The Queensland Radio News

"Your Own Wireless Journal"

6D.

Vol. II. Monday, February 1st, 1926. No. 1

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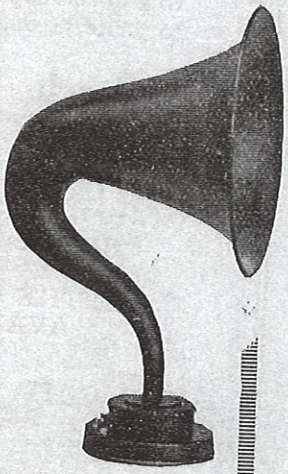

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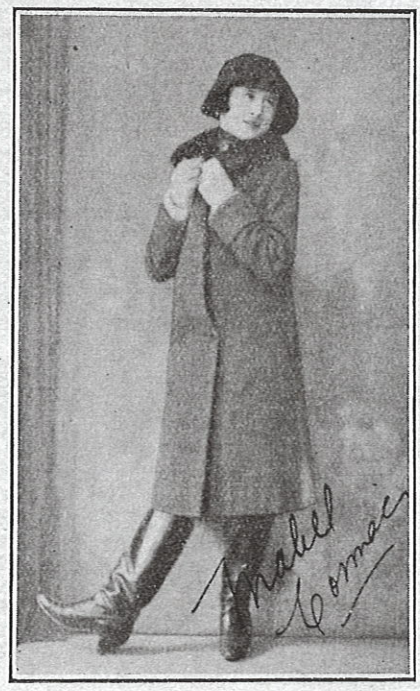

Miss Mabel Cormack

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.

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Published Monthly

The Queensland Radio News

"Your Own Wireless Journal"

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

CONTENTS

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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.

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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.

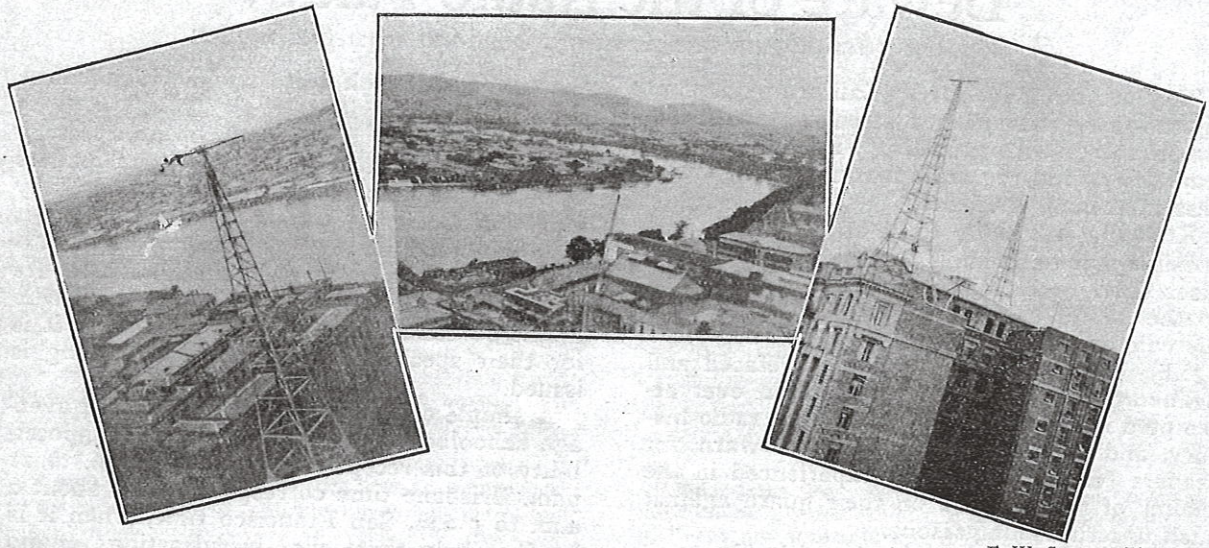
Volume One contains some valuable Radio History so far as Queensland is concerned, for it was during this period that "A" class broadcasting in this State was celebrated. We, who are comparatively young, will, in 30 years time, look back upon this period in much the same manner as do many older people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



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 exhorbitant 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.

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 Lundon 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 vocalion" 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 hawiian 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 hanswer 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 bigest 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 Sundey 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 airaiel and shoots it offs.—So long,

DAD.

Wireless has been installed at a height of 14,900 feet on Monte Rosa, Italy, to summon aid in case of accidents to climbers.

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.

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.

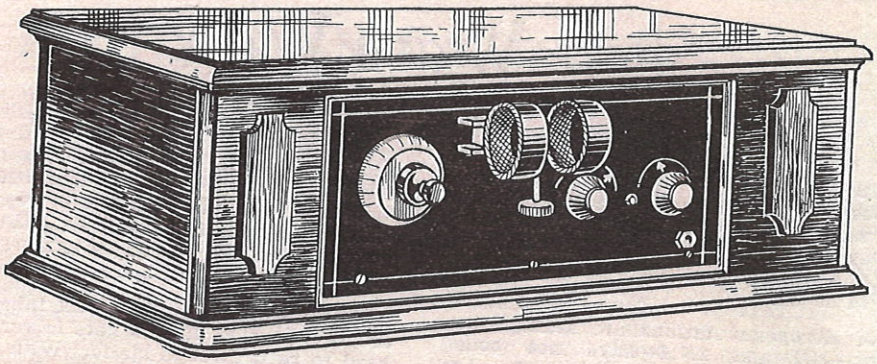
4RB is using a single 5 watt tube, and his signals are very strong, but his note is very low, making it hard to read through static. With this power input he has QSO, U.S.A., and holds a Queensland record for low power on short wave transmission. Well done, O.M.

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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	£	s.	d.
Bakelite Panel, 18 x 8 x 3ft. 6in. Drilled	0	18	0
Base board	0	2	6
Ormond Sq. Law. Low Loss Condenser	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.

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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 raido 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 reeciving 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. Hamilon 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 entertining 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

THERE 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 certain 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 atmospherics, 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.

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 aerials.

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 "amperemeter." 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.

"May I Ask a Question ?"

According to a report in the "Bulletin," listeners to 2BL who live within easy telephone call of Sydney may interject and ask a lecturer questions, and have the novel experience of hearing his own question and the lecturer's answer broadcasted.

The scheme was introduced recently during the weekly session 2BL devotes to lectures on foreign affairs. The interjector rings up in the usual manner on his telephone, and the speech is amplified and carried into the studio where question and answer are both broadcasted.

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.

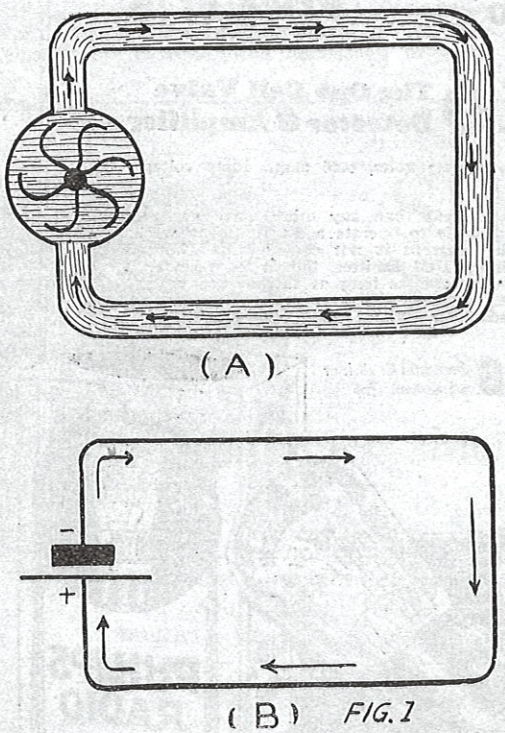

FIG. 1

(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.

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.

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 Coils 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 accomodate 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

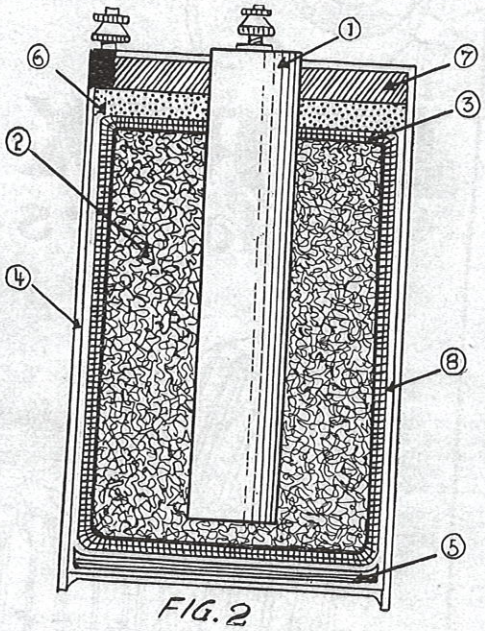

FIG. 2

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.)