

The Queensland Radio News

"Your Own Wireless Journal"



6^D



ol. II.

Monday, February 1st, 1926.

No. 1

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of

The Queensland Radio News

FOR SALE

We have a few back numbers of our Journal for Sale. Those desirous of securing copies to complete their volume I. should write at once, for supplies are limited.

It is impossible to secure copies of February, April or September numbers. Other numbers are procurable, but as some of the following issues are limited to a dozen copies it is advisable to write at once.

| | |
|--------|----------|
| March | October |
| May | November |
| June | December |
| July | January |
| August | |

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Queensland Radio News
Box 1095N G.P.O.
BRISBANE



Miss Mabel Cormack

The little lady whose picture you see above will be remembered by the younger listeners to 4QG in the "good old days" before 4QG was on the air, when the tri-weekly concerts were broadcasted from the Schulz Player Piano Parlours, in Albert Street.

Miss Cormack was Queensland's first bed-time storyteller. Her appearance was always met with success, and when she took her departure with her mother for Great Britain twelve months ago, she left a lot of friends behind. She is now studying dancing and elocution in London, and is progressing remarkably well.

She lately appeared with the B.B.C. (London), in the Children's Hour Session, and her numbers were well received. Mabel is just 13½ years of age, and she is seen wearing Russian boots, which are all the rage in London.

Many listeners will be anxious to hear this young lady at 4QG on her return.

THE RICO-DYNE at SCARBOROUGH.

On Sunday afternoon last, January 31st, whilst motoring at Scarborough (Redcliffe), a party including Mr. J. W. Robinson (Director, 4QG), was attracted by the sounds of 4QG's Band Concert from the Botanical Gardens, Brisbane. On looking round, it was discovered that Mr. Christensen (manager, Home Radio Service, Ltd.), had slung a tape aerial over the branch of a small tree and was entertaining quite a number of people with the 5-valve Rico-dyne Receiver. Reception was perfect. Mr. Robinson complimented Mr. Christensen on the efficiency of his receiver.

Price 6d. Copy

Published Monthly



Vol. 2

MONDAY, 1st FEBRUARY, 1926

No. 1

The Official Organ of the Queensland Division of the Wireless Institute
of Australia and Radio Societies of Queensland

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(Copyright Registered)

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LITERARY CONTRIBUTIONS.

especially original articles of interest to readers, are invited. Accounts of Club doings or unusual receptions, &c., &c., will be welcomed. This journal reserves the right to reject any contribution deemed unsuitable.

THE SUBSCRIPTION PRICE

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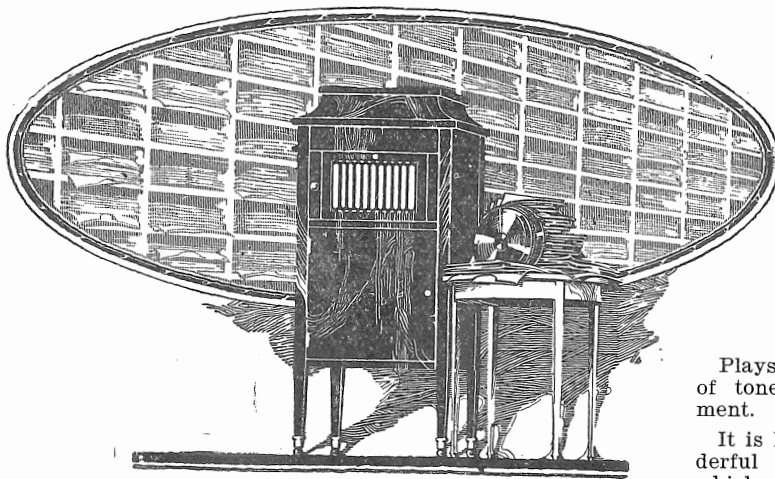
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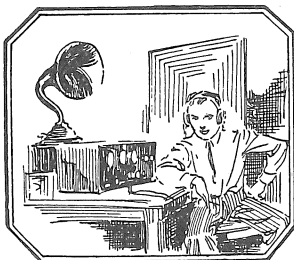
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THE QUEENSLAND
RADIO NEWS



A Magazine for Amateurs
A. T. BARTLETT, Editor

THE EDITOR'S PAGE

Twelve Months Old



THIS issue is Number One of the second volume. Twelve months have rolled by since the first issue of this journal ventured out to win the support of the radio fraternity, and I am anxious to take this opportunity of casting a retrospective glance over the short path of progress.

Last February, when our first issue appeared, there were those who expressed their fears of the immediate success of the paper. They seemed to think it would take a long time to work a Queensland Radio Journal up to a stage of solidarity.

Their fears were ill-founded, however, for the radio public of this (and other) States were not slow in extending a welcome hand to the newcomer. It won and held their confidence to such an extent that to-day it holds a reputation second to none in Australia.

Volume One contains some valuable Radio History so far as Queensland is concerned, for it was during this period that "A" class broadcasting in this State was celebrated. We, who are comparatively young, will, in 30 years time, look back upon this period in much the same manner as do many older people who remember travelling in the first electric tram car.

It would indeed be interesting to foresee to just what extent radio WILL figure in the lives of the people 30 years hence. Of course, transmission and reception will have reached a much finer stage of perfection than at present. In all probability, receivers will be fool-proof, trouble-proof, static-proof, minus aerial, and will most likely incorporate a few stages of television!

However, these things have yet to come, and in the meantime let's keep plodding on. "The Queensland Radio News" hopes to share the journey with the amateurs all the way, and to assist them to the utmost of its ability.

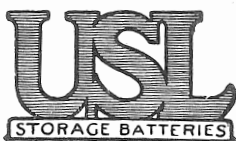
At all times we welcome suggestions and criticisms from our readers for the betterment of our paper. We endeavour to make it of interest to both amateur and broadcast listener alike, and we believe we have, in a measure, succeeded. However, there may be some who consider we do not publish enough technical matter, whilst I am constantly receiving letters requesting news of the programmes, artists, etc., etc.

It is my sincere wish that Volume Two will eclipse Volume One many-fold in both excellence of contents and production, and also in sales popularity. So long as the paper holds the confidence of its readers I feel sure it must do the latter. Let us all—and many thousands more—gather round this anniversary table 12 months hence, and although we may never meet face to face—here's my hand—you are my friend, and as friends let us help each other.

"U.S.L. Will Serve You Well"

Where to Get Your Wireless Batteries —New or—Recharged—

**Make a Note
of the
U.S.L.
New Service
Station
Address**



Service Station
CREEK STREET
BRISBANE
(Near Gresham Hotel)

You can have your Battery recharged at our New Service Station—Butler Bros. Aust. Ltd., Creek Street, Brisbane—near Gresham Hotel.

Commencing from Monday, February 1st, a modern Battery Servicing Station will be thrown open for your special benefit. Wireless enthusiasts will have the opportunity of discussing Battery and other Wireless matters with Mr. A. K. Lawton, President Wireless Institute of Australia. (Queensland division), who will be only too pleased to meet those who are deeply interested in Wireless.

Mr. Lawton, from February 1st, will be General Manager of Messrs. Butler Bros. Ltd., and will take a keen interest in the Battery Department of this Warehouse.

Make a visit to him, at any time from Monday, February 1st.

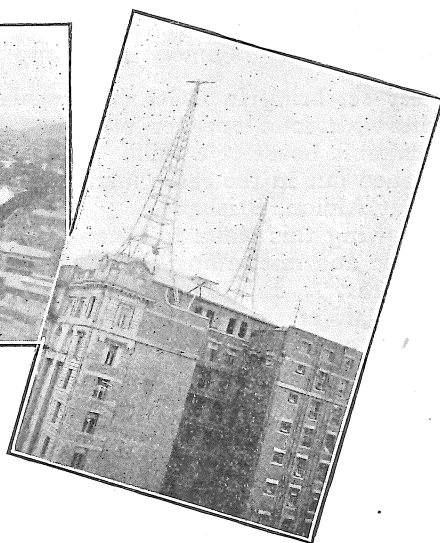
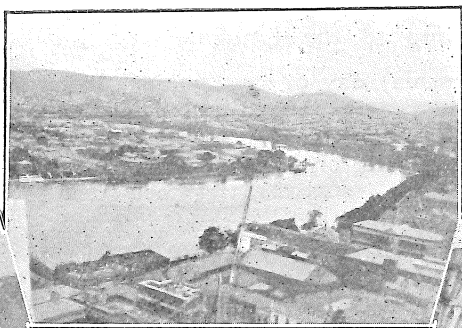
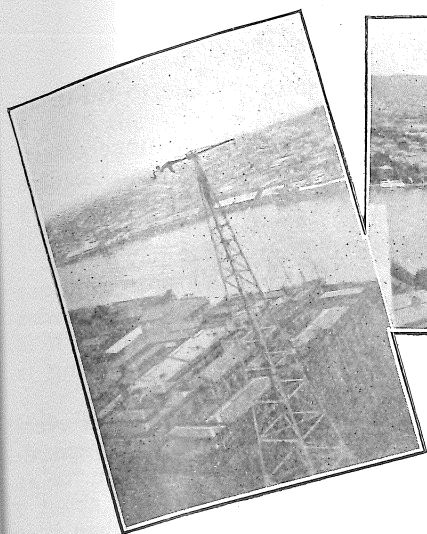
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"Monarch House"

CREEK STREET, BRISBANE



F. W. Stevens, Photo.

Left—Look closely and you will see the figure of a man lying along the span adjusting the aerial—hardly a comfortable position considering the 224 feet drop between himself and terra firma.

Centre—The Brisbane River winding its way through a sleepy city as seen from the towers. These pictures were taken at 6.30 a.m.

Right—The completed aerial system of Station 4QG, Brisbane. It is of the inverted "L" type.

"Up in the Clouds"

Erecting 4QG's New Aerial

4QG's aerial system is now complete. Early on Sunday, January 17th, the aerial was placed in position, and the work was carried out speedily and without mishap.

It just now remains for the finishing off of the erection of the transmitting gear, and the studios, before Big 4QG will be heard testing.

Asked to make a definite statement regarding the date of opening, Mr. Robinson smilingly declined, and replied: "We are not losing one minute. Big 4QG will be on the air as soon as a thorough series of tests has been accomplished."

Mr. Robinson added that on the completion of the tests, the temporary service would be moved into its new headquarters, and would transmit on full power—in a temporary capacity as heretofore—until the completion of the remaining portion of the station.

Following the official opening night, the service proper will commence to operate on the following daily schedule:—

- 1.00—1.30 p.m.—Market Reports, Weather Forecast News Services.
- 3.00—4.00 p.m.—Studio Concert.
- 6.30—7.00 p.m.—The Children's Hour.
- 7.00—7.30 p.m.—The Farmers' Session.
- 7.45—8.00 p.m.—Lecturette Session.
- 8.00—10.00 p.m.—Studio Concert.

It was your editor's pleasure to be recently shown through the station, under construction, and it is only by a personal visit to the station that the immensity of the task can be imagined. Judging by the work then completed and the rate the remainder was being accomplished, it seems to us that tests should be commenced early in March, and if little trouble is experienced it is not too much to hope that 4QG will be transmitting on full power before the end of March. Anyway—here's hoping!

Beware of the Radio Fakir!

A Timely Warning to the Unwary Against Misrepresentation

"My set bring in KGO (California) day or night with loud speaker strength," was the remarkable boast of a radio "expert" who has launched out in the radio manufacturing business at Albion, Brisbane.

Knowing this claim to be an absolutely impossible and misleading one, our technical adviser (Mr. A. E. Dillon) recently paid a visit to the lair of this expert to test the truth of his wild assertions.

The visit revealed the most barefaced and deliberate piece of misrepresentation ever attempted in the annals of Queensland radio history, and we think it only wise to warn our readers (especially those inexperienced in the realms of radio) to be on their guard against such unscrupulous persons.

Our representative paid the visit "in cog," and assumed the role of a "country cousin," who had just come down to buy a radio receiver. The factory consisted of a delapidated bench under a house. The bench was adorned with the stumps of many burnt-out candles, and reeking with the odour of oil lamps, etc., which at once suggested the inefficiency of his methods of working. The "expert" at once proceeded to create an impression by chatting off an effusion of incoherent technical expressions, detailing in glowing terms the capabilities of his set.

At our representative's request he tuned in "America." In a remarkably short space of time music was pouring out of the loud speaker, which, had it actually been from America (on a midsummer night, especially) would have stamped the set as the world's most wonderful receiver. But alas! the coils and the settings of the condenser revealed the station to be not KGO, but 2BL (Sydney).

This man was actually attempting to sell his set by scandalous and deliberate trickery! It was interesting indeed to see how nimble he was to plug in his headphones upon the termination of an item in order to obliterate the announcements and so hide the real identity of the station—on the pretense of readjustment.

Queensland to date has been practically free from this type of parasite who plays upon the credulity of the non-technical public, in order to palm off on to its worthless radio instruments at exorbitant prices. Sydney and Melbourne had their quota during the radio

"boom," and it took quite a while to rid these cities of their activities.

We realise that it is practically unnecessary for us to warn the majority of our readers against such persons—for a man with any knowledge of radio at all—however slight it may be—could see through the flimsy claims.

But probably there may be those who are uninitiated to the principles of radio who might be attracted by such a claim, and it is for their special benefit that this warning is issued.

A simple calculation on the part of an average schoolboy would also prove the impossibility of this reception for, from 8 p.m. to 11 p.m., Brisbane time corresponds with about 2 a.m. to 5 a.m. San Francisco time, when it is hardly likely that the broadcasting studio would be transmitting. In the winter time it is possible to receive KGO in the early evening until about 5.30 p.m. (which would correspond with midnight in California), but seldom with loud speaker volume equivalent to Sydney.

To Radio Dealers

MULLARD RADIO VALVES

First and second shipments sold within the week of arrival.

New shipment arrives next week.

Orders being booked rapidly—Avoid disappointing your customers. Get in early.

The Beauty in the Mullard Valve Calendar has arrived

Like Mullard Valves—a fine production. A page for every day in the year—and there is a Mullard Valve for every wireless circuit.

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Edgar V. Hudson

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Sole Distributors for Queensland

A Cocky's Letter to 4QG

(2 the Manager, 4QG Raidio Station.)

Dear Sir,—I have ritten this to congra—well—to thank you for the wonderful progroms i and my missis enjoi which are broadcasted by your station. I lissen in and tell the wife everyfin that i ear. Yer see, the wife is deaf but I find it very 'ard to sing to er the hitems by Mrs. Robert Bell. Perhaps u could arst her to sing in a deeper voice, as i ave a basso profundo. Would it be arsking 2 grate a favour four u to send me one of Basil's whiskers for my set. The missis would like me to give a speach some nite, so if u ever come short of hartists i will oblige. I understand all about wireless hexcept 'ow u can broadcast with hout the use of telephone wires to heach set. Me air-eul comes in andy four the missis 2 ang the washing hon.. I dont serpose u could sent out some doctors ints now an agin, cause i ave a ell of a boil on a tender place, and the missis as a touch of roomitism. Our cow Milly died last week. We've ad salt cow ever since, which reminds me of my first job. The first week a pig died and we ad salt pork for a week and then the orse died and we had salt orse for a week. When the dear old granmother died i left. I got Lundo last nite. The announser said Dame Clare Butt in selections and i eard im as distinkly as could be whisper "put on the record George." Talking about butts reminds me i bought a new goat called Lizzie from Jack, who as the store in at the villiage. The kids (mine I mean) are doin their ome lessons now. I believe in givin my family the same hedukation as me old man gave me. Where ud i be if it ad'ent been for my schoolin'. That feller "aeolian vocation" is a very andy chap to ave about the stewdio. Yes—one night he sings and the next he plays instruments and everyfing.

My hellest boy Tom i don't fink i'll hever rear—he's never 'ome now anights before nine ho'clock and i ear ees goin a courtin, and at is age. Why e was only forty-nine last birthday. By but the worlds a lot different than in mi youth. Me married daughter's baby cut 'er first teeth last Sunday. We 'ad a concert ere last week so I didn't lissen in that nite, bu i'm sorry i didn't. They wouldn't let me sing and dance when i got there. They ad a hawiiian dancer there doin the "shimmi." I erd the bloke next'a me tellin someone he was engaged to be married to er, but she wriggled out of it. The fouls are not lain 2 well. Sayin of fouls, were ad a cock fite in the paddok to-dey. Jerry won on a fowl. Mary Maco'brien is gettin married to Dave next week. 'e advertised for a farm 'and but as there was no hansver and e'ard more work than 'e could manage 'e 'ad to ask Mary to marry 'im. Dave aint got a set but the dokter sezs he as a leekin valve. Young enry as a black heye. 'e saw, has 'e thought, a gal with 'er back turned to 'im so he went ofer and said ello deariy. Yes 'es got a black heye, but when the girl turned round it was a city traveller with hoxford sacks on. I allus thought i was unlucky, but ise dead sure now. Why the way everyfin is risin, specially skirts, it seems my boys are goin to see more of the world than there dad. I oiled the

condensers with a tin of condensed milk. It didnt improve my set any. I chopped up one of the panels for chips but wot's one panel more or less. I took all the wire out of the set i could find to mend 2 legs of a chair this morin. Old brady sezs 'is are better cows than mine so ise is writin to dan for is opinion—'es the biggest cow i kno. I enjoi the musik by Lenin's orchestra. I've 'ave been wonderin if that the rushin' Bolshevik i been a 'earing of. I ope u will excuse me arskin u to let me say good by as the missis as tea ready. I reali intended to rite you a long letter.—Your radion-fan friend,
DAD WOOP.

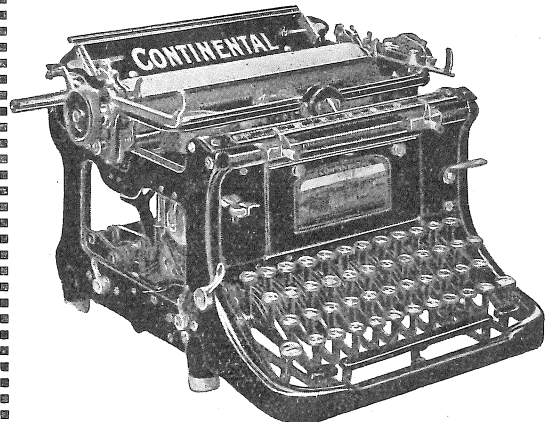
P.S.—'ave you got an ole pair of pants that 'ud fit tom.

P.P.S.—Don let ole macpherson listen in. 'e tunes off on Sunday when the collection is taken up in church and tom told me to give im my collection, and 'e broadcasts it to you. 'e puts it on the airiel and shoots it offs.—So long,

DAD.

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THEATRES AND BROADCASTING

Since the entry of wireless broadcasting into the every-day life of the community, every phase of the world's affairs—both in work and play has been brought to the fireside of thousands of homes, and as the theatre plays a large part in the recreative side of life, naturally this has also appeared frequently on the broadcasting companies' programmes—in Australia anyway. Taking the case of 3LO, Melbourne, not a week passes but at least one of the latest musical productions in the city is relayed. Of course, some people may say that if musical comedy can be broadcasted successfully, why do we not have "straight" plays. This has been tried out long ago, but it was found to be a failure. The only suitable position for the microphone is in the footlights, as this is the only place where it would be out of the way, and yet be able to pick up the voices. In legitimate play, the players are situated chiefly towards the back of the stage, and the words would come through to the listener-in only as a hum. In a musical comedy, soloists are almost on the footlights, and near enough to the microphone for successful transmission, whilst the orchestra is so placed that it comes through with remarkable effect. Many letters of appreciation of the Tivoli Theatre Orchestra have been received by 3LO, Melbourne, this has been a weekly feature for the last two or three weeks.

Occasionally the vocal and instrumental items have been relayed and listeners-in have appreciated this, according to reports received. In broadcasting a

musical comedy it is possible to transmit the whole of the performance, but in vaudeville this would not be successful, as certain of the "turns" are acrobatic tricks, cyclists, etc., and the only noise to come through would be the disjointed music by the orchestra—and even this stops at periods—and the gasps of the audience.

When the theatre broadcasting was first commenced, the pessimist thought that this variety of entertainment would not last, as the theatrical companies would object on the ground of the attendances diminishing, but it has been found the case is exactly the reverse. Many yells of laughter and applause of the audience in the hall, have been thought by the listener-in, to be overdone, and it has had the effect of making them attend personally, just to see, whether the laugh and applause is merited. In other cases, the music has made many people anxious to hear more of it. In England, the theatrical management still cling to the old idea that broadcasting affects the box office receipts, and listeners-in do not enjoy the same benefits as those in Australia.

The initial theatre broadcasting by 3LO, Melbourne, was on the night of October 13th, 1924, when Dame Nellie Melba's farewell to the operatic stage marked the official opening of the station. Since then all the main theatrical musical productions have been relayed, and this is one of the most popular amongst thousands of listeners-in.



BEARD RADIO SETS

Cost Less and are 100% Efficient

Only High Grade Trouble-Proof Parts are used throughout

SPECIAL FEATURES:

SIMPLICITY OF CONTROL, combined with hair-splitting final adjustment, thus ensuring volume with clear and pure tonal quality.

DISTINCT PANEL DESIGN enhanced by highly polished Silk Oak Cabinets.

Beard Standard 1 Valve Receiver, with all the improvements of the Beard multi-valve sets, built for headphone reception of local and interstate stations, £10/10/-, with Brandes Phones.

Beard Standard 2 Valve Receiver, includes a 1 Stage Amplifier, giving enough volume to operate a loud speaker on the local station, and consequently gives comfortable volume for the headphones on the interstate stations, £12/12/- without loud speaker, £16/16/- with Amplion AR111 Speaker.

Beard Standard 3 Valve Receiver is built to give ample volume on the loud speaker for the interstate stations under favourable conditions, £22/10/-, with Amplion AR111 Loud Speaker.

Beard Standard 4 Valve Receiver has been specially designed for broadcast listeners who are situated a long distance from the broadcasting stations, and who want to hear stations from a great distance with enough volume to operate a loud speaker comfortably, £30, with Amplion AR19 Loud Speaker.

S. L. BEARD LOSE STREET
SOUTH BRISBANE

Phone J4370

Demonstrations arranged. Other Sets made to your order and to suit your pocket.

Short Wave Work

(By 4CM.)

Signals on the short waves over the summer months have been very unreliable, even when static is nil. It is true that for weeks short wave DX has been hopeless owing to heavy atmospherics; we might say that there is on an average only one good day and night in seven.

Receptions of European stations are scanty, the English stations—2OD and 2NM—have not been logged since November last. The Yanks can be heard, but only the high-power stations can be copied. The strongest of them is U5AZI, U6CGW, and U1CMP.

The loudest interstate station is A2YI. Next to him we have 2YH, 2RC, 2JW. The Victorian stations 3BD, 3BK, 3BQ, South Australia 5BG, 5AY, 5DA. Nothing has been received of Tasmania, and the only West Australian station logged is 6AG. The New Zealand station, 2AQ, is the loudest, and next to him are:—4AC, 4AV, 4AW, 2XA.

The Honolulu station, NPM, is on good terms with Australian amateurs on account of some of the staff's visit to Australia with the U.S.A. Fleet last August. They state that they have good opinions of the Aussies. NPM's short wave set comprises of two 250 watt tubes with a 500 cycle note. He can be heard calling and working NPO any time between the hours of 8.10 p.m. local time, on a wave of 40 metres

KFUH, the privately-owned American schooner, which is touring around the Pacific Ocean, can be heard at any time, for his power is 1KW with a 500 cycle note. The operator is the well known Fred Roebuck, known in U.S.A. radio circles. KFUH works on a wave length of 37 metres.

A few of the Australia military air force stations can be heard working on short wave now and again. Trying to read them is sometimes hopeless, for the Morse signals are anything but proper.

DX in Queensland is very dead, the only stations that are operating on short waves are 4AN and 4CM. 4RB has been on the air the last few weeks on short wave, and with one five watt tube has communicated with U.S.A. 4AZ and 4CW at present are at a standstill, but 4CW contemplate doing something very shortly.

4AN has filled up a good U.S.A. DX list, consisting of a few Mexican and Chilian stations. He is experiencing bad luck with the transmitting tubes, for within one month two tubes have been burnt out. He contemplates installing a different make of tube to see if his luck changes. His power is usually 100 watts, using 1000U rectified A.C.

4CM's days are numbered. The station is being removed from Preston House to where—we do not

know at present. The conditions under which the station has been operating have been hard, so it is to be hoped that if 4CM is to be re-established somewhere, the conditions will be a little softer. The present time the station is using 100 watts with a note frequency of 500 cycles.

4RB is using a single 5 watt tube, and his signals are very strong, but his note is very low, making it hard to read through static. With this power input he has QSO, U.S.A., and holds a Queensland record for low power on short wave transmission. Well done, O.M.

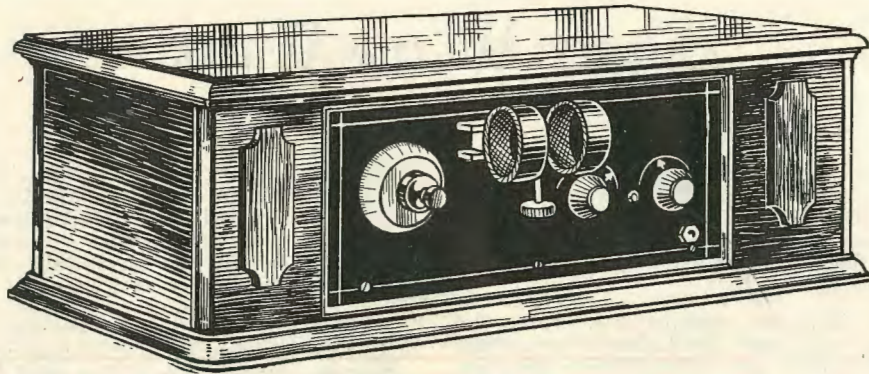
4KR, of Barcaldine, is installing a 120 watt transmitter on short waves, and should be heard testing on 35 metres any time now. Reports on his signal strength will be gladly accepted by the operator, Mr. Keith Richardson. Our editor struck a vital note in his editorial last issue concerning Queensland DX work. There is no excuse to prevent those holding transmitting licenses from getting on the air even with small power. The expense of a low power station is very moderate, and therefore we wonder what the trouble can be. It would be interesting to know just what report will be given when these amateurs are asked by the Government what they have been doing throughout the year. 4AN and 4CM have worked New Zealand stations, using one UV201A receiving tubes, which costs very little. The other apparatus when home-made would only run into a few pounds, thus we could honestly say £3 to £5 would make a very efficient short wave receiver. Let's be up and doing!

Australian Radio License Money

In reply to Mr. A. Blakely (N.S.W.) the Postmaster-General (Mr. P. M. Gibson) recently stated that during the year ended June 30, 1925, wireless license fees were received as follows:—New South Wales, £63,802; Victoria, £38,444; Queensland, £2465; South Australia, £6429; Western Australia, £6619; Tasmania, £1147; total, £18,909. For the half-year ended December 31 last receipts were:—New South Wales, £25,183; Victoria, £23,436; Queensland, £3564; South Australia, £5622; Western Australia, £2340; Tasmania, £531; total, £60,808. The total collections for the year and a half were £179,717.

The following amounts were paid to broadcasting companies up to the end of last year:—Farmers and Co., Sydney, £53,530; Broadcasters Sydney Ltd., £22,941; Broadcasters Co. of Australia, Melbourne, £31,078; Associated Radio Co., Melbourne, £13,442; Queensland Government, £1785; Central Broadcasters, Adelaide, £8400; Westralian Farmers Ltd., Perth, £7673; total, £138,859.

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COMPONENTS

| | £ | s. | d. |
|------------------------------------|-----------|----------|----------|
| Bakelite Panel, 18 x 8 x 3ft. 6in. | | | |
| Drilled | 0 | 18 | 0 |
| Base board | 0 | 2 | 6 |
| Ormond Sq. Law. Low Loss Con- | | | |
| denser | 0 | 16 | 0 |
| 2 Coil Holder Cam Vernier .. | 0 | 10 | 6 |
| 3 H. and H. Bakelite Sockets, | | | |
| 4/6 each | 0 | 13 | 6 |
| Battery Switch | 0 | 3 | 9 |
| S.C. Jack | 0 | 2 | 6 |
| 1 Box Engraved Terminals .. . | 0 | 3 | 3 |
| Grid Condenser and Clips .. . | 0 | 3 | 0 |
| Electrad Grid Leak | 0 | 2 | 6 |
| 2 Signal Transformers | 2 | 2 | 0 |
| Quantity Busbar and Screws .. | 0 | 1 | 6 |
| 2 Rheostats | 0 | 8 | 0 |
| Total | £6 | 7 | 0 |

ACCESSORIES

| | £ | s. | d. |
|--------------------------------|-----------|-----------|----------|
| 1 pair Brandes Phones .. . | 1 | 7 | 6 |
| 1 Phone Plug | 0 | 2 | 3 |
| 3 Columbia Dry Cells | 0 | 9 | 0 |
| 60 Volt B Battery | 0 | 18 | 6 |
| 2 yards Flex | 0 | 0 | 9 |
| Full Aerial Equipment | 0 | 14 | 0 |
| Set of 4 Mounted Coils | 1 | 1 | 0 |
| 3 Mullard D.06 Valves .. . | 2 | 5 | 0 |
| Total | £6 | 18 | 0 |

It is quite possible you can buy cheaper parts, and reduce the cost of making, but you cannot get the quality we are offering here at keener prices.

The Complete Set as set out with Wiring Diagrams and Instructions **£13-5-0**

Loud Speaker extra, ranging from 50/- upwards.

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Tuning in Theory and Practice

(Continued)

As previously mentioned, Inductance and Capacity have certain retarding effects on the current in a circuit. This retarding effect when combined with or without ohmic resistance, is termed the Impedance.

The Impedance is not a simple combination of resistance, inductance and capacity, but is a vector quantity as shown by the following equations:—

$$(1) Z = \sqrt{R^2 + (2\pi fL)^2}$$

For Inductance and Resistance

$$(2) Z = \sqrt{R^2 + (\frac{1}{2\pi fC})^2}$$

For Capacity and Resistance

$$(3) Z = \sqrt{R^2 + (2\pi fL - \frac{1}{2\pi fC})^2}$$

For Inductance Capacity and Resistance in Series

Where $Z = \text{Impedance}$ $\pi = 3.1416$
 $R = \text{Resistance}$ $f = \text{Frequency.}$

FIG. 1

It was previously mentioned that the effects of capacity and inductance oppose each other, so in equation (3) the impedances subtract, and tend to neutralise. As it is not possible to obtain a circuit with inductance without resistance, equation (3) can represent the condition of an oscillatory circuit with inductance and capacity.

The current flowing in such a circuit will be dependant upon condition I equals E divided by Z, or as shown in detail in (a) Fig. 2.

From this we can see that the greatest current will flow when the capacity impedance equals the inductance impedance, as shown in (b) Fig. 2, neutralising it; and the frequency at which the equation balances is termed the resonant frequency, or natural frequency of the circuit.

It can also be seen that the natural frequency will be dependant upon the LC (inductance and capacity) values, and any variation of these will vary the natural frequency.

We are thus able to combine capacity and inductance of definite values to give electrical oscillations of definite frequencies and wavelengths; and to produce circuits resonant to other circuits at any desired frequency.

From the equations I have referred to above, it will be seen that resonance implies that the E.M.F. of the inductance balances the E.M.F. of the capacity

as in (c) Fig. 2. This we can rearrange so that the inductance impedance equals the capacity impedance, (d) Fig. 2.

It will be obvious, then, that by means of the equations (d) Fig. 2, in which L is the inductance in Series, and C the capacity in Farads, we are able to calculate the natural frequency or wavelength of a combination of capacity and inductance in an oscillatory circuit.

The natural frequency could obviously be decreased by increasing either the inductance or the capacity, and increased by decreasing them.

Various arrangements of LC values are possible. Where the value of the inductance L, and the capacity C, is increased, the greater will the value of the inductive impedance and the capacity impedance become, and of course the greater their difference to non-resonant frequencies, and from equation 3, the less will be the resultant current. The resistance which is part of the inductance enters into the problem also, so that a mean has to be taken for the most selective values for a certain frequency.

RADIO CIRCUITS.

Two general arrangements of capacity and inductance are used in radio science for "tuned" or resonant circuits as (a) Acceptor Circuits, and (b) Rejector Circuits. These arrangements are shown diagrammatically in Fig. 3.

The Acceptor Circuit consists of capacity, inductance, and resistance in series. The capacity may consist of an aerial of elevated conductors and earth, with an inductance coil, and this would be termed an open oscillating system. A condenser and an inductance coil in series would be a closed oscillating system.

It is termed "acceptor" circuit, because the greatest current flow takes place when the frequency of the circuit is in resonance with the frequency applied from the disturbing circuit, such as an aerial system, and all circuits of the same LC value are acceptor circuits for the same frequency.

| | |
|-----------------------------|--|
| (a) $I \text{ (Current +)}$ | $= \frac{E \text{ (voltage)}}{\sqrt{R^2 + (2\pi fL - \frac{1}{2\pi fC})^2}}$ |
| (b) $2\pi fL$ | $= \frac{1}{2\pi fC}$ |
| (c) $2\pi f$ | $= \frac{1}{\sqrt{LC}} \text{ or } f = \frac{1}{2\pi\sqrt{LC}}$ |

FIG. 2

If, however, the value of the inductance is increased and the capacity lessened, the greater will be the difference between their impedances, and the less the resultant current at any out-of-tune or non-resonant frequencies.

From equation 3, it will be seen that at resonant frequencies the resistance of the circuit practically governs the amount of current flowing in the oscillating circuit. This is shown on the resonance curve charts. From these we see where the resistance is large in proportion, the change of current at non-resonant frequencies is small. Thus impulses at other than resonant frequencies, would cause considerable current flow in the oscillating circuit.

If, then, it is desired to make resonant the circuit to one frequency of oscillation, the object would only be partly obtained, because other frequencies would produce quite an appreciable current also, and interfere with the resonant frequency impulse.

The curve is seen to be broad and flat so that one of the causes of broad, non-selective tuning is the appreciable resistance in the oscillating circuit. Where the resistance in the oscillatory circuit, however, is comparatively small, the change of current value near resonant frequencies is considerable. Non-resonant frequencies therefore produce little current in the oscillating circuit, while producing greatest current at the tuning frequency, and so avoid interference, and provide selectivity and sharp tuning.

Practically, this means that large inductance coils tuned by a condenser are not so selective at varying frequencies or wavelengths as small coils (inductances) for a small range of frequencies.

This has particular reference to radio reception where the problem is to so proportion the electrical constants of the aerial and secondary oscillating circuits that they will be in resonance with the frequency of the incoming impulse from the radio waves and also intercept the greatest amount of energy.

The latter part of the problem is also affected by the coupling between the open (aerial) and closed (receiver) oscillating systems.

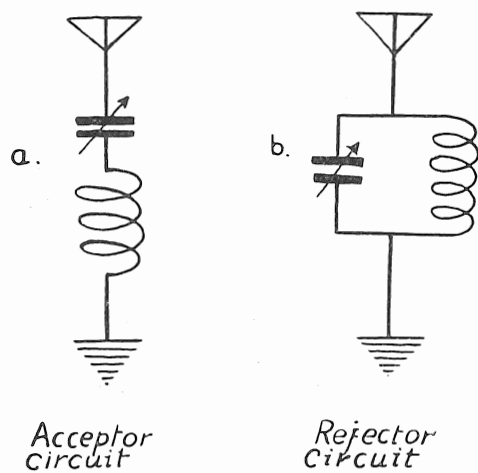


FIG. 3

THE REJECTOR CIRCUIT.

The second general method, the Rejector Circuit, (b) Fig. 3, is an arrangement of capacity and inductance connected in parallel. In this case the conditions differ from the Acceptor Circuit.

The condenser and inductance form a closed oscillatory circuit with a certain natural frequency. When an impulse is applied, however, the condenser and inductance both receive the same value of E.M.F., but the current in the inductance will be retarded an angle of 90 degrees in phase, and that through the condenser will rush to the charge at a maximum value of 90 degrees ahead; the currents in these two branches are thus said to be 180 degrees out of phase.

Therefore the current in the main circuit will be equal to the difference between that in the inductance, and that in the condenser, as they are opposite in direction.

Thus, if an oscillatory impulse were applied to this circuit at a resonant frequency, the currents in the inductance and condenser would be equal and opposite, and no current would flow in the main circuit, although a big current flows around the closed circuit of the inductance and condenser.

This arrangement then, at resonant frequencies appears to offer a high impedance to, and reject the resonant applied impulse from passing into the main circuit.

Resistance again plays an important part. When resistance is a part of the inductance the current through it does not be retarded by an angle of 90 degrees, but at an angle which will depend upon the impedance, which will lessen as the resistance increases. There is thus a difference in the currents flowing in the inductance and the condenser, and a current equal to this difference will flow in the main circuit, and the greater this resistance the greater this current flow.

This means that at non-resonant frequencies a "make-up" current will flow in the closed oscillating and main circuits equal to the difference between inductance and condenser currents.

Practically this has the same non-selective and broadening effect on tuning as in the Acceptor type of circuit.

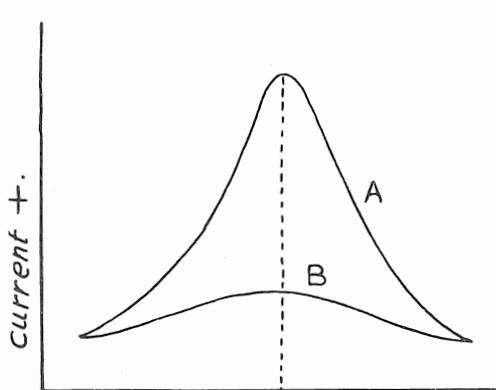


FIG. 4

- A.—Amplitude of Current in an Oscillatory Circuit of Minimum Resistance.
- B.—Curve showing Current in Circuit having more Resistance than A.

COUPLING.

Coupling is attained by (1) Direct Coupling, (2) Magnetic Coupling, and (3) Capacitive Coupling. This is important, but the subject requires more time to adequately handle it, and it is only proposed to mention a few points.

As mentioned previously, the mutual inductance of the coupling has a considerable effect on the inductance, and consequently, must affect the resonant frequency of the circuit.

A close coupling transfers the energy more easily, but the second circuit which has been set oscillating transfers back energy into the first circuit and causes damping and slight out of resonance.

In transmitting sets, this causes a broad tuning two wave effect which is very undesirable.

Coupling must not be too loose, however, or sufficient energy will not be transferred to the second circuit.

Direct coupling, due to its closeness and the resistance of the coil, tend to broad tuning.

Inductive coupling reduces damping effect and sharpens the resonance curve, but reduces the energy transferred to the secondary circuit.

These principles govern the whole matter of tuning, and can be reasoned out from the fundamental circuits containing Capacity, Inductance, and Resistance.

In conclusion, good tuning requires (a) a resonant oscillating condition for maximum current, (b) the resistance must be lowest for most current, and for sharp rise in the resonant current value, (c) coupling and mutual inductance must not be too great to cause excessive damping, (d) the tuning inductance should have low self capacity, low ohmic resistance, good inductive efficiency, absence of dead end effects, and a fine degree of variation of coupling.

The "Terms" System in Radio

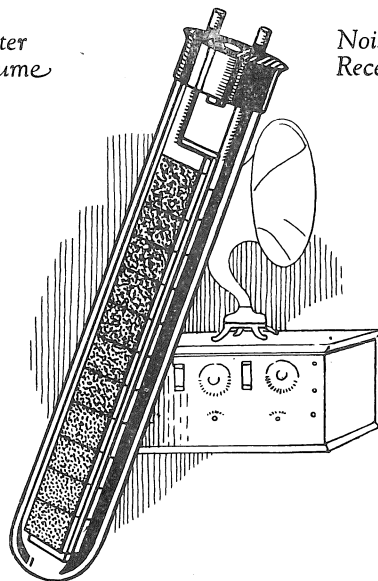
Owing to a typographical error in our January issue a place of information valuable to intending purchasers of complete sets and to radio dealers on the lookout for a profitable agency was omitted from the advertisement of the Australian Wireless Company, Ltd. In that part of the advertisement setting down the prices and terms for this firm's sets the statement of "Terms" purchase should have read: "10 per cent down. The remainder spread over 12 months."

The Australian Wireless Company Ltd. was the first to realise that the only way to really popularise radio was to supply a set capable of long distance reception and to supply that set by some system that would enable a modest purse to purchase such a set. The generous terms offered by this company certainly should achieve this. This is a truth that gramophone companies discovered many years ago, and is responsible for a home without a gramophone being the exception. Under this system we will very soon find the radio-less home the exception also.

An offer in the advertisement of the Australian Wireless Company's appearing in this issue enables live dealers in Queensland to participate in the prosperity accruing from this firm's enterprise.

Better
Volume

Noiseless
Reception



"EUSCO" "B" Accumulators

It is folly to pay fabulous prices for imported tariff-laden accumulators, when the EUSCO—Australian made and guaranteed—may be bought at **LESS THAN HALF** the price!

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PRICE per 2-Volt Cell **2/-**
(fully charged) is only

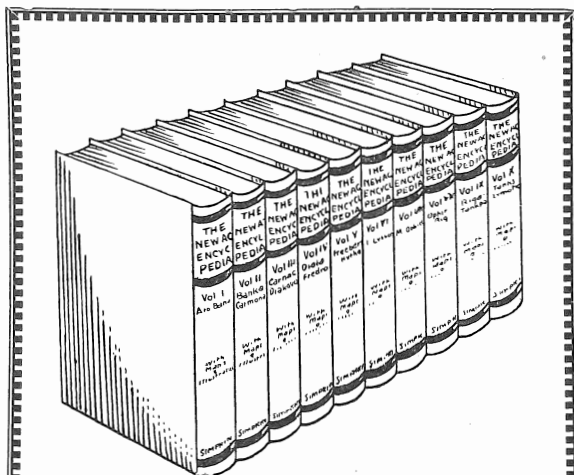
Thus a 40-Volt Accumulator may be bought for £2 (unassembled).

An extra charge of 25/- is made for assembling cells in acid-proof carrying case (with lid), burning on connecting lugs and connecting up.

Ask your dealer for EUSCO A and B Accumulators, or come direct to—

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Some Golden Rules

PUT AERIAL HIGH.

The first golden rule in erection is to place your aerial as high as possible. The height of your aerial is not the highest point of it; it is the mean height from the base, e.g., if, for instance, your aerial is erected on the flat roof of a house 60ft. from the ground, the height of your aerial is the distance from the roof and not from the ground. Supposing that one end of this aerial is 1ft. from the roof and the other end 6in. from the same roof, then the effective height of your aerial is 9in. Similarly, if one end of your aerial is 100 ft. high and the other end 50ft. high, the effective height of your aerial is 75ft. Roughly speaking, if you double the height of your aerial you quadruple the receiving range of your set.

FRAME AERIALS.

You can, of course, have your aerial inside the house on a frame, but no frame aerial, however good, can equal the efficiency of an outside aerial except where there are special local conditions. One of these exceptions would be in the case where there is a great deal of electrical noise outside the house, such as is caused by the proximity of trams or a picture palace. This might well make it difficult to receive distinctly with an outside aerial, in which case a frame aerial would be much better.

THE DOWN-LEAD.

Another golden rule is that the down-lead should be fixed either at the end or in the absolute centre of the aerial, whichever gives the shorter run to the instrument. The down-lead should never be fixed at any other point, and it should be free of all obstructions, carefully insulated, and kept at least 2ft. from the walls.

THE EARTH-LEAD.

Your earth-lead should be as short as possible from the earth terminal of the set to the earthing point. If the earth-lead touches anything on its way to the earthing point it should be insulated just as carefully as you insulate your aerial from points of contact. A main cold-water pipe usually provides a very good earth, especially if connection can be made to this pipe at a point close to where it enters the earth. When making the connection between the earth wire and the pipe, the latter should be scraped clean and the wire carefully sweated or clamped to it. Gas or hot-water pipes do not usually make good earth owing to presence of red-leaded joints.

When you are satisfied that your aerial is well erected and that your earthing connection is sound you may then proceed with arranging your instrument.

The housewife of Toulouse (France) is assisted by radio to shop thriftily. The Mayor has installed wireless loud speakers in the chief shopping centres, and periodically these announce from the central market the reasonable wholesale and retail prices for the day. No chance of profiteering in that city!

PERSONALITIES

Two well-known amateurs—Mr. Keith Richardson and Mr. Hobler (of Barcaldine)—are at present holidaying in Brisbane. 4CM was heard the other day giving them some friendly advice on the construction of a 100 watt short wave transmitter. Anyway, they are taking back a big bottle (not moonshine) to do the deed. We hope they have better luck with it than 4AN has had with his lately.

Mr. W. Stewart, late of the Marine wireless staff, is now attached to VIB as operator.

4RB has inserted rather a neat line in his latest Q.S.L. card. It reads thus: "Queensland—the Land of Sunshine, Flowers and B.C.L.'s." Ho! Ho! Not a bad 'un, Brownie!

Mr. J. Price, of Wireless House, is at present in Sydney on a business trip.

Mr. W. Oxlade, of Red Hill, Brisbane, successfully passed the amateur radio transmitters' examination, and says he will be on the air in a few months. Mr. Oxlade is a student of Mr. Runge, who runs a Morse class when he isn't selling super-hets over Finney's radio counter.

Mr. Tom Starkey, of the Nundah Radio Club, is most enthusiastic over a filter device he has constructed, designed to utilize the house supply for H.T. current to the tubes in his radio set. He is now endeavouring to light the filaments by the same process. Well done, Tom, you have a big task in front of you—but there's nothing like aiming high.

Where will these boys end? Les Kerlin, of Albion, recently rigged up a loop aerial on his car. With a special receiving set he proceeded to the speedsters' delight—the new Redcliffe Road. Then he "opened her throttle" and stepped on the gas. Whilst travelling at a dizzy speed he claims to have received 3LO quite clearly.

Mr. Percy Grant (of 4HB fame) is at present in Townsville installing receivers. Wethinks he will have some static to wade through, although Percy is one of the "hoptomistic" chaps you simply can't keep down.

Mr. Prudence has left the staff of Home Radio Service, and is at present in Sydney.

Mr. Trewearn, of Parbury House, Eagle Street, has installed a five-valve receiver. Although 4CM is but a stone's throw away, Mr. Trewearn states that he can tune-in Brisbane, Sydney, or Melbourne, without the slightest interference from 4CM.

Mr. Len Pass, of Messrs. Hamilton and Pass, asserts the best radio ever he heard was during his Xmas cruise round the Bay. The volume from the southern stations were so great that switching off the filament of his valves did not materially affect his signal strength. Gee—some set!

Mr. G. W. Stevens (Engineer at 4QG) had rather an amusing experience the other evening. Walking along the street he noticed that a few children who had been playing on the footpath suddenly stopped and were gazing at him very intently. As he passed one of them said: "That's Basil!" Oh yes—it's a cat and dog life all right.

Ever try a Radio Sundae? The Wattle Cafe in Adelaide Street is dishing them up in fine style. Afternoon tea a la 4QG's afternoon session. This is the second cafe to instal radio as a means of entertaining patrons.

There is a mild but mysterious outbreak of sore mouths among the keener amateurs of Brisbane. Upon investigation by a medical man it was found to be sunburnt mouth-roofs, probably caused by gazing at new 4QG's lofty masts from the streets below.

We've heard of whisky fiends selling up the happy home for drink; we know gamblers who have pawned the baby's bottle to place a few shillings on a tired gee-gee—but, gentle reader, there is a new vice in our midst. Read what "Ex-Sandow" has to offer in our "For Sale" column this issue. Ah! believe me—there's a heart throb in it.

Mr. Percy Cutlack, remembered by some of the old-timers by his association with the old Institute as assistant secretary, has again returned to the radio flame to get his wings singed. He is at present constructing a five-valver to his own design.

As reported elsewhere in this issue a Brisbane Sunday School recently held a Wireless Sunday Afternoon Service by listening-in to the Bible Class Service from 4QG. If it does nothing else it should shepherd some of the straying lambs back into the fold, for who could compare the old swimmin' hole or even the cricket pitch to listening to a four-valver—even if it is in Sunday School.

Mr. H. L. Hobler (A-4DO) advise us that he transmits nearly every night on about 70 metres, and would welcome any reports on his signals.

RADIO CURES



HERE seems to be no doubt that wireless will, in the future, make us all healthier. At sea, many lives have been saved, because ships who carry no doctor can easily get in touch with a medical man on another vessel, and the treatment is received back on the spot. It might be awkward if a weather forecast happened to get mixed up with "the mixture as before;" the further outlook of the patient may be rather unsettled.

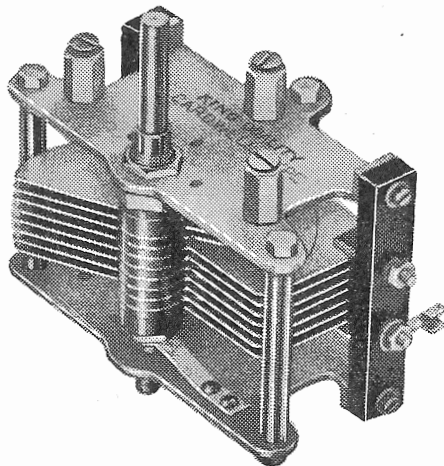
The talks on "Health," by Dr. Stanley Argyle, from 3LO, Melbourne, do more good than half a dozen lectures in a public hall. People will listen where they will not go out, and also, staying at home means they do not run the risk of being run over by a motor car or bus.

Does music have any effect upon our well being? You feel much better when you hear a stirring march, played by the Australian Royal Air Force Band, but again, when the girl in the next flat tries "Hark, the lark," and misses the top notes, your appetite fades away. I visited my doctor recently and found him gazing in a catalogue at a picture of a long pipe with a gramophone horn on the end. He explained it was not a stethoscope, but a saxophone, and he was wondering if he ought to learn to play one. Since the entry of wireless into every-day life, many people had informed him that music had cer-

tain curative powers, and he expected that in a few years' time he would be prescribing a carefully made up sonata, instead of a dose of castor oil. In further conversation he said that everything in nature oscillates to a certain rhythm, and when you're ill, it means that your electrons are out of step and are causing atmospheric, so to speak, in your system. Fortunately, these electrons have an ear for music, and a little bit of jazz would soon put them in their proper place, and they go happily one-stepping again. The time will come when doctors will ask, not what you've been eating, but what sort of a wireless set you've got. If you complain of a headache he will put it down to too rich programme by the Brunswick City Band, and order a course of instrumental music by the Buckley and Nunn Studio Orchestra to be taken thrice daily. The time may come when the Health Department may ask the broadcasting companies to transmit something effervescent, during an epidemic of influenza, as a tonic; whilst during a heat wave all sentimental songs would be barred. Something cool would be required, as "Sea Shanties" or a talk about "Adventures in Greenland."

Probably this is exaggerating but there may be something in it. Some advertisements on the back page of journals will read: "Buy our 10/- crystal set, worth a guinea a box," or a picture of Grandpa jumping over a fence with headphones on. He will have got that 3LO feeling.

We have those "hard-to-get" parts!



CARDWELL LOW-LOSS CONDENSERS:
Standard among American amateurs, Ground-rotor, ball-bearings, hard-rubber insulation, and rigid three-point frame. Price, 37/6.

AMPERITES:

Automatic filament controls, or "ballast resistances." Amperite replaces an expert operator, a rheostat, and a voltmeter. A style for each type of tube. Price, 7/6.

MODERN TRANSFORMERS:

Special type for Low-loss Sets, high ratio—10 to 1, No. 111. For broadcast receivers use No. 110, ratio 4 to 1. Price, both types, 19/6

TAPA PLUGS AND SOCKETS:

The original English tapered plug connector. Perfect contact, beautifully finished. Five colours. Price each, 1/-.

MAJESTIC LOUD SPEAKERS:

By far the finest cheap Speaker on the market. 14 inch non-resonant Pyrolin horn. Adjustable reproducer. Note our Price, £4.

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A Radio Dictionary

(We feel the necessity for an authoritative reference to the terms used in radio to which our readers can at any time refer when they come across some technical expression, whose exact definition is, perhaps, beyond their ken. We herewith present to our readers the second instalment of this Dictionary which will be continued monthly until its completion.)

AERIAL INSULATORS.—Insulators made of porcelain, glass or other insulating material, used for connecting the aerial mechanically to its supports, but at the same time separating it electrically. To be effective, the insulators must be so shaped as to reduce the surface leakage in wet weather to a minimum, and at the same time to be capable of withstanding considerable mechanical stress. The outside surfaces should be highly glazed in order to limit the deposition of conducting material such as soot.

AERIAL RESISTANCE.—The resistance offered by an aerial system to the passage of high frequency currents is not a simple ohmic resistance, but is made up of three separate components. When an oscillatory current flows in the aerial system of a transmitter the power delivered to the aerial is the product of the effective resistance squared times the aerial current. The effective resistance may be split up into three components as follows:—(a) Radiation resistance, (b) equivalent resistance accounting for dielectric losses, and (c) ohmic resistance. Multiplying each of these by the square of the current gives respectively (a) the useful power radiated into space, (b) the dielectric losses, and (c) the power converted into heat in the wires themselves. The aerial resistance is not a constant quantity, but varies with the wavelength of the oscillations, usually having a maximum value at some particular wavelength. Taking the components separately, it is found that the ohmic resistance is fairly constant at all wavelengths; the radiation resistance reaches a sharp maximum at the natural wavelength of the aerial, and the dielectric losses are roughly proportional to the wavelength. The most efficient aerial is one in which the radiation resistance is high compared with the ohmic resistance and dielectric losses. This applies to both transmitting and receiving aeriels.

AERIAL SWITCH.—A change over switch by means of which the aerial is connected to the sending apparatus or receiving apparatus as required.

AERIAL TUNING CONDENSER (A.T.C.) and AERIAL TUNING INDUCTANCE (A.T.I.)—A variable condenser of inductance connected in the aerial circuit for the purpose of varying the oscillation constant—i.e., for tuning the aerial circuit to respond to a particular frequency or wavelength. Sometimes both are varied simultaneously, but it is more usual to have a variable condenser in conjunction with a fixed or tapped aerial coil.

AETHER.—See ether.

AIR CONDENSER.—A condenser or either variable or fixed capacity in which the dielectric or insulating

material between the plates consists of air at ordinary atmospheric pressure.

AIR CORE CHOKE OR TRANSFORMER.—A choking coil or transformer whose magnetic circuit contains no iron or other magnetic material. An air core choke is usually included in a circuit to offer a high impedance or opposition to the passage of high frequency current and a low impedance to a current of low frequency. Air core transformers are used mostly for high frequencies for transferring Radio frequency energy from one valve to the next in Radio frequency amplifiers.

AIR GAP.—In a magnetic circuit consisting of iron a gap is sometimes included in such a position that the lines of magnetic force have to pass a short distance through air. This is done so that the relationship between magnetising ampere turns and magnetic flux shall obey more approximately a linear law—i.e., to make flux more nearly proportional to the magnetising current. This principle is sometimes applied to intervalve transformers. The inclusion of the air gap considerably increases the reluctance of the magnetic circuit, and a greater number of ampere turns are required to produce the same flux density. An air gap results in the production of magnetic poles, N.S.; one on each side of the air gap, which exert a demagnetising effect, and so reduce the residual magnetism to a minimum when the magnetising current is switched off.

ALTERNATING CURRENT.—An alternating current is one which flows first in one direction and then in the opposite direction around a circuit alternately. One way round the circuit is taken as positive and the other way as negative. The time intervals for the two directions are usually equal, and the instantaneous values of the current are equal in magnitude but opposite in direction after expiration of equal fractions of the intervals. Alternating E.M.F.'s and magnetic fluxes may be defined in a similar manner. The sequence of values attained by the current in passing through one complete set of positive and negative values is called one CYCLE (or wave when the current is plotted as a graph to a time base). The time of one complete cycle is called the period or "periodic time," and the number of cycles passed through in one second is called the frequency or periodicity.

ALTERNATION.—A term sometimes used to signify one-half of a complete cycle of an alternating quantity, i.e., that sequence of values from zero to maximum (positive or negative) and back to zero again.

ALTERNATOR.—A dynamo or generator for producing alternating currents.

ALUMINIUM RECTIFIER.—See Nodon Valve.

AMMETER.—The usual term for the word "ampere-meter." An instrument for measuring the current in amperes. The scale is graduated to read directly in amperes, or a simple multiple thereof.

AMP.—Abbreviation for ampere.

AMPERAGE.—The current in amperes in a circuit.

AMPEREHOUR.—The commercial unit of quantity of electricity. It is that quantity which passes when a current of one ampere flows for one hour, or its equivalent, for example, half an ampere for two hours.

AMPERE-HOUR CAPACITY.—The output rating of an accumulator battery in ampere-hours. The rating is sometimes based on continuous discharge and sometimes on intermittent discharge (ignition). The former rating is the true one, the ignition rating being twice the actual capacity of the battery.

AMPERE-METER.—A meter for measuring the flow of current in amperes.

AMPLIFICATION.—See Amplifiers

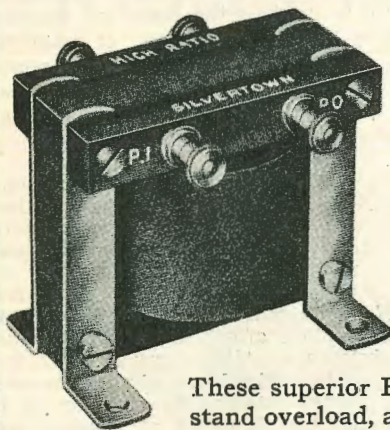
AMPLIFICATION FACTOR OR AMPLIFICATION CONSTANT (of the 3/electrode valve).—The ratio of the change of plate voltage necessary to bring

about a given change of plate current, to the change in grid potential required to produce the same change in plate current; or the number of volts by which the plate potential must be lowered to maintain the plate current constant when the grid potential is raised one volt. It is the maximum voltage amplification which the valve itself can give theoretically. Example: Suppose that at zero grid potential the plate current with 80 volts on the plate is 1.35 milliamperes. Now raise the grid potential by, say, positive 1 volt, and adjust the plate voltage until the plate current is again 1.35 milliamperes, and suppose that the plate potential is now 74.5 volts. Thus a change of 1 volt in the grid potential has an effect of 5.5 times that of a similar change in the plate potential. The amplification factor is then 5.5.

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The Beginners' Technical Page

SOURCES OF ELECTRICITY.

In the last article of this series (see December issue), in which we discussed the Electron Theory, we saw how all matter is ultimately composed of particles of electricity—Electrons—providing an inexhaustible source of Electrical energy. The term "generator" used in an electrical sense to define a source of electrical energy is a misnomer. Energy can neither be created nor destroyed; it already exists. We can, however, transform energy from one kind to another, producing certain results in the process of transformation. A so-called generator can no more generate the electricity which it causes to flow through a circuit than does a pump generate the water which it impels through a pipe.

The energy utilised in driving the pump is converted into the energy contained in the moving stream of water. This flow of water could be again

converted into mechanical energy by, say, causing it to drive a water motor or turbine.

Similarly, the dynamo, or generator utilizes energy from some source of motive power which rotates it. The revolving generator causes the electron stream to move around the conductor, analogous to the flow of water in the pipe, while this flow of electrons can in turn, be transformed to other forms of energy, such as light, heat, motive power, etc.

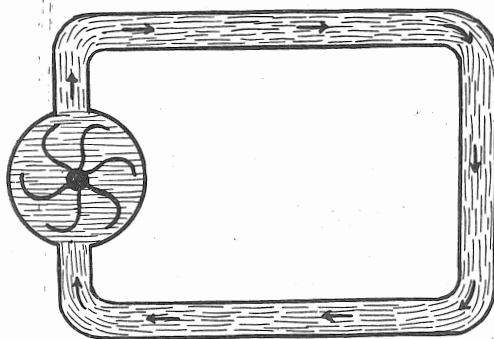
It is obvious that electricity—electrons—exist as a source of potential energy; but before we can produce the effects with which we are familiar, we must cause these electrons to move in the substance of which they form part.

Referring again to our hydraulic analogy illustrated in (a) Fig. 1, we will see that, if we rotate the centrifugal pump attached to our system containing water, we will cause a pressure to be exerted on the water on one side of the pump, while on the other side a suction will be created—amounting to a decrease below the normal pressure. This difference in pressure across the ends of our system will cause a movement of the water particles from the high pressure end to the low pressure end in an attempt to establish a balance. As long as the pump is kept rotating, a kind of a vicious circle will exist—not unlike a dog trying to catch his own tail—and the water will continue to flow round the pipe.

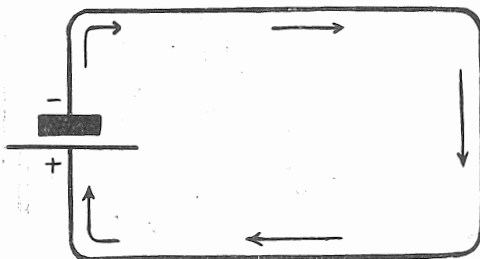
In electrical practice, the conducting wire is analogous to the pipe, while its free electrons could represent the water in the pipe. If we could apply a difference of electric pressure across the ends of the wire by taking some of the electrons off one end and placing them on the other, the electrons would tend to move around the wire in a similar manner to the water in the pipe—this flow constituting an electric current. This is shown in (b) Fig. 1.

In practice this is done by either mechanical or by chemical means, both of which are comparable, for analogous reasons to the pump in our hydraulic analogy. In the former means of producing the movement of electrons, or current, a dynamo or generator is used, which requires to be driven, but is capable of transforming enormous amounts of mechanical power into electrical power—dependant, of course, upon the size or capacity of the plant power.

For the production of the current flow for radio receiving purposes, however, the second or chemical means is utilised on account of its convenience. This is the function of dry cells and accumulators.



(A)



(B) FIG. 1

- (a) Hydraulic analogy of current flow through a circuit. Centrifugal pump represents battery or dynamo which produces a difference in pressure across the ends of the circuit.
- (b) An electrical circuit showing similarity between the two.

BATTERIES.

We will now consider briefly what takes place in our battery and supplies the current we use.

Two types of batteries are used in radio work—those made up from Primary Cells—the dry cell being the most popular—and Secondary Cells or Accumu-

lators. The theory of these latter was dealt with in detail in our issue of May, 1925, and will not be repeated here.

In the manufacture of dry cells, which are extensively used in radio work as "A" and "B" batteries, the process is exactly the same. In the case of the "B" battery, however, a very small current discharge is necessary compared with the "A" type, while a higher voltage is required. As the voltage of any individual cell, when new, remains practically the same, i.e., 1.5 volts, regardless of the size of the cell, to secure the higher voltage, a large number of cells are connected in series. This arrangement is known as a "Battery," and the total voltage is equal to the number of cells times the voltage of one cell (1.5 volts).

As a large current is not required from the "B" battery the individual cells can be made relatively small. The only difference between the cells of the "A" and the "B" battery is in their size.

We will now see what they contain, and how they are constructed. Beginning with the centre of the cell, we find a carbon rod. The carbon generally used for this purpose is that which clings around the gas retorts when coal is coked, and is particularly hard.

To form these irregular pieces of carbon into the regularly shaped rods used in practice, they are fed through a machine similar to a coke crusher, which has heavy iron champing jaws, and which literally chews the coke up into smaller pieces. Later these pieces are placed into a roller mill, where they are subject to the crushing action of polished steel rollers, which grind the carbon into a fine powder. Binders are mixed with the powdered carbon and the whole black mass is kneaded into a kind of a paste. During the crushing and kneading operations, the carbon and binders are heated. The heated mixture is then put into containers of a hydraulic press, when the material, which is still hot, is squirted through the dies to give the shape of section in which it is eventually used.

The rods or plates, after extrusion, are baked in a kiln for a week or ten days, which makes them almost as hard as the original gas retort carbon, but of the necessary shape. Before baking, the carbons are drilled on one end to accommodate the terminal.

Some of the powdered carbon is then mixed with a high grade manganese dioxide, and acts as the depolarising element in the cell. This is made into a paste by mixing it with sal-ammoniac and zinc chloride solution. The paste is then moulded around the carbon as shown in (2) Fig. 2, to the thickness of about half an inch, and is bound in place by several layers of blotting paper and cheese cloth. See (3) Fig. 2. These latter are also saturated with the sal-ammoniac zinc sulphate solution. The carbon surrounded by the depolarising block is then placed into a pure zinc container which acts as the zinc electrode (4) Fig. 2, in the bottom of which are several layers of blotting paper also saturated with the exciting paste of sal-ammoniac and zinc chloride. (5) Fig. 2. The space of about one-eighth of an inch remaining between the case and the block (8) Fig. 2, is now filled with the exciting paste also. This paste never dries hard, but sets to a cheesy consistency, and rises all round the block to a little below the level of the top. Into the space left around the

edge is run a little ring of ozokerite, which seals in the paste. A layer of sand or rice husks (6) Fig. 2, to form an air space for the gases to collect in, covered by a diaphragm of blotting paper, is then placed in the top of the cell, and melted pitch or sealing wax is poured in to seal the cell.

In high tension or "B" batteries, the cells are blocked together with a small cardboard separator between each cell, and fitted into the cardboard case and the whole is filled with molten paraffin wax. This ensures a maximum of insulation between the units of the battery, as well as insulating the whole battery from earth leakage, and the telephone noises from such leakage.

THEORY OF A CELL'S ACTION.

While the principles underlying the production of electromotive force by chemical means remain the same in primary cells, the chemical reactions which take place in some cells are far more complex than in others.

This is so with the Leclanche type or dry cell, and so for simplicity of explanation, we will describe the action of a simple elementary cell composed of zinc and carbon plates in a dilute solution of hydrochloric acid and water.

This acid is denoted by the chemical formula HCl, which means that each molecule of the acid consists of one atom of hydrogen (H) combined with one

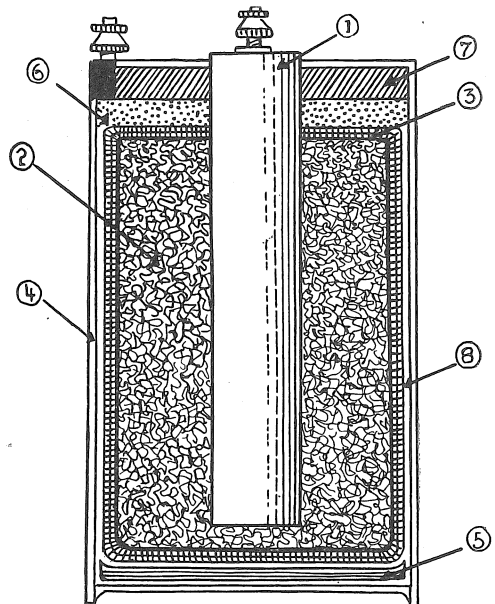
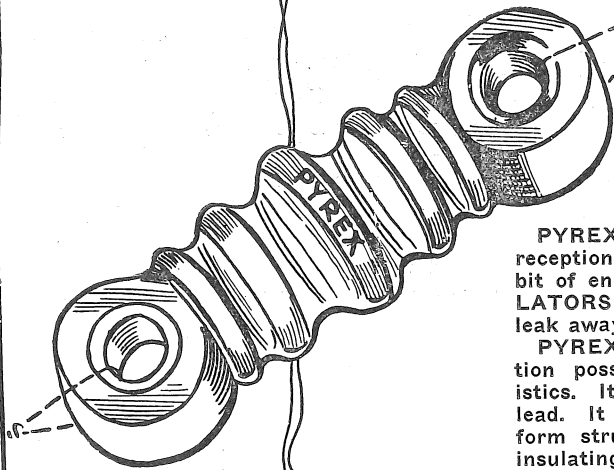


FIG. 2

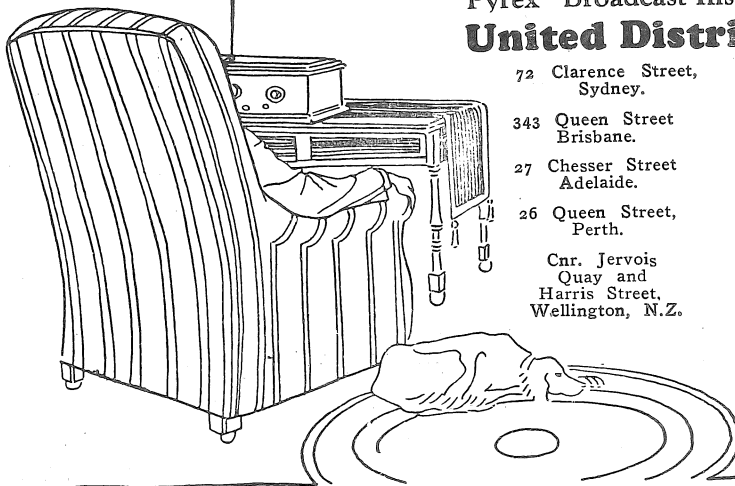
atom of chlorine (Cl). When hydrochloric acid is mixed with water the HCl molecules are split up into two electrically charged parts, known as ions, the hydrogen carrying a positive charge, and the chlorine ion an equal negative charge. This phenomenon is known as "dissociation." The solution as a whole remains the neutral, i.e., uncharged,

(Continued on Page 26.)

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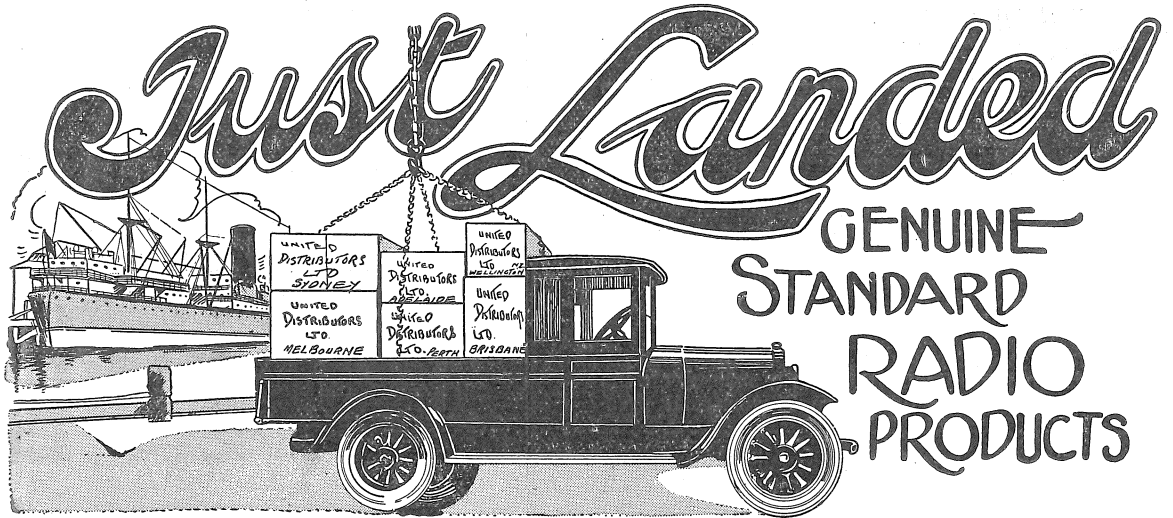
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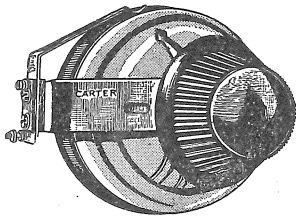
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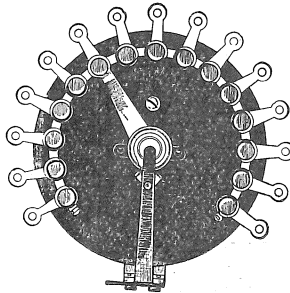
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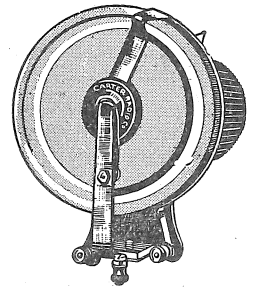
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because it contains just as many negative as positive ions. The zinc plate which is placed in this solution is attacked by the acid, and zinc atoms are taken into the solution or electrolyte. When this occurs, the zinc atoms take with them their positive charge, and leave their negative or electrons on the zinc plate.

The positive zinc ions now in the solution give a positive charge to the solution about the zinc plate, which tends to repel the hydrogen ions to the carbon plate. On reaching the carbon plate they unite with some of the free electrons in the carbon, forming neutral molecules of hydrogen gas which is given off from the plate.

This leaves a deficiency of electrons—electricity—on the carbon plate, while there is a surplus on the zinc, thus providing a difference in electrical pressure.

Providing the plates are not connected by an outside conductor, this movement of ions in the cell continues for a very short time only, as the zinc becomes so strongly charged negatively that it pulls the positive ions back to it with as much force as the acid pulls them into the solution. Similarly, the carbon plate soon ceases to take any more positive electricity from the hydrogen ions, since it soon acquires a large enough positive charge to repel them from itself with a force equal to that which is driving them from the solutions by the positively charged zinc ions.

This is why no chemical action continues in a simple primary cell, beyond a certain point, while the plates are not connected by an outside conductor. Thus the plates become charged to a definite potential difference, or E.M.F. of the cell.

If a wire or conductor of some kind be connected to the plates of the battery, the surplus electrons on the zinc will move around the conductor to even up the charges. As long as this continues to occur the acid will be able to pull the zinc ions from the zinc plate and to allow more hydrogen to leave the solution. This will continue producing a continuous current until either the zinc is eaten away or all the hydrogen has left the solution, i.e., until either the zinc or the acid become exhausted.

If a heavy discharge is taken from these cells, the bubbles of non-conducting hydrogen gas which collect on the carbon form an insulating film, and consequently the voltage and efficiency of the cell drops. This is known as polarisation, and manganese dioxide is used in the dry cell to overcome this trouble.

In the dry cell, as in the simple cell just described, the zinc dissolves in the liquid, and hydrogen is liberated at the carbon plate. Here it is slowly attacked by the manganese dioxide, which is packed around the carbon, thus preventing rapid polarisation.

The designation "dry" cell is really a misnomer. They are not actually dry, but use a moist paste for the exciting chemical as differing from the liquid electrolyte of the typical wet cells.

(To be Continued.)

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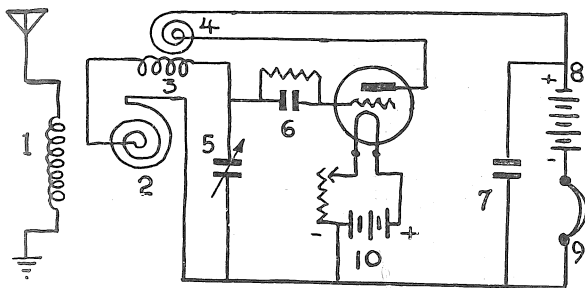
From reports we find that many broadcast listeners find it difficult to tune in 3LO and 2BL, while 4QG is in operation. In truth, only those with very selective receivers can claim the advantage of tuning 4QG in or out at will.

For those who find it difficult to tune out the local station we offer a suggestion which from our experience has proved most successful. The secret lies in the construction of the tuning coils.

The coupling arrangements used between the primary and secondary radio circuits is generally known as a "tuner." However it is handed across radio store

Now to get to the point, we suggest that all coupling in a selective circuit be obtained by using variocouplers. That is, the outside coil be wound in the ordinary way, and the inside coil substituted with a spider web rotor. The latter contains a hard rubber hub, with tiny hard rubber spokes radiating from the centre. Interwoven in these spokes are the windings of the secondary coil and on the coil we suggest winding 40 turns. In operation, maximum transfer of electrical energy from the antenna circuit to the secondary circuit is effected when the plane of this spider web winding is at right angles to the axis of the primary winding. On the other hand, minimum or zero coupling is obtained when the plane of the secondary winding is approximately in line with the axis of the coil or wire constituting the primary circuit.

The winding on the rotor of this newly designed variocoupler is similar in design to the intricate webs fashioned by a spider, hence the term "spider web variocoupler." The instrument may be employed in a variety of radio frequency circuits. It is especially applicable for use in radio frequency amplification. When used in the tuning circuit before a radio frequency amplifier, that stator or primary winding is connected in the aerial system proper, and the rotor or secondary is connected to the input circuit of the initial stage of radio frequency amplification. From

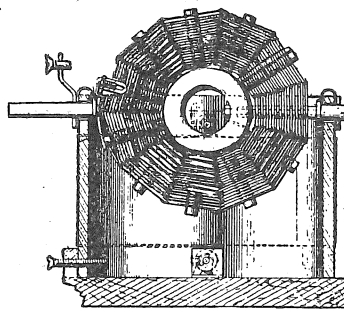


- 1.—Aerial coil, 50 turns.
- 2.—Secondary coil, 30-50 turns.
- 3.—Grid coil
- 4.—Anode coupling coil
- 5.—Tuning condenser, .001 variable.
- 6.—Grid condenser and leak.
- 7.—Bypass condenser, .001 fixed mica dielectric.
- 8.—H.T. Battery.
- 9.—Telephone receiver.
- 10.—Filament Battery.

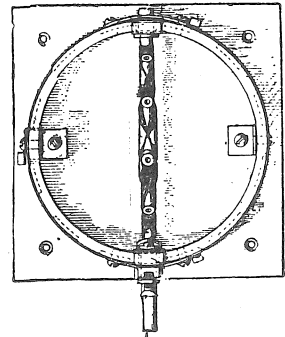
counters under various designations, chief among which are "variocoupler," "loose coupler," "honey comb coils," "lattice wound coils," "stagger woven coils," "basket wound coils," "tuning coils," "Lorenz wound coils," and "duo lateral coils."

These various coupling devices have much in common in structural details. For the 200 to 400 metre band of wavelengths the primary coil ordinarily consists of approximately 50 turns of wire, tapped at each five and ten turns. The secondary coil or circuit contains from 30 to 50 turns of wire, the shape of the latter almost invariably being cylindrical. In addition to the inductive functions of these tuners the primary coil forms one plate of the condenser, while the secondary circuit functions as the other plate. This is detrimental to good tuning.

The whole secret lies in obtaining a high maximum and low minimum inductance in the coupler and at the same time a minimum amount of electrostatic capacity.



Showing Half Section of Coil.



Looking Down on Coil.

actual experience on a receiving station within a mile radius of 4QG the Southern Stations were tuned in without any difficulty, but when using the so-called honey comb coils it was found impossible to tune 4QG out. After trying all makes and all types of couplers none was found to succeed in a measure anywhere approaching that of this "spider web variocoupler."

The selectivity of this tuning device should prove a boon indeed for the reception of radio signals on bands of wavelengths closely approximating each other.

Abbreviations Used in Wireless Signalling

| Abbreviation. | Question. | Answer to Notice. |
|---------------|--|---|
| PRB | Do you wish to communicate by means of the International Signal Code? | I wish to communicate by means of the International Signal Code. |
| QRA | What ship or coast station is that? | This is. |
| QRB | What is your distance? | My distance is |
| QRC | What is your true bearing? | My true bearing is.degrees. |
| QRD | Where are you bound for? | I am bound for. |
| QRF | Where are you bound from? | I am bound from. |
| QRG | What line do you belong to? | I belong to the.Line. |
| QRH | What is your wavelength in meters? | My wave-length is.meters. |
| QRJ | How many words have you to send? | I have.words to send. |
| QRK | How do you receive me? | I am receiving well. |
| QRL | Are you receiving badly? Shall I send 20? | I am receiving badly. Please send 20. |
| | for adjustment? | For adjustment. |
| QRM | Are you being interfered with? | I am being interfered with. |
| QRN | Are the atmospherics strong? | Atmospherics are very strong. |
| QRO | Shall I increase power? | Increase power. |
| QRP | Shall I decrease power? | Decrease power. |
| QRQ | Shall I send faster? | Send faster. |
| QRS | Shall I send slower? | Send slower. |
| QRT | Shall I stop sending? | Stop sending. |
| QRU | Have you anything for me? | I have nothing for you. |
| QRV | Are you ready? | I am ready. All right now. |
| QRW | Are you busy? | I am busy (or: I am busy with.). Please do not interfere. |
| QRX | Shall I stand by? | Stand by. I will call you when required |
| QRY | When will be my turn? | Your turn will be No. |
| QRZ | Are my signals weak? | Your signals are weak. |
| QSA | Are my signals strong? | Your signals are strong. |
| QSB | Is my tone bad? | The tone is bad. |
| | Is my spark bad? | The spark is bad. |
| QSC | Is my spacing bad? | Your spacing is bad. |
| QSD | What is your time? | My time is. |
| QSF | Is transmission to be in alternate order or in series? | Transmission will be in alternate order. |
| QSG | | Transmission will be in series of 5 messages. |
| QSH | | Transmission will be in series of 10 messages. |
| QSJ | What rate shall I collect for? | Collect. |
| QSK | Is the last radiogram cancelled? | The last radiogram is cancelled. |
| QSL | Did you get my receipt? | Please acknowledge. |
| QSM | What is your true course? | My true course is.degrees. |
| QSN | Are you in communication with land? | I am not in communication with land. |
| QSO | Are you in communication with any ship or station (or: with.)? | I am in communication with.(through.). |
| QSP | Shall inform.that you are calling him? | Inform.that I am calling him. |
| QSQ | Is.calling me? | You are being called by. |
| QSR | Will you forward the radiogram? | I will forward the radiogram. |
| QST | Have you received the general call? | General call to all stations. |
| QSU | Please call me when you have finished (or: ato'clock)? | Will call when I have finished. |
| *QSY | Is public correspondence being handled? | Public correspondence is being handled. Please do not interfere. |
| QSW | Shall I increase my spark frequency? | Increase your spark frequency. |
| QSX | Shall I decrease my spark frequency? | Decrease your spark frequency. |
| QSY | Shall I send on a wavelength of.meters? | Let us change to the wave-length of.meters. |
| QSZ | | Send each word twice. I have difficulty in receiving you. |
| QTA | | Repeat the last radiogram. |
| QSS | Do my signals fade? | Your signals fade. |

* Public correspondence is any radio work, official or private, handled on commercial wave-lengths. When an abbreviation is followed by a mark of interrogation, it refers to the question indicated for that abbreviation.

Stray Technicalities

GRID BIASING.

A good deal of misunderstanding seems to exist on the part of the average amateur as to the exact meaning of grid bias. The question has often been asked, "Why can't the grid be biased negatively by connecting the grid return lead to negative side of the accumulator?"

When we say that the grid of a valve is biased two volts negatively or two volts positively, it is obvious that we must have some fixed standard of potential to work upon, otherwise the term becomes meaningless. For instance, when the grid has been made two volts negative, it indicates that it has been made two volts more negative than the fixed standard, which is the negative side of the filament. Obviously, if we connect the grid return lead to the negative pole of the accumulator, the grid will be at the same potential as the negative side of the filament, assuming that no external filament resistance is used in the circuit, whilst connecting the return lead to the positive side of the accumulator will give the filament a positive bias of two, four or six volts, according to the type of accumulator used.

ADJUSTING VARIABLE LEAKS.

Another question which is often prompted by amateurs is "How should I adjust my grid leaks?" As the value of the grid leak is very important for the satisfactory operation of a receiver, and as this unit is often the unsuspected cause of a lot of trouble, a few words on its adjustment will not be amiss.

If the resistance of the leak be too high the grid of the valve will have an excess negative charge, owing to the accumulation of electrons on it, thus limiting greatly the current flowing through the valve, while, if an attempt is made to introduce reaction, howling will be set up. If, on the other hand, the resistance is too low, a loss in signal strength will again result, and where the grid leak is connected between the grid and filament direct, it is often a difficult matter to make the valve oscillate. By using a grid leak of fairly high resistance stronger signals may often be obtained than when the resistance is of a lower value.

Perhaps the following method of adjusting the leak is one of the most satisfactory. The leak is first adjusted to a high value, so that when the reaction coupling is increased the valve "howls."

The resistance is then gradually lowered until the howl is entirely eliminated when using fairly tight coupling of the reaction coil. In this position the valve will work well, and maximum signal strength will still be obtained. This adjustment may vary slightly with different values of filament current and high tension voltage, so to try the different values until the best results are obtained is the best course to adopt.

MAKE YOUR OWN CRYSTALS.

The writer made a few years ago, a synthetic crystal, which proved to be super-sensitive as a detector compared with the natural minerals obtainable at the time, and as the only two constituents are generally available about the home I would strongly recommend experimenters to try their hand at making this crystal.

Obtain a small quantity of pure lead (Pb) not solder or lead alloy. Also some flowers of sulphur—ordinary powdered sulphur. Cut the lead in small pieces and mix with the sulphur in the ratio of seven parts by weight of lead to one part of sulphur. Place the mixture in a crucible, a tin cup or some convenient container other than glass or porcelain. Heat over a Bunsen burner or gas ring. In a very short time the mixture will begin to glow and the lead and sulphur will fuse together. At this point remove the mixture from the heat and place the container in a basin of cold water to cool. Do not let any water get on the crystals as it will ruin them. If you have had things just right you will now have a crystal that is super-sensitive all over its surface. If the lump is crumbly you have "cooked" it too much, and if it is streaked with lead you did not cook it long enough, or you used too much lead.

Wireless sets are under a temporary ban of the Venezuelan Government. It is claimed that listening-in interferes with the work of the nation.

When You Buy a—

G.A.C. Radio Receiver

You get the benefit of Eighteen Years Radio and Electrical experience.

5 Valve Set £37-0-0
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3 Valve Set £22-10-0

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We specialise in overhauling Sets, Speakers, Phones, and Transformers and Batteries Charges.

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536 Stanley St., South Brisbane
Near Vulture St. Section

Phone J2887

Using Atmospheric

Silhouetted against the skyline on the east bank of Manhattan Island, New York, can be seen an ordinary looking aerial that differs not one little bit from thousands of others in the immediate neighbourhood. This one, however, is no mere interceptor of broadcast entertainment, for it guards the city against unexpected darkness caused by daytime storms, saving millions of people inconvenience and keeping the wheels of industry revolving when they would otherwise be compelled to close down for lack of power. To this aerial is attached a wireless receiver which actuates a bell indicating the approach of a storm. It is operated by Nature and is always on duty ready to record the approaching storm, although it may be over fifty miles distant and thus not due to strike the city for several hours; thus giving the electric power and light companies an opportunity to put into service additional machines to generate sufficient current to take care of the additional load required during the period of daytime darkness. The demands upon the electric supply system when a storm breaks are so acute that in a period of five minutes there may be an increase of nearly 75 per cent. in current consumption due to the turning on of lights, so that a storm detector is almost indispensable. The method of operation is very simple. Most of us are acquainted with the violent type of atmospheric disturbance which accompanies a summer storm, and it is this selfsame interference that operates the storm detector. The disruptive "static"

discharges are intercepted by the aerial and led to a device which consists of a short-circuiting switch, a spark gap, a coherer, a relay and battery and a condenser with an earth connection which comprises the whole of the device. A storm five or six hours distant causes the bell to ring about every ten minutes. As the storm draws nearer the frequency of the bell ringing increases until the storm is about half an hour away, by this time it is practically continuous and the signal is passed along to the furnace-men, to the effect that an increased consumption of current may be expected any minute. This novel device is far superior to any other method of storm warning, as a storm may be only half an hour away, invisible and no wind blowing, yet the wireless bell will ring continuously, heralding its rapid advance.

Kennerley Rumford, the husband of Clara Butt, has issued once more, warning to the many Australian women vocalists who are casting longing eyes on London. His experienced advice is an emphatic "Don't," and his reasons are up to date. Owing to the spread of broadcasting and the almost universality of listening-in, the position of the concert-singer has become parlous indeed. Only the very top-line vocalists are doing even fairly well at their profession. He holds out hope that later, probably some equitable arrangement between the British Broadcasting Coy., the listeners-in and the singers will be arrived at; but till then he very seriously advises anxious aspirants to remain in Australia.

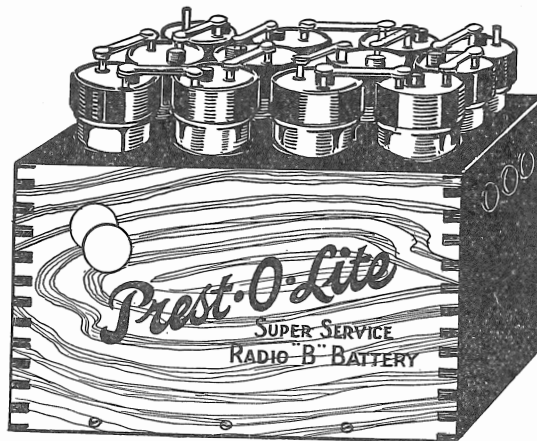
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12 Cell 24 Volts

PREST-O-LITE Batteries are known for their Quality and Courteous Service behind them.

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Also "A" Type Batteries

See Our Experts

A Great Radio Pioneer

Speech by Senatore Guglielmo Marconi, C.C.V.O., D.Sc., LL.D., etc., at the Central Hall, Westminster, London, on the occasion of a presentation to Sir Oliver Lodge.

"Sir Oliver Lodge is, as we all know, one of our greatest physicists and thinkers, but it is particularly in regard to his pioneering work in wireless, which should never be forgotten, that we all welcome him here amongst us to-night.

"In the very early days, after the experimental confirmation of the correctness of Clerk Maxwell's theory as to the existence of electric waves and their propagation through space, it was given to only very few persons to possess clear insight in regard to what was considered to be one of the most important hidden mysteries of nature, and Sir Oliver Lodge possessed this insight to a far greater degree than perhaps any of his contemporaries.

"The result of our understanding something of this subject is now fortunately manifest to all, when we look round at the wonderful progress that has been achieved by radio, which has already become an aid, or rather a necessity to all civilised communities throughout the world.

"We look back over a comparatively short period of time, and proudly reckon up all the benefits that wireless has conferred on mankind: Telegraphy, telephony, broadcasting (that most popular of all present-day wireless manifestations), safety to sea and air navigation; these are all but steps in the ever ascending ladder of wireless applications.

"But although our knowledge has progressed and although we now know a great deal about producing, radiating, and receiving these waves, we know very little, and, I might say, we now realise that we know a good deal less than we thought we knew sometime ago in regard to the laws governing the propagation of electric waves through space across big distances.

"Little over two years ago we all believed that to cover world-wide distances it was necessary to employ large amounts of power and long waves.

"We thought that short waves could only be utilised for communication over considerable distances at night, but that those night ranges were freaky and although too unreliable to allow the carrying out of commercial work.

"Now all this has been changed, and it looks very much as if short waves, and short waves alone, were destined to carry the bulk of long distance telegraphic and telephonic communications throughout the world.

"We found that these waves will carry messages at all times of the day and night to such distant parts as Australia and I might recall the successful tests by amateurs in exchanging two-way communication with New Zealand.

In regard to New Zealand, Australia and other places near the Antipodes I should, however, point out that when using broadcasting, or non-directive methods, we have never so far been certain as to which way the waves travelled round the earth, there being always when working to the Antipodes a practically dark way round one side of the earth, when the other side is exposed to daylight.

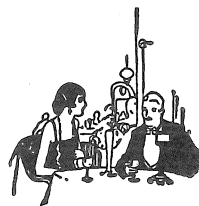
"During the last few days further tests have been carried out between Chelmsford and Buenos-Ayres (in the Argentine) over a distance of nearly 6000 miles by Captain Round and other engineers of the Research Department of the Marconi Company.

"In regard to the Argentine the great circle track of transmission not being very far away from a North-South direction, there is no other track of comparatively the same order of distance over which the waves could travel in darkness at the same time as when the short direct track is exposed to daylight.

"By using a 15 metre wave and a power of only one-fifth of one k., which is an amount of energy comparable to that which has been used by amateurs in their tests, it has been found not only possible but easy to communicate with the Argentine during the hours of daylight at possible speeds of 30 words per minute. Nothing, however, could be received at Buenos-Ayres on this particular wavelength when darkness extended over the area separating the two stations. It was further noticed that the signals were strongest and at their best when the sun was at its highest, over the great circle track separating the two stations.

"So much for the idea that short waves will only travel big distances at night, and it should therefore be no longer necessary for wireless enthusiasts to continue losing their sleep by staying up into the small hours of the morning in order to communicate with their friends in very far distant countries."

Afternoon Tea and Supper at SYRMIS'



When in town of an evening call at Syrmis Cafe for refreshments, and be entertained by 4QG's Studio music broadcasted through our Super Six Receiver.

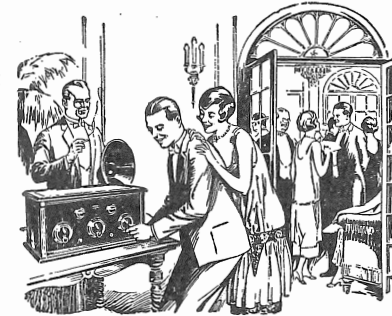
Dainty Afternoon Teas a Speciality

SYRMIS CAFE
GEORGE STREET, BRISBANE.

The HARRINGTON Popular 3

The Best
Radio
Investment
to date

A new 3-Valve Receiver of fine tone quality and exceptional selectivity. Operates with dry cells, valves, and batteries. The set is constructed of the finest component parts. It is built into a handsome maple or oak cabinet, and is supplied with all accessories. There are no extras to buy, and a child can operate it. Price, complete, including Loud Speaker,



£27/10/-

The "POPULAR 4"

This new Model is a 4-Valve Tuned Radio Receiver, and has unusual range, selectivity, and wonderful tone quality.

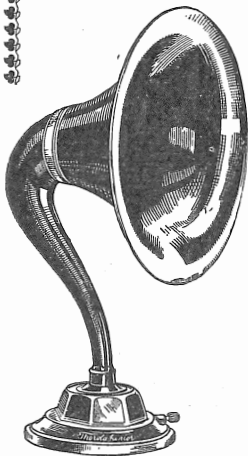
Only the very best of parts are used. The Cabinet is polished in Oak or Maple. It is supplied with all accessories, either dry batteries or accumulator, and loud speaker.

£32

The "THOROLA"

A Better Speaker. Amplifies the faintest radio electrical impulse without the slightest distortion. The ideal speaker for the drawing-room. The volume can be adjusted as desired.

£4/10/-



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93 QUEEN STREET, BRISBANE

MR. J. C. PRICE EXPLAINS!

January 15th, 1926.

The Editor,
"Queensland Radio News,"
Brisbane.

Dear Mr. Editor,—

As you have made reference on two separate occasions to a particular two valve set owned by me, I feel compelled to give an explanation to the many thousands of readers of the "Queensland Radio News."

This set was received on the 12th July last, and weighed only 6½lbs. complete, with all accessories, including battery power, loud speaker, valves, and aerial equipment.

The operation of this set is exceedingly simple, although the results obtained at times are anything but pleasant, loud squeals, and howls being obtained especially when battery power is low.

There is no interference outside the range of the next door neighbour, so that there is no reason for any complaints being lodged by other radio fans that interference is experienced.

The set has now been in operation for six months, and no battery replacements have been required, although frequent daily recharging is essential to the life of the set. Strange to relate the weight of the set has now more than doubled itself. It gives excellent results at the seaside, although curiously is not affected by salt water.

No doubt some of your readers have already guessed that this particular two valve set is in reality a delightful little daughter, with large hazel eyes, curly hair, and the most lovable little limbs imaginable.

Don't you wish you had one? If you do, go right ahead.

Yours faithfully,
J. C. PRICE.

DV-3 TUBES PERFORM SPLENDIDLY.

We are in receipt of the following letter from the agents of the popular DV3 Tubes:—

44 Reynold Street,
Cremorne, Sydney.
1/12/25.

Dear Sir,—

I have been using two of your DV-3 Tubes in my low loss set, and have been very successful on the short waves.

On 40 metres stations in England, Canada, America, Hawaii, Java, Philippine Islands and Japan have been received, and I have cards from England and America checking my reception.

On 20 metres I have heard 4AG (New Zealand), and also an European Station.

The tuning range on my receiver is from 15 to 120 metres.

In the near future I will try a DV-3 Tube on still lower waves, and let you know how it works.

Yours faithfully,
S. HUME.

U.S. Short Wave Stations

In view of the large numbers of readers who operate short-wave sets and are unable to ascertain the Q.R.A. of American short-wave stations heard, we publish this list of American commercial short-wave stations:—

| Fy-Kc. | Wave length. | Location. | Owner. | Power. | Call Signal. |
|--------|--------------|--|----------------------------------|--------|--------------|
| | 21 | Bellevue | U.S. Navy | 10 Kw. | NKF |
| 8560 | 35.03 | Rocky Point, New York .. | R.C.A. | 20 Kw. | WQO |
| 6970 | 43.02 | New Brunswick, N. Jersey | Do. | 20 Kw. | WIZ |
| 6119 | 49 | Sharon, Pa. | Westinghouse El. & Mfg. Co. . . | 150 W. | WHD |
| 4400 | 68.4 | Pinecrest, Fla. | E. G. Watts, Jr. | 5 W. | WRP |
| | 68.4 | Do. | Do. | 100 W. | WRB |
| 4050 | 74.03 | Rocky Point, New York .. | R.C.A. | 20 Kw. | WQN |
| 3480 | 86.16 | New Brunswick, N. Jersey | Do. | 20 Kw. | WIR |
| 3331 | 90 | Kahuku, Hawaii | Do. | 20 Kw. | KIO |
| 3156 | 95 | Bolinas, California | Do. | 20 Kw. | KEL |
| 2910 | 103 | Tuckerton, New Jersey .. | Do. | 20 Kw. | WGH |
| 2220 | 135 | Rochester, New York | Rochester Gas. & Elec. Co. . . . | 750 W. | WJF |
| 2188 | 137 | Wilsonville, Pa. | Penn. Power & Light Co. | 100 W. | WLF |
| | 137 | Allentown, Pa. | Do. | 200 W. | WHC |
| | 137 | Williamsport, Pa. | Do. | 100 W. | WPH |
| | 137 | Hauto, Pa. | Do. | 100 W. | WDS |
| | 137 | Hazelton, Pa. | Do. | 100 W. | WCJ |
| | 137 | Frackville, Pa. | Do. | 100 W. | WBI |
| 2142 | 140 | Flint, Michigan | F. D. Fallain | 500 W. | WGF |
| 2100 | 143 | Baltimore, Md. | Board of Fire Commissioners .. | 500 W. | WEQ |
| | 143 | Portable Stn. in California | Los. Angeles Examiner | 150 W. | KTA |
| | 143 | Do. | Do. | 250 W. | KPK |
| | 143 | Do. | Tribune Publishing Co. | 20 W. | KGA |
| | 143 | Washington, D.C. | Potomac Elec. Power Co. | 50 W. | WIX |
| | 143 | Do. | Do. | 50 W. | WJH |
| 2070 | 145 | Rochester, New York .. | Rochester Gas & El. Co. | 750 W. | WJF |
| 2050 | 146 | Portable Stn. in California | Goldwyn Producing Co. | 10 W. | KYJ |
| | 146 | Do. | Do. | 5 W. | KYI |
| | 146 | Pysht, Washington | Merrill & Ring Lb. Co. | 5 W. | KJA |
| | 146 | Portable Stn. in Russell Reed, California | — | 50 W. | KFZ |
| | 146 | Do. | — | 50 W. | KGV |
| | 146 | Do. | Pratt & Dutton | 500 W. | KYX |
| | 146 | Do. | Do. | 100 W. | KZI |
| 1480 | 202.3 | Harrisburg, Pa. | Penn. State Police | 500 W. | WBAK |
| | 202.3 | Butler, Pa. | Do. | 250 W. | WBR |
| | 202.3 | Wyoming, Pa. | Do. | 100 W. | WDX |
| 1260 | 238 | Honolulu, Hawaii | Hawaiian Pineapple Co. | 50 W. | KYB |
| 1040 | 288 | Kaunapalapu, Hawaii .. | Do. | 50 W. | KRQ |

AID FOR SHIPS IN DISTRESS.

VALUE OF WIRELESS DIRECTION FINDING.

During the recent gales in the Atlantic the value of wireless as a means of bringing aid to ships in distress has again been proved by practical experience. The Anglo-Newfoundland Development Company's ship, "Geraldine Mary," on a recent voyage, received a wireless message from the s.s. "Stikiestad," stating that she had broken her propeller shaft and needed to be towed to St. John's, Newfoundland.

The "Geraldine Mary" used her direction finder to locate the "Stikiestad," and went to her assistance. Owing to rough weather, four days elapsed before a towing wire could be taken aboard the "Stikiestad," and during that time the ships twice lost touch with one another, having been blown as much as 50 miles apart during severe hurricane.

On each occasion the "Geraldine Mary" was able to find the "Stikiestad," and return to her vicinity, by means of wireless bearings taken with the Marconi direction finder. Finally the crews succeeded in passing a towing wire.

CLUB ACTIVITIES

Wireless Institute of Australia (Queensland Division)

Activity is not a feature of the division at holiday time but it is hoped that the surfing, etc., that members who were lucky enough to get away, enjoyed, has put them in good fettle for the new year. Some members of council have been putting in good work right through, and business is all in up-to-date order.

By the time these notes are published it is hoped to have 4W1 on the air every night on 40 and 25 metres.

Summary of an Admiralty test has been received from headquarters and particulars will be forwarded to those who are prepared to furnish reports. It is a distinct advance when the amateur is given a status in this way, and it is hoped will lead to better things. Considerable thought has been given to the matter of finance by the executive, with a view to having available to experimenters apparatus of practical value, and which in the ordinary way they can-

not acquire. It was decided that an Art Union was the best way at present to secure the necessary amount quickly, but to eliminate the undesirable features of many of these affairs it was decided to make the value of prizes as close as possible to the amount of money likely to be raised and depend on the concessions granted by the dealers for the profit. It is expected to sell sufficient tickets to make a clear £75, the whole of which sum will be devoted to the purchase of apparatus. The objects are good, the prizes are right and there is no catch anywhere. Let us see that the wireless public appreciate a fair run for their money.

Country members desiring to take an interest in amateur traffic working either transmitting or receiving only are invited to get in touch with the acting hon. secretary, A. A. Jackson, C/- Courier, Queen Street, Brisbane.

Woolloowin Radio Club

Since our last report the attention of members has been fully occupied in completing the alterations to our new club room. We are indebted to Mr. F. R. Emmott for the able and workmanlike manner in which the electric light installation was carried out, and to Mr. V. F. Keena for the construction of the switchboard.

The most important question under present consideration is the installation of the transmitter. We hope to have something interesting to report in regard hereto, in the near future.

Early in the month, two of our members, Messrs. C. J. Grant and V. F. Kenna, returned from a trip to Sydney and had much of interest to report. Both took the opportunity to visit the Wireless Institute of Australia, N.S.W. Division, and were hospitably received. Mr. Grant met a number of well known radio men during his stay in the southern capital, and collected much useful advice and information, which was passed on to the club members.

On January 14th, Secretary Jiear delivered the first of a series of lectures on "Generators and Motors." He dealt with the principles of electricity and magnetism insofar as the machines under consideration were concerned. The second of the series, entitled "Generators," was dealt with on January 28th. With the aid of blackboard diagrams, the construction and operation were explained.

The Graceville Radio Club has been invited to visit us during February, and an interesting meeting is anticipated.

Our new year greetings were extended to the Editor and staff of "The Queensland Radio News," the manager and staff of Station 4QG, and to the officers and members of all Queensland Radio Clubs and Societies, per medium of this paper. Our letter must have escaped attention of our good friend, Mr. Editor, so we take this opportunity to wish the above mentioned bodies increased happiness and prosperity during the coming year, and in many years to come.

(This letter was received too late for publication.—Ed.)



Wireless Aerials

Supplied, Delivered and Erected.
Good Timber, Solid Foundations.
Enquiries Invited.

G. H. BUSBY

Lily Street, Stones Corner,
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ARTISTS HEARD FROM 2FC



SCOTT ALEXANDER,
Comedies and Sketches.



A. S. COCHRANE,
Hello Man.



MONTGOMERY STUART,
Elocutionist.



D. M. BAXTER,
Tenor.

WIRELESS SUNDAY SCHOOL AT NEWMARKET

Quite a novel Sunday School was held recently on the occasion of the Sunday afternoon broadcasting by 4QG of the Newmarket Baptist Bible Class. A receiving set was installed in the Newmarket Baptist Church, and instead of the usual Sunday School

being held the children "listened-in" to their own Bible Class. The church was well filled, several adults also being present. Reception was good. This is possibly the first time that a Sunday School has been held by wireless in Queensland.

You'll spend less for batteries—

You'll have better reception—

When you buy Willard's you buy Batteries that last for years. Your investment in Battery economy is an investment in better reception, too, for these

Batteries are rechargeable. No need to tell the difference this makes in the quality of reception.

Obtainable from all Licensed Dealers

Queensland
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Motor Supplies Ltd.

Where Adelaide and Boundary
Streets meet—Brisbane.

Willard

**RADIO
BATTERIES**

When Replying to Advertisers, kindly mention this paper.

Wireless Aerial Masts

You can purchase your Masts in one length of Oregon Pine, from 30ft. lengths of 3 x 3 to 80ft. lengths of 6 x 6, also 4 x 4 and 5 x 5 to any length.

We are experts and specially select the timber for this purpose. Write or Ring Desk A to-day, you will be surprised how little good Aerial Masts will cost you.

Rosenfeld & Co. (Q'ld.) Ltd.

"The Oregon Specialists"

TIMBER MERCHANTS.

Moray Street, New Farm, Brisbane

Phone C. 5991.

"AENOLA" RADIO RECEIVERS

The Cheapest in Brisbane by far

Well built and remarkably cheap. Designed to give long range with clarity. Call and ask for a demonstration before purchasing high-price sets elsewhere.

NOTE THE PRICES:

| | |
|----------------|-----------------|
| Crystal £3-0-0 | 3 Valve £20-0-0 |
| 1 Valve £9-0-0 | 4 Valve £25-0-0 |
| 2 Valve £4-0-0 | 5 Valve £32-0-0 |

These prices include Dull Emitter Valves, Batteries, Headphones, Cabinet, Aerial Equipment and Coils.

Loud Speakers from £2 upwards extra.

Using a standard 4 Valve "AENOLA" Radio Set in Melbourne, music was received from Durban and San Francisco on several occasions, and was at times strong enough to work a loud speaker.

Your Choice will be an "Aenla"

A. E. NEWNHAM

Care of H. E. HOWCROFT,

FIVEWAYS, WOOLLOONGABBA

Phone J 2555.

A PEN PICTURE

(BY M. A. PRUDENCE, BRISBANE.)

To-day as I listen to the broadcasting of music and song my thoughts drift back to those grim days when the ether was filled with, not music, but poignant messages of distress, a jumble of Morse, Telefunken and Marconi, enemy and friend, secret codes and submarine warnings

A cold bustling night with the salt tang of whipped spray, a pale moon peeping behind scudding clouds, sheds a pale radiance over the vast expanse of ocean, barely revealing a motley assembly of vessels purging through the rising sea, great black shapes, unrelieved by a light of any description, excepting here and there a dull red glow emanating from a funnel, as the "black squad" below stoke the furnaces.

Ships laden with the needs of a nation. Ships large and small, tramps mainly. French and Spanish, British and Brazilian, huddled together for safety, with the long grey slim destroyers like faithful watchdogs, steaming at a further distance to each side of the convoy.

It is midnight, aboard one of the ships a watch is just commencing; eight bells have struck. A stamping of feet on the bridge overhead my cabin, a murmur of voices, the doors opens and, admits the portly frame of the third mate, who yarns for a moment and then ambles below to a hot mug of cocoa and his bunk.

As no lights can be shown the sole illuminating of the wireless cabin, is a faint ray of light streaming through a hole in a discarded cigarette tin that is fixed over the bulb of the wireless table light, a miniature spotlight that sufficiently reveals the opened log book lying before the receiving instruments.

The noises die away. I readjust the telephones and receiver, light a pipe, reach for a pencil, and start jotting down the incoming messages . . .

The high-pitched note of a German land station, in code, then. "Allo. Allo. Allo. S/S C . . . Submarine sighted, no attack, sub diving." . . . silence for a while then the booming note of war-ship; a croaking Marconi station; faintly . . . British destroyers working code . . . Nantes sending submarine warnings . . . silence again.

Time passes. Calls are less frequent; a sense of drowsiness steals over me. The steady throb, throb of engines and the faint clanking of the steering rods alongside the cabin alone breaks the uncanny stillness. A troubled world seems peaceful again, well here anyhow, I shake off the drowsiness, light the pipe again.

Then suddenly it comes, cutting the ether with startling clearness. SoS. SoS. SoS. S/S W . . . torpedoed. Position . . . badly holed . . . come quickly . . . taking to the boats . . . hurry . . . Silence again. Then BWP the Azores Station repeating the SoS. . . The second mate enters the cabin with a mug of cocoa. "Have a drink, Sparks." How's thing, eh. Going to clear up a bit . . . his voice drones on . . . more commonplaces . . . Whilst out there in the vast sea, an unconvoyed ship alone—the travail of souls . . . a Tragedy of the Great War.

Home Assembly, Complete Set of Parts for Home Construction of any Style of Sets

1 VALVE SET.

| | £ | s. | d. |
|---|---|----|---------|
| 1 Bakelite Panel, 12in. x 9in. x 3/8in. | 0 | 9 | 0 |
| 1 Valve Socket | 0 | 4 | 6 |
| 1 30 ohm Rheostat | 0 | 4 | 6 |
| 1 2-Way Coil Holder | 0 | 10 | 6 |
| 1 .0005 Variable Condenser | 0 | 14 | 9 |
| 1 Combined Grid Leak and Con- denser | 0 | 3 | 6 |
| 1 Baseboard | 0 | 2 | 6 |
| 8 Bakelite Engraved Terminals | 0 | 3 | 6 |
| 1 Soldering Set | 0 | 2 | 6 |
| 1 Set of Screws, etc. | 0 | 3 | 6 |
| 1 Bakelite Terminal Strip | 0 | 0 | 9 |
| 12 Lengths Bus-Bar Wire | 0 | 2 | 0 |
| | | | £3 1 6 |
| 1 Pair Headphones | 1 | 1 | 0 |
| 1 42-Volt "B" Battery | 0 | 12 | 6 |
| 2 Dry Cells | 0 | 5 | 6 |
| 1 Dull Emitter Valve | 0 | 17 | 6 |
| Total | | | £5 18 0 |

3 VALVE SET.

| | | | |
|---|---|----|---------|
| 1 Bakelite Panel, 18in. x 9in. x 3-16 | 1 | 3 | 6 |
| 1 Baseboard | 0 | 2 | 6 |
| 1 2-Way Coil Holder | 0 | 10 | 6 |
| 3 Valve Sockets | 0 | 13 | 6 |
| 2 30 ohm Rheostats | 0 | 9 | 0 |
| 2 Audio Transformers, 5-1, 3 1/2-1 | 2 | 2 | 0 |
| 1 Combined Grid Leak and Con- denser | 0 | 3 | 6 |
| 1 .0005 Variable Condenser | 0 | 14 | 9 |
| 1 Single Circuit Jack | 0 | 2 | 3 |
| 1 Phone Plug | 0 | 3 | 6 |
| 8 Bakelite Engraved Terminals | 0 | 3 | 6 |
| 1 Soldering Set | 0 | 2 | 6 |
| 1 Set of Screws, etc. | 0 | 3 | 6 |
| 1 Bakelite Terminal Strip | 0 | 1 | 0 |
| 15 Lengths Bus-Bar Wire | 0 | 2 | 6 |
| | | | £6 18 0 |
| 1 Pair Headphones | 1 | 1 | 0 |
| 3 Dull Emitter Valves | 2 | 12 | 6 |
| 2 42-Volt "B" Batteries | 1 | 5 | 0 |
| 3 Dry Cells | 0 | 8 | 3 |
| Total | | | £12 4 9 |

2 VALVE SET.

| | £ | s. | d. |
|---|---|----|---------|
| 1 Bakelite Panel, 15in. x 9in. x 3/8in. | 0 | 11 | 3 |
| 2 Valve Sockets | 0 | 9 | 0 |
| 2 30 ohm Rheostats | 0 | 9 | 0 |
| 1 2-Way Coil Holder | 0 | 10 | 6 |
| 1 .0005 Variable Condenser | 0 | 14 | 9 |
| 1 Combined Grid Leak and Con- denser | 0 | 3 | 6 |
| 1 Audio Transformer, 5-1 ratio | 1 | 1 | 0 |
| 1 Baseboard | 0 | 2 | 6 |
| 8 Bakelite Engraved Terminals | 0 | 3 | 6 |
| 1 Soldering Set | 0 | 2 | 6 |
| 1 Set of Screws | 0 | 3 | 6 |
| 1 Bakelite Terminal Strip | 0 | 0 | 9 |
| 15 Lengths Bus-Bar Wire | 0 | 2 | 6 |
| | | | £4 14 3 |
| 1 Pair Headphones | 1 | 1 | 0 |
| 2 Dull Emitter Valves | 1 | 15 | 0 |
| 1 60-Volt "B" Battery | 0 | 18 | 6 |
| 3 Ivy Cells | 0 | 8 | 3 |
| Total | | | £8 17 0 |

4 VALVE SET.

| | | | |
|--|---|----|----------|
| 1 Bakelite Panel, 21in. x 9in. x 3-16 | 1 | 3 | 6 |
| 1 Baseboard | 0 | 2 | 6 |
| 4 Valve Sockets | 0 | 18 | 0 |
| 3 30 ohm Rheostats | 0 | 13 | 6 |
| 1 2-Way Coil Holder | 0 | 10 | 6 |
| 1 Panel Plug | 0 | 3 | 6 |
| 1 400 ohm Potentiometer | 0 | 9 | 6 |
| 2 Audio Transformers, 5-1, 3 1/2-1 | 2 | 10 | 0 |
| 1 .001 Variable Condenser | 0 | 18 | 6 |
| 1 .005 Variable Condenser | 0 | 15 | 0 |
| 1 Grid Leak and Condenser | 0 | 4 | 9 |
| 1 Double Circuit Jack | 0 | 3 | 0 |
| 1 Single Circuit Jack | 0 | 2 | 3 |
| 1 Phone Plug | 0 | 3 | 6 |
| 1 Soldering Set | 0 | 2 | 6 |
| 1 Set of Screws | 0 | 3 | 6 |
| 1 Bakelite Terminal Strip | 0 | 1 | 0 |
| 8 Bakelite Engraved Terminals | 0 | 3 | 6 |
| 20 Lengths Bus-Bar Wire | 0 | 3 | 4 |
| | | | £9 11 10 |
| 1 Pair Headphones | 1 | 1 | 0 |
| 4 Dull Emitter Valves | 3 | 10 | 0 |
| 2 42 Volt "B" Batteries | 1 | 5 | 0 |
| 3 Dry Cells | 0 | 8 | 3 |
| Total | | | £15 16 1 |

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(Next Allan & Stark Limited)

S.A.S.

FOR SALE OR EXCHANGE

If you have anything to sell or exchange here is the place for it. A small charge of 1/6 per insertion (prepaid) for 3 lines (about 24 words) is made. Stamps in this case will be accepted. Address: "For Sale Column," "Queensland Radio News," Box 1095, Brisbane.

For Sale.—Complete Brand New 10-Watt Transmitting Set, adaptable for telephony, tonic train and continuous wave transmission. The outfit consists of a beautiful control panel, 400 volt generator, adaptable to A.C. or D.C., rectifier, filter and smoothing unit, rheostat, transformer, microphone, morse key, and two 5-watt Radiotron valves. Price, £40. Apply: A. W. Joss, C/- C.C.M, Creek Street, Brisbane.

For Sale.—A Four-Valve Set. One Radio Detector, Two Audio, built of standard parts, without accessories. Will demonstrate. Price, only £12. Apply: "Grid Leak," C/- "Queensland Radio News," Box 1095, Brisbane.

For Sale.—Five-Valve Receiver, of superior design, best parts used throughout. Owner has no further use. Price, without accessories, £16. Demonstration arranged. Apply: "Neutro," C/- "Queensland Radio News," Box 1095, Brisbane.

For Sale.—Two 35ft. Steel Tubular Masts (ammonia), complete with guys, strainers, flange, cases, aerial wires, spreaders, etc. Price, £7 complete. Apply: "Nollidea," C/- this paper, Box 1095, Brisbane.

One 4-volt, 60 actual A.H. "Exide" accumulator, new, in excellent condition for best offer. Reason for selling, charging facilities limited. G. Hughes, Box 4, Miles.

£12 buys 2-valve low loss all wave receiver complete in cabinet with all accessories except accumulator. Has received messages from England and many other countries also concerts from America. Holds several reception records. See DX list in August "Queensland Radio News." Also quantity other apparatus cheap. Particulars from Harold Hobler, A-4DO, Lennox Street, Rockhampton.

Will Seel or Exchange for good Radio Gear, the following: Winchester Rifle, Sandow Developers, Punching Ball, Chest Expander, Medical Battery (for medical use or sport). Apply "Ex-Sandow," c/o This Office, Box 1095, G.P.O.

CORRECTION.

In our last issue (on page 1), we referred to the Radio Inspector for Queensland as Mr. Goodall. This was an error. As is generally known Mr. T. Armstrong is Queensland Radio Inspector, and it was he who appeared in the photograph.



**WINCHESTER
Radio 'B' Batteries**

22½ Volt Size

13/-

See these famous Batteries in our Windows and Show Cases, or if out of town write us for further particulars.

45 Volt Size

26/-

**Install the
WINCHESTER
'B' Battery
for Longer Service**

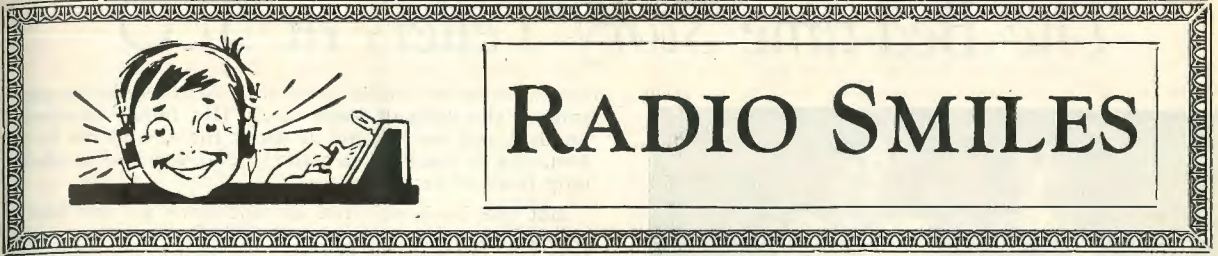
The most troubles connected with Wireless Receiving Sets can be traced to "B" Batteries. Install a Battery that is guaranteed—such as WINCHESTER "B" BATTERIES and you eliminate most of your Radio faults.

WINCHESTER "B" BATTERIES carry a shelf guarantee of 12 months—no other Battery can give such a guarantee.

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Queen Street, Brisbane



Mrs. Brewster: "John, that woman broadcasting has a voice just like mine, hasn't she?"

Mr. Brewster: "Yes, just like yours! We will see if we can't get somewhere else, my dear."

Mum Woop (seeing electric signs for first time): "What's that, dad?"

Dad: "Must be one of them wireless sets on fire."

Boy (looking in radio dealer's window): "Dad, I wish I was you."

Dad: "Why? my son."

Boy: "Well, if I were you, I'd buy you one of those wireless sets."

SOME AERIAL.

Mistress (to new maid): "How is it, Mary, you have not swept the cob webs off the corners of the ceiling?"

New Maid: "Why, mum, I thought they belonged to the wireless."

A MODERN BEDTIME STORY.

"Once upon a time there was a flapper who bought a new evening frock, placed it carefully in a drawer and locked it. A poor little moth who lived in this drawer was also locked in. Days went by and the poor little moth starved to death and the flapper lived happily ever after.

"They say she's frightfully strict with her husband."

"Rather; so ridiculously narrow-minded—she won't even let him get Paris on the wireless!"

ROCK CAKE.

Wife: "How do you like my cake? I got the recipe over the radio; it's a western idea."

Husband (trying to bite into the cake): "That recipe must have been broadcast through the Rocky Mountains, then."

DON'T!
 Hump Your Battery to the
 Charging Station—
IF—

You are living in the South Brisbane area and adjacent Suburbs, we will call for and deliver same promptly. We charge and repair any battery.

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Exide Service Station
 525 Stanley Street, South Brisbane.
 Near Vulture Street.

The Bed-time Story Tellers at 3LO



Left to Right: Lady Greensleeves, Miss Kookaburra, Mary Gumleaf, Billy Bunny.

BEDTIME STORIES.

Gradually wireless is extending its scope, and the various broadcasting companies are catering now for every type of listener-in. All the world, from the cradle to the grave, can now listen-in and be sure of hearing something, either highbrow or lowbrow, that will interest it. Even Jojo, the sleek white donkey which Marie Burke uses in "Wildflower" listened-in the other day. He didn't say anything; but he looked pleased. And so, from granny who secretly enjoys the latest jazz music, to baby who likes the noise, there is something in wireless to appeal to everyone.

Children, for example, are especially well catered for, and 3LO, Melbourne, has combined the newest way of telling stories and the very oldest form of story with excellent results. It has two tellers of fairy stories broadcasting on various nights; and they have brought a new joy into the lives of the children. Not many parents can tell a good fairy story, and still fewer have time to tell them, even if they could; and so the wireless has filled a long-felt want.

Hundreds of letters each week are received at the 3LO Melbourne studio from children—all enthusiastic, and all saying how much they look forward to the stories. The letters vary amazingly in quality; but not a bit in sincerity. They come from far and near: from Tasmania and South Australia, and the far outback, and letters have been received from lonely stations in Queensland. The letters of the bush children are almost pathetic in their gratitude. One little chap, far away in a lonely outback district, writes that he can only hear the bedtime stories one night—on Sunday—as he has to walk five miles to and from school, and gets home too late to hear

the stories on other nights. Another little girl tells of the difficult bush life. Her father is short-handed, and her mother is away ill; and so, to help him, she is learning to milk. The wireless is their only form of entertainment.

But the bush children do not have all the hardships. A little town girl, in a pathetic letter, says that she has been in bed now for two years, because of an injured leg; but the wireless, and especially the bedtime stories, have made her very happy, and she thinks about them and looks forward to them all day, as she lies in bed staring at the ceiling. Another lonely little girl has no father and mother and no one had ever told her a fairy story before. She was so grateful to "Billy Bunny" that she bespattered the whole page with crosses, and offered to send him her doll!

Many of the letters, on the other hand, are quaintly humorous, as the children quite take "Billy Bunny" and "Little Miss Kookaburra" into their confidence, and seem to look on them as auxiliary parents. One youngster writes:—"I had meesles and couldnt lisen in. I got spanked for coming out cos I wanted to hear your story so bad. The doctor gave me a glass thing to suck. I blew hard to make the needle inside go up, and it went up, and the doctor thought I was going to die, and then my father spanked me again." His is a hard life.

A small girl writes:—"My father says that 3LO Melbourne is so loud he will have to put some more nails in the roof to keep it on." Another writes:—"I am going to write these few lines to let you know how I like your stories. Will you tell me more of that Magic Circle story I simply like them. I am six to-morrow, and I must go to bed—Good night." Another has a novel way of finishing up. She describes a visit to the fleet, and ends: "The people when they were coming back they stood on my toes with love from—" Another ends: "I am a gurl 7 and a harf love from—"

What these bedtime stories mean to the children and what they think of the people who tell them is expressed in the following letter from a parent:—"My little daughter wrote a letter to you about a week ago, and she has been listening very attentively each evening except one (when we could not use the wireless), and so we think you may have answered her letter on that very evening. I would not trouble you to answer it again, only you know how much it means to these little ones—their eyes open wide and glisten with pleasure when they hear their names called by you, and you are a very real personality to them, and very dear. . . ." Presents of anything from flowers to knitted scarves are constantly being received at the studio as marks of gratitude from little listeners-in. And there is no doubt that both the tellers of stories and 3LO Melbourne have earned the gratitude of both children and parents.

LEARN CODE QUICKLY. A new, easy, positive and fast method of learning Morse Code. Simple instructions enable you to enjoy hearing the world's code traffic. Also full list of abbreviations and intermediate call signs all countries. Send postal note, two shillings, to Box 1055, G.P.O.

WILL "ANY" VALVE DO?

In wireless shops I have been very greatly surprised indeed at the attitude of Mr. X when he wants to buy a valve. Mr. X, I should explain, is the wireless "man in the street"; he is the average enthusiast, neither expert nor yet absolute beginner, who uses his set on most evenings of the week for the purpose of receiving broadcast transmissions. He knows quite a bit about wireless; the three-, four-, or even five-valver that he has made at home is a piece of work that no one would be ashamed of. He may have views of his own upon such subjects as loud speaker distortion, reaction, and the shunting of audio-frequency inductances. Yet when he goes out to buy a valve he is apt to set about this important business as lightly as if he were purchasing a box of matches or a new pair of bootlaces.

BUYING A VALVE.

He enters a wireless dealer's shop, "I want a valve," he says. "Yes, sir. What make did you want?" "Oh, just let me see what you've got." The assistant produces various standard types, and possibly a few cheap (and frequently nasty!) importations. Mr. X looks them over, selects one, asks if it is a good laster, and on being told that it is, buys it. To him, apparently, all valves are alike so far as their performances are concerned; the only important difference is that some expire, after a momentary display of bluish-purple light, in a shorter time than do others.

Now, does the man who buys valves in this haphazard kind of way get the best out of his set or the greatest value for his money? Most emphatically he does not. If he is lucky, quite respectable results may come his way; but in the majority of cases, though he saves nothing in the original cost by buying in happy-go-lucky fashion, his reception is never more than mediocre.

WHAT A VALVE DOES.

Consider for a moment what valves do. They have three quite separate and distinct functions in the set. The high-frequency amplifier receives upon its grid oscillations whose frequency, even upon the broadcasting band of wavelengths, may be anything up to one million a second! The higher the incoming frequency the more noticeable are the evil effects of interelectrode capacity within the valve.

If a valve with a high capacity between its grid and plate is selected for the radio-frequency side of the set, reception on the shorter waves can never be satisfactory. Then there must be a certain flow of grid current when the grid is at its normal working potential in order that stability may be obtained. Without it the set is perpetually falling into self-oscillation.

The rectifier has an altogether different duty to perform. It receives magnified oscillations at radio frequency from the valve or valves in front of it and converts them into rectified pulses at audio frequency. For successful grid leak and condenser



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WIRELESS BATTERY

Exide Batteries mean a silent and clear reception of all Radio Broadcasting. They are reliable and provide a steady current.

Instal an Exide and you are sure that this part of your equipment is of the highest efficiency.

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BRISBANE

rectification a heavy flow of grid current is essential when the grid is set at a slightly positive value.

NOTE-AMPLIFIERS.

The note-amplifiers deal with rectified impulses at speech frequencies, their role being simply to magnify them without any trace of distortion. Here, since oscillations take place at a comparatively low frequency interelectrode capacity does not greatly matter; but it is of vital importance that the valve should be capable of working about a point in its characteristic curve at which there is no flow of grid current. Should the straight portion of the curve be too short, or should grid current pass, there will be distortion of the most horrid kind.

The man who does not care to devote a little of his spare time to the study of the little idiosyncrasies of the various valves on the market will perhaps do well to confine his purchases to "general purpose" valves made by a manufacturer of repute. With these if they are intelligently used, quite good results are obtainable.

But since there are now "special purpose" valves available at no greater cost than others, why should we not make use of their particular qualities? The general purpose valve can, at best, never be more than a compromise. One can imagine a nondescript dog of fair size being trained to course hares, to kill rats, or to retrieve. All of these things it would do fairly well, but a greyhound, a thoroughbred terrier, and a retriever would be at him handsomely every

time it matched against him in its particular speciality. The general purpose valve performs the three functions required of it about as well as the lurcher dog acquits himself at coursing, ratting and retrieving. The special valve has one definite duty, and performs it as well as the specialised dogs mentioned perform theirs.

FOR SPECIAL PURPOSES.

The wise amateur will select valves intended for particular purposes, just as he uses a pair of strong boots on a wet day, light shoes in hot weather, and comfortable slippers in the evening. No one form of footgear could give complete protection and comfort on all occasions, and no single type of valve will produce the best results in all parts of the set.

ADVICE.

My advice to the thinking amateur is this: Go for the specialised valve. Use it sensibly and your results will show an enormous improvement. Use something designed for the purpose that you want it to fulfil. Be discriminating in your choice, and do not take the first thing that is offered to you. Above all never buy a valve just because it is cheap.—R.W.H. In "The Wireless Magazine."

Pictures Talk

where words
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Charlotte Street, Brisbane.

2BL STUDIO NEWS

On January 22nd last, Dan Thomas, the world-famous pantomime dame, delighted the listeners-in with his quaint and irresistible humour transmitted by 2BL. Already Mr. Thomas has made for himself an enviable reputation as a wireless entertainer. On the same evening there was heard Miss Margaret McKenzie, possessor of a beautiful mezzo soprano voice, and Broadcasters' Brass Quartette in numbers from their repertoire.

Unique among the provision of musical items to assist in producing the atmosphere for a moving picture, is Hoyt's Imperial Orchestra. In addition to delighting the patrons of Hoyt's Theatre, this orchestra assists to entertain many thousands of listeners-in when put on the air by 2BL.

Monday night is one of 2BL's special Jazz Nights. On January 25th, the programme opened with the Ambassadors Instrumental Salon Quartette in classical numbers, and was followed by the combined orchestra (directed by Mr. Hammett) in jazz numbers. Dance music continued until midnight. More and more home entertainments are being organised which take advantage of the opportunity of obtaining dance music of the highest order per medium of wireless.

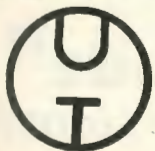
One of the most delightful combinations of human voices possible to imagine, is that of a contralto and a tenor. From 2BL's Studio on January 26th, a song Cycle was broadcast, comprising solo and duet numbers by Miss Myra Gillon and Mr. Norman Wright. These two voices blended beautifully.

On January 27th, jazz music from the Embassy Dance Palais was broadcast. Elliot and Edwards were heard in harmony numbers, and the Honolulu Duo presented steel guitars and other instruments. Instruments of the ukelele type continue to please, and as presented by the Honolulu Duo, something of the glamour and the magic and the moonlight of the Pacific Islands is brought home to the listener-in. Another fine combination heard from 2BL comprise Miss Myra Millie Hughes and Mr. Ray Beatty. These artists are often heard in solo and duet numbers.

Steadman's Welfare Society presented their first annual concert at the Australia Hall, on January 28th, and the whole programme being transmitted by 2BL. Assisting artists comprised Miss Heather Kinnaird, Miss Dorrie Ward, Mr. W. E. Lewis, Miss Edith Dickerson in songs at the piano, and a humorous entertainer in the person of Mr. Fred Gooch.

Miss Dulcie Blair, well known as a solo violinist, and also by her fine work as a member of Broadcasters' Instrumental Trio, has returned to Sydney after spending a holiday in Albury and has resumed work.

A series of Astrological Lectures under the general title of "Astrological Aids to Characters," is being broadcast by 2BL, and delivered by Mr. Fraser Anderson, President of the Astrological Association. As there is a good deal of popular interest in this age, old and much misunderstood science, listeners-in will be glad to avail themselves of the opportunity of hearing a thoroughly competent exponent.



Famous Symbols

The World's First Valve

Was Made by EDISWAN



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| A.R. Bright Emitter | | 10/- |
| R. Bright Emitter | | 10/- |
| A.R.06 Dull Emitter | | 18/6 |
| A.R.D.E. | | 15/- |
| P.V.5.D.E. Dull Emitter | | |
| (power) | | 22/6 |
| P.V.6.D.E. Dull Emitter | | |
| (power) | | 25/- |

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and Hear Everything



TYPE A. R.
Plate Voltage, 30-80.
Filament Voltage, 4.
Normal Filament Current
0.75 amperes.

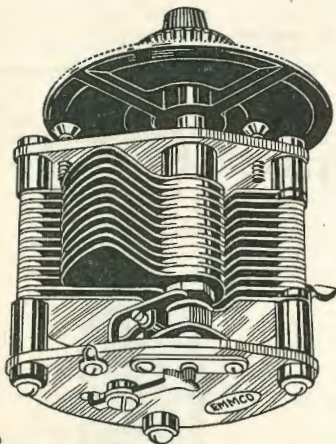


TYPE A. R. 06.
Filament Voltage, 2.5.
Plate Voltage, 20-50.
Filament Current, .06 amperes

&
 The
 Staff
 at
 Temporary
 4QG



Back Row (left to right): Mr. L. L. Sheil (Accountant), Mr. W. F. Barden (Assistant Engineer), Mr. F. W. Stevens (Chief Engineer), Mr. N. A. Cooling (Announcer), Mr. H. Scott MacCallum (Musical Director).
 Front Row (left to right): Mr. C. Moran (Cadet Operator), Miss M. E. MacFarlane (Director's Secretary), Mr. J. W. Robinson (Director), Miss C. H. Archdall (Typiste).



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There is a sound commercial reason why you should favour Australian made Radio parts.

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The “EMMCO” Condenser displayed here is an example of how careful workmanship and modern production methods can produce the equal of any highly priced overseas article at a cost well under the price usually asked for radio parts of its high quality.

Our other radio products are distinguished by the same moderate price and delicate finish that should be the two very sound reasons why you should favour Australian made.

A list of “EMMCO” products and prices will be forwarded on application to the manufacturers.

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For discriminating buyers who require purity of tone, together with good range and selectivity, our Sets are comparable with the most expensive imported Sets.

TWO VALVE SET

which will work a Loud Speaker under favourable conditions around Brisbane, complete with all accessories. **£16**

THREE VALVE SET

complete with accessories. **£28-10-** and good loud speaker. For excellent results on 4QG, and on the Southern Stations when conditions are favourable.

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with all accessories and B.T.H. Loud Speaker. **£46**

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The famous STROMBERG CARLSON and COLIN R. KENNEDY Receivers solve the problem for those requiring a de luxe set, whilst the Five Valve RICO-DYNE at £24, stands alone amongst the lower priced outfits.

Whether you require advice on set building, or whether you wish to purchase a set ready to operate, our advice is always at your disposal.

COUNTRY CLIENTS are especially invited to write to us. Prompt attention assured.

Melton & Co.

8, QUEEN STREET, BRISBANE.

If it's of Steel—We'll build it

If you are contemplating the erection of a building, Wireless Masts, a travelling crane, bakers' oven fitters, or any thing that is built essentially of steel, see us about it.

And, for some years we have been making Steel Flood Boats. These have been bought mostly by squatters and shire councils where floods are prevalent.

Their value lies in the fact that they are puncture proof, cannot leak or water log, or dry out, or open at seams. As evidence that no job is too big for us we remind you that we built the gigantic Wireless Masts on the roof of the State Insurance Building, Brisbane—4QG Broadcasting Station.

Ask us to submit you a price.

HARVEY & SON

"Staunch Service"

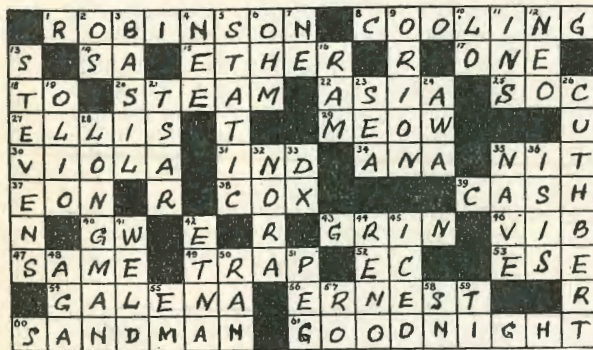
Structural Steel Engineers

MARGARET ST., BRISBANE

S.A.S.

The Cross-Word Puzzle

Great Interest Displayed



Quite a few envelopes were opened before a correct solution was secured. The first correct puzzle opened bore the signature of:—

A. G. SAMSON, Marley Street, South Brisbane,

and we heartily congratulate this gentleman.

A cheque for £2/2/- will be forwarded to him.

It was indeed interesting to wade through the huge pile of answers, and observe the wide area which our paper covers. One reply hailed from New Zealand, others from Victoria, New South Wales, while another carried the post mark of Port Darwin. Northern, Central, and Western Queensland were well represented, while over 200 were from amateurs within a 20 mile radius of Brisbane.

We hope to run another Cross-Word Puzzle Competition at an early date.

Remarkable interest has been displayed in our second Cross-Word Puzzle, no fewer than 447 replies being received.

The drawing took place on Saturday, January 30th, when the compiler (Mr. Dean, of Eagle Junction) shuffled the envelopes (face downwards) in a long shallow box, and proceeded to open the envelopes.

GIANT LOUD SPEAKER.

The world's largest loud speaker is being built in Germany. It will be used experimentally to supply music over an area of about half a mile, though the makers anticipate that it will be heard at a much greater distance. The giant instrument will have three bell mouths, each 40ft. across and 110ft. in height. Only four valves will be used, but music will be amplified 200 times.

TRADE QUOTES TO DEALERS SETS TO OWN CIRCUIT.

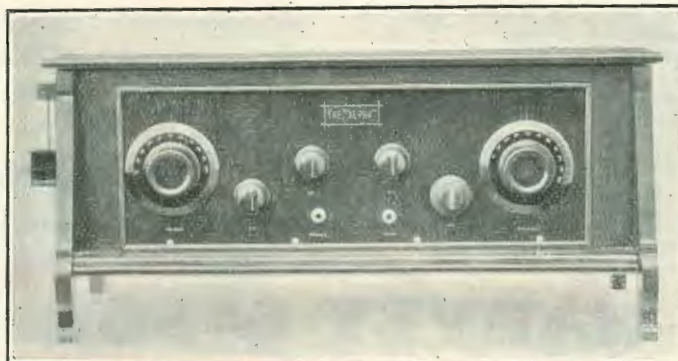
INSTALLATIONS AND TUITION FREE. EASY TERMS IF REQUIRED.

THE "ALPHA" SETS

As the Name Implies are Right in Front. No Trouble—Great Volume—Easy Controlled

Quotations:—
Everything Included

- 1 Valve £9/10/-
No Loud Speaker.
- 2 Valve with L.S.,
£18/15/-.
- 3 Valve with L.S.,
£24/10/-.
- 4 Valve, A.R.19,
loud speaker, £35



- 5 Valve, A.R.19,
loud speaker
£38/10/-.
- 6 Valve A.R. 19,
loud speaker
£55/10/- Very
superior.

All in Silky Oak or Maple, beautiful finish. First-grade fittings. "A thing of beauty and a joy for ever."

Alec. McCulloch & Co.

King House, Queen Street, Brisbane

Sets Altered or Repaired. Absolutely best Workmanship.

Questions Answered

J.B., Goombungee.—The paragraph is correct. You will observe that the grid of the fourth valve is connected through the secondary of the transformer to the negative filament wire which passes along to the common negative battery terminal, the end where it enters the coil is the one marked G on the transformer by the manufacturers, and the other end is marked F. Regarding paragraph seven referred to, this should be quite clear. If you connect the terminal marked G on the transformer on to the one marked G on the valve socket following it, and the transformer terminal marked P to the one on the valve socket marked P, and so on, you cannot go astray. The low potential end of the coil is the earth end.

C.R., Brisbane.—The grid return from the detector valve is connected to the positive filament wire so as to apply a positive charge to the grid in order to set up grid currents for rectification purposes. An article in rectification will appear in an early issue. The opposite connection on the radio frequency valve is to stop rectification as far as possible in that valve, and to keep it amplifying on the straight portion of its characteristic curve, this being determined by the normal grid potential, thus eliminating distortion which would otherwise be caused in the radio frequency amplifiers.

R.E.I., Brisbane.—There is no way of remedying the defect. However, you may possibly do it by lighting the filament, and by gently tapping the valve so that the taps tend to move the heated filament away from the grid.

W.H.A., Oxenford.—The position which you marked on the diagram was the correct one for the crystal detector, i.e., between the end of the transformer winding and L3. Polar condensers are quite suitable; their construction giving a vernier adjustment. Try a 1 megohm leak in place of the 500,000 ohms resistance. For best results the leak should be variable. Also try reversing the connections to the crystal detector. It is unwise to use 4.5 volts on the filaments of the 3 volt valves which you use in the set. The filaments of these valves are specially treated, and have a coating of thorium which gives a greater electron emission at a lower temperature. Excessive voltage would burn the thorium off the filament, tending to greatly decrease the emission and consequently the efficiency of the valve. When the crystal is disconnected in your set, it simply functions as a P.I. circuit. We gave this circuit a reasonable test, and were not favourably impressed with it. While you will no doubt rectify your trouble by reversing the connections to the crystal, providing of course, that the remainder of the wiring is correct, and the valves have not been ruined through excessive filament voltage, we are unable to make any further suggestions without further details of your experiences. The C battery is only necessary when an excessive plate voltage is used on the amplifiers.

G.T.McG., Upper Barron.—We are afraid we are unable to help you much without a diagram of the wiring of the set particularly of the parts preceding the first valve. We are inclined to believe that there is a wrong connection somewhere. The design of the set moreover appears to be unsuitable for Australian conditions. Regarding the type of coupler you mention, we regret that we have no experience with these, and consequently cannot advise you on the matter. Your description of the alterations made to the filament is incomplete. Please describe in detail, submitting sketch if possible so as we can correct.

I.S.McL.—Station 8AC is installed on a Ford motor car travelling at present, we believe, in the Northern Territory. It is operated by Mr. John Flynn, of the Australian Inland Mission. The diagram you request is not available at present.

F.N.R., Avon Downs, N.T.—We would not advise the use of Lactanche type cells for radio "B" battery use. The price at present is something over 6/- for a one-volt cell, and the cost of upkeep is also very considerable.

A. G. MYERS & CO.

719 Stanley Street

(opp. Railway Yards)

South Brisbane

Crystal Sets

Assembled and Unassembled.

Valve Sets

Complete or Ready to Assemble, 1-5 Valves.

Valves—Phillips, Ediswan, &c., &c.

Accessories of All Descriptions.

Also All Electrical Supplies Stocked.

Gramophones and Records

Also in Stock.

JOIN OUR GRAMAPHONE RECORD EXCHANGE

It Will Pay You.

Consult Us when Quality and Service
in Trouble. Our Motto

Roberts' Exhibition Wireless Cabinets

A well-built, finely polished Cabinet, will make all the difference to the appearance of your set.

We build Wireless Cabinets of Maple, Silky Oak, or Rosewood, to any size, and polish them in any color. The cost is very reasonable. Call and see us.

To Those in the Country

To facilitate packing we supply "knock-down" Cabinets, cut and polished, ready to screw together. Write us for prices.

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HOME FURNISHERS
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STORES - NEAR EXHIBITION - VALLEY - BRISBANE

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For Wireless Sets and Accessories

Single Valve Set, £7/10/-, complete.

Two Valve Sets, £14/10/-, complete.

Three Valve Sets, with Loud Speaker,
£25, complete.

Crystal Sets, made specially for 4QG
Brisbane, from 35/-, complete.

All Latest Records Stocked.
Talking Machines from £3/7/6.
Gramophone Repairs Speciality.

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354 GEORGE STREET, BRISBANE.

(Opp. John Hicks).



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General Stamping to The Trade
Get in touch with us. We are experts and **GUARANTEE YOU SATISFACTION.**

CHRIS TURNER LTD.
GIBBON STREET, W'GABBA.

Phone, J 4305.

Correspondence

C/- "Courier,"

December 23, 1925

The Editor,
"Queensland Radio News,"

Dear Sir,—

I thought it may interest you to hear of the success I have had with my three valve portable receiver, designed and constructed by myself from the circuit published in "The Queensland Radio News," of March last, describing a set used by Brien Lawrence, of the Diggers Co. (one stage radio, detector and one audio), the only alteration made being the addition of a reaction coil and a variable grid leak. I have made the set self contained—batteries, valves, phones, loudspeaker, and frame aerial all being included in the one case so that the case can be closed up completely when the receiver is in action. Using the receiver as it stands (with no outside aerial), 4QG comes in fairly well on the loudspeaker (a Dragonfly) while 3LO can be tuned in on the phones quite distinctly, any night. With an outside aerial, Stations 2FC, 2BL, 2KY, 2UG, (or 2UE), 2LO, 3AR, and 5CL (Adelaide), have been received all on the one night. The local station, 4QG, being entirely eliminated in each case except 5CL. This station cannot be received while 4QG is broadcasting by any set in Brisbane as far as I know. Good loudspeaker volume is obtained from 3LO, and fair speaker volume on 2BL, while 2KY was also tuned in on the loudspeaker during testing under a class condition. In each of the other cases loud phone strength is obtained. To those who complain of their sets not being selective, I can thoroughly recommend this circuit to them.

Should any "doubting Thomas" disbelieve the present capabilities of my receiver I do not think I will have any difficulty in arranging a demonstration with the new owner (the receiver now having passed out of my hands).

A. H. SMOUT.

Mr. G. A. Campbell, of Stanley Street, South Brisbane, has had a long experience in radio and electrical work. He has been in the electrical business practically all his life and built his first receiver in England in 1909. He came to Australia in 1912 and put an aerial up in Sydney in 1913, and was experimenting until 2BL started transmitting. Mr. Campbell then made receiving sets a commercial proposition.

WIRELESS POLES

Hardwood and Oregon Pine Wireless Masts delivered and erected. Three coats white paint, well-finished, and fitted with special hardwood base. These poles will stand for a lifetime. Ring J1976 for particulars.

E. ROWDEN
EARL ST., THOMPSON ESTATE
SOUTH BRISBANE



Phone J1976.

"A New A.W.A. Product"



Super Radio Frequency Transformer



30/-

Points of Superiority!

1. Gives constant amplification over a wide range of wavelengths without adjustment.
2. No switching or other mechanical device is used in the A.W.A. Super R.F. Transformer.
3. The elements have been made moisture-proof by sealing in an insulating compound.
4. Efficient electrostatic and magnetic screening has been provided for in the container, and the aim has been to reach perfection in the mechanical and electrical construction.
5. **GUARANTEE.** We undertake to make good any defect in the A.W.A. Super Transformer that may arise within ninety days of date of invoice in respect of either material or workmanship, provided the apparatus is not tampered with, and is returned to us carriage paid and duly advised.

Our responsibility is limited to making good the defect free of charge.



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The Lowest Prices for Quality



This is our motto, and we live up to it by giving our customers the full advantage of every market advantage enjoyed through our immense buying power. Our stocks have been further augmented by additional shipments of high grade radio equipment. Here are a few extracts from our new 1926 Catalogue, which will be off the press very shortly.

"More profit for you" means less profit for us—of course. But we are content to build our business on large turnover and smaller profits than other stores—for by this policy we aim to win and hold your patronage.

AERIAL WIRE.

| | |
|---|-----|
| 3/20 H.D.C., 100 feet | 2/9 |
| 3/20 Enamel Covered, 100 feet | 5/- |
| 7/22 H.D.C., 100 feet | 7/6 |
| 7/22 Enamel Covered, 100 feet | 8/6 |
| Indoor Brass Spring Aerial | 6/- |

INSULATORS.

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| Best English Procelain Egg Insulators, each | 2d. |
| Best English Large Type Egg Insulators, each | 6d. |
| Best English Porcelain Lead In Insulators, 3in., ea | 3d. |
| Best English Porcelain Lead In Insulators, Curved, each | 4d. |
| Insulated Screw Eyes | 3d. |

"B" BATTERIES.

| | |
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| Hellesen 22½ Volt, each | 7/6 |
| Hellesen 36 Volt, each | 10/6 |
| Hellesen 45 Volt, each | 14/- |
| Hellesen 60 Volt, each | 18/6 |
| Eveready 42 Volt, each | 12/6 |
| Eveready 60 Volt, each | 18/- |
| Columbia 45 Volt, large capacity, each | 22/6 |
| Winchester 45 Volt, large capacity | 26/- |

CRYSTAL DETECTORS.

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| "Grip" Detector for Panel Mounting, each | 1/6 |
| Horizontal Glass Barrel Type, each | 3/- |
| "A.W.A." Glass Barrel Type, each | 4/9 |
| Grodan Pericon Detectors, each | 4/9 |

RHEOSTATS.

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| H. & H. Rheostats 30 ohm, with Dial, each | 6/- |
| Frost Metal Frame, 35 ohm, with Pointer, each | 6/- |
| Frost 6 ohm Bakelite (Vernier), each | 10/- |
| Frost 35 ohm Bakelite, each | 9/- |

Our Technical Department is at your service—if you are experiencing trouble with your set, bring it to us without delay, and save further annoyance. We will make an inspection of the set, and give you the necessary advice for remedying the trouble, or if you desire we will re-wire and overhaul your set at a nominal cost.

CORDS.

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| Telephone Cords (Double) with Pins, each | 6/- |
| Loud Speaker Cords, 6 feet, each | 2/6 |
| Loud Speaker Cords, 10 feet, each | 5/3 |
| Loud Speaker Cords, 20 feet, each | 7/6 |
| A and B Battery Cords (5 Leads), with Clips, set | 7/6 |

JACKS.

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| "B.M.S." Jacks Open Circuit, each | 2/9 |
| "B.M.S." Jacks, Double Circuit, Fan Tailed Lugs, each | 3/6 |
| "Mirra" Open Circuit Jacks, each | 2/9 |
| "Millimeter" Double Circuit Jacks, each | 3/3 |
| "Millimeter" Single Circuit Jacks, each | 2/6 |

LIGHTNING ARRESTERS.

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| Electrad Arresters, each | 4/- |
| Muter Arresters, each | 3/6 |

VALVE SOCKETS.

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| Standard R. Sockets, Panel Mounting | 1/6 |
| Standard R. Sockets, Table Type, each | 2/- and 2/6 |
| H. & H. V.T. Sockets, Bakelite, Rubber Feet, each | 5/- |
| H. & H. U.V.199 Sockets, Bakelite, Rubber Feet each | 4/6 |
| Weco Valve Sockets, each | 3/6 |

MISCELLANEOUS.

| | |
|---|-----|
| Spaghetti Tubing, yard | 9d. |
| Liquid Spaghetti, All Colours, bottle | 1/9 |
| Ear Pads, Sponge Rubber, pair | 3/- |
| Square Busbar Wire, feet | 1d. |
| Phone Tips, N.P., pair | 2d. |
| Soldering Lugs, Various Types, dozen | 6d. |



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