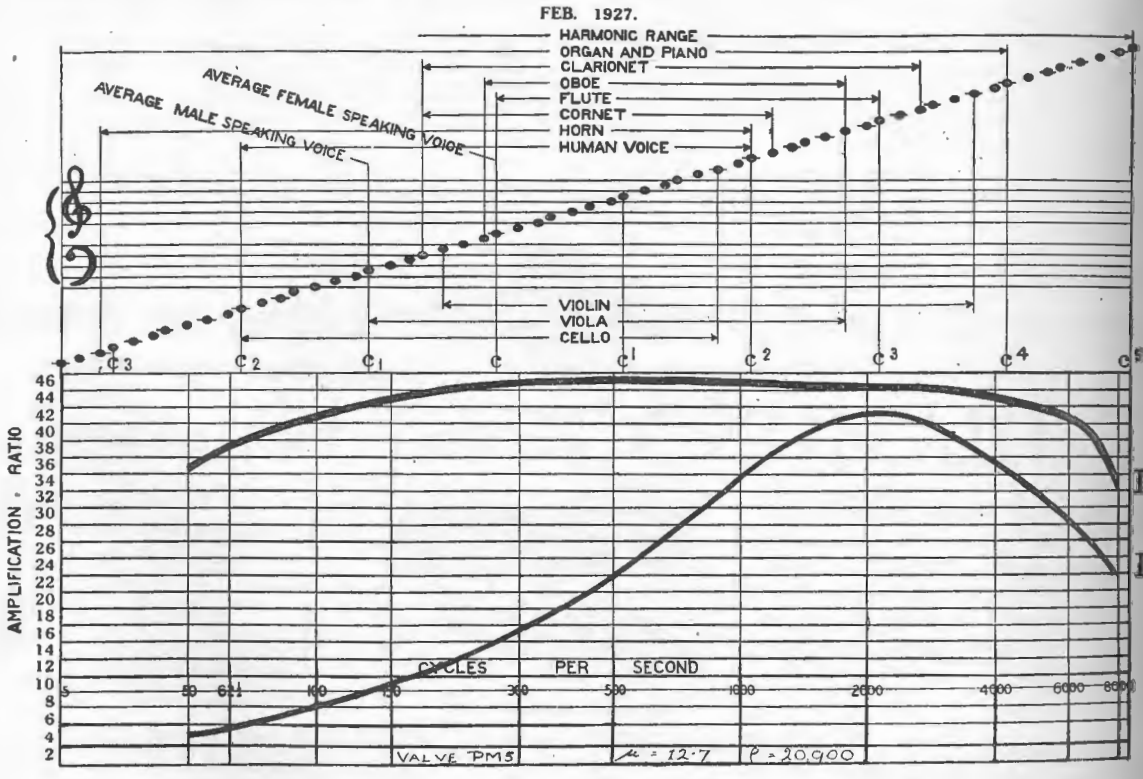
TRANSFORMER

TYPE AF3, 42/6.

The charted performance of the FERRANTI A.F.3 TRANSFORMER is published below Note the

UNIFORM AMPLIFICATION

and buy your Transformers only from manufacturers who publish the curve showing actual charted performances of their product.



Curve 1.—The Ferranti A.F.3 Transformer.
Curve 2.—A well-known transformer made in Australia.

NO BETTER TRANSFORMER IS AVAILABLE AT ANY PRICE.

Obtainable from every Radio Dealer in Australia.

A. BEAL PRITCHETT (Aust.) LTD., SYDNEY and MELBOURNE
WEDMA LIMITED, ADELAIDE EDGAR V. HUDSON, BRISBANE

THE QUEENSLAND
RADIO NEWS

A Magazine for Amateurs
A. T. BARTLETT, *Editor*

Is Radio Approaching Perfection?

THE astounding advancements that have been made in the radio industry during the past two years are prophetic of what may be expected within a like period hence. Development has followed development so rapidly until to-day we accept them as just a matter of course.

The trend has definitely been toward better tonal quality, greater selectivity, and simpler tuning. One has but to cast his mind back a score of months, when five-valve sets were operated from switchboards, and the top notes of a soprano paralysed the loud speaker.

Now, with transformers, valves and loud speakers fully 100 per cent. more efficient than those of two or three years ago, tonal purity is made possible. I ikewise, front panel controls have dwindled from the "teens" down to a solitary dial tuning, even for five to eight valve receivers.

Broadcasting equipment, too, has come in for its share of revolutionising. Witness the modern microphone, modulation panels and amplifiers. A broadcasting station built in 1924 must now be considered out of date when compared with the stations that are being built to-day.

Reviewing these things, it would appear that Radio is reaching its zenith—that it is nearing the Goal of Perfection. Unfortunately, this can not be said. While our scientists have so swiftly overcome the material imperfections in the design of radio apparatus, they have not yet solved the two great bugbears of Radio—Static and Fading.

To-day Static is as fierce, and Fading is as troublesome as it ever has been. The concerted genius of the whole word has not as yet devised a method of overcoming these two huge obstacles that have been placed in the path by the Forces that govern the Universe.

However, difficulties are made to be conquered, and we believe that the impediments which to-day seem impossible will, in the course of time, be removed. Just how this will be brought about is a matter for conjecture.

The potential powers of short waves have scarcely been touched, and who knows but that the solution of the problem may lie in the successful adaptation of the short waves by broadcasting stations?

HEAT
—the Destroyer

WITHIN every valve lurks the grim spectre of heat. Sometimes—as in the case of a bright emitter—he completes his deadly work speedily.

The frequent stretching and contracting when the current is turned on. The crystalisation of the metal due to the filament being incandescent. These are his two favourite avenues of attack.

But even Dull Emitters are not free from his insidious onslaughts. Quite a number work at a comparative high temperature and the fragile filaments fall easy victims.

There is one valve however which bids him do his worst. The Cossor with its Kalanised filament. Because not even a suspicion of a glow is visible when the new Cossor Point One is working you have direct evidence that the harmful effect of heat has at last been countered. After 2000 hours of continuous use the Cossor Kalanised filament is as supple and as pliable as on the day it was first made. This is equivalent to two years of ordinary wear and tear.

The Valve with the Kalenised Filament.

"UX" BASES.

2 Volt. 0.1 Amp.	**13/6**
4 Volt. 0.1 Amp.	**13/6**
6 Volt. 0.1 Amp.	**13/6**

QUEENSLAND DISTRIBUTORS

Cossor bids him do his worst

Small wonder that tens of thousands of wireless enthusiasts are turning to this long-life valve as a means of cutting down the cost of radio. For the Cossor Point One in addition to giving an exceptionally long service—consumes only one-tenth of an ampere. Seven of them take less current than one bright emitter. While its electron emission is so intense and the user obtains such a wonderful wealth of power and richness of tone that Broadcasting takes on a new standard of performance.

See your Dealer about these new valves without delay—they will improve any receiver.

J. B. CHANDLER & CO. Adelaide Street

UNITED DISTRIBUTORS LTD. Queen Street

COSSOR *—the British Valve which serves you longest*

The "Quality" Crystal Set

According to recent figures nearly 80 per cent. of all receivers in the Commonwealth are crystal sets. Evidently the crystal is losing none of its popularity, despite the high state of efficiency now reached in the design of valve receivers.

For economy, for simplicity, and for clarity, the crystal set stands supreme. Many multi-valve set-owners who reside within crystal range of a broadcasting station, often build and find a great deal of pleasure in listening-in on the humble crystal receiver.

We publish herewith constructional details for a very efficient little crystal set. The veriest beginner should experience no difficulty in building this receiver, while the more advanced amateur will be attracted by its capabilities.

Crystal receivers will always be popular on account of their simple construction, cheapness, and ease of operation.

It would be very difficult to state definitely as to which is the best crystal circuit to use, as there are a dozen and one types to choose from.

A crystal receiver, unlike a valve receiver, can only deliver to the phones the amount of energy it receives from the aerial circuit, minus of course a small amount of energy which is lost in the components.

From the foregoing it will at once be apparent that if we wish to obtain maximum results from our receiver we must keep these losses down to a minimum.

Provided that good quality components are used and the set wiring is properly soldered, little trouble should be experienced in this direction.

A crystal receiver may be divided roughly into three principal parts:—An aerial circuit (coil and condenser) to transfer the energy from the passing wave to the detector, a crystal detector to rectify the high frequency energy or, in other words, change the high-frequency current to low-frequency in order that it may operate the phones, and a pair of phones, which convert the electrical energy into sound waves.

The loudness of the signals heard in the earphones will, to a large extent, be governed by the amplitude of the passing wave; that is to say, that the further we get away from the broadcasting station the weaker will be the signals heard, as the amplitude diminishes as the distance is increased.

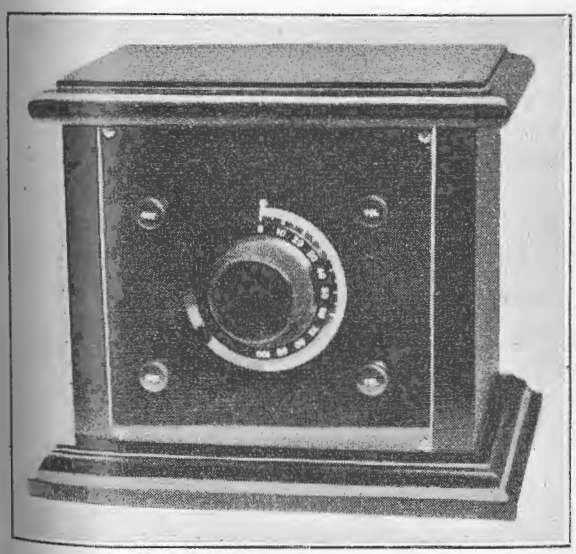
Crystal sets have, under favourable conditions, covered remarkable distances, though for this kind of reception a good deal of patience is needed.

The Circuit.

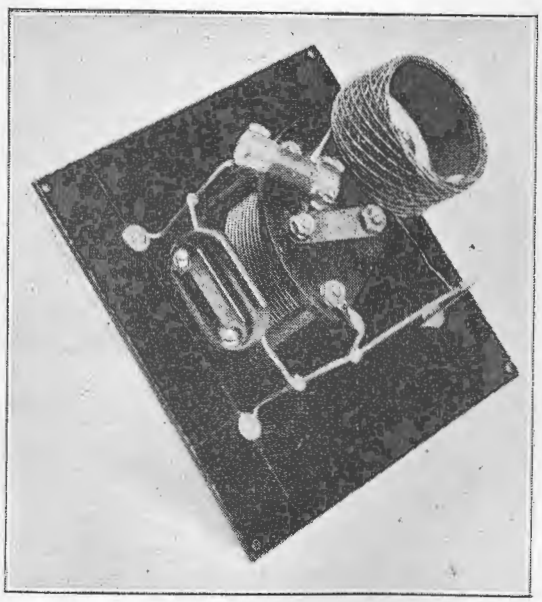
The circuit of the crystal set to be described is not a new one. In fact, it is one of the oldest. Nevertheless, it is a very reliable circuit, and serves as a basis for further experiments.

The Detector.

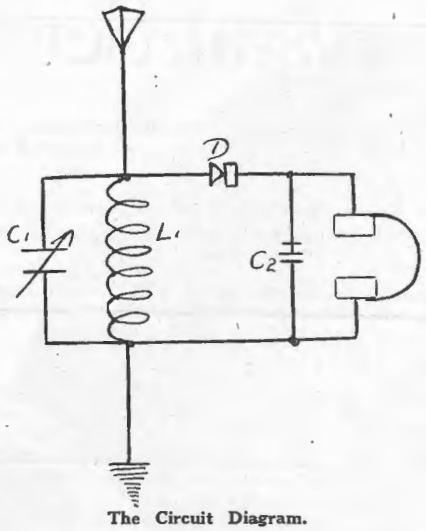
Most of us have at some time or other experienced trouble as regards the catswhisker jumping off the sensitive spot. This is very annoying, particularly when a very good musical item is being broadcast, as most crystals, after they have been in use for some



Showing Front Panel.



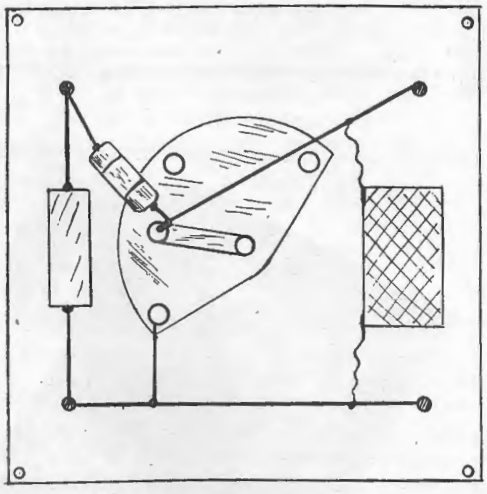
Showing Simple Arrangement of Components.



The Circuit Diagram.

time, are only sensitive in certain spots, and a good deal of time is wasted in readjusting the detector.

Fortunately, this trouble may be got over by using one of the many excellent fixed crystal detectors now available. These detectors generally have two crystals, which are set in a cartridge and properly adjusted at the factory. Once the detector is installed in the receiver it does not require any further alteration.



Semi-Pictorial Diagram.

The Tuning Coil.

The tuning coil may be of the solenoid, honeycomb or spider web type, according to the space available in the cabinet.

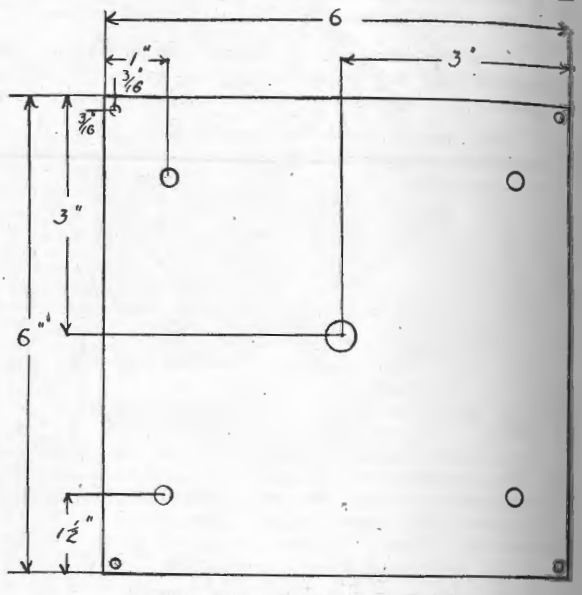
The solenoid type is, of course, the most efficient, but unfortunately requires a fair amount of room.

A honeycomb coil of 40 turns was found to give excellent results in the receiver which is being described here.

Constructing the Receiver.

All the necessary holes, with their positions, are given in the drilling diagram.

On the left-hand side of the panel (looking from the front) we have the aerial and earth terminals while on the right-hand side the two phone terminals.



Drilling Diagram For Front Panel.

The variable condenser is mounted in the exact centre of the panel, and should be mounted in the most convenient manner for wiring.

This condenser should be of fairly good quality, though it is not necessary to use one of the very expensive types.

Fixed crystal detectors are generally supplied with terminals or some form of clips to facilitate mounting so that no difficulty should be experienced as regards this component.

At this point it might be mentioned that these fixed detectors can sometimes be made a little more sensitive by gently tapping with something light, such as a lead pencil. This should not be overdone, however, as these detectors will not stand rough handling.

Tuning the Receiver.

Tuning in this case is a very simple matter, it being only necessary to rotate the condenser dial until a position is found where the signals are loudest.

A fairly good pair of earphones should be used. These should have a resistance of about 2000 to 3000 ohms.

Parts Required.

1 Panel, 6in. x 6in. x ¼in.
1 .0005 Condenser (Ormond).
1 K.I.N. Unmounted Coil, 50 turns.
1 Good Quality Fixed Detector.
1 Fixed Condenser (Igranic).
4 Bakelite Tapped Terminals.
1 Length Busbar.
1 Polished Cabinet.

4QG's Profitable Year

Extracts from Annual Report Presented to Parliament

To the Honourable the Chief Secretary, Brisbane.

Sir,—I have the honour to report that the operations of the Queensland Radio Service during the year ended 30th June, 1927, have been successful.

The period under review has been one of progress, and during the twelve months the broadcasting movement has developed considerably in the State of Queensland. The year has also been successful from a financial point of view; the operation of Station 4QG having resulted in a moderate profit.

Cost of the Station.

The capital cost incurred in connection with the establishment of 4QG (including the temporary plant) was £33,552. Interest at the rate of 5½ per cent. per annum is charged on this amount. ,

The Year 1926-1927.

The year 1926-1927 really represents the first period during which the station has been in full and complete operation. The preceding year was much in the nature of a developmental period, during which 4QG was operating both for the provision of a service and also in an endeavour to interest the public in the possibilities of radio. With the commencement of the year 1926-1927, however, quite a large number of people had installed receiving sets, the first feeling of novelty had worn off, and the operations of the station were regarded by listeners as being the actual provision of a real service.

Such being the case, every effort was made during the year to increase the scope of the transmissions, and to include in the broadcasts from 4QG items and matter which would prove of value to the whole radio community.

The license figures may be regarded as a most accurate indication as to whether broadcasting is progressing or not, and the figures for the period under review are quite convincing.

On 1st July, 1926 there were 8373 listeners' licenses held in Queensland, and this number had increased to 23,163 by 30th June, 1927.

Licenses are renewable annually, and a certain number were, of course, cancelled. The issue of new licenses, however, by far exceeded the number of cancellations.

Novelty Transmissions.

In order to give the public some idea of the possibilities of radio, 4QG has carried out a number of novelty transmissions. Speech has been broadcast from a diver from the bottom of Moreton Bay, concerts have been transmitted from coal mines and so on. Also quite a number of "stunt" transmissions have been arranged from the studio. Advantage has been taken to instal microphones in various places, and broadcast important happenings and functions. The visit of their Royal Highnesses the Duke and Duchess of York was wirelessed whenever possible, lines being laid to the various points at which functions were held and descriptions relayed. The happenings at the Royal National Show were broadcast, thus enabling people who were not able to attend to hear a description of such things as ring events.

Church Services.

The broadcasting of church services has proved popular. The station is linked up with fourteen (14) churches in Brisbane, and allots dates for broadcasting according to the percentages of religion as set out in the Registrar-General's figures.

Bedtime Stories.

Bedtime stories constitute one of the most popular, if not the most popular, broadcasts from the station, and are listened to with great interest by as many adults as children. The policy of the station is to make them as varied as possible, and it does this by transmitting children's entertainments by different characters on different nights. The services of a number of the story tellers are given voluntarily.

Melba Broadcast.

During the year 4QG had the honour to be the first station in the world to broadcast a complete concert by Dame Nellie Melba. The transmission of this concert was a complete success, and drew favourable comment from all parts of Australia.

Listeners' Comments.

The mail received at 4QG is heavy, and from it the staff gains some impression of the views of listeners. In certain portions of every State there exist areas in which reception from nearby stations is poor at night time, and these areas exist in Queensland. They are very small, however, and apart from certain districts, comments of listeners seem to indicate that 4QG's transmissions are well received. Interstate comments are invariably of a high order, and during the summer months in Queensland, American letters reached the station by every mail. Reports from New Zealand and the Pacific Islands have been numerous.

Wireless in the Country.

It is a matter for regret that country residents (and this applies to all States in the Commonwealth) do not avail themselves of the opportunities which broadcasting offers. The number of licenses held in the country is much smaller than should be the case. Whether this be due to the fact that the traders have not exploited the country or to the fact that a country dweller requires a more expensive receiver than the city resident is a matter of conjecture. Perhaps a lecture tour of country districts by an officer of the

Service might do something towards popularising the movement.

Relay Stations.

Relay stations in country districts are desirable, but their establishment must be regarded on purely businesslike lines. Rockhampton appears to be the most suitable centre for the first relay station in Queensland; but, unfortunately, land line facilities which are necessary for its establishment do not exist. Careful inquiries have revealed that it would cost approximately £6500 per annum to maintain a relay station at Rockhampton. This figures make the project impossible at present.

Oversea Programmes.

The science of radio has advanced greatly, and it has been possible during the year to receive London and Paris programmes direct in Brisbane and relay them from 4QG.

Staff.

A broadcasting station is quite different from any other institution. It operates day and night, week days, Sundays, and public holidays, and the demands on its staff are heavy. Every individual member of the staff of 4QG is a keen enthusiast, and has been ready at all times to sacrifice personal comfort for the benefit of the station. The success of broadcasting in Queensland is due in no small measure to the loyalty and diligence of the staff of the Queensland Radio Service.

Finance.

The operations of 4QG during 1926-1927 resulted in a profit of £5334/14/6, the accounts for the period being:—

To Salaries		£4,383	14 1
„ Incidentals		1,097	0 0
„ Artists' Fees		4,651	17 1
„ Royalties and Copyrights		6,887	18 1
„ Station and Expenditure		1,447	6 9
„ Balance, being Excess of Revenue Over Expenditure		5,334	14 6
		£23.802	10 6
By Licenses		£21,066	15 2
„ Advertising		1,952	6 10
„ Miscellaneous		783	8 6
		£23,802	10 6

WHEN SIGNALS BECOME WEAK.

Beginners in radio frequency are in doubt whether to blame their tubes or their batteries when the broadcasting becomes weak. Dry cell batteries of both the A and B type recover some of their strength when left unused for a day or two, whereas tubes that have become exhausted do not show this effect. Consequently, if you find that the radio set sounds almost normal for a few minutes just after you turn it on and then the music gradually grows weaker, you can be pretty sure that the batteries, and not the tubes are to blame.

Weak dry cell batteries should be replaced by new ones, but exhausted tubes can often be given a new lease of life by the reactivation process. A reactivated tube may not last as long as would a new tube, but the rejuvenation process generally adds many hours to its life. And if it happens to burn out in the process, you can console yourself with the knowledge that the tube was probably too far gone to be brought back.

NEW POSITION

CHIEF INSPECTOR OF WIRELESS APPOINTED.

The Chief Manager of Telegraphs and Wireless (Mr. J. Malone) has been appointed Chief Inspector of Wireless in the Postmaster-General's Department, a position which was created recently.

Hitherto Mr. Malone, as manager of Telegraphs and Wireless, has supervised the telegraph and wireless departments of the Post Office. Owing, however, to the increased duties which he has been called upon to perform, due principally to the growth of wireless, it was decided to divide the office into two sections.

In announcing Mr. Malone's appointment, the Director of Postal Services (Mr. H. P. Brown) said that he would occupy his new position forthwith. Until the new position of Chief Inspector of Telegraphs was filled, however, Mr. Malone would continue to act in that capacity.

Distinguished Career.

Mr. Malone began his career in the Postal Department as a telegraph messenger in Western Australia. He served with distinction at the war, and was awarded the Military Cross. He rose to the rank of Lieut-Colonel. At the conclusion of hostilities, Mr. Malone spent some time in Great Britain studying the latest methods of wireless telegraphy. In 1920, when the control of wireless, which had been placed with the Naval Board under the War Precautions Act, was restored to the Postmaster-General's Department, Mr. Malone was appointed to the position of Controller of Wireless, to take charge of the new department. Later Mr. Malone was appointed to the position of Chief Manager of Telegraphs and Wireless.

The minimum salary fixed for the position of Chief Inspector of Wireless is £720, and the maximum salary £792.

AMATEUR WIRELESS

POSTAL DIRECTOR'S STATEMENT.

"The activities of amateur broadcasting stations are being kept under observation," said the Director of Postal Services (Mr. H. P. Brown), referring to the practice of some amateurs to broadcast attractive programmes. "Under the terms of their licenses, the amateurs are supposed strictly to confine their transmissions to experiments. They claim, however, that they are in a better position to judge the results of their experiments if they combine their purely research work with the transmission of programmes. The efforts of some amateurs in this direction are greatly appreciated by listeners, particularly on Sunday nights after the large stations have ceased transmitting." Mr. Brown added that although the department was anxious to encourage experiments conducted by amateurs, it did not desire that they should do anything which might be regarded by the large broadcasting companies as competition. If the practice developed very much in that direction the department certainly would take steps to stop it. The only broadcasting services transmissable were the A. and B. class stations. If amateurs wanted to broadcast for the entertainment of others, they would have to obtain licences similar to those held by such stations. Experimental licences were not sufficient.

3AR TO ERECT SHORT-WAVE STATION

Following the remarkable success which has been achieved by overseas broadcasting stations by using specially short waves for transmission, arrangements have been made by the Associated Radio Company, to erect a short-wave broadcasting station as an adjunct to the Melbourne broadcasting station, 3AR. The Chief Wireless Inspector (Mr. J. Malone) has approved the construction of a short-wave broadcasting station, which will use a wave-length of 55 metres. The power to be used by the station at the outset will be 250 watts, which is, of course, substantially less than the power employed by the well-known overseas stations, such as PCJJ and WGY. The decision to begin experiments in short-wave broadcasting from 3AR, however, is an important one, because although the power of the transmitter will be low, amateur stations have succeeded in communicating with Great Britain and other parts of the Empire with even less power.

FILMING THE VOICE FOR THE DEAF TO SEE

Although New Yorkers, like Londoners, often declare that in their city's roar they cannot hear themselves speak, an inventor of the Westinghouse Electric Company has furnished them with an instrument by which they can see the sound of their voices.

The voice, like a motor horn or a motor omnibus or a passing train, makes itself heard because it sends out vibrations; but any vibrations, if they fall on the right receiving surface, can be made to set an electric current in movement one way or another, as we realise whenever we use a telephone.

Vibrations in this new invention set up electric currents in the wires which support a tiny mirror held between the poles of an electric magnet. The sensitiveness of the arrangement is partly due to the magnetic field set up by the magnet, but the effect is to make the mirror oscillate in response to almost any vibration whatever.

Different Curve for Every Sound.

A beam of light falls on the mirror and is reflected on a screen, so that these all but imperceptible movements of the mirror are magnified so as to make them visible. The voice, in speaking or in singing, records its own vibrations in a line of light, and every note has its own proper curve and record.

The new instrument is so sensitive that it will sift vibrations and distinguish them, so that every word has its own curve and every sound a different one. It is thought that the differences could be learned by a deaf person, who would thus be able to read on a screen the sound a voice was making.

We imagine that when men began giving their lives to the study of vibrations many cynics must have smiled and said, "What is the good of all this?" Now we know, and once more we may ask, "What is the good of a cynic?"

The Eternal Problem—*Programmes*

Talking the other day with a wireless enthusiast, we fell to discussing programmes. I was defending the monotony occasioned by the inclusion of artists several times a week, singing the same repertoire of songs on the grounds I have advanced before in these random notes—namely, the impossibility of getting new numbers in sufficient variety to spice the programme with novelty.

Agreeing, my friend thought that while that was an explanation, it was not necessarily a defence, and made a suggestion which I hasten to pass on for what it is worth.

Towards the end of July 4QG twice broadcast a description of the Rugby match at the Exhibition Oval, where two matches between Queensland and New South Wales were staged. Arrangements were made so that the transmission was relayed by landline to Station 2FC, who broadcast the description for the benefit of N.S.W. listeners.

On Monday, 8th August, 3LO Melbourne relayed to listeners the Sydney station 2FC, which broadcast "Madame Pompadour," the beautiful light opera played in Sydney. There is not the slightest doubt that this item was much appreciated by thousands who are naturally tired of the ordinary concert programme.

Why should not this be made a usual, instead of an isolated occurrence. Most stations have nearly always something in its programme of very special interest. They generally strive after one "star" item at least each day. Why should not the good things be shared so that listeners in distant places, whose sets are too small may receive these programmes direct.

The result would be valuable in two ways. The number selected for broadcasting, if not of the first importance, would be a change, and it would serve to remind listeners to one particular station of the fact that grass is not always greener in the next paddock, whatever grumblers at home may think. We need a salutary reminder at times that our license to growl at our own family's shortcomings is founded on an erroneous belief that other people are better off. It is simply that we are human and tire of even the best things, unless we get a change.

COIL MAKING IN QUEENSLAND.

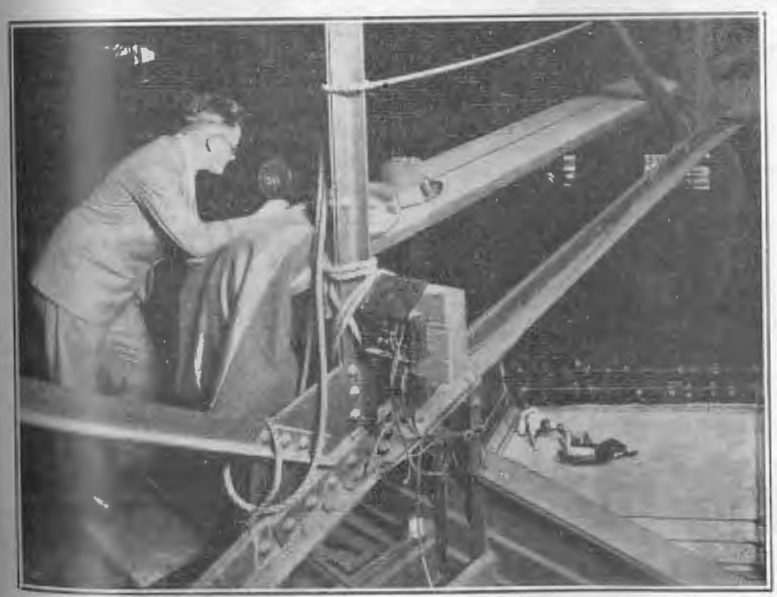
A New Industry.

During the past month a new company has been formed in this state for the purpose of making all manner of coils for use in radio reception.

The Colo Coil Company (of which Messrs. B. V. Cole and N. C. Lowe are the principles) report that a healthy demand for their product already exists among the radio dealers.

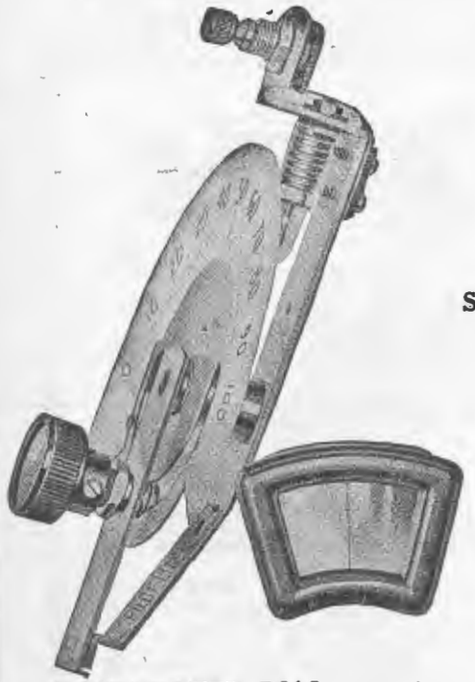
We were impressed with the specimens of "Colo" coils submitted to us. They were well wound, some on celluloid others on bakelite, and appeared to us to be very efficiently made.

Announcements concerning this line will appear in this paper at an early date.



Mr. Norman McLance describes the wrestling at the stadium for broadcasting by 3LO, Melbourne.

ETTIE HARVEY.
A little blind girl who often writes to "Little Miss Brisbane," of 4QG. Ettie has written some splendid fairy stories.



ILLUMINATED DIAL, No. 1277 12/-

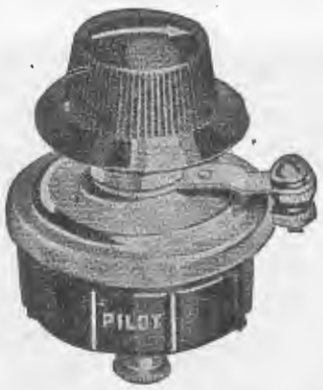
SUB-PANEL SOCKET, No. 205 1/3

NEW TYPE KILOGRAD DIAL, No. 1278. 7/6

NEW PILOT PARTS

RHEOSTAT

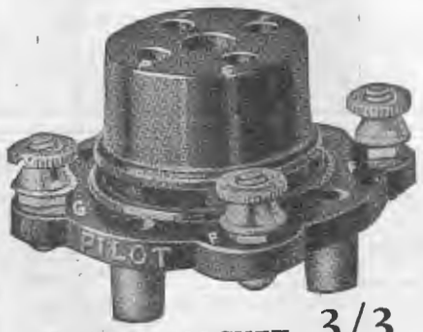
906—6-ohm .....
910—10-ohm .....
920—20-ohm .....
930—30-ohm ..... } 3/6



RESISTOGRAD 8/6

MIDGET CONDENSERS

M7—7-plate 5/6
M13—13-plate 6/6



FLOATING SOCKET 3/3

BAKELITE SHIELDED TRANSFORMER 15/9

UNITED DISTRIBUTORS LIMITED

343 QUEEN STREET, BRISBANE.

New "Pilot" Radio Parts

IF there's anything new in the field of Radio Parts, you may depend it bears the "PILOT" imprint.

True to name "PILOT" leads the world in the manufacture of new Radio Apparatus. Made with amazing accuracy, beauty of design, and faithful workmanship.

Yet despite "PILOT'S" undoubted leadership, you pay no more for "PILOT" Parts than you do for other brands, who imitate "PILOT" principles.

SEE THESE NEW "PILOT" PARTS AT YOUR DEALERS.

"Pilot-Lite" Illuminated Dial

The lamp in back of the panel shines through the translucent, graduated scale. Lamp operated from "A" Battery. May be turned out easily by simple switch. Its contact points are entirely insulated from the frame. The smooth working friction drive is employed, eliminating backlash. Furnished with a simplified drilling template PRICE 12/-

"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" Shock-Proof Universal Socket

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. 3/3

"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 7/6

"Pilot" Midget Condenser

Neutrograd M7, Capacity .000025

Compensates for variations in coils 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" Audio Transformer

(No. 371—Ratio 3½ to 1; No. 3712—Ratio 2 to 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

UNITED DISTRIBUTORS LTD.

343 QUEEN STREET BRISBANE

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

Death of

Mr. Norman A. Cooling

4QG'S FIRST ANNOUNCER.

The death of Mr. Norman A. Cooling, which occurred at a late hour on Monday night, Aug. 15th, has removed a man whose voice was familiar to many thousands of people in Queensland.

Mr. Norman A. Cooling will be remembered by many of the early radio enthusiasts of this State as the announcer at Station 4QG during the time the temporary plant was operating from the small station in the Executive Buildings.

Mr. Cooling was the possessor of a deep bass voice, and although very few radio enthusiasts actually met him, yet many knew him intimately, it might be said, by the sound of his voice.

He occupied the position of announcer at the little station during the whole of the time it was in operation, but when the big station was placed on the air he resigned mainly owing to health reasons.

Mr. Cooling was an architect, and was employed in the Public Works Department at Brisbane. He was a keen lover of music, and on quite a number of occasions entertained radio listeners with popular baritone numbers from 4QG. Unfortunately, he leaves a widow and a young family, to whom our deepest sympathy is extended.

STATION 4QG.

SEPTEMBER PROGRAMMES.

The following is an outline of the September programmes from Station 4QG:—

Thursday, September 1st: St. Barnabas concert, the Stuart Quartette.

Friday, September 2nd: W.E.A. music class, the Richmond Party.

Saturday, September 3rd: Studio concert, Olympic Motor Speedway, Lennon's ballroom.

Sunday, September 4th: St. Paul's Church (morning), Windsor Band (afternoon), St. Stephen's Cathedral (night), Greater Brisbane Municipal Concert Band (night).

Monday, September 5th: Organ recital by City Organist, studio concert.

Tuesday, September 6th: Mr. Erich John's party in a night of "Gems from the Operas."

Wednesday, September 7th: The Windsor Municipal Band, assisted by studio artists.

Thursday, September 8th: The Lyric Glee Party in an "Old Time Night."

Friday, September 9th: W.E.A. music class, Anzac Hostel concert.

Saturday, September 10th: Bedtime stories from Ascot State School, Musical Festival from Bundaberg.

Sunday, September 11th: All Saints' Church of England (morning and evening), Federal Band (afternoon), Greater Brisbane Municipal Concert Band (night).

Monday, September 12th: Mr. Erich John's party.

Tuesday, September 13th: The Sandgate Methodist Choir.

Wednesday, 14th: Nigger minstrel entertainment relayed from Gympie.

Thursday, September 15th: The Curlew Troubadours.

Friday, September 16th: Silkstone Apollo Club's recital, relayed from Booval.

Saturday, September 17th: Mr. L. A. Pares' concert.

Sunday, September 18th: St. Stephen's Cathedral (morning), St. John's Cathedral (evening), Excelsior Band (afternoon), Greater Brisbane Concert Band (night).

Monday, September 19th: Pianoforte recital, Brisbane Eisteddfod Choir, studio programme.

Tuesday, September 20th: Concert relayed from Ipswich.

Wednesday, September 21st: Studio concert, the Richmond Party.

Thursday, September 22nd: Yeronga District Choir.

Friday, September 23rd: Full programme by the Federal Band.

Saturday, September 24th: Lismore Musical Festival.

Sunday, September 25th: St. Paul's Church of England (morning and evening), band concerts (afternoon and evening).

Monday, September 26th: Olsen and Goodchap concert, studio programme.

Tuesday, September 27th: The Stuart Quartette, studio programme.

Wednesday, September 28th: King and King's concert.

Thursday, September 29th: Concert from C.P. Cafe.

Friday, September 30th: Mr. Arthur Sharman's party.

Notes from 3LO

(By Our Special Correspondent.)

HOLLAND SPEAKING.

We are likely, if all goes well, to have a fairly regular service from Eindhoven, Holland. The trouble previously was that the station in Holland believed that the only possible time for it to broadcast was at such an hour that we could only receive in the small hours of the morning.

3LO entered into a special arrangement with it, so that its subscribers could get the thrill of long-distance, that it should attempt to communicate by sending the sounds across the Pacific, instead of through the more direct route by way of India. To get the darkness necessary, Holland had to broadcast just when it was getting light, and we received it about the middle afternoon, when it was darkening for evening. The results were excellent for the most part, though we have not yet learned to distinguish broken Dutch word for word.

The music, not being broken, came through splendidly. "Rose Marie" was chosen. 3LO is in communication with the station at the present time, negotiating for a regular service.

PRINCE VISITS 3LO MELBOURNE.

An outstanding event at 3LO Melbourne has been the recent visit of His Royal Highness, Prince Purachatra of Siam, whose charming personality created a bond of affection between the people of Australia and the subjects of His Majesty the King of Siam.

Prince Purachatra broadcast a learned and fascinating talk from 3LO Melbourne, which was greatly appreciated by millions of listeners throughout Australasia and the thickly populated islands of the Malay Archipelago, and the Pacific, as well as in Southern Asia. He also visited the transmitting station of 3LO at Braybrook, near Melbourne, and, being an eminent engineer and scientist, naturally delved deeply into the intricate details of the plant at this—one of the largest and most modern wireless stations in the world.

Verily, wireless is becoming a great and permanent link between the peoples of the earth. Nations are no longer insular, but by means of wireless communication are kept in close and constant touch with each other, and by understanding the ideals of people who were hitherto looked upon as foreigners in remote and strange lands, will now be regarded as neighbours, as binding the ties of friendship and assisting in maintaining a great and lasting peace amongst all races.

WRESTLERS AS UNCLES.

Nothing seems more incongruous than the spectacle of giants whom we have seen in the ring wrestling viciously, changing into gentle story-tellers, transmitted before the microphone into little lambs, roaring "as gently as any sucking dove."

We have recently had this experience with Al Karasik. I had a mental picture of these men, a picture heightened by my friend, McCance. I thought of them as abysmal brutes, low in the brow and with great diaphragms like arches of Victory.

Nothing could be further from actuality. Al Karasick, for instance, is going to talk through 3LO on "Books." He is a voracious reader, and passes his leisure time with the classics. When I heard that he had told the kids Russian fairy stories and had actually sung them a little Russian lullaby, I felt like challenging him to wrestle. I always thought I could wrestle a bedtime story-teller. Now I'm not so sure.

Al is very popular with the children, and he gets more "fan" mail than an actress. I shouldn't wonder, when the wrestling season is over, if he were retained permanently to amuse the infants.

Another wrestler, about whom I have had to readjust my idea, is Sam Clapham. He is a medical student who just missed getting his doctor's degree because there was offered to him a wrestling engagement he couldn't "pass up." Sam is a bit of a scholar and when he gets a hammerlock on some scientific treatise, he never gives up till he has it on the mat. He is going to give a series of talks to 3LO customers.

A GREAT PIANIST.

Pianists who enjoy hearing the works of the great masters interpreted in a skilful manner, will be glad to know that Mr. Elvins is once again due at Studio 3LO to give another of his intensely interesting recitals. As is usual on these occasions, Mr. Elvins will precede each selection of his recital by a brief explanatory talk, setting forth the aims and objects of the composer, so that listeners who have not had the advantage of a classical musical education, may follow the recital with intelligent interest.

DR. NYULASY AND TENNYSON.

A unique contribution to the broadcasting programme of Studio 3LO comes from Dr. Nyulasy, who recently gave a series of readings from the poet, Alfred Lord Tennyson, and "illustrated" by musical selections played by the Studio Orchestra. Although Shakespeare, Longfellow and Byron have been given over the air from time to time, it is the first occasion that Tennyson has been broadcast by 3LO, and the series were received with keen interest by all lovers of literature. To those listeners who know their Tennyson will, the opportunity of hearing such well-favoured poems as "Locksley Hall," "The Lady of Shallott," and "The Charge of the Light Brigade" illustrated with musical selections, afforded especial delight.

THE MERRY WIDOW.

An outstanding event at Studio 3LO will be the revival of "The Merry Widow" on Monday evening, September 5th, under the direction of Mr. W. G. James. This popular musical comedy will be produced by Alfred Andrews and his popular co-announcer at 3LO, Mr. Maurice Dudley, will also take a part in the production. Mde. Saffo Arnav is included in a strong cast, and there will a chorus of 40 members of the Melbourne Choral Union, together with a full orchestra.

Probable Calamity Averted

Children Saved by Station 4QG.

The value of wireless was very clearly demonstrated recently, when a series of announcements broadcast from 4QG assisted the police and parents to take action in recovering a quantity of dangerous explosives, of which a number of children in one of the suburbs of Brisbane had gained possession. It is quite probable that through the agency of the station a number of children were saved from serious, if not fatal injuries. The facts make very interesting reading:—

Listeners to Station 4QG on the night of Wednesday, August 17th, were quite startled to hear the following announcements made:

"About 4.30 p.m. to-day, after the children had been dismissed from the Musgrave Park State School, several of them found a cement bag containing a box of 100 detonators. Not knowing what they were, the children distributed them amongst themselves.

"The police, up to the present, have recovered 30 detonators, 70 being probably still in possession of the school children.

"All parents of children attending that school are asked to question their children, and ascertain if they are in possession of any detonators, as they are highly explosive. Any compression or heat, or picking on the inside would cause an explosion, and result in serious or perhaps fatal injuries. Any parents recovering any detonators from their children, kindly advise the C.I. Branch or nearest police station immediately."

The announcer at 4QG then stated that the matter was quite serious, and in order to enable parents to identify any detonators which might have been in the possession of children, he gave a description of a detonator.

Parents of children attending the school and owning wireless sets, were then asked to make the matter known to any other parents not possessing receivers.

The story of the manner in which the message came to be broadcast by 4QG is very interesting.

At tea-time on Wednesday night a resident of South Brisbane was surprised when his young son, who attends the school, put a detonator on the tea table. The father recognised it, and asked where the boy picked it up. He was advised that the youngster had found it near a neighbours gate, and the father, thinking that more may be about, searched and mentioned it to the neighbour.

The neighbour's son overheard the conversation and quite gleefully remarked that one of his schoolmates was lucky, "he has a lot of them!" he said.

Alarmed, the two parents went to the third house, where a very pleased youngster had more than 20 detonators spread on the floor.

When it was discovered that the school children had found a box of them and shared them amongst themselves, the parents were quite alarmed, and informed the police.

Realising the danger to so many children, the police inaugurated a search, and advised 4QG of the happening. The officials of 4QG were quick to realise that serious injuries might be received by the children if prompt action were not taken, and accordingly the message set out above was broadcast at regular intervals throughout the evening.

What Wireless Did.

Due to the wireless announcements, quite a large number of detonators were recovered.

The circumstances under which they were found make one realise that there must be some truth in the old time-worm expression that a merciful Providence safeguards children and intoxicated persons.

Some of the children had used the detonators in such a manner that it is impossible to understand just why serious accidents did not happen.

One small boy had thought that the detonator looked something like a cracker, and had wanted to throw it in the fire at home to hear the noise. His mother refused to allow him to do so on the grounds that it might put out the fire!

Three or four children had rammed pencils into the detonators, and were using them as holders. Another small boy had found a piece of gelignite in the park near the detonators, and was carrying it in his pocket!

On the Thursday morning a vigilant police officer discovered a young Australian wandering along to school with a detonator in his mouth!

These and other cases show just how remarkable it is that no serious accident happened.

The whole incident served to show just exactly how useful wireless may prove in case of emergency, and there are many parents in Brisbane to-day who are thankful that they own radio receivers.

Should Broadcasting Stations be in the City or outside?

(By "Ray Dio.")

The subject of the proper location of broadcasting stations has received considerable attention of late. The discussion has centred round the point as to whether the stations should be in the city or in the outskirts.

Some authorities condemn the practice of erecting stations in the city or settled parts of a city area. Others suggest the grouping of all the stations in one centre—in or outside the city.

Modern Practice to Keep Out of City.

...When the Australian stations were erected there was scarcely any precedent to follow, and very little experience available, both in regard to the design of the station and the selection of the best site for its location. In America, where the greatest development was taking place, the principal stations were located in the cities. The reasons for deciding on such locations were manifold; but principally to provide the station complete with its studio in one building. The necessity or advisability of having the studio in the city was obvious. It would not do to ask artists to go out of town to studios, if the studios could be kept in the city as the theatres were.

Thus, the selection was not made on strictly technical grounds, expediency and compromise playing a large part.

In England also the matter was dealt with on somewhat similar lines. Witness the first Marconi station on Marconi House in the Strand. That station —the first (2LO)—was subsequently shifted to Selfridges in Oxford Street, mainly to enable the B.B.C. to obtain additional studios.

Research in the field of signal strengths showed that the city was not always the best place for a station. If the city contained high buildings with masses of steel—as in lower New York City—a considerable amount of absorption accompanied the transmission. The metal work in the buildings absorbed some of the energy, and the useful energy—the "field strength" —was consequently diminished.

The tendency therefore became in favour of shifting the stations away from such obstructions.

Blanketing of Reception Near Stations.

It was found that by shifting the station to a suburb of the city a new difficulty was encountered. The field strength was certainly increased by eliminating the absorptive effects of the city metal structure, but the increase of the field strength proved to be a mixed blessing. That is, for listeners who desired to receive other stations than the one brought to their suburb. The local station was so "strong" that selectivity was serious interfered with. The near station was too "loud" for the usual type of receivers to tune out. The sets were choked or blanketed: the signals from the station were so strong that it was impossible to tune them out except by the employment of a specially selective set.

Stations Should be Located Scientifically.

These discoveries led to further investigation and research, and ultimately it was agreed that the location of the station should have a distinct relation to the density of dwellings. In other words the signals from the station should be so strong and no stronger throughout the settled areas.

Such a determination is not an easy one. The signal strength cannot be of the same intensity in every suburb differing in distance from the station.

It is necessary to decide what amount of signal energy is necessary for average reception conditions —how "loud" the station should be; and when will it become annoyingly loud. That conditions for the nearest and most distant suburb should be determined Then the location of the station can be determined on some scientific lines. There are other factors of course, such as the availability of power supply, etc., to be considered.

Multistage Valves with Built-in Coupling Elements in Long Distance Reception

(By Dr. W. Reiss, Germany, Inventor of the Reiss Microphone.)

(Especially written for "The Queensland Radio News")

General.

In order to obtain harmonious and distortionless reception of long-distance transmitters at a good loud-speaker intensity, it is necessary, according to the present state of transmitting and receiving technics, to employ a receiving set of not less than five valve stages. By long-distance reception it is meant that, considering (1) normal receiving conditions of both the atmosphere and the place of reception, and (2) the dark day-time, the observer may alternatively get any distant station of not too small transmitting energy at loud-speaker intensity.

Of course, one can also do with a smaller number than five valves with reacted sets, particularly if the reaction is made almost up to the oscillatory limit of the audion. In this case, however, a harmonious performance can no more be spoken of. The formulated terms of long-distance reception—when taking no account of the intermediate-frequency receiving sets containing still more than five valves—are accomplished by the so-called neutrodyne connections, viz., by sets having two stages of high-frequency amplification with special connecting means for preventing the valves from their oscillatory tendency, besides an audion and two stages of low-frequency amplification.

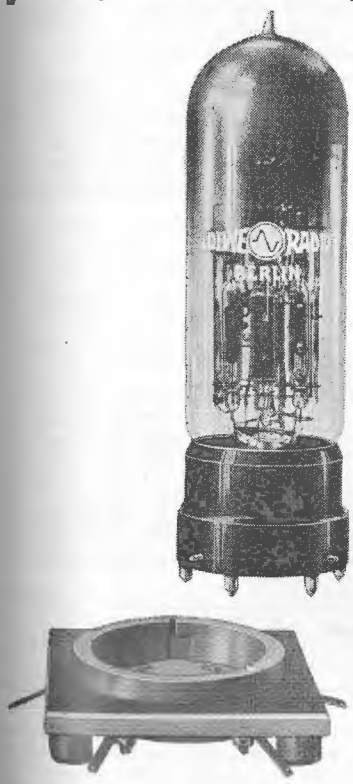


Fig. 1—Outer View of a Multi-stage Valve with Holder.

Every radio fan will know the great number of components and connecting lines required and the precautions to be observed when assembling the set in order to obtain perfect functioning of such a five-valve connection. There are many who failed with the neutrodyne. All who have not yet succeeded in long-distance reception or have not been satisfied with it, are offered a chance by the multi-stage valve with built-in coupling elements (Fig. 1) to construct without great technical knowledge a long-distance receiving set, the output of which is even superior to the neutrodyne as regards acoustic intensity, practically equivalent as regards selectivity. Since these multi-stage valves are already known to a certain extent, we shall state here only the essential items in brief.

General Description of the Multi-Stage Valves.

There are two types of multi-stage valves, viz., the three-stage valves (type 3NF) and the long-distance valve (type 2HF). Either type represent complete multi-stage amplifying systems containing as coupling links between the valve stages not low-frequency transformers, but high-ohmic resistances and transmitting condensers. The connecting principle of the interior valve is thus the same as with the well-known resistance-capacity amplifiers. The inner system of the three-stage valve is shown in Fig. 2, the connecting diagram of it is illustrated by the drawing in the bordered part of Fig. 4 on the right. It will

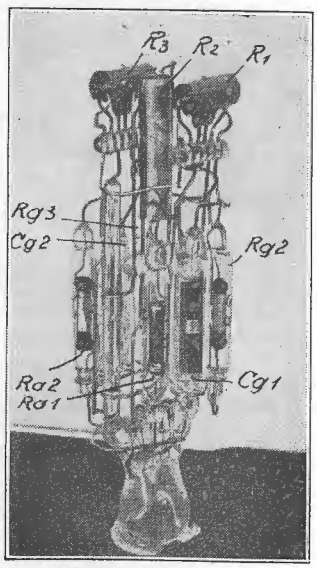


Fig. 2—Inner System of the Three-stage Valve.

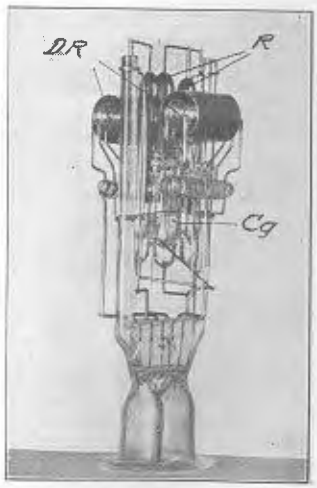


Fig 3—Inner System of the Long-distance Valve.

be noted from Fig. 2 that the two horizontal cylinders and the one vertical between them are the three electrode systems of the single valve stages. The coupling components are below arranged centrically around the middle axis of the valve. The three-stage valve is used for rectifying the high-frequency oscillations and amplifying same at low frequency. In order to get a rough idea about the amplifying figure it might be mentioned that in transmitting cities and their outskirts the three-stage valve only steps the energy of the local transmitter taken in by any auxiliary aerial up to loud-speaker intensity.

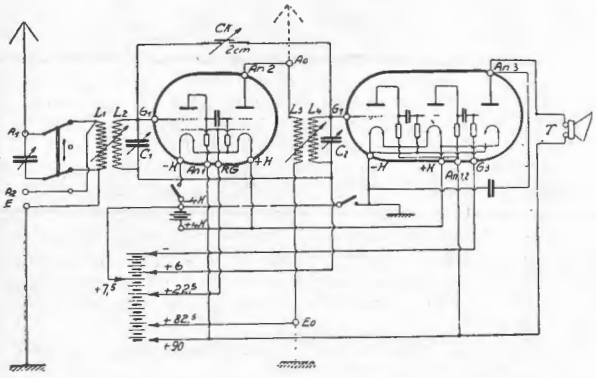


Fig. 4—Principal Diagram of Connection for Long-distance Reception.

The considerations referring to the amplification of sound frequencies by means of valves coupled with resistance-capacity apply theoretically to the problem of the high-frequency amplification. When practising the method, however, technical difficulties will arise. If one would use single valves when constructing such high-frequency amplifiers, the possibility of amplification would be over at a lower wave limit of about 800-1000 m. The reason for this is that apart from the capacities of the valve electrodes, also those of the connecting lines between the coupling elements suffice for being considered a good shunt parallel with the plate resistance. In the long-distance valve it has been possible to place the coupling links quite close to the electrodes of two valve stages and, therefore, to keep the connecting lines so short and the bad capacities so small as to obtain a high-frequency amplification in two stages, being effective down to a wave-length of about 200 m. The principal connection of the long-distance valve is illustrated in the smaller bordered part of Fig. 4 on the left. The technical construction of the interior is shown in Fig. 3. The two horizontal electrode systems of the two valve stages will be easily noted in the upper part of Figs. 2 and 3.

Description of the Connection for Long-Distance Reception.

When combining the long-distance valve with the three-stage valve according to Fig. 4, one will obtain an efficient long-distance receiving set. The effect of the connection is so that the incoming weak amplitudes of a far transmitter will be so amplified by the long-distance valve as to rectify and step the overlapped speech frequencies up to loud-speaker intensity by the coupled three-stage valve. For obtaining sufficient selectivity guaranteeing the reception of the different transmitters without disturbing one another, the connection is containing two tuning circuits C1L2 and C2L4, which get the energy by the two coils L1 and L3; the energy input of same may be controlled by a variable coupling by means of L1 and L3 swung round. For increasing the selectivity there is also provided a rough tuning of the aerial by means of a shortening condenser. For receiving the short wireless waves below about 400 m. it has proved suitable to transmit part of the output energy of the long-distance valve to its input grid circuit through a reacting channel containing a small condenser Ck of 2 cm. Hereby the damping of the oscillatory circuits will be reduced, and consequently the selectivity and acoustic intensity of the connection increased. For receiving longer waves of the big broadcasting stations, the aerial coil L1 may be connected in parallel with the aerial condenser. The block condenser between H and An3 in Fig. 4 (confer also C in Fig. 6) answers the purpose of short-circuiting the slight amount of high-frequency energy which may still be in the output of the valve, and of oppressing unwished for reactions which would manifest themselves by whistling and howling in the set. The capacity of the condenser is about 5000 cm. The mark of earth connection at —H of the Fig. 4 (confer also C in Fig.

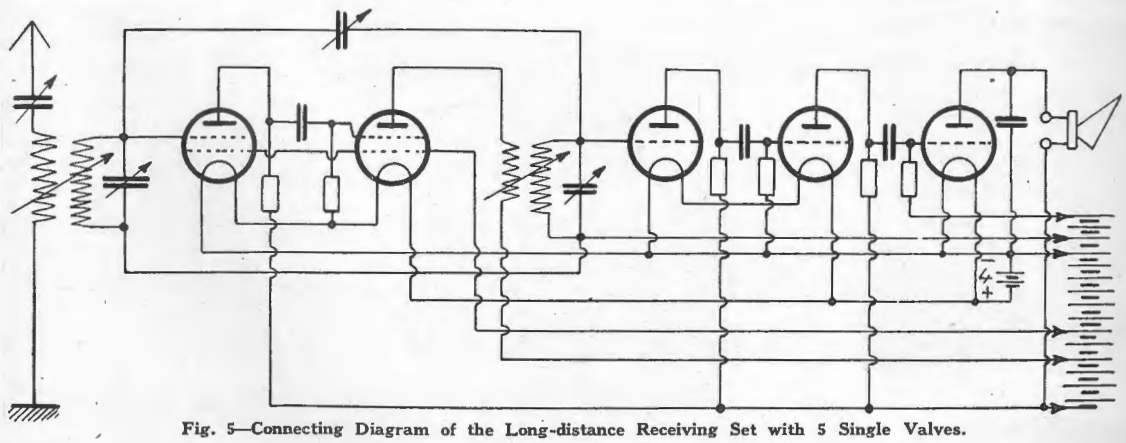


Fig. 5—Connecting Diagram of the Long-distance Receiving Set with 5 Single Valves.

) refers to the metallic coating of the front plate which, however, is not earthed.

Before discussing the technical make of the connection in detail, first the advantages offered to the radio fan by the multi-stage valve shall be stated. They will become evident when drawing a connecting diagram (confer Fig. 5), showing the same arrangement as Fig. 4 with the only difference that a separate valve is used for each amplifying stage. The section, Fig. 4, will be best transferred to the simplified illustration of Fig. 6, where, instead of the principal connection of the multi-stage, only their holders with the natural arrangement of the six connecting poles are shown. When comparing the two figures, 5 and 6, one will note at once the considerable simplification which is offered to the construction of the three-valve receiving set by the multi-stage valves. The radio fan is offered complete multi-stage amplifiers and spared the trouble of fixing five valve holders, the numerous coupling links (high-ohmic resistances and condensers) and the resepctive connecting lines.

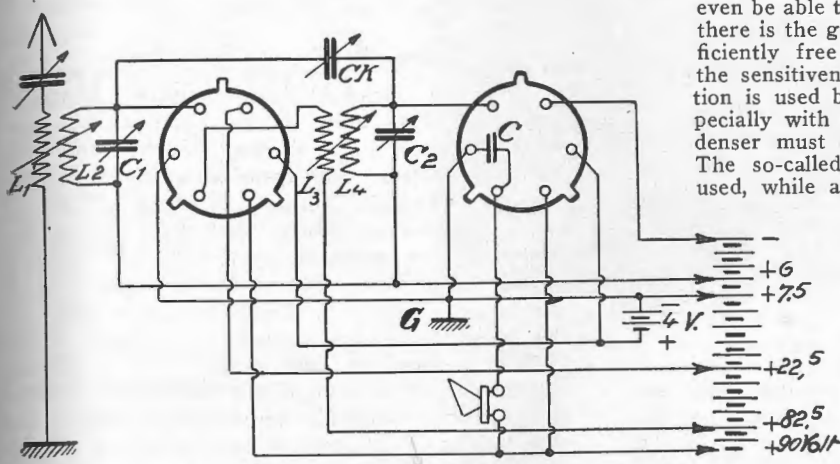


Fig. 6—Simplified connecting Diagram of the Long-distance Receiving Set with Valve Holders.

Precautions for the Construction.

In all assembled connections of some sensitiveness the valves, 3NF and 2HF, have to be specially covered; that is simply done by wrapping the glass valve with some tinfoil, copper or other metal foil, placing around a bare copper wire in several windings and connecting the protective cover to one pole of the L.T. battery. The static protection may be also carried on by a sheet cylinder or a steel cylinder coated inside with tinfoil. It should be noticed that considerable trouble may arise without block condenser at the output of the three-stage valve, for instance, sounding and howling of the whole set. That comes never from the valves themselves, but will always be caused by undesired reactions. Of course, no block condenser should be placed between the output plate and heating of the long-distance valve, since the high-frequency current would be short-circuited by it. On the contrary, when using the high-frequency valve great care has to be taken that all bad capacities in the line and connected coils are avoided. Therefore, only coils of slight capacity will be used in the output circuit of the long-distance valve. For instance, single-layer cylinder coils or basket coils are adapted for. Pancake coils, and particularly the customary honeycomb coils, give bad results.

Whether the construction is free from capacity will be easily judged from the fact that the apparatus allows connecting comparatively large plate coupling coils L3 without oscillating at once. In the range of wireless waves up to 750m. one should be able to insert a coil of up to 75 windings in the plate circuit without the apparatus oscillating automatically. At long waves (Konigswusterhausen, Daventry) one must even be able to use up to 200 windings, only then there is the guarantee that the apparatus is sufficiently free from capacity. For increasing the sensitiveness an adjustable capacitive reaction is used between the two grid circuits, especially with short waves. The reaction condenser must be small, maximum about 3 cm. The so-called neutrodyne condensers may be used, while at longer wireless waves the condenser is at zero, it is advisable to employ a weak capacitive reaction with waves below 500m., but keeping same as low as possible. A proof of the correct functioning of the connection is given if the remote transmitters offer a distant interference phenomenon when increasing the reaction condenser and coupling the output plate coil of the long-distance valve tight to the input circuit of the three-stage valve. Thus the usual interfering whistling will be heard as with reacted sets. When coupling looser or adjusting the reaction condenser to smaller values, the apparatus will be relieved of the oscillating state. Any unsteady transition by breaking or interrupting the oscillation must not take place.

The output plate of the high-frequency valve is connected to 50—90 volts; the normal connection is at about 80 volts. The space charge voltage should not be chosen higher than absolutely necessary for obtaining the mentioned sensitiveness of the connection. Higher voltages are an unnecessary stress to the H.T. battery, owing to a greater consumption of current. When using †7.5 volts of the H.T. battery as zero potential and connecting the space charge grid to †22.5 volts, the space charge grid current is about 3 milliamperes.

Description of the Finished Set.

Fig. 7 shows the inner view of a finished multi-stage receiving set according to the connecting of Fig. 6, and shall give an idea of how to arrange suitably the component parts of the connection and to make the static protective arrangements and the lines. One will note the three metal protection cases covering the tuning condensers. A horizontal line connects the cases leading to the negative heating pole by a vertical branch. The cylindrical sheet covers of the valves are connected to the medium condenser case by a connecting cable. The front plate of the case consists of metal. Of course, vulcanite coated with tinfoil on the inside for avoiding hand capacities may also be used. To prevent the two tuning cir-

cuits from getting inductively influenced, the two coil units are fixed at the maximum distance from each other, viz., at the lateral surfaces of the case. The stationary coils belong to the oscillatory circuits, the rotatable ones are the coupling coils, i.e., on the left there is the coil for the input circuit to the long-distance valve, on the right the one for the output of same and input to the three-stage valve. The block condenser C (in the porcelain case) which is to short-

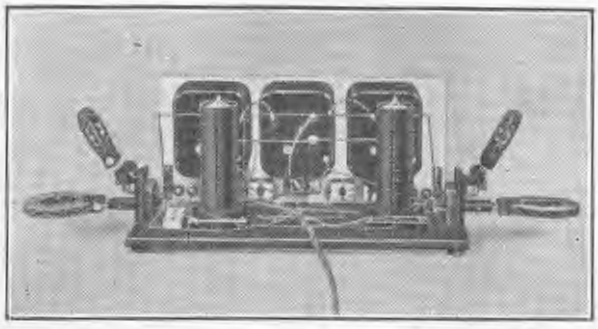


Fig. 7—Inner View of the Set with Valves.

circuit disturbing high-frequency oscillations, is directly attached to the two soldering plates —H and AN3 of the three-stage valve. Below the middle condenser case there is the small reaction condenser consisting of a fixed and a rotatable blade. A cut-out on the left for the three-stage valve, one on the right for the long-distance valve, and two special jacks A0 and E0 at the front plate, grant a reception by the three-stage valve only if, for instance, a near transmitter is going to be received. A two-way switch below the case of the aerial condenser completes the set. Special rheostats for heating the valves are not provided, since the filaments have dimensions adapted for a voltage of 4 volts.

Some Results of Observation.

As to the efficiency of the connection, it may be stated that when using overhead aerials a loud-speaker reception from most distant transmitters will be obtained. For instance, a Berlin observer who used the lighting mains as aerial was able to receive 25 home and foreign stations by loud speaker at the first two nights he handled the set. Another listener using a wire of about 5m. in length as aerial and laying it along the floor, received by means of this primitive aerial arrangement all stations for 350 kilometres round by loud speaker. As particularly excellent result there might still be mentioned that in Brunswick the American station of Philadelphia had been heard at 4 o'clock in the morning by loud speaker.

The First Radio Convention

On Right: A flashlight photograph taken during the evening. The call signs of many amateurs are plainly discernible on the various cards.

On Thursday evening, August 11th, the Queensland Radio Transmitters' League staged the first amateur Radio Convention held in the Commonwealth. The function took place in Vaughan's Cafe, Isles, Lane, Brisbane, and the various tables were placed in charge of a league member who had his call-sign displayed conspicuously on it. The walls were adorned with mottos of which "Ohm Sweet Ohm," "League Kindly Light, but not beyond the rated Voltage," "Tickets Please!" "Don't Argue, Radio Hams are the Best" are some examples. An injunction to "Blow Your Own Horn" had reference to the fact that the League supplied each guest with a trumpet—red, white and blue striped variety—upon which applause, morse, injections, etc., could be given. More musical strains proceeded from the steel guitar and Kentucky whistle, manipulated by 4CG and 4NW, who looked like an advertisement for "That Schoolboy Complexion" with little white hats perched periously upon the top of their heads and gazing through horn-rimmed specs. minus glass.

The guests included the Radio Inspector (Mr. T. A. Armstrong), the Director of 4QG (Mr. J. W. Robinson), the Chief Engineer (Mr. F. W. Stevens), the O/C VIB (Mr. H. F. Coffey). The Chairman, Mr. M. M. O'Brien, 4MM, and President of the League welcomed the visitors, and explained the purpose of the gathering. In a well-chosen speech he proposed the toast of "The Broadcasting and Commercial Services," which was replied to by Mr. Robinson in his usual happy style. In the course of his reply the director expressed regret that for 23½ days no one—not even "Brother of Ten" nor "Pro Bono Publico"—had written to the papers complaining about his station!" Mr. Coffey, in responding on behalf of the Commercial services, traced the development of commercial radio from the times of the magnetic detector, upon which excellent DX records—even judged by present-day standards—had been established.

Mr. H. W. Walsh, 4HW—4WR, delivered a lecturette upon "Amateur Organisation," and stressed the need for co-operation among all classes of the wireless public. The lecture by Mr. Armstrong on the "Historical Development of Short Wave Radio" was of extreme interest, and displayed very great knowledge of the subject matter. The facts elicited regarding skip distances, and the unreliability of the ultra-short waves were a surpise to those present.

To this speaker also fell the duty of proposing the toast of "The Queensland Radio Transmitters' League." He referred briefly to the activities of the league, and expressed the opinion that if keeness counted for anything then it had a great future before it.

In responding, the secretary of league, Leo. J. Feenaghty, 4LJ, outlined the policy of the league, and made comparisons between the state of affairs obtaining in the U.S.A., where amateur transmitters and experimenters were well organised, and those in this country, where such organisation was more conspicuous by its absence. He referred to the league's intention to embark upon a scheme of education of the broadcast listener by means of lectures over the air. In the course of a short talk upon broadcasting, Mr. Robinson offered to co-operate with the league in its educational policy by permitting the use of the station during part of the programmes for lectures.

Mr. F. W. Stevens gave some interesting details of life on the Willis Island Commonwealth Meteorological Station in the Blue Pacific. At the conclusion of the evening two films, kindly loaed by the Australian General Electric Company, were screened. The first depicted in graphic form the construction of a motor of minute proportions, while the second was "The Wizardry of Wireless," which was screened at the Albert Hall some two years ago. During the evening, Mr. Ted Grace and Mr. H. Kington rendered pianoforte selections.

Should We Follow English or American Broadcasting Methods?

(By "Ray Dio.")

A question that will soon come up for answer is that of the type of broadcasting most suitable for Australia. Whether we are to have one station and one service per capital city, or a multiplicity of services. In England to-day the former class of service is provided, while in America, and in a modified degree, in Australia, the latter obtains.

English or American Methods for Australia?

The recent Royal Commission on Wireless heard various opinions on the subject, and quite probably will have something to say on it in their report—a report by the way which appears to be overdue for public scouting. Many witnesses strongly supported the idea of multiple services, as at present in Sydney and Melbourne—but just as many wanted only one service per city.

The arguments in favour of the one service crystallise into the capacity of one company to provide a better service if it gets all the revenue, than could be given by two companies who share the revenue. Secondly, the proponents of this single station idea contend that interference would be reduced, if not eliminated, for crystal listeners.

Perhaps the strongest argument in favour of it is that pertaining to the service to be given by relay stations in the country districts. It would be more economical to relay and rebroadcast one service than two services simultaneously.

The objectors to this scheme contend that the English system, which provides for only one station for London, is not suitable for Australia. They say that such a monopoly is not desirable, and that listeners should have the facility of changing from one local station to another for alternative programmes.

Are Class "B" Stations Necessary.

But the multiplicity of class "B" stations is the point I had in mind in writing. We are told that satisfactory reception in Sydney is particularly difficult, owing to the number of "B" class stations.

Now, these stations may be regarded as providing sectional services—for commercial, political or religious publicity. The Government authorities apparently do not restrict the number of such stations, and it is conceivable that some embarrassment will be experienced in drawing the line. One section will be able to justify a claim for the privilege of a license if its rival organisation has been granted such a privilege, the result would undoubtedly be objectionable from the point of view of the listener. He pays for a service to be given by two "A" class stations. And the companies or the Government which demand the payment of a subscription in the form of a license have an obligation to the listener in addition to that of providing a service.

That obligation is to keep the ether reasonably free for the uninterrupted reception of the paid services. Any great increase in the number of stations operating at the same time makes the chances of uninterrupted reception by average sets more and more difficult.

The proposals by the State Government in Sydney to add more stations is, therefore, to be deplored. At all events it should be very carefully investigated.

It looks as if the scheme of sectional broadcasting is not desirable if the primary services—those for which the listener pays—are interfered with, and that the scheme of two alternative services is desirable.

What is Telepathy ?

Mr. C. L. Copeland and his son, "Argus," write their views upon the principles that govern the Science.

Following upon the appearance of the article dealing with the telepathic broadcast published in our last issue, we have received quite a number of letters from readers, who express their interest in the scince of telepathy. In view of the amount of attention that is being bestowed upon the subject, we feel that an article dealing with the principles of telepathy would be appreciated, and with this end in view, we approached Mr. Copeland and his son "Argus," who kindly prepared the following interesting and authoritative article.

* * * *

To-day there are few subjects that are receiving greater attention, and few that are so little understood, as that of telepathy, or the influence of the human mind.

There is nothing greater in the world than man, nothing greater in man than his mind, and consequently nothing more worthy of our fullest research and investigation.

The study of thought transference in its various branches opens up a vast field of new posibilities in mind training. Of course, there are obstacles to be overcome, but superstition, bigotry and ignorance must eventually give way to truth and the advancement of science. It is but the natural order of things.

To assume that all people possess the powers of telepathy to a certain degree would not be wrong, but to say that the mind can be brought into a telepathic state at any time would not be correct. Most of us have our gifts. Some are gifted in music, others in art, while others find their gifts lie in one or more of the many varied avenues of life. While these gifts are to a certain degree natural, the assistance of a tutor is always needed to train the mind in the right direction so that the gift may be correctly applied.

Until we are able to reach the strange fundamental principles that underlie the science of telepathy, no definite course of study can be adopted. The time is now not far distant when scientific research will show the way for people who possess the telepathic sense to develop their powers along the correct lines.

In describing telepathy or mind-reading, we would like to draw a comparison with the science of television, where a mechanical device is utilised for projecting objects from one point to another.

When a person looks at a subject, the image of that subject is reflected into the eye, from the eye to the brain in minute nerve vibrations which are sensitive to a person's temperament.

In television, as readers of this magazine are doubtless aware, the eye of the televisor is usually composed of mechanical devices sensitive to various light rays. These rays, when captured, are converted into electrical impulses just as nerve vibrations are set up when the human eye transfers the images to the brain.

It is, therefore, established that the televisor—a mechanical instrument—can bring about the same results as the human eye, which is a natural organ working in unison with the brain.

Scientists have for years devoted much time and study to the investigation of different vibrations. They have found that light, sound and heat are carried through space upon certain wavelengths. Thus it would not be wrong to assume that nerve vibrations throw out a like disturbance or even have a wavelength or measurement of its own characteristic that has not so far been fathomed.

When the nerves of two brains vibrate in sympathy with each other, we contend that waves pass bewteen the two human wireless stations, which are literally tuned to the same frequency.

Some readers will recall an instance when they have been mentally humming a tune in another company, when, to their astonishment, their friend picks up the thread of the same melody and hums or sings it aloud.

This is just one of many simple instances that happen every day that go to prove the existence of "thought waves." In most cases these occurrences are put down to "coincidences," but scientists are beginning to believe that the transmitting and receiving of thought waves (which except in telepathy are entirely subconscious operations) exert a mighty influence upon the minds of the community.

Some few years ago scientists interested in thought waves, investigated the powers of inter-communication which existed between animals and insects with the following result:—

One naturalist was concerned in the fact that a moth could attract other moths from one room to another. An experiment was carried out along the following lines. A jar was procured and a live moth was placed inside. The jar was sealed, making it sound and colour proof. Soon it was observed that other moths came upon the scene, and the experimenter decided to investigate the method the insects used in attracting each other. After much thought, the scientists decided to connect up an ultra-sensitive instrument of the listening-in type. The results were astounding. A series of faint sounds made audible by amplification disclosed the fact that the insects were using some unknown method of communication.

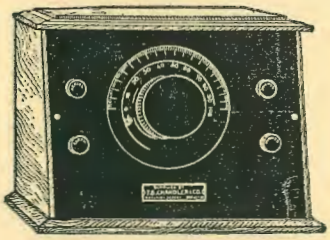
There are plenty of sceptics who contend that telepathy is impossible. They state that no one will read their mind, and defy anybody possessed with telepathic powers to do it. It is as well to state definitely that such a person's mind cannot be read. Telepathy is only made possible by intense concentration, and unless a person concentrates, his mind cannot be read. When a sceptic is requested to fix his mind upon a certain thought, his mind is so filled with scepticism that no definite thought waves are set in motion, and consequently a result cannot be obtained.

Summed up, telepathy is the transference of thought waves between two minds in sympathy. It is a science that is bound to attract an immense amount of attention during the years that are yet to come.

The Crystal Set You Have Wanted!

CHANDLER'S *new* CARBODEX Crystal Set

No Adjustment Required



Always Ready For Use

THE CARBODEX CRYSTAL SET was designed for those who desire the utmost in simplicity combined with the utmost in efficiency. It was specially designed by Chandler Radio Engineers, and on test gave remarkable results on local broadcasting.

This Crystal Set incorporates the famous CARBORUNDUM CRYSTAL DETECTOR. Vibration has no effect whatever in its results—it gives beautifully clear, trouble-free reception always. Tuning is accomplished by turning a single dial, and is the only simple adjustment required.

The CARBODEX CRYSTAL SET may be had in a handsome polished Walnut or Rosewood Cabinet with one pair of headphones and aerial equipment for **PRICE** ..... **£3/10/-.**

CARBODEX One Valve Amplifier

IN APPEARANCE the New CARBODEX One-Valve Amplifier is an exact duplicate of the CARBODEX Crystal Set—the same size—the same style of Cabinet—gives the same good results. The two units combined will allow of moderate loud-speaker reception within a reasonable distance of Brisbane. With valve and batteries, the new CARBODEX Amplifier may be had for PRICE ..... £3/19/6 complete.

CARBORUNDUM Stabilising Detector Unit

THIS Highly-efficient Stabilising Unit for Crystal and Reflex Receiving Sets comprises:—Genuine Carborundum Detector, Potentiometer and Dry Cell—all conveniently mounted. It gives greater sensitivity, increased selectivity and clearer tones. Why not fit your set with one of these Carborundum Stabilising Detector Units? PRICE 25/-

CARBORUNDUM Permanent Detector

HEAVY five-pound contract pressure makes the Carborundum Detector permanently sensitive They are built solidly, hold their adjustment indefinitely, and will not "burn out". In permanency, efficiency, selectivtiy and volume they excel all other crystal detectors. PRICE 10/6

For Amateur Reception

CHANDLER'S Two Valve Low Loss Short Wave Receiver

FOR amateurs who desire a short wave, low loss receiver capable of bringing in short wave stations all over the world this receiver will make a special appeal. It has a tuning range of from 20 to 100 metres and is remarkable for its ease of control. Complete with headphones, valves and batteries this receiver may be had for PRICE £12/10/-

Full Particulars on Request

J. B. CHANDLER & CO.

45 Adelaide Street, BRISBANE

Next Allan & Stark's S.A.S.

Reliable Speakers

R.C.A. Model 100

You may have the finest receiver in the land, but unless your speaker is capable of faultless reproduction you will never get the best results from your set.

The Speakers listed below carry our sincere recommendation. They are products of the world's greatest radio organisations, and every model represents full value and complete satisfaction.

B.T.H.

Amplion A.R.38

Choose Your Speaker

From this Fine Range:

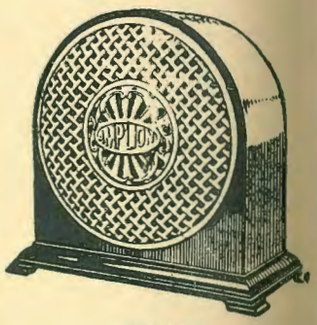
R.C.A. Model 100	£10 10 0
Amplion A.R.38	3 0 0
Amplion A.R.111	3 10 0
Amplion A.R.114	3 15 0
Amplion A.R.19	6 10 0
Amplion New Cone	8 8 0
B.T.H. Model C.2	4 15 0
Phillips PCJJ Model	6 10 0
Brown H.1	6 15 0
Brown H.2	2 18 0
Brown H.3	4 2 6
Brown, H.4	2 0 0
Sferavox	4 4 0
Primax	6 10 0
Brandes Table Talker	2 5 0
Spitfire	1 15 0

Osram Valves

NEW PRICE LIST

D.E.2	10/6	D.E.4	12/6
D.E.3	10/6	D.E.8	10/6
D.E.3B	10/6	D.E.5	11/-
		D.E.5B	11/-

Manufactured by the B.G.E. Coy., of England, Osram Valves are without question the finest valves on the market to-day. Try them in your set and note the difference.



RADIOLUX

Amplion A.R.19

Amplion A.R. 114

Wireless House

LIMITED

CITY BUILDINGS EDWARD STREET BRISBANE

The King of Receivers

A Set that will always be Modern

R.C.A. **R.C.A.**

Station 2BL Purchases Seven RCA Receivers!!

and Model 100 Loud Speakers

The following Executive of 2BL have installed R.C.A. Receivers and Model 100 Loud Speakers:—

W. J. MacClardy, Managing Director.
Raymond Allsopp, Chief Engineer.
Mrs. Dorothy Jordan, Lecturer.
Geo. Saunders (Uncle George), Announcer.
Mr. Billy Dick, Concert Manager.
Vernon G. Barnet, Musical Director.
Dr. du Maurier, Lecturer.

Could R.C.A. Receivers and the Model 100 have better recommendation ?

5-Valve R.C.A. Model 20

Twenty times as selective as the average set, selective at **all Wavelengths**—that is the Model 20. It embodies new developments in circuit design and acoustics discovered by R.C.A. Engineers. It gives 7 Valve results, though it employs only 5 valves, possessing exceptional distance range. And the Model 20 is famous for its ability to reproduce musical notes in full volume without distortion. Specially treated Audio Frequency Transformers make possible the highest known degree of tone fidelity.
Ask for a demonstration. The Model 20 offers you the greatest value in radio to-day.

PRICE

£50 **Complete with Everything**

£36 **Set and 5 Matched Valves**

Parts for Building the Q.R.N. Crystal Receiver

1 Panel, 6in. x 6in. x ¼in.	3/-
1 .0005 Condenser (Ormonde)	8/6
1 K.I.N. Unmounted Coil, 50 turn	1/6
1 Fixed Detector Carborundum	11/-
1 Fixed Condenser .001 (Igranic)	2/-
4 Bakelite Topped Terminals	1/4
1 Length Busbar	1d
1 Polished Cabinet	10/6

WIRELESS HOUSE

LIMITED

CITY BUILDINGS
EDWARD STREET
BRISBANE

World famous PHILIPS "MINIWATTS"

with the new POWER-PLUS FILAMENT

For every radio set

A609
6 *Volts*, .06 amp.
General Purpose
13/6

B605
6 *Volts*, .1 amp.
Power
13/6

Giving greater economy plus increased sensitivity and better tone

A630
6 *Volts*, .06 amp.
Resistance
Capacity
13/6

B406
4 *Volts*
.1 amp.
Audio
13/6

Slip these *mighty* "Miniwatts" into the sockets of your set. Your batteries will last four times longer.

The new A609 and B605 are now replacing older and more wasteful valves in thousands of sets throughout Australia.

Philips make a valve for every purpose—for every radio.

When *you* are buying valves
BE CERTAIN—BUY "MINIWATTS"
SOLD EVERYWHERE

A409
4 *Volts*, .06 amp.
General Purpose
13/6

PHILIPS VALVES

B403
4 *Volts*, .15 amp.
Super Power
15/-

LONDON PCJJ PARIS PCJJ WORLD PCJJ RE-BROADCASTS

New Valves for Old!

How to Build a Portable Valve Rejuvenator

(From Data Appearing in "Popular Mechanics"

Although the title of this article recalls to our minds the cry of a certain wily merchant who, many thousands of years ago, searched for Aladdin's wonderful lamp in disguise, we would not like our readers to class this article as a "fairy tale." The little instrument here described, which can be built by any radio enthusiast at small cost, can work wonders with old valves, provided, of course, that the grid and filament are not "shorted."

Most of us have at least one old valve that has apparently outlived its usefulness, either by ceasing to function altogether, or by dropping to a very low state of efficiency. By a very short process of rejuvenation it is possible to build up the characteristics of old valves to almost original readings.

Valve rejuvenation is not altogether a new process. In fact there are several types of rejuvenators upon the market, but as these operate from power sockets, they are somewhat costly, and are used more by radio dealers than by amateurs.

The added advantages of the rejuvenator about to be described are the compact arrangement making for easy portability, and the fact that the instrument is operated without any outside source of electric supply.

Construction.

The construction of the rejuvenator is very simple. A shallow box, measuring approximately 6¾ ins. long by 5 ins. wide, 1 5-8 ins. high (inside measurements) provides the container for ten flashlight cells. The corners must be square, and there should be no metal projections of any kind inside.

Four pieces of stiff spring brass, 1½ ins. long by ½-in. wide are cut and bent to the shape shown in fig 1. A hole is drilled in the centre of each, and they are then screwed to the sides of the tray in the positions indicated in the layout (fig. 2), the first clip 1¼ ins. from the end, and the second one 2¾ ins. from the first. The clips on the opposite side of the tray are mounted the same distance apart, but the start is made from the opposite end of the tray. Use short brass screws that will not pierce the wood, and arrange the clips horizontally, so that they will make the necessary connections for the dry cell units. Two brass end cell connectors are then cut ½-in. wide, and 1-in. long and a short lead of flexible wire is soldered to each connector as shown in fig. 2. These terminal connectors are then screwed to the inside of the tray about 5-8 in. from each end in the positions shown in the layout (fig. 1.).

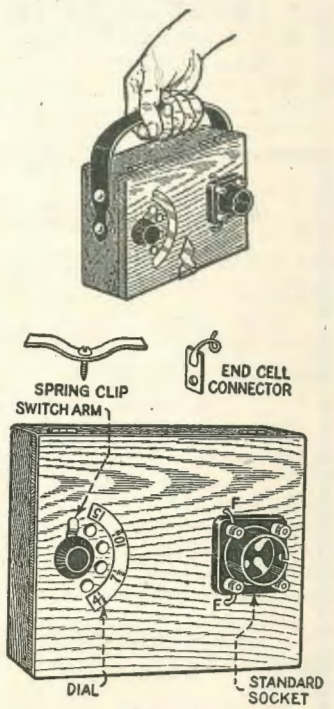


Fig 2

Ten flashlight cells of the round 1½-volt type are then inserted in the tray in the manner shown in the line-up diagram (fig. 1.). The base of the zinc shell being the negative terminal of each, and the small terminal in the centre of the opposite end, the carbon or positive, two cells are laid end to end, positive to negative, and will just squeeze into the width of the tray. The direction of every other pair is reversed as shown in the diagram (fig. 1.), the voltage being progressively indicated on each cell. Spring the brass clips out, so that the cells are held firmly in place, making tight connections to the terminals. This line-up will bring one end connector against the negative pole of the first cell, and the other against the positive terminals of the end or tenth cell.

Three thin brass connectors, 1-in. long and ½-in. wide, with a short piece of flexible wire soldered to each, are slipped between the cells for the voltage taps to the switch points at 4½, 7½ and 10½ volts, the 15-volt tap being the lead from the positive end terminal.

The three voltage connectors are placed between the third and fourth, fifth and sixth, seventh and eighth cells respectively. The switch arm is mounted 1-in. from the end of the cover, and the four switch contacts as shown in the view of the top of the finished instrument . Care should be taken to let them project as little as possible on the underside of the lid. Glue a small arc of white cardboard close to the taps and mark the various voltages as shown in fig. 1.

The tube socket is mounted at the other end of the lid, and two small holes are drilled near the filament posts for the flexible leads, one to the negative end connector at the first cell, and the other to the switch arm. . The voltage leads are then soldered to their contact points on the underside of the lid, the 15-volt tap going to the positive end connector at the tenth cell. If flexible rubber-covered wire is not

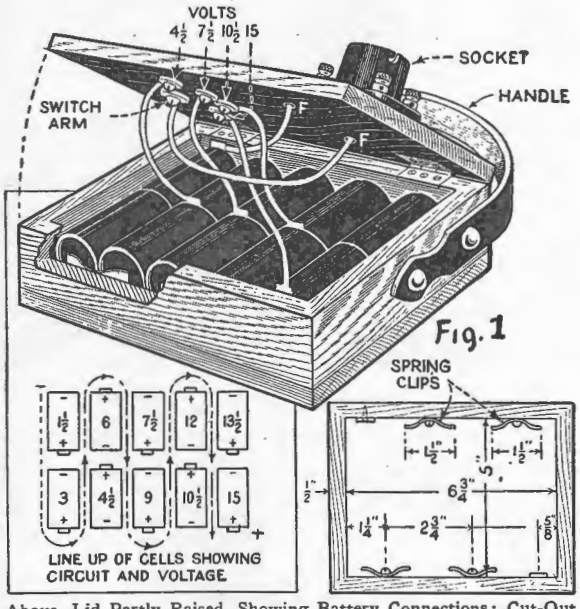
available, use a fine copper wire covered with thin spaghetti tubing.

Bend the ends of the brass strips over flat, and pack any spaces between the cells with cardboard to keep them rigidly in position. Hinge the lid on one side, and provide two small hooks, one at each end of the tray. Arrange the hooks to engage with two pins driven into the ends of the cover, so as to hold the lid tight down on the tray when closed. If there is any play between the lid and the cells use felt or cardboard to pack the cells firmly. A leather carrying strap may be added if desired, as shown in fig. 2.

Operation.

To rejuvenate a valve, place it in the socket with the switch arm off. Then with your watch in hand, flash the tube by placing the switch arm on the voltage indicated for that particular valve.

For the 199 type of valve the flash should be on 10½



Above, Lid Partly Raised, Showing Battery Connections; Cut-Out Section at Front Shows Spring Clip in Position; Below, Line-Up of Cells and Layout of Tray

volts for 45 seconds. At the end of this period bring the switch arm back to 4½-volt tap, and leave it there for 10 minutes. Replace the valve in the set, and if the required improvement is not evidenced, repeat the process.

The 201A type of tube should be flashed at 15 volts for 45 seconds, and then burned at 7½ volts for 10 minutes.

While the life of the small dry cells composing this unit is not long enough for use in a commercial way for valve rejuvenation, the amateur who has only a few valves to rejuvenate occasionally will be well served by the instrument.

Note.—Choice of the socket depends entirely upon the type of valve used. Most valve makers are now using the UX type socket, but if the valve base of the valves to be rejuvenated are of the UV type or any other type ,it will be necessary to either fit a socket to suit the valve or else use an adaptor.

List of Material Required.

1 Box of ½in. wood, 1 5-8in. deep and 6¾in. long (inside measurements).
1 Lid of ½in. wood (overall dimension 6 x 7¾ ins.).
1 Strip of spring brass ½in. wide by 8in. long.
1 Piece of thin brass sheet, ½in. x 3in.
1 Switch lever.
4 Contact points.
1 Valve socket to suit type of valve.
2 Small brass hinges with wood screws.
20 Short brass wood screws.
10 1½-Volt flashlight cells (round uni-cell type).
Catch hooks, flexible rubber-covered wire, etc.

3AR Now on Full Power

Noted Improvement in Victorian Station's Transmission

A theme for discussion among keen radio listeners during the past few weeks has been the noted increase in strength and quality of the programmes from 3AR, Melbourne.

Improved almost beyond recognition by the installation of a new and powerful transmission plant of 5 k.w. and the last word in modulation systems, this station now ranks as one of the finest broadcasting stations in the Commonwealth.

According to the many letters which reach the studio in Elizabeth Street from some of the most remote regions of all the States, and from New Zealand, the volume and clarity of the transmission now leave little room for improvement.

Under the direction of Mr. N. F. Gardner (manager and director), the programmes have improved out of sight and the station has been re-organised as "A" class in all respects.

Pioneer Station.

Although 3AR is in some degree a new station, it claims to be a pioneer of broadcasting in Australia. Associated Radio was the first organisation to apply for a broadcasting licence.

"Unfortunately, there were delays, or we should have been the first actually to broadcast. Still, we kept within striking distance, with an eye always to the latest developments in radio; we are proud of 3AR station, and it is the ambition of the Directors —Messrs. the Hon. E. L. Kiernan, M.L.C. (chairman), G. A. Little, R. A. Bunning—to aim always for improved broadcasting," Mr, Gardner said.

"Our local improvements were carried out under the supervision of Amalgamated Wireless (Aust.) Ltd., and we have their certificate that 3AR is now received at satisfactory strength throughout Australia and New Zealand. Letters from hundreds of listeners—including many who live in what are regarded as bad 'fading' areas—have been appreciated."

"There is an admirable spirit among listeners," said Mr. Gardner. "The applause of the unseen audience so widely scattered, reaches us in the form of telephone messages and letters. I think that most of them realise that the conducting of a broadcasting station is no easy job. No station could suit everybody all the time.

"What we must try to do is to please our audience and, unlike the successful play, the diverse tastes. There must be a complete change of programme every day. Also programmes have to be arranged for publication five to three weeks ahead to reach all the States.

"Although there is a great preponderance of city over country listeners, 3AR sandwiches into its programmes a variety of features of special interest to the country. The market reports, for example, are specially prepared so that the man on the land may have the information that is most likely to assist him in marketing his stock and produce.

"A special racing talk at 11 a.m. is given on Wednesdays and Saturdays—last minute information, with a forecast of the weather for the day."

For the Country.

Victorian country towns are being described in a series of talks, and soon special programmes will be broadcast from some of the larger centres, including Ballarat, Bendigo, and Geelong. Arrangements are being made also for brief talks on land subjects generally, and information will be given regarding land for free settlement in all the States. The Agricultural and Lands Departments of the State are co-operating with 3AR by supplying official data.

"Although we avoid politics," Mr. Gardner remarked, "we wish to assist in the decentralisation movement. It is fitting that radio, which has helped so much to enhance the attraction of life in the country, should do what it can to disseminate information that may lead to further rural settlement. Even in our sessions for the kiddies we transport them to a romantic country atmosphere. Hence the entry in the programme: 'The Farmyard Five, transmitted from Kookaburra Gully, the 3AR up-country station, Jimmy Jackeroo and his pals, Sammy Sundown and his concertina.'

'Uncle Mac's musical evenings are considered wonderful by the little folk, and the Saturday night concerts for those who do not like wrestling is a welcome change over. Sunday afternoon and night concerts under the direction of Mr. W. J. Jenkins, after the church services have been broadcast, are a regular pleasing feature by 3AR."

The New Plant.

The recent improvements in transmission and control were made after extended inquiries abroad. Unimately it was decided to instal a system combining the best features of leading Australian stations. The new equipment was made in Australia, by Australian engineers.

A new Western Electric 8B control panel, and the wonderful microphone are the only instruments of their type in Australia, and the whole of the equipment constitutes all that is desired for clear transmission.

Famous Artists.

Among the entertainers whose names appear in 3AR programmes are: the famous international primadonna, Madam Mary Conly; Percy Blundell, Russell Callow, Ernest Victor Phillips, Leslie Jephcott, Rowland Thomas, Chas. Trewavis, Ernest Beachcroft, John Hobbs, Beatrice Oakley, Hazel Foletta, Eileen Pascoe-Webbe, J. Harcourt-Bailey, Mollie Locke, Jack Bell, William Davies, Violet Wood, Walter Quirk and many others. The Brearley Orchestra, with its popular orchestral concerts, Roy Charles and the Ayaz Dansonians, the wonderful Brunswick-Panatrope midday concerts for the lunch hour, the Lyric Choir, the leading Australian brass bands, all contribute to the all round variety combined with quality which 3AR aims at for listeners-in. In addition, subjects of topical interest are constantly being sought, while a complete news service keeps the huge unseen audience in touch with all important events throughout the world.

By special request items from the wonderful Panatrope will be broadcast at an early date on Sunday evenings.

Leggets Ballroom Orchestra dispenses choice dance music nightly from 10 p.m. to 11 p.m. through 3AR, affording a delightful windup to every pleasant evening.

International Broadcasting

Considerable attention has been focussed lately on re-broadcasts of transmissions from stations in Europe and America. The actual results of the re-broadcasting may not have been all that was desired, but the events compel a consideration of the possibilities in store for us. These international broadcasts are a direct result of the success of short-wave working—rather they should be called ultra-short waves—that is, wave-lengths below 100 metres. Attention to that region of radio frequencies in broadcasting has grown up steadily during the past two years.

Short Waves First Exploited by Amateurs.

The amateurs in various countries, but particularly in America, may not unreasonably be called the pioneers of short-wave working, and our Australian amateurs hold their own with their colleagues in other countries. Owing to official restrictions on the use of particular wave-lengths reserved for other purposes. The amateur wave-band was gradually pushed down below 400 metres. The amateurs surprised themselves by finding out unexpected results in their experiments. First with telegraphy signals, and later with telephone transmission. The distance over which communication was established, gradually increased until Australia to England or to America calls became usual events. It must not be assumed, of course, that the amateurs were doing all the work in the fruitful field of short waves. The experimental and research sections of large radio co-operations and Government departments undertook the study thoroughly. The results that satisfied amateur workers naturally would not do for commercial working and intensive research was undertaken.

Difficulties to be Overcome.

It was found that many difficulties, some of them apparently insurmountable, were encountered. But while the research studies confined the current practicable uses of the short waves were demonstrated, commercial working of telegraph services over extreme distances was inaugurated. The beam service from England to Australia and to Canada are examples; similar services will shortly be opened to India and South Africa. Whilst it was found that the short waves were subjected to very much less interference from atmospherics than were the usual long wave-lengths, the investigators were, and still are, baffled by the strange behaviour of the short waves, the fading and distortion effects were noted as grave difficulties, and these obstacles to continuous and reliable working were more serious on telephony broadcasting than on telegraph signalling. The effects of fading are known to many listeners. They are experienced in listening to all broadcast stations, and vary according to the wavelength used, and the distance from the station. The effects are worst on the ultra-short wave-lengths used for very long distance com-

munication. These difficulties, like all obstacles to scientific progress, are there to overcome, and the extraordinary progress of radio development in recent years gives one the hope for early victory by the scientific workers.

Disparity in International Time.

One great difficulty is the difference in the time between the two stations. London time is two hours behind Melbourne time. A greater disparity exists in Australian and American time. It is not encouraging to listeners to have to get up at 3 a.m. to listen to the re-broadcast of an American station, for instance. Thus, we see that some form of storing the received energy is necessary. It will be possible no doubt to receive a station like PCJJ Holland on WGY New York at 3 a.m., and take some kind of phonograph record which will be transmitted during the usual hours of broadcasting by Australian stations. When that difficult of the disparity in time is overcome by some such arrangement, and the technical deficiencies of fading and atmospherics (re-broadcasting them is no pleasure) have been corrected, then international broadcasting will be satisfactory.

What is the Power of a Broadcasting Station?

(By "Ray Dio.")

During the recent Royal Commission, public hearings in various States quite a lot of evidence was given on the question of the power of the stations. Various statements were made as to the method of determining the power, and opinion frequently become mixed up with authoritative statements of technical fact.

Opinions also were offered on new methods of settling the matters. Some were technically sound, but others unfortunately were not as practicable as their proponents were sincere.

Present Method Not Satisfactory.

It apparently was agreed that the method now opted by the Australian authorities was not the best. hile it was not the best, it was admitted that it was on the lines adopted in most other countries. The method consists in determining the power in watts in what is called the high-frequency generator circuit the input of power is measured. The current on the plates of the drain oscillator or main amplifier is read, and likewise the volts in the plate are noted. The product of the plate (anode) current and volts gives the watts. That figure is noted as the power of the station in accordance with the Government laws.

American Methods

The difficulty most complained of is where to take those readings. In modern stations like 4QG, 2FC, and 3LO, high-frequency energy of considerable value is found in those circuits—the main oscillator circuit. The modulator circuit, and the master oscillator circuit. High-frequency energy exists in other circuits as well, but it is in these circuits that it can be measured conveniently.

There may be as much as 5000 watts in the medular and 2000 watts in the modulator in a broadcasting transmitter, but no note is taken of that power in reckoning the licensed power of the station. And a really efficient station must normally have a master oscillator. It can be eliminated with some probable reduction in efficiency, and also with consequent savings in the cost of power obtained from the electric power supply company. There is thus an opportunity to save money by adopting a less efficient transmitter, and yet comply with the Government regulations.

In America the method is somewhat similar to that adopted in Australia. The Australian method is the same as that adopted in England and most of the European countries. The Americans measure the power in the Main Oscillator and then reckon that half of that power is transferred to the aerial circuit that is fifty per cent is lost in the aerial circuit. The power input to the aerial circuit is then taken as the rated power of the station.

Thus we see that when we read of a 5000 watt station,like WEAF New York or WGO Oakland, the actual effective usefulness of power is about half that of Australian A class stations.

Energy Received is the True Test.

Those methods are scarely satisfactory. They are the best commercial method that can be used to-day however. A fairer method would be to measure the energy available to the listeners. A consideration of that will show that the type and quality of the receiving aerial, receiver, earth system will have a large influence on the extent of power received in the set. It is practicable however to determine the energy available at a given locality for listeners, that is the field field strength or electric field intensity, which is the measure of the efficiency of the transmitter. That field strength or electric field intensity, which is the true optimum locality in relation to the transmitter could be selected and the field strength in milli-volts per metre, measured. That would be a favourable indication of the efficiency of the transmitter.

"SKIPP" REES

The man with the megaphone at the Speedway, Brisbane, from whence Station 4QG frequently broadcasts descriptions of the races. "Skip" Rees is a very popular figure among many sporting bodies of Brisbane; his sonorous announcements are quite familiar to 4QG listeners.

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.

WOOLOOWIN.—Secretary, H. A. Jiear, Lisson Grove, Wooloowin.

WYNNUM AND MANLY.—Secretary, P. J. Golden, c/o Tracksons Bros., Ltd., Elizabeth Street, Brisbane.

Wireless Institute of Aust. [Q'd Div]

For some time past the Institute station, 4WI, has been broadcasting on Sunday mornings between the hours of 10 and 11 a.m. The sessions comprised morse practice, musical items, radio lectures, and general discussions on the advance of the science of radio telegraphy and telephony. The station, transmitting at a power of 10 watts on a wavelength of 250 metres, has become very popular with the Sunday morning listeners-in who, judging by their written appreciations, are deriving considerable benefit in their morse and principle of radio studies from the Institute's helping hand.

In view of the considerable interest that is being shown in 4WI, the council of the division has decided to continue the Sunday morning broadcasts from their amateur station, and a committee has been given control of the weekly transmissions, this committee undertaking to prepare progressive lectures and practices for each session.

The Institute is anxious to assist amateurs in any way possible with their radio problems, and applications from amateurs for information will receive every attention.

The study of the science of radio is indeed an interesting one and now that radio has assumed such a large proportion of the "life" of every home, the difficulties with which the listeners-in and amateurs are confronted are many, so with a view to advancing the science of radio telegraphy and telephony generally, the Institute is prepared to give every assistance to those whose problems are beyond them.

The Institute's amateur transmitting station and rooms are on the top floor, "Courier" Building, Queen Street, Brisbane, and the address for all correspondence is Box 689K, G.P.O., Brisbane.

Wooloowin Radio Club

The most important happening in the radio world for the past month was, of course, the Convention. The Wooloowin Club was well represented, and all had a very enjoyable evening. The Convention was held on Thursday evening, so no meeting of 4WN was held, and it is noteworthy that this is the first evening the gang have not met since the formation of the club.

Several very interesting evenings have been spent lately, one in particular being a talk by Mr. Kington on his travels as a radio salesmen. Mr. Kington gave a very interesting account of his experiences in Northern Queensland, and brought along a large number of photographs (he is a very keen amateur photographer) to show the members. At this meeting we had present a visitor, Mr. Anderson, who had just returned from a trip through the North, and as he has visited many of the same places as our Pres., several very interesting discussions arose. Another event was the "Night of the Willies." This consisted of an electrical demonstration arranged by Professor "Willys Knight" and his worthy assistant, "Andy." Several unusual experiments were performed, such as lighting lamps without connecting them to the mains or batteries, and several of the members drew quite long sparks from a small Tesla coil. The Professor then demonstrated his "death ray." A strange apparatus consisting of a long tube mounted on a tripod and bearing many strange coils, lamps, etc., was connected up. Several of the members began to laugh, whereat the Pro. became angry and promptly blew up one of their pipes. A pack of cards was then produced, and one selected and passed around for inspection; it was then tacked up on the wall. On the "Death Ray" being focussed on it, it disappeared in a puff of smoke. Of course the "death ray" was all "bunk." though many of the members still wonder how it was done.

One of our members arrived the other night bearing a small parcel which was found to contain a first-class morse key for the club transmitter. This key was very kindly donated by a keen admirer of the club who has, however, never been present at one of our meetings. Let us take the opportunity of extending to him an invitation to be present at one as soon as possible—if not sooner.

The gang all seemed very satisfied with our Birthday Supplement in last "Queensland Radio News." This space so kindly given us by the Editor and filled by our members, brought us several letters of congratulation, one being from Miss Scott, of Artarmon (the place which Sydney is near).

The business of the meeting held just before the Convention was laid down as a lecture by Mr. Oldham. However, Mr. Oldham insisted on the gang

going up to his house for the evening, so at 7.30 the gang all arrived with shining faces. After the formal business Mr. Oldham showed us his mast, built from scrap timber (though it does not look it), and his numerous sets. Apparently he has a set for every room in the house, to say nothing of two in the workshop, but I suppose I am just a little over the mark. Mr. Oldham's pet set is a 3-valve set which is a pleasure to operate, especially when it will cut out 4QG and get any other station at will, though I do not mean it is necessary to do this to get good music. NOT so.

Our next meeting is to be the annual meeting, when the election (or re-election) of office-bearers takes place. It may be interesting to note that only one committee meeting has been held during the past year, which speaks well for the smooth running of the club.

Just one thing more. Say, Toombul! What about that debate. It was fixed for last Thursday, but we were informed it was "off" again. Did the YL's of Toombul prove too great an attraction again?

Toombul Radio Club

Arrangements for a radio demonstration at the next annual show of the Nundah District A.H. and I. Association are in the hands of a committee appointed from the ranks of the Toombul Radio Club. The show, which is to be held on Friday and Saturday, September 30th and October 1st, has, in past years, been the most popular suburban show, and Brisbane radio enthusiasts are asked to enter their home-made receivers and accessories, so as to enliven the judging and swell the exhibit.

For some time past the club has been contemplating the erection of a "shack" to house the club "junk." ("Junk" is an expression generally used to describe the paraphanalia collected by radio enthusiasts during their study of the hobby.) A suitable site has been discovered, and as the club numbers a good many willing workers, it should not be long before 4TC has a "shack" of its own.

The club was well represented at the Radio Convention arranged by the Q.R.T.L., and held in Vaughan's Cafe on the evening of August 11th, and the majority of the gang arrived home in the "wee sma' oors," after having spent a very enjoyable (if not exactly quiet) evening.

The club meets every Wednesday evening at the residence of Mr. Walz, Eton Street and Sandgate Road, Nundah. Enquiries are invited.

Queensland Radio Transmitters' League

The Q.R.T.L. has been very busy this last month with its arrangements for the first Radio Convention a report of which appears elsewhere in this issue. During the month also the league has brought out the first issue of its official organ, "Q.T.C.," under the

editorship of Secretary 4LJ. It met with a most enthusiastic reception, and had to be reprinted twice. Future issue will be available at the end of each month.

In furtherance of the policy of the league, and accepting the offer made by the Director of 4QG, the league is in touch with Mr. Robinson regarding the broadcasting of lectures by its members on matters of interest and use to the broadcast listener. These lectures will not be of a technical nature, but will take more the form of household tips to better reception. They will follow a progressive syllabus and will cover all fields of listeners' activities—crystal, single valve, and multi-valve.

League members have already been able to render assistance to listeners in trouble in several instances, and application to any leaguer in the neighbourhood will result in advice and assistance being rendered. The new headquarters of the league is at Wilmington Street, Wooloowin, where they have rented the club room of the Wooloowin Radio Club. Visitors would be welcome on any meeting night—each alternate Friday—and inquiries should be addressed to the secretary, Leo J. Feenaghty, oa-4LJ, c/o Main Roads Commission, Desmond Chambers, Brisbane.

Home Made Sets

Are they Decreasing ?

(By "Ray Dio.")

It would be interesting if we could find out the number of receivers in use that are home-made. By home-made sets one means, of course, the assembling together of component parts of the set obtained from radio traders.

Very Few Home-Made Sets.

We are apt to class all sets not made completely in the factory as home made. Actually there are very few sets that can properly be called home-made. Home-assembled is a better description. There may be, and probably are, still a few crystal sets that are made up by the enthusiastic and energetic owners from details supplied by the various wireless traders.

The preparation of the former, winding of the coil or coils, and making of the connections, and even the catswhisker—all the work of making a crystal receiver except the actual crystal itself—that constitutes a home-made set really. In some cases indeed the actual piece of crystal is obtained other than from a wireless shop.

Home Assembled Sets Very Numerous.

In the construction of "home-made" valve sets one comes across energetic workers who made up the inductances, resistances and the condensers—all in fact but the valves. We thus can say that there are some sets that can not unreasonably be called home-made sets.

But the number of home-assembled sets is probably greater. So many traders are selling component parts with very complete instructions for assembly. And there are many "kits" that are really complete sets dis-assembled or disconnected, and all ready for assembling. The purchasers of these kits must constitute a large proportion of the listeners.

Not only in the metropolitan district, but in the country centres, are there sets found. Undoubtedly the greater number is in the suburban areas. Crystal sets and what might be termed low-powered valve sets are plentiful in those parts. The owners of the sets are near to the traders, and any difficulties met with in finally assembling the set or in testing it can be remedied, as advice is thus easily obtained.

We must admire the amateur set builder in the back country who constructs his set. He has few of the advantages and facilities of his city friends, and his difficulties after has once started to tune in are greater. That latter statement needs some qualification, I find, on a little more reflection. The important factor of selectivity does not play such a part in a country operated set. One can easily operate a four-valve set for interstate reception in the country with comfortable selectivity; whereas the same set operated within, say, twenty miles of an "A" class station, would prove very unsatisfactory from the selectivity point of view.

Home-Assembled Sets will Continue to Grow.

The more one ponders the subject the more evident it becomes that we are a long way from the phonograph stage. That is from the stage when all the sets in use will be factory made. And it is probably just as well. There is a charm in the assembling of your own set—or the tinkering with its assembly, provided that that is done with knowledge there is no great risk.

The radio traders will continue to offer various types of components. The concentration on design in all countries will result in improvements and changes that will surely be tried out. And it will be good for the development of the industry.

The wireless papers show no abatement of the quantity of instructions for the assembly of sets and the tests of new components. The instructions are generally very complete and the data, including diagrams, are of sufficient clearness and detail for anyone of average ability to follow. So long as the use of interfering circuits is not encouraged this procedure cannot be condemned.

Thus we see there is not much likelihood of the home-assembled set disappearing or being reduced in any quantity.

Catalogued

HERE are seventeen radio components, most of which are essential in every type of receiving set. If you are a home constructor, tear this leaf out and keep it by. It will act as a complete catalogue to which to refer before visiting your dealer. If you are not a home constructor, tear it out anyway, for the parts in your set require replacing now and again. Everything is priced, and when you buy Emmco you know what you are getting.

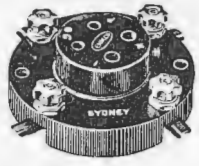
Emmco — Economy — Efficiency

EMMCO Stratelyne Condenser. .0005, 12/6; .00035, 12/–

EMMCO De Luxe Vernier Dial. **Price, 9/6**

EMMCO "B" Battery Eliminator. **Price, £10/10/-**

EMMCO Midget Transformer. Ratios, 2-1, 3½-1, 5-1. **Price, 13/9**



EMMCO Balanced Socket **Price, 3/9**

Cavalier Transformer, ratios, 2-1, 3½-1 and 5-1. **Price, 21/-**

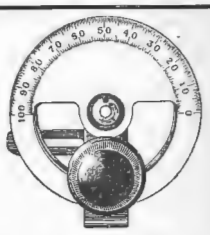
EMMCO Lightning Arrestor. **Price, 2/6**

EMMCO Headphones, **Price, 21/-**

EMMCO Transformer. Ratios, 2-1, 3½-1, 5-1 and 7½-1. **Price, 17/6**

Maclurcan Tone Purifier. **Price, 21/-**

EMMCOSTAD **Price, 7/6**



EMMCO Back Panel Dial. **Price, 5/6** With Switch and Bulb, 10/-

EMMCO Vernier Dial, finished in Black or Mahogany. **Price, 7/6**

EMMCO Straight Line Frequency Condenser, **Price, 25/-**

Emmco Components are sold

At All Radio Dealers

Made by **ELECTRICITY METER MFG. CO. LTD.,** *Sydney*

AMONG THE AMATEURS

The WX of late has not been conducive to any startling DX records, and with the exception of a few odd nights, the number of Yanks to be heard is surprisingly small. Of course, while we are wearing our woollen undies and shivering, the U.S.A. gangs are indulging in surfing and going about in the coolest garments. So with surf comes old man QRN, and they suffer accordingly. Never mind, men, the old fellow is working his passage west, and he'll soon be here!

Despite this, several of the local operators seem to be able to effect trans-Pacific contact quite frequently. 4GO managed to get across on an average of once per night during July. One Sunday he broke the record by 10 nu contacts. FB, George.

Fone has obtained a very firm hold on the local emitters. Most any night can be heard 4AW, 4NW, 4LJ, 4CG, 4MM, 4MF, and others. The majority are trying to put over good fone on a carrier that is very poorly fitted for the job. There is consequently a large percentage of hum and a small percentage of speech. It would appear that the rectification of the current has not been good enough to suit fone. There has been a considerable improvement, however, of late and before long it is hoped to hear quite good canned music from the experimental stations.

Peculiar effects are noticed here lately regarding QSS. A report on contact at first yields R7, but after rewing the rag for a few minutes the other fellow—particularly if he happens to be a South Aussie—comes back with "Nw R 4 om, QSS Bd" and you promptly wonder what's wrong. This state of affairs is mutual and seems to be particularly prevalent with contacts from the 4th to the 5th districts. No less than four different strengths were received the other night during the one QSO with South Australia. Immediately afterwards a Victorian station gave a steady constant report. 'Sfunni.

4MF, a new one, puts out some nice sigs., though he does not read very readily. His sigs. are DC and well choked. Old 4AZ is once more being heard on the air though he either has another op. or rheumatism, for the sigs. are decidedly different from Frank's clear cut morse. How come?

4JG, it is said, will soon be on regularly. Heard him the other night sending out wails of distress to some of the Wooloowin gang with an R.A.C. note—R meaning rough, Hi! I am told his shack is portable and like a semi-detached bungalow.

Considerable interference is being experienced on the popular band at present from the VIM, LP1, VIS, WHL, KEL artists. VIM being particularly QSA, while, of course, our Argentine friend is always a 'Kan Killer."

Heard 4AL, Bruce Munro, Bulimba, putting out some fairly good sigs. recently, though he might be mistaken for a DX on account of the fact that his QRH was in the vicinity of 39 metres.

The 20 metre band is the subject of much controversy. Some say it is just the little pippin, while others rebuke it for its fickleness. I think it must be feminine gender, since it cannot be relied on—thank goodness it's only men who read this page! Actually at certain times of day the 20 band is absolutely the best, but it appears that at nightfall it lags by the wayside. Apropos of that it is interesting to learn that the opposite effect is noticed up north with the 30.40 sigs. From nightfall till the we sma' oors Aussie sigs. are QSA vy. 'Twould appear wise to make provision for rapid QSY up when the shades of night start to fall fast. This band should receive an impetus as a result of the good information recently supplied by 4RB in the QRTL mag.

The local gang seem to have had a striking example of thought transmission. 4RB recommends the use of old tube base for changing BCL sets to SW; 4JG used the same idea on his SW receiver, while QST mentions the same thing. The locals, however, didn't crib from QST, because the issue wasn't here when they started. These tube bases are used to wind coils round, the ends being brought out to the legs. It's an FB idea, and economises space, so should be excellent for portables. The same idea could be used for RF chokes in both receivers and 'mitters. Most ops. have a score or six of dead marines, and therefore need not worry about the wherewithal. Try it!

If difficulty is experienced in obtaining a transmitting grid leak, try 180 feet of 44 SWG Eureka, which, according to James, makes a resistance of 5000 ohms. It will stand lots of current, and winds into a very small space.

4YN is back from the High Spots of Richmond (N.S.W.), and promises to be on the air soon. Heard A2F calling CQ the other night, and this reminds me that I heard that the Air Force stations have permission to use the official stations for "Hamming" now. So look out for a QSO with and QSL from A2F, A8Q, etc., the new calls of the old 5LX gang, &c.

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.

The Transmitting License

(By "Q.R.N.")

Article No. XI.

Continuing the discussion on the various transmitting circuits in general amateur use one reaches now the Meissner and the "Tuned Grid Tuned Plate" transmitter. In last issue the Hartley and the Colpitts circuits were described and it was shown how very closely the one resembled the other. In somewhat similar manner does the Meissner compare with the Tuned Grid Tuned Plate type. The chief point of similarity lies in the fact that ordinarily the grid coil in either of these layouts is at a distance from the plate coil. Herein, too, is the chief point of difference to the Hartley and Colpitt's type. In the tuned grid tuned plate transmitter the distance apart of these coils is usually about 18 inches, and is often considerably more—depending solely upon the vagary of the construction.

In the Meissner type the same usually is the case. However, there is a type, or rather an adaptation, of the original Meissner type known as the "three coil" Meissner, wherein the grid and plate coils are relatively close together. This however being, as noted, an adaptation of the fundamental idea, is not really admissible in a consideration of the general circuit.

So much for the preliminary discussion; a closer survey of the two types—the Meissner and the tuned grid tuned plate circuit—is in order.

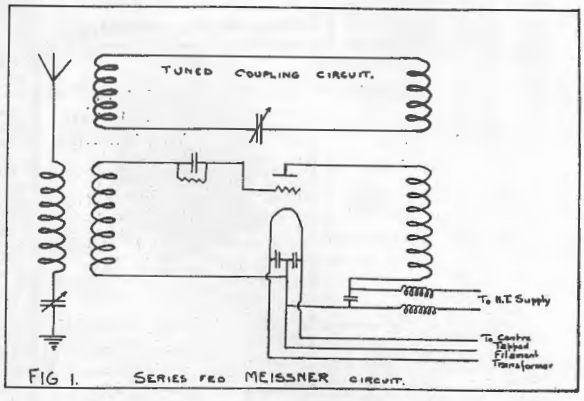
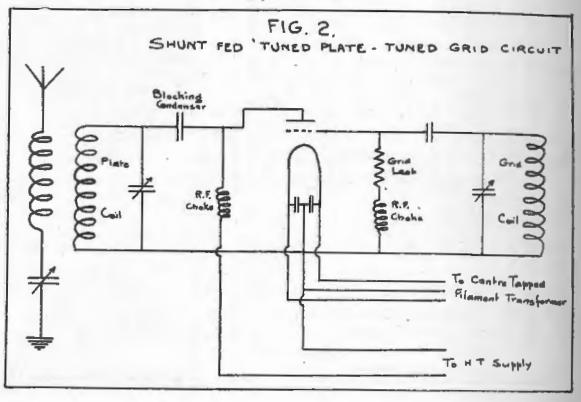


FIG 1. SERIES FED MEISSNER CIRCUIT.

The Meissner circuit is, like most transmitting circuits, simply a grown-up receiving layout. Refer to the diagram of fig. 1, wherein is shown the standard circuit diagram of a four coil Meissner circuit with series power supply—that is, as explained in last issue, the transmitter is "series fed," or in other words, the high voltage feed is in series with the valve. The diagram shows five coils, but the circuit is named from the four main coils—viz., the two forming the coupling circuit and the two to which this circuit is inductively coupled. The aerial pick-up coil, being standard to all circuits, is usually disregarded in discussion.

The development of the Meissner circuit from the ordinary broadcast receiver is simple. One has only to imagine the receiver reaction (or tickler, or plate) coil swung right away from the grid coil to convert the passive receiving set into the prototype of a very active transmitter.

Ordinarily, when using a one-valve receiver of the P1 type, the broadcast listener swings the reaction coil into close proximity to the grid coil. The habit is reprehensible, but one for which there is no feasible remedy. The "oscillation" consequent upon such action is to a large extent unwanted in a receiving set, but is, on the other hand, the *sine qua non* of a transmitter. A transmitter depends upon the oscilla-



tions developed in its various circuits, and steps are taken to make such oscillations strong and steady.

In a receiver, however, the powers used in the various circuits and, in consequence, the strength of the oscillations are comparatively minute, so that a tight coupling between grid and plate coils does no serious damage except to the feelings of neighbouring listeners. But the same tricks tried with a transmitter with closely coupled coils and an applied voltage of eighteen hundred or two thousand would cause quite a different result. From many points of view it is desirable that the coupling between grid and plate coils should be more delicately controlled than is possible in the example just considered.

To gain this advantage the P1 receiving circuit is subjected to mechanical alterations. The reaction coil is swung away from the grid coil—in fact, is placed right at the other end of the baseboard, and turned at an angle to give greater certainty to the intention that no stray coupling exists between the two coils. Of course, if this be done with the basic receiver the state of oscillation so noticeable when the two coils were in close proximity would be non-existent when the coils were far apart. So, too, in the present state of the transmitting circuit—there is no "oscillation" in the set, and the transmitter is inoperative. Some means then must be found which will, in itself, incorporate the desirable features of close and remote coil positions. The two coils must be coupled electrically to permit the circuit to work, and

this is done by means of the two coils which, in fig. 1, form the coupling circuit. As can readily be seen this addition has the effect of facilitating the passage of energy, by a system of inductance coupling, from the plate circuit into the grid circuit. The circuit as shown is standard, and the three-coil Meissner transmitting circuit differs only in the fact that both coils of the coupling unit are merged into one.

It is usual to tune the coupling circuit as shown, though the same result might ordinarily be obtained by leaving this circuit untuned and tuning either (or both) the grid or plate circuits. However, the system shown, which has the advantage of lessening the number of controls is also to be preferred, because of the more effective control it gives in tuning the transmitter. As will be seen, the rest of the circuit does not require very much consideration. It is similar in every fundamental respect to the circuits shown in last issue, except for the actual layout. Radio frequency chokes and bypass condensers are used as before in the power leads, and the use of centre tapped transformers and efficient rectifiers and filters is as desirable in this as in the earlier circuits.

The outstanding advantage of the Meissner and tuned grid tuned plate transmitters has, however, not yet been emphasised. It lies, of course, in the fact that the coils in the plate and the grid circuits—not being coupled to each other—can ordinarily be wound to a specified size and fixed into position. There are no clips to be juggled into various relative positions, and no sliding of coils to give the best coupling. Possibly the Meissner is not as flexible as the conventional Hartley to cover quick changes of wavelength, but such is not necessarily a drawback in these days, when a transmitter works for weeks at a stretch on one band without the urge to QSY to another to seek additional contacts. For this reason the Meissner and the tuned grid tuned plate transmitters have much to recommend them to the amateur who has not the inclination to do unnecessary manipulation of coils and clips and prefers a straight forward condenser controlled transmitter.

From this aspect an even greater measure of popularity has been accorded the tuned grid tuned plate circuit. It has increased in numbers in the last year until it shares with the Hartley about 80 per cent. of the Australian amateur transmitters. Handled by an efficient operator, it is no better and no worse than the Hartley, and will give the same consistent results. The advantage of the Hartley is the ease with which big changes of wavelength can be compassed. The tuned plate tuned grid circuit on the other hand has an easier and a smoother control. It has the further advantage that the coils used may be wound directly on bakelite tubing of suitable diameter, and may be proportioned as to keep the inductance capacity ratio of the circuit within the most desirable limits. A set of plug-in coils to cover various transmitting bands take the place of the spaced copper helices of the Hartley type, and, together with their compactness they permit of the assembly of a very neat looking transmitter. A further advantage of the tuned plate tuned grid circuit lies in the ease with which a purely condenser controlled transmitter may be definitely calibrated for any given waveband, with the added fact that the calibration once made is permanent.

In practice the circuit is as shown in fig. 2. A glance will show its similarity to the circuit of fig. 1. Here, too, the grid and plate coils are far apart, but in the case of the tuned plate tuned grid transmitter the coupling between the two circuits is capacitative in place of inductive. The grid and plate coils are each tuned, and the symmetry of the circuit is evidenced by the fact that the inductance of the coils and the capacity range of the tuning condensers are the same for either circuit.

As shown in fig. 2, the grid coil is placed on the opposite end of the baseboard to the plate coil, and the aerial coil is variably coupled to the latter. The whole transmitter is tuned by three variable condensers which, for powers up to about 50 watts, may be good type receiving condensers. The greatest care should be exercised in the choice of the various fixed condensers used for coupling or blocking purposes, though a good type of mica-dielectric fixed condenser as used in receiving sets will, in all ordinary circumstances, prove suitable.

Reliable meters to measure plate current, aerial current, and filament voltage are greatly to be desired in handling the tuned plate tuned grid transmitter, as unfortunately the valve is at certain settings of the tuning condenser, prone to stop oscillating, and when this occurs the loading up of current upon the plate causes it to heat up very quickly, which tends to shorten the effective life of such valve. Of course, any such heating is readily visible to the eye, but the use of calibrated meters is a surer indication that all of the circuits are functioning correctly.

In next issue various methods of keying will be discussed, together with the use of relays and other protective devices, and a survey made of the manner in which speech and music are broadcast.

Two Unique Broadcasts for September

Bedtime Story Session and Concerts to be Relayed from Ascot and Ipswich

Added interest will be given to 4QG's Bedtime Stories and Concert on the nights of September 10th and 20th, when these sessions are to be relayed in the form of public demonstrations from Ascot and Ipswich, giving the children and their grown-ups the opportunity to see and hear the story-tellers and artists broadcast before the microphone.

From the Ascot State School

On Saturday, September 10th, the Ascot State School, famed for its beautiful school buildings and well-kept grounds, will be the scene of the annual Ascot Show organised by the School Committee in aid of the school funds.

4QG HAWAIIAN INSTRUMENTALISTS.
Who are appearing with 4QG Bedtime Story-tellers at the Ascot and Ipswich Broadcasts.

As most school children nowadays are enthusiastic listeners to 4QG's bedtime stories, the committee visualised the unbounded joy that would leap up within the hearts of the children if the beloved "uncles" of 4QG could attend their show in person, and applied for permission to have the bedtime story session and concert relayed from the school grounds on the day of the fete.

This was granted, and it is quite safe to assume that there will be a healthy attendance of children (and "grown-up children") at the Ascot State School to see the bedtime story-tellers they often hear from 4QG.

A stage will be fitted up at one end of the swimming pool, which, of course, will be drained and dried and the children will be able to seat themselves on the floor of the pool, while other listeners can arrange themselves around the edge of the baths.

The bedtime story session will commence at 6.30 p.m., and will terminate about one hour later.

A fine concert has been arranged and this will commence at 8 p.m. sharp.

Prices of admission to the ground are 1/-, Children 6d. Those who intend attending the fete, are advised to board an Oriel Park tram in the city, alighting at Abott Street, from whence the school is at once seen.

A Souvenir Programme containing the photos of all the bedtime storytellers has been printed and may be secured on the grounds or at Heiser's, Jewellers, Brisbane Arcade. Price 3d.

From the Town Hall, Ipswich

This function has been organised and is being directed by W. Haigh & Co., Ltd., of Ipswich, all profits going to the Ipswich City Vice-Regal Band.

As in the Ascot School broadcast, the complete bedtime story session and night session is being broadcast, the combined story-tellers from 4QG supplying the first entertainment, and an extra special programme supplied by leading Ipswich artists comprising the second.

Two distinct entertainments have been arranged,

"SNOWBALL" AND "SUNRISE."
Two coloured coons who are appearing with "Uncle Ben," "Uncle Mike," "Uncle Jim," "The Sandman," "The Professor," and "Grandfather" at the Ascot and Ipswich Broadcasts.

Single and double session tickets are on sale at Bob Johnstone's, Brisbane Street, Ipswich, where the box plan for gallery seats is also opened.

We are told that some pretty effects are to be introduced into the staging of the bedtime stories, the Ipswich Town Hall being equipped with a modern system of stage lighting.

To the children of Ipswich and district this should be a "Night in Wonderland," and by the magnitude of the organising, the hall will prove all too small for the crowd that will attend.

As there will doubtless be a number of enthusiasts who will journey from Brisbane to Ipswich on this occasion, we would state for their benefit that a train leaves Central at 5.5 p.m., arriving in Ipswich at 6 p.m.

The concert portion of the entertainment promises to be something of exceptional merit. Ipswich is

"THE PROFESSOR,"

Who, with the rest of "Uncle Ben's" Party, will take part in the Special Broadcasts.

famed for its musical talent, and by the programme that has been arranged, it would appear that they mean to uphold the reputation of their city.

A souvenir programme has been prepared in honour of the visit of Station 4QG's staff and artists to Ipswich, which is being sold throughout the town or may be obtained direct from W. Haigh & Co., Ltd., at 3d the copy.

Messrs. W. Haigh & Co., Ltd. state their sole object in organising these entertainments is to help the Ipswich Vice-Regal Band, which, by the way, is one of the most successful contest bands in the Commonwealth, and to stimulate an interest in radio.

Prices for admission are as follows:—

One Session Tickets:—Front and back stalls, children 6d, adults 1/-; gallery children 9d, adults 1/6.

Two Session Tickets:—Front and back stalls, children 9d, adults 1/6; gallery, children 1/-, adults 2/-.

There is no extra charge for booking seats in the gallery.

Aerial Avenue, Radioland.
Thursday, September 1st, 1927.

To All My Little Sweethearts,

Dear Children,—

Here's another letter from your old "Uncle Ben." I do hope you have all been good children since I last wrote to you through the "Radio News." I feel sure you have been, and I trust you will always try to be better and better every day. Do you remember that old saying, children? which says:—

"I shall pass through this world but once. Any good, therefore, that I can do, let me do it now, for I shall not pass this way again."

It is indeed very true and if you only try to do some "little good"—well, then, you will find that it will make you ever so much happier in your lives.

Now, I must tell you what is going to happen during this month. At 6.30 p.m. on Saturday, September 10th, all the Bedtime Story-tellers are going to visit the Ascot State School, and I can tell you, we are going to have a rollicking time with all the children there. Do you know that "Uncle Mike" and myself have two nigger brothers. Oh, yes! one is called "Snowball" and the other is called "Sunrise." They are very funny, too, and they have promised to visit the Ascot State School with us, and I think they can play the banjo, so it looks as though there will be plenty of fun.

Then, again, we are going to visit Ipswich on Tuesday night, September 20th, and we would like all our little pals in Ipswich to come along and have a good old laugh with us, too. We might also sing our old favourite, "How Do You Do?"—that is, if the boys and girls help us with the chorus.

The photograph man told me that he would come along and take a flashlight photo of the Ascot State School children and also the Ipswich children, while we are telling the stories—so look in the next issue of the "Queensland Radio News," and the Editor might show them to you.

Well, Sweethearts, I must toddle along now. I send my fondest love to all the little sick boys and girls, and I trust they will soon be well and strong again.

Best love and kisses to you all.

Yours truly,
"UNCLE BEN."

"SANDMAN'S" COMPETITION.

The Prize Winners.

The following are the prize winners in "The Sandman's" Guessing Competition, published in our last issue. A jumble of letters were printed which represented two words. Hundreds of replies were received and, of course, many formed words, but they were not the correct words.

The answer was **"GUESS WHAT."**

Altogether 35 girls and 28 boys sent in the correct answer. These were placed in two piles, and "The Sandman's" baby daughter, "Bubs," picked out two entries from each, which bore the following names:—

Girls.

First Prize: Priscilla Green, Bedford Villa, Burleigh Heads.

Second Prize: Dorothy Hyde, Main Street, Woodford.

Boys.

First Prize: Alfred Adsett, Veresdale, Beaudesert Line.

Second Prize: Edward Gisler, Brisbane Road, Wynnum West.

The prizes will be forwarded to these children in a few days' time.

"UNCLE MIKE"

An Irishman in kilts!—and with a Green Helmet—and, hush! green underpants!! Did ever you see such a spectacle? This is how "Uncle Mike" will look at the Ascot State School on September 10th, and at the Ipswich Town Hall on September 20th.

THIS MONTH'S COMPETITION

GUESS "UNCLE BEN'S" BIRTHDAY.

Can you guess "Uncle Ben's" birthday?

To the boy or girl that guesses correctly, a first prize of 7/6 and a second prize of 4/- is offered.

In the event of no child guessing the correct date, the nearest competitors will be awarded the prizes.

Address enevelopes "'Uncle Ben's' Competition," Box 1095N, G.P.O., Brisbane.

HAVE YOU BUILT THE "Q.R.N." WAVE TRAP?

We are constantly receiving reports from our readers of the wonderful success they are experiencing with the "Q.R.N." wave-trap described in detail in our July issue.

If you have built this wonder trap, we would appreciate an account of your personal experience with it.

Write to the Editor, box 1095N, Brisbane.

Australian and New Zealand Wavelengths

Although broadcasting has been slow in developing in New Zealand it now appears that a definite and useful advance is being made. Special laws were passed in 1923 by the Dominion Parliament, including the now famous Act dealing with wireless patents, and the preliminaries of broadcasting were undertaken. Several stations commenced more or less amateur services, and the Post Office sold some licenses. The broadcasters soon realised that one of the most important factors was finance, and the industry did not move forward with any rapidity. After discussions a more promising step was taken last year, and the New Zealand Broadcasting Company was licensed to operate stations in Auckland, Wellington, Christchurch, Dunedin, and other towns. The Auckland Station 1YA, now made known to many Australian listeners, was opened last year, and although its power is less than the biggest Australian stations, the transmission has been much appreciated.

High Power Station for Wellington.

Now the company is about to open a big station at Wellington. It will have a power of about 12½ to 15 kilowatts. That is about two to three time the power of 3LO Melbourne. The wave-length is to be 420 metres. The intention of the company in using a station that will be as big as the famous WEAF Station in New York, apparently is to provide a service that will cover the whole of New Zealand for low-powered sets. That of course is quite a commendable idea, although the Australian experience of fading will no doubt be encountered. But what is more interesting to Australian readers and listeners is the wave-length selected.

Will Wave-Length Cause Interference in Australia?

We have a station in Sydney on 440 metres, and one in Adelaide on about 400 metres. It looks as if there will be some interference. The Australian stations within 20 or 30 metres of 420 metres will not be received in or near Wellington with any degree of satisfaction, and any reception of 2YA in Sydney or Adelaide, or in the other capital cities for that matter, is not likely to be satisfying unless a specially selective receiver is used. Of course, we do not know if the authorities in Australia and New Zealand responsible for designating the wave-length of broadcasting stations have consulted each other. But if they have not, it looks as if some understanding of each other's conditions is essential. If one country so near as New Zealand can use a wave-length that is likely to be the cause of interference to listeners in Australia, or if a high-power Australian station is given a wave-length that the New Zealanders consider should be free to them, there is sure to be some trouble. Confusion and dissatisfaction arose in Canada from a similar difficulty. The United States broadcasters "jumped" wave-lengths that were, by a "gentleman's agreement," allotted to Canada. The main cause of the trouble there was due to the fact that the United States Government found that it did no have the power to order its own companies off the wave-lengths they had jumped. That difficulty has been overcome by the Radio Act, passed by Congress last December.

High-Power Stations in Japan, Too.

This wave-length problem is an international one. We hear that the Tokio Station JOAK is going to increase its power from 1000 watts to about 40,000 watts, and as its wave-length is 375 metres, there will certainly be some difficulties to be met by listeners to 3LO on 371 metres. There is nothing to prevent Java starting a 50 kilowatt or 100 kilowatt station on 370 metres. Such a station would be alright for Java listeners, but the effect on Australian listeners who want 3LO would be very serious. It only shows the necessity for some international body like the League of Nations undertaking the responsibility of straightening out these matters of radio wave-lengths.

"Q.T.C."

The Official Organ of the Queensland Radio Transmitters' League.

During the month it was our privilege to review the first number of "Q.T.C.," a lively little monthly devoted to the activities of amateur transmitters, and the Queensland Radio Transmitters' League in particular.

The magazine is, as yet, produced on a duplicator machine by the willing and honorary labour of the "editorial staff," but it is evident that what may be lacking in typographical excellence is compensated for by the informative nature of the articles, all of which are written by members of the League.

The Editor, Mr. Leo. J. Feenaghty (4LJ) informs us that the paper is sold by subscription only (6/6 per annum). Remittances should be forwarded to the Editor, "Q.T.C.," c/- Main Roads Commission, Desmond Chambers, Adelaide Street, Brisbane.

"ATMOSPHERICS THAT ARE NOT"

In a recent issue we published an article under the above title. Inadvertently we omitted to acknowledge "The Radio Mail," the house organ of the Cossor Valve organisation as its source.

Distortion in Transformers

(By H. K. Love).

The incessant demand for faithful reproduction of sound waves in all their forms, that is, music, voice etc., has led investigators to make a deep study of the requirements for audio frequency transformers. The musical scale which the average transformer is called upon to handle runs in a straight line of frequencies. of from approximately 16 vibrations or cycles per second up to 8000. The human voice covers the range of roughly roughly from 125 cycles to, say, 280 cycles, so that it will be seen that a transformer which may give excellent reproduction of the voice is only being called upon to amplify a very small portion of the frequencies that have to be provided for.

Low and High Notes.

The lowest note of a pipe organ is about 16 cycles per second; this note is so low in frequency or vibrates so slowly that it is more frequently easier to feel it than hear it. A transformer is rarely expected to handle frequencies of such a low order as 16 per second. The pianoforte range starts from a frequency of abjout 275 and runs up to a shade over 1000 cycles per second. The top notes of the violin go even higher. In addition to the provision which has to be made in an amplifying transformer for the natural musical frequencies a big margin must be allowed for what is termed the harmonic range. This is explained in the following way:—If the top note of the piano is struck it emits a sound wave of, say, about 1100 cycles, but it also emits harmonic sound waves which are, to put it simply, multiples of the original note, both above and below the true frequency. It is on this account that a big overlap of amplifying ability must be allowed for in any transformer which may be used to step up or step down audio frequency currents corresponding to anything within the range of frequencies previously mentioned.

An Ideal Transformer.

It would be ideal if a transformer could be designed which would give a straight-line amplification curve over the whole frequency band, but I am afraid that so far this has not been possible. Most transformers are designed to amplify correctly from 50 cycles to about 6000. Even within this range of frequencies there is a decided drop of as much as 10 degrees between the frequencies of 300 and 50 cycles per second, and on the upper range a drop of 3 or 4 degrees from 4000 to 8000 cycles per second. The best transformers of present day design should at least have a straight-line curve between the frequencies 300 and 4000. This covers the principal portion of a pianoforte range, most instruments, and a reasonable margin for harmonic range. The construction of a good transformer which will be expected to give reasonable performance should be somewhat along the following lines:—

(a) Core—Ample core section with practically no air gap should be provided.

(b) Inductance—The inductance of the primary should be high at the average voltages used in wireless sets, say, about 80 henries.

(c) Ratio—The ratio should not be too high, but as high as possible consistent with low losses at high frequencies.

(d) Windings—The windings should be sectioned or subdivisioned with a view to the reduction of self-capacity current and eddy current losses.

The points mentioned in (a), (b) and (c) are made to insure faithful amplification at low frequencies, and that mentioned in (d) ensures good amplification at high frequencies.

Short Waves for "Tahiti"

During the last visit to Sydney of the H.M.S. "Tahiti" of the Union Steamship Company's Line, the vessel was equipped with a special short wave wireless installation.

Similar short wave wireless sets were recently fitted in the "Makura" and "Aorangi" and when the "Niagara" returns to Sydney, that vessel also will be equipped, thus making the four Trans-Pacific mail steamers right up to date in the wireless communication services.

The short wave sets have been compactly assembled and do not take up very much space in the wireless cabin, nevertheless they are so efficient that the ships now epuipped, will be able to maintain communication with the Sydney Radio Station right across the Pacific. The advantage to the shipping company is at once apparent and of course passengers get the benefit by being able to send messages to Australia and receive replies promply at very low cost.

These sets were specially designed after a considerable amount of experimenting by the engineers of the Amalgamated Wireless Company and the sets were manufactured in that Company's works at Sydney. Similar wireless sets fitted in other ships by the Amalgamated Wireless Company have proved capable of transmission over distances of at least 10,000 miles.

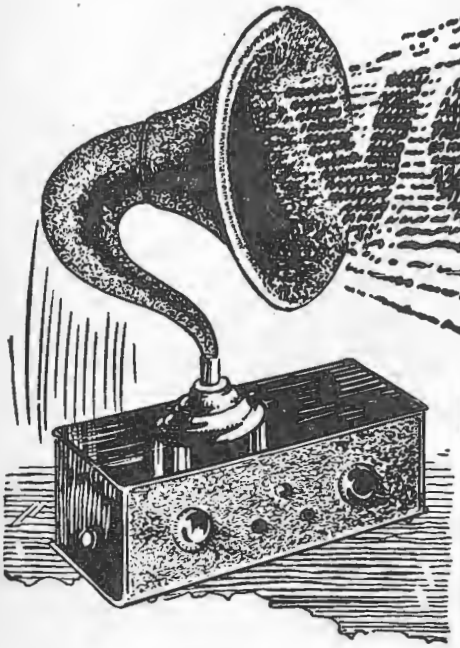
"LIFTING A FLY."

It has been estimated that the total energy collected by the average wireless aerial over a period of 40 years is only just sufficient to lift a fly one inch.

This amazing feat brings home the wonder of wireless reception when consideration is given to the volume of music that can be received from the negligible energy in an aerial.

Another instance of the tremendous economy of energy that is a feature of wireless has been supplied to us by a wireless experimenter using Mullard P.M. valves who, with only the equivalent energy of an ordinary flash lamp battery, established two-way communication with a fellow epxerimenter.

The actual energy consumed amounted to less than one-thousandth of a watt per mile.



Volume—

—but no distortion of Tonal Quality

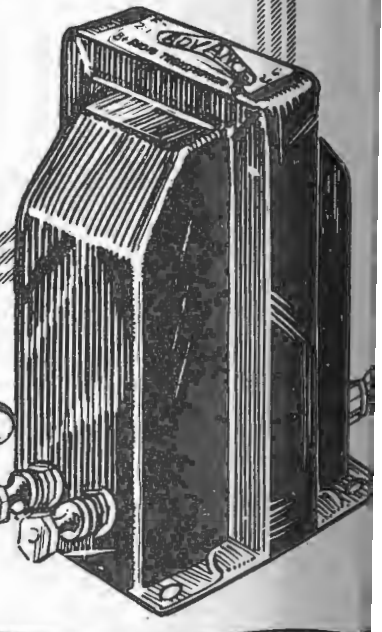
THAT, after all, is what you really seek from your set. The "Advance" Audio Frequency Transformer has been specially designed to give you pure-toned volume—to increase the clarity and strength of your reception. The name "ADVANCE" is a guarantee of its electrical and mechanical perfection. Made in ratios of 2-1, 3½-1, 5-1.

Wholesale Distributors for Queensland:

EDGAR V. HUDSON,

Charlotte St., Brisbane;

ADVANCE
ALL AUSTRALIAN
RADIO
PARTS
ARE MADE BY
RADIO
CORPORATION
OF AUST. PTY. LTD.
Melbourne Sydney
Adelaide
Brisbane



ADVANCE

AUDIO FREQUENCY TRANSFORMER

17/6

Notes from 4QG

WINDSOR MUNICIPAL BAND.

The Windsor Municipal Band has lately been playing in the Botanic Gardens, Brisbane, and has been reproduced faithfully by Station 4QG. In the near future a series of recitals by the band will be broadcast direct from 4QG's studios.

MR. ERICH JOHN'S RECITALS.

Mr. Erich John has arranged a very fine programme by his party of radio artists, and this will be given from 4QG on the night of Tuesday, September 6th. The first portion will comprise gems from the operas, and the second part will consist of miscellaneous numbers.

ANZAC HOSTEL CONCERT.

Miss Alice Raven is organising a special concert which is to be held at the Anzac Hostel, Kangaroo Point, on Friday, September 9th. The programme is a varied one, and includes quite a number of well-known artists. Arrangements have been completed for the programme to be broadcast from 4QG from a quarter past nine until approximately ten o'clock.

SPEEDWAY BROADCASTING.

Now that the Olympia Motor Speedway has been opened at Davies Park, West End, considerable interest is centred in the broadcasting of descriptions of the racing. During the time the Exhibition Ground was used as a speedway, thousands of people wrote to 4QG expressing their appreciation of the descriptions and the incidental noises which were also broadcast. Davies Park has proved just as popular.

OLD-TIME NIGHT.

The Lyric Glee Party is a combination of artists that have been heard at regular intervals from 4QG for a period of two years. On Thursday, September 8th, they will make a reappearance on the programme after an absence of several weeks. The whole of the period that night will be filled with songs that grandfather and grandmother loved in their younger days, and the instrumental music provided by the party will include quite a number of old-time dances.

A RECORD.

During the month of September no less than 71 outside broadcasts will be effected by 4QG, and these include relays over considerable distances. The Lismore Musical Festival will be broadcast by the big northern station, and concerts from as far north as Gympie and Bundaberg are included in the schedule for the month. The Bundaberg relay is a notable one, as more than 300 miles of land line will be used in order to effect the transmission of it.

FOOD FOR THOUGHT.

Until recently 4QG closed down from 6.15 p.m. to 6.30 p.m. on Monday to Friday, but that time is now being used for the purpose of broadcasting lecturettes on subjects of more than passing interest.

Many listeners are perhaps at dinner at that hour, but no doubt the loud speaker is switched on in some homes, and short addresses by prominent people issuing therefrom give food for thought, assisting the food for the body.

THE "ELEC-TRU-TONE"

A new device, which is known as an electrical "Pick-up" or recreator, has recently made its appearance on the market, its purpose being to reproduce music electrically through any radio receiver and loud speaker when used in conjunction with an ordinary phonograph.

This device is known as the "Elec-Tru-Tone," and consists of three principal parts:—

An electro-magnetic generator with a carefully-balanced and damped armature and stylus bar; a suitable volume control, which allows one to regulate the volume from a whisper to full volume, and a plug, which is placed in the detector socket of the radio receiver.

The reproduction afforded by this system is a revelation, and is far in advance of the old type phonographs. The delicate overtones of music, which to a large extent have been about lost, are now brought out to perfection. Then again we have the deep booming of the bass notes, which combined with the wonderful volume, gives a very pleasing effect.

The Elec-Tru-Tone may be attached to practically any standard phonograph, the adjustment being only a matter of a few seconds. The procedure is as follows:—

The "Pick-Up" is slipped on to the tone arm of the phonograph, a needle, of course, being inserted in the usual manner, the detector valve of the receiver is then removed and the special plug inserted; only one thing now remains to be done, and that is to insert the speaker plug and switch on the valves.

On test we found that the Elec-Tru-Tone's performance was quite up to the makers claims, and the only limiting factor was the quality of the speaker and audio amplifier. The best results were, of course, obtained form a well designed resistance coupled amplifier, though really excellent tone was obtained from sets epuipped with medium quality transformers.

Our sample was forwarded by Messrs. Harringtons Ltd., Queen Street, Brisbane.

Whispers from Maoriland

Miss Brenda Bell, of Palmerston South, has succeeded to the mana of her brother as operator of 4AA, one of the world's best-known amateur wireless stations. She recently enjoyed the thrill of breaking through a hitherto unpierced barrier of space by getting into touch with South Africa.

One seventh of a second after the fight ended, Mr. Ivan O'Meara, of Gisborne, one of the Dominion's foremost experimenters, had the result of the Dempsey-Sharkey fight in New York. He listened in to a short-wave broadcast account of the bout from the ringside, and heard clearly the full description of the affair, even to the cheering and yelling of the crowd. As ether waves take one-seventh of a second to travel from New York to New Zealand, he was thus aware of the result sooner than anyone who depended on cables.

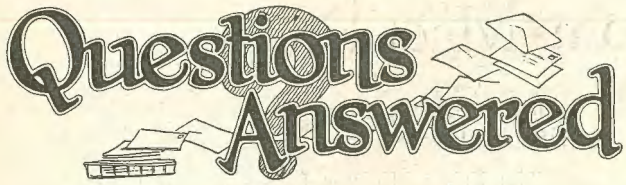
Development has followed development so quickly in radio investigation that it is difficult to think that it is just twenty-five years since the first message was sent across the Atlantic, and that in 1919 broadcasting was still unknown.

A hardy annual in Maoriland Parliament is Mr. T. K. Sidey's Daylight Saving Bill. It is again before the House at present. There have been many arguments in favour of daylight saving, but the radio side of the question has not been advanced. If Mr. Sidey's Bill gets on the Statute Book, he should receive the thanks of every owner of a long-distance set, for, instead of having only a difference of one hour and a half between the time in New Zealand and Australia, there will be a gap of two hours and a half. Thus, when the New Zealand stations close down, listeners will be able to tune in with Aussie at the commencement of their concert sessions.

When the usual estimates for the year were placed before the House, an item of £15,000 raised considerable adverse comment from both sides of the Chamber. It was a loan made to the New Zealand Broadcasting Company by the Government. The Leader of the Opposition (Labour) said that for the Government to lend such a large sum of money to a concern like the Broadcasting Company without the authority of Parliament was objectionable. He wanted to know why the money was lent. Was the company in such a bad position that it must go to the Government for a loan of £15,000 to enable it to carry on its work? Why should such a loan be made when people who were waiting for loans for houses and other things were told that the money was not available. Another Labour member suggested that if the company was in this position, the Government accede to the request of listeners-in and make broadcasting a State monopoly.

The Prime Minister (the Rt. Hon. J. G. Coates), replying to the discussion, referred to the early unsuccessful negotiations for the formation of a broadcasting company. The New Zealand Dairy Company had made proposals to that end, but the desirability had been pointed out of having stations in the four chief centres. The company had fallen in with the suggestion, and Mr. Goodfellow, who was interested in the company, decided that he would form a company himself. Mr. Coates went on to refer to the Advisory Board, the object of which was to act as a buffer between the company and the listeners-in.

Listeners to 2YA hear too much that is not on the programme. People used to forgive the shortcomings of 2YA when somebody would call out, "Over, Mac!" and even held guessing competitions about the identity of "Mac,' and how high the hurdle was. The same sort of thing from such an aristocratic station as 2YA is, however, beyond excuse. It has apparently not been recognised to the proper extent, that even a whisper overheard by the equipment travels thousands of miles, and arouses the disgust of many thousands of people.



"Choke," Gympie.—(1) The capacity of the coupling condensers should be about 1MF, as this value will pass all the frequencies in the practical musical range.

(2) Most of the valve manufacturers give the amplification factor of their valves printed on a circular enclosed in the carton. If you desire to work out the amplification factors for any particular valve you will have to resort to a formula which will be found in any reliable text book.

"A.C.," Rockhampton.—Try reversing the leads that connect to the reaction coil.

"W.P.K.," Kedron.—(1)Try testing the windings of the transformers with a pair of earphones and a small battery. (2) If your batteries are in good condition, as you state, see that they are properly connected, and that all terminals are tight and free from corrosion.

"D.N..," Indooroopilly.—Probably your coils are not suitable for the type of receiver that you are using Try a 35 turn coil in the first plug and a 50 turn in the second.

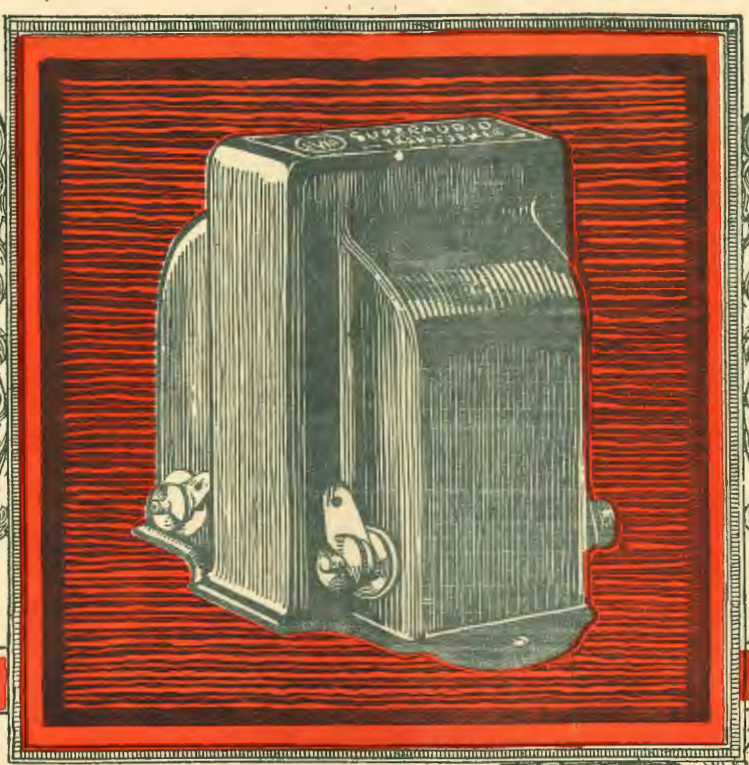
"B.V.D.,"Townsville.—"The Phasatrol" is a new device which is used to stabilise radio frequency amplifiers. It consists briefly of a small condenser and a high resistance. The "Phasatrol" is placed between the plate of the R.F. valve and the primary of the R.F. transformer.

"L.D.R., Quilpie.—(1) The Solodyne Receiver employs two stages of neutralised radio frequency amplification, and uses reaction on the detector valve. (2) Yes, the Solodyne receiver should give better results than the straight-out neutrodyne, as the regenerative detector gives it plenty of "punch."

"G.G.M.," Toowoomba.—Probably your condenser plates are touching. This would account for the grating noise heard in the phones.

"F.H.," Mapleton.—The distortion may be due to a faulty valve or a bad L.F. transformer. Test these parts, replacing them if necessary, and let us know how you get on.

"Enquirer," Warwick.—A small fixed condenser of about .001 m.f. shunted across the phones would improve your reception.



Get the Best from Your Receiver by using the New A·W·A~Super-Audio Transformer

It incorporates in a superlative degree the essentials of a good transformer :—

1. **High inductance primary.**
2. **Ample cross section of iron.**
3. **Ample cross section of copper.**
4. **Low magnetic leakage.**
5. **Low distributed capacity.**

The new A.W.A. Super Audio Transformer is small and convenient for assembly, of fine appearance, compact and easy to wire, and its response characteristic is practically constant over the whole range of speech frequencies.

The A.W.A. Transformer will ensure the best performance from your Receiver

A.W.A. Transformers are Guaranteed.

AT ALL RADIO DEALERS

Amalgamated Wireless (Australasia) Ltd.

Sydney • Melbourne • Brisbane • Adelaide
And Wellington, N.Z.

Supplied in Four Ratios

2 - 1 3½ - 1
5 - 1 9 - 1

Price 18/-

A·W·A~Super Audio Transformer

Printed and Published by the Proprietors, The Read Press. Ltd., Douglas Chambers, Adelaide Street. P.O. Box 1095 N.

Wholesale Distributing Agents: Gordon and Gotch (Australasia) Ltd., Brisbane, Sydney, Melbourne, and