THE AUSTRALASIAN

Radio World

APRIL 1, 1937
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Registered at the G.P.O., Sydney, for transmission by post as a periodical.

—See Story Inside.

- 1937 INTERNATIONAL ALL-WAVE SIX: MORE ABOUT THE
- "COMPANIONETTE": TWO-BAND CRYSTAL-CONTROLLED TRANSMITTER:
- B.B.C. TELEVISION SIGNALS HEARD IN AFRICA: LIST OF ZL AMATEURS.

Editorial Notes....

With the publication of this issue of the "Radio World," completing Volume 1, it is interesting to look back over the past twelve months and review the progress the paper has made in that time. The idea of a magazine designed specially to cater for set-builders, dxers, servicemen, dealers—in fact, for everyone interested in radio technically—was conceived early last year, and on May 1 the first issue saw light of of day.

That such a magazine was badly needed in Australia was immediately proved beyond all doubt by the enthusiastic welcome it was given, not only by those who follow radio as a hobby, but by the trade generally as well. Letters of congratulation and appreciation soon began to pour in from all parts of the Commonwealth, and during the past eleven months the volume of mail has increased steadily until now letters are arriving at the rate of about four hundred a month.

Requests for circuits and technical information, suggestions for new receivers, reports on the performance of "Radio World" sets, general amateur and DX news—almost every conceivable radio topic under the sun is covered by readers in all parts of Australia and New Zealand, in New Guinea, Fiji, and even as far afield as America. This keen widespread interest is not only very gratifying, but it also proves beyond doubt that the magazine is now thoroughly established.

The "Radio World" has only one policy, and that is to give service to those it caters for. One important outcome of the enthusiastic support that has been forthcoming is that it makes possible various improvements to the magazine. Many of these have already been planned, and will gradually be put into effect as the paper progresses.

THE AUSTRALASIAN RADIO WORLD

Incorporating the

ALL-WAVE ALL-WORLD DX NEWS.

Managing Editor:
A. EARL READ, B.Sc.

Vol. 1. APRIL, 1937. No. 12.

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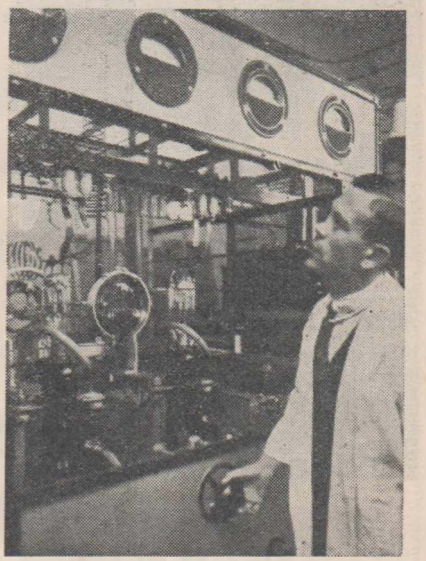
When PCJ Was PCJJ . . . . .

Famous Pioneer Shortwave Broadcaster Celebrates Ten Years of Service: Tributes Paid by Early Amateurs, Now Executives in Radio Industry . . . . .



Left: Mr. Edward Startz, chief announcer of PCJ and PHI, addresses his far-flung audiences with equal fluency in any of seven different languages.

Right: A section of the PCJ transmitter.

PROMINENT among memories of the good old days that are treasured by veteran shortwave enthusiasts must surely be that of the notable occasion, on March 11, 1927, when the Philips experimental transmitter PCJ (then PCJJ), first relayed the chimes of Big Ben around the globe—for on that day shortwave world broadcasting passed out of the experimental stage and became a practical success.

By G. V. HUME
(Ex VK2GV)

Tenth Anniversary Broadcast From PCJ And PHI.

In order to commemorate the anniversary of that first transmission, a special broadcast was carried out on March 20 last, from stations PCJ and PHI—the latter a newer station, but one that cannot eclipse the immense and deep-rooted popularity that PCJ has earned since those early pioneering days.

The radio enthusiast of those days owned various receivers, ranging from one to five-valve sets, a five-valver being something to wonder at. It was a very different type of set to the modern metal chassis superhet that is so popular nowadays. In some cases crystal sets were still being used. All factory-built receivers were designed for the reception of broadcast stations only—dual-wavers were not then on the market.

Many of the so-called broadcast listeners were also intrigued by the possibilities of overseas reception, and built shortwave receivers. In some respects their sets were costly, despite the fact that they were home-made, because in 1927 parts were much more expensive than to-day. Headphones sold for around 50/-, and variable condensers for 45/-.

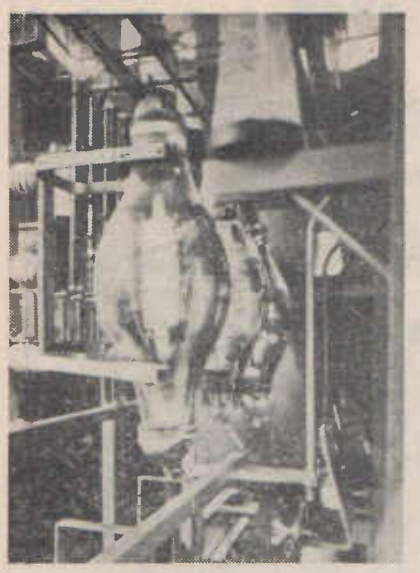
Design information was eagerly sought after, and the local radio periodicals of the time featured special articles on this phase of radio. Perhaps the American magazine "QST" deserves special mention, as it was the recognised authority then on shortwave matters, and presented many famous receiver designs.

How the radio experimenters thrilled at the performances of their favourite receiver, and what a variety of designs one found in the radio "shacks" around Sydney. Some sets were compact—others were spread out over half the table. One experimenter would favour "space-wound" coils, while another would enthuse about new coils as used in the "so-and-so" de luxe receiver.

In all cases one would find big accumulators and heaps of "B" batteries, slow-motion dials, head-phones, international time calculators, perhaps a horn type loud-speaker, and occasionally a 250-watt "bottle."

First S.W. Broadcast From KDKA.

The first shortwave broadcast from overseas was carried out in 1925, through station KDKA in America, and these transmissions were well received in this country. Later, two other American call-signs came over per medium of the short waves. These were W2XAF and W2XAD, at Schenectady.



Three of the huge transmitting valves that send PCJ's programmes around the globe.

Early in 1927 the famous Philips Laboratories in Eindhoven, Holland, completed a special shortwave transmitter, and it was announced in the local press that special transmissions would be made which should be audible in Australia. This was "hot" news.

The local shortwave enthusiasts became very excited when it was found that the signals from Holland could be received satisfactorily, and the station call letters PCJJ became established on the 30-metre band. Many of the executives in the commercial radio companies of Australia to-day were among those keen shortwave experimenters who heard those transmissions back in 1927.

Some broadcasts of historical importance to radio were made through PCJJ in the year 1927, the most outstanding of these being the chimes of Big Ben from London, a relay from the London station 2LO, and the occasion when Queen Wilhelmina of the Netherlands spoke to her subjects throughout the world.

PHI Brought On The Air.

Following the success of PCJ, another station, PHI, was brought into operation on 16.88 metres, to demonstrate the remarkable possibilities of the shorter wavelengths. Through these stations Mr. Edward Startz, the announcer, has become known to thousands of listeners in all parts of the world. To talk to this huge audience he uses seven languages!

In recalling the early days of PCJJ, a tribute is due to the late Mr. W. Dawson, of Philips' Wellington office, who was responsible for the design of the "PCJJ-4" receiver which enjoyed great popularity with local constructors. Thousands of these sets were built up, and indeed many of them are still being used to-day.

What PCJ means to the radio fraternity of this country is evidenced by these extracts from letters received recently by Philips Radio, Sydney.

" . . In the hearts of all the early experimenters the achievements of the Philips shortwave stations will not be forgotten; not only did they pioneer this field, but their broadcasts proved of inestimable value to experimenters as well as a source of entertainment." **(Charles D. Maclurcan, VK2CM, Sydney).**

" . . The completion of a ten-year period of service of this magnitude is certainly something of which to be proud, and I take this opportunity of congratulating your Company on this achievement, and wish you every success in the future in this wonderful work." **(Claude Plowman, Airzone, Sydney).**

" . . That receiver was known as the 'All Empire' receiver, and it was made possible by the introduction of the Philips A442 valve. It give me the sincerest pleasure to offer my hearty congratulations to the veteran stations PCJJ and PHI . . . In the realms of shortwave broadcasting they are, to those who have lived with short waves through the years in Australia, the outstanding veterans of the shortwave highways." **(Don B. Knock, "The Bulletin," Sydney).**

" . . PCJJ has a very warm spot in the hearts of Australian shortwave listeners. Its consistently good programmes, aided by its excellent transmissions and cheery greetings of its multi-lingual announcer, endeared PCJJ to its Australian audience." **(A. K. Box, "Listener In," Melbourne).**

" . . Since their first overseas transmissions, Philips stations PCJ and PHI have consistently played a leading part in the development of world radio. The regular transmissions year in and year out from these Philips stations have been of inestimable value to professional and amateur alike, and in addition, have been interesting and entertaining to many thousands of regular listeners in all parts of the world." **(N. S. Gilmour, Lekmek Radio, Sydney).**

" . . Looking back now I well remember the extraordinary impetus given to shortwave interest when PCJJ came on the air. I have received this station in many parts of Australia, on shipboard at sea between Sydney and Singapore . . . .

(continued on page 47)

The Front Cover.

The photograph on this month's front cover shows a portion of the huge aerial arrays used by PCJ and PHI. The former broadcasts on 19.71 and 31.28 metres, and the latter on 16.88 and 25.57 metres.

JUDGING by latest releases announced recently by leading receiver manufacturers, 1937 is going to be an "all-wave" year. This new trend is due to the fact that in the past two or three years the number of shortwave broadcast stations operating outside the usual 19 to 52-metre band covered by the average dual-waver has increased considerably.

By adding another wave-band to extend the tuning range on the short waves downwards to about 12 metres and upwards to around 80, these newer stations can be brought in.

"1937 International" First Triple-Band Kit-Set.

The "1937 International All-Wave Six" has been designed to cater for the many set-builders who will want to follow this latest trend.

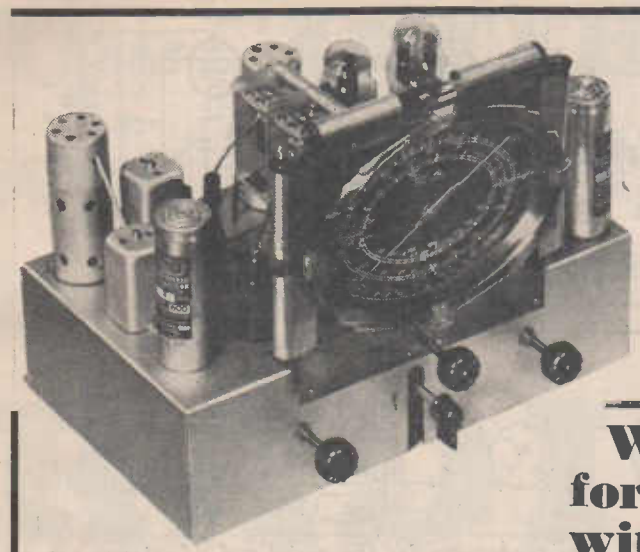
Featuring the new Radiokes tri-wave coil assembly and midget iron-cored intermediates, as well as the triple-band tri-colour dial just released by the same firm, this latest "International" is absolutely up-to-the-minute in design, and will undoubtedly remain a standard model for several years to come.

Special Output Circuit Using Inverse Feedback.

A further "star" feature is the use for the first time in any kit-set in this country of a special type of output circuit, incorporating inverse feedback. This will be explained at greater length later on, but briefly it means that with the arrangement used, an output of just on three watts can be obtained, with quality of reproduction far superior to that given by the conventional arrangement using a single output pentode.

Broadly speaking, the valve line-up of the "International" is similar to that of the "Fidelity Broadcast Five" described in the January issue, except that the former uses an r.f. stage. A 6K7 is used in this position, and is followed by a 6A8 mixer-oscillator.

Ample i.f. gain is given by the pentode section of an Australian-designed 6B7S, used in conjunction with a pair of Radiokes type QIC iron-cored intermediates.



Build the Amazing New . .

1937 INTERNATIONAL

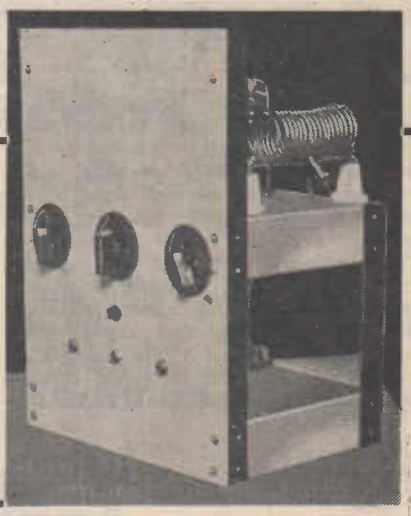
ALL-WAVE SIX

Every single component in our kit of parts for this outstanding new de luxe all-waver is guaranteed to be of the highest quality, and exactly as specified by the Editor.

Complete kit of parts, including valves and speaker **£19-10-0**

We will send your order for these sensational sets within 24 hrs. at the lowest possible price!

DEALERS! SEND FOR BEST DISCOUNTS



● TWO-BAND, CRYSTAL-CONTROLLED TRANSMITTER

This fb. xmtr. is crystal-controlled, and uses rack-and-panel assembly. Both looks and performs like a professionally-built job. Using standard parts throughout, it gives the utmost in results at the lowest cost.

Complete kit of parts, exactly as specified **£13-10-0**

THE COMPANIONETTE THREE

The "Companionette" makes the ideal "personal" radio. Those who travel a fair amount can slip it in a suit-case and have radio always "on tap." Ideal also for beach or week-end cottages where power is available.

Our kit of parts is exactly as specified, and is supplied complete with valves and speaker.

(Special leatherette-covered cabinet as illustrated, 17/6 extra).

Complete kit of parts

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DEALERS! We have been appointed distributors for the famous COLUMBIA DRY BATTERIES and DRY CELLS, manufactured by the National Carbon Company. Send for latest price list.

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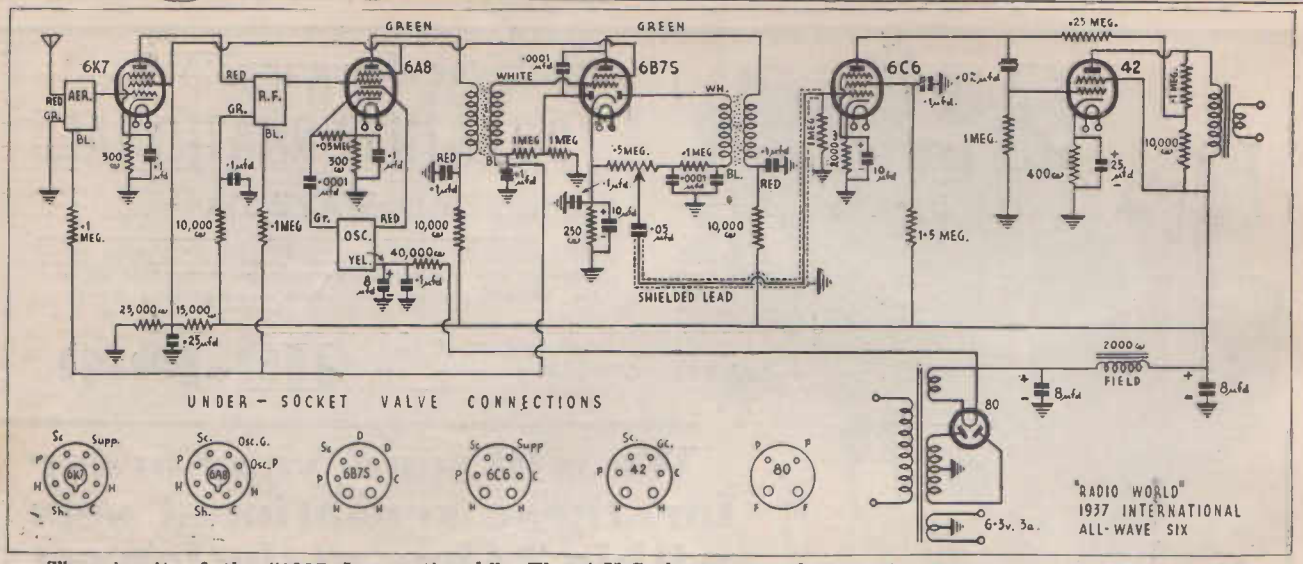

The circuit of the "1937 International." The A.V.C. by-pass condensers for the aerial and r.f. stages are not shown, as actually they are already wired in circuit inside the all-wave coil box. Under-socket connections for all valves are also given, the caps of the first four valves being the control grids.

A.V.C. On First Three Valves.

Automatic volume control is applied to the first three valves, the required voltages being obtained from the plate of the 6B7S pentode section by connecting a small fixed condenser of .0001 mfd. capacity between it and the A.V.C. diode.

This scheme provides very good control, the degree of which can be varied by varying the capacity of the small condenser, and also relieves the diode detector circuit of the damping that is imposed upon it by the usual arrangement. Otherwise the A.V.C. is normal.

Ample De-Coupling Included.

It will be noticed that instead of employing a common cathode resistor to provide self-bias for the first three valves, separate resistors, each well by-passed, have been used. Also, the plate circuits of the first three valves have been thoroughly decoupled by connecting a 10,000-ohm resistor in each "B+" line, by-passed with a .1 mfd. condenser.

Actually in some cases it may be found that all this de-coupling is not necessary, and that the set is perfectly stable without at least some of it. However, in a high-gain receiver of this type de-coupling is never out of place, as it provides a cheap and effective insurance against the troublesome bugbear of instability.

To ensure a well-smoothed, steady "B+" supply to the oscillator, the oscillator plate voltage is taken from the input side of the smoothing filter, through a 40,000-ohm resistor that is by-passed with an 8 mfd. wet electrolytic and a .1 mfd. tubular in parallel with it.

The latter takes care of any r.f., while the former acts as a reservoir

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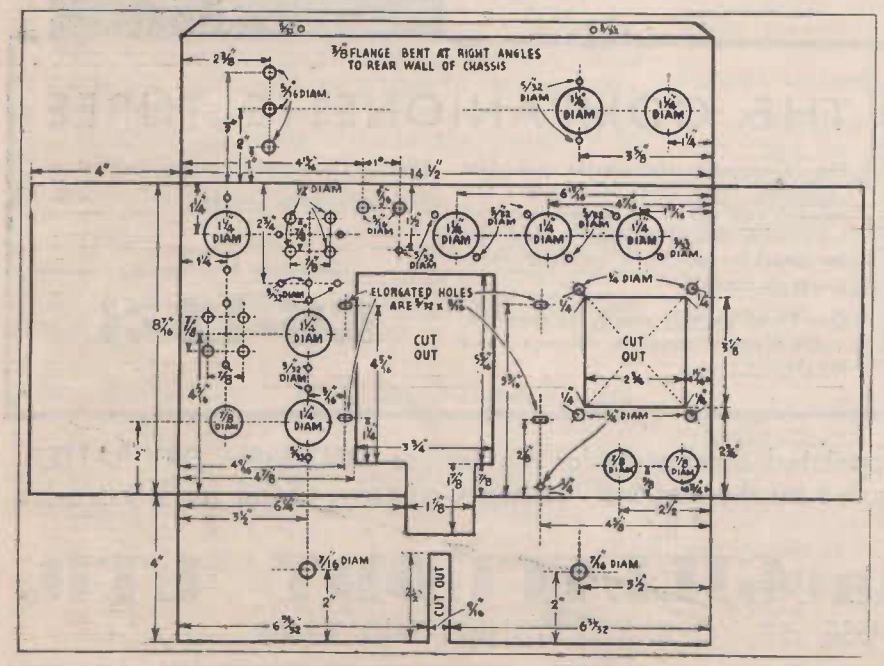
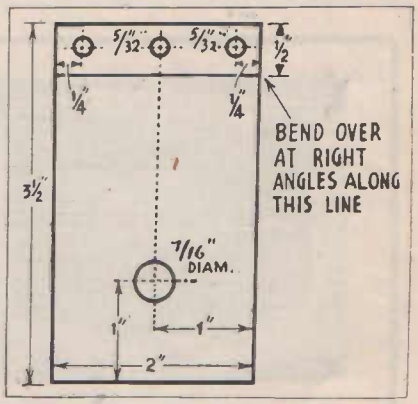


Left: This sketch gives complete details for preparing the 14½ in. x 8½ in. x 4in. steel chassis required.



Above: Dimensions for the volume control mounting bracket are shown in this sketch.

Radio Ramblings

A page for letters from readers. A prize of 2/6 will be awarded for every technical tip published.

★ ★ ★

"Eaglet" Best Two-Valver Yet.

The "Eaglet Two" is honestly the best little two "banger" I have had the pleasure to build or operate. I built it up using a type 15 as detector and 33 audio, and believe me this set is the "goods"—I can recommend it to anyone desirous of building a good and yet cheap S.W. job. Many stations can be put on speaker. I am using a 10,000 ohm resistor and 25 mfd. condenser for automatic bias for the 33.

My reason for building the battery version is that I never know where I may be transferred to, and a battery job can be used anywhere. I tried using a D.C. eliminator, but when the detector is just off oscillation the beat of the power-house engine comes in. Perhaps some of our D.C. area readers may have a remedy for this. I am unable to use a 5-valve all-wave job on the short waves, owing to this fault.

Well that's that. My newspaper agent advises a delay has occurred and I haven't received my February issue yet. Hence my P.N. as I look forward each month for my "R.W." I am anxiously waiting to see the dope on A.O.P.C. I have been rather fortunate in getting a pal (who is an electrician) to study with me for the above ticket, so he can assist me with the electrical side and I in turn assist him with Code, etc. Can we obtain copies of previous A.O.P.C. examination papers? If so, what would be the charges and where can they be obtained?—W. H. G. Dawson (AW121DX). Tailem Bend, S.A.

{Copies of previous A.O.C.P. exam. papers are obtainable from the Chief Inspector of Wireless, Treasury Gardens, Melbourne, Vic., price 6d. per set, while the syllabus of the examination is obtainable free from the Chief Radio Inspector in the capital city of every State.—Ed.}

★

For Users Of Tree-Supported Aerials.

In the March "R.W." a tip was published for aerials attached to trees. The scheme has the fault that a re-adjustment is needed after every gale.

Might I suggest the following improvement? Instead of fastening the end of the aerial, run it over a pulley and tie an iron weight to it, heavy enough to keep the aerial taut. When the wind sways the tree, the weight will rise up and down and not put any extra strain on the aerial.

Also a tip for modulated oscillator users. Put a fixed condenser in the audio output lead and save blowing valves if the lead accidentally drops on battery of set under test. A .5 mfd. pigtail is quite suitable.

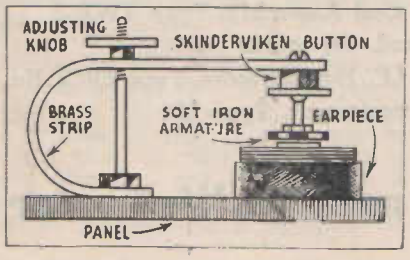
Please continue as you are as the magazine is the best available, and I have read a lot . Keep on the "ham" portion, as it is wanted.—S. White, Nyngan, N.S.W.

★

A Magnetic Crystal Amplifier.

I am sending along the enclosed tip for the "Radio Ramblings" page. Is there any chance of a list of ZL amateur calls being published? I should like to see one; what do other readers think.

Many set-builders who are unable to go to the expense of valve amplifiers for their crystal sets will obtain excellent results from the amplifier illustrated. It is necessary to purchase a microphone button. An ordinary single pole-piece from a pair of 2,000-ohm headphones is screwed to the panel. A piece of 2 B.A. rod threaded one inch both ends is then bolted to the panel next to the 'phone as shown in the diagram. The brass strip is then bent and drilled at both ends. The button is attached to one end and fitted to the panel by means of the 2 B.A. rod at the other end. Then a soft iron armature of the same diameter as the pole-piece is fitted to the reed of the button. The adjusting knob must be threaded right through.



Connections:—From one terminal of the microphone button to the positive terminal of a 4½-volt dry cell; from the negative of the cell to the loud speaker; the remaining terminal of the loud speaker to the other terminal of the microphone button.

Wishing "A.R.W." the best of luck. Keep going—it's the best radio paper printed in Australia today.—L. Schnitzerling, Warwick, Q'land.

"Amateur Game" Articles Appreciated.

I wish to congratulate you on your very fine paper, which I have purchased since the first issue. I am very interested in shortwave reception and have been operating shortwave sets for many years, and consequently appreciate a magazine such as the "Radio World, especially as it is printed in Australia.

In the last issue you stated that electric shocks were received by car drivers when crossing the Harbour Bridge. I am connected with motoring but fail to see how this can happen, unless a serious leak occurs in the ignition system. Would you please explain?

I very much appreciate your articles on "Breaking Into The Amateur Game."—W. M. Rodgers, Milperra.

★

Another Shock On The Bridge!

I was interested in W.J.P's article on page 18 of March issue, stating how he received an electric shock when driving a car over the Sydney Harbour Bridge. A few years ago I had the same experience while on one of my visits to the city, but have been down twice since, and have not experienced a similar shock. I would be interested in knowing the cause and cure of this strange effect.

I do not know much about radio, neither am I very interested in long-distance reception, but I take "R.W." each month as I always find interesting items in it, most of which are very simply explained, and can be easily understood by new-comers to radio like myself.—M. A. Hartley, Grenfell, N.S.W.

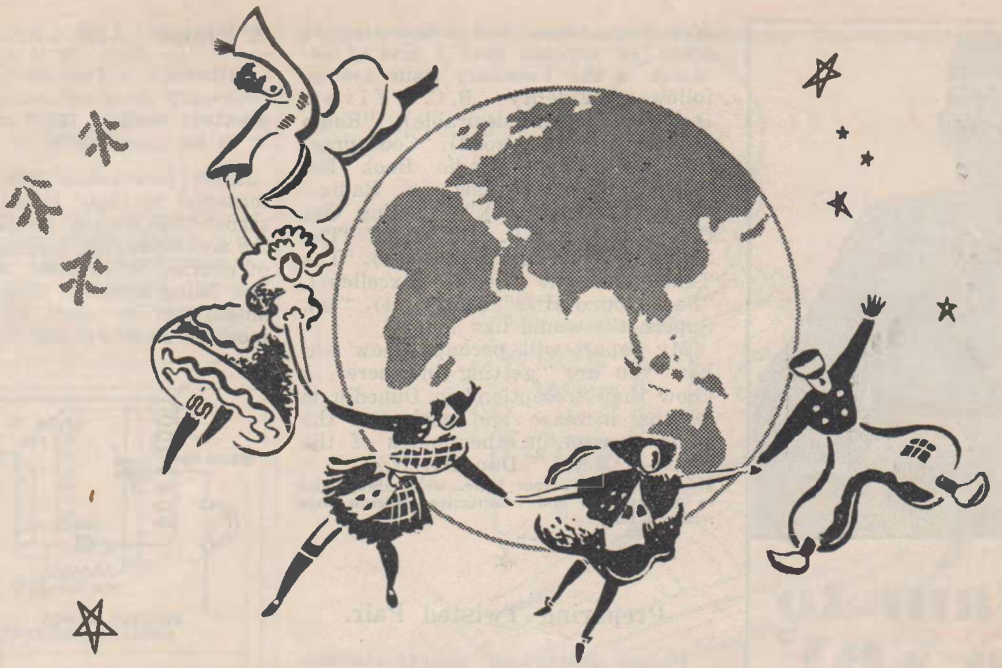
{Re car-drivers receiving shocks on the Sydney bridge, "W.J.P." explains the cause and cure in his notes this month. Glad you like "R.W."—Ed.}

★

"R.W." Is R9 In Dunedin, N.Z.

As a reader of the "R.W." since No. 1, may I congratulate you on the excellent quality of your paper. A steady improvement has been maintained since the first issue. I have recommended the magazine to several of my acquaintances who have been enquiring as to how they should acquire a knowledge of radio, without too many technicalities.

"Radio Ramblings" is the most in-



National Melodies

Gathered from the four corners of the world Radiotron presents to 2CH listeners, "National Melodies from Afar" — a veritable feast of characteristic music culled from the pages of history. Every Friday night at 9.20 on 252 metres.

A RADIO SPOTLIGHT FEATURE

RADIOTRONS

THE WORLD'S STANDARD RADIO VALVES

AUSTRALIAN GENERAL ELECTRIC LIMITED
Sydney. Melbourne. Brisbane. Adelaide. Hobart

AMALGAMATED WIRELESS (AUSTRALASIA) LTD.
47 York Street, Sydney; 167-169 Queen Street, Melbourne

formative page, and interesting to all. The articles that I find of interest in the February issue are as follows:—"Fidelity B.C. Five" (schematic plan desirable), "Radio Ramblings" (very good), "Code practice Oscillator," "Radio Book Reviews," "What's New in Radio," "Amateur Game (1)," "Getting Out On 5m.," "5m. P.P. Oscillator," "The Story of Television" (excellent), "The Tuned Circuit (6)" (excellent), "Background Hiss" (excellent), "5m. Superhet" (would like more).

My report will perhaps show you how you are "getting in" here. I know that "reception" in Dunedin is on the increase and wish you the same success in other parts of the globe.—"Mech.," Dunedin, N.Z.

{Many thanks for your letter—we're always glad to get opinions and constructive criticism from readers.—Ed.}

★

Preparing Twisted Pair.

Please accept my congratulations on your excellent radio magazine, an addition to the Australian radio periodicals that has long been wanted.

Your very fine monthly book covers practically every part of radio, and therefore each reader can be sure of obtaining something in his own particular branch. As for myself, I am always interested from cover to cover and would not miss a copy.

I have been in radio about five years as a serviceman and would appreciate very much full particulars concerning the Associated Trained Radio Servicemen's organisation, as I am interested in this branch of the game.

You have already published a very fine list and amendments of VK call-signs—if you were to print a similar list of ZL's and places adjacent to Australia, you would certainly be helping not only the amateur station owners, but also the people interested in the receiving side of such a hobby.

I have a quick method of twisting V.I.R. or similar wire for a doublet lead-in from an aerial, which may be of use to some of my fellow readers. There have been many instances when I have had to erect an aerial and use twisted flex to eliminate noise, and should anyone wish to do so the easiest method is to place the end of each piece of wire in a breast drill, and have someone holding the remaining ends. By simply turning the drill you have a very neatly twisted flex in a few seconds.

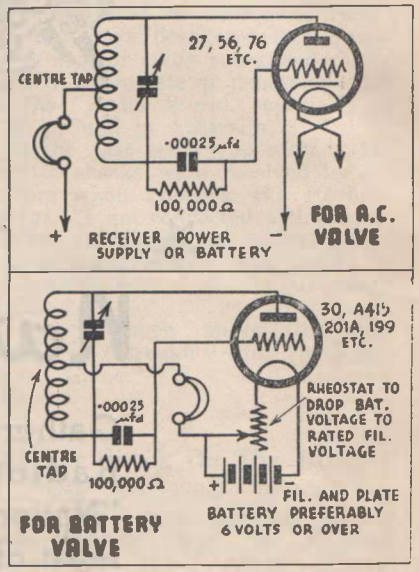
I have a QSL card which I would only be too pleased to exchange with other readers. Later I intend to become a member of your DX Club.—C. W. Welsh, Warwick, Q'land.

{An up-to-date official list of ZL calls is published elsewhere this month.—Ed.}

A Simple And Cheap Monitor.

Although a good monitor is a very necessary piece of equipment in an amateur station, there is no need for it to be complicated or costly.

Most new hams will find enough material in their junk-boxes to construct the simple monitor shown in the accompanying diagrams. It must, of course, be shielded, an aluminium box being suitable, though a cheaper shield can be made by building the monitor in a wooden box and cover-



ing the latter with tin-foil taken from a burnt-out filter condenser.

Plug-in coils are not used, an 80-metre coil being mounted rigidly in the monitor. Harmonics are used for monitoring on the other bands.

Most triodes, directly or indirectly heated, will function satisfactorily in the monitor—I use a 227, which gives good results. It will be noticed that when using an indirectly heated valve, the power supply may be taken from the receiver.

A wavemeter, consisting of a coil, condenser and pea lamp, should be used in conjunction with the monitor to ensure that the operator is not being misled by the wrong harmonic from the transmitter.—E. Webb (AW14DX), Mitcham, Vic.

★

Has Built Code Practice Set.

I received this month's "Radio World," and am enclosing 6/6 for the first 9 issues. I often wonder how I never came to buy the "Radio World" before.

I have just finished building the code practice oscillator described in the February issue and I'm having great fun learning the code. With

your clear and simple instructions, set building becomes much easier.

Wishing the magazine every success.—L. Nicora, Melbourne, Vic.

★

Doublet Or Single-Wire At Will.

Here is a tip which I think should prove useful for those dxers who use commercial dual-wave receivers. In most of these receivers, provision is made for both a doublet and single-wire antenna, as shown in fig.

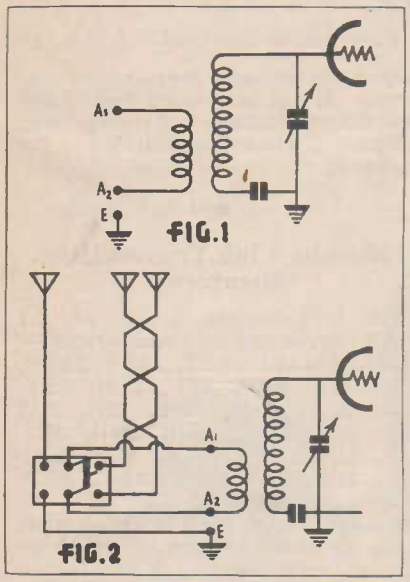


FIG.1

FIG.2

1. Usually the former gives better results on shortwave than the latter, while the reverse holds for broadcast reception.

By means of the switching arrangement, shown in fig. 2, it is possible to change from doublet to single-wire without unscrewing terminals, etc., In place of the D.P.-D.T. switch shown, two earthing switches may be used, or alternatively a D.P.D.T. toggle switch may be installed inside the cabinet.—John B. Healey, Malvern, S.E.3, Vic.

★

Home Made Section-Wound R.F. Chokes.

In reading the February issue of the "Radio World," I noticed on page 22 a "kink" for home-made R.F. chokes. I was quite interested in this as I make all my own R.F. chokes, both for transmitter and receiver. However, the chokes described are rather bulky when a lot of gear has to be assembled in a small space, so here is the dope on the choke I use.

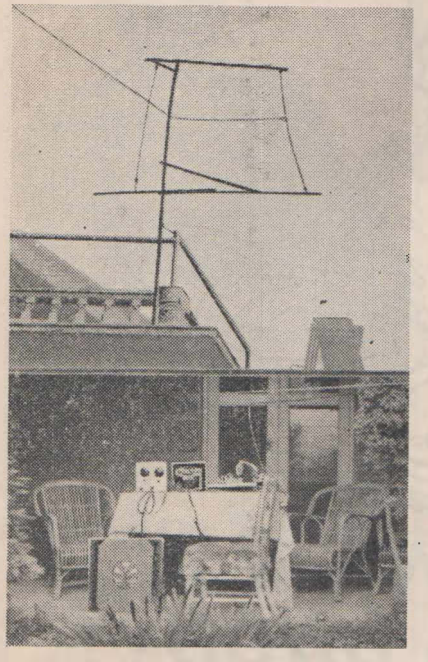
They are pie-wound on about 2½ in. of butcher's skewer—6 windings of 50 turns of about 32 s.w.g. enamel does the trick. A small space is left between each winding and small holes are drilled at either end of the

(continued on page 34)

B.B.C. Television Signals Heard in Africa

W.I.A. 5-Metre Field Day Postponed : More About Static Electricity: Lakemba Radio Club Notes and News . . .

By W.J.P.



Equipment used by Lakemba Club members on the occasion of their 5-metre transmission from Government House, Sutton Forest, when attempts were made to reach Sydney.

IT is reported that Mr. G. C. Angilly, of Cape Town, South Africa, consistently picks up the sound and vision signals from the B B.C's. television transmitter in London on his simple two valve super-regenerative receiver. The actual vision signals, of course, are not received on a screen, but are "heard" in the 'phones in the form of a varying buzzing sound.

Furthermore, the fact that German television signals have been logged in New York suggests that when properly established, television will cover a much wider service area than was first anticipated.

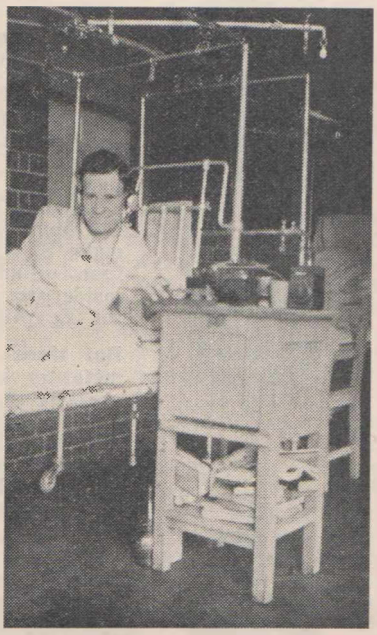
★

5-Metre Portable Beam Antenna

The 5-metre directive antenna shown above was used by 2OD, 2DL, and 2ABT on the occasion of the 5-metre field day organised by the W.I.A. for March 7. Unfortunately, heavy rain necessitated a postponement. However, as one of the Lakemba party had to make a business call down south, it was decided to take the apparatus as arranged.

By 12.15 the equipment was installed in the grounds of Government House, Sutton Forest, near Moss Vale. The aerial was a collapsible affair, and with the aid of a few bolts was fitted up and attached to a balcony as shown. We listened and called for about four hours but could not hear a signal, although cars passing on the main southern Highway created quite a noise in the receiver, indicating that this part of the equipment was working. It rained intermittently throughout the day, and had it not been for the hospitality of Mr. Savage, one of Government House officials, the outing would have proved very dull in several respects.

The directive doublet antenna used has proved quite successful on previous portable tests over shorter distances. It can be rotated easily, and has the advantage of being very compact when dismantled for transport.



Something new in QRA's!—A snap of VK2ZP (Arthur Yates. from Inverell), with the improvised 80-metre rig installed for him by Lakemba Radio Club members. As a result of a glider accident, in which both his legs were badly fractured. 2ZP is now a patient in the Royal Prince Alfred Hospital, Camperdown, Sydney.

★

Lakemba Club Transmitting Members.

The following is a list of the Club's transmitting membership:—VKs 2AS, 2ABI, 2ABT, 2ABY, 2ACK, 2CL, 2CY, 2DL, 2ED, 2EH, 2EV, 2FD, 2FG, 2GM, 2HE, 2IO, 2IC, 2JT, 2KS, 2LW, 2LR, 2MH, 2NJ, 2OD, 2OW, 2PX, 2QP, 2QX, 2TQ, 2TG, 2UC, 2VA, 2VY, 2WB, 2XD, 4XM (ex 2XM), 2XZ, 2ZR.

Readers having QSL or report cards for more than one of the above stations may forward them to the Secretary's postal address, 308 Old Canterbury Road, Hurlstone Park, thus effecting a saving in postage on individual cards. Incidently, the above transmitting membership is claimed to be the largest for any suburban radio club in Australia. Receiving call-signs number from VK2-L1 to VK2-L30.

★

Our "Shocking" Bridge.

We have been requested to give an explanation as to the reason why motorists received shocks when contacting toll collectors on the Sydney Harbour Bridge, as mentioned last month.

The Harbour Bridge being fairly well elevated, and constructed of huge steel girders, may induce a charge of static electricity in a car passing along its roadway, this charge being prevented from leaking away due to the rubber tyres on the car. (That is, assuming that there is not over-much dirt on the tyres).

In the action of stopping the car to pay his toll, the driver may be touching some portion of the metal structure of the car, the result being that his body is at the same electrical

Here Are The Valves That Make Air-Cell Receivers Possible!

By using the up-to-date Mullard Silver-Contact 2 volt battery valves, the total filament current for a dual-wave 5 valve superhet. receiver is only 0.47 amp. Allowing for dial lamps this brings the total "A" battery drain well within 0.65 amp. for the Air-Cell. Even a six-valve receiver is within the capabilities of the Air-Cell with Mullard Silver-Contact valves.

KF3	R.F. amp.	0.05 amp.
KK2	Converter	0.13 amp.
KF3	I.F. amp.	0.05 amp.
KBC1	Det., A.V.C.	0.1 amp.
KL4	Output	0.14 amp.

Total Filament Consumption 0.47 amps.

Mullard

THE · MASTER · VALVE

The Mullard Radio Co. (Aust.) Ltd., 26-30 Clarence St., Sydney. 'Phone B 7446 (2 lines). Telegraphic Address: "Mulvalve."

potential as that acquired by the car. The toll collector standing on the ground may be considered to be at earth potential. When both motorist and collector make contact, the electrical charge from the car is discharged, much to the discomfort of the driver.

It will be observed that now short lengths of flexible wire are erected on the roadway at each toll gate approach. This wire protrudes upwards and makes contact with the car chassis, so that the electrical charge is discharged through the wire instead of through the collector.

It may also be observed that petrol waggons are always fitted with a chain which drags on the roadway. This serves a similar purpose, as it prevents the waggon acquiring an electrical charge, due to its passing over elevated locations, through or under large metal structures, and eliminates any possible danger from induced currents from a nearby lightning discharge. Sparks caused by such induced voltages could quite easily prove disastrous where inflammable spirit is concerned.

DX Notes And News

World-Wide S.W. Loggings.

Dxing With A 10-Valve All-Waver.

These are my first notes, and I hope to contribute at regular intervals. My receiver is a 10-valve all-wave superhet, and the antenna is a doublet 42 feet high.

I have heard the following countries (on 'phone only):—VK, W, VE, KA, K4, TI, VP2, HI, XE, HP, HK, K6, CO, LU, K7, NY, VS.6, OA, G, PY, YN, PK, CP, J, VP9, YV, VP5, SU, EA, ON, CE, F8, HC, EI, OZ, VP3, CX, XU, PA, VS2, VU.

Recent 20 m. loggings include:—PK's, 3ST, 1DX, 1VH, 3WI, 1PK, 1GL, J3EM. G's, 5RB, 2AK, 2OQ. XU's, 3GG, 6KZ, 8EH, VP.9G, HI2K, VU2CQ. VS's, 2AO, 2AK, F3PP, PAO. 1DW and HC1FG.

QSL's received have been F8II, ON4VK, G5BJ, PK1ZZ, VE's, 1DQ, 4GU, 3DF, 5DK, CE3DW. XE's, 2N, 2AH, LU8BR, PY2EJ, CX1CC, HI7G. W's, 9MPG, 9WQY (160 metre 'phones).

I would like to exchange my SWL card with any other members of the Club, so let's have them, you chaps! B.C. DX here is out of the question owing to the high QRM level.

Best of luck to "Radio World" and 73 to fellow-members.—Bob Russell (AW201DX), Taupo Road, Taumarunui, N.Z.

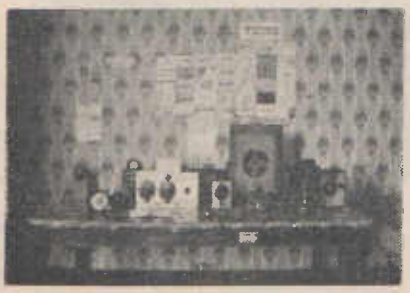
Up-To-Date S.W. News Appreciated.

Your "Radio World" certainly gets more and more interesting every issue, and I am inclined to agree with the "boys" who say that it is too long to wait between issues. I find that some chaps up here who are not in any way connected with radio or dxing are buying the "Radio World" for the interesting reading that is in it, and perhaps for information in the shortwave section, to find out what is on the air in the way of entertainment.—Jas. M. Klein (AW65DX), Cooma, N.S.W.

VK3SE Wants Reports: QSL's Guaranteed.

Just a few lines asking you to please enrol my New Zealand friend and myself in your widely popular All-Wave All-World DX Club.

I have in my shack 1,559 QSL cards and 124 SWL cards—I am getting several snaps taken of the den shortly, and will send one along for publication if suitable. I am very busy at present as I do all the corresponding and QSLing, also 2nd operating at VK3SE. To all members who hear this station either on 80, 40, or 20 metres, please report. The station will definitely QSL in due course.—T. Bayley (AW212DX), Ballarat, Vic.



This neatly-planned DX shack belongs to AW129DX—James Ferrier, of Coleraine, Vic.

5 Continents Heard In 30 Minutes.

During February I have been listening from two different locations, Swan Hill in N.W. Victoria, and Geelong, and find the latter is the better location for DX.

Conditions in the afternoon have improved slightly, and many hams are to be heard on the 20-m. band. In the evenings the Germans, DJA, DJN, DJB, DJE, DZC and DZH are all at good strength, but the 16 and 19-m. stations are strongest. On 31-m. ZBW3 is R7, Q4; VK3LR and VK3ME are both unsteady at R6-7, Q4. A Japanese station on about 27-m. is very strong (R8-9) in the evenings at about 8 p.m., E.S.T. I think it is JVN or JVM. On 34-m. ZMBJ, S.S. "Awatea" is usually R max. in Geelong, but VPD2, close by, is only R6, Q3. On 40 and 80 m. some hams are very active, VK3HX being very consistent on 80 metres.

In just over half an hour one evening I heard 5 continents on 20-m. 'phone. The stations were, G5ML (R7, Q5), W9RUK (R6, Q5), CE1AH (R8, Q4), XU8XW (R5, Q4), and VK4LO (R9, Q5). Other hams heard on 'phone are KA1BH, KA1ER, HI7G, OA4N, OA4AK, CE3DW, HK1Z, LU9BV, G5BJ, K6's, W's, VK's and ZL's. I have also heard the All-Continent QSO's which were mentioned in the February issue of "R. W." My latest verifications are from W9UJS, W2CYX, OLR and ZL1CD.

I have just fitted band-spread to my 3-tube Schnell receiver, and it certainly is a great help on the 20 and 31-m. bands.

I am very interested in 5-metre work, and greatly appreciate the articles written by VK2NO. Wishing the Club and magazine the best of success.—Tom D. Dowling (AW97-DX), Geelong, Vic.

QSL's Out To 13 Countries.

The 20 m. ham band has been very good lately, and I have 24 QSLs out in 13 different countries. I have received QSL's from the following stations:—W4BYY, W6ITH, W9LD, ZL3BK, LA1G, PK3GD, ON4PA, ON4VK, OA4R, SM5SX, VPD2 and W2XAF.

I have just erected a 50-foot pole and am thinking of erecting a rotary beam antenna. I shall try and operate it by turning a motor-car steering wheel on the wall inside my room. My present aerial is a vertical type half-wave on 20 m.

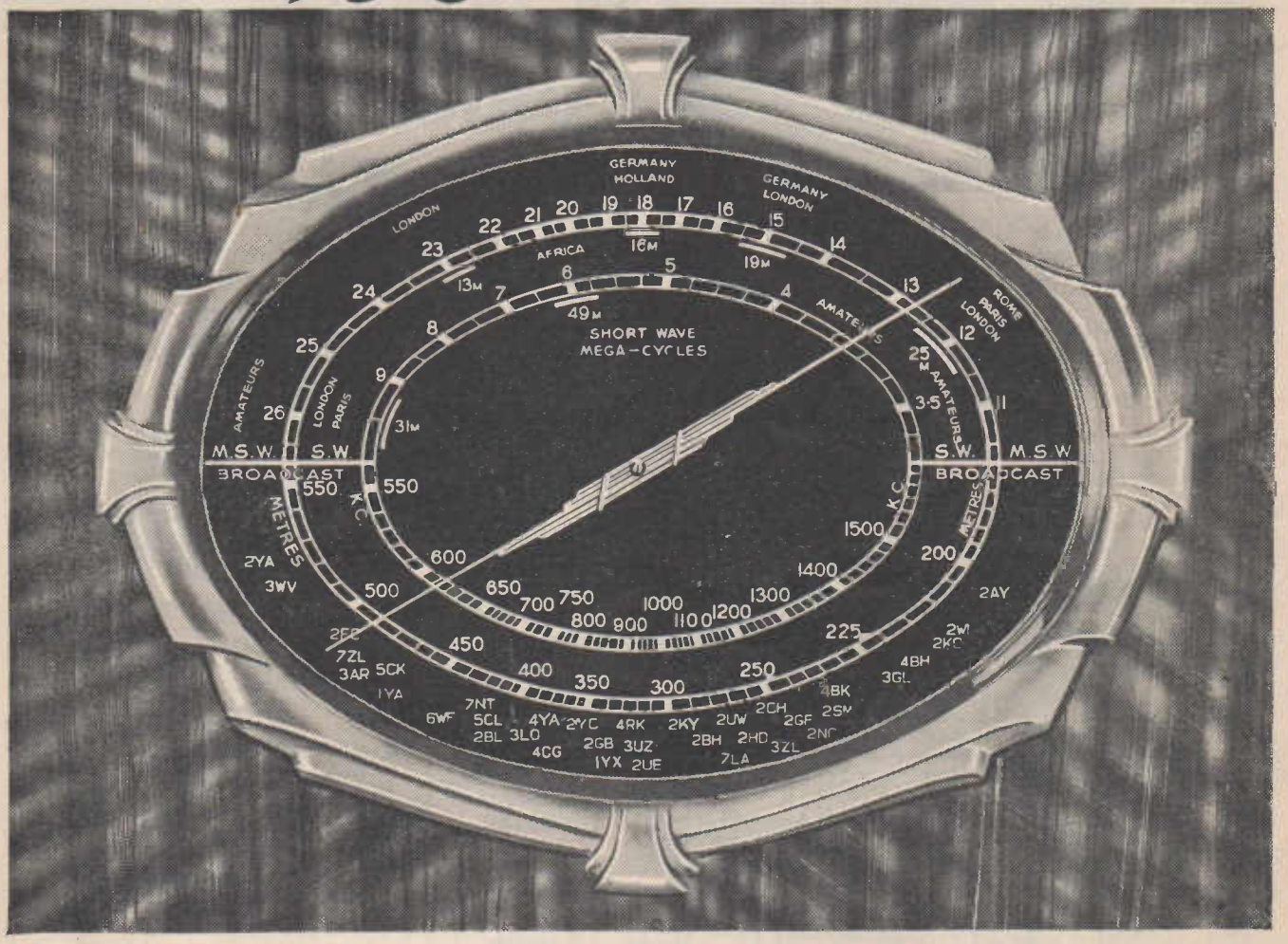
I think the list of new members should be continued so that one can find how far, etc., one is situated from other members of our fine Club. I am enclosing my latest photograph of my "gear."

Wishing the Club and "R.W." the very best of luck.—Jamie Ferrier (AW129DX), Coleraine, Vic.

Will Exchange QSL's.

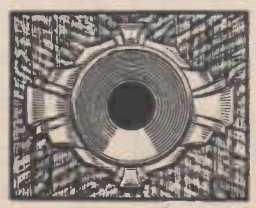
The following club members would like to exchange QSL's with fellow dxers.—James Mildenhall (AW156-DX), Coff's Harbour Jetty, Coff's Harbour, New South Wales, while correspondents anywhere in Australasia are wanted by Maurice Tierney (AW77DX) 62 Connemarra Street, Bexley, N.S.W.

New DIAL BEAUTY by Radiokes!



. . . a triple-band, tri-colour Edgelit dial, amazingly smooth, accurate, reliable

RADIO'S most beautiful dial released for 1937 by Radiokes! Distinguished in every feature; more beautiful than anything similar you have ever seen. Everything you expect—smoothness, strength, reliability—is here. Not even a hint of backlash at any setting.



No slipping or any other troubles common in most ordinary dials. Perfected, simplified mechanism has trebled efficiency and eliminated all points of usual weakness. Construction is rugged and firm throughout.

Main parts are made of 16 gauge and 18 gauge steel and brass. Glass front scale. A highly efficient system of edge lighting emphasises the beauty of the front and throws the colours well in relief. Three colours—orange, red and green—illuminate different sections of the dial in a striking way. The large oval escutcheon—measuring internally 7in. x 5in.—is made of metal, and can be had either in Antique Silver or Florentine Bronze. A "Magic Eye" escutcheon (as illustrated) to match is also available at small extra cost.

Ask your dealer for details or send this coupon.

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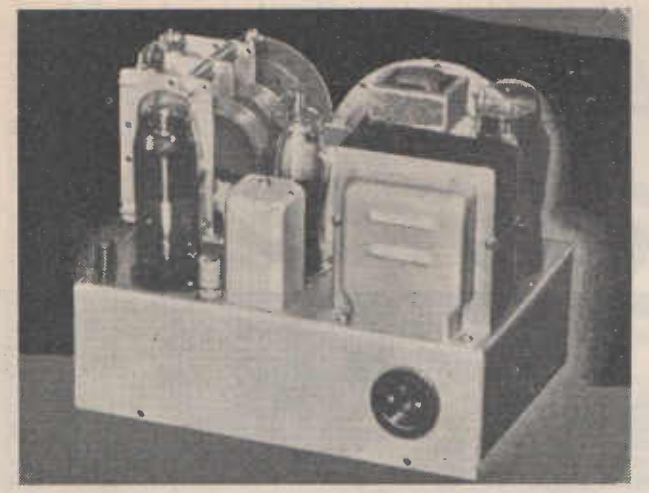
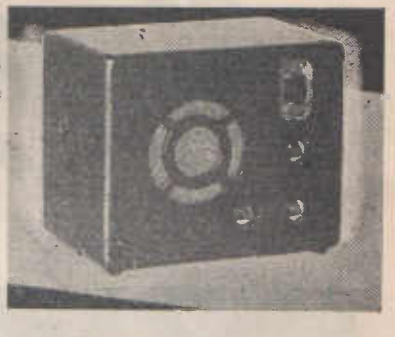


A rear view of the completed receiver. The EL3 output pentode is on the extreme left, the 80 rectifier on the right, and the 6F7 behind the detector coil.



Assembling And Wiring The Companionette Three . . .

Complete constructional details covering the assembly and wiring of the "Companionette Three", featured in last month's issue, are given below.

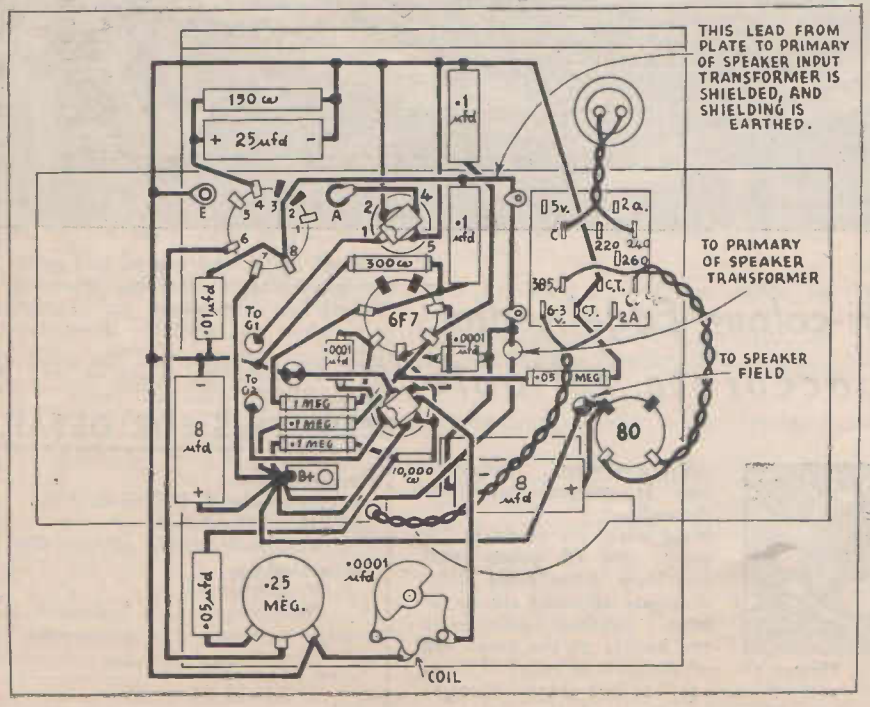
THOUGH the "Companionette" is very compact, there is nothing difficult about the assembly and wiring if the job is tackled methodically.

The three valve sockets can be mounted first of all, together with the aerial and earth terminals and the power socket on the rear of the chassis. The power transformer is then bolted in place, followed by the coils and the condenser gang, which should be supported 3/8in. above the chassis by means of four ¾in. bolts and nuts, and four small mounting pillars.

Also, before the gang is mounted, a six-inch lead should be soldered to the fixed plates lug underneath each of the two sections.

The .25 megohm volume control is the last component to mount at this stage—the reaction condenser is not fitted until the main portion of the wiring has been completed.

The main point to watch when mounting all these components is to ensure that they are arranged so that their terminals face in the directions indicated in the under-chassis diagram. This applies to the valve sockets, coils and power transformer.



The under-chassis wiring of the "Companionette" is given in this sketch.

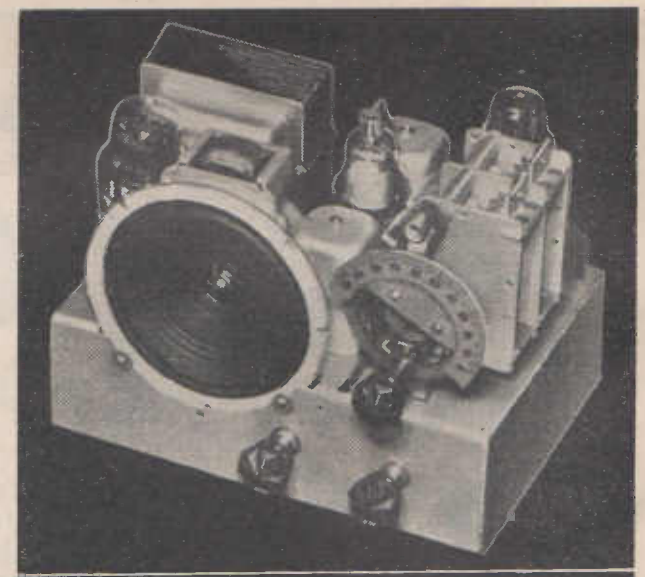
Commencing The Wiring.

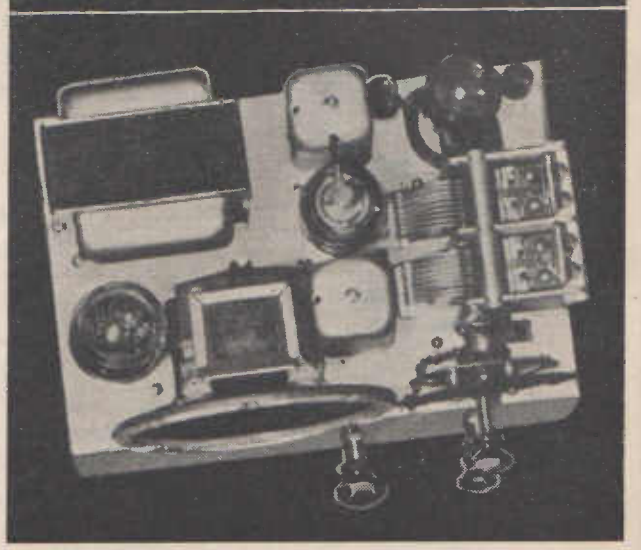
The chassis can now be inverted and the heater wiring put in. To avoid confusion this has not been shown on the accompanying under-chasis wiring diagram, but it is completed as follows:—To wire the rectifier socket, a pair of leads is soldered to the "5v. 2a." terminals on the power transformer, and to the filament terminals on the 80 socket. Another pair of twisted leads is similary connected between the "385v., 60 m.a." terminals and the plate terminals on the rectifier socket.

Next, a third pair of leads is run from the "6.3v. 2a." terminals to the heater terminals on the 6F7, and a twisted extension run on to the heater terminals on the EL3 socket. Lastly, another twisted pair can be run directly from the "6.3v. 2a." terminals on the power transformer panel to the dial light, but these leads can be put in after the dial has been mounted.

The main portion of the wiring can now be put in. Commencing at the aerial terminal, wire the aerial coil,

Two further views of the completed "Companionette" chassis are shown on the right.





pentode section of the 6F7, detector coil, 6F7 triode section and so on, following the circuit through. The under-socket connections of the valves are shown on the circuit diagram published last month, while the coil connections are given on a slip of paper that will be found inside each coil carton.

Watch Polarity Of Electrolytics.

There are three dry electrolytics used in the circuit—two 8 mfd. 450-volt working types for the power supply filter (one on each side of the 2,500-ohm speaker field), while the third is a 25 mfd. 25-volt working type used as a by-pass across the 150-ohm self-biasing resistor in the cathode of the EL3.

In every case the end of the condenser marked positive or painted red should be connected to the positive side of the circuit. This is "B+" for the first two condensers, and the cathode of the EL3 for the third.

An earth line, consisting of a length of 16-gauge tinned copper wire, is run around the chassis and soldered to the solder lugs placed underneath nuts belonging to handy mounting bolts. This line is connected directly to the earth terminal, and to the wipers on the condenser gang.

As a support for the "B+" connections, a small single-lug bakelite strip is bolted to the chassis and supported about half an inch from it. This is located near the volume control, as shown in the wiring diagram.

The Speaker Connections.

There are four connections to the speaker, two going to the field and another pair to the speaker input transformer; all four leads pass through the chassis.

Of the two field connections, one connects to "B+" and the other to an 80 filament terminal, while one of the remaining two leads goes to "B+" and the other runs to the plate terminal of the EL3. This last lead should be shielded with copper braiding, and the shielding earthed at several points along its route.

After the speaker has been mounted and wired, the 6F7 grid clip can be fitted, and the dial mounted. To do this, bend the bottom portion of the mounting bar back at right angles so that it lies flat on the chassis when the dial is in position. Next, pass a bolt through both bar and chassis, securing it with a nut and washer.

Finally the dial escutcheon can be screwed in place on the cabinet with a pair of small wood screws.

Aligning And Operating The "Companionette."

After the wiring has been thoroughly checked, the valves can be plugged in, the aerial and earth connected up, and the power switched on. While doing this, carefully watch the rectifier for any signs of sparking or of a blue glow, both of which denote a serious overload. If either occurs, switch off immediately and re-check the wiring.

With the set operating correctly, it can be aligned before it is mounted in the cabinet. The midget semi-variable coupling condensers underneath the coils should be adjusted according to the locality in which the set is used.

If fairly high selectivity is needed, then these condensers should be opened a turn or two. Gain is greatest with them screwed right in, but selectivity is then at its poorest. Opening the condensers means a certain loss of gain, but an appreciable improvement in selectivity.

Hence it is necessary to adopt the most suitable compromise between gain and selectivity that is obtainable for the locality in which the receiver is operated. Once the aerial that is to be used is decided upon, the best setting for the coupling condensers can easily be found after a little experimenting.

To align the receiver, set the trimmers on top of the gang about half-way out, and tune in a station near the middle of the band—one that requires a fair amount of reaction to bring it up to quiet room strength is best. The trimmer on the first section of the gang can then be adjusted for best results.

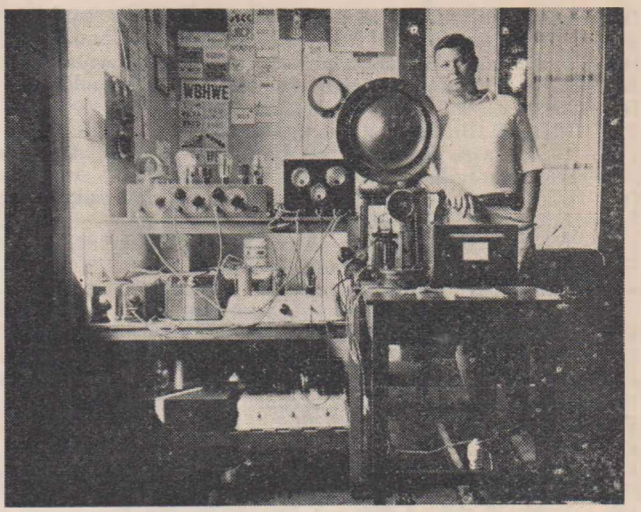
Short Aerial Is best In City Locations.

The "Companionette" is highly sensitive, so that in metropolitan areas only a few feet of aerial wire is needed to give more than ample volume from all locals. In fact, in such locations a short aerial is definitely advisable.

In country locations, however, with a good outside aerial and an effective earth, excellent interstate reception can be expected.

ZL AMATEUR TRANSMITTERS

Published below is the latest official list giving call-signs, names and addresses of all licensed amateur transmitters operating in New Zealand. By detaching the centre 8 pages from the magazine, readers will have the list available in handy reference form.



This Netherlands Indies amateur station, owned and operated by J. H. A. Steenmeyer, is located at Kediri, in eastern Java.

Auckland.

CALL SIGN. NAME. ADDRESS.

1AA—Edwards, C. N., 26 Meola Rd., Point Chevalier, Auckland.
1AB—Waite, S. G., 54 Marlborough Street, Dominion Road, Auckland, S.W.1.
1AC—Spackman, L. S., 29 Faulder Avenue, Westmere, Auckland, W.2.
1AD—Kenny, J. P., 10 Prospect Terrace, Ponsonby, Auckland, S. 2.
1AE—Duffin, R. W., 40 Meadowbank Road, Remuera, Auckland, S.E.2.
1AF—Penny, V. G., 207 Panmure Rd., Auckland, S.E.6.
1AG—Pope, C. R. W. L., 58 Ulster Street, Hamilton.
1AH—Hartle and Gray, 7 Alten Road, Auckland.
1AI—McLean, C., "Bird Grove," Waipu.
1AK—Claxton, W. H., Hill Street, Thames.
1AL—Bartrum, R. G., 17 Wellington Street, Hamilton.
1AM—Isherwood, J. C., 17 Clyde Street, Whangarei.
1AN—Arthur, H. B. M., 242 Dominion, Road Auckland.
1AO—White, R. G., 1388 Dominion Road, Mount Roskill, S.3.
1AP—Winch, N. J., Brady Street, Te Awamutu.
1AQ—Somerville, A. A., 66 Wairiki Road, Mount Eden, Auckland, S.2.
1AR—Mellars, L. M., 24 Rangitoto Avenue, Remuera, S.E.2.
1AS—McCrae, I. H., Winstone's Buildings, Queen Street, Auckland, C.1.
1AT—Swain, G. S., Mangapiko Street, Te Awamutu.
1AU—Spackman, M. L., 27 Merivale Avenue, Epsom, Auckland, S.E.3.
1AV—Reardon, F. C., 20 Cooper Street, Auckland, W. 2.
1AW—Lyons, R. R., 4 Coronation Road, Epsom, Auckland,
1AX—Orbell, R. J., 5 Mount Royal Ave., Mount Albert, S.W.2.
1AZ—Sherson, J. R., Radnor Street, Hamilton.
1BA—Taylor, R. J., 68 View Road, Mount Eden, C.3.
1BC—Mickleborough, W. E. F., 58 Moa Road, Point Chevalier, W.3.
1BD—Wadham, W. H., 22 Sefton Avenue, Grey Lynn, Auckland, W.2.
1BE—McKay, E. K., 17 Windsor Street, Parnell, Auckland, C.4.
1BF—Partelow, A. L.. R.N.Z. Air Force Base, Auckland.
1BG—Thompson, B. G., 16 Litchfield Road, Parnell, C.4.
1BH—Hudson, A. H., 49 Almorah Rd., Epsom, Auckland, S.E.1.
1BI—McArthur. G., John Street, Pukekohe.
1BJ—Jury, A. V., Onewhero.
1BK—Long, R. J. E., Mount Wellington Highway, Ellerslie, S.E.6.
1BL—Lynch, J. S., 31 Colombo Street, Frankton Junction.
1BN—Tapp, D. W. M., Tutanekai Street, Rotorua.
1BO—Paterson, T. M., Ngaruawahia.
1BP—Surman, J. D., 38 King's View Road, Mount Eden, Auckland, S.1.
1BQ—Coutts, M. W., Great South Road, Otahuhu.
1BR—Sweetman, T. C., 16 Arcadia Road, Epsom, Auckland,
1BS—Grainger, R. E., 65 Beresford St., Bayswater, Auckland.
1BV—Evans, A., Railway Street, Papakura.
1BW—Jackson, R. M., Ngaiwi St., Orakei, Auckland.
1BX—Grut, H. J., Ngaroto, Te Awamutu.
1BY—Yeats, C., Whitford.
1BZ—Gault, J. H., 105 Paritai Drive, Orakei, Auckland.
1CA—Jakeman, H., Main Street, Huntly,
1CB—Nobes, J., Teasdale Street, Te Awamutu.
1CC—Potter, W. H., 67 Pah Road, Epsom, Auckland.
1CD—Baxendale, J., 532, Manukau Road, Epsom,
1CE—Sargent, T. A., 34 Bellwood Avenue, Mount Eden.
1CF—MacLean, H. M., Leith Street, Te Awamutu.
1CH—Boyd, H. A., 13 Budock Rd., Mt. Roskill, Auckland.
1CI—Wight, C. A., Puke Road, Paeroa.
1CJ—Danrell, R. A., Hill Street, Te Kuiti.
1CK—Salt, G. McB., 32 Pukeora Avenue, Remuera.
1CL—Shearer, L. D., Hotel Northland, Queen Street, Auckland.
1CM—Humphrey, A. E., 37 Montrose Street, Point Chevalier.
1CN—Ireland, A. E., Mutu Street, Morrinsville.
1CO—Lee, W. L. W., Awhitu.
1CR—Hunter, W. E., Archibald Road, Glen Eden.
1CS—Williams, J. H., c/o J. H. Walter, Fencourt, Cambridge.
1CT—Pickmere, A. H., Yacht, "Arethusa," Whangarei.
1CU—Gray, H., Main Street, Ohura.
1CV—Wood, L. H., Kenrick Street, Te Aroha.
1CZ—Pooley, J., Post Office, Raglan.
1DA—Quigg, L. G., 4 Enfield Street, Mount Eden, Auckland.
1DB—Dugmore, F. R., Fifth Avenue, Tauranga.
1DC—Townsend, R. G., 32 Crummer Road, Ponsonby, Auckland.
1DD—Foster, E. B., 20 Rowan Road, Mount Roskill, Auckland.
1DE—Adshead, G. O., 58 Airedale, Street, Auckland, C.1.
1DF—Gordon, P. P., 20 Haverstock Road, Mount Albert, S.W.1.
1DG—Grant, R. J., 226 Hobson Street, Auckland.
1DH—McDonald, T. C., Arapuni.
1DI—Lindegreen, G. S., 3 Calgary Street, Auckland, S.2.
1DJ—Fielder, A., 24 Fairlands Ave., Avondale, Auckland.
1DK—Glucina, G., Shaw Road, Oratia.
1DL—Larking, M. J. W., George Street, Waiuku.
1DM—Cottam, S. L., 102 Grange Road, Auckland.

1DN—Appleyard, C. B., 11 Folke Street, New Lynn, Auckland.
1DP—Volkner, N. J., 47 Wembley Road, Auckland.
1DQ—Warden, C., 25 Maxwell Avenue, West Lynn.
1DS—Day, H. F. W., 1449 Great North Road, Avondale.
1DT—Gray, C. E., Cape Brett, Russell.
1DV—Gibbs, S. B., Hasley Road, Manurewa.
1DW—McNamara, F. R. S., 20 Cambrai Avenue, Auckland.
1DY—Crickett, J. L., Park Street, Morrinsville.
1DZ—Elliot, H. N., 36 Kingsland Avenue, Kingsland, Auckland.
1FD—Davidson, J. F., Morgantown, Te Aroha.
1FE—Wood, A. F., 32 Peach Grove Rd., Claudelands, Hamilton.
1FF—Gifford, B., Sloane Street, Te Awamutu.
1FG—Pawley, N. C., Willow Street, Tauranga.
1FH—Cross, C. T., 18th Avenue, Tauranga.
1FI—Goodwill, C. S., Jellicoe Street, Te Puke.
1FJ—Sexton, W. J., 14 Ethel Street, Sandringham.
1FK—Hamlin, S. M. Y., Mount Wellington Highway, Ellerslie.
1FL—Wark, A. J., Lairdale Road, Taumarunui.
1FM—Warn, J. E. B., Katikati.
1FO—Cooper, E. R., 60 Meadowbank Road, Remuera.
1FP—Anchor, G. S., 8 Queen's Avenue, Frankton Junction.
1FQ—Smith, A. F., 5 Westminster Road, Mount Eden, S.2.
1FR—Harris, L. W., 5 Fitzroy Street, Papatoetoe.
1FS—Dickson, L. R., 3 Gorrie Avenue, Epsom, Auckland.
1FT—Walding, N. N., 31 Edwin Street, Newton, C.2.
1FU—White, G. D., Bridge Street, Opotiki.
1FV—White, J. M., 13 Atherton Rd., Epsom, Auckland.
1FX—Trenwith, J. H. L., 19 Fairlands Avenue, Avondale.
1FY—Curtis, N. C., 5 King Edward St., Auckland.
1GB—Beere, G. St. J., Yacht "Ngataki," Auckland and elsewhere.
1GC—Illingworth, W., Te Atatu.
1GD—Branigan, C. K., Lighthouse, Cape Maria Van Diemen.
1GF—Fish, J. F., 29 Hepburn St., Auckland, C.2.
1GG—Eaton, R. E., Main Street, Taumarunui.
1GI—Smerdon, A. D., 7 Claude Street, Epsom Auckland.
1GK—Laskey, J. J., Hinemoa Street, Whakatane.
1GL—Talbot, J. F., Pererika Street, Rotorua.
1GP—Merriman, E., 12 South Road, Auckland, C.2
1GQ—Brewer, W. L., 19a King Edward Avenue, Bayswater.
1GR—Robins, G. H., 4 Ascot Avenue, Devonport, Auckland.
1GS—Scull, G. H., 8 Ethel Street, Sandringham, Auckland.
1GT—Smith, H. C., 6 Amohia Street, Rotorua.
1GU—Pratt, E., 26 Station Road, Claudelands, Hamilton.
1GV—Spackman, B. C. W., Seabrook Avenue, New Lynn.
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1GX—Hawthorn, F. L., 10 King Edward Street, Mount Eden.
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1GZ—Amos, A. M., 7 Halesown Avenue, Auckland.
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1HE—Matthews, H. H., Otorohanga.
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1HH—Smith, A. E., The Esplanade, Blockhouse Bay, Auckland, S.W.3.
1HJ—Snow, A. N. H., Wallace Street, Wharangei.
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1HM—Simpson, C., 8 Grattan Street, Auckland.
1HO—Jarman, A. W., Willoughby Street, Hamilton.
1HQ—Batty, H. W., Onewa Road, Birkenhead, Auckland.
1HR—Goodwin, L. W., 433 Coronation Road, Paeroa.
1HS—Crowhurst, L. A., 10 Williamson Street, Epsom, Auckland.
1HT—Bettany, A. W., Beale Street, Hamilton East.
1HV—Auckram, T. W. B., 37 Princes St., Otahuhu, S.E.1.
1HW—Evans, G., Railway Hut A111, on line South Auckland.
1HY—Brown, D., Seddon Street, Waihi.
1HZ—Dodds, J. jun., Raynor's Road, Huntly.
1IA—Petty, G. A., 77 Portland Road, Auckland.
1IB—Blair, R. L., 12 Weona Place, Auckland.
1IC—Fitzwilliam, W. B., 19 Springleigh Avenue, Auckland.
1ID—Gooch, R. A., 32 Esplanade Road, Mount Eden, Auckland.
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1IL—Bennett, A. E., St. Patrick's Presbytery, Wyndham Street. Auckland.
1IM—Sutcliffe, D. B. G., 20 Albert Road, Point Chevalier.
1IN—Pearce, R. M., 27 Epsom Avenue, Auckland.
1IO—Callander, H. C., 8 Ewington Ave., Mt. Eden, Auckland, S.2.
1IP—Merriman, E., c/o N.Z. Railways, Frankton Junction.
1IQ—Stewart, T. K., Tara, Mangawai.
1IR—Turtley, S. J., Te Kawana Road, Te Aroha.
1IS—Olsen, C. M., Cranley Street, Dargaville.
1IT—Boon, S. W., Roberts Street, Tauranga.
1IU—Cameron, E., McGregor's Road, Morrinsville.
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1IW—Burley, T., 8 Goldie Street, Auckland.
1IX—Day, B. C., Aumoe Street, Auckland.
1IY—Barlow, J. L., 10 Edwin Street, Auckland.
1IZ—McDonald, J. P., Arapuni.
1JA—Sager, J. H., Pakura Street, Te Awamutu.
1JB—Piesse, G. F., 6 Francis Street, Grey Lynn, Auckland.
1JC—Hayward, F. H., c/o Radio House, Waihi.
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1JE—Gaukrodger, H. W., Victoria Street, Dargaville.
1JF—Hardcastle, G. L., 13 King Street, Frankton Junction.
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1JI—Smith, J. R., 34 Kingsland Avenue, Auckland.
1JK—Schofield, J. R., 202 Heaphy Terrace, Hamilton.
1JL—Lockie, A. A., cnr. Bowen & Clarence Sts. Thames.
1JM—Acton, F., 81 Seddon Street, Hamilton.
1JN—Walker, W., 25 King Street, Hamilton.
1JO—Henry, H., P.W. Sub-Station, Kerepehi.
1JP—Leprou, E. E., Mahoe Street, Melville, Hamilton.
1JQ—Allen, A. E., 1720 Great North Road, Avondale, Auckland.
1JS—Jones, M. W. S., 35 Speight St., Kohimarama, Auckland.
1JT—Taylor, J. F., 11 Nottingham Street, Grey Lynn.
1JU—Morrin, E. C., King Street, Pukekohe.
1JW—Wilson, V. H., 5 Stanley Point Road, Devonport.
1JX—Hayward, C. A., 147 Campbell Road, One Tree Hill.
1JY—Doyle, E. A. L., 25 Mangere Road, Otahuhu.
1JZ—Robertson, C. S., 33 Wallace St., Ponsonby Auckland.
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1KB—Thompson, D. D., 36 Byron Avenue, Takapuna, N.2.
1KC—McCallum, K. T., 22 Allandale Road, Mount Albert, S.W.2.
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1KK—Carter, N. A. W., 11th Avenue, Tauranga.
1KL—Luxford, H. M., 37a Te Aroha Street, Claudelands, Hamilton.
1KM—Gardner, D. R., Ranolf Street, Rotorua.
1KO—Barlow, R., Banks Road, Matamata.
1KP—Sutherland, G., Okauia, Matamata.
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1KT—Sadler, G. A., 15 Ardmore Road, Ponsonby.
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1KW—Williams, W. A., c/o Illingworth, Te Atatu.
1KX—Mobberley, E. N., 11 Challenor Terrace, Mount Albert.
1KZ—Bell, E. W. D., Rata Street, New Lynn, S.W.4.
1LB—Thrower, G. J., Railway Cottage, Waihi.
1LC—Diedrichs, G. H., 12 Ascot Avenue, Remuera, S.E.2.
1LE—Jacobson, E. J., Whakapara.
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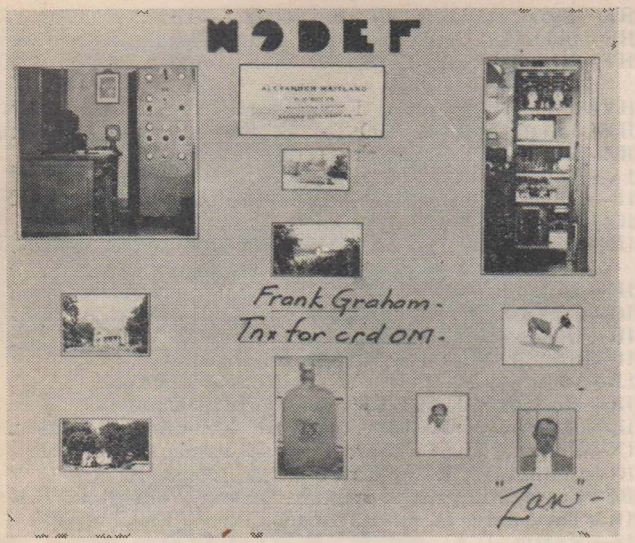
1LG—Morgan, G. S., Glendon Avenue, Avondale.
1LI—Bice, G. A., 696 Manukau Road, Epsom, Auckland.
1LK—Kennedy, F. W., 34 Barnley Terrace, Auckland.
1LL—Cook, S., 24 Millais Street, Auckland.
1LM—Wellington, K., 1 Pencarrow Avenue, Mount Eden, Auckland.
1LN—Egan, R. A., 208 Ponsonby Road, Auckland.
1LO—Edelsten, W. R., 14 High Street, Otahuhu, S.E.7.



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1MM—Taylor J. T., 28 Westview Road, Grey Lynn, Auckland.
1MN—Bettany, A. C., Nelson Street, Pukekohe.
1MO—Goodwin, L. J., Western Street, Matamata.
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1MR—Barnes, R. E. M., 107 Richmond Road, Ponsonby, Auckland.
1MS—Bitossi, Royal N.Z. Air Force Base, Auckland.
1MT—Bolwell, F. W., Lighthouse, Cape Maria van Dieman.
1MU—Langridge, J. H., 26 Pererika St., Rotorua.
1MV—Llewellyn, J. D., Rawene.
1MW—Thames Amateur Radio Club, (A. A. Lockie), Mackay St., Thames.
1MX—Fisher, B. D. B., 22 Stanmore Street, Auckland.
1MY—Carss, J. R., 1 Seacliff Avenue, Takapuna, Auckland.
1MZ—Holmes, F. E., 23 Cameron Street, Devonport, Auckland.
1XI—Auckland University College, Auckland.

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2AC—O'Meara, I. H., Bushmere Road, Gisborne.
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2AH—Roberts, R. V., Rogers Street, Blenheim.
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2AJ—Parmenter, V. H., 2 Oak Grove, Wellington, C.1.
2AK—Cooper, A. M., 83 Roxburg Street, Wellington.
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2AS—Whiteman, V. G., Cape Campbell Lighthouse.
2AT—Beale, E. W., 405 Grays Road, Hastings.
2AU—Fever, W. H., 66 Rotherham Terrace, Wellington.
2AV—Chatfield, R. G., 42 Raroa Road, Kelburn, Wellington,
2AW—Clarke, C. R., 111 Apu Crescent, Lyall Bay, Wellington.
2AX—Kyle, J. V., 50 Waldegrave Street, Palmerston North.
2AY—Corps of Signals, Central Depot, Garrison Hall, Wellington.
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2BB—Murray, N., 8 Maria Place, Wanganui.
2BC—Perry, S. H., 89 Tiber Street, Island Bay, Wellington.
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2BH—Hall, W. M., 1 Hutt Road, Pentone.
2BI—Liddell, C. G., 16 Lerwick Terrace, Lyall Bay, E.3.
2BJ—New Plymouth Aero Club, New Plymouth.
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2BZ—Gillion, O. W., 71 Church Street, Palmerston North.
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2CJ—Upchurch, G. E., 113 Wallace Street, Wellington.
2CK—Black, J. W., Duke of Edinburgh Hotel, Porangahau.
2CL—Antridge, E., Fort Dorset, Seatoun, Wellington, E.5.
2CN—Bradley, E. A., 5 Caius Avenue, Gonville, Wanganui.
2CO—Hamilton, C. G., 76 Ellice Street, Wellington.
2CP—Cormack, J. B. B., 64 Tilley Road, Paekakariki.
2CR—Scott, R. J. H., 308 Eastbourne Street, West Hastings.
2CS—Miller, R. E., 17 Tennyson Street, Petone.
2CU—Murray, J. A., 2 Kennedy, Street, Wellington.
2CV—Blakeley, P. W., 26 Balgownie Avenue, Wanganui.
2CW—Jensen, W. A. E., 18 Mills Road, Wellington, S.W.1.
2CX—Patchett, G. P., 264 Rintoul Street, Wellington.
2CY—Francois, L. G., Post Office, Spring Cove, Nelson.
2DA—Newlands, G. B., 35 Adelaide Street, Petone.
2DB—Morrison, C. W., 71 Dundas Street, Seatoun, Wellington.
2DC—Chisholm, W. P., 9 Palm Grove, Wellington South.
2DD—Redshaw, L. P. L., 6 North Esk Street, Nelson.
2DG—Taylor, C. R. H., Kereru Bend, Tawa Flat.
2DH—Bedingfield, D. L., 123 Jackson Street, Petone.
2DI—McMahon, P. R., Kendall's Road, Linton, Palmerston Nth.
2DJ—Peterson, E. A., 175 Queen's Drive, Wellington, E.3.
2DK—Barclay, B., 43 McGrath Street, Napier.
2DL—Carr, R. A. J., Totara Terrace, Miramar, Wellington.
2DM—Smith, C. H., 558 Childers Road, Gisborne.

2DO—Wiffen, M. A., Okaramio, Blenheim.
2DP—Stretch, J. H., 249 Ohiro Road, Wellington.
2DQ—Hooker, J. K., 11 Standen Street, Karori, Wellington.
2DR—Cooke, A. R., Railway Avenue, Upper Hutt.
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2FA—Butler, G. B., 46 Winter Street, Gisborne.
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2FI—Knight, A. A., Emano Street, Nelson.
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2FP—Hoare, P. R., 166a Abel Smith Street, Wellington.
2FQ—Crabtree, A. W., 177 Vigor Brown Street, Napier.
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2FX—Fownes, H. G. G., 1 The Parade, Island Bay, Wellington, E.2.
2FY—Roberts, H. R., Ikanui Road, Hastings.
2FZ—Reid, D., 11 Murphy Street, Wellington.
2GA—Johnson, J., St. James Avenue, Lower Hutt.
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2GE—Tyler, G. E., 155 Vigor Brown Street, Napier.
2GF—Shaw, D. C., 19 Barker Street, Wellington.
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2GH—Cross, A. R., King Street, Nelson.
2GI—McGregor, E. W. L., Waipawa.
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2GK—Perkin, S. R., 42 Puru Crescent, Lyall Bay, Wellington.
2GL—Gabriel, M. T., The Mansions, Ghuznee St., Wellington.
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2GS—Green, H. E. H., Clifford Road, Johnsonville.
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2GZ—McKenzie, A. J., Rainbow Station, Awatere, Marlborough.
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2HB—Clinch, V. J., Woodbourne Aerodrome, Blenheim
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2HE—Elliston, L. J., Main Road, Karori.
2HF—Jenkins, D. F., 8 Pembroke Road, Northland.
2HG—Marston, G., Creswick Terrace, Northland, Wellington.
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2HI—Birch, L. E., 626 Devon Street, New Plymouth.
2HJ—Hampton, J. H., 95 Orangi Kaupapa Road, Wellington.
2HK—Whiteman, W. F. C., 7 Moana Avenue, Lower Hutt.
2HL—Hill C. P., 115 Creswick Terrace, Northland, Wellington.
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2HO—McLaughlin, J., Nelson.
2HP—May, P. J., Charlotte Street, Takapau.
2HQ—White, L., Ladies Mile, Eltham.
2HR—Stevens, W. A. W., Manawapou, Street, Hawera.
2HS—Shennan, C. V., 35 Queen Street, Wellington.
2HT—Bradfield, A. G. S., Te Awe Awe Street, Palmerston North.
2HV—Bennett, A. K., 93 Powderham Street, New Plymouth.
2HW—Megann, T. H., 299 The Parade, Island Bay, Wellington.
2HZ—Eckford, T. S., Park Terrace, Blenheim.
2IA—Blumhardt, E., 95 High Street, Blenheim.
2IB—Benson, P. W., 244 Featherston Street, Palmerston North.
2IC—Austin, E. S., Mill Street, Nelson.
2IE—Wainwright, W. J., 21 Waikato Street, Island Bay, Wellington.
2IF—Rolle, E. G., 96 Hanson Street, Wellington.
2IG—Jackson, W. L., 14 Seapoint Road, Napier.
2IH—Dodds, I. N., R.M.D., Upper Moutere.
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2IJ—Andrews, F. R. W., White House, Taihape.
2IK—McMillan, L. D., 32 Queen Street, Petone.
2IL—Gabites, J. F., 52 Glen Road, Kelburn, Wellington.
2IN—Perkins, H., 6 Elmira Avenue, Palmerston North.
2IO—Collins, E. S. B., Kawai Street, Nelson.
2IQ—Cassey, R., 131 Elizabeth Street, Wellington, E.1.
2IR—Thevenard, C. M. H., Sandon Road, Fielding.
2IS—Martin, J. L., c/o Nicholl Bros., Taihape.
2IU—Purdy, R. G., 11 Akatea Street, Wellington, S.1.
2IW—Bownes, W. S., 141 South Road, Hawera.
2IX—Parker, C. H., Hukanui.
2IY—Gorman, W. D., 34 Garden Road, Wellington.
2JA—Chisholm, D. H., 16 Kings Avenue, Wanganui.
2JB—French, E. J. S., Lyndhurst Road, Hastings.
2JC—Way, Clinton J., Manchester Street, Feilding.
2JD—Abbott, W., 1 Dee Street, Island Bay, Wellington.
2JH—Law, R. G., Orlando Street, Stratford.
2JI—Rean, W. J., Station Road, Ohakune Junction.
2JJ—Gilby, K. B., 4 Vogel Street, Wellington.
2JL—Prime, D. R., Taoroa Road, Taihape.
2JN—Down, A. R., Rira Street, Marton Junction.
2JO—Parsons, J., Ormond, Gisborne.
2JP—Bradley, R. A. H., Russell Street, Nelson.
2JQ—Shirley, J. R., "Burnside," Bay View.
2JR—Fahey, J. D. S., 45 Harbour View Road, Northland, Wellington, W.2.
2JS—Johnson, H. B., Kensington Private Hotel, Wellington, S.1.
2JT—Hutana, H. T., Mangaoropa, Porongahau.
2JU—Fanthorpe, J. K. L., 7 Marami Street, Kilburnie, Wellington.
2JV—Cranford, C. A. H., Ohakune Junction.
2JW—Davies, R. D., 22 Ferry Street, Seatoun, Wellington.
2JX—Culpitt, Tui Street, Taihape.
2KA—Cuthbert, G. A., 1 Coombe Street, Wellington.
2KB—Wood, L. M., Rangiwahia.
2KC—Moess, C. B., Rangiwahia.
2KD—Simpson, C. J. C., 603 Ellison Road, Hastings.
2KE—Smith, W. A. D., Smith's Garage, Urunui.
2KF—Gould, A. G., Tasman Street, Nelson.
2KG—Sharland, K. O., Cleveland Road, Nelson.
2KI—King, R. H., Riverbend Road, Napier.
2KJ—Pettifer, M. F., 99 Shakespeare Road, Napier.
2KK—Young, L. T., 39 Eden Street, Island Bay, Wellington.
2KL—Steele, N. A., Devon Street, Picton.
2KM—Robertson, G. A., Pakowhai Road, Hastings.
2KN—Milward, H. P., Tulloch Street, Wanganui.
2KO—Davison, S. C., Humber Street, Island Bay, Wellington.
2KP—Henskie, F. J., 86 Glenmore Street, Wellington.
2KR—Gregg. A. P., Lewer Street, Karori, Wellington.
2KS—Furness, J. S., Keiss Street, Blenheim.
2KT—O'Neill, J. G., 702 York Street, Hastings.
2KU—Ward, T., 53 Calabar Road, Miramar, Wellington.
2KV—Ward, T. W., 53 Rugby Road, Tariki, Inglewood.
2KW—Palmer, C. G., Alton, Wanganui.
2KX—Wicksteed, C. G., 44 Norway Street, Wellington, W.1.
2KY—Simonsen, H. D., 134 Totara Road, Wellington, E. 4.
2LB—Fouhy, W., 99 Washington Avenue, Brooklyn, Wellington.
2LD—Westwood, E. N., 171 Onepu Rd., Lyall Bay, Wellington.
2LE—Pinhey, J., 72 Dundas Street, Seatoun, Wellington.

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2LI—Munro, G. S., 3 Tasman Street, Nelson.
2LJ—Morgan, G. S., c/o Mrs. Berg, Juliet Street, Stratford.
2LK—Dance, W. E., Warwick Street, Blenheim.
2LM—Western Electric Co., Ltd., Wellington.
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2LO—Leatham, W. G., 136 Dixon Street, Wellington.
2LP—Pascoe, L. V., 251 Church Street, Palmerston North.
2LQ—Ambury, C. R., Paynter's Avenue, New Plymouth.
2LR—Edwards, K., 24 Rex Street, Miramar, Wellington.
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2LU—Wildash, R. F., Charles Street, Blenheim.
2LV—Barltrop, C., 61 Rakau Road, Wellington.
2LW—McLennan, H. C. S., Raroa Road, Johnsonville.
2LX—McCaul, D. G., Cashmere Avenue, Wellington, N.5.
2LY—Masters, W. C., 174 Jackson Street, Petone.
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2MA—Hight, P. D., Moana Avenue, Tahunanui, Nelson.
2MB—Glading, C. M., 71 Herald Street, Wellington.
2MC—Lawson, S. C., 13 Binham Street, Wellington.
2MF—O'Leary, B. J., Waikupa Road, Okoia, Wanganui.
2MH—Walker, A. C., Konini, Pahiatua.
2MI—Parsons, C. B., 5a John Street, Wellington, S.1.
2MJ—Smith, L. G., "Hill View," Guppy's Road, Greenmeadows, Napier, Hawke's Bay.
2MK—Adams, J. A., Stansell Avenue, Tahunanui, Nelson.
2MM—Adcock, H. F., 39 Opaki Road. Masterton.
2MN—Pole, L. E., High Street, Hawera.
2MO—Johnson, R. W., 16 Duigan Street, Wanganui.
2MP—Powell, W. H., Gloag Street, Waverley.
2MQ—Crook, P. G., 102 Maclean Street, Hastings.
2MR—Blair, D. I., Te Horo.
2MS—Thomasen, L. H., Rewa.
2MT—Taylor, W., 37 Kennedy Road, Napier.
2MU—Bell, S. M., Mangoihe, Raetihi.
2MV—Harte, T., Baring Head Lighthouse, via Eastbourne.
2MW—Wiggins, F. V., 17 Konini Street, Wanganui.
2MX—Smith, I. E. L., Ames Street, Paekakariki.
2MY—Sellens, F. W., 7 Randwick Road, Northland, Wellington.
2MZ—Castles, C. R., 6 McDonald Crescent, Wellington, C.1.
2NB—Sword, A., 2 Waione Street, Pentone.
2NC—Henderson, J., Central Police Station, Wellington.
2NF—Bullivant, R. E., 109 Nelson Crescent, Napier.
2NG—Wintringham, L. R., Muller Road, Blenheim.
2NI—Peacock, J. W. E., 9 Andrew Young Street, Palmerston N.
2NJ—Ross, H. D., 30 Miro Street, Palmerston North.
2NL—Reeves, G. T., 30 Kirkcaldie Street, Petone.
2NM—Stubbs. G., "Burnside," Takapau.
2NN—Reilly, A. C., Seddon.
2NO—McLaughlin, J., 123 Jackson Street, Petone.
2NP—King, A., 5 Huia Street, Petone.
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2NR—Taylor, W. N., 11 Harbour View Road, Northland, Wellington, W.2.
2NS—Glassey, R. B., Main Street, Pahiatua.
2NT—Sutton, C. H., Richmond, Nelson.
2NU—Martin, J. M., Alfred Street, Nelson.
2NV—Stallard, E. H., Tasman Street, Collingwood.
2NW—Le Seuer, A. I., 35 Richmond Ave., Karori, Wellington.
2NY—Mace, W. G., Barnard Street, Wellington.
2OB—Sword, J. A. D. S., 4 Waione Street, Petone.
2OC—Hutchinson, W. C., 53 Stout Street, Wellington.
2OD—Barnes, W. D., 8 Second Street, Masterton.
2OF—Davies, C. P., 42 Koromiko Road, Wanganui.
2OG—Lough, E. B., Manuka Road, Stokes Valley, Wellington.
2OI—Bell, L. G., 2 Hornsey Road, Wellington.
2OJ—Inge, W. J., Louis Street, Hastings.
2OK—Moir, E. V., 535 Ormond Road, Gisborne.
2OL—Cuthbert, D. M., 9 Hereford Street, Palmerston North.
2OM—Cameron, R. P., 27 Ngaio Street, Kelburn, Wellington.
2ON—O'Brien, J. S., Chatham Islands.
2OO—Burrell, N. W., 151 Bridge Street, Nelson.
2OP—Scambury, G. E., 23 Onepu Road, Lyall Bay, Wellington.
2OQ—Cronin, P., Bengal Street, Khandallah, Wellington.
2OR—Rean, H. E., 166a Railway Row, Okahune Junction.
2OS—McKernon, F. H., Lighthouse, Portland Island.
2OT—Girling, J. R., 95 Leach Street, New Plymouth.
2OU—Parminter, J. D., McLean Street, Wairoa.
2OV—Petrie, L. G., 127 Coromandel Street, Wellington.
2OW—Forbes, W. D., 19 Buckingham Street, Wellington, E.3.
2OX—Keyes, A. W., 17 Queen's Drive, Lyall Bay, Wellington.
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2PB—McLaren, H. B., Jun., 144 Collingwood Street, Nelson.
2PC—Mitchell, G. W., 6 Gladstone Road, Napier.
2PD—Vinten, W., Waipawa.
2PE—Roatz, H. E., 17 Te Whiti Street, Kilburnie, Wellington.
2PF—King, Thomas, 489 Aberdeen Road, Gisborne.
2PG—Ferguson, J. D., 5 Hume Street, Lower Hutt.
2PH—N.Z.A.R.T. (Marlborough Branch), High St., Blenheim.
2PI—Trealeaven, A. R., 9 Manawaroa St., Palmerston North.
2PJ—Barnes, L. D. M., 2 Ashton Terrace, Castlecliff, Wanganui.
2PK—Yorke, R., 28 Highway Road, Wellington, W.1.
2PL—Johnston, N. B., 78 Tinakori Road, Wellington.
2PM—Norman, J. L. M., 13 Tinakori Road, Wellington.
2PN—Briden-Jones, W. J., 71 Kent Terrace, Wellington.
2PO—Yont, R. E., Rocks Road, Nelson.
2PP—Sinclair, J. D. J., 502 Grove Road, Hastings.
2PQ—Angelini, L., Main Road, Pahiatua.
2PS—Fisher, B. V. P., 21 Imlay Crescent, Ngaio, Wellington.
2PT—Coker, L. W., Parker Street, Blenheim.
2PU—Tucker, S. A., St. Leonards, Lower Wairau, Blenheim.
2PV—Moloney, M., Ward.
2PX—Taylor, M. F. W., Ballance Street. Shannon.
2PY—Heslop, H. G., 26 Waimea Road, Nelson.
2PZ—Randerson, K. D., Mount Street, Nelson.
2QA—Bailey, A. W., 48 Main Street, Palmerston North.
2QB—Lucas, A. W., 27 Calcutta Street, Khandallah, Wellington.
2QC—Noble, W. A., Queens Road, Lower Hutt.
2QE—Byrn, H. L. T., 17 Macara Street, Masterton.
2QF—Hay, F. H., 26 Durie Hill, Wanganui.
2QG—McGahan, L., Maxwell Avenue, Wanganui.
2QH—Barnes, C. J., Fox Street, Featherston.
2QI—Dawson, F. J., 102 High Street, Blenheim.
2QL—Lawlor, L. A., Howard Road, Lowry Bay, Wellington
2QM—Stevens, O. J., 43 Coromandel Street, Wellington.
2QN—Bornholdt, A. V., 14 Buick Street, Petone.
2QO—Hanford, R., 96 Riddiford Street, Wellington.
2QP—Smith, W. E., Opunake.
2QR—Nolan, R., 257 Clifford Street, Gisborne.
2QS—Padman, N. B., 222 The Parade, Island Bay, Wellington.
2QT—Hilkie, A. J., 34 Wade Street, Wellington.
2QU—Hitchins, M. J., 22 Derwent St., Island Bay, Wellington.
2QV—Haynes, W. R., c/o W. Clark, Waipawa.
2QW—Pratt, E. R., 44 Heretunga Street, Petone.
2QX—Ryder, N., 148 Jackson Street, Petone.
2QY—McCarthy, J., 22 Oriental Street, Petone.
2QZ—N.Z. Shortwave Radio Club (A. B. McDonagh), 4 Queen Street, Wellington.
2RA—Petrie, B. J. M., 21 Upland Crescent, Wellington, W.2.
2RB—O'Donnell, J. B., 31 Marama Crescent, Wellington, C.2.
2RC—Coakley, R. J., Te Morne Road, Lower Hutt.
2RD—Andrews, N. A., Poole Street, Moteuka.

2RE—Steele, N. A., Picton.
2RF—McSweeny, T. J. G., 118 Creswick Terrace, Northland, Wellington.
2RH—Munro, C. R., 122 Shakespeare Street, Hastings.
2RI—Savlel, B. E., Coley Street, Foxton.
2RJ—Inglis, W. I., 87 Hutt Road, Lower Hutt.
2RK—McKenzie, K., 2 Devon Street, Wellington, C.2.
2RM—Kebblewhite, K. W., 196 Hutt Road, Petone.
2RO—Ashford, J. W., Lighthouse, Farewell Spit.
2RP—Goodyer, B. E., Graham, Russell St., Waipukurau.
2RQ—Jones, I. L., 7 Vera Street, Karori, Wellington.
2RR—Turner, W. G., 40 Ingestre Street, Wanganui.
2RT—Murphy, J. F., Cafe-de-Paris Hotel, Palmerston North.
2RU—Boyens, R. O., 26 Aurora Terrace, Wellington, C.1.
2RV—Grant, C. J., Lincoln Road, Casterton.
2RW—Gibbs, E. G., 2 Ruapehu Street, Castlecliff, Wanganui.
2RX—Robins, R. B., Bulls.
2RY—Hayward, E. B., 60 Heads Road, Wanganui.
2RZ—Bowman, G. R. B., 8 Copeland Street, Lower Hutt.
2SA—Hawera Radio Society, Hawera
2SB—McIntosh, J. A., Lighthouse, Cape Campbell.
2SC—Smith, G. C. T., Griffin Street, Napier.
2SD—Oxley, J. S., 20 Tiber Street, Island Bay, Wellington.
2SE—Daws, B. V., Pukeora Sanatorium, Waipukurau.
2SF—Sandford, G. G., King's Private Hotel, Wakefield Street, Wellington.
2SG—Ainsworth, C. R., 67 Herald Street, Wellington.
2SH—Boardman, W., 6 Norma Crescent, Kelburn, Wellington.
2SI—Barker, W. J., 10 Lochiel Road, Wellington.
2SJ—Wilson, T. D., Korokoro, Petone.
2SK—Teehan, J. N., 6 London Street, Dannevirke.
2SL—Earl, E. H., Karioi, Ohakune.
2SM—Jenkins, D. A., Riverside Drive, Lower Hutt.
2SN—Forsyth, S. K., Ward Street, Lower Hutt.
2SO—Alexander, B., 28 Konini Road, Wellington, E.2.
2SP—Langdale, C. C., 35 Adams Terrace, Wellington.
2SQ—Ford, H. W., 44 Jones Street, Wanganui.
2SS—Weaver, P. C., Whitehead Road, Hastings.
2ST—Carver, M. A., 196a Oriental Bay, Wellington.
2SU—Gould, C. J., 23 Lorne Street, Wellington.
2SV—O'Hara, C. H., 7 Barrack Street, Wanganui.
2SW—Nicholls, L. W., 6 Colombo Street, Palmerston North.
2SX—Bell, F. G., 111 Regent Street, Hawera.
2SY—Ensoll, J. R., c/o Public Works Department, Wanganui.
2SZ—Bolton, R., 51 Mantell Street, Wellington.
2TB—Rush, D. O., Mills Road, Eltham.
2TC—Page, B. R., Cook Street, Tolaga Bay.
2TD—Sullivan, W. G., 55 Alma Road, Wanganui.
2TE—Foster, E. M., Lighthouse, Farewell Spit.
2TF—Moffatt, F. A., 17 Turnbull Street, Wellington.
2TG—McGinty, F. G. J., 2 Highbury Crescent, Wellington:
2TH—Weenink, H., c/o Mrs. March, Korokoro, Petone.
2TI—Pipworth, A. G., 55 Wi Pere Street, Gisborne.
2TJ—Ambury, C. R., 133 Devon Street, New Plymouth.
2TK—Coleman, H. A., 25 Trafalgar Square, Nelson.
2TL—Jillings, M. A., c/o H. F. Cook, Te Aute Road, Havelock North.
2TM—Borthwick, E. S., 8 Glasgow Street, Wellington.
2TN—Alexander, K. G., 23 Coolidge St., Brooklyn, Wellington.
2TO—Read, G. C., Schoolhouse, Manutahi, Patea.
2TP—Borman, C. A., 3 Athol Crescent, Wellington, C.1.
2TQ—Miller, E. D. N., 5 View Road, South Haughton Bay, Welington.
2TR—Laurie, G., 2 Empire Street, Dannevirke.
2TS—Nixon, H. W. J. H., 58 Hobson Street, Wellington, N.1:
2TT—Farlen, J. L. F., 34 Normanby Street, Wellington.
2TU—McMillan, A. K., 17 Queen Street, Dannevirke.
2TV—Boyer, J. P., Bainham.
2TW—Cunliffe, A. J., 6 Taft Street, Brooklyn, Wellington.
2TX—Scanlon, V. A., Wingrove Factory, R.D., Stratford.
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2TZ—Alexander, C. J., 16 Hudson Street, Island Bay, Wellington.
2UA—Vickers, E. R., 43 Rotherham Terrace, Wellington.
2UB—Bunn, H. R. W., Turutura Road, Hawera.
2UC—Willis, B. G., Moki Road, Uruti.
2UD—Gamman, A. R., Pukahu, Hastings.
2UE—Williams, E. N., Rangiuru Road, Otaki.
2UF—Ludwig, M., 18 College Street, Masterton.
2UG—Riddle, W. C. M., 66 Calabar Road, Wellington, E.4.
2UH—Leslie, D. A., 122 Sheehan Street, Gisborne.
2UI—Cullen, J. J., Manuka Street, Nelson.
2UJ—Hanlon, R. K., 19 Torridon Street, Miramar, Wellington.
2UK—Murray, C. G., 10 Maire Street, Lower Hutt.
2UL—Bartlett, A. J. W., Matakitaki Road, Murchison.
2UM—Hollard, C. S., Stratford-Opunake Road, Rowan.
2UN—Hastings, W. A., 18 Georges Drive, Napier.
2UO—Cresswell, A. B., 143 Hobart Street, Wellington.
2UP—Louisson, G. M., 15 Alan Street, Palmerston North.
2UQ—Heyward, A. W. N., 92 Wexford Road, Wellington, E.3.
2UR—Trustrum, H. N. J., Post Office, Horopito.
2US—Gawn, J. E., 2 Lerwick Terrace, Kilburnie, Wellington E.3.
2UT—Parkinson, V., Aubrey Street, New Plymouth.
2XY—Collier and Beale, Ltd., 66 Ghuznee Street, Wellington.

Canterbury.

3AB—Evans, L. C., 77 Ayers Street, Rangiora.
3AC—Laugeson, N. W., 73 Bexley Street, Christchurch, N.1.
3AD—Banwell, C. J., 9 Chelsea Street, Linwood.
3AE—Lawson, H. C., 119 Canon St., St. Albans, Christchurch.
3AF—Sandford, G. C., Moncks Spur, Redcliffs.
3AG—Byrne, L. J., 14 Bretts Road, Ashburton.
3AH—Courtis, H. B., 69 Grey Road, Timaru.
3AI—Strachan, J. E., East Belt, Rangiora.
3AJ—Blake, R. G. F., South Belt, Rangiora.
3AK—Lane, S. W., 19 Bridle Path Road, Lyttleton.
3AL—Beattie, G. C., 66 Ashley Street, Rangiora.
3AM—Kirk, R. E., 263 Kilmore Street, Christchurch.
3AO—Souper, Mrs. T. M., 66 Mersey Street, Christchurch.
3AP—Tomlinson, H. C., Motunau.
3AQ—Lovett, V. P., 130 Alford Forest Road, Ashburton.
3AR—Buchanan, D. W., 74 Wills Street, Ashburton.
3AS—Copp, L. F., 2 North Avon Road, Christchurch, S.1.
3AT—Marquet, L. J., 46 Shakespeare Road, Christchurch.
3AU—Byrne, J. L., 6 Theodocia Street, Timaru.
3AW—Gilbert, G. R., 48 Queen Street, Westport.
3AX—Earland, F. P., 1 Hamilton Street, Christchurch.
3AY—Mason, G. E., Hawarden.
3AZ—Stanton, R., 17 Martin Avenue, Beckenham.
3BC—Harrison, J., Scargill.
3BD—Vincent, H. F., George Street, Waimate.
3BE—Boys' High School (Mr. H. E. Dyer, Master in charge), Straven Road, Riccarton.
3BF—Prince, E., 76 Cobham Street, Christchurch.
3BG—Hurrell, L. W., 480 Cashel Street, Christchurch.
3BJ—Hunter, L. C., 62 Colombo Street, Christchurch.
3BK—Danks, T. L., 27 Cashel Street, Christchurch.
3BL—Askey, G., 15 Sarah Street, Timaru.
3BM—Cook, D., 125 Opawa Road, Christchurch.
3BN—Field, N. A., 16 Campbell Street, Timaru.
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3BP—Merrin, F. E., 148 Ensor's Road, Christchurch.
3BR—Savage, V., 70 Wildberry Street, Christchurch.
3BS—Rose, W. C., 39 Heywood Terrace, Christchurch, N.E.1.
3BT—Smith, W. L., Ludstone Estate, Karkowra.
3BU—Docherty, W., Ward Street, Runanga.
3BV—Schaef, L. M., Marsden Road, Greymouth.
3BW—O'Connell, F. A., 77 Ferry Road, Christchurch.
3BY—Whitely, A. J., 15 Lonsdale Street, New Brighton, Chch.
3BZ—Jackson, W. H., Raukapuka, Geraldine.
3CA—Hughes, C. A., 149 Huxley Street, Christchurch.
3CC—Elliott, J. B., 25 Frankleigh Street, Christchurch.
3CE—Henderson, B. G., 100 Rugby Street, Christchurch.
3CF—Simpson, A. E. H., 99 Abberley Road, Christchurch.
3CG—Brown, H. P. V., 10 Merivale Lane, Christchurch.
3CH—McKnight, S., 8 Dover Street, St. Albans, Christchurch.
3CI—Mulholland, F. S. T., 189 Bligh's Road, Christchurch.
3CJ—Hanan, A. E. S., Beverley Road, Timaru.
3CK—Shipley, E. G., 2 Puriri Street, Riccarton.
3CL—Gerity, L. P., 20 Fitzgerald St., St. Albans, Christchurch.
3CO—Seton, G., Kellaway, Waikari.

3CP—Parton, C. W., 69 Hackthorne Road, Cashmere, Chch.
3CS—Hill, J., 178 Church Street, Timaru.
3CT—Tabley, J. R., 113 Milton Street, Christchurch.
3CU—Schofield, S., Akaroa Heads Lighthouse.
3CV—Gilligan, S. J., Ranfurly Street, Runanga.
3CW—West Coast Radio Society, Greymouth.
3CX—Stewart, J. D., 112 Alford Forest Road, Ashburton.
3CY—Hughes, W., 190 Waltham Road, Christchurch.
3CZ—Rose, F. L., 39 Heywood Terrace, Christchurch, N.E.1.
3DA—Perrott, R. W., 24 Innes Road, Christchurch, N.W.2.
3DB—Marks, S., 35 Haast Street, Christchurch.
3DC—Travis, E. H., 43 Papanui Road Christchurch.
3DD—Lemin, A., 104 High Street, Greymouth.
3DE—Dale, K. W., Maungaiti, Timaru.
3DF—Morgan, H. W., c/o H. Pilbrow, Midlands, Oxford.
3DG—Clayton, B. T., 58 Stewart Street, Christchurch.
3DH—McBryde, A. W. I., 70 Frank Street, Christchurch, N.W.2.
3DI—Taylor, K., 10 Norton Street, New Brighton.
3DJ—Walter, F. W., 89 Briggs Road, Mairhau, Christchurch.
3DK—Holmes, C. E., 74 Wychbury Street, Christchurch.
3DL—Smith, P. O., 8 Victoria Street, Christchurch.
3DM—Calbert, R., 99 Hinau Street, Christchurch, W.1.
3DN—Reynolds, E., Cox Street, Ashburton.
3DO—Hunter, R. P., 30 Randall Street, Christchurch.
3DP—Sweeney, A. P. H., 192 Moorhouse Avenue, Christchurch.
3DQ—Goldsborough, R. F., 371 Hereford Street, Christchurch.
3DR—Hullett, E. W., 259 Fitzgerald Avenue, Christchurch.
3DS—Farquhar, A. J., Mount Hutt R.M.D., Rakaia.
3DT—Thompson, J. T., Good Street, Rangiora.
3DU—Wilson, V. J., 33 Rosebery Street, Christchurch.
3DV—Zohrab, C. E., 18 Aitken Street, Ashburton.
3DX—Ripley, R. H., 52 Hopkins Street, Christchurch.
3DY—Firman, H. V., Wilson Street, Geraldine,
3FA—Gates, T., 48 Diamond Avenue, Christchurch,
3FB—Freeman, J. F., Linwood Avenue, Christchurch.
3FC—Guthrie, M. W., 32 Westminster Street, St. Albans, Chch.
3FD—Wilmott, S. V., 146 Jubilee Avenue, North Brighton.
3FE—Ellwood, M. H. G., 89 Westminster Street, Christchurch.
3FF—Turner, C. H., 19 Bealey Avenue, Christchurch.
3FG—Wickham, L. M., Arney Street, Greymouth.
3FH—Mail, L. C., Dr., Wilson Street, Geraldine.
3FI—Roscoe, J. H., 4 Saltaire Street, North Brighton.
3FJ—Robinson, V. E., 21 Queen's Avenue, Christchurch.
3FK—Hepburn, L. D., 247 Fifield Terrace, Christchurch.
3FL—George, A. B. W., 16 Stafford Street, Riccarton.
3FM—Knowles, J. H., 171 River Road, Christchurch.
3FN—Hartnett, D. P., Peel Street, Cobden, Greymouth,
3FO—Blackmore, W. V., Northbrook Road, Rangiora.
3FP—Reid, J. A. M., 3 Cain Street, Timaru.
3FQ—Walker, E. M., 50 Jerrold Street, Christchurch.
3FR—Lilly, C. P., 173 Bealey Avenue, Christchurch.
3FS—Smith, D. A. F., 106 Bletsoe Avenue, Christchurch.
3FT—Cunnold, C. D., 80 Church Street, Timaru.
3FU—Wilson, S. A., Pigeon Bay.
3FV—McCracken, W. D., 18 Whiteleigh Avenue, Addington, Christchurch.
3FY—Evans, L. C., 64 Ryan Street, Linwood.
3FZ—Gledhill, A. F., 43 Severn Street, St. Albans, Chch.
3GA—Gale, W. T., 113 Petrie Street, Christchurch.
3GC—Perry, W. J., Wild Street, Hokitika.
3GD—Kingan, S. G., Mayfield.
3GE—Isaacs, N., 5 Wai-iti Road, Timaru.
3GF—Timaru Boys High School (A. G. Tait), Timaru.
3GG—Roberts, C., Dobson, Brunnerton.
3GH—Voss, C. H. J., Willowbridge, Waimate.
3GI—Ballantyne, C. T., 26 Nelson Terrace, Timaru.
3GJ—Hall, T. R., 25 Ilam Road, Reccarton, Christchurch.
3GK—Jacobs, F. J., 25 Bordesley Street, Linwood, Christchurch.
3GL—Keast, T. J., Lincoln.
3GM—Andrews, R. A., 304 Gloucester Street, Christchurch.
3GN—Dacombe, A. M., 186 Page's Road, Bromley, Christchurch
3GP—Eddy, A. W., Lake Road, Irwell, Christchurch.
3GQ—Gee, F., 25 Roslyn Terrace, Timaru.
3GR—Rowe, R. H., "The School," Springbank, St. Andrews,
3GS—Nelson, M. H., 19 Pratt Street, New Brighton, Chch.
3GU—Keys, J. R., 60 Huxley Street, Sydenham, Christchurch.
3GV—Edwards, W. G., 89 Domain Terrace, Spreydon, Chch.
3GW—Gourley, A. R., McDonald Street, Methven.
3GX—Barbour, W. F., 8 Templar Street, Avonside, Chch.
3GZ—Berry, A. E., 18 Marlborough Street, Linwood, Chch.
3HA—Arnold, H. F., 165 Ollivier's Road, Christchurch.
3HB—N.Z. DX Radio Assn. (Inc.), Christchurch, N.1.
3HD—Johnson, L. E. C., 57 Francis Avenue, Christchurch.
3HF—Robb, C. M., 195 Bealey Avenue, Christchurch.
3HG—Naylor, L. W., cnr. Peal and Rintoul Streets, Westport.
3HH—Griffin, R. J., Trevor's Road, Ashburton.
3HI—Hepburn, K. A., 104 Oxford Street, Ashburton.
3HJ—Steel, J., Otira.
3HK—Harvey, P. R., 6 Windsor Terrace, Christchurch.
3HL—Clutterbuck, E. W., St. Albans Fire Station, Christchurch.
3HM—Evans, C. E., 3 Drain Road, Fernside, Rangiora.
3HN—Bray, A. C., 108 Tancred Street, Ashburton.
3HO—Philpott, E. C., 127 Westminster Street, Christchurch.
3HP—Hildebrand, D. E., Seddon Terrace, Runanga.
3HQ—Rodda, C. A., 71 Springfield Road, Christchurch.
3HS—Holmes, R. G., 124 Nayland Street, Sumner, Christchurch.
3HT—Shrimpton, S. A., 44 Beverley Road, Timaru.
3HU—Lawn, C. R., Pareora East, Timaru.
3HV—Johnson, J. F. L., 3 Poulson Street, Addington, Chch.
3HW—Stringleman, Miss M., 28 Konini St., Riccarton, Chch.
3HX—Perkins, H. T., Fire Stations, Woolston, Christchurch.
3HY—Watkins, E. C. K., 174 Baker St., New Brighton, Chch.
3HZ—North Beach Rover Scouts Radio Society, 23 Berry St., North Beach, Christchurch.
3IA—Langrope, S. J., William Street, Akaroa.
3IB—Higgs, R. B., Charles Street, Kaiapoi.
3IC—McCulloch, I. A. G., 38 Retreat Street, Christchurch.
3ID—Pettigrew, W. L., 281 Fitzgerald Avenue, Christchurch.
3IE—Hopkinson, L. G., Fraser Street, Temuka.
3IF—Higgins, H. E., Gresson Street, Greymouth.
3IG—Buchanan, D. W., Blandswood, Peel Forest.
3IH—Cocksedge, Lavand Street, Akaroa.
3II—Rowe, I. S., 80 Epsom Road, Sockburn, Christchurch, W.2.
3IJ—Addison, R. H., 430 Montreal Street, Christchurch, C.1.
3JA—Rowe, H. J., Southbridge,
3JB—Burtenshaw, J. W., Thornycroft Street, Fendalton, Chch.
3JC—Millard, H. W., 29 Weka Street, Christchurch.
3JD—Lyes, A. E., 155 King Street, Christchurch.
3JE—Fechney, C. E., Rose Hill, Methven.
3JF—Henderson, H. P., 201 Fitzgerald Street, Christchurch.
3JG—Gibbs, J. R., Wigram Aerodrome, Sockburn.
3JI—Hart, J. D., 31 High Street, Greymouth.
3JJ—Lowry, T. N., 95 Osborne Terrace, North Brighton. Chch.
3JK—Elliot, L. A., 40 May's Road, St. Albans, Christchurch.
3JL—Mason, G. F., 14 Hillview Street, Christchurch, E.1.
3JM—White, D. V. B. P., 27 St. Martin's Road, Christchurch.
3JN—Ashby, D. H., Princess Street, Waimate.
3JP—Langley, E. W., 136 Huxley Street, Christchurch.
3JR—Stuart, J. A., 127 Innes Road, Christchurch.
3JS—Pruden, H. C. L., 89 Retreat Road, Christchurch, N.E.1.
3JT—Birbeck, D. H., 435 Barbadoes Street, Christchurch.
3JU—Anderson, D. W., 105 Office Rd., St. Albans, Christchurch.
3JV—Hill, R. S., Dunsandel.
3JW—Anderson, R. A., 262 Lincoln Road, Addington, Chch.
3JX—Rowlands, T. E., R.M.D., Kaiapoi.
3JY—Maguire, Rev. J., 136 Barbadoes Street, Christchurch.
3JZ—West Christchurch District High School, Hagley Avenue, Christchurch.
3KA—Slack, E. J., 60 Peel Street, Westport.
3KB—Burch, J. R., 256 Fitzgerald Avenue, Christchurch.
3KC—Davey, W. E., St. Andrews.
3KE—McGrath, R. E., 183 Richmond Terrace, New Brighton, Christchurch.
3KF—Pettitt, E. R., High School, Methven.
3KG—Billson, G. E., Jun., 75 Gardiner's Road, Harewood, Chch.
3KH—Service, W. J., 25 Ilam Road, Riccarton, Christchurch.
3KJ—Rogers, K. J., 75 Frankleigh Street, Christhcurch.
3KK—Lublow, H. H., 16 London Stret, Lyttleton,

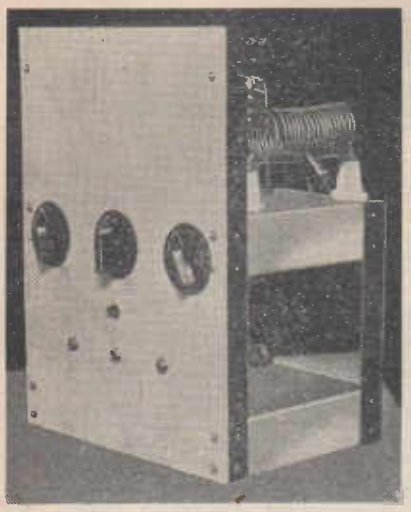
3KM—Woodfield, R. T., 44 Canon Street, Christchurch, N.1.
3KO—Lindsay, R. H., 170 Durham Street, Christchurch, S.1.
3KP—Green, K. D., 24 Severn Street, Christchurch, N.1.
3KR—Cox, R. C., 66 Neville Street, Christchurch.
3KU—Condon, W. J., Adderley Head, Lyttleton.
3KV—Duxbury, T. A., Pigeon Bay.
3KW—Phillips, A. S., Duvauchelle.
3KX—Heslop, G. W., 17 Kitchener Square, Timaru.
3KY—Talbot, A. D., Pleasant Point.
3KZ—Eadie, J. M., 28 High Street, Greymouth.
3XB—Canterbury University College, Hereford Street, Chch.

Otago.

4AA—Bell, F. D., Waihemo (Shag Valley Station).
4AB—Hunt, P. W., Joseph Street, Gore.
4AC—Robinson, R. E., 3 Chetham Avenue, Dunedin.
4AD—Jordan, A. E., 41 Venus Street, Invercargill.
4AE—Brown, G. E., Ardwick Street, Gore.
4AF—Strachan, J. M., 2 Lawrence Street, Gore.
4AG—Homer, H. L., Cromwell.
4AH—O'Grady, F. J., Dunedin.
4AI—Shore, K. H., 22 Helena Street, Dunedin.
4AJ—Austin, H. W., 443 Leith Street, Dunedin.
4AK—Hobbs, J. H., Lighthouse, Puysegar Point.
4AL—Grubb, A. H. McL., Gore.
4AM—Gibb, L., Luggate, Otago.
4AN—Clayton, B. T., 85 Alice Street, Invercargill.
4AP—Stroud, L. B., 118 Stafford Street, Dunedin, C.2.
4AO—Shrimpton, H. N., 17 Cliff's Road, St. Clair, Dunedin.
4AQ—Edgar, G. T., 24 Pine Hill Road, Dunedin.
4AR—Natta, H. W., 41 Richardson Street, St. Kilda, Dunedin.
4AS—Morris, C. C., 17 Hope Street, Dunedin.
4AT—Stone, J., 34 Grove Street, St. Kilda, Dunedin.
4AU—Gerkin, G. D., Knapdale.
4AV—Milnes, J. L., 9 Warden Street, Opoho, Dunedin.
4AW—Head, A. W., Radio Station, Awarua.
4AX—Halcrow, L. A., c/o National Broadcasting Service, Highcliffe, Dunedin.
4AY—Budd, L. W., 11 Agnes Street, Mornington, Dunedin.
4AZ—Sidey, T. K. S., Tolcarne Avenue, Dunedin, N.W.1.
4BA—Smith, J. G., 7 Crosby Street, Dunedin.
4BB—Smith, W, T., 10a Alva Street, Dunedin.
4BC—Ferris, J. L., Alexandra.
4BD—Swann, A., 27 Oakland Street, Dunedin, E.1.
4BE—Shepherd, N. H., 31 Warden St., N.E. Valley Dunedin.
4BF—Smith, L., 24 Mitchell Street, Invercargill.
4BG—Marshall, W., 24 Cutten Street, St. Kilda, Dunedin.
4BH—Motion, R., 13 St. Heliers Street, Caversham, Dunedin.
4BI—Hitchcock, S. R., 63 Hunt St., Anderson's Bay, Dunedin.
4BJ—Cameron, E. P., 44 Cargill Street, Dunedin.
4BK—McDonald, N. M., Railway Station, Roxburgh.
4BN—Middlemiss, T. C., c/o Majestic Mansions, St. Clair, Dunedin.
4BO—Richardson, A., Lighthouse, Cape Saunders.
4BP—Collett, W. G., 40 Cargill Street, Dunedin.
4BQ—Frame, F. E., 251 Melbourne Street, Dunedin.
4BR—Thomson, H. G., 6 Albion Street, Mataura.
4BS—Burnby, L. A., Waikaka Valley, Gore.
4BU—Cook, R. W., 61 Shetland Street, Dunedin.
4BV—McConnell, J. R., 157 Tweed Street, Invercargill.
4BY—Winefield, J. W., 5 Dundas Street, Dunedin.
4BZ—Masterton, D., 40 Brighton Street, Dunedin.
4CA—Harris, A. R., 52 Peter Street, Dunedin.
4CB—Callender, H. A., 54 Brougham Street, Gore.
4CD—Sims, F. A., 169 Anderson's Bay Road, Dunedin.
4CE—Searle, J. H., 193 Ettrick Street, Invercargill.
4CH—Hyndman, A. W., Milford Sound.
4CF—McLaren, A. D., 36 Driver St., St. Kilda, Dunedin, E.1.
4CG—Boyens, R. O., 92 Duke Street, Invercargill.
4CI—Stewart, R. D., 59 Easther Crescent, Kew, Dunedin.
4CJ—Jupp, H., 36 Pitcairn Street, Dunedin.
4CK—Self, W. F., 12 School Street, Roslyn.
4CL—Cameron, M. E., 102 Princess Street, Dunedin.
4CM—Mathie, M. A., 16 Rother Street, Oamaru.
4CN—Peterson, A. McN., 148 Melbourne Street, Dunedin.
4CO—Crocker, A. V., 34 Chalmer Street, Oamaru.
4CP—Edginton, P. K. S., Henderson Street, Bluff.
4CR—Johnstone, M. O., Balclutha.
4CS—Wilkinson, A. R., 158 Main Street, Gore.
4CT—Allen, J., 52 Prince Albert Road, Dunedin.
4CU—McEwan, D. M. R., 20 Mitchell Street, Invercargill.
4CV—Wareham, A., c/o 4YA, Dunedin.
4CW—Leckie, J. C., 29 John Street, Dunedin.
4CX—Warbuton, Mrs. N. O., c/o McFarlane, North Balclutha.
4CY—Morrison, E. C., 24 Elm Road, Dunedin, C.2.
4DA—Warren, B. C., 595 George Street, Dunedin.
4DB—Barron, K. H., 48 Queen Street, Dunedin.
4DD—Sergeant, G. W., Kurow.
4DG—Gilchrist, N. C., Waiareka Junction, Oamaru.
4DH—Hanlon, A. C., 16 Pitt Street, Dunedin.
4DI—Shepherd, D. A. C., 4 Bellknowes Terrace, Dunedin.
4DJ—Austin, A. J., Riversdale.
4DK—Hunter, S. T., 75 Herbert Street, Invercargill.
4DL—Leslie, A. J., 268 High Street, Dunedin, C.1.
4DM—Wylie, W. H., Arthur Street, Oamaru.
4DN—McBryde, A. W. I., 128 Tennyson Street, Dunedin.
4DO—Fookes, A. C. L., P.W. Department, Lauder.
4DP—Grant, J., Otiaike.
4DQ—Hamilton, W. R., 50 Islington Street, Dunedin.
4DR—Mutch, J. R., Ann Street, Bluff.
4DS—Renton, B., Inchclutha.
4DT—Kirby, Miss K., 40 Cargill Street, Dunedin.
4DU—Wilson, D., 10 Douglas Street, St. Kilda, Dunedin.
4DV—Simpson, J. W. N., Central Fire Station, Invercargill.
4DW—Wallace, A., Radio Station, Awarua.
4DX—Taylor, W. R., 12 Nottingham Crescent, Dunedin.
4FA—Miles, T. H., Murchinson Street, Dunedin.
4FB—Gardner, H. F., 7 Bellevue Street, Roslyn Dunedin.
4FC—Johnson, J., 48 Fulton Street, Invercargill.
4FD—Denford, F., 16 John Street, Caversham, Dunedin.
4FE—Kennedy, G. R., School, Waimahaka.
4FG—Ellis, C. A., 319 Herbert Street, Invercargill.
4FH—Freeman, C. H., 29 Ravenswood Rd., St. Clair, Dunedin.
4FI—Gault, J. H., 77 Spottiswoode Street, Dunedin.
4FK—Dodds, R. B., 110 St. David Street, Dunedin, N.1.
4FL—Jocelyn, J. N., Bannockburn.
4FM—Shave, P. G., 23 Coquet Street, Oamaru.
4FO—Hudson, S. T., 30 Tweed Street, Roslyn, Dunedin.
4FQ—Nichol, L. A., Bank of New Zealand, Otautau.
4FR—Howard, J. G., 24 Erin Street, Dunedin.
4FS—Clark, P., Main Road, St. Leonards, Dunedin.
4FT—Mitchell, G. L., 36 Roseberry St., Belleknowes, Dunedin.
4FW—Phillips, R. D., 60 Royal Terrace, Dunedin.
4FY—Brain, E. R., Waipounamu, R.D., Gore.
4FZ—Findlay, C. S., 54 Russell Street, Dunedin.
4GB—Chapman, M., Rosebank, Balclutha.
4GC—Hayward, A. S., Balclutha.
4GE—Anderson, G. A., Thornbury,
4GF—Borthwick, 62 Cutten Street, Dunedin. S.1.
4GG—Boddy, H. W., 64 Belgrave Crescent, Dunedin.
4GI—Burnby, J. C., Gore-Ferndale R.D., Gore.
4GK—Kitto, R. G., 106 Bowmont Street,, Invercargill.
4GM—Jackson, D. D., 46 Islington Street, Invercargill.
4GN—Baird, W. C., 56 Arthur Street, Invercargill.
4GQ—Collett, D. H., 4 Severn Street, Oamaru.
4GR—Ridgwell, G. S., Stirling.
4GS—Graham, E. J. W., 317 Yarrow Street, Invercargill.
4GT—Bowden, J. R. W., Gordon Road, Mosgiel.
4GV—Broom, F. E., Radio Station, Awarua.
4GX—Sutton, H., 63 Dublin Street, Invercargill.
4GY—Brown, E. E. A., 471 George Street, Dunedin.
4GZ—Applegarth, G., 29 Rawhiti St., Andersons Bay, Dunedin.
4HF—Hazlett, F., 100 Melbourne Street, Invercargill.
4XO—Otago University College, Dunedin.

Cook Islands.

ZKIAB—Wood, E. J., Titikaveka, Rarotonga.
ZK2AA—Lonsdale, J., Radio Station, Niue.



The completed transmitter, though inexpensive to build, has a neat, professional appearance.

A Two-Band Crystal-Controlled Transmitter . . . .

A simple and compact rack-and-panel transmitter using a 53 as combined crystal oscillator and doubler, driving a 6P6. Designed for operation on the 20 and 40-metre amateur bands. Designed and described . . .

By VK2QX.

A FEW years ago, the average transmitter used by the newcomer to the amateur ranks was usually one of the conventional types of self-excited rigs, by means of which the new "ham" gained his early experience in the field of radio transmission. To-day, however, conditions are decidedly different. The considerable increase in the number of active amateurs means more congested wave-bands, with a consequent demand for transmitters of greater stability.

Ideal For Newcomers.

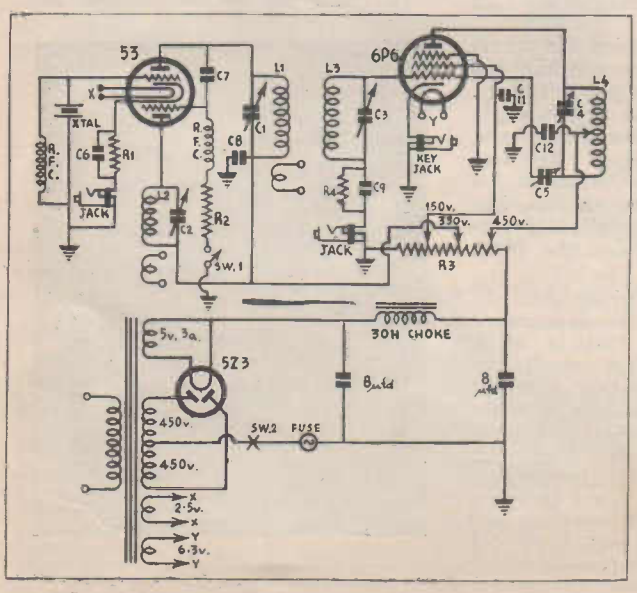
The object in presenting full constructional details of the transmitter featured in this article is twofold. Firstly, it is cheap and simple to build, and should prove ideal for new "hams" who are desirous of high efficiency. Secondly, the actual space occupied is so very small that the transmitter could be located conveniently in any room in the house, without any objection from domestic sources.

In a large number of cases, exception is taken by lady members of the household to the usual type of haywire "ham" gear, but this transmitter, used with a compact receiver, would occupy but a few square feet of space, and will provide results equal to many of the multi-stage line-ups. In fact, it was constructed by the writer and VK2QP for VK2XM (now VK4XM) who, being transferred to Queensland for business reasons, required very compact apparatus for installation at a guest house at Cairns.

Circuit Uses 53 And 6P6.

The circuit is practically identical with that as described by 2CP in the September and October issues of "Radio World," but it is anticipated that numerous readers will appreciate full constructional details of a transmitter of this type.

A 53 twin-triode valve is used as crystal-oscillator-doubler, driving a 6P6. A 40-metre crystal is used across the first grid of the 53, the first plate output being tuned to 40 metres. For 20-metre operation capacity coupling is used between plate No. 1 and grid No. 2 by means of the condenser C7, plate coil L2 being tuned to 20 metres. Link coupling



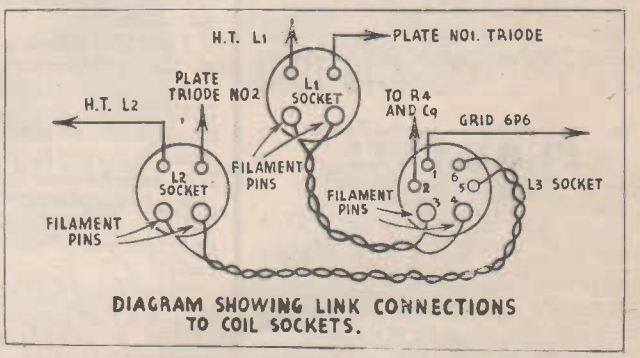


Fig. 1 (Left)—The circuit:—C1 and C2, 17-plate midgets; C3 and C4, 11-plate midgets; C5, 5-plate midget; C6-8-9-11-12, .01 mfd.; C7, .00005 mfd.; C10, .0001 mfd.; R1, 400 ohms; R2, 50,000 ohms; R3, 25,000-ohm voltage divider; R4, 30,000 ohms; S.W.1, toggle switch: S.W.2, toggle switch to break H.T.

Fig. 2 (Above) shows the link connections to the coil sockets.

Two-Band Crystal-Controlled Transmitter

LIST OF PARTS

1—power transformer, 450v., C.T., 450v., 2.5v., 2a., 6.3v., 2a., 5v., 3a. (Radiokes).
1—150 mill. filter choke (Radiokes).
2—aluminium chassis, 12in. x 8 in. x 2¼in.
2—pieces angle iron 11in. x 1in. x ⅛in., or aluminium.
2—pieces angle iron 16in. x 1in. x ⅛in., or aluminium.
1—Tylux panel 17in. x 12½in. (aluminium or bakelite may be used).
3—4-pin sub-panel sockets.
2—6-pin sub-panel sockets.
1—7-pin sub-panel sockets.
(All sockets porcelain or isolantite for preference.)
2—stand-off insulators.
2—6-pin coil formers.
2—4-pin coil formers.
2—17-plate midget condensers (Radiokes, Raymart).
2—11-plate midget condensers (Radiokes, Raymart).
1—5-plate midget condensers (Radiokes, Raymart).
3—closed circuit jacks.
2—small toggle switches.
3—pointer dials with graduated scales.
1—bakelite knob or dial.
1—40-metre crystal and holder.

FIXED CONDENSERS.
1—.00005 mfd. mica (Solar).
1—.0001 mfd. mica (Solar).
5—.01 mfd. tubulars (Solar).
2—8 mfd. wet electrolytics, 600v. working (Solar).

FIXED RESISTORS.
1—30,000 ohm resistor, 1-watt (Bradley).
1—50,000 ohm resistor, 1-watt (Bradley).
1—400 ohm, 20 m.a. resistor (Radiokes).
1—25,000 ohm voltage divider (Radiokes).

VALVES.
1—6P6 (Radiotron).
1—53, 1—5Z3 or 80 (Radiotron, Ken-Rad, Raytheon, Philips, Mullard).

MISCELLANEOUS.
1—grid clip; 1—alligator clip for p.a. tank coil; 6 doz. 1in. x ⅛in. nickel bolts and nuts; 6 doz. spring washers to fit ⅛in. bolts; 1 doz. nickel washers; 5 pieces of bakelite 3in. x 2in. for insulated condenser mountings; 1—6-volt .1 amp. pilot lamp and fuse socket; ¼lb. 20-gauge d.c.c. wire; 16 feet 10-gauge bare copper wire; small quantity 36-gauge d.s.c. wire, 6in. length 2½in. former; power flex; sundry hook-up wire.

is used between L2 plate coil and the grid coil of the 6P6, both the grid coil (L3) and the plate output coil (L4) being tuned to 20 metres.

For use on 40 metres the operation is as follows:— L2 is removed and Sw. 1 is opened. This removes the plate voltage from the second triode of the 53, as this portion of the valve is not required for 40-metre operation. In this case the first plate output of the 53 is tuned to 40 metres as before, link coupling being used between L1 and L3. L3 and L4 are, of course, tuned to 40 metres.

Assembly And Wiring.

Two aluminium chassis 12in. x 8in. x 2¼in. are used, mounted one above the other and supported by 1in. x ⅛in. angle irons. For those who may find difficulty in obtaining angle iron, ordinary aluminium may be used in its place.

The top chassis contains the whole of the transmitter proper, while the lower one contains the power supply. Both chassis are bolted to the angle irons with small machine bolts and make a perfectly rigid job. The two rear angle irons finish flush with the top of the transmitter chassis, but the two front irons are slightly longer, and serve to support the front panel.

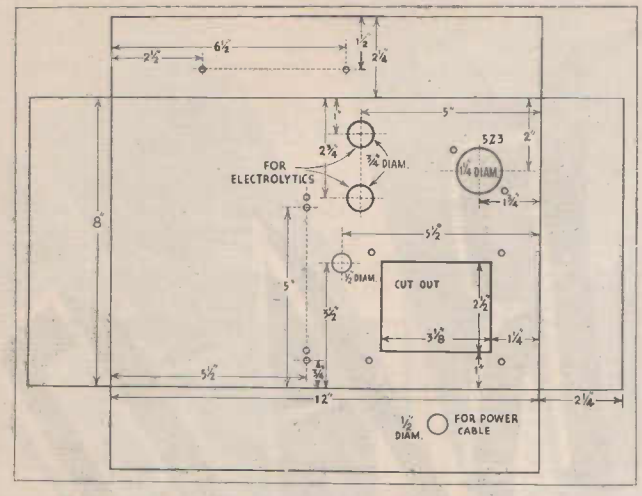
This front panel (which contributes a great deal to the appearance of the finished set) consists of a piece of Hardy's Tylux, which can be obtained from dealers specialising in supplying amateur requirements. This material is not only very reasonable in price, but different colours are available to suit individual tastes. Care must be exercised in cutting this material, as it is soft and tends to chip at the edges. A hacksaw blade was found quite suitable for the process.

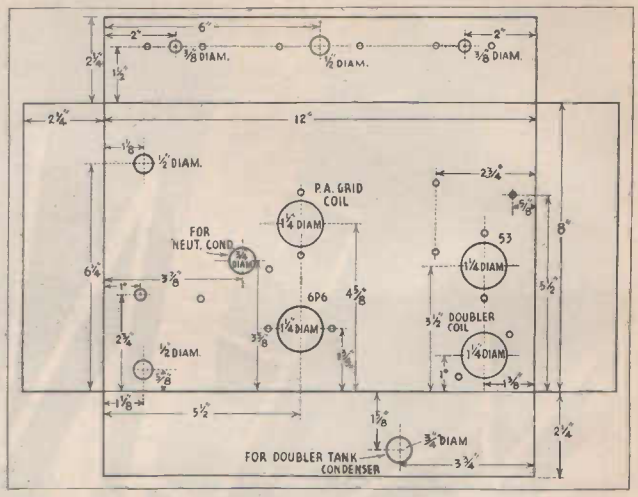
The dials, which lend a commercial appearance to the transmitter, are Australian made, and are obtainable from Price's Radio for about 2/- each. Nickel-plated washers are used on these bolts which of necessity must pass through the front of the panel, so as to maintain neat appearance.

The coils are mounted as far apart as possible, the oscillator coil being placed beneath the chassis and mounted in an inverted position. Looking down on the transmitter from the rear (Fig. 4) the crystal holder is on the extreme right front, the oscillator coil being directly beneath it. Next is the 53, and at the back is the doubler coil, while to the left is the power amplifier grid coil and the 6P6.

The tank coil on the extreme left

A rear view, showing the layout.



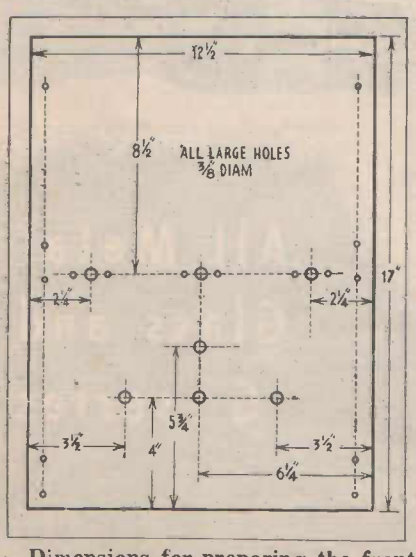


Details for stamping and drilling the power-supply chassis are given on the left (Fig. 3), while the sketch on the right (Fig. 4), gives the layout of the transmitter chassis.

is supported well away from the metal chassis by means of two stand-off insulators. The neutralizing condenser is mounted underneath the chassis, with the shaft protruding through the top between the 6P6 and the tank coil.

Identifying The Controls

The front panel controls from left to right are as follows:—oscillator tank condenser, power amplifier grid condenser and power amplifier tank condenser. The doubler tank condenser is mounted at the back next to the coil it tunes. All tuning condensers are mounted on small pieces of bakelite, the holes through the panel and chassis being sufficiently large to allow the shafts to pass through without touching. Good midget condensers are recommended for the tuning.



Dimensions for preparing the front panel are given above.

The small switch below the centre tuning control is connected in the grid circuit of triode grid No. 2, and is used when changing bands. The three jacks below the controls are as follows:—total plate current of 53, grid current of 6P6, and keying jack. A milliammeter could be mounted on the panel if desired, and would probably improve the appearance. A flexible lead with a plug attached could be used to take a reading from any one of the three jacks.

Care should be taken in the layout of the transmitter, all plate and grid leads being kept as short as possible. All the wiring except the few leads to the power supply is completed before the top chassis is mounted.

The Power Supply.

The lower chassis contains the entire power supply, with power transformer, electrolytic condensers, rectifier and voltage divider mounted on top, while the filter choke and fuse are mounted underneath. A hole is drilled at the back of the chassis and fitted with a rubber bushing in order to pass through the power cord.

A small toggle switch is fitted in the H.T. centre tap so as to break the high voltage when changing over to receiver, but to leave the heaters of the valves running, so as to eliminate delay when switching over to transmit. This switch is not shown on the actual tansmitter as it was intended to have it mounted on the table near the key, with a flexible lead running to the transmitter which was to be located several feet away from the operating table.

The voltage for the plates of the 53 is tapped off the voltage divider, and should be about 350 volts. The screen voltage for the 6P6 should be about 150 volts, tapped off in the same manner. The voltage divider should be of the heavy duty type.

For 'Phone Operation.

Details of a suitable modulator were given in the October issue of "Radio World," so that it is not intended to cover the telephony portion in this article.

In any case new "bams" are not permitted to operate on telephony untill they have been on the air for a period of 6 months on C.W. By this time they would have acquired sufficient knowledge to incorporate their own ideas for suitable modulation and other improvements.

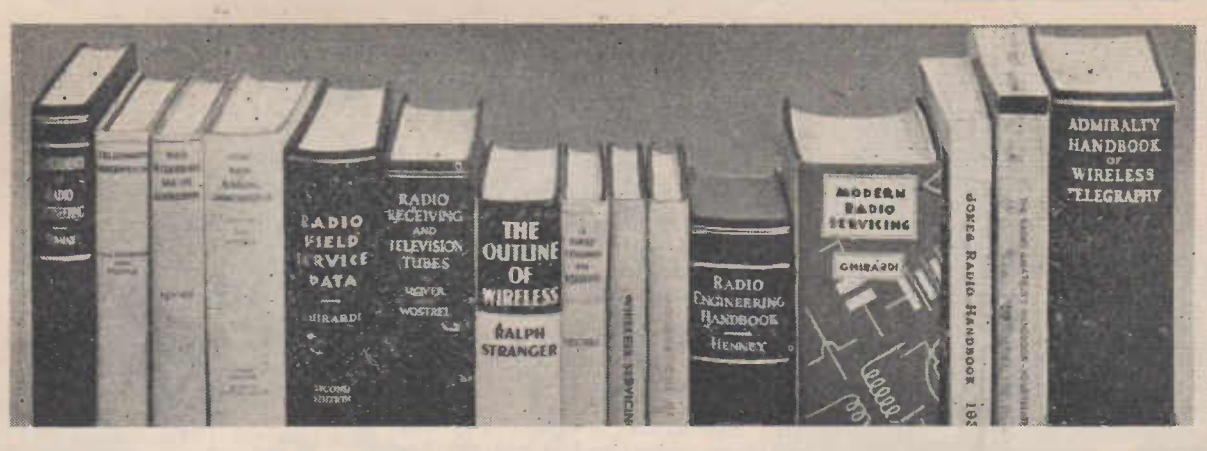
Tuning And Adjustments.

The actual tuning should not require much explanation, but it is suggested that the transmitter be tried first on 40 metres, leaving out coil L2.

Providing everything has been wired up correctly, no difficulty should be experienced in tuning L1 to resonance with the crystal. This will be indicated by a "dip" in the meter, which may be plugged into the first jack, or else by holding the

A Warning To Readers.

It is desired to point out that before a person may be in possession of apparatus capable of emitting a signal, he must at least be the holder of an experimenter's licence. Failure to comply with this law renders the offender liable to prosecution, which may debar him from ever holding such a licence.



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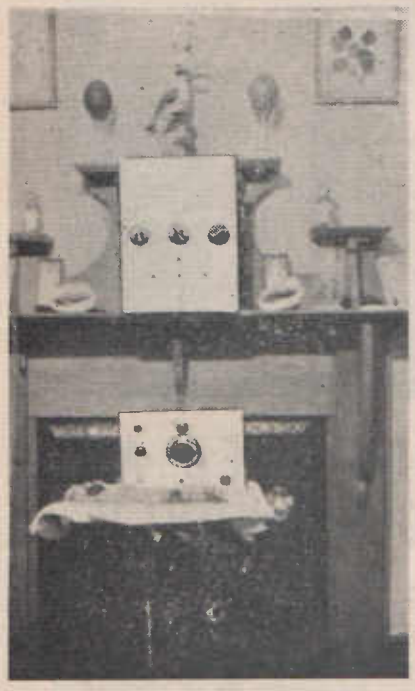


The photograph illustrates the compactness of the transmitter, and the small amount of operating space needed for a complete rig.

conventional loop and pea lamp around the coil.

L3 is then tuned to resonance, and finally L4. For 20 metres, L2 is plugged in and condenser C2 rotated until the circuit is tuned to the 20-metre harmonic. L3 is changed, and tuned as before, and finally L4.

A suitable position is tapped off on coil L4, so that neutralization may be effected by rotating condenser C5. No difficulty should be experienced in neutralizing the 6P6.

Aerial System.

The transmitter was originally designed to operate from a single-wire tapped hertz antenna, clipped on to the tank coil through a fixed condenser. However, it may be adapted to any other type of antenna, as it would be quite a simple matter to mount an aerial coil in the field of the tank coil.

In conclusion, if there are any points on which readers are not too clear with respect to the construction of the transmitter, information will be gladly supplied by the writer or 2QP, or where possible, by any transmitting member of the Lakemba Radio Club, a complete list of whom is published elsewhere in this issue.

Coil Data.

40 metres.

L1, 19 t. (on 4-pin former)
L3, 14 t. (on 6-pin former)
L4, 22 t. (self supporting)

The link coil is wired to pins 3 and 4 of the 6-pin coil former, corresponding to pins 3 and 4 of the coil socket.

20 metres.

L2, 10 t. (on 4-pin former)
L3, 8 t. (on 6-pin former)
L4, 12 t. (self supporting)

The link pin is wired to pins 5 and 6.

(Refer to Fig. 2 for coil socket wiring).

L1, 2 and 3 are wound with No. 20 D.C.C. L4 is wound with No. 10 gauge bare copper wire, and is 2in. in diam. Link turns in all cases, 2 turns, spaced about 3/8in. from the low potential end of the inductances. R.F.C. 150 turns 34 gauge D.S.C. close-wound on a 3/8in. former.

Radio Ramblings.

(continued from page 21)

skewer to permit the fastening of "pigtails" which can be made with 22 or 20-gauge tinned copper wire. These chokes are most efficient and can be used in shunt-fed transmitters with no fear of R.F. leakage. Above dope is for 80 m. chokes. For higher frequencies, approximately half above is O.K.

My transmitter is situated in Gisborne, but I'm studying at Auckland at the moment. My outfit is C.O.P.A.—42 osc. on 3916.5 k.c., 42 buffer, 10 final. Input is 50 watts and 'phone is used mostly. If any member of your club hears my station, I would be pleased to receive a report—100% QSL.

Congratulations on the fine magazine, and 73.—J. M. White (ZL2GX), Auckland, N.Z.

★

Keeping Veri. Cards Clean.

Here is still another way of keeping "veries" clean. Take a sheet of cellophane ¾in. larger all round than the card to be covered, and also a piece of thick card, the thicker the better. I use card cut from match cartons obtainable from a local store, and cellophane from stationers.

Place cellophane on clean hard surface, veri. card on top face down with even amount extending all round, then the thick card, which is cut exactly same size as veri. Cut corners off cellophane, apply paste to card and fold cellophane over onto pasted card and allow to dry.

If cellophane comes out with wrinkles, hold the finished job in front of a fire for a few seconds—not too close. DO NOT USE thin card, as cellophane will pull veri. card out of shape and probably spoil it.—G. E. Notely (AW40DX), Moonah, Tasmania.

☆

An "Outdoor" At The Seaside.

I have been very interested in your publication since its inception, and now have much pleasure in enclosing a P.N. for 10/6 for one year's subscription.

I have built up an "Outdoor Portable Four," and have had it working, but not quite satisfactorily perhaps, as there is a certain amount of instability. I followed the revised circuit in the November issue and shielded the I.F. transformer leads where specified. I just took the shielding through into the cans, and not for the whole length of the leads up to the isolantite bases. Would this be sufficient, or should I have taken it to the latter? You say to shield all three leads from I.F.T.3. Accordingly I omitted to shield the fourth lead—the black one. Was this correct?

On page 8 of the October issue is a sketch of the complete underchassis wiring. (It is essential to follow this lay-out exactly? I did for most of it, but owing to the size of some of the components was unable to adhere to it to the letter. I did not use ½-watt resistors).

Anyway, it is a wonderful circuit, and we have had some real enjoyment from it. We had the set at the seaside for a fortnight during the fourth test match, and never missed a bit of the latter—while picnicing, swimming, motoring, motorboating, etc.—W. T. Finlay, Campbell Town, Tasmania.

[The instability you mention is probably due to the fact that you have not shielded the leads of the I.F. transformers right up to the isolantite bases. Also, it would be an advantage to shield the black lead from the third I.F. transformer. The shielding should be earthed to the chassis in all cases. With regard to following the layout sketch given, it is not imperative that this be followed exactly, especially as for the sake of clarity it was necessary to alter the actual location of some of the parts. The main point is to keep all leads as short and as well-spaced as possible.—Ed.]

★

Cure For Microphonic Valves.

Here is a good cure for microphonic valves, which can be a great nuisance in a set. The howl is caused by mechanical vibration of the valve elements, due often to the sound waves from the speaker impinging on the glass envelope. The detector is usually the one responsible, and by wrapping it in cotton wool and inverting a small tumbler or jar over it, the howl will disappear. An elastic band will keep the cotton wool in place.—H. Whyte-Meach (AW69DX), Artarmon, N.S.W.

This 700-foot steel mast forms the transmitting aerial for the new medium-wave broadcaster at Santa Palomba, Rome.

Verifying All Continents

An excellent objective for the DX beginner is to V.A.C.—or verify all continents. How this can be done is explained below . . .

By ALAN H. GRAHAM.

IN dxing, haphazard listening may bring results, but for real success one must keep one's nose to the grindstone, and this is done much more easily when there is a definite objective in sight.

For every dxer, the first goal should be the obtaining of at least one verification from each of the six major continents—V.A.C.

But why stop there? Why not aim at something rather more difficult—say 6 V.A.C. (or six verifications from each continent)? It may appear rather difficult, but the following notes (based on present reception conditions) should suffice to show that a little patience is all that is needed.

Before going further, just a few words of advice to beginners and near-beginners. Firstly, the very great importance of a thorough knowledge of one's dial cannot be stressed too strongly. By compiling a list of dial readings of the regular stations, the task of identifying weak signals is greatly simplified: for, after all, if the frequency of a mystery station can be calculated to within a few k.c., it is a relatively simple matter to identify if a reliable station list is kept, and the short-wave notes in local journals are studied.

Secondly, it is a good idea to compile a tuning schedule, noting down details of the more-difficult-to-log DX catches. In this respect special attention should be paid to the obtaining of the latest and most reliable information concerning station schedules, for it is always advisable to listen for a station when it is on the air!

By jotting down a station's hours of transmission, and the time when it is heard best in your locality, new stations can be logged with a minimum of effort.

Of course, it is a mistake to think for a moment that merely tuning to the right frequency at the correct time, is all that is necessary—far from it. Dxing resembles cricket in its glorious uncertainty—and therein lies the secret of its popularity. Don't be discouraged if you fail to "get" your station on the first attempt. Remember that conditions vary considerably from day to day, and try again.

Australia.

Now let us get down to business. Being patriotic, we will deal with Australia first. Six verifications from Australia! Sounds easy, but is it—for we will exclude amateur stations.

VK2ME (9.59 m.c.) should be an easy catch any Sunday afternoon or evening: as also should be **VK3ME** (9.51 m.c.) and **VK3LR** (9.58 m.c.) on their daily evening transmissions. Next comes the new A.W.A. transmitter in West Australia, **VK6ME** (9.59 m.c.), which is on the air from 9-11 p.m. daily except Sundays.

That makes four stations—the others could be **VLK** (10.52 m.c.) and **VLJ** (9.76 m.c.), but they are commercial stations and do not verify, so we will have to look elsewhere. The M.V. "Kanimbla" (**9MI**) will be one—on 6.00 m.c. irregularly, but usually heard around 9 p.m.

But what of that sixth station? There is one, but Eastern States' listeners will find it rather difficult to log—**VK8SC**, the Flying Doctor station at Port Hedland, on 6.95 m.c. Opening at 7.30 p.m. on Sundays, this station has been reported in the West, but I have yet to see a claim to its reception in the Eastern States—so it looks if these six verifications for Australia may be quite a problem.

Europe.

No difficulty can be expected in obtaining six verifications from Europe. **Daventry** does not verify, but **Zeeson** and **Paris** come in like locals. As they are so easily logged there is no glamour attached to their verification. In getting those six Europeans, why not make a job of it, and log some of the more difficult stations?

The following are suggested as a representative selection. Firstly **CSW**, Lisbon, Portugal, who have been vacillating between 9.93 m.c. and 11.0 m.c., and now seem to have settled on the former frequency. Listen for them around 7 a.m. Then **LZA**, Radio Garata, Sofia, Bulgaria, on 14.97 m.c., are heard best on Sunday afternoons from 3.30 p.m.

Next, **Radio Belgrade** (call **YTC**, I think) on 6.10 m.c., in the early mornings. On the lower frequencies also, try for Vienna, **OER2** (6.07 m.c.) and Copenhagen **OXY** (6.06 m.c.) around 7.30 a.m. And to make up the six, get up early one morning (4.40-5.30 a.m.) for **TFJ**, Reykjavik, Iceland, on 12.23 m.c.—a real DX catch.

Of course, if you can't get all the above there are plenty of others to fall back on. For example, **OLR** (11.87, 6.03 and 9.55 m.c.), **ORK** (10.33 m.c.), **HBL** (9.59 m.c.), **PCJ** (15.22

m.c.), **PHI** (17.77 or 11.73 m.c.) and **I2RO** (9.63 and 11.81 m.c.).

Asia.

If necessary, Japan would provide practically all the six Asiatic veris. **JVE** (15.66 m.c.), **JVF** (15.62) and **JVH** (14.60 m.c.) are to be heard fairly regularly in the afternoon or evening, 'phoning Europe or America, while in addition **JZI** (9.53 m.c.), **JZK** (15.16 m.c.), **JZJ** (11.80 m.c.) and **JVN** (10.66 m.c.) broadcast on regular schedules.

If you include only one of the above stations, we will still have no great difficulty in obtaining our quota of Eastern veris. **HS8PJ** Bangkok (9.35 m.c.) now transmits regularly on Thursday nights at 11 p.m. **ZBW3** Hong Kong (9.52 m.c.) are just about the best stations on the 31 m. band these nights. China will provide us with two stations—**XGOX** Nanking, on 6.85 m.c. nightly at 9.30 p.m.; and the 'phone station **XOJ** (15.8 m.c.) who calls London (**GBA**) around 9 p.m.

That leaves only one station to make up our six. A fairly wide choice remains, one of the following: **FZR3,** Saigon, 16.23 m.c., working Paris; **VUB,** Bombay, 9.56 m.c., around 2.30 a.m.; **VPB,** Colombo, 6.05 m.c.; **RV15** (5.72 m.c.) in Siberia (will now definitely verify reports on their 7 p.m English session); and finally there is a host of D.E.I. stations (which may be included under the heading of Asia).

North America.

By including Central with North America we can extend the number of countries verified, which is rather a sound policy.

Panama is easily logged per medium of **HP5K** (6.0 m.c.) in Colon. They can be heard almost nightly at 10 p.m.

Mexico, too, is fairly easy to log. Try for the latest Mexican, **XEWI** (11.9 m.c.) on Friday or Saturday afternoons, when they are on the air till 3 p.m. Another station is **XEXA** (6.17 m.c.).

Costa Rica may be added to your log through "La Voz de la Victor," **TIPG,** in San Jose, on 6.41 m.c. Better still, try for a "certificate of reception" from **TI4NRH,** Heredia, on 9.67 m.c.

Guatemala is to be heard on 9.45 m.c. (a little above GSC) in the early afternoons. The call is **TGWA.**

Canada must not be neglected. Canadians are much more difficult to log than U.S. stations, but still, a little patience is all that is needed. The best bets seem to be **CJRX** (11.72 m.c.) only 5 k.c. from TPA4; **CJRO** (6.15 m.c.); or one of the Drummondville 'phone stations—for example, **CJA4** on 11.41 m.c.

The United States provides at least a dozen certainties on a variety of frequencies. **W8XAL, W9XF, W3XAL** on 49 m.: **W2XAF, W1XK** and **W3XAU** on 31 m.: **W1XAL, W2XE** on 25 m.: **W2XAD** and **W2XE** on 19 m.: **W3XAL** on 16 m.: and **W2XE** and **W8XK** on 13 m. The last two mentioned have been heard faintly around 10.30 p.m.; and a "veri." from one of them is something to boast about.

We understand **W8XK** will no longer verify—but we think that on receipt of a correct report on their 21.54 m.c. transmission, they will send along an acknowledgment.

South America.

Most dxers will agree that there is a peculiar thrill associated with the logging of South American stations. At one time they were rather difficult to "pull in," but recently conditions have improved to such an extent that a number of these low-powered transmitters have been widely reported.

LRU, Buenos Aires, is heard fairly well at present on 15.29 m.c. (just below DJQ). Their schedule is 9 p.m.-8.50 a.m.

HJIABP, Cartagena, can be logged almost nightly on 9.62 m.c. On Sunday nights they are often heard calling American 14 m.c. hams.

Another Colombian on 31 m. heard recently was **HJIABB** (9.55 m.c.). on the same frequency as DJA. We understand that they are rather slow in verifying reports, so don't be too impatient.

Just above GSB, **PRF5,** Rio de Janeiro, should soon be heard at 8 a.m. A report to them will almost inevitably be followed by a torrent of tourist propaganda.

HCJB, on 8.95 m.c., is heard best during the winter in the early afternoons. However, they may possibly be heard earlier this year, as conditions seem better than ever for South American reception.

YV3RC, Caracas, seems the most likely Venezuelan. It transmits on 6.16 m.c., and is heard best after 2 a.m.

If any difficulty is experienced in logging six South Americans, just move to the 20 m. ham band about 7.30 p.m. Four Peruvians (**OA4AB, OA4AI, OA4N** and **OA4R**) and a couple of Chileans (**CE1AH** and **CE1AO**) are heard regularly at good strength.

Africa.

Undoubtedly the greatest difficulty will be experienced with regard to African verifications. However, the

(continued on page 44)

Breaking Into The Amateur Game...3

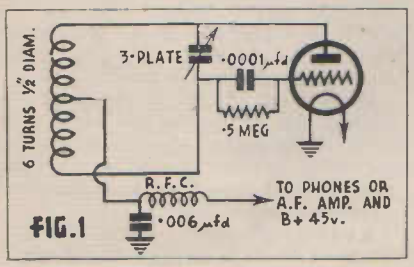


Fig. 1—The simplest form of super-regenerative circuit.

This instalment explains how a regenerative detector works, and outlines the principles of operation of the t.r.f., super-regenerative, and superheterodyne types of receivers.

DETECTION, or demodulation, is the term applied to the necessary process in a receiver of making the r.f. (radio frequency) signals audible to the ear. Detectors may be divided into three different classes. (1) The diode or simple rectifier, (2) the grid detector and (3) the plate detector.

The diode detector has already been discussed as a simple half-wave rectifier. Crystal detectors function in the same manner, that is, the alternating r.f. currents are converted into direct currents and we have left only the modulation envelope impressed on the d.c. This is made audible by the headphones (or after audio frequency amplification, by the loud speaker).

How The Plate Detector Works.

In the case of the plate detector, a tuned circuit is made to resonate at the desired radio frequency and the resulting voltage developed is applied across the grid and cathode of the triode detector. A pair of headphones, or the input to an audio frequency amplifier, is connected in the plate circuit. A radio frequency by-pass condenser of approximately .0005 microfarads is connected from plate to cathode, to by-pass to earth the unwanted r.f. energy appearing in the plate circuit.

By the application of a comparatively high negative grid bias voltage, the valve operates over the lower region of the curve, near plate current cut-off.

The plate current will now vary in accordance with the average value of the positive half-cycles of the modulated carrier, tuned in the resonant circuit. The modulation envelope will produce an audio frequency current superimposed on the direct plate current of the valve. The "plate load" on the detector ('phones or transformer primary) will receive this signal, which is actually the useful output from the detector.

In this type of detector the average plate current will show, on a low range milliammeter, an increase when a carrier is tuned in. This is so because the positive half cycles of the carrier wave reduce the effective bias, the negative halves having little or no effect since the operating point is set near cut-off.

Turning now to the grid detector, we have the resonant circuit applying the signal across grid and cathode as before, but in series with the grid side of the circuit, a grid condenser shunted by a high resistance (grid leak) is inserted. No fixed negative bias is used.

The modulated carrier applied to the grid alternately swings positive and negative causing, on the positive cycles, the attraction of negative electrons from the cathode. The result is that grid current flows more on positive half-cycles than on negative. Consequently we have a rectified grid current flow corresponding to the modulation envelope.

The resultant a.f. (audio frequency) voltage developed across the grid leak causes corresponding plate current variations, heard in the headphones or a.f. amplifier. Since the rectification (or detection) takes place in the grid circuit only, we have considerable amplification in the grid-to-plate portion of the valve.

Now, the presence of a carrier at the grid, as we have seen, causes grid current in the direction from grid to cathode (in the external circuit) making the grid more negative than the cathode, resulting in a decrease in the plate current.

Reaction Greatly Improves Sensitivity

In both triode detectors we have noticed that a small r.f. (radio frequency) by-pass condenser is connected from the plate to the cathode—to remove the unwanted r.f. that appears in the plate circuit of the valve. This may be put to a most useful purpose.

As we discussed earlier, the r.f. by-pass is connected back to cathode, but why not feed some of this r.f. energy from the plate circuit back to the input or grid circuit, again? This can be done, and by providing suitable control for this action we obtain a high increase in sensitivity without the necessity of adding a further valve to the circuit.

Should this "feed-back," "regeneration" or "reaction" be carried too far we get "oscillation" in our detector—that is sufficient feed-back is obtained from the plate to grid circuit to overcome the "damping" in the latter and steady r.f. oscillations are maintained, the frequency being determined by the circuit constants (capacity and inductance) and the power being supplied by the H.T. (high tension) source.

The Super-Regenerative Receiver.

Normally regeneration can be adjusted only to the point very near to oscillation, but actually, the nearer we adjust the detector to this point the more sensitive it becomes. If this highly critical condition could be set and maintained in a stable condition, the result would be a detector for modulated carrier signals possessing enormous sensitivity.

The answer is the "super-regenerative" circuit, which is essentially a regenerative detector operated in its most sensitive condition, and prevented from breaking into constant oscillation by the application of a "quench" or interruption" frequency above the audible limit.

Very high sensitivity is obtained, but the noise level is high and the selectivity poor. Also, the system is more suited for operation on short waves, and at present is confined in its application almost entirely to the ultra short waves.

Fig. 1. shows the simplest form of super-regenerative circuit applied to the reception of ultra high frequency signals (56 to 60 m.c.) or in wavelength terms, 5 metres and lower. As mentioned, the selectivity of a receiver of this type is of very poor order, and is quite useless at lower frequencies (higher wavelengths).

The function of the circuit is very simple—as will be noticed, the only unusual feature is the grid-leak connection, which to all intents and purposes goes to the H.T. positive.

(continued on page 40)

The . . . A.T.R.S. Bulletin

Conducted by the Secretary, 287 Clarence Street, Sydney, N.S.W.

★ ★ ★

From The Secretary's Pen.

WE made mention last month of an all-Australian A.T.R.S. It is now evident that it is only a matter of time when this will be an accomplished fact. We have been in communication with the under-mentioned servicemen, who have been chosen as branch organisers in their own particular states.

Victoria:—V. H. Blight, 30 Ellis Road, Glen Iris, S.E.6, Victoria.

H. Mendoza, 161 Lygor Street, East Brunswick, N.4, Victoria.

Tasmania:—J. G. Oliver, 63 North Terrace, Burnie, Tasmania.

Western Australia:—A. J. Gibbs, 129 Herbert Street, West Subiaco, West Australia.

Readers living in the above states are asked to give these pioneers of the Association every possible support.

While going through the mail during the past month I noticed a letter of interest to all readers:—

"Dear Sir,

I am rather interested in your Association and would like to see one formed in Victoria. There is just one little point I would like to query. That is: What constitutes a trained serviceman? As you know, a man can be well trained in theory and yet not be experienced on the practical side. What good is his training? In other words, who is the better man, the one who merely learns the set course or the man who has had say ten years of practical experience and understands the different brands of receivers?

I have been in the radio game for 16 years, ten of which I have done nothing else but service work both for the trade (other shops) and myself. In my opinion, success in the servicing game can be accomplished only by having a complete practical knowledge of all makes of receivers and their inherent faults, and also of the various peculiarities of different types of valves that do not show up on a tester. I have had many so-called trained men call and see me to obtain information on a certain brand of receiver, with which they have not come in contact before. However, should I be eligible to join your Association, would you please forward me particulars?—Yours etc., H. Mendoza."

I agree fully with what Mr. Mendoza says, but at the same time I think our correspondent will agree that a solid groundwork of theory, no matter how it is obtained, is essential if a serviceman is to be successful in his profession.

One of the questions asked on our entry form is:—"State briefly your experience as a radio serviceman." Some or all of this experience may have been gained in a training school, but what we stress is that the member must have practical experience at radio servicing. Perhaps other readers would like to send their views along.

Applicant From New Zealand.

Another inquiry has also been received from a serviceman in Auckland, N.Z., who is interested in A.T.R.S. We are hoping to establish a branch in that country, as well as in every state throughout the Commonwealth.

Queensland Branch Notes.

By W. Hudson (Acting Secretary).

A meeting was held at the Queensland College of Science, Brisbane, during last month, a number of active servicemen and a few amateurs being present. Ways and means of inaugurating a licensing system for servicemen were debated, and our activities generally in Queensland also came up for discussion.

Several members favoured the ideas used by the N.R.M.A. in the motor trade, for establishing certified service shops, determining trade discounts and for suppressing the "gyp merchant."

Other Queensland readers professionally interested in radio and wanting to know more about A.T.R.S., are invited to write me, c/o Queensland College of Science, Old Town Hall Chambers, Queen Street, Brisbane.

INTERMITTENT FAULTS ARE HARDEST TO LOCATE

By "SERVICEMAN"

ONE of the most annoying troubles servicemen encounter is the intermittent fault.

Often the serviceman is called out to a receiver, which when switched on appears to operate quite satisfactorily, though the customer states that the set has definitely been "playing up." Generally it is waste of time to wait for the fault to show up, and so the set should be brought away for observation on the service bench.

As to the causes of intermittent faults, valves are undoubtedly the most common offenders. Unfortunately a fault of this nature will rarely show up on a valve tester, though a direct short between the elements will of course be indicated, and if the valve gives a very poor reading it is more likely to be the culprit than a newer one.

The only definite way of proving that this type of valve trouble is not present is to substitute a fresh set of valves, one at a time.

Faulty Resistors A Common Cause.

Resistors, too, are quite common causes of intermittent troubles. Carbon resistors have a knack of changing their values after they have been in operation for a while, especially those carrying current, such as the detector plate and screen resistors. The following test sometimes works, but is not always satisfactory:—Place test prods across the suspected resistor, while the set is running, and note any change of voltage drop

when a change of volume occurs.

Unfortunately, the resistance of the equipment (meter and series resistors), will often upset this test, unless the value of the suspected resistor varies greatly. Replacement again is recommended.

In cases of fading in superhets, one resistor in particular should be looked to—the oscillator grid leak. Substitution is the only way of proving anything in this case, too.

Other Causes Of Noise And Fading.

Dust between the vanes of the variable condensers can cause anything from crackling to fading, and a gang insecurely fixed and earthed to the chassis will often give rise to whistles, crackling, fading, etc.

Crackling in electrolytics, on occasions only, is generally caused by the voltage of the mains rising. Substitution by higher voltage condensers is the only remedy. High resistance joints in the primaries of aerial and r.f. coils and intermediate frequency transformers are also a source of trouble.

Dry joints or high resistance joints in any part of the wiring can be troublesome, and the usual test of tugging at every lead with a pair of pliers should be tried. As well the joints should also be visually inspected, as it is possible for them to hold mechanically, but be poor electrically.

Shortwave switches often need cleaning, and in various cases replacing. The earlier types were a great source of trouble in this respect.

In the case of fading on local stations, the conduit of the mains in the house where the set is operated should be inspected to ascertain if an efficient earth connection is made. A neighbour's old-fashioned reaction type receiver in an oscillating condition must be included in the list, and if all else fails inquiries should be made in this direction.

Aerial and line filters are also valuable aids to the elimination of noise. If the aerial and earth terminals are bridged and the noise ceases, it is almost certain to be coming from an outside source, and an aerial filter will often effect a cure. As for the line filter, it is a case of "try it and see." Any other case of outside interference, whether permanent or intermittent, should be referred to the radio inspector.

The Amateur Game.

(continued from page 38)

However, since the circuit is that of a "series-fed Hartley" oscillator—this condition maintains a negative bias on the grid of the detector, and by the grid-leak value, its connection and the value of the interruption frequency by-pass. Condenser (.006 mfd.) a super-audible frequency is set up which gives us, as explained earlier, a super-regenerative detector.

The subject of shortwave and broadcast receivers is a very broad one, and were we to discuss either at length in this series, there would be no space to cover other subjects.

Fig. 2 depicts a superheterodyne rereceiver, which may be used for operation on frequencies between roughly 16 metres and 550 metres.

C1, C2 and C3 may be ganged together—trimmers being necessary, of course, for broadcast frequencies, and on frequencies from 14 megacycles to 3.5 megacycles these condensers may be used for band-setting, and a 3-plate three-gang may be used for band-spreading (covering amateur bands only) to be connected in parallel with the larger three-gang. Plug-in coils are recommended, for the following groups of frequencies, viz, 14 m.c., 7 m.c., 3.5 m.c. and 1,500 to 550 k.c.

The first stage with its 6D6 valve, is to function as a radio frequency amplifier. C1 tunes the particular coil in use (assuming plug-in coils) to the frequency of the station we are desirous of hearing. The small winding is for aerial coupling purposes, either to a pair of feeders or aerial and earth.

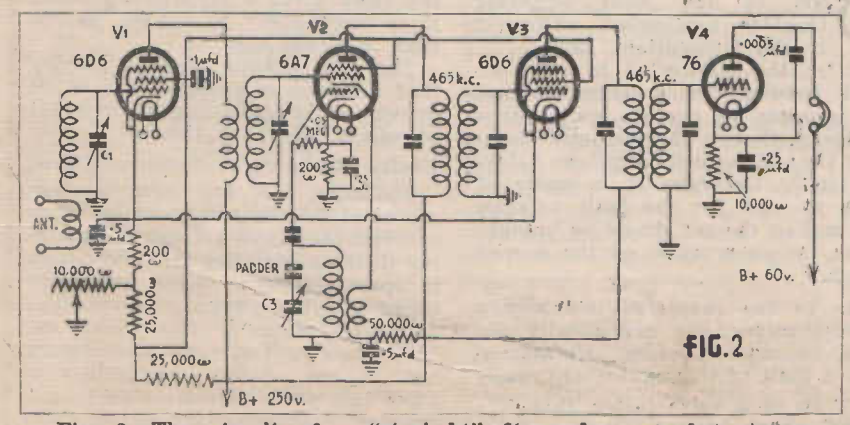


Fig. 2—The circuit of a "straight" four-valve superhet, recommended for operation between 16 and 550 metres. Plug-in coils can be used.

This 6D6 stage, like the third valve, is a variable mu type—meaning that the amplification factor is variable over a wide range simply by altering the negative grid bias. In this case, the cathode is made positive in respect to earth (i.e. grid) which is relatively the same thing as making the control grid negative in respect to earth (cathode earthed).

By following the circuit diagram we see that, starting from "B+ 250v.," a 25,000-ohm voltage-dropping resistor connects "B+" to the screens of the valves 1, 2 and 3, and thence through a 25,000-ohm resistor to the junction of the volume control (10,000 ohms) and the 200-ohm cathode resistor.

Depending on the volume control position, the voltage drop created by the plate current of the valves and this bleeder current through the two 25,000 ohm resistors in series with each other and the volume control, produces a positive voltage at the cathodes, depending in value on the setting of the volume control.

The amplified output from V1 is fed to V2 (6A7) through the primary winding of a radio frequency transformer, the secondary of which is tuned to signal frequency by C2. R.F. voltage developed across here is fed to the detector section of V2. Quite a separate function also takes place in V2—that of maintaining oscillations at a frequency determined by the setting of C3 and its associated coil.

Closely inspecting the circuit around this coil-condenser combination, we see the usual two-winding oscillator coil. The smaller winding is in the plate circuit of the triode section of the 6A7. From the top end of the secondary coil a grid condenser connects to the control grid of the triode section of the 6A7—from there the 50,000-ohm grid leak goes to the cathode.

We see that, contrary to usual practice in a triode oscillator circuit, the grid leak does not connect to earth. The circuit as shown avoids the application of bias to the oscillator by having the control triode grid and common cathode at the same d.c. potential.

The pentode section of the 6A7 functions as a plate "detector" combining the signal frequency with the oscillator frequency—the r.f. voltage from the oscillator being coupled by virtue of the electron stream from the common 6A7 cathode. The signal

(continued on page 44)

1937 International All-Wave Six—List of Parts

1—steel chassis 14½in. x 8½in. x 4in., stamped and drilled as shown, with bracket for volume control.
1—power transformer (Radiokes type L80).
2—octal sockets, 1—small 7, 1—6, 2—4-pin wafers.
1—4-pin speaker socket (Dalton).
1—power plug and socket (Dalton).
1—tri-wave coil assembly (Radiokes TWA-3).
2—midget iron-core 465 k.c. I.F's. (Radiokes QIC-465).
1—Three-band edge-lit dial to suit, with escutcheon (Radiokes).
2—type 58 valve shields.
5—terminals, 3 red, 2 black (Dalton).
3—large knobs.
1—.5 megohm carbon potentiometer.
1—volume control extension shaft, with coupler.
1—single-pole single-throw switch (toggle type).
1—length of power flex and plug.
4—grid clips (2 octal, 2 large).

FIXED CONDENSERS.
4—.0001 mfd. fixed condensers (midget mica).
1—.02 mfd. tubular (Solar).
1—.05 mfd. tubular (Solar).
9—.1 mfd. tubular (Solar).
1—.25 mfd. tubular (Solar).
2—.10 mfd. dry electrolytics, 25v. working (Solar).
1—25 mfd. dry electrolytics, 25v. working (Solar).
3—8 mfd. wet electrolytics, 600v. working (Solar).

FIXED RESISTORS.
1—250 ohm carbon.
2—300 ohm carbon.
1—400 ohm wirewound.
1—2,000 ohm carbon.
4—10,000 ohm carbon.
1—15,000 ohm carbon.
1—25,000 ohm carbon.
1—40,000 ohm carbon.
1—50,000 ohm carbon.
4—.1 megohm carbon.
1—.25 megohm carbon.
4—1 megohm carbon.
1—1.5 megohm carbon.

VALVES.
1—6B7S (Radiotron).
1—6K7, 1—6A8, 1—6C6, 1—42, 1—80 (Radiotron, Raytheon, Ken-Rad, Mullard, Philips).

SPEAKER.
1—8in. dynamic speaker, 2,000 ohm field, input transformer to match single 42 (Rola).

MISCELLANEOUS.
4—6.3v. dial lights, 2 doz. 8in. bolts and nuts, hook-up wire (solid and flexible), solder tags, bus-bar, 4 small single-lug bakelite strips, with 4—1in. length of hollow brass tubing and 4—1in. bolts and nuts (for supporting pillars), 1—3-lug terminal strip.

International All-Wave Six.

(continued from page 8)

condenser stabilising the oscillator voltage supply and eliminating any tendency towards flutter on the short waves.

42 With Inverse Feedback.

The audio channel is similar to that of the "Fidelity Broadcast Five," except that a 42 with inverse feedback has been used in place of the single 2A3.

The inverse feedback arrangement employed with the 42 is undoubtedly destined to be used in receivers with single pentode output. The way in which it operates will be dealt with in a separate article next month, but briefly, inverse or negative feedback is the direct opposite to regeneration, or positive feedback, in that latter causes, or tends to cause, oscillation, while the former gives a stabilising effect.

With inverse feedback, a voltage from the amplifier's output is fed back into an earlier part of the amplifier in such a way that it is out of phase with the signal input voltage. One obvious effect is that sensitivity is reduced, but this is a minor drawback that can be easily overcome by using a high-gain audio driver such as the 6C6 used in the "International." There are various schemes for feeding back the required voltage, that shown being both simple and effective.

Thus, apart from the stabilising effect, the nett result given by inverse feedback is a very considerable improvement in quality on that given by a straight 42. Actually the quality of reproduction is such that by many listeners it might be considered as indistinguishable from the really preferable arrangement using a 2A3.

The Chassis And Parts.

Elsewhere will be found a sketch showing complete dimensions for preparing the chassis, while a list of the parts needed to build the "1937 International" will be found on this page.

Next month detailed instructions will be given covering the assembly and alignment of the receiver.

VK AMATEUR STATIONS . . . Additions and Amendments

CALL SIGN. NAME. ADDRESS.

3GG—Guest, E. L. G., 9 Mulgoa St., Brighton, S.5, Vic.
2AFH—Tarrant, H. J., R.A.A.F., Richmond, N.S.W.
3YS—Bail, F. G., 62 Shannon St., Box Hill North. E.12, Vic.
2VR—Wheeler. A. R., "Winston," Malton Road, Epping, N.S.W.
4HN—Nicholson, H. G., Paga Hill, Port Moresby, Papua.
2AFJ—Fraser, J. H., 8 Deakin Avenue, Haberfield, N.S.W.
5CP—Laver, C. P., Cape Borda Lighthouse. Kangaroo Island, S.A.
7HM—Moorhouse, H. M., 95 Arthur St., North Hobart, Tas.
2FQ—Collinge, C. H., 123 Murray St., Wagga Wagga, N.S.W.
2AFL—Swanson, W. W., 24 Bongalong St., North Sydney, N.S.W.
3ID—Davies, I. J., Talbot Avenue, Bentleigh, S.E.14, Vic.
2AFQ—Treharne, E. D. L., 5 Waimea St., Burwood, N.S.W.
3UY—Nilsen's Broadcasting Service Pty. Ltd., 45 Bourke St., Melbourne, C.1, Vic.
3LL—Kelly, K. M., Queen's College, Carlton, N.3, Vic.
7DW—Watson, D. M., 30 Main Road, New Town, Hobart, Tas.
6BA—Arnold, W. H. R., Alexander St., Wembley, W.A.
2AFM—Dickson, E. J., 31 Station St., Guildford, N.S.W.
6KE—Nicholls. A. H., Corrigin, W.A.
2AFN—Slawson, G. T., 69 Lawrence St., Harbord, N.S.W.
3PE—Thornley, P. E., Gnotuk, Camperdown, Vic.
6CM—Matheson, C. R., Aeradio Station, Forrest, W.A.
2AFO—Toakley, T. T., "Kieta," Merriwa St., Katoomba, N.S.W.
3EX—Webb, E. K., 297 Mitcham Road, Mitcham, Vic.

Alterations to Call Signs.

4WG—Grant, W. P., Ward St., Indooroopilly, S.W.2, Qld. Now VK4WU.
3WX—Nicholls, W. J., 54 Bayview St., Williamstown, W.16, Vic. Now VK7WX. (See also Changes of Address).
3XF—Chaffer, E. M., 41 Norwood Crescent, Moonee Ponds, W.4, Vic. Now VK2AEK. (See also Changes of Address).

Changes of Address.

2ZP—Yates, A. G., Prince Alfred Hospital, Camperdown, N.S.W.
2EE—Llewellyn, J. L., 9 Allison Avenue. Lane Cove, N.S.W.
3WX—Nicholls, W. J., 34 George St., Launceston, Tas. (See also Alterations to Call Signs).
6ZZ—Stephens, H., 82 Fremantle Road, South Perth, W.A.
2ZB—Zero Beat Radio Club—54 Station St., Newtown. N.S.W.
3RA—Parker, R. A., Flat 5, Coppin Court, Coppin Grove, Hawthorn, E.2, Vic.
3XR—Winton, J. H., 43 Clyde St., Surrey Hills, E.10, Vic.
2ADE—Miller, C. A., 162 North St., Casino, N.S.W.
2CJ—Johnston, W. C., Moonee St., Coff's Harbour, N.S.W.
2VJ—Jarvis, V. J. E., C/o Station 2BS, Keppel St., Bathurst, N.S.W.
3KK—Kilsby, K. W., 4 McIntyre St., Hamilton, Vic.
3TP—Prentice, T. F., 37 Claremont Avenue, Caulfield, S.E.7, Vic.
5BH—Blunden, L. W., 58 Shelly St., Firle, S.A.
2EL—Colyer, E. L., 47 Towns Road, Rose Bay. N.S.W.
4NW—Starkie, T. W., "Langthorne," Rode Road. Nundah, Qld.
3KX—Tandy, R., 76 Rae St., Colac, Vic.
2GJ—Jones, G. E., 5 Oakley Road, North Bondi, N.S.W.
5RY—Yates, R. C., C/o B. H. P. Co. Ltd., Whyalla, S.A.
2ADY—Vaughan, D. E., 3 Hampden St., Lakemba, N.S.W.
3UK—Marshall, V. E., 75 Argyle Road, Kew, E.4, Vic.
2LW—Waugh. L. W., 6 Park Avenue, Waitara, N.S.W.
2ABH—Mulligan, H. P. A., 60 Willis St., Kingsford, N.S.W.
2KC—Fry, R. H., 45 Kembla St., Wollongong, N.S.W.
2ZD—Hands, R., 28 Reddall St., Manly, N.S.W.
3XF—Chaffer, E. M., 7 Kinneil Court, Elizabeth Bay Road, Pott's Point. N.S.W. (See also Alterations to Call Signs).
4ZL—Pembleton, T. E., 167 Denham St., Rockhampton, Qld.
2EW—Webster, W., 126 Pittwater Road, Gladesville, N.S.W.

Amendments.

2SC—Municipal Council of Sydney, Electricity Department. Oxley St., Crow's Nest, N.S.W. Now The Sydney County Council, Oxley St., Crow's Nest.
2LJ—Rayner, J., Shown in October 1936 Supplement as 8 Everson St., Belmore, N.S.W. Should be 8 Edison St., Belmore, N.S.W.

Cancellations.

2ACX—Dalziel. K. E., No. 3 Squadron. R.A.A.F., Richmond, N.S.W.
3ZU—Stephens, R. A., Commercial Road, Yarram, Vic.
6HC—Hermes Amateur Radio Club, Drill Hall, Leederville, W.A.
3LH—James, H. P., C/o W. Mason, 349 Beach Road, Mentone, S.11. Vic.
2ABX—Perooz, J. P., Hope St., Bourke, N.S.W. (Portable).
5CF—Trott, C. F., McLaren Flat, S.A.

The All-Wave All-World DX News

Official Organ of the All-Wave All-World DX Club

★ ★ ★

North Suburban Radio Club Holds First Annual Reunion.

FORTUNE, in the shape of the weather, hardly favoured the North Surburban Radio Club on Tuesday, March 16, when it celebrated the completion of twelve months' active existence.

The function, which was held at the Memorial Hall, Chatswood, was, however, very well attended both by members and visitors. Among the guests were the senior radio inspector (Mr. W. T. S. Crawford), the federal president of the W.I.A. (Mr. W. M. Moore) and Mr. Peter Adams (2JX), representing the New South Wales Division of the Wireless Institute. Nearly all of the kindred radio clubs were well represented.

In replying to the toast of the Wireless Branch, P.M.G's. department, Mr. Crawford stated that his department whole-heartedly supported clubs such as the North Suburban. Departmentally, he said, it was much easier to deal with congregations of amateurs than with individuals.

In concluding the formal business, the President sketched the aims of the club and noted how they had been fulfilled in the first year.

Zero Beat Radio Club News.

By "RUSS."

Since the change of QRA, the Club's transmitter has had its power supply re-built. While in the city, the mains were 240 volts d.c. and so the power of the transmitter was limited, but since the removal to Newtown, where the supply is 240 volts a.c., many stations have been worked, each giving a good report on reception. The aerial is a matched impedance flat top about 50 feet high, and the direction is N.E.-S.W.

During the latter end of March the transmitter has been off the air owing to the exhibition at David Jones Ltd., where the Club's gear, together with equipment supplied by members, is on view. The prize list is as follows:—

Best Portable Transmitter—2IQ.
Best Receiver—V. Joyce.
Best Piece of Apparatus—ZIK.
Best Direction-finding set—T. Walters.
Best Novelty Receiver—T. Walters.
Smallest Set—P. Mulligan.
Best-wired Smallest Receiver—L. Stocks.

The prizes will be presented to the winners at the April monthly meeting. As the annual meeting of the above club will take place on the last Friday night of May, all nominations for the office bearers must be in the hands of the Council by the April monthly meeting, so that ballot papers can be prepared and posted to country members.

The new syllabus for the A.O.P.C. has just been finalised, and all intending members are requested to get in touch with the Secretary, 54 Station Street, Newtown, at once. The Club rooms are also at this address (about two minutes from Newtown station).

Field Day On April 4.

A field day has been arranged for members at Carrama for April 4. This is the last and final for the President's Cup, and all members are asked to attend and help make the day a success. There is also a cup for the winner of the day's "hike."

Another cinematograph night will be held early in April, so watch out for the date.

ALL-WAVE ALL-WORLD DX CLUB
Application for Membership

The Secretary,
All-Wave All-World DX Club,
214 George Street,
Sydney, N.S.W.

Dear Sir,

I am very interested in dxing, and am keen to join your Club. The details you require are given below:

Name.....

Address.....

[Please print both plainly.] .....

.....

My set is a.....

[Give make or type, number of valves, and state whether battery or mains operated.] .....

.....

I enclose herewith the Life Membership fee of 3/6 [Postal Notes or Money Order], for which I will receive, post free, a Club badge and a Membership Certificate showing my Official Club Number.

(Signed).....

[Note: Readers who do not want to mutilate their copies of the "Radio World" by cutting out this form can write out the details required.]

The Amateur Game.

(continued from page 40)

frequency is fed to the pentode control grid.

Now, the oscillator coil and condenser combination is set so that it always tunes 465 kilocycles (k.c.) higher than the r.f. and first detector grid circuits. It therefore follows that the difference (465 k.c.) always appears in the plate circuit of the first detector or mixer, quite regardless of the position of the three-gang condenser.

(To be continued next month.)

Verifying All Continents.

(continued from page 37)

position has been greatly improved by the appearance of a number of Italian colonial 'phone stations.

Of these, **Asmara** on 14.5 m.c.: **Tripoli (ICK)** on 9.46 m.c.: and **Addis Ababa (IUG)** on 15.45 m.c., would constitute a nice bag. They are on the air from about 6 p.m. daily. The first-mentioned station (Asmara) can be identified by its use of a 5-note musical call. All reports to the Minister of Marine in Rome are promptly verified.

CNR, in Robat, Morocco, on 12.82 m.c., is probably one of the most widely-heard Africans. Send your reports to the Director-General of Telephones and Telegraphs.

Probably the latest station reported in Australia is **CR7AA** (or **CR7BH**—the call seems doubtful). At all events, this Portuguese station in Mozambique has been widely reported on 11.7 m.c.

Night-owls will find **VQ7LO** in Nairobi, Kenya Colony, worth staying up for. It comes in on 6.08 m.c. in the small hours of the morning.

Of the South Africans, **ZTJ**, the transmitter of the African Broadcasting Co. in Johannesburg, is a good bet. They are also heard in the very early mornings—on 6.09 m.c.

If the stations mentioned above are all logged (and there is no reason why they shouldn't be) the dxer will certainly have something to show for his work.

Here are the stations which will give you six V.A.C., and 31 countries verified—

Australia: VK2ME, VK3ME, VK6ME, VK3LR, VK9MI and VK8SC.

Europe: CSW, LZA, OER2, OXY, TFJ, YTC.

Asia: JZI, ZBW3, XGOX, HS8PJ, VUB, FZR3.

North and Central America: W1XAL, CJRO (or CJA4), TIPG, XEWI, HPSK, TGWA.

South America: LRU, HJ1ABP, PRF5, YV3RC, HCJB, and Chilean or Peruvian amateurs.

Africa: ICK, IUG, Asmara, VQ7LO, CR7AA, CNR.

What's New In Radio

A monthly review of latest releases in sets, kit-sets, and components

Clyde Radio Batteries At David Jones' Exhibition.

An attractive stand at David Jones' Radio and Electrical Exhibition held recently in Sydney was that arranged by the Clyde Engineering Co., featuring a complete range of the latest Clyde radio batteries, together with Clyde home-charging plants.

There are now available no less than 14 types of Clyde batteries designed specially for radio use, rang-from the 2-volt 25-ampere hour "midget" to the three 6-volt Super models designed for use with vibrator sets.

A list of the types available, together with latest retail prices, is given below:—

TYPE	Volts	Amp. hour Capacity at 100 hr. Rate	Retail Prices
2VS5	2	25	0 17 6
2VS7	2	40	0 18 9
2VC11	2	100	1 12 6
2VC15	2	130	2 0 9
4SR5	4	25	1 17 6
4SR7	4	40	2 6 0
4CR7	4	60	2 11 3
4CR9	4	80	2 17 3
6SR5	6	25	2 18 6
6CR7	6	60	3 7 0
6CR9	6	80	3 13 3
6CR11	6	100	4 12 6
6CR13	6	120	5 5 0
6CR15	6	140	5 18 9

Types 6CR11, 6CR13, and 6CR15 are specially designed for use with vibrator receivers.

★

Latest Mullard Valve Characteristics Booklet Now Available.

One of the most elaborate and comprehensive sets of valve characteristics charts now available is that just released by the Mullard Co. (Aust.) Ltd.

Produced in handy booklet form, there are eighteen pages devoted to listing complete characteristics and socket connections of the popular Mullard Silver Contact Series (6.3v. A.C. or D.C., 2v. battery, 200 m.a. D.C., 4v. A.C.) as well as of the 2v. battery series (pin base), and American type glass and metal valves. Full details of miscellaneous European types, both A.C. and battery, are also given.

Further information supplied covers notes on the various charts, gain control characteristics of extended cut-off valves and specially superseded European types, while an index by type numbers is published on the back cover.

Copies of this latest release may be obtained free on request from the Mullard Radio Co. (Aust.) Ltd., 26-30 Clarence Street, Sydney (enclose 2d. to cover postage).

★

Distributors For Columbia Batteries.

Messrs. Fox & MacGillycuddy, of 57 York Street, Sydney, advise that they have been appointed distributors for the well-known Columbia radio "A." "B" and "C" batteries. Country dealers are invited to write for the latest trade price list.

★

Valuable Gift To Readers Offered By A.W. Valve Co.

The latest sales promotion release by Amalgamated Wireless Valve Co., of Sydney, containing the price list of Radiotron valves as at March, 1937, is in the form of a folder featuring "Cavalcade of Communication."

An elaborate production very attractively printed in four colours, "Cavalcade of Communication" traces in story and illustration the history of communication, from the dark ages, when a language of gestures and signs was used, to the present-day era of wireless telephony and telegraphy.

Other Recent A.W. Valve Co. Releases.

Among other recent releases of great interest to dxers and experimenters is the Radiotron Great Circle Map of the World and Station Chart, and the Radiotron World-Wide Mileage Chart. The former contains a world time chart as well as an up-to-date list of several hundred broadcast and shortwave stations, while the Azimuthal map can be used to determine the distance and direction

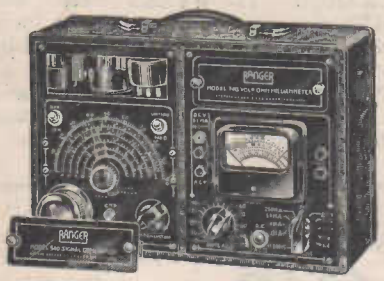
from Sydney of any point on the earth's surface. The World-Wide Mileage Chart enables the mileage between any two of the listed cities of the world, and also between Australia and New Zealand cities, to be read off at a glance.

All three releases contain a wealth of attractively presented information that any radio enthusiast would find invaluable. A free copy of all three will be sent free to applicants forwarding a 2d. stamp to cover postage to Amalgamated Wireless Valve Co., 47 York Street, Sydney.

★

Ranger-Examiner Multi-Meter And All-Wave Oscillator.

Prominent among the well-known Ranger-Examiner line of portable test equipment is the model 540-740,



The Ranger-Examiner Model 540-740 combination multi-meter and all-wave oscillator.

which combines two instruments in one unit—a direct reading all-wave signal generator and a volt-ohm-milli-ammeter.

The Model 740 volt-ohm-milli-ammeter uses a Triplett meter, and has the following ranges:—10-50-250-500-1,000 A.C. and D.C. volts at 1,000 ohms per volt; (D.C. accuracy 2%, A.C. 5%) 1-10-50-250 M.A.; 0-300 Low Ohms; High Ohms to 250,000 at 1.5 volts. Rheostat adjustment will take care of 15 volts for ohms readings up to 2.5 megohms, while batteries may be added, permitting readings in 250,000 ohms steps. Low ohms range reads to ½ ohms—the 25 ohms portion being in the centre of the scale. The back-up method used is without appreciable contact or other errors. The current drain is only 1 m.a.

The model 540 direct-reading signal generator covers five frequency bands on fundamentals from 110 to 20,000 k.c., using plug-in coils. Each coil is individually calibrated by peaking with trimmer condensers built into the coil. Both modulated and unmodulated signals are available.

The complete 540-740 unit is reasonably priced at £15-0-0, further particulars being available from the exclusive factory representatives for Australia and New Zealand—Messrs. W. G. Watson & Co. Ltd., 279 Clarence Street, Sydney.

Leaves From A Dxer's Log-Book

. . By ALAN H GRAHAM

FEBRUARY 19—In the early morning the two outstanding stations on the air were the Zeesen transmitters **DJD** (25.4) and **DJC** (49.8). The latter's was the only signal to be heard on 49m., which was rather disappointing as the noise level was lower than usual.

About an hour later **CT1AA** opened at 7.05 a.m. putting in a nice R7 signal. Listeners hearing their cuckoo-call must regret that other stations are so slow in following their lead and adopting identification signals.

In the evening the 20m. ham band was again worth a few minutes' attention. Outstanding were **VR2FF** (Fiji) and **OA4AB** (Peru).

FEBRUARY 20—The morning session was remarkable for an extra-loud signal from **TPA3** (25.2). This station is becoming the loudest and most consistent of the 6 a.m. group.

After 10 p.m. **W1XK** (31.3) was about the loudest station on the air. **YDC** (19.8) and **YDA** (31.09) were also heard. Just before midnight **I2RO** (25.4) were R8: they closed for a few minutes at 11.57 p.m., and came on again with their usual English commentary on the week's news.

FEBRUARY 21—Just after midnight **JZI** (31.4) and **JZJ** (25.4) were both at good speaker strength, opening their programme with a daily news service in English.

Another loud signal on 25m. proved to be **OLR4A** (25.2).

After **PHI** (16.8) had been logged at 9.55 p.m., a remarkable link-up of Russian stations was heard between 10 and 11 p.m. No less than 10 transmitters were logged carrying the same programme. The wavelengths were as follows:—19.8; 20.15; 20.4; 23.4; 25.6; 25.74; 25.0; 35.5; 38 and 70.2. The call-signs of all the above are not known but they include **RKI** (19.8), **Omsk** (20.4), **RNE** (25) and **RV15** (70.2). Signal strengths varied from R5-9—the best signals being on 20.15m.

FEBRUARY 22—Outstanding this morning was **SM5SX** (25.6), heard at 7.30 a.m. They closed at 8.05 a.m. with announcements in several languages including English.

Just after 4 p.m. Germany was at good strength on 19 and 31m. (**DJL, DJB, DJA** and **DJN**). 19m. signals were R9 and 31m. a mere R7-8.

At 5.10 p.m., **TYA2** on 33.2m. were at good strength, with a remarkably low noise level.

Between 7.30 and 8 p.m. the amateurs on 20m. were even better than usual. Stations heard included **K6BAZ, K6CMC, KA1AN, KA1AR, CE1AH** and **VS6AB.**

FEBRUARY 23—A station not heard for a month or so was **DZC** (29.16).

In the mid-afternoon a rather unusual reception was that of **COCX** (26.2). Signals were R6, but QSB was rather troublesome.

FEBRUARY 24—**W3XAL** (16.8) were putting in a very nice signal around 8 a.m. They are seldom heard so well after 7.30 a.m.

On 25.6m. a foreigner was heard at 9.45 p.m. This may have been a Russian previously referred to (Feb. 21); or possibly **CR7BA**, Lourenco Marques.

HJ1ABP (31.2) were almost the best 31m. station at 10.30 p.m. They are remarkably consistent at present.

FEBRUARY 25—Very little listening done this day. However, even so, a new station was logged. This was the Colombian **HJ1ABB** (31.3). It transmits on exactly the same frequency as DJA, and naturally the QRM was very bad.

FEBRUARY 26—**COCX** (26.2) were fairly good at 7.15 a.m. They use a remarkable variety of identification signals (cuckoo call, bugle, chimes, train, galloping horses, etc.).

EAQ (30.4) were rather weak, only R3-4: also their transmission is hardly as good as formerly.

At 2 p.m. **KAX,** Manila (15.0) were heard calling **PLE,** Bandoeng.

Two Canadian hams were logged at 10 p.m.—**VE2JJ** and **VE2DC.**

MARCH 1—**VLZ** appeared on a new wavelength (22.5) relaying the cricket descriptions.

HJIABP were again R8-9 after 10 p.m.

MARCH 2—**COCQ** (30.7) were much louderth an they have been for several weeks now. Quite back to old R9+ standard.

MARCH 3—Despite a fairly high noise level, a few minutes was spent on 49 m. between 6 and 7 a.m. Just after 6.30 a.m. a station was logged on 49.6m. This proved to be Moscow. After closing at 6.56 a.m., the sta-

tion again came on the air at 7 a.m., opening with the "Internationale." No trace could be found of the usual 50m. transmissions.

Russia also provided the best signal in the evening per RNE (25.0). The news bulletin at 9.40 p.m. could have been copied 100%.

MARCH 4—The only stations heard were a number of 20m. amateurs. It was rather unusual to log two VK6's on 'phone. They are very seldom heard in this locality. CE1AO, OA4N, OA4AB and VP5PZ were also audible.

MARCH 5—A most unusual reception was that of signals on 12.5m. from a Russian station. Whether this was a new transmitter or a harmonic of RNE has yet to be discovered. Signals were R4, QSA3.

MARCH 6—This was quite an eventful day. At 6.30 a.m. YTC (49.18), Belgrade, were a good R7-8. This station can be easily identified by its unusual musical interval signal.

VPD2 was found on 31.4m., having returned there from 34m. Signals were R8.

Just before 10.30 p.m. the writer was surprised to hear W2XE on 13.96m., at R4, QSA3. Reception of Americans on 13m. appears to be most infrequent. Certainly this was the first occasion that this feat has been reported for some considerable time.

MARCH 7—A rather distorted signal on 20m. around 5 p.m. may possibly have been LZA, Sofia. Positive identification was impossible, however, as the signals were only R3 at best, and about R1-2 on announcements.

MARCH 8—Same nice 16m. ham signals were heard from a number of Americans, including W9MCD and W1JIE.

At 10.45 p.m. two Americans were heard on 13m. Both were rather weak (R3). This would indicate that high frequency reception is improving steadily. Listeners are advised to watch for these stations—W2XE and W8XK.

MARCH 10—Another new station was heard this evening at 6 p.m. This was the Italian African 'phone at Asmara, Eritrea. It operates on 20.69m., and can be identified by a peculiar 5-note musical signal.

A further group of amateurs included:—VU2BY, PK3ST, OA4AI and KA1AS.

After 11 p.m., a South American was heard on 31.8m. Signals were very loud, but bad C.W. QRM prevented positive indentification. Very probably the station was COCH, Habana.

MARCH 12—Three 'phone stations were the best catches for the day. DFD, Nauen, were calling Tokio on 20.4m.: GBA, London, calling Shanghai on 18.6m.: and XOJ, Shanghai, calling London on 18.9m.

MARCH 14—Two more 'phone stations definitely identified were the Russians RIM (Tashkent, Turkestan, 19.6m.) and RKI (Moscow, 19.8m.). They were heard calling each other at 2.55 p.m.

The two Cubans COCX (26.2) and COCQ (30.7) were both R5-6 at 3.15 p.m.

About an hour later, OLR3A was heard on 31.4m. Signals were R8 at first, but rapidly faded out to R4.

MARCH 17—W1XK were R6, QSA5, closing at 4 p.m. It is a long time since they were heard as well in the afternoon.

Asmara (20.69) were again heard at 6 p.m. They seem to commence traffic regularly at this hour.

When PCJ Was PCJJ.

(continued from page 4)

It is interesting now to remember that we heard the voice of Her who was then Princess Juliana speaking to her people beyond the seas. I made at that time a wax cylinder record of her speech." (H. Russel Crane, Sydney).

" . . It recalls the world's longest distance relays carried out in 1927 by 2BL, Sydney, of which I was engineer-in-charge. We first heard and relayed PCJJ to our Sydney radio audience at 3.30 p.m. (Sydney time) on Apil 8, 1927. The reception was made on a simple 3-valve receiver, and the results were so good that I venture to say they have not been surpassed at the present time even with the modern superheterodyne receivers." (Ray Allsop, Raycophone, Sydney).

" . . My outstanding item of interest in connection with the reception of your station was on one occasion in 1929, when I received excellent signals while conducting radio experiments in an aeroplane (Mark II DH60) over Mascot, New South Wales, at an altitude of 6,000 feet . . . . Suppressors were used in the ignition system, and while on the glide with the engine just ticking over reception was excellent." (S. V. Colville, VK2FA, Sydney).

" . . Station PCJ (then PCJJ) has been closely identified with many significant scientific observations, particularly in regard to the analysis of radio echoes during Dr. Stormer's original work on the earth's magnetic field. However, not only from the purely technical standpoint, but also from the more important and wider angle of world peace and hegemony, station PCJ rightly deserves the plaudits of the whole world upon this happy occasion." (E. J. T. Moore, Sydney).

Notice To Readers.

Owing to heavy pressure on space this month, due to the publication of the list of ZL amateurs, it has been necessary to hold over instalment 8 of the "Radio Step By Step" series, and the concluding article on "The Story of Television." Both will be published next month.

" . . It is the opinion of Association members that PCJ and PHI have done a tremendous lot to popularise shortwave broadcasting, and the activities of both stations have been looked upon in Australia as outstanding achievements in the radio world." (Alan Duke, President, Victorian Radio Association).

" . . It is indeed a landmark in long-distance radio broadcasting, and I have pleasant memories of the thrill there was in picking up the old PCJJ." (S. H. Witt, P.M G's. Dept. Melbourne).

Down through the years from 1927 to 1937 the Dutch transmitters PCJ and PHI have maintained their transmissions on the short waves, and what were originally experimental transmissions have now become regular entertainments, for to-day listeners are insisting on dual-wave receivers so that they may hear what the shortwaves are saying.

To the old timer in radio, however, the tenth anniversary of PCJ will bring back happy memories of the faithful "low loss" set and the midnight oil that was burnt in 1927 and other years.

"Radio World" Celebrates First Birthday Next Month

Special Covers For Volumes I. & II. Now Available

This issue of the "Radio World" is the twelfth, and completes Volume 1. In response to many requests from readers who want to keep their copies avaiable in handy form for reference, special covers for Volumes 1 and 2 are now available.

For these, a strong and durable leather-board has been chosen, covered with dark blue book-cloth and attractively printed in gold, with the title of the magazine, volume number and dates of issue.

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New readers are advised that back copies in Volume 1 are now available at 9d. each, post free. Also, a complete set of copies in Volume 1, together with a subscription for the twelve issues of Volume 2, are offered at the special price of 17/6, post free (or any six copies in Volume 1 and subscription to Volume 2, 14/6, post free).

Finally, readers who wish to take the "Radio World" on a subscription basis and have their copies posted to them direct each month, thus avoiding delay, are invited to complete the coupon below and send it in.

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