

RADIO

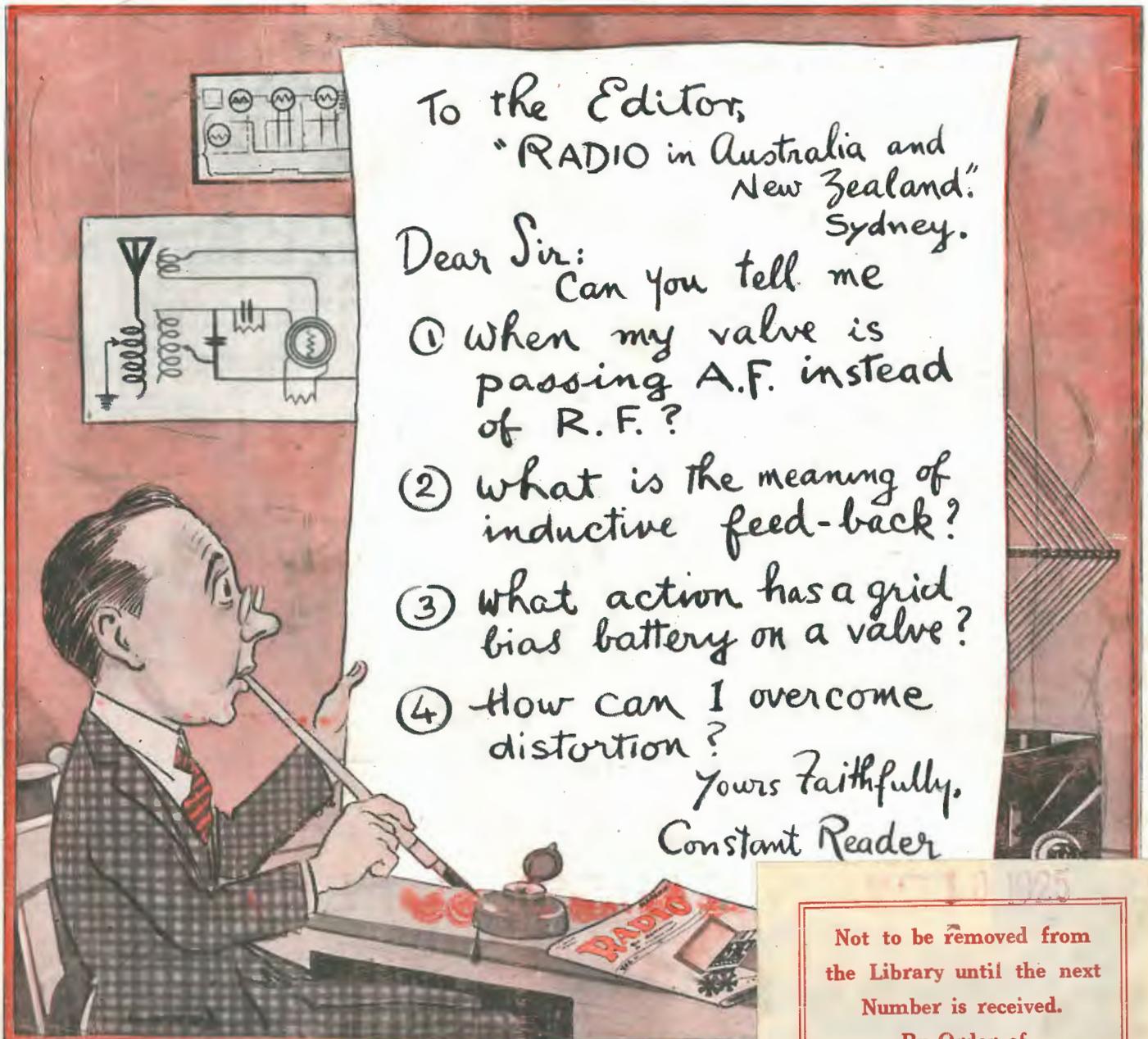
IN AUSTRALIA
& NEW ZEALAND

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VOL. II

MARCH 4, 1925

No. 51



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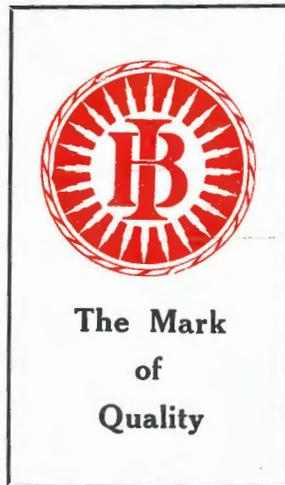
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[Edited by N. H. THOMPSON.]

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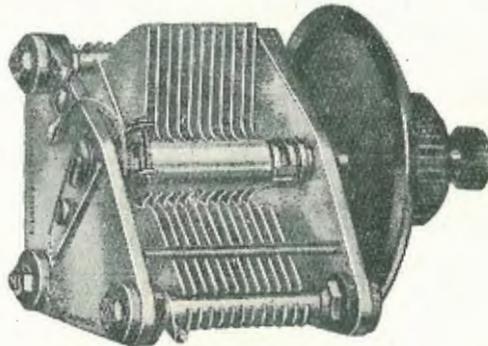
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Radiotorial

Learning to Walk



WIRELESS is very much like knowledge, in that the more one knows, the less one knows one knows. And again, because the less one knows, the more one will want to know, for knowledge is strength. There is nothing more pathetic than the sight of one dabbling in that about which he knows nothing. Nor is the pathos reduced to any less a degree when considered in conjunction with acquirement of a knowledge of Wireless.

AN all-seeing Providence has ordained it with a simplicity that bespeaks genius that before one can walk, one has painfully to learn to crawl. This is in order that when one walks with one's head among the clouds one will, or should, carry with one a memory of how hard the ground is and of the careless people who leave things about and which are liable to trip one and bring one low. If one has not a thorough knowledge of the obstructions that abound on *terra firma*, one might as

AND so, through the mercy of Providence, for, perhaps, quite a time, until even the patience of the gods is exhausted and, inexplicably, it seems, the fumbling toe meets with obstruction.

WHAT a fall is there, my countrymen, what a fall!

IF he who has descended to Mother Earth so precipitantly possesses the right qualities, he will set about and commence to learn anew to crawl. He will mark, learn and inwardly digest the whereabouts of those dangerous localities in which hard and uncharitable and spiteful pieces of furniture, abound. He will recommence the study with a meekness of heart which we are told entitles him to inherit the earth.

AFTER no little knocking of knuckles and scraping of shins he will gradually begin to find that he is able to crawl backwards and forwards, and even sideways, without any unpleasant sequel. He begins to realise in his inmost heart that he really *knows*, if not all, at least

WARNING RE FRAUDULENT INSPECTOR.

"RADIO" has been informed that an individual fraudulently representing himself to be an Inspector of the P.M.G.'s Department has been visiting houses in certain districts under the pretence of examining receiving sets and calling for the production of broadcasting receiver licenses.

IN one instance this individual confiscated and took away a receiver at a house where there was no license and in another case he obtained money under some specious pretext from the householder.

OUR readers are warned to take particular care of any individual asking access to their premises, and they should know that genuine officers of the P.M.G.'s Department are provided with a written authority and identification which they should always be asked to produce. Needless to say, the genuine officers have no objection whatever to producing their authority on request, as they will always be found courteous and obliging.

well be walking on air—with the dire and to-be-expected result.

SOME people, after very little practice, soon convince themselves that they can crawl quite nicely. They roll over now and again and collect an interesting array of cuts and contusions through carelessness in circumnavigating the corners of wardrobes, chair and table legs, and other ordinary, every-day appurtenances of existence, but, on the whole, they consider, to put it modestly, they are doing exceptionally well. With that they totter unsteadily to their feet, and by the kind-heartedness of that Providence which is proverbial for its glad sufferance of Fools, they succeed in staying on them—for a while.

AND how their self-estimation soars! With what a cold and contemptuous eye do they survey the aerial evolutions of the eagle—"upon that little tent of blue which prisoners call the sky." 'Tis but a hand's span away, and did they so desire they could pluck it down! And what of the high mountain and the higher cloud? What are they but pebble piled on pebble, and so many drops of moisture spun to the likeness of a ball of silk? "Bah!" they snap their fingers, "'tis naught!"

sufficient, of the gentle art of making progress on his hands and knees to enable him to stand upright with some well-founded feeling of legitimate confidence. He knows that he knows.

AGAIN he takes the great step and rises to his feet, but this time there is no unsteadiness. He has earned his promotion and is rightfully entitled to take up his position with the Elect. He is one of those who *know*.

IN other words, the foregoing can be summed up thus:

The longer one progresses with Wireless, the more one will gain from it; the deeper one delves, the more interested one becomes, but one can only go so far and so deep; if one is not properly armed with those most important tools, Experience and Knowledge of Elementaries, one will be able to advance so far and no further. To do and find the big things in Radio, it is imperative that the Little Things be appreciated for their true importance. Never let it be forgotten that the greatest experts of the Wireless world to-day began their work by, so to speak, adding one and one together and finding that they made two—and why. Let not the fan-fare that announces the Super-heterodyne dull our ears to the music of the buzzer of the humble crystal set—each is greatness in its way.

Recent Commonwealth Wireless Patents

By G. Apperley.



FOLLOWING are abridgements of complete specifications of Wireless patents notified in the Official Journal of Patents as accepted at the Commonwealth Patents Office, Melbourne, during the month of October, 1924.

No. 15474/23—Applicants: E. E. CHARLTON, K. H. KINGDON, I. LANGMUIR, AND J. MACKAY, U.S.A.

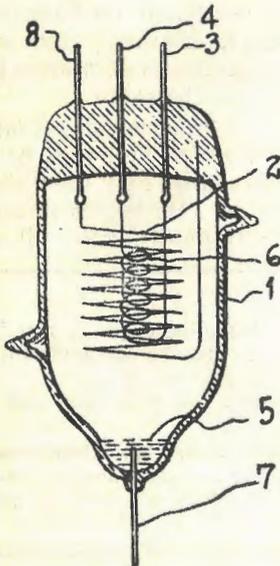


Fig. 1.

Describes a method of improving the operating efficiency of electron discharge devices by providing in the space surrounding the cathode a low pressure of vapour of certain alkali metals such as caesium or rubidium, which under certain conditions greatly increases the electron emission from the heated cathode.

The useful life of the device is thereby greatly increased as the result of successful operation at a low cathode temperature.

In the evacuated receptacle 1, Fig. 1, is a spiral filamentary cathode 6, which may be heated by current led in through conductors 3 and 4, an anode 5, of caesium and a grid 2, in the form of a spiral conductor, surrounding the filament. Connection to the anode and grid is effected by

the leads 7 and 8. Before sealing off the container after exhausting, a small quantity of the desired metal is introduced to provide a vapour at the required pressure and a surplus of unvapourised metal sufficient to form the anode 5.

No. 17016/24. INVENTOR B. B. GRACE, ENGLAND.

In order to limit the range of a tuning element of a wireless receiver the element which normally may be actuated through a given number of degrees is provided with means whereby the movement may be restricted to less than the said given range. Fig. 2 shows a condenser having fixed plates 1, and movable plates 2. The former are fixed to the shaft 3, which may be rotated by the knob 4. Firmly attached to 3 is a member 5, adapted to engage stop members 7 and 8 permanently attached to the base 6, the total range of movement being through 180 degrees. One or more adjustable stop members, such as 9, may be secured

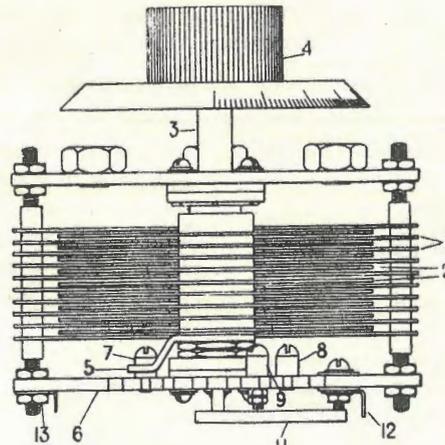


Fig. 2.

in the path of 5 to restrict the tuning range of the condenser by limiting the movement of the movable plates between any two points in their normal arc of travel.

No. 15796/23—THE DUBILIER COMPANY LTD, ENGLAND.

A connecting device comprising a casing 1 (Fig. 3) on which is a con-

ductor element formed to correspond with an ordinary bayonet "cap" of an electric lamp, so as to fit the standard bayonet "cap" lamp holder. The casing also carries two terminals 7. In the construction illustrated, casing 1 is made up of two mating parts 4 and 5 preferably formed of a moulded insulating material secured together by bolts 6. The casing is adapted to carry two condensers of different capacities, each being respectively connected in series, with one contact pin 8 and terminal 7. By interposing the device between a radio receiving apparatus and transmission

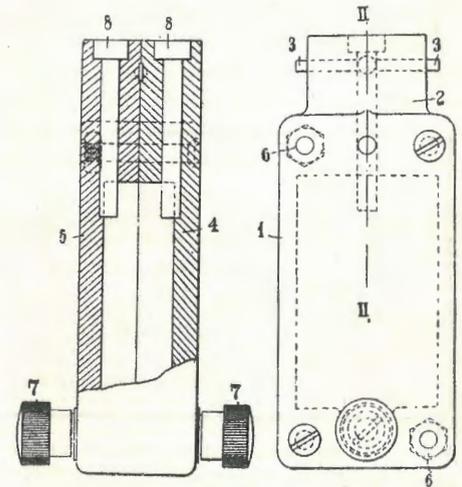


Fig. 3.

conductors carrying electrical energy for purposes such as lighting or power, such conductors may be utilised as antennae in a receiving system.

No. 16167/24—INVENTOR W. DORNIG, GERMANY.

To improve the efficiency of a frequency multiplying transformer a reduction of losses is brought about by impressing upon the core a certain number of counteracting ampere turns when an auxiliary consisting of a capacity 8 (Fig. 4) connected in series with a large inductance 9 is connected to the transformer. Two or more auxiliary circuits may be employed, at least one of which is tuned to the fundamental frequency.

No. 17864/24 — METROPOLITAN-VICKERS ELECTRICAL CO. LTD., ASSIGNEE OF N. P. HINTON, ENGLAND.

To provide an inductance coil possessing only a small electrical capacity between neighbouring wires, a band consisting of a number of wires 1, 2, 3, 4, (Fig. 5) are arranged parallel

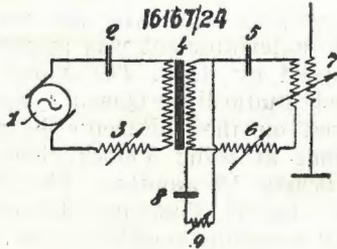


Fig. 4.

to the edges of, and enclosed between, two strips 5 and 6, of paper or other suitable insulating material. Such a tape may be manufactured by feeding the wires together with the top and bottom gummed supporting strips through two rollers, one of which is

grooved to space the wires. When the required numbers of layers of tape have been wound on the coil, the inner and outer ends are folded over as

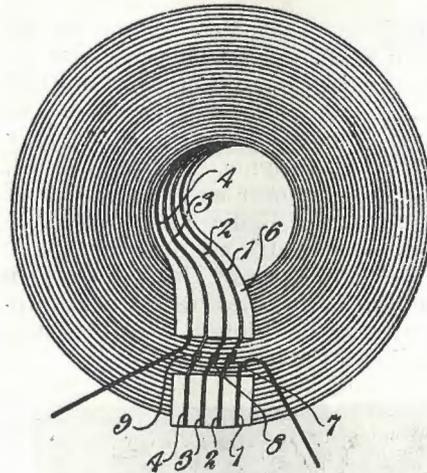


Fig. 5.

shown, and the wires joined by 7, 8 and 9, so that the several turns of wire are connected in series.

No. 17979/24—INVENTOR, C. S. FRANKLIN, ENGLAND.

To avoid the intense and concentrated high tension high frequency field acting on the glass which supports the grid and cathode in a valve capable of producing high frequency oscillations of considerable power, the

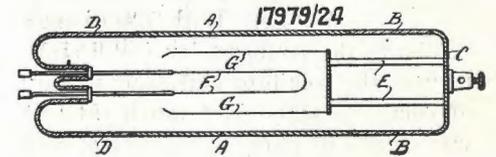


Fig. 6.

elements are enclosed by a metal cylinder A (Fig. 6), which acts as the anode. A glass cylinder B, is sealed to one end of A, and a metal plate C, is sealed to the former. The other end of A is sealed to a glass cylinder or bulb D, which carries the cathode F. The grid G supported by stout rods E, is carried by the plate C.

When East Meets West

WITH the New Year are signs that a better understanding between different races of people is slowly developing from radio broadcasting. Letters from listeners received at KGO indicate this.

Commenting on a recent programme heard in his home in Chinatown, San Francisco, Mr. Gon Sam Mue incidentally revealed the trend of Celestial minds under the influence of radio broadcasting.

"Just a few words of appreciation," he wrote, "for the sermon and concert broadcast by your station this afternoon. Being a Chinese, I live in Chinatown where automobiles and other vehicles are so numerous on Sundays that I am afraid to let my children go out upon the streets. But since I have built my radio set, they are content to stay at home. Of course, they could not understand the words of the sermon, but they did know that some children were being baptized, as my wife explained that part to them. The afternoon concert of the KGO Little Symphony Orches-

tra was wonderful, as the selections were not too classical for the Celestial mind. I liked especially the 'Blue Danube Waltz' and 'Schubert's Serenade'. If you knew what the living conditions here in Chinatown are like you would know how broadcasting benefits us, especially on Sundays. There are exactly 23 aerials in my block. It may interest you to know that there are more radio sets in one block of Chinatown than in any other part of San Francisco." Mr. Mue is an interpreter in 'the Immigration Service, office of the Commissioner of Immigration, Angel Island Station, San Francisco.

From across the Pacific letters are coming as a result of recent KGO test broadcasts to Japanese radio scientists. K. Kawahara, Amiya, Hakozaki, Hakata, Kyuusyuu, Japan, who signs himself "A Japanese Radio Bug," offers another side-light:—

"Messrs. KGO Broadcasting Company: Owing to my small pocket book I could not tell this by cable. But I am very glad to inform you that my

home-made three-valve reflex set of my own design brought your programme QSA, which spanned the immense water, in a twinkling of time and with such immense clearness." Mr. Kawahara then gave a log, with the Japanese time, for each piece he heard, which was found to check very closely with the control room record at KGO. "I enjoy the Shanghai 50-watt station, about 600 miles away from here, on a loud-speaker every night," he continued, "but it is unbelievable to have heard your station in such clearness and volume. As a matter of fact, when the music was loudest, it would have been loud enough to operate a loud-speaker with modest volume. Hoping you prompt answer, I remain, yours truly, K. Kawahara, a Japanese Radio Bug."

NAME AND ADDRESS WANTED.

WE still await the name and address of a Dubbo reader who forwarded us 10/- for a year's subscription to "Radio."

Radio in the Western United States

By Ralph L. Power, D.Sc., of "The Los Angeles Examiner."

BY far the outstanding recent event, at this writing, is the second Los Angeles radio show just coming to a close. With 120 display booths in the Ambassador Hotel auditorium the exhibits consisted mainly of complete sets. Not much interest was shown in parts or in crystal sets.

Both KNX, *The Express*, and KFI, *The Examiner*, broadcast programmes

The first 1,000-watt station in the North-west is now in operation in Seattle with the call letters of KFQX at 232 metres, broadcasting from 6.45 until 11 o'clock, except on Sunday and Tuesday nights. Alfred Hubbell, electrical engineer and part-owner of the American Radio Telephone Company operates the station with studio on the 21st floor of the L. C. Smith Building and the transmitting apparatus in the Mount Baker District outside of the city.

C. Miller, of Cleveland, was the guest of honour since his collection of flutes is the finest in the States.

Something novel in the way of radio entertainment was recently attempted by KHJ, *The Times*, from which studio little Queen Titania has talked on the children's hour programme at seven o'clock, Tuesdays, for nearly 18 months. The Hollywood Record Company brought a record-recording machine to the studio and, as the little Queen gave her weekly message to the kiddies, the machine permanently recorded the talk. Later it was reversed and the same audience that had heard the youngsters talk listened to the phonograph record.

Herbert Rawlinson has come back to filmland with a vengeance and has just finished "The Town Boy" and "The Adventurous Sex," but he finds time to give his talent to radioland. Of course, his old-time favourite, the ukulele, is ever present, but he also makes a specialty of stories.

Kathryn Maguire, talented film player, who has just played the lead opposite Buster Keaton in "The Navigator," also speaks from radio studios in the West. She acted as Matron of Honour at the radio wedding held at the recent radio show.

Rawlinson hit upon the idea of trying his jokes upon the pretty screen celebrity. If the jokes register joy and glee on Miss Maguire, then they were all right for radio—land and sea. If she does not register that way they are tabooed. Apparently the one Herb. just told was not up to his usual standard and had to be deleted.

When Bert Lytell, idol of the stage and screen, was recently in Tahiti on location for the film "Never the Twain Shall Meet," life was terribly dull and dreary until some of the mechanics built a radio set. Then the entire company listened in each night and heard the baseball scores, the weather reports, what the Prince of Wales was wearing, and all the worldwide news from KGO and KFI.



Herbert Rawlinson, the well-known film star, broadcasting a "good one." Judging by the expression of his companion, Kathryn Maguire, it was not quite so good as he thought.

from the show. *The Examiner* presented honorary announcers in the person of famous film stars—Lew Cody, Herbert Rawlinson, Larry Semon, Monte Blue, Bert Lytell and others, while famous screen celebrities acted as hostesses.

The closing night of the show featured a radio wedding, at which 7,500 enthusiastic radio and movie fans were present in the auditorium and hundreds of thousands listened over the air.

Both KFI, in Los Angeles, and KGO, in Oakland, have been given provisional license to broadcast on 1,500 watt power revocable if too much interference is caused with stations operating on lower power.

The eighth annual meeting of the Los Angeles Flute Club was observed with a remarkable programme broadcast from the First Methodist Episcopal Church through *The Los Angeles Times*, KHJ. Dr. Dayton

Walter Sylvester Hertzog has just delivered his 200th consecutive lecture on American history from KHJ, thus apparently setting a new record in continuous broadcasting on a lecture series. The talks are given five nights a week from 6.45 to 7, Pacific standard time.

KFAE, the State College at Pullman, Washington, operating on a 330 metre wave-length, at 500-watt power, is now setting forth on the third year of its operation. It is under the direction of Dean Hubert Vinton Carpenter, of the college of mechanical and agricultural arts, and broadcasts



Bert Lytell.

musical programmes Monday, Wednesday and Friday nights, from 7.30 until 9 o'clock.

The new Denver station of the General Electric Company came on the air the week before Christmas with call letters of KOA, on a wave-length of 323 metres. This station will operate three nights a week on a schedule to be announced later, using 1,500 watt power. KOA completes the trans-Continental chain of three stations owned and operated by the General Electric Company. WGY at Schenectady and KGO at Oakland being the other two.

New Zealand Broadcasting

GOOD reception of broadcast concerts from stations within and without the Dominion has been hard to obtain lately, owing to static being generally troublesome.

Radio 1YA is earning a good name for itself with its transmissions, which often provide pleasant entertainment for listeners, even in the South Island.

Wellington's broadcast station is still reported to fade in places in the South Island. An exceptional programme was broadcast from this station recently, when Ralton's Savoy Havana Band was heard to advantage via the ether.

Radio 2YM is reported at good strength in most parts of the Dominion. 4YA, it is rumoured, may again be heard on the air in the near future.

The most popular broadcasting station outside of the Dominion is easily 2FC. The transmission is good and the programmes are excellent. The station is received on the loud-

speaker with nothing in front of the detector valve, with just the two steps of audio frequency in order to get the volume from the loud-speaker. Radio 2FC has also been picked up on a loop aerial, using a powerful eight-valve super-heterodyne. On a recent Sunday a concert given by a municipal band came in very well. New Zealand listeners would like to suggest that the announcer at 2FC repeat all titles twice, as sometimes a burst of static at the psychological moment prevents the name of the item being heard. Miss Ina Bosworth, the English violinist, who was recently broadcast from 2YK, was also heard from 2FC recently; although bursts of atmospherics prevented her offering being fully enjoyed.

Christchurch, once the home of 3AC, one of the first stations in the Dominion to broadcast, is rather poorly served by radio now. Although Mr. J. I. Smail, a wireless trader, is operating station 3AQ at his own ex-

pense, talent is very modest at coming forward and concerts are broadcast irregularly.

KEEP your set away from open windows on damp nights.

A **VERNIER** rheostat is best for detector, especially in the ultra-audion hook-ups.

IF you can fit a telephone receiver into an old phonograph horn it will make a fairly good loud-speaker.

IN building a valve set, keep the leads from the secondary and to the grid as short as you can.

RADIO is here to stay, so get your set now and enjoy the radio entertainment.

Adding a Valve to Your Crystal Set

Below is described a crystal valve circuit, which takes advantage of dull amplification, and yet is no more difficult to handle than a plain stage of audio frequency amplification.

By E. A. Burbury.



THOUSANDS of listeners-in are using crystal sets today; in fact, I think it is safe to say that a large percentage commence with the humble crystal set. Gradually, however, the desire grows for something a little better, and finally the decision is arrived at to add a valve.

The questions then arise, "Which circuit shall I use?" "How can I obtain the best possible results with the valve-crystal arrangement?" One friend suggests a stage of radio frequency amplification, another a stage of audio, but why not make

Type D.E.3 is recommended for its good, all-round results, it functions equally well as a radio or audio frequency amplifier. L2 is a honey-comb coil of such a value as, with the .0005 m.f. variable condenser C2, will tune to the wave-length of the particular station desired, i.e., 200 turns for 2FC, etc. C3 and C4 are fixed condensers, each having a capacity of .001 microfarads. D is a crystal detector, P and S the primary and secondary windings of an audio frequency intervalve transformer, and T the telephones or loud-speaker.

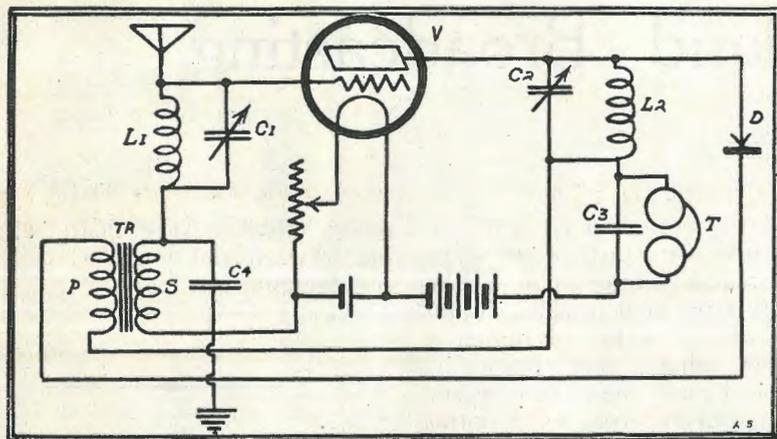


Fig. 1.

use of that property of the three electrode valve which enables it to amplify both radio and audio frequencies simultaneously? This can be effected quite simply, and in most cases use can be made of the component parts of your existing crystal set.

In Fig. 1 is shown diagrammatically a dual amplification circuit which is no more difficult to handle than an ordinary single valve detector circuit.

L1 and C1 are the inductance and variable condenser respectively which were in use in your crystal set. V is a three electrode valve.

A brief description of the action of this circuit is as follows: The radio frequency currents in the aerial circuit are impressed on the grid of the valve and amplified. From the plate circuit these currents are then rectified by the crystal detector D. The resultant audio frequency current is then taken back and impressed on the grid of the valve through the iron core transformer TR, where it is amplified and passed through the telephones T. A fixed condenser C3 is shunted across the telephones, which acts as a bypass for the radio frequency currents in this circuit.

Regeneration is not employed in this receiver, so that the usual difficulties met with in handling reflex circuits are not apparent. For those who do not mind a little careful manipulation, regeneration may be made use of without altering any connections, by coupling inductances L1 and L2. This reactive coupling, however, should be used sparingly. Commence tuning with the coils very loosely coupled, adjusting the two variable condensers C1 and C2 each time the coupling is tightened. Do not carry this process too far, or oscillations will be produced, and will probably be accompanied by an audio frequency howl. This is just what should be avoided, and it will be found to be rather difficult to eliminate. This howl is a phenomenon frequently met with in reflex circuits, and is caused by the valve oscillating at audio frequency. It can be distinguished from the familiar whistle produced by two radio frequencies beating together to produce an audible note, in that variation of the tuning condensers will not vary its pitch.

In some cases depending on the particular valve in use, a stabilising effect is obtained by the employment of a variable grid leak connected between the grid and negative filament of the valve. This leak should have a comparatively low minimum value of approximately 100,000 ohms.

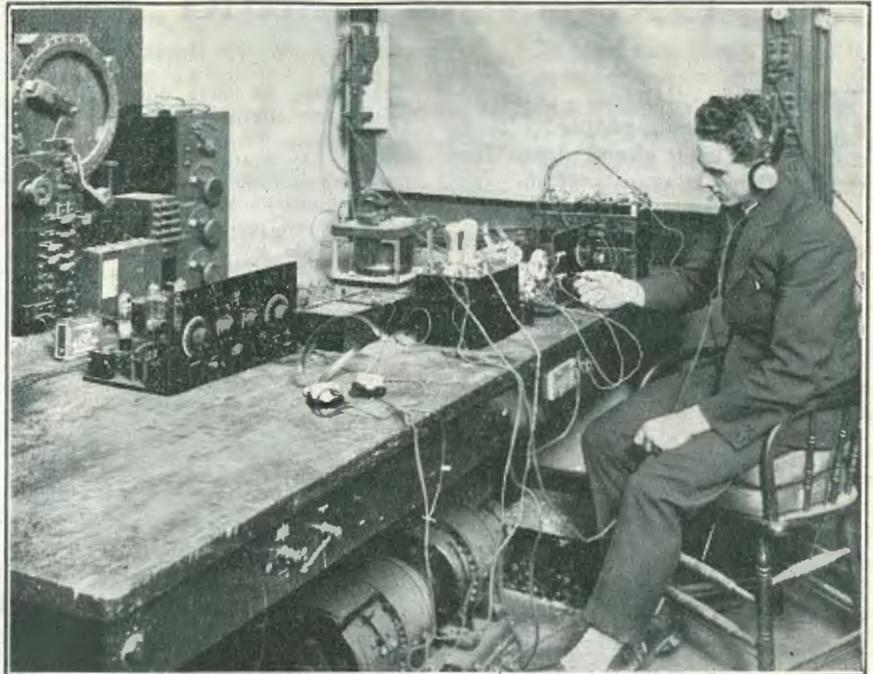
If a little time and care are taken in adjusting this circuit exceptionally good results are possible, and quite equal to the average two valve receiver.

FOLLOWING are stations recently heard on good strength by Mr. Louis J. Moore, of Seymour, Vic.: 3BD, 3BM, 3BQ, 3JH, 3JU, 3XF, 3XN, 3XO, 3YY, 3OT; 2CR, 2CH, 2DE, 2GR, 2JM, 2JS, 2RK, 2HM; 4SF; 5LO; 7SF; N.Z.: 4AA, 4AG, 4OA, 2AC, 2AE, 2AP, 3AF; U.S.A.: 6CGW, 6CGU, 6CC, 661R (?), 6AWT, 9ZT, 2JT and 2JK.

CALLS HEARD.

MASTER D. E. WHITE (aged 14), of Kerr's Road, Lidcombe, N.S.W., is a DX-getter of the first water, and with his three-valve set—one R.F., Detector, and one A.F.—logged the following stations between January 4 and 5 last:—N.S.W., 2HM, 2JS, 2RJ, 2BY, 2GQ, 2CR, 2WS.; V., 3LO, 3HH, 3BD, 3BQ, 3BM, 3OT, 3JU, 3JH, 3TM, 3AP, 3XO; Q., 4AN; S.A., 5DN, 5BG, 5BA; W.A., 6WF; N.Z., 2AC, 2AP, 4AK, 4AG, 1AA, 1AC; U.S.A., KGO, KDKA. KDKA was also received on January 30 and 31. Every word spoken by the announcer was clear and distinct, but Mr. Elder's speech was spoilt by QRN. The receiver on which these results were secured is home-constructed and the panel is of wood. Honeycomb coils were used for the long waves, spiderweb for 130 metres to 300 metres, and low-loss coils for wavelengths below 100 metres.

STORAGE B batteries are cheaper in the long run if you have a multi-valve set.
A BEDSPRING and other freak aerials are all right for short distance work.
THE simplest regenerative set is many times more sensitive than a crystal set.



The photograph shows an operator receiving one of the recent KDKA transmissions from Pittsburg on two valves at the Amalgamated Wireless test room, Collins House, Melbourne.

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DX Notes—and Other Things

By C. D. Maclurcan.



MOSTLY "Other Things" this time, people! 2CM has been closed down for the last couple of months and wireless has been "ofphskeigh"—this is Esperanto for "not any."

I did try to write up something for last month, but my typist was away on holidays and I'm blessed if I could make the darned typewriter oscillate. This is how I felt:—

The Stenog's Vacation.

My tYpust is on her vacation,

My trpist's awau fpr a week,

My typudt us in hwr vscarion

Wgile thse danr weys plys hyde and seej.

Cjoras:

Oy, breng boxk, bting bxck,

Brung becj mu tyPust ti my, tp mr;

E/&ng bExj, b6ng bicx,

Bjing bosk m£ trpust t— oh helk!

?&!!!

Talking of Esperanto, I have it on good authority that it will be necessary to pass an examination in this language before being granted a broadcatching licence. In order to obtain a pass, 2,372 per cent. must be obtained. Esperanto, like Gum Arabic, is one of the new "live" languages—as distinct from Latin and Greek, which are dead languages—very dead.

Anyway, my golf DX has improved somewhat, and my niblick approaches only need three watts of language.

On page 24 of the January 20 issue of *The N.Z. Wireless and Broadcasting News* appears a letter from one, Roy Keith, 16 Princes Street, Hawera, portion of which I will repeat:—

"To the Editor:

"Say, boys, have you seen the *Radio News* for November, 1924? If not, turn to page 830 and look at the list of Australian amateur stations.

"I am trying to break it gently, as I know that if you come across it suddenly the result might be fatal, so before you look take a 'spot' or, perhaps, two, if your nerves are unsteady, and then hold your breath and look. You will find that all of us transmitting amateurs have been listed as Australian amateurs.

"And this is fame, eh, Frank? Say, Ralph, do they address your QSL cards c/o. G.P.O., Sydney? Hi! hi! If you don't look out, we will wake up some fine morning to find that the Aussies have got all the credit for working the

U's, while we have done the job; so something ought to be done about it.

"Perhaps we might send a delegate over to the States who might broadcast the information to all and sundry from the biggest broadcast station that the country can make available, that New Zealand is not Australia—never was, and never will be—and is about 1400 miles from Australia.

"Surely the Editors of *Radio News* should know geography better than to



Mr. C. D. Maclurcan.

make such an awful mistake! Such ignorance as this in a country of such scientific advancement, and where such wonderful educational broadcasting is done is unpardonable. They should make amends by putting on special broadcast programmes of poy dances, etc., with special lectures on 'Lil' ole N.Z.' 73's.

"Yours, etc.,

"ROY KEITH."

Now, isn't that simply too awfully horrible for words?—and all because Hugo's compositor left two letters out of Australian.

I won't comment on this letter, because I want to see closer and more friendly relations between Australia and New Zealand. But, oh! you New Zealanders, why won't you stop it? We all know that you have accomplished wonderful things in amateur radio, and we have given our praise and admiration ungrudgingly—but, really, there are others. Since you will mention DX records, I think Australia holds them; correct me if I'm wrong, N.Z. For absolute distance, I consider A3BQ holds the cake. A recent issue of *The Wireless World* says that he was received in England at 7.30 a.m. one morning. So that his signals went the long way round, via N.Z., and not only put an extra 1200 miles on to the distance from New Zealand to Great Britain, but also traversed the Tasman Sea in daylight. Added to this, he has since put over speech to G2OD.

Then, again prior to the reception of 3BQ in England and shortly after Z4AA got QSO England, a Sydney station asked Z4AA to, in turn, ask Great Britain to QRX for Australia, one afternoon at 5.30 p.m. Sydney time. Although the Englishman 4AA was working did not hear Sydney calling, it has since been learned that several other English stations did. One man got the whole conversation between Z4AA and Sydney. So, then, these signals also went the long way round and had 1200 miles of daylight to go through first. This happened on November 9 last year, and these were the first signals received in England from Australia, so far as we know at present.

The latest nine-day wonder is the reception in Australia of KDKA's broadcasting from Pittsburg, U.S.A., and the rebroadcasting of the received signals by 2BL, Broadcasters, Sydney, Ltd.

Though vowing to have none of radio during my annual surfing orgy, I just had to tuck a set under my arm one week-end and find out if it

TEL.: B 5925.

Charles D. Maclurcan
CONSULTING RADIO ENGINEER

PRATTEN BUILDINGS,
26 JAMIESON ST., SYDNEY.

really was so. Well, I got excellent music and rather mushy speech, and the chap said he was KDKA, Pittsburg—but you never know when to believe these radio cranks.

I had heard KDKA about eleven months ago, both in Sydney and on the *Tahiti* in N.Z. He was then on 98 metres, and although not nearly the strength he now is on 63 metres; the speech had the same thick, mushy characteristic. In connection with the rebroadcasting by 2BL, the reception from America was carried out in the first instance by Ray Allsop, 2YG, and transmitted by land line to 2BL. The result can hardly have been called a success, but the difficulties to be overcome were many, and no doubt when the coming of winter reduces static, it may be really worth while rebroadcasting.

Jack Davis, 2DS, writing to me from Melbourne, says that wireless reception there is infinitely better than here in Sydney. He says that G2OD is about three times the strength there than at his strongest here. I also notice that in the latest *Experimental Radio and Broadcast News*, "The Owl" says in his DX notes:—

"It is a strange thing, but there is not the slightest doubt that signals from South Australia are heard much more strongly in Melbourne than signals from Sydney, with the same conditions at each transmitter."

There must be a "hoodoo" around Sydney, though how "The Owl" gets his "same conditions" in two places 600 miles apart tickles my secondary.

During the gale that blew over Sydney just before Xmas, one of 2CM's 80ft. masts dragged its anchor and became a total wreck on the Almond

Rock, situated two points north-east by South Coast. Luckily, the mast was in ballast at the time, and as the crew were away, there were no casualties.

The remaining mast has since been shifted to a central position, and next week 2CM should be on the air again, rectifiers permitting, with yet another aerial (the thirsty-third). This will be an almost vertical cage 90ft. long from top to toe. Counterpoise just beneath, 90ft. long and 15ft. wide. I suppose soon we will be working with 10ft. aerials.

The Wireless Institute, N.S.W. Division, are planning another exhibition, to take place probably in May or June next. The last exhibition was an unqualified success, but this one is going to be something really "out of the box." The management committee has not yet been finally selected, but will include Messrs. Renshaw, Mingay and Cooke.

Visited 2CX (Harry Stowe) last night, on the occasion of the first standard frequency transmissions in Australia. It is at least two years since I visited him, but I was hardly prepared for the wonderful improvements that he has effected. His apparatus is now housed in a separate building, and is most conveniently laid out. What struck me most, apart from a good supper, was the fact that all batteries are charged "in situ," nothing has to be disconnected from their respective sets. The standard wavelengths transmitted were 130, 150, 180, and 200 metres. These were most carefully checked by the Institute's Precision Wavemeter, and a different code letter was used for each change in wavelength. These

transmissions will take place once a week, and should be of very great value to experimenters. It remains to be seen, however, if 2CX's efforts will meet with any appreciation. It is to be hoped that they do, for there is not much fun in it for him.

WIRELESS IN WELLINGTON.

THAT the broad tuning of Radio 2YK, Wellington's broadcasting station, prevents listeners in that city from hearing receiving concerts from other parts of the Dominion is the complaint made by one or two listeners. The matter is receiving attention.

It has been suggested that the Wellington station should cancel its transmission on Friday evenings and substitute a programme on Saturday evenings, which could include the results of the various sports held during the afternoon.

The long-awaited change-over from spark to valve transmission at VLW, the commercial station at Wellington, is about to take place, it is reported; which bears out the old adage that "One man's meat is another man's poison." The change will be welcomed by broadcast listeners who have oftentimes found the note of VLW rather insistent; but the sea-going operator, approaching from a few thousand miles away, and sweeping the ether for the first sound to enable him to clear his traffic, will probably view the change with some dismay.

AFTER you have assembled your set in a cabinet, try a temporary hook-up before making permanent connections unless it is a standard circuit.

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Reducing the Capacity of Condensers

(By R. S. W., N.Z.)

THE introduction of one stage of radio frequency amplification to a wireless set in many instances does away with the necessity of tuning the aerial tuning inductance by means of a condenser, and the writer has found that by plugging in coils of the approximate wave-lengths to the waves to be received, and jointing the aerial and earth wires in series with the aerial tuning inductance, the usual .001 variable condenser can be scrapped. Tuning can be carried out quite efficiently by variation of coupling between the aerial tuning inductance coil and the secondary circuit coil in conjunction with the .0005 microfarad variable condenser joined across the secondary coil. This arrangement will also work efficiently with received wave-lengths that may be below the fundamental wave-length of the aerial. It not only simplifies the adjustments of the set, but throws the old .001 mfd. variable condenser

on the scrap heap, as the tendency nowadays, with the advent of low-loss tuners, is to work with a maximum of inductance and a minimum of condenser. Of course, if it is decided to build a low loss set the best proposition is to purchase suitable low-loss condensers with low minimum capacity, but where one has to study economy the following hints will prove efficient and easy to adopt.

We will suppose that a variable condenser of .001 mfd. is required to be reduced to meet a circuit requiring a .0005 mfd. variable condenser. This can be quickly arranged by joining a .001 fixed condenser in series with the variable .001, and then one has variable capacity of from .0005 maximum to a very low minimum capacity, and very much lower than the minimum capacity of the .001 variable condenser.

If a still lower capacity is required,

join a fixed condenser of still lower capacity in series, and there it is secured. Be sure and use mica fixed condensers of the Dubilier or other reliable make—never use paraffin paper condensers for this work.

Keep in mind that the capacity of separate condensers joined in series is equal to the reciprocal of the sum of the reciprocal of their separate capacities.

The definition of this law may scare the inexperienced, but really there is no need. Just suppose one wanted to know the capacity of a .0005 mfd. variable condenser joined in series with a mica .0005 mfd. fixed condenser.

All one does is to convert both capacities into reciprocals and place a plus sign between them, viz. :—

$$\frac{1}{.0005} + \frac{1}{.0005} = \frac{1+1}{.0005} = \frac{2}{.0005}$$

Back Numbers of "Radio"

The following interesting articles appeared in previous issues of "RADIO." Copies may be had on application to this office.

Use of a "C" Battery in a Two-Valve Receiver Wave Trap; Construction and Erection of Aerial Masts; Something about the Super-Heterodyne; Efficient Two-Valve Receiving Circuit; Two-Valve Fixed Coupler Set; Using Alternating Current for Filament Lighting—No. 41.

Carborundum Crystal Receiver; Construction of Plugs and Jacks; An Inductive Wave-Trap; How to Increase Range and Selectivity; Changing Variometer-Vario Coupler Set to Reflex; Three Methods of Using Audio-Frequency Amplification—No. 42.

Oscillating Crystal Receiver; Aerial Mast for £8/12/-; Microphonic Noises in your Set; Swinging Aerials; Honeycomb Coils; How to Make and Use Them—Shielding—No. 43.

Three-Valve Receiver; 3 L.O.—No. 44.

An Efficient Long-Distance Receiver; Receiver Noises—How to Diagnose and Cure them; A 60-600 Metre Tuner; Four First-rate Circuits; How to Make an Audibility Meter; A Loose-Coupled Short-Wave Set—No. 45.

Crystal-Valve Circuits; Low Loss Tuners; One-Tube Circuits; Low Loss Inductance Coils; An All-Wave Tuner—No. 46.

A Super-Five Valve Receiver—No. 47.

To calculate the reciprocal of this fraction, divide numerator "2" into the denominator ".0005," and there it is, namely, ".00025 mfd." Quite simple, isn't it?

Now get to work and try out some of the new low-loss circuits and you will get quite a lot of fun out of it.

If one happens to possess one of those cheap condensers bought at a big price in those simple days before one understood the meaning of megohms, etc., with an insulation resistance of the order of four to six megohms, the insulation can be raised considerably by the insertion of a small mica condenser in series with the poor article which can then be made to do a turn.

STATION FOR DUNEDIN?

IN connection with the scheme for providing broadcast concerts from each centre of New Zealand, a scheme has been formulated in Dunedin to operate an independent broadcasting station as soon as subscriptions of £1 each are forthcoming from 300 listeners. A society has been formed called the Otago Broadcasting Society, which proposes to own and operate a station of 500 watts power, to work on a wave-length of 370 metres, the cost of maintenance working out at £400 per annum.

It is not stated how a scheme of this nature would be affected by the Dominion broadcasting scheme; but presumably it is proposed that subscribers should pay their £1 fee in addition to the tax of £1 5s., which will be levied on April 1.



Little Billie Holloway, well-known to listeners-in to 2BL.

POETS, TAKE HEART!

RADIO is a "boon to the busted bard," according to Will R. Hill, "old home poet," who is more or less familiar to listeners in to KGO, because the publishers who would not consider his MSS. before he began to broadcast are now anxious to publish his verses.

"I have written many publishers in my life," said Mr. Hill in a letter, "trying to interest them in my stuff, but it was without avail until I began broadcasting from KGO. When I was able to show them hundreds of letters from 'radio-fans,' asking for copies of the verses I had read over the air, they began to see that my books might sell."

Old friends, many of whom he had not heard from for years, wrote in to Mr. Hill from all over the country. These requests, with others, have run the sale of his latest book into the thousands.

"Surely radio has proved itself a boon to the busted bard," continued Mr. Hill. "Had it not been for radio, my stuff would still be lying around in typewritten form, instead of being published and read."

A WEAK but clear signal is better than a loud, distorted one.

THERE are great opportunities to develop something good in radio.

IT is better to use a .001 condenser in your aerial than a .0005 one.

AMPLIFICATION without distortion is better than loud signals between a squeal and a squawk.

"YOUR SPLENDID PAPER."

Mr. Ernest Smith, of Pine Creek, via Broken Hill, writes to the Editor. In the course of his letter he says:—

"It is with pleasure that I write you these few lines to show how much I appreciate your wonderful publication known throughout Australia as 'Radio.' From it I received instructions how to build my first radio receiver, 'An Efficient Long-Distance Receiver,' 'Radio,' No. 45. It is the circuit I am using now, and I must say that it is giving splendid results—you can hardly realise how excited I was when I picked up my first station, which was 3LO. I have since added three stages of Audio and can hear music twenty feet away from the 'phones.

"... 'Radio' is just what we require; it contains everything we want to know and I must say I look forward every fortnight for my copy to arrive.

"Wishing your splendid paper all sorts of success, I remain your very much pleased

ERNEST SMITH."

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"RADIO
in
Australia & New Zealand."

March 4, 1925.

Aerials

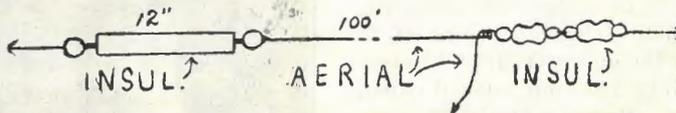
MUCH has been written, but little attention is paid by the radio fans regarding aerials or antennas. Just because Bill Brown threw a wire out in the back yard and picked up some station 1,000 or 1,500 miles away is no reason every Tom, Dick and Harry are going to do the same thing.

When radio broadcasting first became popular we all recommended an aerial patterned after the commercial types, consisting of several wires held apart on spreaders. Since then we have found one wire is just about as good as a dozen, and it does not matter a great deal what size the wire is. You may use No. 30 or you may use half-inch strip of copper and you will not notice much difference, if any, in signal strength when you first put it up. The smaller wire may be-

sometimes such that it must run down the side of the house from roof to first floor. This is bad in that the building takes away part of the energy.

An aerial should be well insulated where it may come in contact with other objects. In fact, an aerial should be guyed away from all objects and be about three feet from them. While it is true radio energy will pass through anything, on the other hand, if you make the path easy for it, it will travel to your set just so much better.

Insulators on each end of the aerial are important. Not just a short one or three or four inches, but have at least a foot of good insulating material, such as glass, pyrex or porcelain. They may be in the form



come corroded later on and not give as good results, but when tests are made you will be hard put to judge which is best.

The writer has recently moved in the suburbs with plenty of open space around the house and he has used just a ground connection, the house wiring and an outdoor aerial and picked up stations over 1,000 miles distant with either form of collector. The outdoor aerial gave better volume, but there was also considerable noise with it; while the plain ground connection gave a slightly weaker signal (it was of loud-speaker volume), but it was clear. The set used in these experiments was a two-valve reflex with two extra stages of audio.

The above shows that almost any old thing will do for an aerial in the suburbs or country, but in the city it is another matter. There you have so many things to contend with. In the first place, you are restricted as to space for an aerial and usually must put up a short aerial, which means less energy is collected by it than if a large one were used. The location of your aerial on the roof and the lead to the receiving set is

of rods about a foot long or they may consist of four smaller insulators in series. Insulators with a corrugated surface have greater surface than those with a flat, smooth surface. There is one thing, you cannot use too much insulation on your aerial. The more you have in each end the shorter the aerial will be, but on the other hand, the farther the aerial will be from other objects, and this is a desirable feature.

The drawing shows a flat-top aerial with several small insulators connected in series in one end and one large one in the other. Either method will do and on account of the smaller insulators being easier to obtain, this method will most likely be followed by the majority.

USE a good grid leak for best results with your audion.

YOU may convert one of your telephones into a loud speaker by placing it in a large bowl, if signals are strong.

6WF's Transmissions: Feb. 25 to March 11

WEDNESDAY, FEBRUARY 25, 1925.

12.30, Tune in. 12.35, Market Reports of The Westralian Farmers Limited. 12.38, News Service. 12.44, Weather Report. 12.45 to 1.30, The Wesfarmers' Studio Orchestra. 1.0, Time Signal. 3.30, Tune in. 3.31 to 4.30, Concert from Boans Ltd. Roof Garden Tea Rooms. **MUSICAL NIGHT:** 7.5, Tune in. 7.10, Children's Bedtime Stories. 7.42, News Items, Weather Forecast, Market Reports. 8.0, Time Signal. 8.1, Latest News Items and Cables. 8.10, Musical Programme. 9.55, News Items. 10.2, Close down.

THURSDAY, FEBRUARY 26, 1925.

12.30 to 12.44, Same as Feb. 28. 12.45, Musical Items. 1.0, Time Signal. 1.1 to 1.30, Musical Programme. 3.30, Tune in. 3.35, Programme comprising Talks, and Musical Items. 4.30, Items by The Wesfarmers Studio Orchestra. **CONCERT NIGHT:** 7.5 to 8.1, Same as February 25. 8.10, Concert. Musical Director, Mr. A. J. Leckie, F.R.C.O.; Accompanist, Mr. H. Vowles, F.R.C.O. 9.55, News Items. 10.2, Close down.

FRIDAY, FEBRUARY 27, 1925.

12.30 to 12.44, Same as February 26. 12.45 to 1.30, The Wesfarmers' Studio Orchestra. 1.0, Time Signal. 3.30 Tune in. 3.31 to 4.30, Concert from Boans Ltd. Roof Garden Tea Rooms. 7.5 to 8.10, Same as February 25. 9.0, Mr. Botterell on "Wireless." 9.55 to 10.2, Same as February 25.

SATURDAY, FEBRUARY 28, 1925.

12.0, Tune in. 12.5, Market Reports of The Westralian Farmers Ltd. 12.10, News Service. 12.15, Weather Report. 12.16, Musical Programme. 1.0, Time Signal. 7.5 to 8.1, Same as February 27. 8.10, The Wesfarmers' Studio Orchestra. 9.55, News Items. 10.2, The Wesfarmers' Studio Or-

chestra. 10.28, Trotting News. 10.32, Close down.

SUNDAY, MARCH 1, 1925.

7.30, Evening Service to be relayed from Trinity Church, Rev. Williamson Legge, Preacher.

MONDAY, MARCH 2, 1925.

12.30 to 1.0, Same as Feb. 27. 3.30 to 4.30, Same as February 27. **ORCHESTRAL SELECTIONS' NIGHT:** 7.5 to 8.1, Same as February 27. 8.10, A Short Talk. 8.30, The Wesfarmers' Studio Orchestra. 9.55, News Items. 10.2, Close down.

TUESDAY, MARCH 3, 1925.

12.30 to 1.30, Same as March 2. 3.30, Tune in. 3.35, Programme comprising Talks, and Musical Items. 4.30, Items by The Wesfarmers' Studio Orchestra. **CONCERT NIGHT:** 7.5 to 8.1, Same as March 2. 8.10, Concert. Musical Director, Mr. A. J. Leckie, F.R.C.O.; Accompaniste, Miss Evelyn Willis, A.R.C.M. 9.55, News Items. 10.2, Close down.

WEDNESDAY, MARCH 4, 1925.

12.30 to 1.0, Same as March 3. 3.30 to 4.30, Same as March 2. **POPULAR NIGHT:** 7.5 to 8.1, Same as March 3. 8.10, Dr. J. S. Battye on 'Recent Excavations in Egypt.' 8.30, Musical items. 9.15, A short talk by Rev. A. Muriel. 9.55, News Items. 10.2, Close down.

THURSDAY, MARCH 5, 1925.

12.30 to 1.30, Same as March 4. 3.30 to 4.30, Same as March 3. **CONCERT NIGHT:** 7.5 to 8.1, Same as March 4. 8.10, Concert. Musical Director, Mr. A. J. Leckie, F.R.C.O.; Accompanist, Mr. H. Vowles, F.R.C.O. 9.55, News Items. 10.2, Close down.

FRIDAY, MARCH 6, 1925.

12.30 to 1.30, Same as March 5. 3.30 to 4.30, Same as March 5. **POPULAR NIGHT:** 7.5 to 8.1, Same as March 5. 8.10, A short talk by Rev. D. I. Freedman. 8.30, Musical Items. 9.0, Mr. Smethurst on "Wireless." 9.55, News Items. 10.2, Close down.

SATURDAY, MARCH 7, 1925.

12.0, to 1.0, Same as February 28. **DANCE NIGHT:** 7.5 to 10.32, Same as February 28.

SUNDAY, MARCH 8, 1925.

7.30, Presbyterian Church—Rev. G. Tulloch.

MONDAY, MARCH 9, 1925.

12.30 to 1.0, Same as March 6. 3.30 to 4.30, Same as March 4. **ORCHESTRAL SELECTIONS' NIGHT:** 7.5 to 8.1, Same as March 2. 8.10, Mr. W. M. Carne on "Treatment of Wheat for Ball Smut." 8.30, The Wesfarmers' Studio Orchestra. 9.55, News Items. 10.2, Close down.

TUESDAY, MARCH 10, 1925.

12.30 to 1.0, Same as March 6. 3.30 to 4.30, Same as February 27. **CONCERT NIGHT:** 7.5 to 8.1, Same as March 9. 8.10, Concert. Musical Director, Mr. A. J. Leckie, F.R.C.O.; Accompaniste, Miss Evelyn Willis, A.R.C.M. 9.55, News Items. 10.2, Close down.

WEDNESDAY, MARCH 11, 1925.

12.30 to 1.0, Same as March 10. 3.30 to 4.30, Same as February 27. **MUSICAL NIGHT:** 7.5 to 8.1, Same as March 10. 8.10, A short talk on Town Planning by Mr. W. A. Saw. 8.30, Musical Programme. 9.55, News Items. 10.2, Close down.

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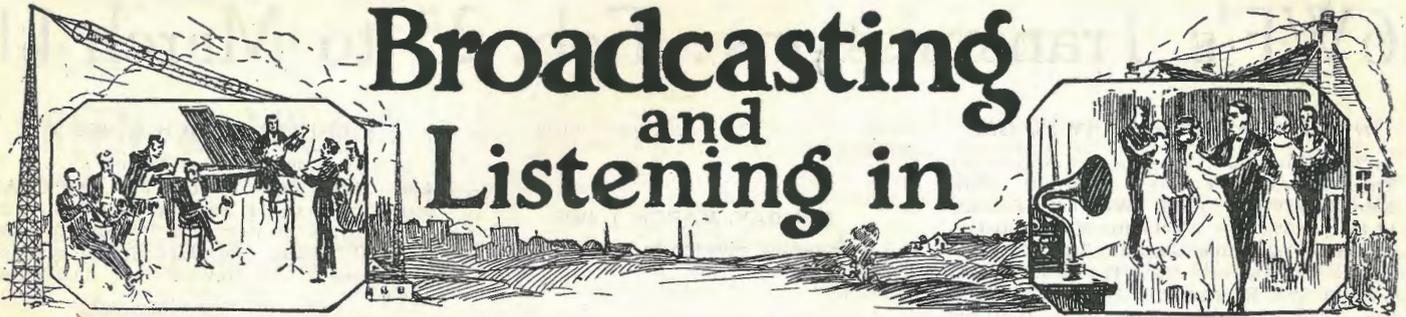
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2FC

BROADCASTING TIMES.

Sydney Mean Time.

CALL SIGN 2FC, SYDNEY.

Wave Length: 1100 metres.

Power: 5 kilowatts.

Midday Session:

- 12.55 The Chimes of 2FC.
12.58 Time Signals from Farmer's Master Clock.
1.0 Coastal Farmers' Market reports, Stock Exchange information, Weather information, "Sydney Morning Herald" news service, Reuter's and Australian Press Association cables, "Evening News" midday news service.
1.30 Close down.

Afternoon Session:

- 3.0 The Chimes of 2FC.
3.30 Musical Programme.
3.50 Afternoon Stock Exchange information, late Weather information, "Evening News" afternoon news service.
4.0 Close down.

Early Evening Session:

- 6.30 The Chimes of 2FC.
6.33 Children's Hour.
7.10 Dalgety's Market reports (wool, wheat, stock), fruit and vegetable markets, late Stock Exchange information, Weather News, Shippings News, late "Evening News" news service, Reuter's and Australian Press Association cables.
7.20 Close down.

NIGHT SESSION:

- 7.55 The Chimes of 2FC.
8.0 Musical Programme.

The evening entertainment broadcast from Station 2FC is varied and includes Theatrical transmissions from the Theatre Royal, Her Majesty's Theatre, The Criterion Theatre, The Palace Theatre, The Tivoli Theatre, Haymarket Theatre and the Prince Edward Theatre.

Jazz music provided by the Wentworth Orchestra is also broadcast direct, and high-class musical entertainments provided at the Studios of 2FC, in which Sydney's leading artists participate, are also features of the programme.

SATURDAY: Midday, early evening and evening sessions as on week days, afternoon session as follows:—

- 3.15 The Chimes of 2FC.
3.18 to 3.45: Late Sporting information.
3.45 Close down.

SUNDAY: No midday, afternoon or early evening session. Church Services from one of several Churches, commencing at hour appointed for Divine Service, according to the Church, and varied by some Sacred Concert from the Studio of 2FC.

- 10.0 Close down.

6WF

BROADCASTING TIMES.

Perth Mean Time.

Wave Length: 1250 metres.

Midday Session:

- 12.30 Tune in to gramophone.
12.35 Market Reports of The Westralian Farmers, Limited.
12.38 News Service.
12.42 Weather Reports.
12.44 Gramophone Items.
1.0 Time Signal.
1.1 to 1.80 } Gramophone and Pianola.
1.81 Close down.

Afternoon Session:

- 3.30 Tune in to Pianola.
3.35 } Special programme, comprising
to Talks, Gramophone, Pianola, West-
4.0 } alian Farmers' Studio Orchestra.
4.1 Close down.

Early Evening Session:

- 7.5 Tune in to Gramophone.
7.10 Bedtime Stories.
7.45 Market Report.
7.57 Weather Report.
8.0 Time Signal.
8.1 News Cables.

EVENING SESSION:

- 8.10 to } Entertainment.
— } See list hereunder.
Monday: 8.10, Lecture: 8.45, West-
farmers' Orchestra.
Tuesday: 8.10, Professional Concert.
Wednesday: 8.10, Theatre or Hall Broad-
casting.
Thursday: 8.10, Professional Concert.
Friday: 8.10, Concert Evening and
Lecture.
Sunday: 7.20, Church Service.
Saturday: 8.15, Westfarmers' Studio Or-
chestra.

SATURDAY:

- Midday Session:**
12.0 Tune in to Gramophone.
12.5 Market Reports of The Westralian Farmers' Ltd.
12.10 News Service.
12.15 Weather Report.
12.16 Gramophone and Pianola.
1.0 Time Signal.
1.1 Close down.
Early Evening Session:
7.5 Tune in to Gramophone.
7.10 Bedtime Stories.
7.45 Market Reports.
7.57 Weather Report.

Evening Session:

- 8.0 Time Signal.
8.2 News Cables.
8.15 Westfarmers' Studio Orchestra.

3LO

BROADCASTING TIMES.

Melbourne Mean Time.

Wave Length: 1720 metres.

MONDAY TO FRIDAY:

Midday Session:

- 10.57 "Tune in" Signal.
11.0 Buckley & Nunn Studio Orchestra.
12.0 Time Signal.
12.30 "Argus" News Service, Reuter's and the Australian Press Association Cables.
1.0 Time Signal—Luncheon Hour Talk.
1.15 "Herald" News Service: Weather Report and Stock Exchange information.
2.0 Close down.

Afternoon Session:

- 3.0 Musical Programme.
3.40 Afternoon "Talk," Fashions, Cookery, Infant Welfare, etc.
5.0 "Argus" and "Herald" News Service.
5.15 Close down.

Early Evening Session:

- 6.0 Children's Hour: "Billy Bunny" Stories.
6.45 "Argus" and "Herald" News Service, Reuter's and the Australian Press Association Cables.
7.30 Close down.

Evening Session:

- 8.0 Theatrical Items, Lectures, Vocal and Instrumental Items.
9.30 "Argus" News Service.
10.30 Close down.

THURSDAY NIGHT.

- 8.0 Studio Concert.
8.30 Carlyon's (St. Kilda) Dance Orchestra.
11.15 Close down.

SATURDAY NIGHT.

Same as Week Days—Sporting Results at Hour and Half Hour.

SUNDAY.

Afternoon Session:

- 3.0 Pleasant Sunday Afternoon Services from Wesley Church.

Early Evening Session:

- 6.0 Children's Hour; "Billy Bunny" Stories.
7.0 Church Service.

Evening Session:

- 8.30 Concerts from the Studio.
9.0 "News of the Week," Prof. Meredith Atkinson, M.A. (Oxon).
9.30 "Argus" News Service.
10.0 Close down.

READERS are requested to register any letters addressed to us containing postal notes, etc. to ensure same being safely received.

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2BL

BROADCASTING TIMES.
Sydney Mean Time.
Wave Length: 350 metres.

Midday Session.

12 } Musical Programme, with News
2 p.m. } Reports supplied by "The Guardian."

Afternoon Session.

3 } Musical Programme, with News
to } Reports supplied by "The
5 } Guardian."

Early Evening Session.

7 Nursery Rhymes and Bedtime Stories.
7.45 Pitt, Son & Badgery Stock Exchange Reports.

Night Session.

8 Nightly Concert.

EVENING ENTERTAINMENT.

- Monday: "Jazz" night, with vocal items from the Studio.
- Tuesday: Classical Studio Concert.
- Wednesday: Dance Night.
- Thursday: Broadcasters' Popular Concert.
- Friday: "Jazz" night, with popular items from the Studio.
- Saturday: Popular Concert.
- Sunday: Classical and Operatic Concert.

7ZL

BROADCASTING TIMES.
Hobart Mean Time.
Wave Length: 390 metres.

MONDAY TO SATURDAY.

Morning Session—11 to 12 Noon:

11.0 "Mercury" News Service.
11.30 Musical Items.

Afternoon Session—3 to 4 p.m.:

3.0 Weather and Market Reports.
3.30 Educational Lectures as arranged.

Early Evening Session—7 to 8 p.m.:

7.0 Children's Stories by Uncle Nod.
7.30 (Saturday) Latest Spotting News.

Evening Session—8 to 10 p.m.:

8.0 Vocal and Instrumental Concerts from Studio. Orchestral Music.

SUNDAY.

Afternoon Session—3 to 4 p.m.:

3.0 Musical Programme.

Evening Session—7 to 9.30 p.m.:

7.0 Church Services as arranged.
8.30 Vocal and Instrumental Concerts from Studio.

3AR

BROADCASTING TIMES.
Melbourne Mean Time.
Wave-length: 480 metres.

MONDAY TO SATURDAY.

Morning Session:

11.0 Musical Items.
11.45 Weather Report, Stock Exchange Information.
12.0 Time Signal, Close Down.

Afternoon Session:

3.0 Musical Items.
3.30 Weather Report, Afternoon Stock Exchange News.
4.0 Time Signal, Close Down.

EVENING PROGRAMME.

7.0 Children's Corner, by "Uncle Rad."
7.35 Closing Stock Exchange News.
7.45 Weather and latest Market Reports. News Bulletin.
8.0 Vocal and Instrumental Concerts.
10.0 Close down.

SUNDAY.

Afternoon Session:

3 to 4 Musical Items.

EVENING PROGRAMME.

7.0 Children's Corner, by "Uncle Rad."
7.30 Vocal and Instrumental Items (Church Services announced).
9.30 Close down.

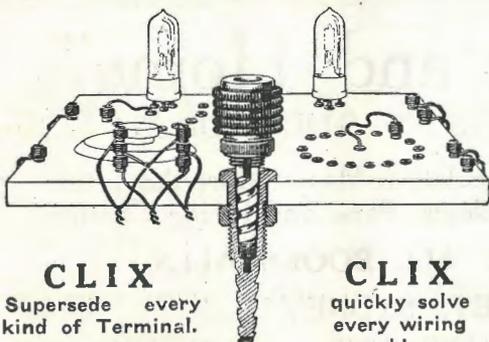
SUCH is the power of radio that while entertaining Japanese listeners, and radio fans in Australia, New Zealand and Tasmania, a recent early morning broadcast from KGO is reported to have nearly started a neighbourhood row in Honolulu, two thousand miles from the station.

The report of O. L. Rodgers, warrant officer in the United States Army, stationed in Honolulu, shows that only the prompt arrival of the native police saved the situation.

"Your special programme was received so loudly," wrote Rodgers, "that it disturbed the slumbers of my neighbours. Somebody telephoned the

police. Then things began to happen. I thought for a while that we would spend the rest of the night in the police station."

According to Rodgers the warring factions, including the police, finally settled down to enjoy the programme, and asked him to send their appreciation to KGO for the broadcast.



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N.Z. Amateurs Log KDKA

Reception Reports



HE tests from KDKA, Pittsburgh, were received by at least three listeners in New Zealand.

Mr. W. M. Dawson, of 3AL, Ashburton, furnishes reports on two of the tests as follow:—

"On the Friday night I went on to 65 metres with a wave-metre and KDKA was there in splendid strength. Statics were not bad, and power line interference moderate, and I could get every word the speaker said; a shorthand writer might easily have "taken" the whole speech. A musical item followed and afterwards another speech by Mr. J. A. M. Elder, Australian Trade Commissioner in the U.S.A. This speaker spoke slowly and deliberately and was easily followed. I cut out some time after 10 p.m., and it was still going strong.

"I looked for and found KDKA again on Friday night, January 30. Speech was again in progress as I tuned in. Power line interference was considerable, causing some passages to be lost altogether, but apart from that the volume was good. I was using only one turn in the primary and I swung it at right angles with no difference to the volume. The aerial was removed, and still good volume; earth also came off next and speech was still much the same. Grounding the aerial or disconnecting hardly made a scrap of difference to the strength of the signals. Incidentally, the speaker was heard to remark:—"It is a remarkable achievement that voices and

musical accompaniments in the studio at KDKA are plainly audible a matter of 9,000 miles away, in Melbourne, Australia.

"The set used is a three-coil receiver with low-loss coil detector and one stage of audio. Primary, one turn of No. 10 copper; secondary, eight turns (4in. diameter) No. 12 D.C.C. basket wound, tuned with a .0005 mfd. vernier condenser; tickler 3in. diameter, nine turns of No. 12 wire. Dull-emitter valves are used: one UV199 for detector and one DV3 for amplifier."

Mr. W. McLean, of Milton Street, Otago, reports having received four transmissions from KDKA, on January 23, 24, 25 and 26, using one valve only. Writing of his success to *The Dominion*, he states:—

"He broadcast a lot of complimentary speeches from various men well-known in the newspaper world of New York, also one from the Commissioner for Australia in U.S.A., and one from C. W. Horn, to his uncle, M. Simmonds (?), I think, in Australia. The speeches were pretty long. The operator announced to the Melbourne *Herald*, 'Have you got a shorthand writer handy? I have about 600 words of press for you.' Then he read over all these messages. Every word was as clear as a bell. Had I been able to write shorthand I should easily have copied the lot. I am only using a single valve three-coil circuit (eight primary, ten secondary, ten "tickler"), no condenser on primary

and the secondary about ten degrees on d/.0005 condenser. The music was louder than either 2YK or 2YM, who were on the air on Sunday night. The hum of KDKA's generator was quite plain, but could be heard only when the set was slightly oscillating. The musical items were from a gramophone, and, as he said, it was hardly fair to expect artists to come and sing at that hour of the morning. He also announced on the Sunday night that they had had a very clear view of the eclipse of the sun."

Mr. G. Blake, of 3AD, Greymouth, on the West Coast of the South Island, also reports hearing the test transmissions.

The fact that the transmissions were heard on successive nights and with good, steady strength, and that the speeches and other items were so clear that they could have been taken down verbatim, precludes the "freak" theory for these long-distance transmissions. The Westinghouse Electric Company, owners of station KDKA, expects that these tests will open up the way to commercial wireless communication between Australia and N.Z. and the United States, and the Maori-land listener foresees the time when these transmissions will be caught up and relayed from local broadcasting stations to the owners of crystal sets.

Conflicting reports are to hand regarding the third of the series of the five test concerts.

The concert was to have been transmitted from the station of the Chicago

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Tribune on Wednesday, January 28, at 6.30 p.m., New Zealand time. Three listeners in the Dominion report having heard the station on this night, and a fourth to have heard items and a few words leading him to believe it was the Chicago station.

Mr. T. H. Blain, of Rangiora, near Christchurch, reports that on Wednesday at 8.48 p.m., the station WGN was first heard, and that at four minutes to nine an orchestra was heard quite clearly when a spark station jammed for seven minutes. At 9.5 p.m. speech was again heard, followed by another orchestral number, which was very clear; this continued until 9.15 p.m. The call WGN was received very clearly at 9.20 p.m. and at 9.24 a pianoforte item was heard very well. At 9.28 he lost the station completely, but found it again at 9.40. At 9.45 a piano and other instruments were heard. At 9.50 a spark station had a prolonged "flutter." At 9.56 the call WGN was heard again. The station was further lost between 10 o'clock and 10.15, due to it fading. The last signal was heard at 10.20, and at that time an orchestra was very loud.

Mr. J. E. Strachan, of the same town, happened to hear snatches of signals which apparently check with the results obtained by Mr. Blain.

Mr. J. W. Ward, of Tariki, Taranaki, also reports having heard the test concert from *The Chicago Tribune's* broadcasting station on the Wednesday night. He heard the concert between the hours of 6.30 and 10.30 p.m. through heavy static. An amateur of New Plymouth also reports having successfully received the station.

On the other hand, Mr. E. H. Scott, of Nelson, who recently arrived from

the U.S., and who brought word of the tests, claims to have received the test concert on Thursday night. He states that through an unfortunate error on the part of the controllers at Chicago the test was transmitted on Wednesday evening instead of Wednesday morning, so that instead of hearing them on Wednesday they were heard there on Thursday. There appears to be an error in this statement, however, as if the concert was transmitted on Wednesday evening, Chicago time, the transmission would have taken place on Thursday morning, New Zealand time, this country being 17½ hours in advance of the time in Chicago. Mr. Scott submits a detailed report of the transmission as he received it on Thursday morning.

It is, of course, possible that there were transmissions on both nights. Further word will be awaited in order to clear up the apparent mystery surrounding the transmission.

JAPAN COMMUNICATES WITH AMERICA.

AN interesting account of long-distance wireless communication from the Chosi (Japan) wireless station, by means of a Marconi MC-1 Type 1½ Kilowatt valve transmitter, is contained in a recent edition of the Japanese newspaper *Asahi Shimbun*.

The officer-in-charge of the Chosi station seems to have been determined to get the utmost efficiency out of his set. Having communicated at night with the American steamer *President Jefferson* over a distance of 3,500 miles, and with the *President Wilson* in daylight at a distance of 2,000 miles, he set enthusiastically to work to break these records and succeeded in communication with San Francisco

(KFS), 4,500 miles. The two stations exchanged greetings and the American station, in replying, used a 15 k.w. arc transmitter.

Although this achievement may be regarded as exceptional, it is a great tribute to the efficiency of the Marconi Valve Transmitter, and a set similar to the one installed at the Chosi station attracted great attention at an Exhibition recently held in Tokio.

The MC-1 type of continuous wave valve transmitter was primarily designed for ship installations as an addition to the spark transmitting apparatus and was constructed to communicate between ships up to distances of 1,500 miles.

WIRELESS SERVICE AT SEA.

SIR BERTRAM HAYES, upon his retirement from the command of the *Majestic*, received a congratulatory wireless message from the Chatham multiplex marine station, Massachusetts, recalling that his ship holds the world's high-speed record in radio transmission by working at 150 words per minute.

The *Majestic*, which is a very popular ship among business people, is called upon to deal with a great volume of wireless traffic, and in order that this may be handled expeditiously, the ship has been equipped with Marconi apparatus for high-speed transmission and reception.

DO not connect your aerial to an electric light pole.

DO not use your set during a lightning storm.

IF you have a sending set, remember you interfere with others every time you send.

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A Simple Valve Transmitter for Telegraphy



SHORT wave application from about 80 to 100 metres for both wireless telegraph signalling and broadcasting is at the present time receiving world-wide attention. Results hitherto undreamt of are daily being achieved, and for the benefit of those contemplating experiments in this direction, we here briefly describe a simple form of short wave valve transmitter suitable for telegraph purposes.

Fig. 1 is a schematic diagram of the circuit arrangements.

The construction of this set is not at all difficult, but there are certain parts which are not readily procurable on the market and which will

The grid coil L_2 should be wound on a suitable former capable of rotation in one end of L_1 with about 18 turns of No. 20 double cotton-covered wire.

A convenient diameter for this former is about $3\frac{1}{2}$ in. Brush contacts between the spindles and the windings for making connections to the coils should be avoided. Good positive connection is ensured by bringing the wire out in the form of a spiral of small diameter and limiting the movement of the coil to 180° . The spiral connections should be so arranged that they do not come in contact with L_1 when the coil is rotated. The grid condenser C_3 should have high insulation and should preferably be constructed with mica as a dielectric. The

advantage being that the voltage is thereby distributed along the former and the risk of insulation breakdown is thereby greatly lessened. It is a good plan to bring a tapping out of the winding at every thousand ohms from 5,000 to 12,000 and to provide a suitable 8-point switch, so that the resistance value of the leak can be readily changed.

In order to reduce the self-capacity of the winding a thin, separating material sure as empire paper of thin, paraffin paper can be inserted between the layers in each section.

The Condenser C_2 , usually known as the anode feed condenser should have a value of .002 mfd. and this value should not be exceeded. The object of this condenser is to prevent the coil L_1 from short circuiting the high tension supply. It prevents the flow of direct current, but must pass the high frequency currents without hindrance. A well-made mica dielectric condenser which will withstand a voltage equal to several times that of the high tension should be used. Fixed condensers are usually constructed of a number of sections joined in series so that the potential difference is equally distributed across each unit.

The function of coil L_3 is to prevent the oscillations from reaching the high tension power source. This coil should offer a very high impedance to the oscillating voltages and for 80 to 100 metres wave-length may consist of about 200 turns of No. 30 D.S.C. copper wire wound on a $2\frac{1}{2}$ in. former. In order to keep the self-capacity of the winding reasonably low it should consist of a single layer. The former should be constructed of good insulating material because considerable alternating voltages may build up across the winding. If the wave-length of the transmitter is increased beyond 100 metres, it will be necessary to introduce a larger choke. The aerial ammeter A is purposely shown connected in the aerial lead because if it is connected in the earth lead, there is a risk of it being burnt out if the high tension supply is obtained from a source which is earthed. It may be an advantage to provide the ammeter with a short circuiting strap, so that its resistance may be

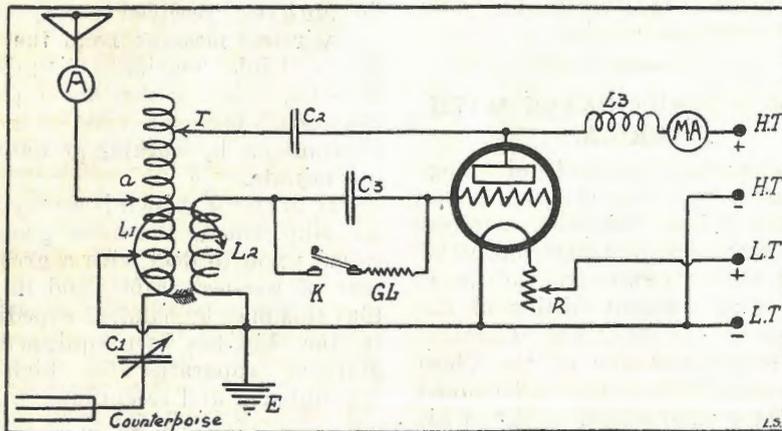


Fig. 1.

have to be home-constructed. The aerial inductance L_1 may be built with $\frac{1}{4}$ in. or $\frac{3}{8}$ in. x 24 s.w.g. copper strip, or No. 12 round copper wire. A former having the supporting sides for the winding made of high quality insulating material such as bakelite or porcelain should be about 7 in. in diameter and wound with about 18 turns. The number of turns, however, is only an approximate guide, because the inductance of the coil will vary with the spacing of each turn. The required length of the former can easily be determined after having decided upon the spacing between the turns. Cylindrical formers are usually fairly difficult to construct, and in some cases it may be better to make the former square with 8 in. sides. Three clips should be provided for making connections to the inductance.

value of this condenser is not very critical, but should be about .002 mfd. It is an advantage to construct the grid leak GL in sections, so that its resistance can be varied between about 5,000 and 12,000 ohms. It is very necessary that this resistance remains uniform and for this reason it should be wound with resistance wire. A strip of micanite or a number of strips of mica sheet or even high quality ebonite can be used as a former for winding the leak. The strips should be about 7 in. long x about $2\frac{1}{2}$ in. wide and should be slotted about $\frac{3}{8}$ in. deep at 12 equi-distant points along each side, the slots being about $\frac{1}{4}$ in. wide and opposite to one another.

The winding may consist of 38 or 40 gauge silk-covered eureka or other suitable resistance wire. The winding is put on in 12 sections, the great

removed from the aerial circuit when readings are not required. The aerial tuning condenser C_1 should have air dielectric and possess high insulating properties. Its inclusion will facilitate initial tuning, and if the transmitting aerial is not too large it can ultimately be dispensed with. A suitable value for this condenser for general purposes is .0005 mfd.

The signalling key K is connected in the grid leak circuit and the leak is disconnected when the key is open. During operation when the key is open, the grid condenser quickly acquires such a negative voltage that oscillations cease and this provides a very convenient method of signalling and one which is very much used. The circuit described above is suitable for transmitters using between 5 and 100 watts. The high tension and low tension supply is, of course, selected to suit any particular type of valve, as also is the filament resistance R.

The adjustments of the transmitter for maximum power and efficiency calls for probably more attention than the construction of the arrangement.

The writer has tested many transmitting valves which have been condemned by experimenters as faulty and useless for transmission purposes only to find that they are quite normal and that the trouble has been with the adjustments of the transmitter circuits. Briefly there are six possible adjustments.

- (a) Wave-length.
- (b) Coupling between valve and aerial.
- (c) Grid coupling.
- (d) Grid bias voltage.
- (e) Anode circuit voltage.
- (f) Filament voltage.

The wave-length adjustment is made by varying the tapping (a) on L_1 . Adjustments of other parts of the circuit will, however, slightly effect the wave-length but the greatest variation is caused by alterations to the coupling between the grid and aerial coils. Any variations in this respect, however, can be compensated for by readjusting the tap (a) for any position of grid coupling. The position of the anode tapping T should be carefully adjusted whilst watching the readings of the aerial ammeter A and the plate feed ammeter (m.a.). The tapping should be varied until the radiation current

is a maximum with a minimum feed current. When this adjustment has been made the degree of coupling between coils L_2 and L_1 should be varied, the best adjustment being that position when the ratio of aerial current and plate feed current is a maximum.

The adjustment of the grid leak resistance is of very great importance and has a direct bearing on the minimum filament current and anode voltage required to promote oscillations. Generally speaking it should be adjusted to a position which gives the highest radiation with a minimum of plate feed current. If the anode voltage remains constant, it will be noticed that for various values of leak resistance the required filament voltage varies, so that by selecting some value the set may be operated at a fairly low filament temperature thereby increasing the life of the transmitting valve.

Although different effects may be obtained by varying the anode voltage for all practical purposes this should remain constant at the value corresponding to the rating of the particular valve used.

The filament voltage up to a certain degree will increase the aerial current, but above this degree, no further increase is obtainable. In practice, therefore, the filament voltage should be increased steadily from that point where oscillations commence to the point where the aerial current is no further increased.

If an earth system alone is used, the variable tap at the lower end of the inductance L_1 should be permanently fixed at the extreme lower end of the winding.

Beneficial results are frequently obtained by using a counterpoise which is really an artificial earth. The counterpoise consists of a number of wires suitably arranged and connected together below the aerial and insulated from the earth. The wires of the counterpoise should extend beyond the shadow of the aerial and as many wires as are convenient should be employed.

The counterpoise system is held a few feet off the ground by insulators and fixed to posts. When using the counterpoise and the earth, the wave-length of the transmitter is first determined with the counterpoise only

(Continued on page 840.)

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(To the Editor.)

"Lancefield,"

24 Bondi Street,
Mt. Hawthorne,
Perth, W.A.
31/1/25.

Dear Sir,—

It may interest the many readers of your interesting journal to learn that the test transmissions from KDKA were logged here by many experimenters, including myself. I was unfortunately unable to have a try for this station until to-night, but a number of my colleagues "had" him from the first night and inspired by their success, I determined to "have his noise."

I had three hours in which to knock together a low-loss set as per your issue No. 46. The job was finished with five minutes to zero. Not having a wave-meter it took me twenty minutes to "step on" his voice and he came in with good volume. I was using two valves, so I switched him on to three which brought him in on the loud-speaker and he could be heard all over the house, but considerable interference from others, with howling valves, completely spoiled reception, although the volume of speech was there. So were the howls, too; so that it was only possible to catch a word here and there.

I might mention it was daylight here all the time, but it was very noticeable how the volume increased towards the end. The experimenters of the Eastern States have a big pull over us here in the West, as we seem to be on the Edge of Beyond; however, having had a taste of low-loss tuners, I will try to improve it and do some more DX chasing and be pleased to report any further successes.

Wishing yourself and your popular journal every success and prosperity, I beg to remain,

Yours, etc.,

(Signed) EDWARD PAGE,

Vice-President Wireless Inst. of Aust.,
W.A. Division.

P.S.—The circuit used was the Low-loss

Receiver, Fig. 1 (*Radio*, No. 46), with two stages of audio added. The first transformer is a Eureka Concert Grand, using 90 volts on all plates.

(To the Editor.)

75 Nicholson Road,
Subiaco, Perth, W.A.
1/2/25.

Dear Sir,—

During the last test with KDKA, I was successful in picking up that station on three different evenings, although it was daylight here, between 6 p.m. and 7 p.m., the time tests were carried out.

I was using a Low-loss Tuner similar to the one shown in *Radio* a little while back. Two valves were used, one detector, and one audio frequency. Here is list of call signs heard on the same set:—25/1/25: A3BD, A5DA, A2YI, A3BQ, A2YG. 26/1/25: A3BD. 27/1/25: A2YG, A2YI, GB, Java (fone music), A5AH. 28/1/25: UKDKA. 30/1/25: KDKA, Z4AK, Z1AO. 31/1/25: KDKA, A5DA (fone), A2AC.

Also American amateurs: U6AB, U6CRW, U6BEL, U6ALV, U6APW, U9BJL, U6AME, U5AAQ, U5ZAI, U2ALX.

2YG, 2YI and 3BD are very loud here. I have put them on loud-speaker and read them 15 feet away.

Here are a few complete messages I have managed to log:—hr nr 1 2YG aust. Jan. 27 to KDKA Pittsburgh ur fone veri qsa trite Ray Allsop, 2YG, coogee, Sydney.

Message to KDKA, Jan. 27:—ur (fone) Sydney trite at 2YG and 2YI. sig. Nolan, Double Bay, Sydney.

KDKA, Pittsburgh, Jan. 30:—ur fone loud speaker trite Ray Allsop, 2YG.

CQ de GB here, laboratory, Govt. Radio service, Bandoeng, Java, Dutch East Indies. Pse. listen for our telephony and music and inform us pse. by letter—

After above speech and music followed, but too indistinct to understand.

Yours faithfully,

(Sgd.) H. T. SIMMONS.

(To the Editor.)

Gowrie Station,
Charleville.
2/2/25.

Dear Sir,—

A little more about KDKA. We had him here for the fourth time on the 31st. A clipping from the local paper is enclosed giving details of the transmission on 26th. Two other dates were 30th and 31st.

I would very much like to get in touch with anyone else who heard this station to compare notes. He is by far the loudest of any station we have yet heard.

The set used is the same two-valve used on the previous occasion, details being unaltered.

I could hear the speech on 31st with aerial and earth disconnected. On 31st, owing to bad statics, most of this last transmission was received with aerial off and earth connected to aerial terminal on the set.

Hoping to hear of other readers' experiences with this station,

Very truly yours,

(Signed) PERCY L. GRANT.

(To the Editor.)

12 Chestnut Road,
Auburn, N.S.W.
3/2/25.

Dear Sir,—

This is the first occasion on which I have written in this last couple of months, the reason being that there has been nothing exciting to report. Having logged KDKA during the whole of the test period last week, however, I thought a line might be of interest.

KDKA was first logged on Saturday and, although rather QKZ, the music and speech was quite readable on a one-valve "Low Loss." During the week the strength increased wonderfully and the modulation was absolutely perfect.

On Tuesday, KDKA was heard quite O.K. on a 2ft. frame aerial and, although the music was O.K. with the aerial abso-

A BOUQUET.

In the course of a letter to the Editor, a Charlestown (N.S.W.), reader writes:—

"I have built the single-valve receiver described by Mr. F. L. Devereux, B.Sc., in 'Radio,' Vol. II, No. 40, but omitting the T. C. C. Mansbridge type condenser shunted between the B battery and earth. I am also using a 30 ohms variable resistance in the filament circuit, instead of a fixed one.

"It is a pleasure to add that the results are in keeping with the high standard of your publication, 2FC coming through day and night clearly and distinctly on a pair of Sterling 4000 ohms 'phones and a DV3 De Forest valve lit by three one-volt Columbia Dry Cells.

"It is a pleasure to add my tribute to the value of 'Radio' to the amateur, and I trust that 1925 will bring all you desire."

lutely off the set, the speech was not intelligible.

On Wednesday night without the aerial or earth, the speech was absolutely wonderful and, although QRN was bad on this night, it was negligible without the aerial. During the whole of the concluding nights of the test this was repeated every night and as the last night, Saturday, was notorious for QRN and "howlers," this was a great asset for the whole of the speech by J. A. M. Elder was heard as clear and as plain as if her had been in the room. With the aerial on, this was impossible. During one of the nights of the test, a visitor in the person of Mr. G. R. Chalbeber was present and he expressed great surprise at the strength and the excellent modulation of KDKA.

A feature of the reception was the number of times each message was repeated and the announcer asked for advice as to whether this was necessary. In my opinion it was not, as every word was heard here with ease.

I am aware that KDKA was heard without aerial on a two-valve set, but I think I have some claim on being one of the first to hear him on a single "Bulb" without aerial or earth.

Hoping this may be of interest,

I am, yours, etc.,

(Sgd.) THOS. N. ANTHONY.

P.S.—I might mention that at the time of these experiments, the aerial was right off the set and earthed, thus eliminating any possibility of induction or capacity effect from this source.

LISTENING-IN IN LONDON.

ALL England is frightfully bucked at the moment of writing, over the successful picking up and transmitting of Australian messages in England, by amateurs working on short-wave wireless sets. Radio communication has advanced another step, but the dazzling progress of the science has attracted so much attention that many of the little romances to which it has given rise have rather missed the public eye.

Broadcasting is firmly enough established in Australia, but here, where nearly every suburban resident has his allotment and his wireless set, people have reached that state of mind when they think of broadcasting as something that has been in existence ever since before they can remember. I have heard respectable citizens, writes the London correspondent of *The Daily Guardian*, who ought to know better, talk about the days before wireless in the same breath as the days before railways and bobbed hair.

One of the most interesting things about listening-in, however, has been

the revelation of international characteristics which it reveals. In England one can have the world brought to one's drawing-room and reproduced in capsule form merely by turning a few screws and making a few lights flicker. I have listened to the general hum of small chat in the Amalgamated Wireless Company's station in Collins House, Melbourne, but the record of ship's reports, broadcasting programme from Farmer's, Sydney, and small items of information which filter in through the wires there have not the thrill of the cross-talk which goes on round Europe and across the Atlantic.

The familiar old saying about if one stands on Charing Cross station long enough he will see everyone in the world might well be adapted to assert that if one listened-in on a powerful English station long enough one would hear everything that is doing in Europe.

Any night will do. Take up the earpieces and this is the sort of thing you hear: Marseilles calling, commercial information; 2LO (London) Big Ben striking; call from a tramp steamer in the Atlantic—man injured, medical advice wanted; dramatic soprano song from Madrid broadcasting station; ping, ping—Cairo calling in code, unintelligible; naval direction finding station at Flamborough Head checking the bearings of a Belgian produce scow; fearful chaos and discord—two broadcasting stations trying to work on the same wavelength, we have got them both at the same time—Danish and Italian in an unholy mix-up; Paris Posts and Telegraphs announcing a concert item; a girl singing in Lisbon; then everything is jammed—we have struck the Admiralty station at Pembroke and the Silent Service is ostentatiously belying its name.

After that, to drop into short waves we hear London amateurs talking among themselves, someone calls a radio acquaintance in Aberdeen; then another throws out across to Holland; the Metz radio club chips in; then a jerky Finn calls to someone in Dijon, France.

The next call is from across the Atlantic. A sonorous voice is lecturing from Springfield, Illinois; the Chicago *Tribune* announces its formula—WGN. This is a delightful piece of American modesty, for WGN

stand for World's Greatest Newspaper. Off again, and the General Electric Company is talking from Schenectady, N.Y. Then a couple of concert item from New York City. Finally, and perhaps most romantic, we hear the meek call from some small amateur six thousand miles away on the Prairies of Alberta, asking please won't someone talk to him on the radio and relieve his loneliness.

THE distance you may hear depends a great deal on the power of the sending station.

YOU may paralyze your valve by turning on the filament current too suddenly.

Keenly priced New Stocks "Low-loss" Sets and Accessories.

Assuredly the purpose of all Radio enthusiasts this coming Winter will be to receive KDKA and other distant stations. To successfully attempt this the best possible sets and parts are necessary, and with this in view David Jones' have obtained new stocks of "Low-Loss" Sets and Accessories, undoubtedly the finest known for long-distance receiving. These are ready tested and fully guaranteed. The moderate pricing will readily be seen from two typical values following:—

Acme Low-Loss Condensers, .0005.

Price 48/6

Acme Low - Loss

Transformers. Price.. 35/-

Low-Loss Coils made to order on specification.

D.C.C! Wire of correct gauges now in stock.

DAVID JONES'

For Radio Service,

22 YORK ST., SYDNEY.

Tales of the Wireless Service

Your First Ship

By "Kwat."



WHAT a thrill one experiences when one is handed his Operator's Proficiency Certificate! What a time of suspense and anxiety one goes through until one is finally appointed to a ship! Then the addi-

tional thrills when one is finally appointed. Thrills with stings in their tails, perhaps!

Comes the night before you board the ship, and you do not know whether to be glad that you are going, or sorry that you are leaving. When

Mother is putting your name on your handkerchiefs, instructing you about airing your sheets, and when to take the cough mixture, with a far-away look in her eyes—*then* you feel your first sting.

Next day when you leave to join your ship another sting comes, a sting almost sufficiently poignant to make you draw back and stay at home with Mother, and, if you are half a man, you will feel the same many times throughout your life, the pain in your "midriff" getting worse at each time you say "Good-bye!"

Now you are in the cab, bag and baggage, and it is here that the minor stings come in quick succession.

You have dreamed of a triumphant approach to the ship, when all trials and tribulations will be swept away. You have wished for one, and you have rehearsed one. An approach, filled with triumph and dignity, where cool, calm, and efficient Science makes a triumphant and dignified onslaught on the Old Man of the Sea. And, if suggestion, and auto-suggestion have any of the powers attributed to them, your approach should be one of Dignity personified headed by a brass band.

But you will find that suggestion with all the promise claimed for it, proves a failure. First, "there ain't no brass band, mister." As this is probably an unfortunate oversight of someone's, you let it pass. But the cabman proves to be a veritable fly in the ointment, for he, much to the interest of the wharves in the vicinity,

RADIO

THE GIFT SUPREME.

"LEVIAPHONE" SENIOR CRYSTAL SETS.

They mean hours of exalted joy, not only during Xmas, but throughout the whole year. Guaranteed Braybrook Wave Length (20 mile radius), and complete with one pair of Headphones, aerial wire and insulators. Will carry three pairs of phones. For £3/3/-

ASTROPHONE CRYSTAL SETS.

The De Luxe Model is in velvet-lined case, with patent spring lid; the ideal present; just a nice convenient size; will fit in your suit case for the holidays. Fitted with nickel-plated fittings. Guaranteed Braybrook wave length (20-mile radius) without headphones and aerial wire. Accessories, 30/- extra. For £3/10/-

Write for Illustrated Catalog. We Stock all Sets and Accessories.

THE LEVIATHAN

PTY., LTD.,

Cr. Swanston and Bourke Sts., MELBOURNE.

Mention "Radio" when communicating with Advertisers.

commences a vociferous discussion about fares in general, and unceremoniously dumps your baggage at the foot of the gangway.

Now you are faced with your first nautical problem, namely, how to get those boxes aboard? After debating the problem with yourself, you decide to hump them up the gangway on your own.

Everyone around the decks gazes upon you with a frosty-faced, unconcerned stare, which holds a little thrill that has to be experienced to be appreciated, and, is one that not even Shakespeare could enthuse over. Not by any chance does one of them offer to give you a helping hand. That would be violating one of the traditions of the sea—something that you will know all about later on.

The problem is to get about two hundredweight of goods up a narrow gangway, sloping at an angle of some 45 degrees, and, at the same time, retaining your dignity, the crease in your trousers, and, not forgetting the lovely, straight part in your hair.

By this time you have decided that the sea is a rotten place anyway, no

one seems to care whether you live or die, sink or swim. But at last your dunnage is aboard, very much at the expense of the crease in your trousers, and the part in your hair. Now comes the problem of making yourself "known." The problem seems insurmountable, especially as by this time your bulwark of dignity has wilted and flopped like your starched collar—the pick of a dozen freshly ironed.

Yesterday, you rehearsed approaching the ship with a manly mien and demanding the Captain's presence on the quarter deck. To-day, the problem has taken on quite a different aspect. The hoped-for white-decked mail boat has resolved itself into a humble collier, dusty, rusty, and old. And the crew, those who have not by this time disappeared down dirty, old rabbit hutches, are the most unlovely, unshorn pack of bovines imaginable. Shipmates? Bah!

How to make yourself "known" still revolves in your mind as you struggle up with the last box—the one containing your new uniform and the cough mixture. Oh! for the

brotherly mystic sign of some secret society to smooth away your troubles. The "Black Hand" suggests itself as appropriate under the circumstances.

Blindly you pick the most presentable-looking bird of the flock, unconsciously elbow the Second Engineer and Mate aside and make yourself "known," as bad luck will have it, to the second steward.

And so commences your initiation into sea life. So commences your period of petty squabbles that, oftentimes cement friendship all the tighter in a way peculiar to the sea, where all classes of men are thrown indiscriminately together for company. Here begin your bouts of seasickness, when probably you would welcome death, periods, as Mark Twain puts it, "When you are afraid that you will not die."

Gone are your dreams of romance when you vision yourself heroically emerging from some frightful wreck, spick and span, in gold-braided uniform, and being rewarded by the Captain giving you the pick of his only daughter.

(Continued on page 840.)

"RADION" — the Supreme Insulation for Your radio receiving set



When you build your receiving set you want to use absolutely the best insulating material that you can get. Nothing else is quite so important. The tone and audibility of the entire set depend to a great measure upon the insulation.

Radion has proved to be the supreme wireless insulation. It is made solely for radio work and far excels any other material in the four main Radio essentials namely:

1. Low Angle Phase Difference
2. Low Dielectric Constant
3. High Resistivity
4. Low Absorption of Moisture.

Radion also has a fifth very important characteristic—its workability. Even the amateur with ordinary house tools can saw, drill and otherwise work Radion Panels without the slightest danger of their chipping or cracking.

Radion Panels and Parts (dials, knobs, sockets, insulators, etc.) will greatly improve your radio set. Don't be satisfied with inferior substitutes when you can get genuine Radion.

Look for the trade mark stamped on every piece.

International Radio Co., Ltd.,
91-92 Courtenay Pl., Wellington, N. Z.
200 Castlereagh St., Sydney, N.S.W.



C41

"Static"

By F. Basil Cooke, F.R.A.S.



AN old saying is that trouble is only sent to be overcome and in the rapid development of civilisation, more and more difficulties daily confront the pioneer in Science, for with every new discovery we have numerous problems to solve before perfection is attained.

In Wireless we see a science of the greatest benefit to Mankind, and one which has grown more rapidly than any before it; we have improved our means of transmission and are continuing to do so all the time—we have devised means of receiving the Wireless waves of exceptional sensitivity, but we always have with us our arch-enemy "Static."

"Static" or, as it is sometimes called, "Atmospherics," is caused by electrical disturbances in the air—these disturbances create waves similar to Wireless waves, and conse-



Mr. F. B. Cooke, F.R.A.S.

quently are heard in the receiver. The result is, of course, that while listening to the broadcasting or wireless messages from distant stations, we have the static interrupting, and causing foreign noises which sometimes are very distressing.

Static is sometimes local, i.e., close by, in which case it is very much louder than when at a distance. It is also heard in different ways. Sometimes it is continuous, while at others it comes in bursts. Sometimes when we have a splendid, clear night, free from static, a sudden, loud peal will be heard and then there will be quiet again. These occasional bursts might only occur three or four times in the one evening.

Static is worse in the North of Australia than in the South, and in certain districts particularly troublesome.

(Continued overleaf.)

30/- EACH.

MADE BY—



THE MAN WHO INVENTED BROADCASTING.

DE FOREST VALVES



D.V. 3
Filament, 3 Volts,
.06 Amp.

D.V. 2
Filament, 5 Volts,
25 Amp.

Both Types Fit Standard American Socket.

TYPE D.V.2—Takes 5 Volts at 1/2 Amp. on Filament 30/- each

Plate Voltages, Detector 18-22 1/2 Volts; Plate Voltages, Amplifier 60-150 Volts.

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Plate Voltage, 16-22 1/2 Volts, Detector; Plate Voltage, 60-120 Volts, used as an Amplifier.

Both Types Fit Standard American Socket.

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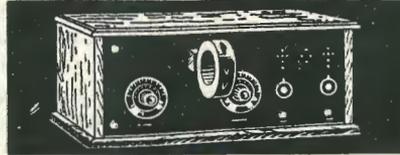
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"PICO" HEADPHONES.
Strong, light, durable, fully guaranteed, give you the programmes at their best, 25/-



UNITED HOME ASSEMBLY SETS.
One to five Valves, can be put together with a screw-driver and a pair of pliers. Prices 5 to 11 guineas. New Circuit now available.



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Made in Australia, as good as the most expensive imported 21/-



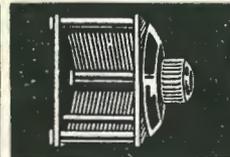
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Low-Loss Condensers. Most accurate and thoroughly reliable. All Capacities. Plain and Vernier.



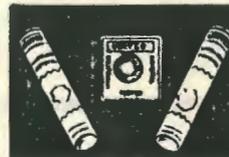
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"SIGNAL" VARIABLE CONDENSERS.
Distance and volume assured. All capacities, plain and vernier.



"ATLAS" LOUD SPEAKERS.
The "Musician of the Air." Clear, mellow, true £7/10/-



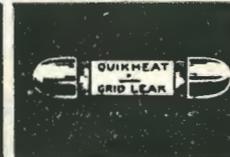
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Made and tested in Australia. Price, 1/3. Galena, Midite, Hertzite, Pyrites, Claritone, Zincite. Mounted 1/9



UNITED COILS.
Guaranteed, correct, efficient. True Inductance. Price, 2/- upwards. Mounted and unmounted.



STATIC LIGHTNING ARRESTOR.
Price 2/6 Required by the Underwriters.



QUICKHEAT GRID LEAKS.
3 different capacities, 100,000 to 10,000, 1/2 meg. to 5 meg. Accurate.



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Best grade. Bushings absolutely true. Inlaid with fast white enamel



BRANDES TABLE TALKER.
Strong and distinct, as mellow in tone as an old violin £4/15/-



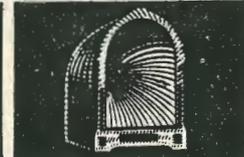
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SIGNAL PUSH AND PULL POWER TRANSFORMERS.
£3/3/- the pair.



DE LUXE COIL PANEL & COUPLING PLUG.
Genuine Bakelite. True connections. Perfect fit. Easy adjustment, 3/8.



ECHO LOUD SPEAKER.
Strong and clear. Special shape and construction £4/15/-

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Wellington.

(Continued from previous page.)

There is a regular static season, usually from November until the end of February, being really bad during December and January, and beginning to fall off until April, when there commences a period of perfect long-distance reception.

From the foregoing remarks it might be thought that reception is impossible except during the Winter, but this is not so. Once one knows the cause of the noises, there is immediately a certain amount of interest aroused, in that we are actually hearing what is going on right away up in the Heavens.

In the study of Static lies a very useful field for research—instead of believing Static to be an enemy, why not make it our friend and learn what it has to teach us?

We all know that the changes in the weather create electrical disturbances. Each special kind of weather change has its own special type of Static, so if we can only learn the language of the Static we will have a very helpful aid to forecasting the weather.

This is new work in Australia and very little has been done in this direc-

tion, but the little that has has proved very fruitful. Those of us who live in the country have a golden opportunity of studying this very interesting subject, and I feel sure that the schools could easily arrange working parties to take accurate observations daily, both during the daytime and at night.

As a suggestion, these results could be sent in to some headquarters, together with the actual weather conditions at the time, and there analysed, when the results could be tabulated and printed as a valuable contribution to our knowledge.

There are several persons privately observing Static regularly, and predicting their own weather forecasts with a great deal of accuracy. This, at least, would be a means of turning an enemy into a friend, and instead of turning off our Radio with disgust, when Static had the Air, we could examine it instead and learn what it has to tell us.

This hobby is full of possibilities and doubtless many interesting nights could be profitably spent which otherwise would be lost.

There is still another important aspect to Static studying, and that is

its elimination—the more we know of our troubles, the more chance have we in eliminating them.

If the medical profession want to find a cure for a new disease they study the disease itself very minutely and find out all about it before attempting a solution for its elimination, and thus we should treat Static.

WHEN the tube will not light up, the battery has run down, there is an open circuit in the filament leads or the prongs are not making contact.

YOUR detector tubes nearly always work best with different plate voltages. What is best for one may not be so good for another.

DIFFERENT detector tubes require different grid-leak values.

SOMETIMES you get better results by having the variable condenser in the ground instead of in the aerial.

KEEP your lead-in as far away from the house as you can.

CRYSTAL detectors give good, clear music over radio.

FINAL adjustments for weak signals are made with your rheostat.

THE NAME TO KNOW IN RADIO IS—

WILES Wonderful Wireless

384 PITT STREET
(NEAR GOULBURN ST.)

56-58 GOULBURN STREET
(1 DOOR FROM PITT ST.)

23 PITT STREET
(NEAR CIRCULAR QUAY)

MAKE YOUR OWN BROADCAST RECEIVING SET in a few hours of your spare time, with a screwdriver, pliers and soldering iron, and spend a thoroughly enjoyable evening putting together one of these famous sets. No experience, special tools or drilling required. Only the best quality parts are supplied, including Bakelite panel, drilled and engraved. The accessories include Dry Cell Valves, Batteries, Headphones, Soldering Iron, Screws, Solder, and instructions for building and operating, which are so clear that you cannot go wrong.

Parts for 1-Valve Set	£7 8 1	Parts for 2-Valve Set	£10 2 4
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ON account of the unprecedented number of orders that have been received for VOLUME II. of “RADIO IN AUSTRALIA AND NEW ZEALAND” applications for copies will be dealt with in strict rotation.

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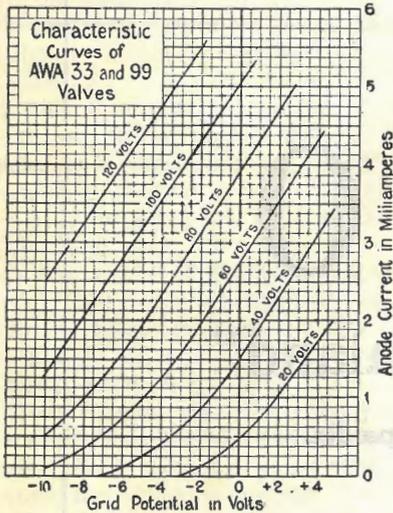
THE WIRELESS PRESS

97 CLARENCE STREET, SYDNEY, N.S.W.

A New Valve

A NEW valve which is in demand by experimenters and broadcast listeners-in is the AWA99, manufac-

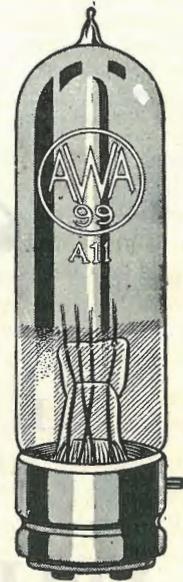
no use for a single tube and higher



It is of the dull emitter type and operated with a filament current of 0.06 of an ampere. A dry cell may thus be conveniently used for lighting. In valves for use with dry cells it is of the greatest importance that the filament current be as small as possible, and that the characteristics of the valve must not be sacrificed in making this reduction in current. The AWA99, it is claimed, fully meets both these requirements.

In order to operate at such low current it is necessary that the filament wire be very fine, and it is interesting to note that the filament of this value is only about one-fourth as thick as a human hair.

Designed to operate from a three-volt dry battery, accumulators may be used if proper care is taken to reduce the voltage at the filament terminals to three volts. On account of the small filament current, the ordinary four to ten ohm rheostats are of



resistance must be used.

(Continued overleaf.)

tured in Australia at the Sydney valve works of Amalgamated Wireless (A/sia.) Limited.

"AJAX" Initialled Binding Posts

Bakelite tops clearly engraved and well finished.
Eight on a card, consisting of—

- | | |
|-----------------|-------------------------|
| 1 "B" Battery — | 1 "B" Battery + |
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| 2 Telephones | 1 Ground 1 Antenna |

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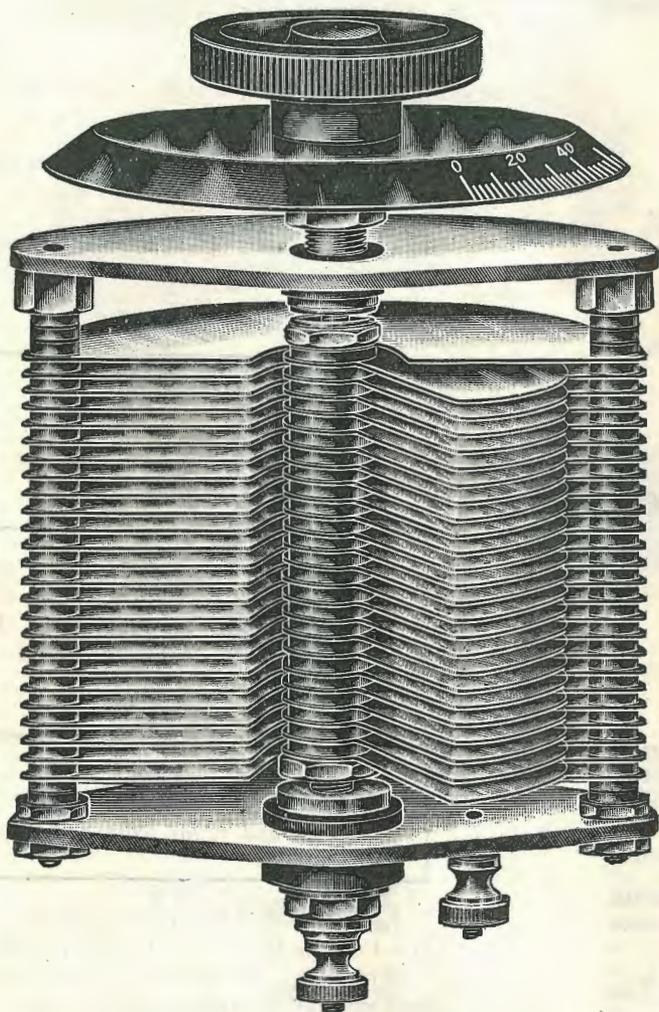
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"A Listening we would Go"



QUITE a good idea, but not good listening-in unless the vital part of your Set is good. Of course, quite a lot of condensers are good but with a product that has 25 years' reputation to uphold, the results must be more than good—they must be excellent. Therefore ask your Dealer for

Ormond's No. 2 Condenser

We specialise in turning Brass and Steel Screws and machined parts of all descriptions and accessories.

ORMOND Engineering Co.

199 PENTONVILLE ROAD, KING'S CROSS - - LONDON, ENGLAND

A New Valve

(Continued from previous page.)

The AWA99 is quite small, being one inch in diameter and slightly over three inches in length.

The electrostatic capacities between the electrodes of the valve are very small and for this reason it is an exceptionally good radio frequency amplifier and best results are obtained with about 45 volts on the plate. It also functions well as an audio frequency amplifier with from 40 to 80

volts on the plate and a small grid bias which secures minimum distortion.

In addition to its uses as a radio and audio frequency amplifier this tube functions very efficiently as a detector, but not more than 45 volts should be used on the plate.

The AWA99 has a standard bakelite UV199 base.



37/6

At all
Radio
Dealers

A Wonderful Improvement!

Western Electric

HEADPHONES WITH NEW COMFY PAD.

Day after day comparisons always demonstrate the better results from Western Electric equipment. And, after all, you just pay a little more for Western Electric Headphones, but what a world of difference, compared with Headphones that are merely made to sell at a low price.

Western Electric Headphones are typical of wonderful Western Electric workmanship, which stands behind over half the world's telephones.

You get comfort, you get scientific construction. The magnetic material stands up to all conditions. Special moisture-proof cords are used. In fact, you need only examine and "listen in" with Western Electric Headphones to recognise why Western Electric is a name to trust in Radio.

Any Radio dealer will supply you with "W.E." Head Receivers. Always insist on "Western Electric."

Western Electric Company (Australia) Ltd.

192-194 Castlereagh Street, SYDNEY

Telephone: City 336, 355 and 356.

Also at 588 Bourke St., Melbourne

A CRYSTAL detector is not used in a regenerative hookup.

SOLDER all connections for best results.

RADIO waves penetrate dielectric materials, but are absorbed by metal.

A Simple Valve Transmitter

(Continued from page 829.)

connected, then the lower tap on the coil L_1 is moved and its position adjusted until there is no change in the wave-length when it is connected or disconnected.

Your First Ship

(Continued from page 833.)

Later on the Fifth Engineer and the Fourth Mate both tell you of the "Skipper's" daughter. They once had similar dreams to yours. She is fat, forty, splay-footed, and walks with a limp.

But you are an *Operator* at last, filled with the pride of the sea, despite tiffs with the Second Engineer over using too much "juice" in the daytime, and glorying in the name of "Sparkes," and probably, the unloveliest in an unlovely bunch aboard a dirty, old collier, which, like you, plays a very important part in the scheme of things, and perhaps doing deeds of valour, should necessity arise, that will live as long as Shakespeare's verse.

Brandes

The Name to Know in Radio



*Result of
16 years'
experience*

"None but the Brave" —

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BORDEAUX ON A CRYSTAL.

SOMEWHAT unique in current wireless exploits is that of Mr. R. O'May (7OM), of Bellerive, Tasmania, who succeeded recently in picking up Bordeaux, France, on a crystal.

The explanation of this phenomenal piece of DX work appears to lie in a heterodyning effect produced by HZA, which super-imposed itself upon LY's signals and passed them on through powerful stations to Australia.

This matter of the oscillatory nature of certain crystals surely bears investigation by Australian wireless societies. According to current issues of American wireless magazines, considerable headway in this direction has already been made in the United States, where the "oscillating crystal" is receiving considerable attention at present.

CAFE PROPRIETOR'S ENTERPRISE.

MR. A. J. JACKSON, who conducts a cafe at Atherton, N.Q., thinks that he is the first, or at least, one of the first, to install a radio receiving

set for the entertainment of the North Queensland public. Mr. C. Kidman, late Wireless Officer of the s.s. *Wyreema*, built the set for Mr. Jackson and gave him much valuable advice. Recently, very fair results were secured in the reception of 2FC, 2BL and 3LO, and on one occasion KGO was heard. The set is a four-valve one, one radio and detector and two audio with a two-valve amplifier, push-pull circuit.

VLD (AUCKLAND).

MR. G. H. ROBINS, the popular Radio Inspector of Auckland, has again taken up his duties after lengthy absence on sick leave. During the time he was away from duty, his position was filled by Mr. F. O'Grady, who now resumes his old post of Senior Operator at the Auckland radio station (VLD).

NEW ZEALANDERS IN LIMELIGHT.

SEVERAL New Zealanders have been in the limelight since the beginning of the year, and as the season advances one may reasonably expect

to hear of other excellent performances.

Mr. Ivan O'Meara received messages from the U.S. airship *Shenandoah* when she was cruising round the Great Lakes, North America, and the airship reports receiving messages from Mr. O'Meara.

Mr. Frank D. Bell, of Shag Valley, Otago, has received confirmation of his communications with France. Mr. L. M. Mnears, an amateur near Pau, reports the receipt of the congratulatory messages sent from New Zealand wireless amateurs to the French and British amateurs upon their brilliant efforts in wireless telephony. Every word, the Frenchman stated, came through with the utmost clearness.

Mr. T. W. Ward, of Tariki, reports having received the first of the test concerts sent out by the American broadcasting stations.

Mr. R. Keith, Hawera, reports having received signals from the beam station at Poldhu (Cornwall, England), working on a wave-length of only 20 metres. The signals were received during daylight, and were addressed to a station with a call sign of ICCM.

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Queries Answered



C. H. (Molong). Q.: In using the "P1" with two stages of A.F., please give connections for plugging in on second valve. A.: See the five-valve receiver in *Radio* 47. The inner contacts are connected to the primary of the inter-valve transformer and the outer contacts to the plate of the valve and the positive H.T. Q.: Using the "P1" single-valve receiver, strong signals have been received from 5DN; is this good reception? A.: Yes. Q.: What is the address of this station? A.: L. C. Jones, 146 Rundle Street, Adelaide. Q.: Are there any Morse stations operating on 3AR's wavelength? I have difficulty in getting him, through interference from this source. A.: Probably ship stations working on 450 metres. You are to be complimented on your good, all-round reception. Q.: Is there no other way to receive amateurs and 2BL except by using a .001 condenser in the aerial circuit? A.: Not unless you use smaller coils or inductances, or reduce the length of your aerial; even then it is advisable to use an aerial tuning condenser to avoid interference.

W. B. B. (Auburn). Q.: Give information for making chokes suitable for the three-valve receiver in *Radio* No. 48. A.: Adopt that specified in the article, i.e., the secondary of any ordinary iron core intervals transformer. See *Radio* No. 19 for construction. Q.: Which would be the more satisfactory aerial for short-wave reception? (Sketch submitted.) A.: This will have to be found by experiment. The shorter aerial will no doubt be the more suitable.

R. M. (Walsh, Qld.). Q.: Using a five-valve receiver, comprising two stages R.F., detector and two stages of A.F. amplification, would greater selectivity be obtained using a loose-coupled tuning circuit? A.: Yes; using correct size coils and condensers, you should have no difficulty in cutting out interference. Q.: Give information on the theory and operation of this circuit. A.: See "A Long-Distance Receiver," *Radio* No. 45 and also description of the five-valve receiver, *Radio* No. 47. Q.: Advise where Igranic goods are obtainable. A.: Any of the leading radio dealers.

T. G. (Brunswick). Q.: Using single-valve receiver (circuit submitted), what is cause of difficulty in obtaining reaction on wavelengths below 350 metres? A.: Use your aerial condenser in series. The best method is to use a series-parallel

switch, connections of which have been given in previous issues.

S. W. H. (Sydney). Q.: Using the low-loss tuner, *Radio* No. 46, how many turns are required on the secondary to tune between the wavelengths mentioned? A.: 18 turns.

A. B. P. (West Maitland). Q.: Using five-valve receiver (two tuned anode, detector

city of condensers correct? A.: Aerial tuning condenser should preferably be .001 mf. variable, and 'phone condenser .001 mf. fixed. Q.: If properly constructed, should receiver be selective? A.: Use coupled aerial circuit similar to three-valve receiver in *Radio* No. 46. Q.: Suggest any improvements to receiver. A.: A two mf. condenser across the H.T. battery would be an advantage. Q.: Would UV199 valves be suitable? A.: Yes.

J. H. C. (Moreland). Q.: Using "Long-Distance Receiver," *Radio* No. 45, can 'phone condenser be of different capacity to that specified? A.: Through an error, this is given as 1 mf., instead of .001. Q.: How can correct plate voltage be supplied to both amplifier and detector valves? A.: Use a tapped B battery. Q.: Should coil G be mounted independently of C and D and at parallel or right-angles? A.: Yes; approximately three or four inches, at right-angles.

V. C. H. (Moonah). Q.: Is it possible to use A.C. mains for heating the filaments of UV199 valves? A.: No; this method is only recommended for valves requiring 6 volts on the filament. Q.: Would it be dangerous to erect a 50ft. mast, supported by twelve wire-rope guys to concrete anchor blocks and about 20ft. from electric light mains? A.: Providing the guys are taken in the right direction, there should be no danger. Get in touch with the local council or electric light company before erecting the mast and obtain their approval. Q.: Would 100ft. aerial be satisfactory for long-wave work, and another of 50 to 70 feet for reception on 100 metres? Would using two aerials be O.K.? A.: For very long wavelengths, increase the former to about 150ft. The smaller aerial should not be longer than 50ft., using a .001 condenser in series.

F. J. R. (Sydney). Q.: Using present apparatus (particulars submitted), recommend circuit suitable for receiving Australian broadcasting stations, including 2FC and 2BL, on loud-speaker in suburbs. A.: Use the "P1" with two stages of A.F. amplification, *Radio* No. 40. For this receiver you will require an additional valve and transformer (A.F.). Q.: What additional apparatus would be required for reception of KGO on 'phones? A.: As many amateurs have received this station on a single-valve receiver ("P1"), you should have no difficulty in picking up this station on 'phones, using receiver referred to.

(Continued on page 846.)

READERS, PLEASE NOTE!

QUERY letters which are accompanied by our coupon and comply with the following directions will receive first preference.

MAKE your letter as brief as possible and write your questions on one side of the paper, one underneath the other. All letters must be signed in full, together with the address of the sender. For publication, the writer's initials will be used or a nom-de-plume, if desired, but on no account will any consideration be given to anonymous communications.

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and two stages A.F.), what is cause of difficulty in receiving 2BL, although strong signals are received from 2FC; will a series-parallel switch overcome this trouble? A.: Yes; connections for a six-point switch are given in an article on a two-valve broadcast receiver published in *Radio* No. 38. Q.: Would this type of switch be suitable for receiver referred to? A.: Yes.

H. I. (Drummoyne). Q.: Is wiring diagram of five-valve receiver correct (circuit submitted)? A.: Yes; you omitted to state ratio of transformers. Q.: Is capa-

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JANUARY.

MR. L. N. CALLAGHAN signed on s.s. *Ulmaraa* at Sydney, 29th.

Mr. J. McManus signed on s.s. *Kooyong* at Melbourne, 30th.

Mr. D. Lynch signed on s.s. *Monaro* at Melbourne, 28th.

Mr. J. H. Pullan signed on s.s. *Ashridge* at Melbourne, 30th.

Mr. J. T. McTavish signed on s.s. *Koonda* at Melbourne, 30th.

Mr. A. C. Hickey signed on s.s. *Austral-plain* at Melbourne, 29th.

Mr. A. J. Croft signed on s.s. *Lowana* at Melbourne, 30th.

Mr. E. M. Bain signed on s.s. *Saros* at Melbourne, 29th.

Mr. H. K. Wadsworth signed on s.s. *Kooringa* at Melbourne, 30th.

FEBRUARY.

Mr. D. Soraghen signed on s.s. *Yankalilla* at Sydney, 2nd.

Mr. H. F. Hartley signed off s.s. *Levuka* at Sydney, 2nd.

Mr. C. W. Scriven relieved Mr. C. C. Ullman on s.s. *Gascoyne* as Senior Operator at Fremantle, 3rd.

Mr. F. L. Stevens signed on s.s. *Katoomba* at Sydney, 6th.

Mr. C. E. Robison signed on s.s. *Junee* at Sydney, 9th.

Messrs. A. S. Smith, J. D. Woods and H. J. Crocker signed off s.s. *Niagara* as Senior, 2nd and 3rd Operators respectively at Sydney, 6th.

Mr. L. S. Lane signed on s.s. *Merrilu* at Sydney, 9th.

Mr. H. F. Hartley signed on s.s. *Levuka* at Sydney, 9th.

Mr. A. H. Jeremy signed on s.s. *Riverina* at Sydney, 10th.

Messrs. F. T. Neal and R. W. S. Bailey signed on s.s. *Arafara* as 2nd and 3rd Operators at Sydney, 10th.

Mr. J. E. Cleary signed off s.s. *Cooma* at Sydney, 9th.

Mr. M. L. Robertson signed off s.s. *Changsha* as Senior Operator at Sydney, 10th, and signed on s.s. *Makura* as Senior Operator at Sydney, same date.

Mr. R. W. S. Bailey signed off s.s. *Changsha* as 3rd Operator at Sydney, 10th.

Messrs. J. D. Wood and H. J. Crocker signed on s.s. *Makura* as 2nd and 3rd Operators respectively at Sydney, 10th.

Messrs. G. J. Flynn, J. Ridler and W. K. Tomkins signed on s.s. *Parattah* at Sydney, 11th, as Senior and 3rd Operators respectively.

Mr. G. Maxwell signed off s.s. *Barambah* at Sydney, 10th.

Mr. A. S. Smith signed on s.s. *Macumba* at Brisbane, 13th.

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(Continued from page 844.)

P. J. K. (Springwood). Q.: Using single-valve receiver (circuit submitted), what is cause of unsatisfactory results and difficulty in getting receiver to oscillate? A.: For 2FC use a grid coil of 150 turns, and plate 200. You evidently have wrong connections on the reaction coil; reversing these will probably overcome your trouble. To receive the desired stations, use a series-parallel switch. Use smaller size coils; for 2BL these should be 50 and 75. Connect the positive A to the negative of the B, instead of the two negatives as shown in your diagram.

D. R. H. (Beaudesert). Q.: Using five-valve receiver (circuit submitted), what size coils are required for reception on wavelengths between 350 and 1700 metres? A.: Obtain a number of coils from 50 to 250 turns and select those suitable for the particular station you desire to receive. Table showing wavelength range of various size coils is given in Amalgamated Wireless (A/sia), Limited's advertisement on page iii. of the cover, *Radio* No. 47. Mount coils according to the method adopted in the five-valve receiver in *Radio* No. 47, which will give you increased signal strength. Q.: Would increasing aerial from 100 to 125 feet be an improvement? A.: Yes, providing you do not desire to receive below 350 metres. Q.: Would a UV200 be better than a UV201A as a detector, and will they both fit the same socket? A.: Yes; the former being essentially a detector valve, both can be used in the same socket. Q.: Would it be necessary to use different size coils if aerial is increased as suggested? A.: No; there will be a slight difference in the condenser readings; in any case, it would only affect the primary coil.

C. P. G. (Epping). Q.: Using single-valve receiver (circuit submitted), why has earth wire to be disconnected to receive amateur transmitting stations? A.: Due to aerial tuning condenser being connected permanently in parallel; use a series-parallel switch in conjunction with this, which should be in series for short-wave reception and parallel for long. Required: 20 or 25 turns for the grid coil and 35 for reaction. Q.: Give wavelengths of the following: 2YE, 2JM, 2ZN, 2RA, 2GR, and 2DE. A.: 2YE, 208 metres; 2JM, 237; 2ZN, 215; 2RA, 220; 2GR, 240 and 160; 2DE, 240. These are the latest wavelengths of which we have been advised. Q.: Give particulars 2XY. A.: No record.

[We will be glad if operator of this station will forward these particulars to us.—Ed. *Radio*.]

A. H. R. (Maclean). Q.: Give particulars regarding S.A. station with call-sign ending with "N", which I have repeatedly heard lately transmitting on approximately the same wavelength as 2BL. A.: The only S.A. amateur stations ending with "N" are 5BN, 200 metres; 5CN, 230 metres; and 5DN, 245 metres. Supply details of the items transmitted, and we will endeavour to ascertain who this station is.

Q.: Advise how to receive on the lower wavelengths, using a 3-coil circuit. A.: Use a 50ft. aerial with a .001 aerial condenser in series. Q.: Has a "Marco" variable grid-leak any special purpose? A.: We do not know of any special features of this type over any other. Q.: On what wavelength does 2RJ transmit? A.: 220 metres.

G. V. R. (Wycheproof South). Q.: Using a four-valve receiver, which of the following aerials would you advise for best results: (a) two wires 110ft. long, 6ft. apart, and within 18ins. of a tree at the far end; (b) same as (a) but 90ft. long, 10ft. from tree; or (c) four-wire aerial 80ft. long, 3ft. apart, 45ft. high, 15ft. from tree? A.: If possible, have your aerial as far from the tree as possible, even if it means reducing the length to about 80ft., using two wires, with the height mentioned. The reason you are able to receive only faint signals from 2FC is probably not due to your receiver but intervening conditions, such as screening.

C. V. C. (Granville). Q.: Could the crystal-valve circuit, Fig. 4, Page 315, *Radio* No. 39, be used with two coils or could the three coils be used in a three-coil holder? A.: You will get greater selectivity using three coils, which may be mounted in a three-coil holder. Q.: Would a .001 variable condenser for primary tuning with .0005 and .0002 for the secondary and reaction respectively be suitable? A.: Yes. Q.: Advise ratio of transformer. A.: 5 to 1. Q.: Are there any peculiarities in the construction of this circuit, and should it be satisfactory? A.: Results obtained will depend mainly on the sensitiveness of the crystal. Crystal-valve combinations are recommended where purity of reception is desired.

J. B. J. (Enmore). Q.: Using crystal-valve receiver (circuit submitted), what ratio transformer and type of valve would you advise? A.: A 5 to 1 audio-transformer and any standard make of English or American valve, either "bright" or "dull" emitters. Q.: What should be the voltage of the batteries and resistance of the rheostat? A.: Depends upon the type of valve used. Filament and plate voltages of various makes of valves are given in the article entitled, "Valves For Every Purpose," *Radio* No. 33. For those requiring an accumulator for filament heating, a 6 or 10 ohm rheostat should be used. For "dull emitters," such as UV199 or WD12, 30 ohms. Q.: Suggest any improvements to the circuit. A.: Use circuit as per Fig. 4, Page 315, *Radio* No. 39, which will give you greater selectivity.

R. L. (Epping). Q.: Would three-valve receiver, *Radio* No. 48, be more selective than the "P1" with two stages of audio? A.: Yes; particularly in view of your close proximity to Sydney radio station. Q.: Would the former be as efficient as the latter for long-distance work? A.: No. Using the coupled aerial method there would be a slight decrease in the signal strength, which would be particularly

noticeable during long-distance reception and when using choke coupled circuit. Q.: What are values of primary and secondary tuning condensers? Should the latter be variable? A.: .001 and .0005 respectively. Yes. Q.: Should negative A be connected to negative B? A.: It is immaterial whether the two negatives or negative and positive are connected. Q.: How should tuning coils be mounted? A.: In a standard three-coil mount with primary and reaction variable. Q.: What should be the size of the coils for reception of 2BL, 2FC, and 3LO? A.: For 2BL, primary, 50 turns; secondary, 75; and reaction, 50. For 2FC and 3LO, 150, 200 and 100 respectively.

I. G. (Uralla). Q.: Would circuit shown on Page 747, *Radio* No. 49, be as sensitive as an ordinary circuit using aerial? A.: No; it is only suggested when it is impracticable to erect an outdoor aerial. Q.: Is it suitable for long and short-wave reception? A.: Yes. Q.: Could R.F. be used? A.: It would not be satisfactory; audio-frequency may be added in the usual way for working a loud-speaker.

H. R. (Punchbowl). Q.: Using spiderweb coils and "P1" circuit, how many turns are required for reception of amateur transmitting stations between 100 and 300 metres, also 2BL and 2FC? A.: For amateur stations, approximately 18 to 20 turns for the grid coil and 25 to 30 for the secondary. The number of turns on the former coil will depend upon the size of the aerial. For 2BL, 25 and 50 respectively. For 2FC, using a small aerial, you will get better results using honeycomb coils. The best method would be to fix the spiderweb coils on honeycomb coil holders and use a two-coil mounting. Q.: Are these coils (spiderweb) suitable for any circuit, including the "Flewelling"? A.: Yes.

A. M. (Singleton). Q.: Using the "P1" circuit, with a Cossor P2 valve, what is cause of unsatisfactory results? A.: Providing you have your receiver correctly wired, can only suggest the valve is at fault. Replace this with a different make. It is possible the grid leak or condenser may be the cause, particularly if the two are combined. Cut this out of circuit and see the effect. Although you mentioned the height of your aerial, you omitted to state the length. For reception of the regular Australian broadcasting stations, about 100ft. would be sufficient. A 43, instead of a 23, plate condenser is quite O.K.

W. J. H. L. (Five Dock). Q.: Where could I get a wavemeter calibrated? A.: Write to Mr. C. D. Maclurcan, Pratten Buildings, 26 Jamieson Street, Sydney. Q.: What are the names of the following stations: CZQ, JWA, JDQ, GAB, VLE, GFB, JAPB, VLJ, AJPB, VZD? A.: CZQ, Kurumba; JWA, Seta (Jap. warship); JDQ, Luzon Maru; GAB, Homer City; VLE, Maheno; VLJ, Wahine; GFB, Bal-donnell; VZD, Dilkeria. No record of others.

(Continued on page 848.)

WIRELESS OPERATORS

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(Continued from page 846.)

H. W. S. (Cooroy). Q.: Explain reason for four-valve receiver (circuit submitted) suddenly refusing to operate. A.: Suggest faulty valve or valves. We notice you are only using 20 volts on the plate of the UV200; increase this to about 40 or 50. Suggest a lower ratio transformer for the second stage instead of your present 5-1. Q.: Why should B battery only last about a week? A.: Battery has evidently deteriorated, possibly through becoming damp or being badly knocked about. Test each cell with a voltmeter and re-build as described in *Radio* No. 46. Q.: What is cause of difficulty in receiving 2CM on 250 metres? A.: Reduce the length of the aerial by about 25ft. or 30ft., or use a single wire in place of the present twin.

E. R. S. (Brisbane). Q.: Using crystal-valve receiver (circuit submitted), what should be the ratio of the transformer? A.: Five to one. Use circuit, Fig. 4, Page 315, *Radio* No. 39. Q.: Would using a potentiometer be any advantage? A.: Not if you use battery connections shown in circuit mentioned. Q.: How would this circuit compare with the "P1" with stage of audio, as regards range and strength of signals? A.: You will get better results using the two-valve receiver.

W. L. M. (Blenheim, Qld.). Q.: Using the "P1" with two stages of audio, would .0005 condensers and 1-6 transformers be suitable? A.: The condensers will be satisfactory; a 1-6 transformer for the second stage would be too high and tend to cause distortion. It is always advisable to use the apparatus specified for each particular circuit.

G. D. (Epping). Q.: Would the two-valve long-distance receiver, *Radio* No. 45, be better than the untuned R.F. circuit, Page 252, *Radio* No. 37? A.: Yes. Q.: Using the former, is the anode coil fixed? A.: The anode coil shown as "G" in pictorial diagram is fixed and should be mounted about four inches from C and D. Q.: Would UV201A valves be suitable for this circuit? A.: Yes. Q.: Using these

valves, would a 0-5 grid leak and .0025 condenser be satisfactory? A.: Yes. Q.: Would better results be obtained using a 25 or 30 ohm rheostat instead of a 35? A.: Use either a 25 or 30 ohm rheostat.

J. G. A. (Forest Lodge). Q.: Using the 60-600 metre tuner, *Radio* No. 46, what should be the value of the choke coil? A.: This may be a honeycomb coil; one of about 75 turns will be suitable for the wavelengths specified.

C. P. (Bulahdelah). Q.: Using long-distance receiver, *Radio* No. 45, could all the parts be mounted on the panel, or would it be necessary to mount some on the base? A.: Yes; you would, however, need a larger panel. It would be advisable to mount the valves on the base to avoid vibration when making necessary adjustments to condensers, etc. Q.: Would an extra valve work a loud-speaker when receiving Sydney broadcasting stations, distance about 80 miles? A.: Yes. Unless you specially desire long-distance reception, use the "P1" with two stages of audio (*Radio* No. 40).

O. J. (Ascot Vale). Q.: What is filament voltage and amperage of an "Osram" R2 valve? Is this a detector or amplifier, or both? A.: We do not know of an R2. Are you referring to the R which requires 4 volts and .65 amps and may be used either as a detector or amplifier?

J. A. M. (Stawell). Q.: Can you explain why a .001 variable condenser makes no difference to the tuning? A.: Either you have this connected up wrongly or the plates have become shorted; test with a dry cell and pair of 'phones, and at the same time moving the plates. If the condenser is O.K., no response should be heard in the 'phones.

R. W. T. (Burwood). Q.: Can you advise name and address of 2RHS? A.: No record. Send fuller particulars, such as wavelength, etc.

W. N. (Guildford). Q.: Using three-valve receiver (circuit submitted) with variocoupler, can you suggest any improve-

ments? A.: If you desire to receive all Australian broadcasting stations use honeycomb coils, owing to the limited wavelength range of variocouplers. Q.: How can interference from Pennant Hills station be overcome? A.: Use coupled aerial circuit such as shown on Page 634, *Radio* No. 46, with primary and secondary tuning condensers. A series-parallel switch would also be an improvement.

B. B. (Irrewarra). Q.: Using honeycomb coil windings instead of variometers in auto-plex circuit, *Radio* No. 43, how many turns would be required? A.: Grid variometer, two honeycomb coils, 200 turns No. 26 S.C.C. and plate variometer, two of 250 turns, same gauge wire. These dimensions are for reception of 2FC. in which case aerial coil will be a 150-turn coil shunted by a .0005 mf. variable condenser. Q.: What gauge and amount of wire would be required to wind a honeycomb coil of 1500 turns? A.: 9 ozs. No. 32 d.s.c. Q.: Using a W.D.11 valve, what should be the ratio of the transformer? A.: Five to one.

Replies to R. D. (Honeysuckle), P. B. (Albury), E. W. C. (Bungendore), J. T. (Darlington), and P. B. (Wilmington), have been held over owing to non-compliance with conditions published in these columns.

PERSONAL.

MR. DAVID WYLES, M.I.R.E., who lately relinquished his position with the Radio-Electric Works of Amalgamated Wireless (A/sia.), Limited, was the recipient of a very handsome presentation as a memento from his fellow-workers.

In a short address, Mr. Grime spoke eulogistically of the ability of Mr. Wyles and of the excellent and loyal service rendered by him during the past eleven years.

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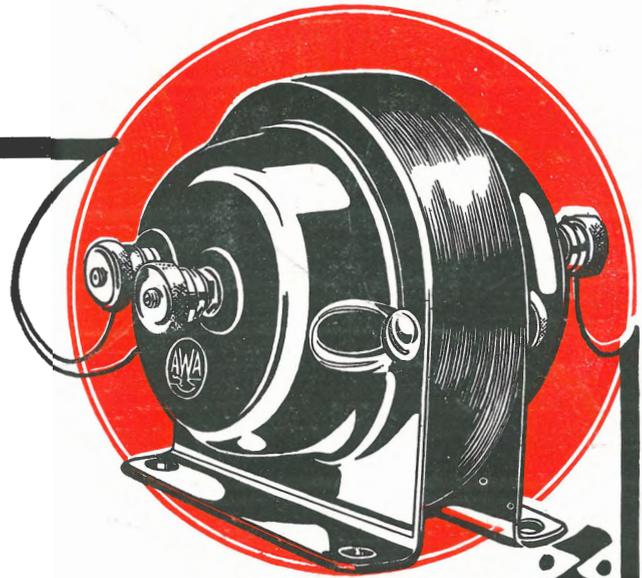
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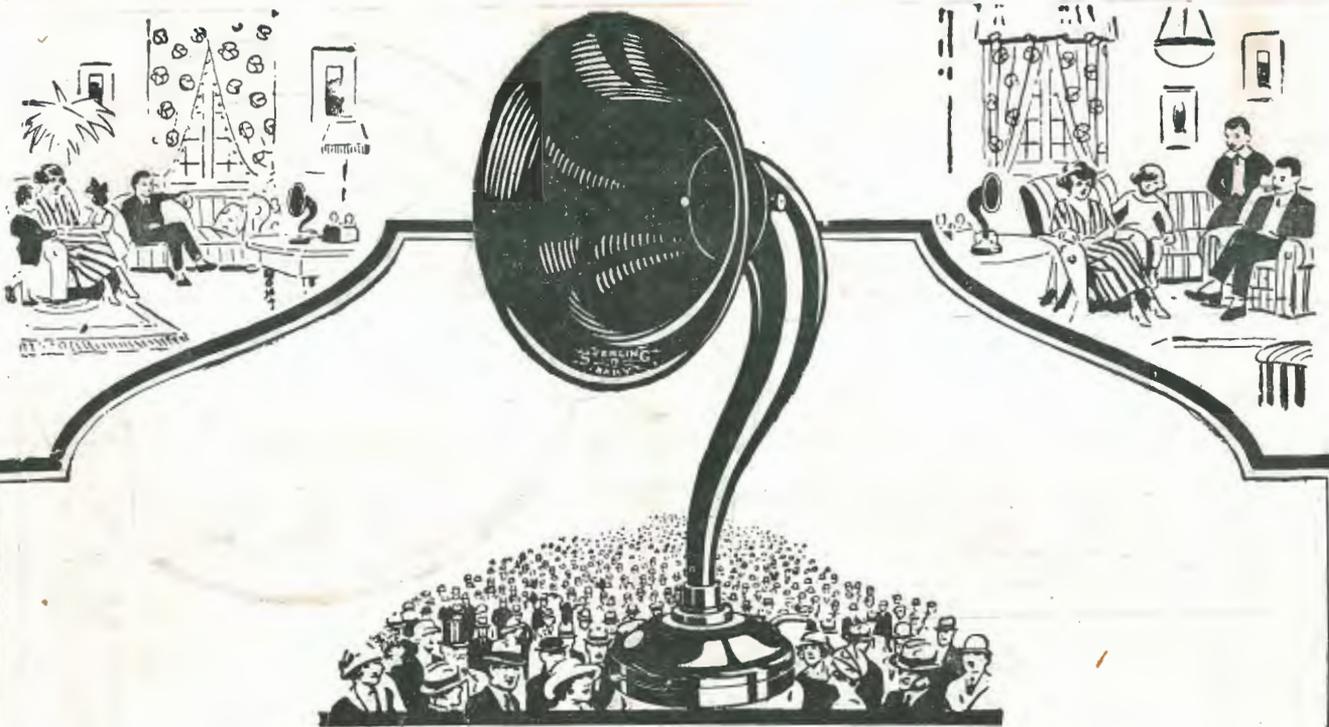
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