THE AUSTRALASIAN Radio World

PRICE, 1/-

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

VOL. 5 . . . . . NO. 6 NOVEMBER 1940

TRANS-PORT A.C. MANTEL MODEL

STRAIGHT FOUR SIMPLE CIRCUIT

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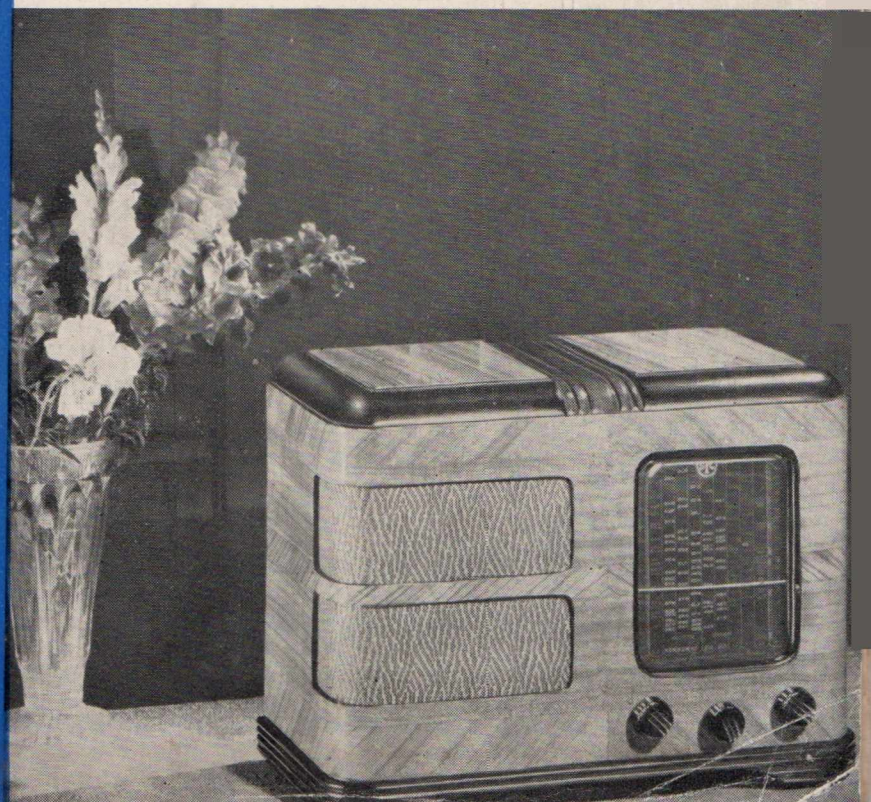

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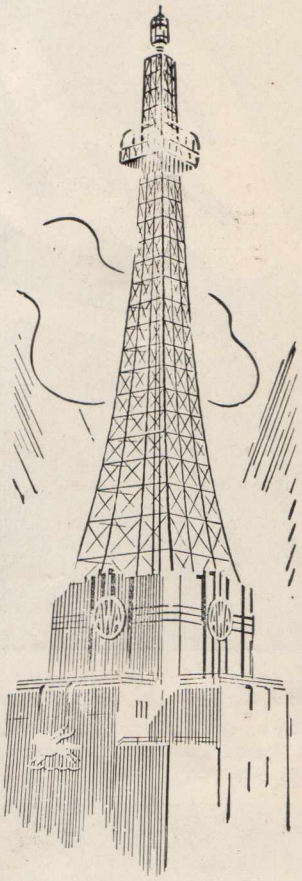

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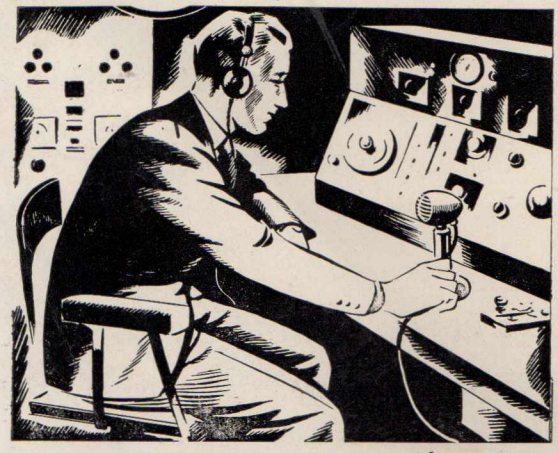

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The Australasian

RADIO WORLD

Incorporating the

ALL-WAVE ALL-WORLD DX NEWS

Vol. 5 NOVEMBER, 1940 No. 6

CONTENTS:

The "Australasian Radio World" is published monthly by A. G. Hull.

Editorial Offices: 117 Reservoir St., Sydney, N.S.W. Telephone: MA 2455.

Subscription rates: 1/- per copy, 10/6 per year (12 issues), post free to Australia and New Zealand.

PERSONAL

In step with the tremendous increase during the past few years in the number of licenses taken out annually in the Commonwealth, the radio service business has advanced to the position where it now must be recognised as a separate industry. The task of keeping over a million receivers in order is a tremendous one; that alone would make the men who perform it a force to be reckoned with, but there are other reasons why servicing as a profession is becoming increasingly more important.

Of everyone in the chain between set manufacturer and buyer, the serviceman has perhaps the closest and most constant contact with the latter. Once he has obtained the confidence of his clients as a result of his experience and integrity, his recommendations regarding valve or set purchases are generally followed without question. Manufacturers who realise this can build up valuable goodwill among servicemen, and thus among listeners, simply by "servicing the serviceman"— by keeping him supplied with plenty of service data on their receivers and valves.

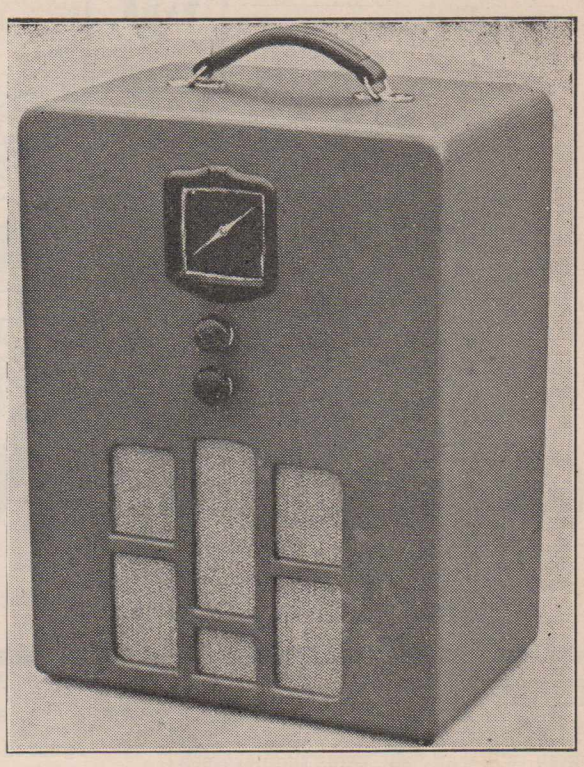
A second reason why radio servicing is now forging ahead is that the serviceman of to-day must of necessity be equipped with a wide and thorough knowledge of radio from both the practical and theoretical angles. With improved methods of manufacturing, sets are being made more and more "breakdown proof," but against this they are far more complex than they were a few years ago, which means that service calls per set average little fewer to-day than they did before the advent of dual-wave receivers, with their host of modern refinements.

This increase in complexity also means that the day is well past when radio repair work can be performed by experimenters or electricians with a voltmeter, soldering iron, and a pair of pliers. Elaborate service equipment, plus a thoroughly sound and up-to-date knowledge of radio are essentials for anyone in the service game to-day. The equipment needed is expensive, and the training required means years of concentrated and costly study, but for good men the opportunities offering are endless. As an established profession, radio servicing is only in its infancy.

A. G. HULL.

THE TRANS-PORT

You can pick it up and carry it around the house, into the breakfast-room, sun-room, bed-room or even the kitchen. Plug it into the power and there you are! No aerial is required.

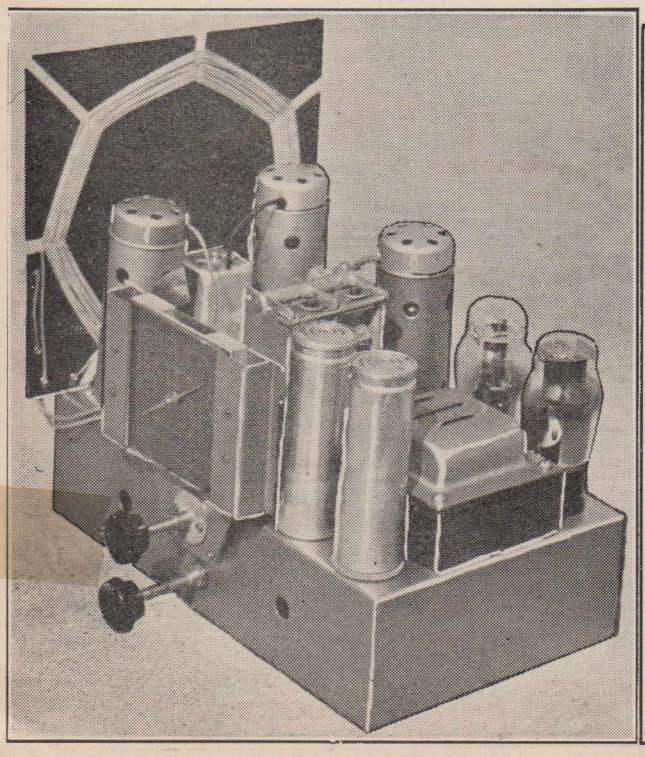


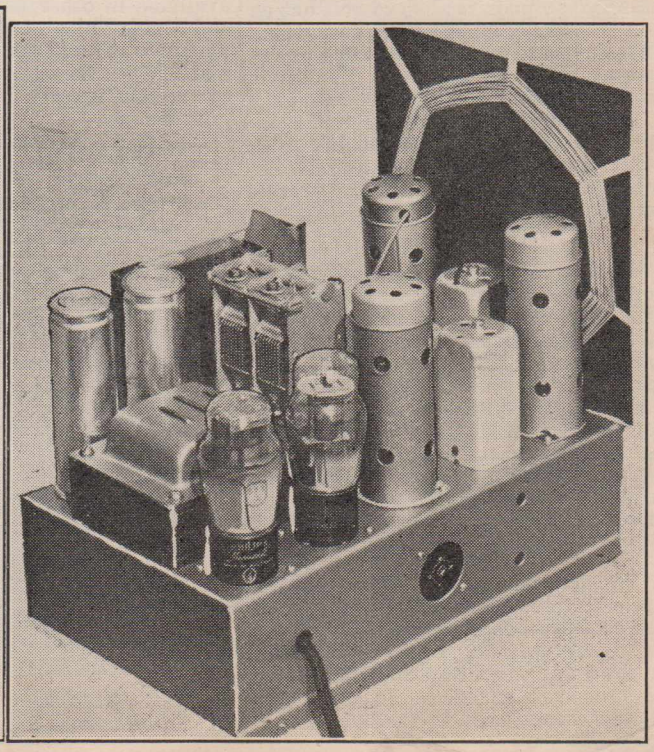
Here you see the "Western" leatherette-covered cabinet which has been specially designed for this job. Below you have two views of the chassis, showing the aerial loop, which fits inside the cabinet.

Year after year, radio broadcasting becomes more and more a major part in our lives. Originally it was the correct thing to switch on the set and listen intently for an hour or so at a time. To-day the average household has a radio set in operation for about sixteen hours out of every twenty-four. Running costs are negligible; sets are so reliable that they give thousands of hours of service without attention.

Sometimes, however, it is a doubtful blessing, especially for the neighbours — if by any chance they do not have their own set to protect them.

We refer to the happy housewife, as one example, who likes to have the





TRANS-PORT *(continued)*

radio going in the front room, and listen to it while she peels the potatoes in the kitchen. Under such circumstances the poor set has to belt out as much power as it can, and often enough has to operate with such power output that the distortion therein is predominant.

The solution to the problem is obvious — wifey should have her own little kitchen set, or if that is not possible, there should be a transportable on hand.

General Practice

It is quite general practice at present for mantel models to be used in this way, being picked up and carried around the house, to the kitchen, out on the verandah, into the bedroom, if sickness is present, and so on. In every case, however, there is a trailing length of aerial wire, thrown up over the nearest picture frame, dangling across the carpet to trip the unwary, or something like that. And all so unnecessary!

Obvious Solution

The obvious solution is to have a transportable set built on the lines of the batttery-operated portables, with a neat case, carrying handle, reasonable weight, and most important of all, an in-built loop aerial.

This means that no trailing wire is needed; simply plug it into the nearest power socket and away she plays.

Ignored by Technicians

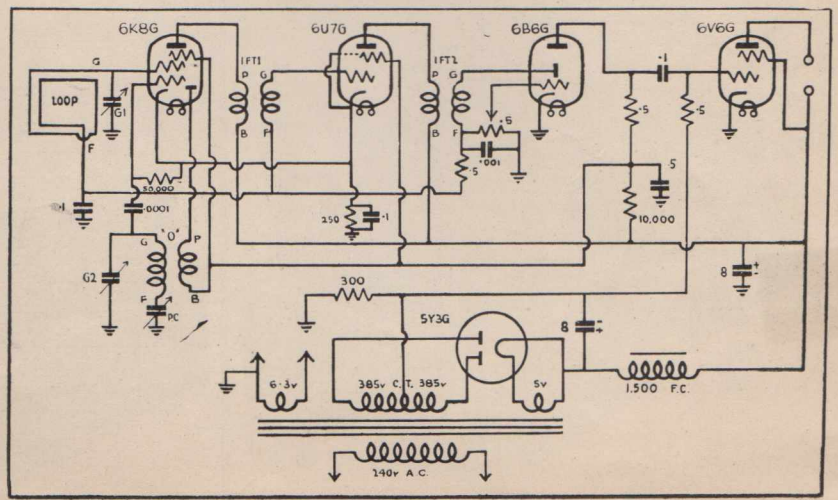
Sets of this kind have long been available in other parts of the world, and have also enjoyed a certain amount of success on the local market, yet they appear to have been completely ignored by local technical journals.

Let us hasten to fill the gap. The set described by us can be taken as a typical example. Actually any pet circuit can be used, the main difference between this and any ordinary set is simply the use of a spider-web loop instead of an aerial tuning coil. The actual inductance of the spider web is brought to resonance by the capacity of the first section of the tuning gang.

Local Reception

For local reception this gives ample pick-up, and if at any time it is desir-

Circuit schematic of "Trans-Port" receiver in its simplest form. In practice an extra component or two may be needed to obtain stability.



ed to get longer range, an external aerial can be applied, an extra turn in the loop gives the necessary inductive coupling for the outside aerial.

Simplest Arrangement

Our circuit, as it happens, is an attempt at the simplest possible arrangement of four valves and a rectifier, with a minimum of component parts, yet retaining all the modern features, such as automatic volume control, diode detection, etc.

TRANS-PORT — Parts List

1—Suitable carrying case (Western).
1—Suitable steel base (Arcadian).
1—Power transformer, 80 ma. 6.3v.
1—Special coil kit with loop (R.C.S., Radiokes).
1—2-gang condenser w/ trimmers (Stromberg-Carlson).
1—Dial to suit (R.C.S., Radiokes).
2—8 mfd. electrolytic filter condensers (T.C.C.)
1—.5 mfd. tubular condenser (T.C.C.)
3—.1 mfd. tubular condensers (T.C.C.)
1—.001 mfd. mica condenser (T.C.C.)
1—.0001 mfd. mica condenser (T.C.C.)
1—.5 meg. volume control (I.R.C.)
3—.5 meg. 1-watt resistor (I.R.C.)
1—50,000 1-watt resistor (I.R.C.)
1—10,000 3-watt resistor (I.R.C.)
1—300 ohm 3-watt resistor (I.R.C.)
1—250 ohm 3-watt resistor (I.R.C.)
5—Octal sockets, 3 valve cans
VALVES:—1-6K8G, 1-6U7G, 1-6B6G, 1-6V6G, 1-5Y3G (Brimar, Radiotron, Philips, Mullard.)
SPEAKER:—1,500 field coil, to suit 6V6G (Rola, Amplion.)

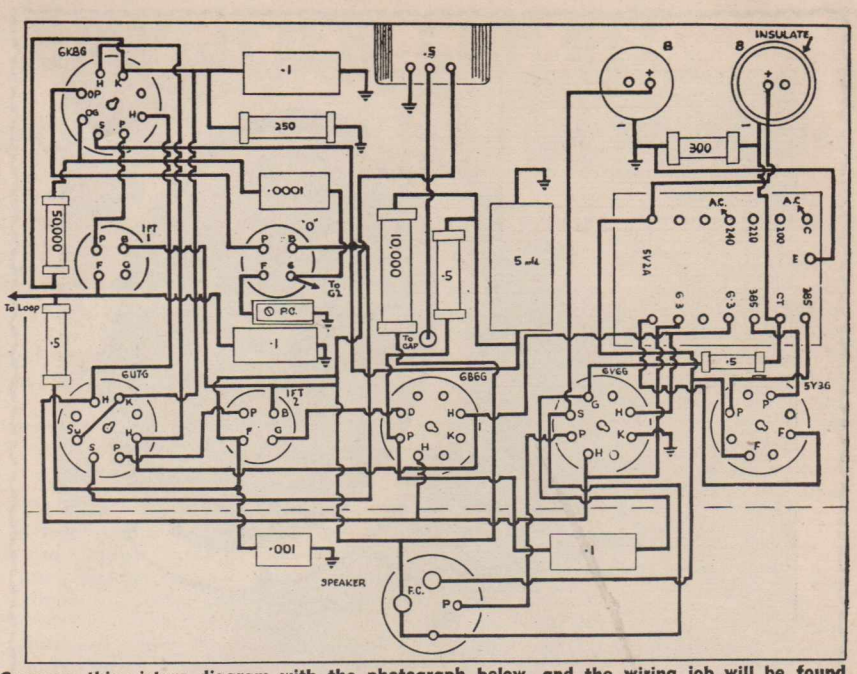
Unnecessary Components

Technically it is possible to suggest about a dozen components which could be added to ensure complete stability, but in practice this little set worked out fine, and so we are running the description in its simplest form.

Then, for the benefit of those who want to experiment with it, we hope to be able to give some hints and tips about by-pass condensers and so on.

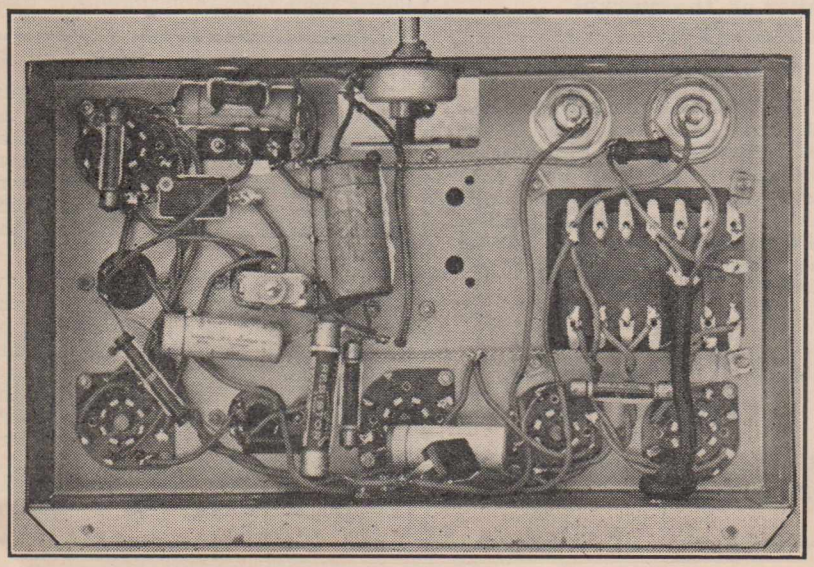
This should vary the monotony of the ordinary constructional article.

It isn't possible to keep on telling the same old story month after month along the lines of "now take the tip of the hot soldering iron between the thumb and forefinger of the left hand," and so on. Once in a while is surely often enough to go into all the minor details. Any novices who need such point-to-point construction instructions can turn up the Velco article in last month's issue. That particular article, probably one of the most complete ever published, tells of every point. Most of the instructions given are also applicable to this, or any other chassis.



Compare this picture diagram with the photograph below, and the wiring job will be found quite simple.

This photograph shows the actual wiring which is indicated in the picture diagram above.



TRANS-PORT *(continued)*

So let us assume that the builder of this set has already had experience in set building, or has read the Velco article in last month's issue. He has secured a suitable base, which incidentally could have been lots smaller if so desired; a kit of component parts, all of which are standard stock lines, and the wiring has been completed according to the picture diagram and checked against the circuit schematic.

The speaker is plugged in, valves fitted and the power switched on.

It is ten to one that on setting the volume control about half-way open and swinging the dial over, there will be a station played at reasonable strength.

NEW LONG-LIFE VALVE RECORD?

From time to time reports come to hand of outstanding performances achieved on receiving sets by keen listeners. It is thought, however, that the following extract from a letter written to Amalgamated Wireless Valve Co. Pty. Ltd. by Mockler Bros., of Bathurst, this month, sets a new long-life record for a receiving valve:

". . . we are forwarding one of a set of five Radiotron valves. We think the record of these valves is remarkable — particularly as an estimate of 12 hours a day is on the conservative side. These valves have been in use 40,000 hours and still show about 50%."—(Sgd.) Mockler Bros.

The valve in question was supplied as initial equipment in a Bandmaster model 44A (serial No. 079/817) in October, 1931, and no replacements have been necessary since that date.

If the set appears "dead," however, the ear should be applied to the speaker to see if there is any hum at all. If the rectifier is wired up correctly and the speaker circuit complete, there should be at least some sort of a little hum or sizzle in the speaker.

If not, an inspection should show the fault. Otherwise the cap of the second detector valve, 6B6G, should be tapped with the finger or the clip lifted from the cap and then replaced. This should come through the speaker as a sharp and loud noise. If not, a fault is indicated somewhere in this valve or in the output valve. If the noise does come through the speaker it is reasonable to assume

(Continued on page 41)

A NEW AMPLIFIER CIRCUIT

Direct-Coupled Phase-Changers Reveal Interesting Possibilities

AS might be imagined, after sitting through the many heats of the recent amplifier championship, there was not much doing in this line in the laboratory. In fact, anyone mentioning amplifiers during the month following the conclusion of the contest would stand a fair chance of being silenced with a particularly sickly grin.

But time is a great healer.

Ten watts of mighty nice power output, therefore, was to be found echoing around the walls again last week-end.

The source of this noise (music?) was a rather different type of amplifier circuit, one which is certain to interest the many hundreds of our readers who follow the design of such equipment.

The novelty in this circuit lies in the use of a direct-coupled phase-changer.

The winning amplifier in the contest used a resistance-coupled phase-changer and then direct coupling to the output valves.

Our latest arrangement provides for a direct-coupled phase-changer and then resistance-coupled output.

Performance revealed plenty of gain, even for low output pick-ups, excellent quality, and remarkable simplicity.

Quite a handful of component parts are saved over a conventional hook-up.

The circuit also lends itself admirably for the application of inverse feed-back over the three stages.

We do not, however, propose to deal with that particular aspect of the amplifier at present.

The Circuit

A glance at the schematic will show how we have arranged the high-gain triode portion of the 6B6G diode-triode so that it takes its plate feed through a resistor which also acts as the grid leak of the phase inverter.

The actual plate current of the first stage, flowing through this resistor, provides the bias voltage for the phase-inverter valve.

This bias is not critical and we found by experiment that the circuit will balance itself within wide tolerances.

It is equally suitable for use with the 6V6G or 6L6G valves, and for this reason we just show V1 and V2 as the output valves and "B" as the bias resistor.

For a pair of 6V6G this resistor should be 125 ohms, when the current drain will be about 115 milliamps at 265 volts.

Taken from a 385-volt 125-milliamp transformer through a suitable choke and then a 1,000-ohm field coil, this should work out nicely, with a bit over ten watts in the field, which a 12" speaker should handle comfortably.

The power output will then work out at about 9 watts.

WATCH FOR IT!

Following this short article, in which we announce a circuit of considerable interest, we hope to give further articles dealing with direct - coupled phase - changers. From a technician in one of the foremost radio set factory laboratories we have been promised a full technical review of this circuit, also the application of feedback to it, complete with many graphs and other data.

Higher Bias Voltages

It is thought, however, to use a bias resistor of about 200 or even 250 ohms, which will keep the plate and screen currents lower, with higher voltages than the rated 250 on the plate.

Using the 6L6G type beam power valves, the bias resistor can be 125 ohms, with a high tension current of about 165 milliamps at 300 volts. This heavy current drain is an awkward one to get from any normal power transformer, and we suggest the use of 200 or 250 ohms and a 385-volt transformer with a current rating of 150 milliamps and a 1,000-ohm field coil speaker, as well as a 150 m.a. filter choke.

Power Output

Under these circumstances the power output is something around 13 to 15 watts, or 18 watts with the 125-ohm bias resistor if you can arrange to get the heavy high tension current supply.

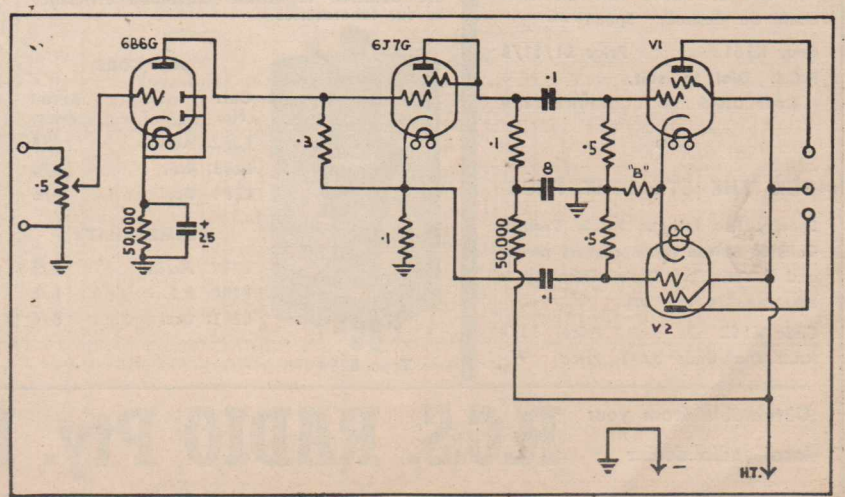
In actual practice, the human ear will not be able to tell the difference between ten and fifteen watts, especially if you are feeding the power into a single 12" speaker.

For Radio Work

For all-round work, including the audio end of a powerful radio receiver, we can give this circuit a thorough recommendation.

It is also a handy circuit to bear in mind if you already have a "Big Boy" amplifier on hand and you want more gain, together with an "earthed" input, such as from a microphone or photo-cell pre-amplifier.

Circuit diagram of a simple amplifier, using a direct-coupled phase-changer. If required, the first valve can be used as the second detector of a radio receiver.



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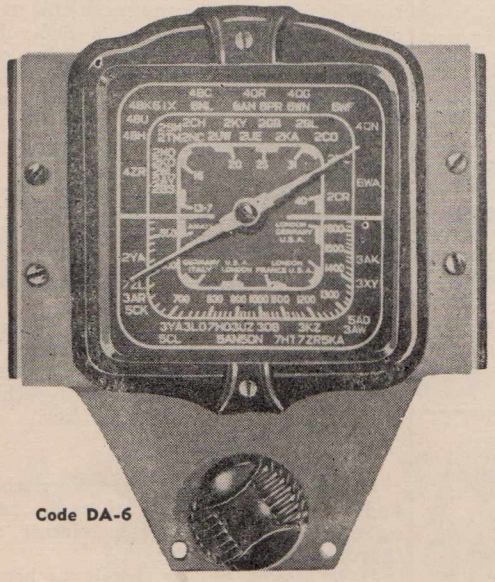
JUST RELEASED — NEW R.C.S. DIALS!

For some time we have felt we should provide dials for use with coils of our manufacture, thus assuring perfect tracking. Types DA-1 and DA-2 are single glass dual-wave, the type DA-2 having been designed especially for use with our Five Band Communications Receiver coil kit, and the "H" type Condenser. Code DA-1 is a standard dual wave dial for use with R.C.S. Coils and the "F" type condenser. The DA-5 Dial is for 1600 to 550 k.c., and 13.7 to 40 metre bands and the "H" type Condenser. All of this series are edge-lit and wedge-driven. The aperture for the escutcheon is approximately 7" x 4-7/8."

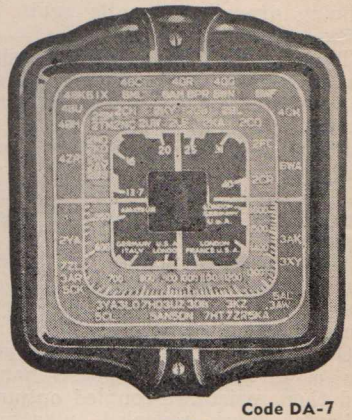
DA-1 Standard D.W. Dial, "F" Condenser ..... Price 22/6
DA-2 Communications Dial ..... Price 22/6
DA-5 13.7 to 40 metres D.W. Dial, "H" Condenser ..... Price 22/6



Code DA-6

DA-6 Dual-wave Dial is a smaller version of the larger dials, suitable for mantel sets. It is strongly built, edge-lit and wedge-driven. The escutcheon aperture is 3" x 3," and it is for use with type "H" gang condenser, on the 1600 to 550 k.c. and 13.7 to 40 metres S.W. Bands ..... Price 18/9

The new D.W. Portable Kit Dial, Code DA-7, has all parts supplied ready to assemble, and it has a glass scale with both B.C. and S.W. Bands clearly marked, finished in white with green background. The special walnut escutcheon is easy to fit and requires an aperture of 3" x 3." It is the only portable dial which can be edge-lit. Available for use with "H" type Gang Condenser on 1600 and 550 k.c. and 13.7 to 40 metres S.W. Bands.
Code DA-7 ..... Price 9/-



Code DA-7

DA-8. The specifications of this dial are exactly the same as the DA-7, except that the components are mounted on a bracket which requires only 1 screw to fit to the chassis.
Code DA-8 ..... Price 13/6

FOR THE TRANS-PORT

The heart of this novel set is the R.C.S. Trolitul Coil Kit as used in the original sample. The sensitivity and selectivity are all that could be desired. Specify —

Code K161 ..... Price £1/11/3
R.C.S. Dial to suit,
Code DA-6 ..... Price 18/9

•

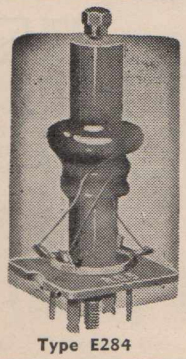
FOR THE STRAIGHT FOUR

Specify the famous R.C.S. Trolitul Coils to obtain the necessary power and selectivity. Their efficiency is surprising in this set.

Code K162 ..... Price 13/-
R.C.S. Dial, Code DA-7. Price 9/-

R.C.S. TROLITUL BROADCAST COILS

These coils are available in both Air Core and Permeability tuned types. The latter are adjusted to ensure maximum efficiency in our laboratories.



Type E284

AIR CORE

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E283.	R.F.	6/6
E284.	Osc.	6/6

PERMEABILITY

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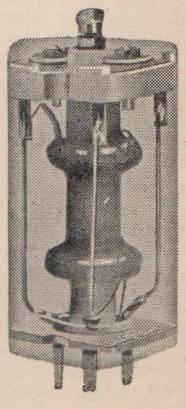
IF108.	2nd I.F.	7/6
	Iron Core, 465 k.c.	
IF109.	1st I.F.	11/-
IF110.	2nd I.F.	11/-
	Air Core, 175 k.c.	
IE68.	1st I.F.	7/6
IE69.	2nd I.F.	7/6



Code IF107

Obtainable from your local radio dealer

R.C.S. RADIO Pty. Ltd.

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DONALD'S BATTERY CIRCUIT

By using two r.f. stages ahead of the frequency changer it becomes possible to build a receiver of extreme sensitivity, ideal for operation in distant country locations. Some of the problems of the design are told in this story.

READERS will recall the story, "Beyond the Gates," which appeared in the March issue, and in which we told of Donald, the radio man of the kangaroo country, and his ideas about circuits for battery receivers.

Apparently that particular article aroused a good deal of interest, for many readers have since written to ask for further details of the set preferred by Donald.

Donald had a holiday down town, which gave him a chance to pick up some special parts, so that he has been able to build an even more effective dual-waver.

Noise Level Limits

With such an extraordinary low atmospheric noise level at his location, Donald can use real sensitivity. At King's Cross, near a tram-line, with plenty of electrical machinery, there is quite a definite limit to the amount of sensitivity which can be used to advantage. But in the wild open spaces there is practically no limit, so long as the valve hiss and actual receiver noise is kept low.

The surest way to get sensitivity, without noise, is to have extra amplification at the signal frequency; in other words, more stages ahead of the first detector.

The usual hold-up in the matter of having two r.f. stages is the four-gang condenser.

These do not appear to be available, but we got Donald fixed up by obtaining two special two-gangs from Strombergs. These were made up for us with an extended shaft, so that they could be coupled to form a four-gang.

Since Donald prefers to wire up his own wave-change switch, there was no difficulty in getting a coil unit fixed by using one aerial, two r.f. and one oscillator dual-wave coils, mounting them in a specially-designed base, with a four-gang Yaxley switch underneath.

Wiring up such coils to a switch is not exactly what we would recommend as a nice job for a novice, but to a man of Donald's experience we knew it would not present any real difficulty.

Splendid Results Obtained

Within a few days he wrote to report that he had the set in operation and that its performance was quite up to what he had hoped, with tremendous sensitivity and extreme selectivity.

No trouble was experienced as regards oscillation, but Donald takes care of this as he goes along. Part of his plan of building a set is to get a dozen extra .1 microfarad by-pass condensers and fit them as he builds. He puts one to every screen terminal, right at the valve socket in each case. By-passes are also fitted to every B plus terminal, right at the coils, and so on.

Extreme Selectivity

The two intermediate stages were found to be too selective for ordinary broadcast listening, although this selectivity was found to be a great boon on short-waves, keeping the noise down. Consequently, Donald finds it advisable to fit a switch to cut out one of the i.f. stages for "local" reception on the broadcast band. Just exactly how he is going to do this without introducing a feedback circuit, and consequent instability, remains to be seen.

Photos Not Available

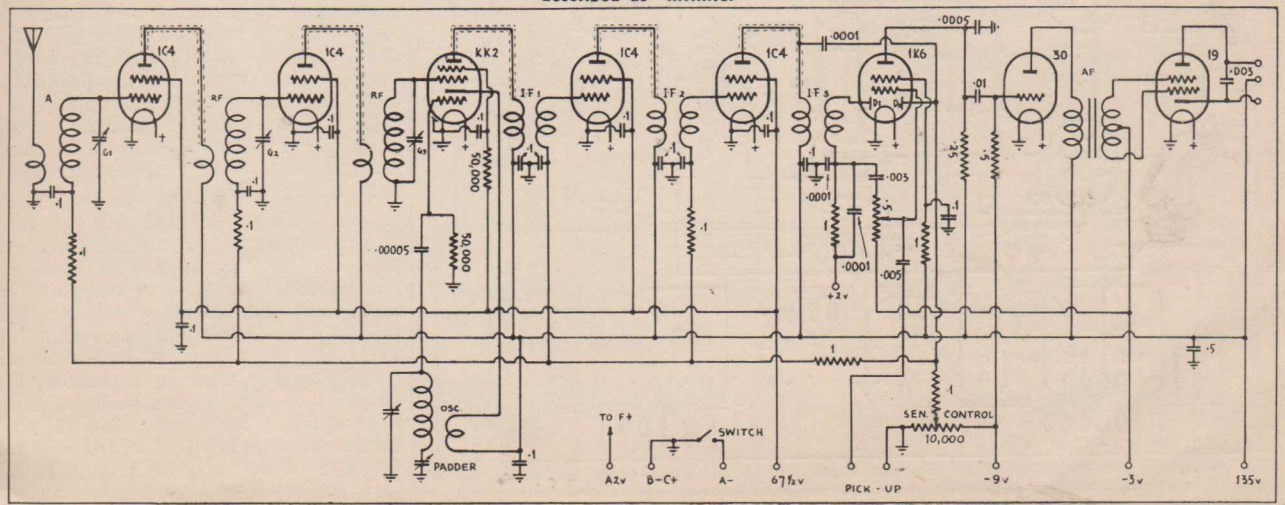
It was hoped to be able to take a run up to hear this set in operation and to obtain proper photographs of the chassis and the wiring, but petrol rationing makes it look as though this may be difficult.

For those who are interested, however, we give the circuit used, or rather, a rough idea of it, showing the two-volt valve types which Donald prefers to the 1.4 types.

WINNING AMPLIFIER CIRCUIT

An artist's error occurred in the circuit of the winning amplifier, published in our September issue. Fortunately the error was so obvious that any intelligent reader would recognise it immediately, especially as the picture diagram showed the correct arrangement. The main bias resistor was shown between earth and the c.t. of the high tension winding, instead of the filament winding.

Circuit of the eight-valve battery superhet discussed above. When properly stabilised, performance is of an order which can only be described as "infinite."



FURTHER CHAMPIONSHIP CIRCUITS

As promised, here are details of a couple more of the amplifiers which competed in the recent Amplifier Championship.

Apart from the winning amplifier in the recent Amplifier Championship, there were several others which gave excellent performance, and we originally hoped that we would be able to give full details of several of these.

Unfortunately, however, we have been sadly disappointed by several of the finalists, who readily promised to let us have rough sketches of their circuits and sufficient details for us to be able to describe them, but these sketches have not yet come to light.

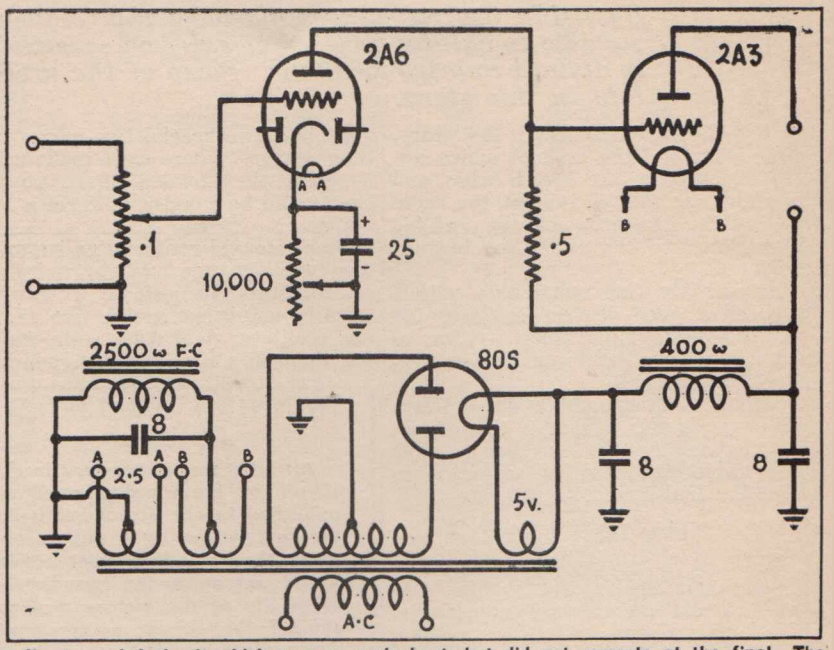
Not To Hand

In the case of the amplifier used by Mr. Dobson, the performance in the final was not up to the same standard as displayed by this amplifier when it won its heat. There was just some minor detail out of adjustment at the final, but in proper adjustment this amplifier could turn out excellent quality.

Mr. Dobson has promised to let us have the circuit for publication, but we are still waiting.

Likewise Mr. Lilley.

Mr. Lilley's amplifier finished fourth at the final, but was by no means disgraced, turning out splendid quality when heard in the right position. It seemed that the high note output was not sufficiently diffused, for practically every spectator sitting in one part of the hall voted for this amplifier, yet it did not sound so outstandingly good in other parts.



The direct-coupled circuit which won an early heat, but did not compete at the final. The high tension required is from 400 to 450 volts, which can be obtained from a 385-volt 100 milliamp transformer, as the current drain is low.

The amplifier was a dual-channel one, and we feel sure that if only some slight alteration had been made in the mounting of the high-note speaker there might have been an entirely different tale to tell.

However, the point is that Mr. Lilley assured us of a full description for publication.

We are all still waiting for it.

Won Third Place

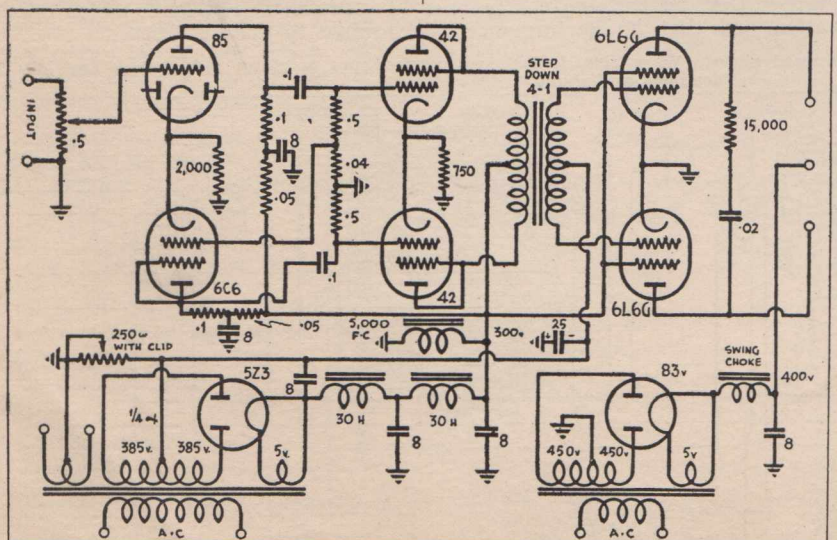
On the other hand, Mr. Lindsay, who finished third in the final, has been most helpful, and we are able to give a circuit diagram of his amplifier, showing all the resistor and condenser values.

The essence of this circuit is the use of a step-down ratio audio transformer. It is comparatively difficult to make an audio transformer with good characteristics if it has a step-up ratio, but on the other hand the inductance of the primary can be kept well up, if the ratio is step-down. We notice this with some of the cheap Class B transformers which are offered for battery-operated circuits. By using one of those transformers in an a.c. set it is possible to get quite good results. Another factor assisting the transformer in this particular circuit is the push-pull input.

The phase-changer circuit in this amplifier is also of much interest, being one of the paraphase arrangements.

Direct-coupled Job

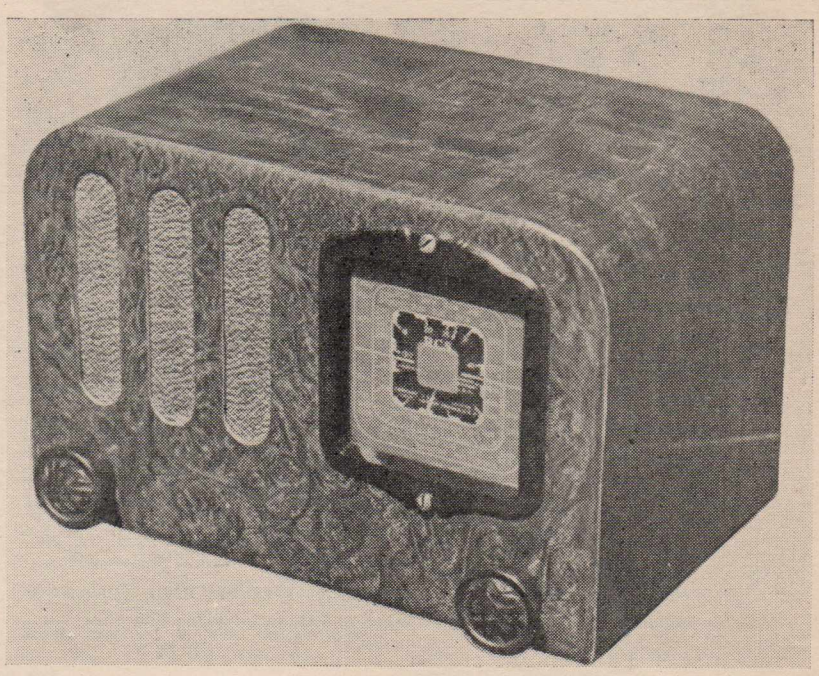
Another amplifier which showed up well in the Amplifier Championship was the small direct-coupled job which Mr. Hirst, the ultimate winner, used in one of the early heats, which he won. As we mentioned in the article describing the winning amplifier, Mr. Hirst is of the opinion that he could just as easily have won the final with this smaller job. It has the big advantage of being quite simple to adjust, even without meters.



The circuit of the amplifier which finished third. Originally built as a modulator for a "ham" transmitter, this outfit proved capable of delivering excellent music.

THE STRAIGHT FOUR

By using multiple-purpose valves and trick circuits, it is possible to get results out of proportion to the number of valves used. But there are those who think it is a better proposition to use an extra valve, with a simpler circuit, and get results that way. Here is just such a circuit for a baby mantel model.

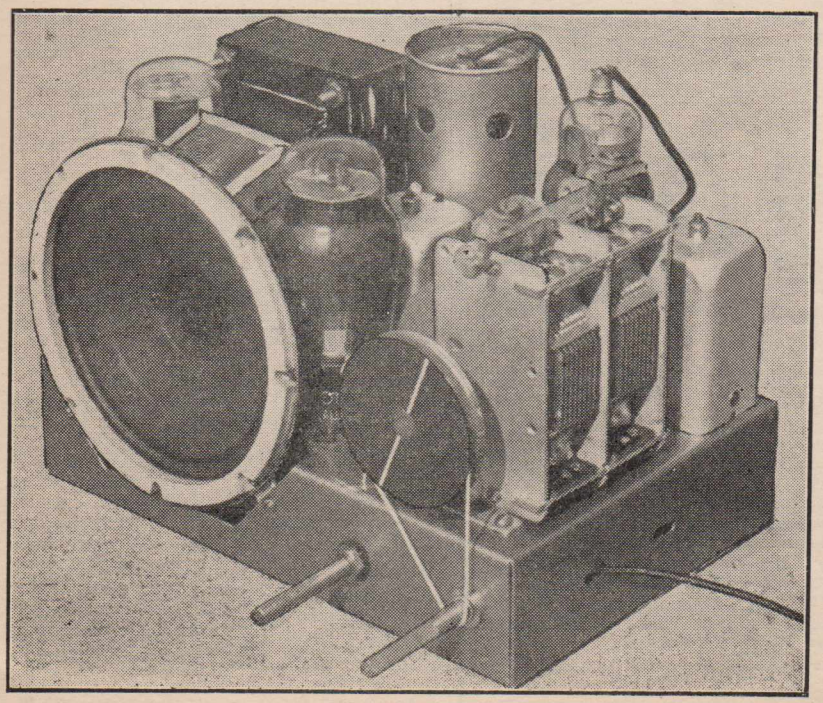


This little "Straight Four" chassis is ideal for fitting in a steel cabinet, like the one pictured here, which was used for "Itsy-Bitsy" last month.

THE wonderful results obtained with simple t.r.f. receivers, such as the Itsy-Bitsy in last month's issue, made us wonder just how good such a receiver could be built, if separate valves were used for each stage and a few extra shillings spent on other extra components.

Years ago the "straight" three-valve circuit, as it was called in those days, was a most popular circuit for both commercial and home-made receivers. Especially in England, around 1930 to 1934 the set consisting of an r.f. stage ahead of a detector, with a pentode in the final stage, was a recognised standard, both for a.c. and battery-operated receivers. With the addition of more and more stations on the dial there came the need for greater selectivity. The superhet circuit proved more selective, and so the old t.r.f. circuits faded into discard.

Recently, however, there has been quite a trend in the direction of simpler sets, especially as 95% of listening time is spent on a handful of the most powerful stations.



A general view of the "Straight Four" chassis, showing the simple, yet compact layout.

STRAIGHT FOUR
Parts List

1—Base to suit (Arcadian)
1—Steel cabinet to suit (Arcadian)
1—Power transformer, midget 40 ma. type.
2—Coils (1 Aer. 1-R.F.) (R.C.S., Radiokes)
1—2-gang Condenser with trimmers (Stromberg-Carlson)
1—Dial to suit (R.C.S., Radiokes)
1—10,000 ohm volume control (R.C.S., Radiokes)
1—Radio frequency choke (R.C.S., Radiokes)
2—.5 meg 1-watt resistors (I.R.C.)
1—.25 meg. 1-watt resistor (I.R.C.)
1—.1 meg. 1-watt resistor (I.R.C.)
1—400 ohm 3-watt resistor (I.R.C.)
2—8 mfd. electrolytic condensers (T.C.C.)
2—.1 mfd. tubular condensers (T.C.C.)
2—.01 mfd. mica condensers (T.C.C.)
1—.0001 mfd. mica condenser (T.C.C.)
1—.00025 mfd. mica condensers (T.C.C.)
4—Octal sockets, 1-valve can
VALVES:—1-6U7G, 1-6B6G, 1-6V6G, 1-5Y3G (Mullard, Brimar, Philips, Radiotron)
SPEAKER:—1,500 ohm field, to suit 6V6G
Sundry Hardware, etc.

Searching for distant stations has its attractions, but there must be thousands who never want to hear anything beyond their own local stations. For these listeners, the simple t.r.f. circuit, operated in a suitable

STRAIGHT FOUR *(continued)*

able of fulfilling their requirements.

Of course, there are certain difficult location, can give performance capcult locations where it would not be reasonable to expect a t.r.f. set to give complete satisfaction.

For example, at Coogee, within a mile or two of the powerful 2BL transmitter, interference would be quite a possibility.

Double-Purpose Valves

By using one of the double-purpose valves, such as the 6F7, containing two separate sets of elements, it becomes possible to make up an effective circuit with two valves and a rectifier. The 6J8G can also be used in a similar way, as in "Itsy Bitsy."

Generally speaking, however, the last ounce of performance cannot be expected from such arrangements.

For example, the triode section of the 6F7 has comparatively low gain.

Even the triode section of the 6J8G

Pre-Training of R.A.A.F.

V.E.N.T.S.! At last Sydney has awakened to the fact that a Voluntary Emergency National Training School is absolutely necessary for the training of the hundreds of recruits waiting for admittance into the R.A.A.F.

Three public-spirited, enterprising businessmen — Mr. G. E. C. Brown, of W. W. Campbell's; Mr. F. C. N. Smith and Mr. W. J. O'Brien, of Breville Radio — have formed this organisation entirely independent of government or public subsidies.

There will be branches in both country and city — the city classes being held in the Shell Company rooms corner Carrington and Margaret Streets, Sydney.

In addition to the study of Morse and theory under skilled instructors, the waiting recruits will be well trained in physical culture.

Thus hundreds of men, instead of waiting idly and impatiently for admittance into the Air Force, will be using this time to excellent advantage, and will have done much of the preliminary groundwork before their training in the Air Force actually begins.

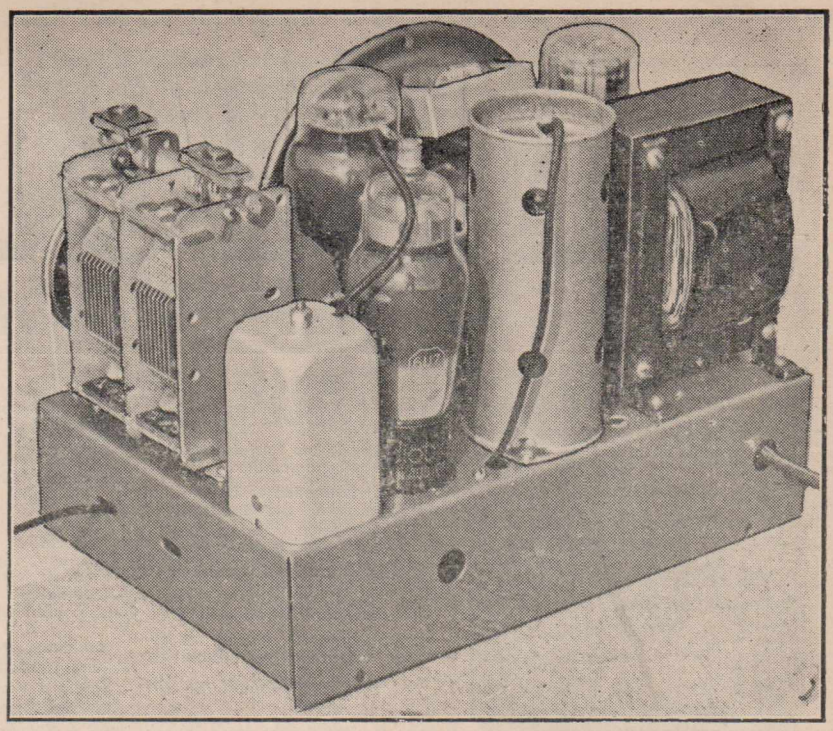
Already a great number of instructors have kindly offered their services to the V.E.N.T.S. — but more and still more will be required as the waiting list of Air Force reservists grows. So, if you are a competent Morse, theory or physical culture instructor — do your bit towards winning the war, by applying to the Hon. Sec., V.E.N.T.S., Box H 1031, G.P.O., Sydney!

STRAIGHT FOUR

(continued)

has a nominal amplification factor of something below 20. This is not comparable with the gain possible with a high-gain pentode used under ideal conditions, when a voltage gain of over a hundred is readily obtained.

To cut a long story short, we put together a straight t.r.f. set, consisting of a good r.f. amplifier ahead of a high-gain detector with a beam power output valve, avoiding all the short cuts and petty economies. Its performance was just what we fancied it might be, and so here are the full details.



A rear view of the "Straight Four" chassis, with the aerial coil in the near corner.

We can recommend it to you as a grand little performer which fills the gap between the cheapest possible a.c. set and the smallest of the superhets.

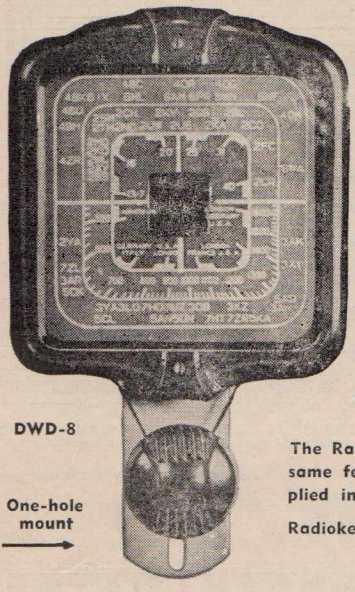
Standardisation

Economy in the use of metal is a definite need in the national effort, and so whenever possible, we like to use standard bases, instead of having a special design drawn up for every new set.

If a popular type of base is suitable, other things being equal, it means that supplies are easier to ob-

RADIOKES

OFFERS YOU THESE NEW DIAL RELEASES!



DWD-8

One-hole mount →

ASSEMBLED PORTABLE DIAL

This new Radiokes Portable Dial is supplied ready assembled.

- All that is needed to fit the dial to chassis is the insertion of one screw.
- Dial shows broadcast and dual-wave stations clearly marked in white on green.
- This dial can be edge-lit!
- Neatly finished walnut escutcheon of attractive design.
- The aperture required for the dial is 3" x 3."
- For "H" Gang, B.C. 1600 to 550 k.c. and S.W. 13.7 to 40 metres.

Radiokes Dial, Type DWD-8 13/6

The Radiokes DWD-7 Dial has exactly the same features as the DWD-8, but is supplied in kit form.

Radiokes Dial, Type DWD-7 ..... 9/-

•

DUAL-WAVE UNIT

Radiokes engineers have developed the newly-released Dual-wave Unit with R.F. stage—attaining new peaks of technical perfection! Broadcast 1500 to 550 k.c., shortwave 13.7 to 40 metres, with Aerial, R.F. or Oscillator Coils. For A.C. or Battery operation.

Type DWU-3, illustrated at left £3/7/6

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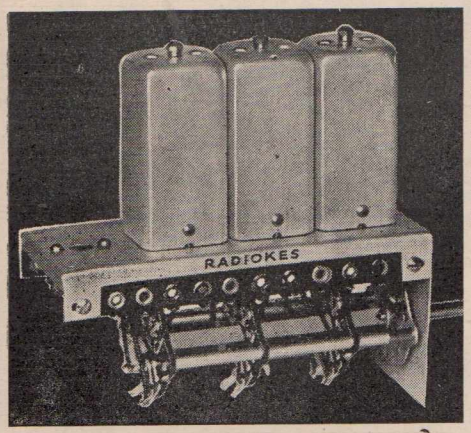


THE TRANS-PORT A.C. 5

If you want results equal to those obtained by the Editor, you must specify this Radiokes Trolitul Coil Kit.

Type CK1019 ..... £1 11 3
Radiokes Dial, DWD-6 ..... 18 9

•

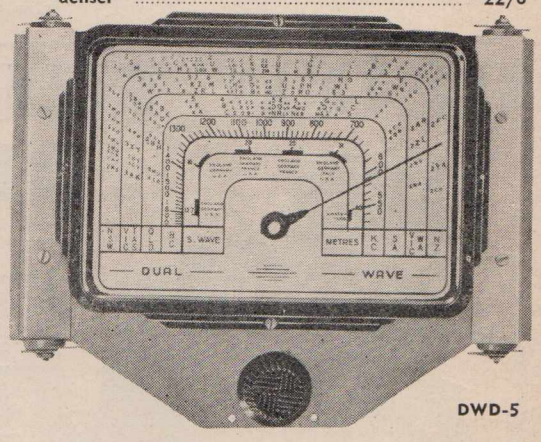
THE STRAIGHT 4

The new and improved design of the Radiokes Precision Products will give you the highest standard of results obtainable.

Radiokes Kit, Type CK1020, comprising 2 ACB Coils, @ 6/6 each 13/-
Radiokes Dial, DWD-7 ..... 9/-

Radiokes Dials, DWD-1, DWD-2, DWD-5, are all edge-lit and wedge-driven, and dial apertures required are 7" x 4-7/8."

DWD-1 Standard D.W. Dial, "F" type condenser 22/6
DWD-2 Communications Dial "H" type condenser 22/6
DWD-5 13.7 to 40 metres D.W. Dial, "H" condenser 22/6



DWD-5

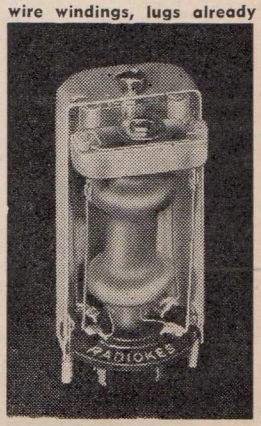
NEW RADIOKES DUAL-WAVE COIL (at left). Litz wire windings, lugs already tinned, short-wave range 16 to 50 metres. B.C. range 1500 to 550 k.c.

Type List Price
D.W.C. 14/-

NEW RADIOKES INTERMEDIATE TRANSFORMER (at right)

One-piece mechanically sound Trolitul formers and base — the highest standard I.F.'s available. A special feature is the round base suitable for round or square cans.

Type List Price
A.I.F. (Air Core) 7/6
I.I.F. (Iron Core) 11/-
P.I.F. (Perm.) 13/9



Radio Suppliers Pty. Ltd.,
Sole Agents for Radiokes Products,
Wingello House,
Angel Place, Sydney. Phone: B 4586.

If unable to obtain the advertised lines, please check the above square. ☐

Please send me the latest Radiokes price list.

NAME.....

ADDRESS.....

STRAIGHT FOUR
(continued)

tain and dealers do not require to carry such a large stock.

For this little set we found that the base originally designed for the "Little General" was just the thing. Since our circuit uses considerably fewer components, it means practically no crowding on the underside, and yet the size is small enough to provide a really natty little set which will fit into a baby type of mantel cabinet.

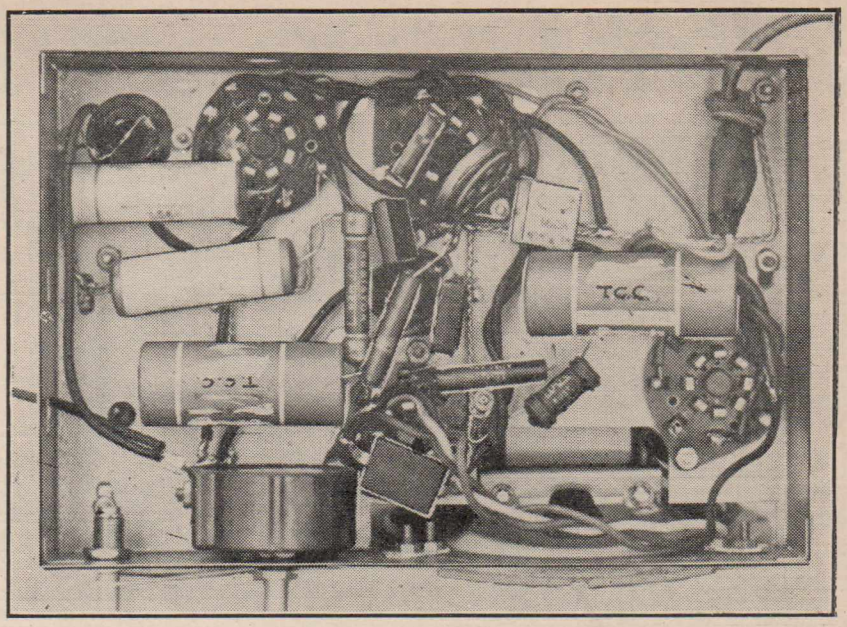
Reaction

As will be seen from our diagrams, we do not use reaction.

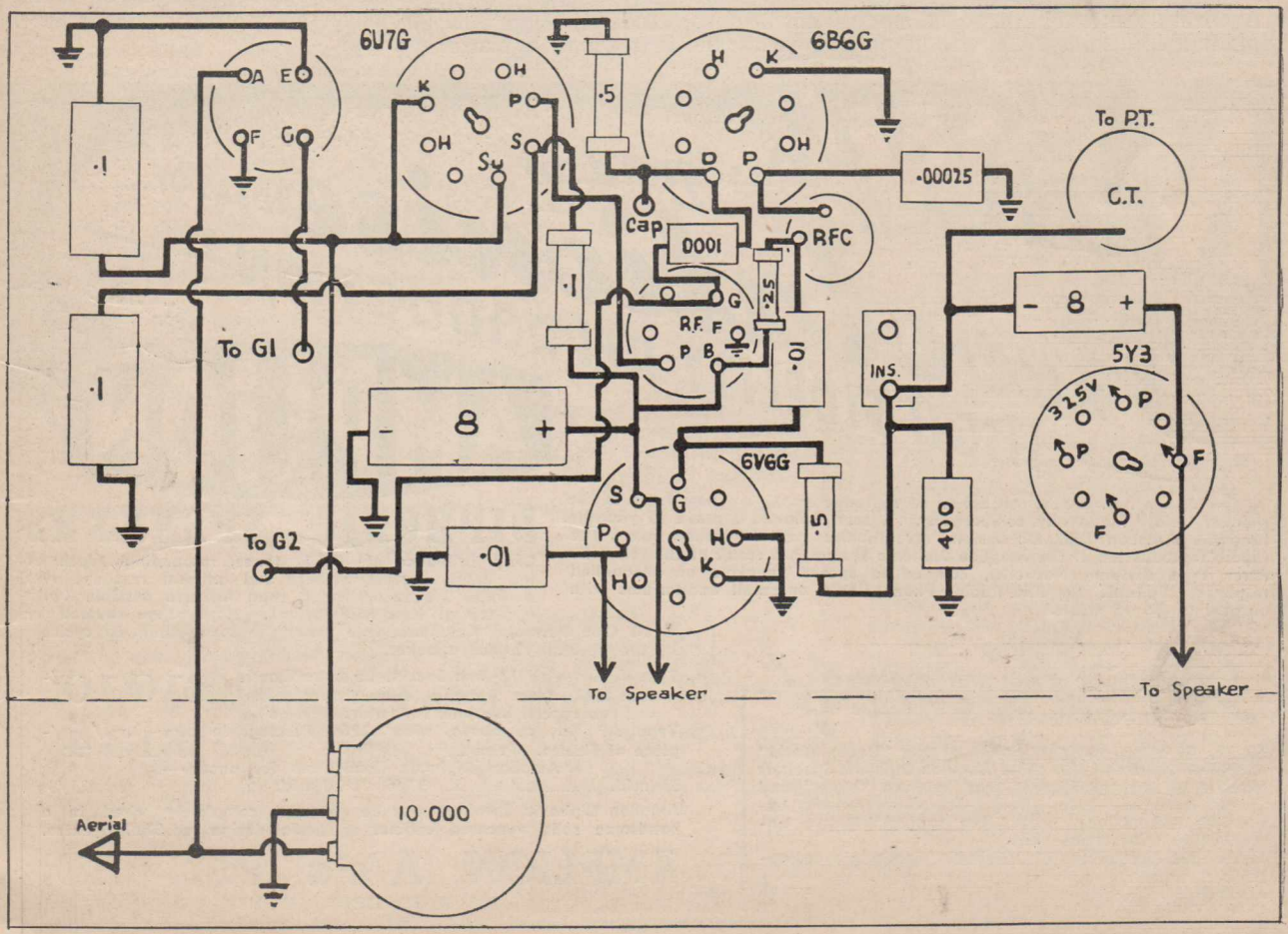
It is not a bad plan, however, to get the r.f. coil with a reaction winding, as under certain circumstances there might be quite a bit of extra gain to be obtained by the use of a little reaction, either fixed or controlled.

With our original chassis we found that there was so much gain in the job without reaction that it was quite unnecessary.

There might be examples built up with slightly different layout or wiring which would be more stable. Under such circumstances a little reaction can work wonders. We



Above is the photograph, and below, the diagram of the wiring. By using these together you should have no difficulty in getting the job done quickly.



STRAIGHT FOUR

(continued)

strongly recommend that the set be built and put into operation without reaction for a start and then, if so desired, a little experimenting can be carried out.

Details of a suitable reaction circuit to use as a starting point for such experiments can be taken from the Itsy-Bitsy circuit in last month's issue.

Standard Components

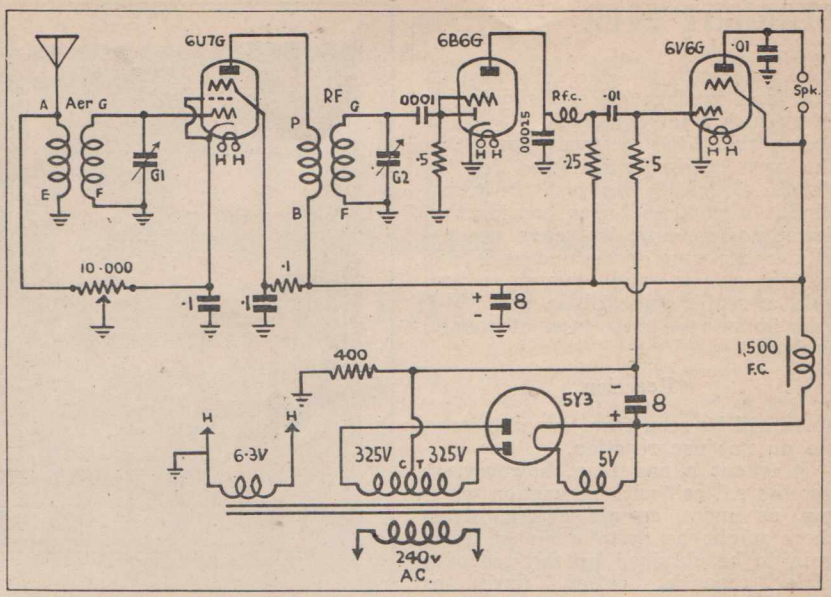
All the components used in the building of this set are standard lines, readily available from any radio shop.

The valves specified are all of Australian-made types, so that if at any time in the future overseas valves are unobtainable there will still be replacements available for this set.

Assembly

The construction of this set is so simple that it is hard to know what part of the actual work could be worth describing in detail.

The actual assembly of the main components is just as simple as putting together a Meccano model. Then the wiring calls for the use of a soldering iron, but otherwise it is just a matter of following out the picture diagram.



How's this for simplicity? It is the circuit of the "Straight Four," a strongly recommended circuit for a small mantel model.

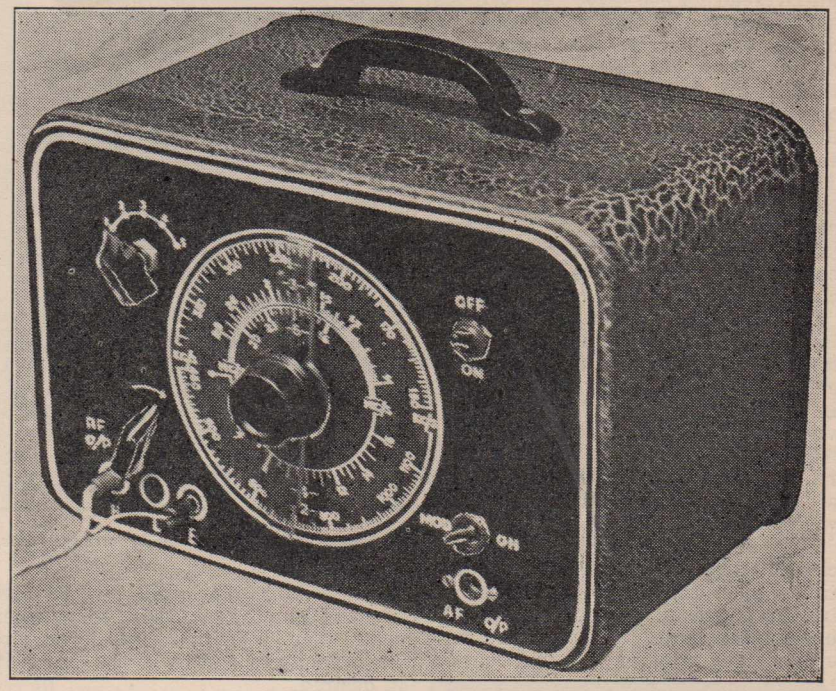
Alignment

Unlike the superhet, the straight circuit does not need any complicated alignment, and it is simply a matter of peaking both trimmers to get best results. It is not possible to get perfect alignment all over the band, but the set is sufficiently broad in tuning to make this feature anything but a problem.

ALL - WAVE OSCILLATOR

BUILD IT YOURSELF

Every advanced radio engineer and mechanic needs an all-wave oscillator. It is essential for the correct alignment of any modern receiver.



General view of the all-wave oscillator, which can be readily assembled from the special kits available.

IN "Radio World" for January last appeared full constructional details of a five-band service oscillator using a 1D8GT as combined r.f. oscillator and modulator. This design proved highly popular, and to-day is giving sterling service to the many servicemen and experimenters throughout the Commonwealth who built it up.

The original model, however, was designed in a form primarily suitable for laboratory use, and not for carrying around on service jobs. Apparently most servicemen prefer an instrument adaptable for either use, and accordingly the instrument has been re-designed to fit into a more compact case fitted with carrying handle, as shown in the photographs.

Essential For Accurate Alignment

Next to a multi-meter, easily the most valuable test instrument an experimenter can possess is an all-wave oscillator. The sensitivity of any receiver is directly dependent on the degree of accuracy with which it has been aligned, and while alignment by ear generally produces satisfactory results, for peak performance, alignment by oscillator is essential. Furthermore, imperfect alignment can often result in the presence of "birdies" and various forms of instability — faults that are sometimes wrongly blamed on the circuit.

There is no lack of data on test oscillators, for dozens of different designs are available in various magazines and text-books. However, most of them possess one or more serious disadvantages that to some extent destroy their usefulness.

Host of Attractive Features

The "Radio World" Service Oscillator illustrated above has been designed to eliminate those faults, and to incorporate every important feature an instrument of this type should possess. It is completely shielded, is compact and portable, and as well has a particularly efficient attenuator system for controlling output — an essential in these days of receivers with a.v.c. and fractional microvolt sensitivity. A minimum of parts has been used, though no attempt has been made to reduce the cost at the expense of performance.

The requirements of complete shielding, portability and low cost ruled out the use of a.c. from the start, for the mains cannot be filtered cheaply against all harmonics, nor could the oscillator then be used in non-reticulated areas. Thus battery operation was decided upon. This brought in the question of running costs, which was solved very successfully by using one of the latest 1.4-volt valves, the 1D8GT combination diode triode pentode.

All-Wave Oscillator

Parts List

1—Special Calstan all-wave oscillator foundation kit, comprising ready-drilled, steel, crackle-finished cabinet, 7 in. x 6 in. x 10½ in., all-wave oscillator unit (comprising five-band coil assembly and attenuator mounted in steel box, with modulation choke and condenser gang bolted in position), tuning knob and celluloid indicator, scale for front of cabinet printed on heavy art paper.
1—Octal wafer socket.
1—Type 1D8GT valve.
2—S.P. s.t. on/off switches.
1—Pin-jack.
1—Set test leads.
1—10-lug resistor panel.
2—Small instrument knobs.

FIXED CONDENSERS:

1—.0001 mfd. mica (T.C.C.).
2—.01 mfd. tubular (Ducon).
1—.02 mfd. tubular (Ducon).
2—.1 mfd. tubular (Ducon).

FIXED RESISTORS:

2—50,000 ohm ½-watt carbon (I.R.C.).

BATTERIES:

1—45-volt "B" unit (Eveready PR45).
1—1½-volt midget "A" unit (Eveready Q168).

MISCELLANEOUS:

Nuts and bolts, solder tags, sheet of celluloid to fit over scale (optional), hook-up wire, midget grid clips.

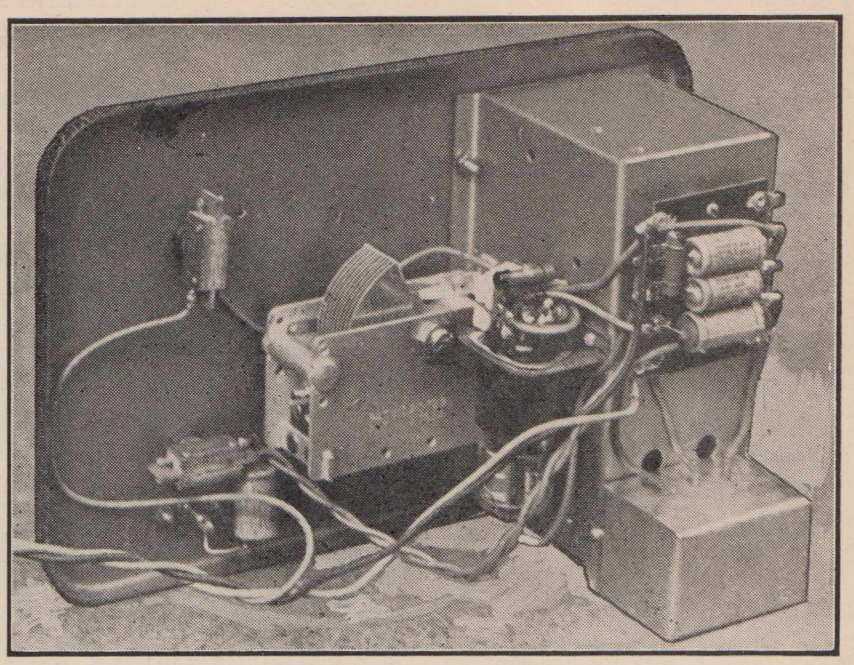
OSCILLATOR *(continued)*

Running Cost Is Negligible

The battery equipment comprises an Eveready Type Q168 "A" cell and a PR 45-volt "B" unit. "A" and "B" drains, respectively, are .1 amp. and approximately 4 mills. This means that about 400 hours of continuous operation, representing over twelve months of normal service, can be obtained from a single set of batteries. Taking this remarkably low running cost into consideration, an a.c. operated model is not justified, particularly in view of its greatly increased costs and much more complicated circuit.

The pentode section of the 1D8GT is used as an electron-coupled oscillator, giving plenty of output with excellent stability. The triode section is used as a separate modulator — a very desirable feature, as a self-modulated valve does not give smooth r.f. oscillation, with the result that a "hash" instead of a clean carrier wave is generated.

The audio oscillator section of the circuit uses a centre-tapped modulation choke, the circuit constants being arranged to give a steady 400-cycle audio note. This can be used either to modulate the r.f. carrier generated by the oscillator, to give an audible note from the speaker when a receiver is being aligned, or else the a.f. output can be used separately if desired.



A general view of the inside arrangements, showing the inverted mounting of the valve.

The instrument covers five wavebands, operating on fundamental frequencies on four of them (from 150 k.c. to 16 megacycles). For the fifth band (from 16 to 30 megacycles), second harmonics from band 4 are used. The oscillator thus covers the shortwave and broadcast bands, and all intermediate frequencies from 150 k.c. upwards.

Altogether, builders of this instrument will be delighted with its flexibility, accuracy of calibration, and ease of operation, especially in view of its low initial and upkeep costs.

In passing, much of the credit for this very successful design should be given to Mr. J. F. Smithers, chief engineer of Slade's Radio test equipment branch.

Coil Unit Supplied Ready-Calibrated

Each Calstan oscillator unit supplied is wired into the original experimental model before leaving the factory and adjusted against a standard signal generator for frequency coverage on all five bands to ensure reasonably accurate calibration. For all practical purposes the standard of accuracy thus obtained is perfectly satisfactory. However, for those who desire it, the instrument after completion can be sent to the Calstan factory (Slade's Radio, 61a Lang Street, Croydon, N.S.W.) for re-calibration against a standard signal generator.

Alternatively, the two lowest frequency bands can be given a final adjustment on broadcast station fundamental frequencies and harmonics by means of the two trimmers accessible through the two holes at the rear of the coil box (see rear view). Frequencies in "band 2" falling within the broadcast band (i.e., from 550-1100 k.c.) can be checked directly by beating the output from the oscillator with a signal picked up by a receiver from a station operating on a suitable portion of the band. (A t.r.f. type of receiver will obviate any possibility of image signals giving rise to confusion.)

The process is as follows: Run a lead from the "H" r.f. output socket, alongside the receiver lead-in. With the oscillator switched to "band 2," rotate the attenuator control full on, and turn the on/off switch to the "on" position.

Next, tune in on the receiver a broadcast band station operating on a frequency between 550 and 1100 k.c. — for example, 2FC on 610 k.c. — and

Next Month —

NEW PORTABLE SET

also

OUTPUT METER

adjust the oscillator tuning control accurately to this frequency. If the calibration of "band 2" is correct, a heterodyne whistle will be heard, caused by the beating between the oscillator and b.c. station carriers. A very slight adjustment of the "band 2" trimmer will then enable zero beat to be obtained. On the other hand, if no heterodyne whistle is heard, the position of the trimmer should be carefully varied until it is, when a further slight adjustment to find zero beat will complete the calibration.

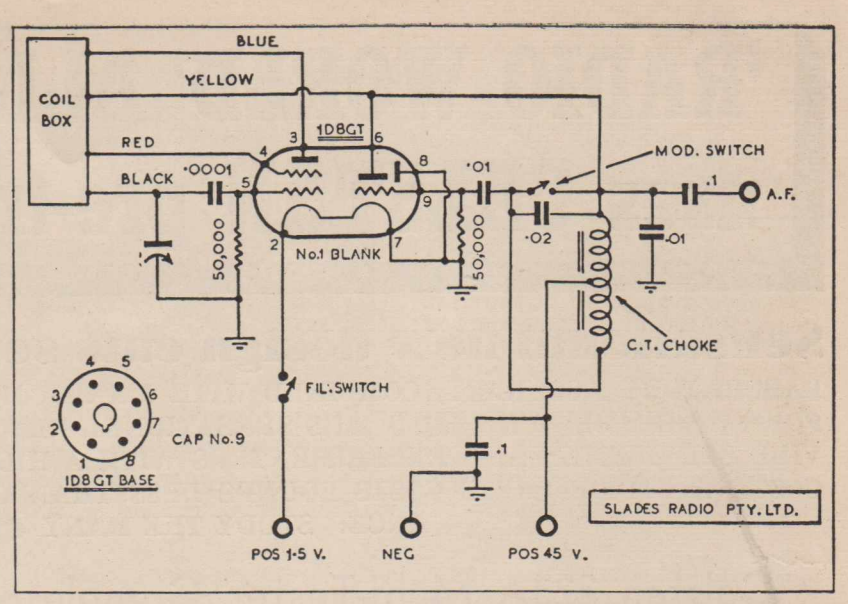
Calibration Checking

Next, a check can be made of "band 1," which extends from 150 to 550 k.c. and takes in all the intermediate frequencies in common use. Harmonics of the fundamental frequencies generated by the oscillator are used in this test, which is carried out in the following way:

Switch the oscillator to "band 1," and adjust the pointer to 475 k.c. The first harmonic of this frequency is 950 k.c., which is 2UE's frequency of transmission. Now adjust for zero beat as before. Similarly, the second and third harmonics of 175 k.c. are 700 and 1400 k.c., respectively, stations operating on the former being 2NR, Northern Rivers, N.S.W., and 7DY, 2PK and 4MB. (The station chosen for the check will of course depend on the builder's location.)

With the calibration of "bands 1" and "2" checked in this way, and adjusted if necessary, the oscillator is ready for service. (The three short-wave bands require no adjustment; their calibration is not so critical, and is guaranteed to be substantially accurate.)

Complete information on the procedure of aligning receivers — both superhet and t.r.f. — using a service oscillator was given in the excellent article published in "Radio World" issue for last January.



Circuit diagram of the oscillator, showing the colour coding of the coil box.

'RADIO WORLD' ALL-WAVE OSCIL
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Sensational new design cuts service time: increa

LABORATORY ACCURACY, COMBINED WITH MAXIMUM FLEXIBILITY AND IMPRESSIVE FORMANCE, ARE BUILT INTO THIS SENSATIONAL NEW STAR ALL-WAVE OSCILLATOR, I VIDE SERVICEMEN AND EXPERIMENTERS WITH A HIGH PRECISION INSTRUMENT AT COST. A KIT OF PARTS COSTS POUNDS LESS THAN COMMERCIAL MODELS OF EQUIV ANCE. STUDY THE MANY FEATURES LISTED BELOW:

Calstan 223A Multi-Tester Completes Your Service Kit

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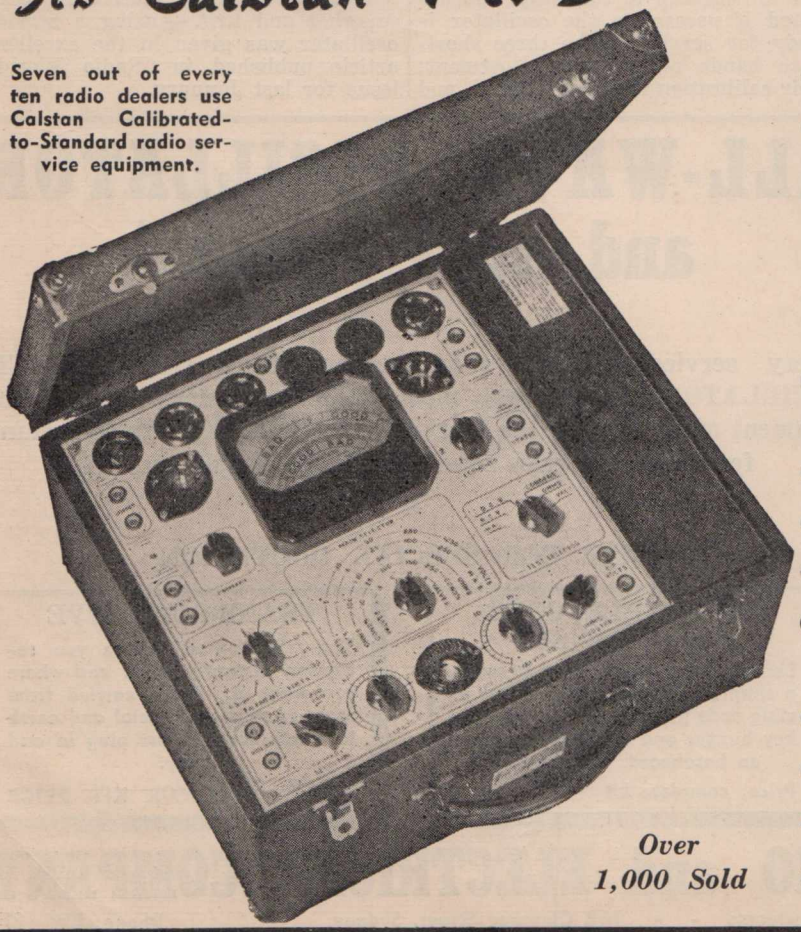
It's "Calstan" 7 to 3

Seven out of every ten radio dealers use Calstan Calibrated-to-Standard radio service equipment.



Over 1,000 Sold

The Star All-Wave Oscillator and the famous Calstan 223A Multi-tester together form a complete portable testing laboratory that will quickly and efficiently take care of all kinds of receiver faults, however obscure.

FEATURES OF 223A MULTI-TESTER

- Combines the multiple functions of a Valve Tester and Multi-tester.
- A new type meter with a high-grade aluminium face, which will not crack or warp in any climate. . . . It is large, and all ranges can be read with the greatest possible speed and accuracy. It is a really high-grade movement housed in an expensive moulded Bakelite case. Requires only a small mounting space . . . no mounting screws are visible and all threaded portions are brass inserts, firmly moulded into the case during the process of its manufacture.
- New style, permanently etched, finger-proof panel.
- Can be operated from either 6-volt accumulator or A.C. mains.
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- Tests every valve on the Australian market, including the new 1.4-volt series.
- Tests Electrolytic Condensers, and Paper and Mica Condensers.
- Measures A.C. Volts up to 1,250, Output Volts up to 1,250, D.C. Volts up to 1,250, D.C. Milliamps up to 250, Ohms from ½ Ohm to 10 Megohms.
- Set in good quality, leatherette Carrying Case.
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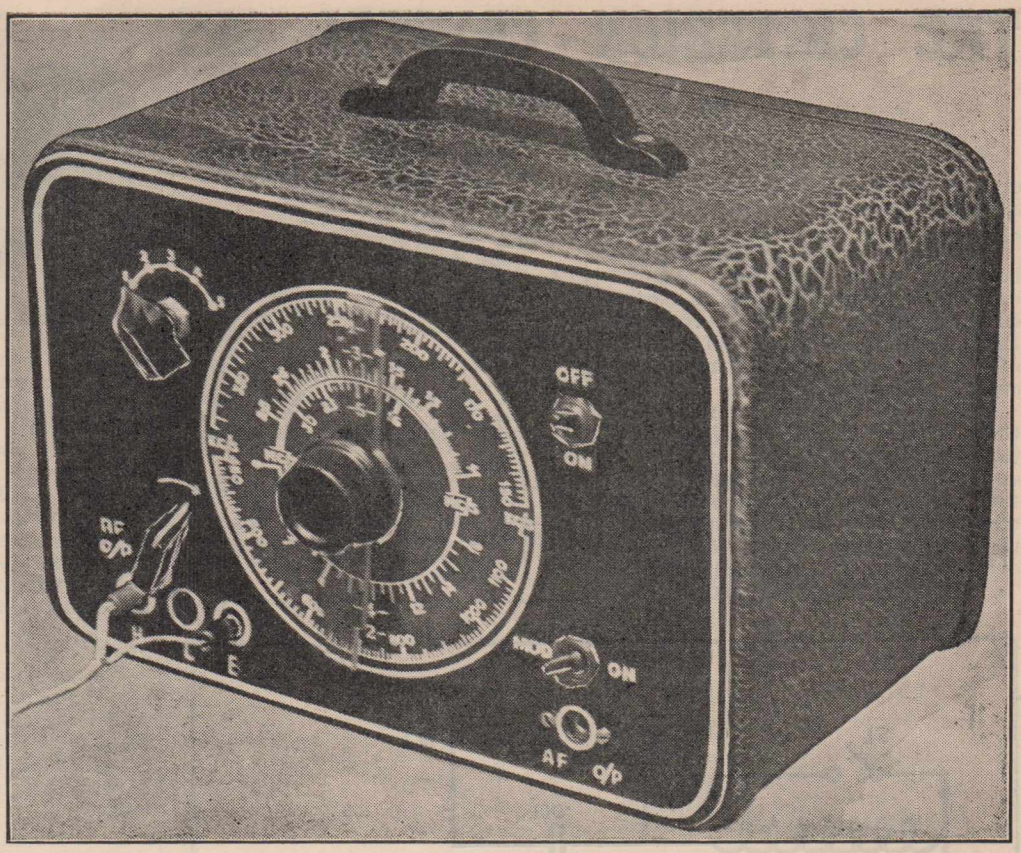

★ STAR FEATURES

- Continuous coverage from 150 k.c. to 30 m.c. in five bands. 150 k.c. to 15 m.c. on fundamentals, 16 to 30 m.c. on harmonics.
- Coils, band switch and attenuator are wired and sealed in a compact steel case, modulation choke and condenser gang being mounted externally.
- ONLY FOUR COLOUR-CODED LEADS to connect Foundation Unit into circuit.
- Band coverage is accurately pre-adjusted to track with five-band direct-reading scale.
- Electron-coupled r.f. oscillator circuit ensures high frequency stability.
- Five-inch five-band dial with non-slip planetary drive direct in k.c.'s, m.c.'s and metres.
- Provision for high and low r.f. output, with particularly efficient attenuator system. 400-cycle modulator note available when required.

COMPLETE KIT

The complete kit of parts for the Star All-Wave Oscillator comprises the Foundation Kit described alongside, together with all necessary resistors and condensers, valve, batteries, etc., as detailed in the list of parts accompanying the constructional article elsewhere in this issue.

Price, Complete Kit

£7/17/6

FOUNDATION KIT

The Calstan Star All-Wave Oscillator foundation kit comprises: One steel cabinet, 10½" x 6¼" x 7"; oscillator unit, mounted in steel box, with modulation choke and condenser gang; knob and indicator; scale printed on heavy art paper.

Price, Foundation Kit

£4/17/6

Coil Kit only, comprising five-band coil assembly and attenuator mounted in steel box with modulation choke and condenser gang bolted in position **£3/7/6**

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THE CRITERION CRYSTAL SET

By L. T. MOORE

The response brought about by the crystal set circuit published in the September issue of "Radio World" has spurred us on to even greater efforts.

Without a doubt, crystal sets are becoming more and more popular every day, judging by reports received in the mail at this office. Not only the beginners, but even the builders of big valve sets are becoming keen crystal set supporters.

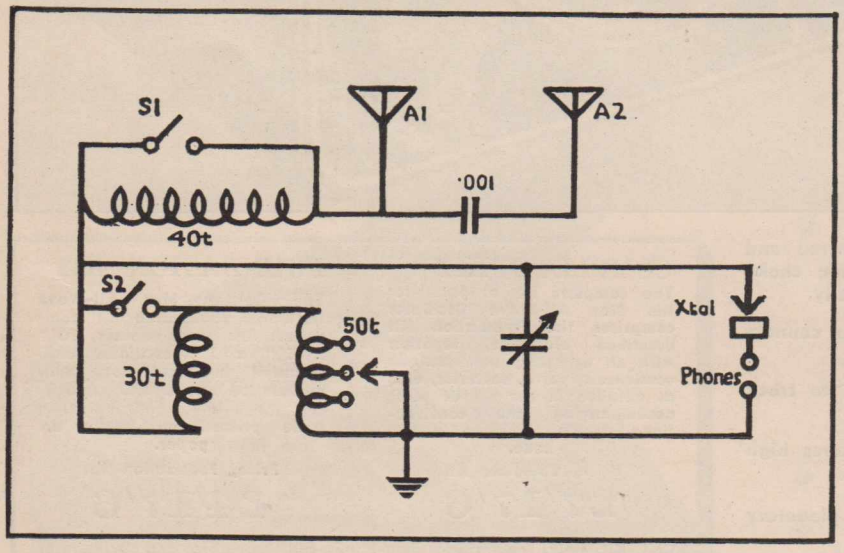
Crystal sets indeed have a lot in their favour. Apart from the fact that the law requires the owner of a crystal set to have a listener's licence, this is the only running cost to be met other than the original cost of the components. These days, however, crystal sets are mainly used as "a second set about the house." One reader from a Sydney suburb states that he has a "Radio World" crystal set at his bedside and if he finds that he cannot sleep, it is just a matter of placing on the headphones and he has the programme he wants, all night if he wishes, without waking even persons sleeping in the same room.

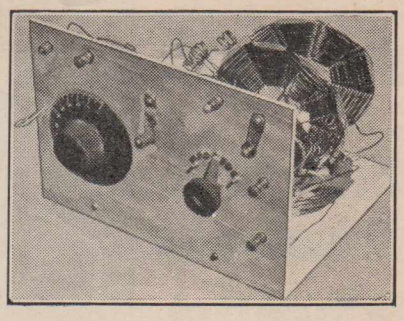
Here we describe a crystal set circuit that is the last word in efficiency. Much careful thought has been given to this circuit by the designer, a resident of Kogarah.

By manipulating the various stages of tuning you can get the best results obtainable from a crystal receiver. It might take a moment or two to find the correct coil, to switch in or find the right tapping and adjust the condenser, but, when you finally do "tune in" you know that you are receiving all that any crystal set is likely to give you.

THE CRITERION CRYSTAL SET

1—Front panel, 10" x 7."
1—Wooden base, 10" x 7."
1—Tap switch, i.e., 7 studs and a switch arm to suit.
5—Terminals.
2—One-way switches (can be home-made from pieces of scrap brass).
1—Crystal detector.
1—Dial.
1—Reel of 18 gauge enamelled copper wire.
1—Reel of 20 gauge enamelled copper wire.
1—Reel of 22 gauge enamelled copper wire.
1—Sheet of cardboard.
1—Variable condenser, .0005 to .00035.
1—.001 condenser.
1—Solid block of wood, 2" x 3" x 3."
SUNDRIES — Hook-up wire, heavy wire for coil lever, strip wood, nuts, bolts, woodscrews, etc.





Construction

You can begin construction by making the spider-web coils.

Take the sheet of cardboard and cut from it two circles, as shown in Diagram 1. Then take the wire and start on the tapped spider coil by inserting the 22-gauge wire through the small hole at the bottom of one of the vanes on the former. Wind the wire in and out the vanes, making sure that you push each and every turn down to the bottom of the vane, as there are lots more turns to be put on. When you have ten turns on, double the wire back for about one inch and twist it, thus making tap No. 1. Continue with the winding for ten more turns and form another tap on the same side as the latter, and so on until you have 50 turns, 4 taps, and two ends. Finish off the coil by punching a hole in the vane and threading the wire through it once or twice, leaving six inches for connections.

Next wind the other spider coil in the same manner, only leaving out the taps and using 40 turns of 18-gauge wire.

The bank coil is merely 30 turns of 20-gauge wire wound on some round object, such as a bottle 3½" in diameter. Slip it all off and secure it with insulation tape, so as to make a neat little coil with ends about 8" long.

Mounting Components

Take the base board and mount a solid block of wood, 2" x 3" x 3," on to it. This may be done by screws from the bottom of the base, remembering to countersink the heads, so that the unit will rest on an even surface. Next, place into position the gang condenser, and drill the panel to take the various switches, terminals and tap studs, etc., as shown in the photograph.

The coils may now be mounted so that we can begin with the actual wiring.

Mounting Coils

By means of wood screws through the centre of the coil former, the tapped coil can be attached to a strip of wood 6" x ½" x ½." It is then mounted as a fixture on the top of the wooden block on the panel side. Make sure that you have the tappings and the wooden strip facing the panel. When the coils are brought together nothing should stop them from coming up flush. The other spider coil is then mounted on the other piece of strip wood 8" long.

This coil is not a fixture, and should be facing the tapped coil in line with it when both coils are in the flush position.

Approximately 2" should be left overlapping for the wire lever to be

(Continued on page 42)

HOW TO USE THE MORSE KEY

Trained morse code operators are in strong demand. How to start training yourself in the use of the key, the construction of which was detailed in our September issue, is given in this article by Alf. Barnes, ex-VK2CE.

Well, I suppose there has been much drilling, tapping and polishing since we last talked about the construction of morse keys! This month we discuss the application and use of the key. We will see that a knowledge of telegraphy is an asset and a fascinating pastime — especially if one can get a companion equally as enthusiastic as oneself.

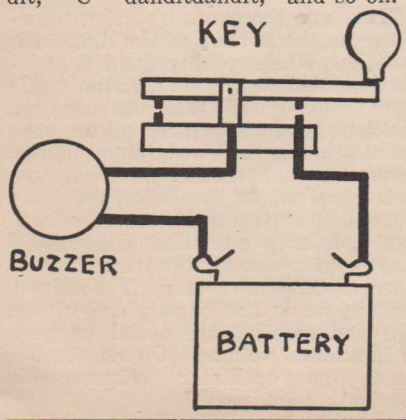
Build Receiver

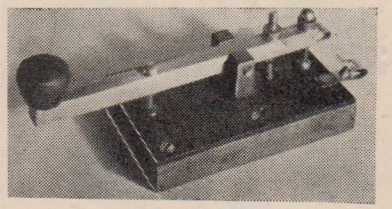
There are no short cuts in the learning of the morse code. Practice and perseverance are the main helpful factors. By all means build a short-wave receiver if you do not already possess one. The "Reinartz Three," described in last month's issue, should be just the thing.

Once the receiver is in operation, we will find that there are stations sending telegraphy continuously; some are fast and furious, others slow and steady. It is the latter which provide us with receiving practice quite free of charge! Of course, most of the text consists of five-letter cypher, but this is an advantage because it prevents the occurrence of the learners' common error — anticipation and guessing.

A New Rule

Now, here is a statement which at first may seem rather startling — forget all about dots and dashes. Think only of "dits" and "dahs," for this is just how the dots and dashes sound when made by transmitter or practice set. The letter "A" therefore immediately impresses on one's mind the sound "ditdah"— one word, notice, because if separated like this —"dit dah"— we would have the two letters "E" and "T." The letter "B" therefore forms the impression "dahditdit-dit," "C" "dahditdahdit," and so on.





Mental Practice

Now, whilst travelling to and from work or school, we have an excellent opportunity to practice this phonetic conversion of the symbols. Signboards and posters along the route, as well as in the bus, train or tram, can be mentally morsed to oneself. For instance, if, as I do, you travel in the bus, you'll notice a yellow sign on the bulkhead behind the driver; here's how it commences: "Ditdahdahdit ditdah didditdit ditditdit dit dahdit dahdah-dit dit ditdahdit ditditdit." Now, what word does this spell?

Keep a pad and pencil alongside your receiver, and next time you hear a telegraph station see if you can copy at least a letter or two. Soon the common words, such as "and" and "the" will be quite legible. Remember, however, that whatever messages you may hear must not be made known to other persons, for the law requires that telegraphists are "bound to observe the secrecy of correspondence."

Practice Set

For our practice set we require a morse key, buzzer and battery. For preference, the buzzer should be of the "high pitch" type; ordinary buzzers can be converted to "high pitch" by jambing a wad of paper between the spring blade and armature.

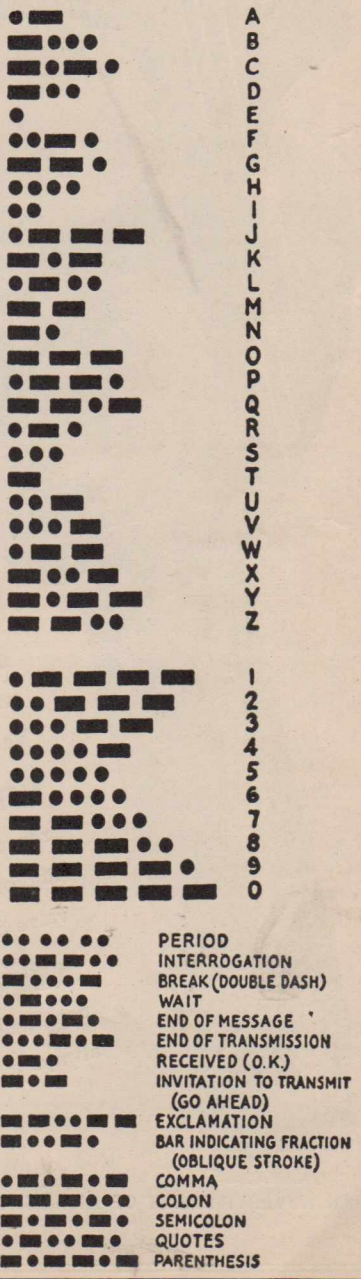
For long service, the battery should consist of three standard dry-cells connected in series, although the number 126 4½-volt "C" battery is smaller and a good performer. A circuit is shown for the solo practice set; if at all possible, build two of them and get another enthusiast on the other end of the line of the two-way circuit given. It's so much more fun this way — especially if you are separated by rooms or even houses!

Watch your step though, for your wires must not pass over or under highways, power or phone lines.

Notice that the two-way circuit is open (no sound) unless both keys are held down or short-circuited by the switches. Whilst you are copying, your key is short-circuited, and your pal's is open for sending, and vice versa.

It is important that the batteries are connected in series, best done with a colour-coded landline.

(Continued on page 26)



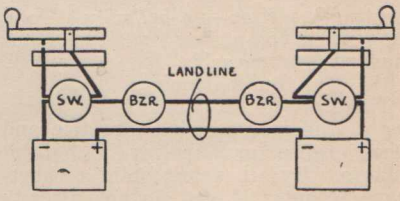
MORSE KEY *(continued)*

Using the Key

Hold the knob lightly with the thumb and first three fingers and try a series of dots — pardon, "dits." These are just quick, light taps with flexing wrist and arm fairly still.

See the idea?

Now, make three "dits" with a "dah" immediately following — "dit-ditditdah." Fine! That's a perfect "V," which is always used for testing and adjusting.



A "dah" should be three times as long as a "dit." Too many learners make the mistake of holding the "dits," i.e., they do not make "dits" at all; they make long and short "dahs." A "dit" is merely one quick, sharp touch of the key, and never make a "dit" anything but a "dit," no matter how slow you may wish to send. There must be an almost imperceptible pause between letters and a noticeable pause between words. Send slowly, cautiously and surely! Haste makes waste —

"ditdahditdahdit."

Alignment of "Velco"

In the first place, after the set is working, tune to a station somewhere in the centre of the dial and peak up the I.F. transformer by beginning with the second one and adjusting trimmers about half a turn in either direction until maximum results are obtained. After this is done, proceed in exactly the same way on the first transformer.

Then tune the set to a station somewhere on the bottom of the dial, such as 3XY. While rocking the dial backwards and forwards, adjust the oscillator trimmer until the most sensitive position is found, then adjust the aerial trimmer until maximum volume is obtained. After this is done, tune to the top end of the dial (say, 3AR) and follow instructions as for the bottom end, only adjusting the padder instead of the oscillator trimmer, and when maximum volume is obtained, tune again to the bottom end of the dial and readjust the aerial trimmer to maximum volume. On no account must the oscillator trimmer be touched again.

H.T. FROM ACCUMULATOR

DETAILS OF MR. CARTER'S UNIT

In the August issue we described a high-tension power supply, run from a 6-volt storage battery. Mr. H. J. Carter, of Marrickville, sent us the following letter describing the power supply used by his son in the Amplifier Championship.

Dear Sir,—

Observing the article in your August issue, regarding a battery power supply, I am supplying particulars of the equipment used by my son for his entry in the Amplifier Championship.

The idea lends itelf to many purposes, the simplest form being the supply of 240 volts alternating current, but others include high tension direct current by self-synchronising or low tension for battery charging from alternating current mains.

This unit is constructed round a 12-volt Lionel train motor, costing 10/6. For supplying 240 volts alternating current, the additional parts required are: Two 36-segment car generator commutators, 2 bushes to suit, and a transformer with a 24-volt centre-tapped primary to carry 10 amperes, with a 240-volt secondary to carry half an ampere, with taps at 200, 210, 220 and 230 volts.

The taps are not essential, but are needed if the battery charging feature is required.

The motor has a ¼ in. spindle protruding for 1 in. at each end, and it is necessary to turn up bushes for them before the commutators can be fitted. (Note: Only one of these commutators is used for alternating current operation).

Slight alterations are also made to the motor, viz., the fields are connected in series to help reduce the current drain; also a 10-ohm rheostat is placed in the circuit, to reduce the speed of the motor to approx. 1,000 r.p.m.

Operated in this way, the current drain is reduced to half an ampere, instead of the normal 2 amperes.

We start next on the commutator, and join three segments together and then to earth. Now skip nine segments and join three more together and earth these; skip nine more and join the remaining three to earth.

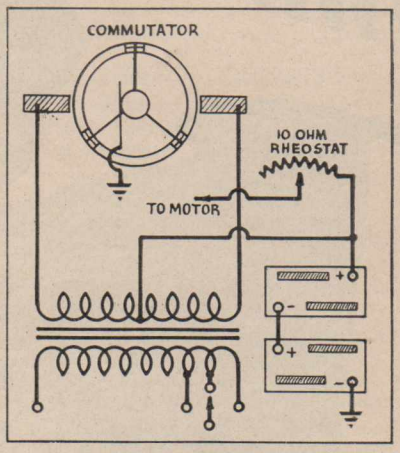
The commutator can be mounted now and the bushes fitted, then everything is ready to supply 100 watts alternating current at 240 volts.

Should high tension direct current be required, it is necessary to design the transformer to give the required voltage secondary and connect up the second commutator, making sure that the shorted segments are in the correct positions in relation to the first commutator.

The action is the same as a synchronous vibrator, with the exception that a much greater amount of current is available.

A synchronising commutator is used for battery charging, too, and the transformer plugged into the mains on the 200-volt tapping. The motor operates from the 12-volt winding, which now becomes the secondary, but actually puts out about 16 volts by value of the lower turns ratio.

Yours faithfully,
HARRY J. CARTER.



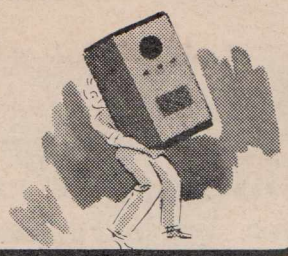
A Tale from America

Dr. Hyman Freedman, dentist, announced before the Kings County Medical Society, his newly invented magnetic teeth, designed to hold false teeth in place.

The magnets, set so that they oppose each other in upper and lower jaws, repel the plates with a force of about two ounces. This pressure is not annoying, for a person with false plates bites with a pressure of 40 pounds.

The magnets are made of any of the new magnetic alloys, all of which are very powerful. They are horseshoe in shape, sunk in the rear of the teeth. Porcelain sheaths the front of the metal, concealing the magnets from view.

There are four of these magnets, two for upper and two for lower jaws. They must be remagnetised once a year.



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-BUT YOU CAN TAKE ME ANYWHERE!

Your full-sized radio is good company — but you can't take it with you to the beach or bush. That's why radio manufacturers in Australia have designed the handy 1.4 volt PORTABLE set. Light, compact and complete, you can take it anywhere you can walk. Equipped with Eveready Portable Batteries, it is entirely self-contained — simply put it down, switch it on and tune into your favourite station. Could anything be simpler, easier or more enjoyable? Take a 1.4 volt Portable with you wherever you go outdoors this summer.

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Shortwave Review

CONDUCTED BY
L. J. KEAST

Special Transmission from New Caledonia ☆ Several Transmitters Steal In ★ Call Sign of Moscow ★ Excellent Talk by Douglas Fairbanks, Jnr.

In order to bring out this issue in time to permit of the Christmas number being out before the holidays, we have been unable to wait for all the listeners' reports. Therefore, if this column is a little longer than usual, please forgive me.

Several changes have been noted lately; for instance, **TAP**, Ankara (9460kc., 31.70m.) have since October 6 remained on the air till 7.30 a.m. and sometimes later.

Special Transmission

Radio Saigon (11,780kc., 25.47m.) gives a special transmission for New Caledonia from 7.15 to 7.40 p.m., news in French, followed by music.

A new one (to me) is **PMA, Bandoeng** (19.38mc., 15.48m.), opening at 10.15 p.m., news in English 10.20. Programme in several languages follows, and station closes down at 11.15 p.m. with "Good-night," etc., in English, German, French and Dutch. Excellent signal.

Transmitters Steal In

London, in Trans. 1, continues till 8.15 p.m., and talking of London reminds me several transmitters, not intended for us, steal in, for instance, **GSE** (11.86mc., 25.29m.), which can be heard distinctly at 9.30 p.m., and the comparatively new **GRW** (6.14mc., 48.82m.) puts in a fine signal at 7 a.m.

Our old friend, **Radio Suisse**, Schwarzenburg (6.16mc., 48.66m.) is still great of a morning, till 7.25. They did not appear to have much luck on this frequency when testing from 9 to 10.45 p.m., and during the last week have tried 11.87mc., 25.28m. during these hours. At Randwick it is nearly 10 p.m. before I can separate them from **GSE** and some weak sister in the background, who, so far, I have not determined, and equal favorites for further opposition are Morse and noise. If the signals are intended for us, I wish they would use the 16-metre band, as a finer signal than **HBH**, Geneva (18.4mc., 16.23m.) on a Friday night from 11.45, would be hard to beat.

New Station

Another new station to me is an Italian, who, on approximately 19.37 mc., 15.49m., is heard at 11.37 p.m., giving news in English. I have not noted the call sign, even if it was given, but he sometimes parallels with **2RO8**. It is a very good signal, and may be the call sign is **IRW**.

From 9 p.m. we have **PLJ**, Bandoeng (14.63mc., 20.51m.) at very good strength, and **PCV**, Amsterdam (18.07mc., 16.6m.) can be heard from 10.30 p.m. if the "whirling swirling merry-go-round" noise usually found on most German transmitters at this time of the night, permits.

Moscow Call-sign

I am told the call sign of Moscow on 14.72mc., 20.38m., is **RWG**, the same as 7.36mc., 40.76m.

I do not know what time limit was allowed for the American S.W. stations to bring their power up to 50,000 watts, but have you noted the great strength of **WGEA** at 8 a.m.? Listening to them at this hour on Friday, October 11, I was so surprised that I tuned in again on the 12th, and, sure enough, the volume was equally amazing.

THIS MONTH'S REPORTERS

Many thanks to:—
Official Observers:—
Wm. Bantow, Edithvale, Vic.
A. T. Cushen, Invercargill, N.Z.
J. C. Linehan, Leabrook, S.A.
and
S. I. Nelson (AW577DX), Cairns, Q.
B. W. Keats (AW565DX), Launceston, Tas.
Dr. K. B. Gaden, Wallumbilla, Q.
R. C. Schooth, Deagon, Q.
M. Bowser, Chullora, Sydney.
J. J. Fitzgerald, Auxiliary Hospital, Randwick.
M. Rogers, Hunter's Hill, Sydney.
A. Beattie, New Lambton, N.S.W.

Talk by Douglas Fairbanks, Jnr.

Heard an excellent talk by Douglas Fairbanks, Junr., through **WRUL**, Boston, at 7 a.m. on October 12. While the 19 and 25 metre bands were used, I found 11.79bc., 25.45m., best. A fine talk on the British-American Ambulance Corps given by a fine gentleman.

In October issue I referred to Radio Newsreel; a special Pacific edition is now given at 7.45 p.m. daily.

A good morning station is the C.B.S. **WCBX**, New York, 15.27mc., 19.63m., which can be heard at good strength at 8.15 and speaking in several languages.

Like Old Times

Seemed strange, and certainly made me think of old times, when I heard the old flute signal of Czechoslovakia the other morning. I was running over the 25-metre band, which by the way is surprisingly good at present, when, on 11.84mc., 25.34m., I came across the station from which we used to hear such fine news and talks in English. I wonder where Mrs. Zdenka Wallo and Mr. Leslie Hill are to-day?

Talking of English, one of the finest of the many series featured by the B.B.C. is "News from Home," by Howard Marshall at 10 p.m. each Monday, and if you care to still hang on to Daventry you will be entertained by "Hi-Gang," featuring Bebe Daniels and Ben Lyon.

Phenomenal Signal

Tempted by the phenomenal signal of **CJRX** on July 7 to report same to James Richardson and Sons Ltd., I did so, and received an acknowledgment in the form of a QSL card, but it is signed by J. Osborne on behalf of Transcanada Communications Limited.

I wonder how many heard our old friend, Bob Whybrands, on Sunday, September 22, speaking over **DJX** (9675kc., 31.01m.) at 6.45 a.m. Did not seem like our old pal of the Happiness Station, **PCJ**. As Arthur Cushen, of Invercargill, says: "Bob did not seem at home; it appeared like a forced broadcast." Even the German announcer's statement that Whybrands was on a visit to Berlin didn't seem to ring true.

After 8.30 a.m. morning reception is now very poor compared with a few weeks ago, although Rome and some of the Americans are holding up. As a general rule I would say from 9 a.m. till 1.30 p.m. at present is "interval time."

Best Philippine Station

Credit where credit is due: **KZRH**, Manila (9640kc., 31.12m.), is classed by all reporters as the best of the Philippine stations. Once, "The Nation's Station" (**KZRM**) was first favourite, but is now a long way behind "The Voice of the Philippines."

INCLUDE under "Notes from Diary"

I am advised by Mr. John J. Fitzgerald, of Randwick Auxiliary Hospital that he heard **CR7AA**, Lourenco Marques, announce at 2 a.m. on October 16 that they are operating on 6.03 mc., 49.75 metres. Mr. Fitzgerald also says for ten minutes reception was very good and then went to pieces. (**CR7AA** have another allotted frequency of 6137kc., 48.88m.—Ed)

The MONTH'S LOGGINGS

ALL TIMES ARE AUSTRALIAN EASTERN STANDARD

AUSTRALIA AND OCEANIA

VLQ-3, Sydney (15,315kc., 19.59m.): Not in use at present.

VLQ-7, Sydney (11,880kc., 25.25m.): 5 to 5.30 a.m., special programme for A.I.F. in Palestine.

VLR-3, Lyndhurst (11,850kc., 25.32m.): Good in daytime (Gaden).

VLQ-5, Sydney (9680kc., 30.99m.): Heard very strongly from 9 to 10 a.m. in programme for North America.

VLQ, Sydney (9615kc., 31.21m.): Special transmission for A.I.F. in England, 5 to 5.30 p.m.

VLR, Lyndhurst: Strong nightly (Bantow).

VLW-2, Perth (9650kc., 31.09m.): Fairly strong nightly (Bantow).

Fiji:

VPD-2, Suva (9535kc., 31.46m.): Only fair at night now (Nelson); but heard well in Tasmania (Keats). Good in afternoons (Beattie).

New Caledonia:

FK8AA, Noumea (6120kc., 49.00m.): Weak signal (Nelson).

AFRICA

Kenya:

VQ7LO, Nairobi (6083kc., 49.31m.): Opens at 2.15 a.m.; relays B.B.C. news at 4.

Mozambique:

CR7BE, Lourenco Marques (9710kc., 30.9 m.): Appears to be much stronger lately at 7 a.m.

Egypt:

SUX, Cairo (7865kc., 38.15m.): Heard weakly at 6.30 a.m. (Keats, Tas.).

Morocco:

Radio Maroc, Rabat (11,940kc., 25.13m.): Mr. Keats, of Launceston, reports hearing at 7 a.m. (This is interesting, as I understood they had gone off the air since French capitulation.—Ed.)

AMERICA (Central):

TIPG, San Jose (9620kc., 31.19m.): Good signal nightly (Nelson).

Guatemala:

TGWA, Guatemala (15,170kc., 19.77m.): Good, occasionally from 7 to 8 a.m. on Mondays (Schooth).

TGWA, Guatemala (9658kc., 30.98m.): Heard in afternoon, with weak signal, closing at 2.45 (Schooth, Nelson).

Panama:

HP5A, Panama (11,700kc., 25.64m.): Heard regularly from 1 p.m. to 2 p.m., weak (Schooth).

HP5J, Panama (9610kc., 31.22m.): Fair signal nightly (Nelson).

North:

WNBI, Boundbrook (17,780kc., 16.87m.): Good, well after 9 a.m. (Gaden, Beattie).

WGEA, Schenectady (15,330kc., 19.56m.): Fair to good around 7.30 a.m. (Schooth, Gaden).

KGEI, 'Frisco (15,330kc., 19.56m.): Fair after 1 p.m., good at closing at 2.30 (Schooth, Nelson, Gaden, Cushen).

WLWO, Cincinnati (15,270kc., 19.64m.): Heard well till 11 a.m. lately (Schooth). Strong at 8 a.m. (Bantow, Cushen, Beatty).

WRUL, Boston (15,250kc., 19.67m.): Note the difference between North and South. Weak at 7 a.m. (Nelson, Cairns). Strong at 8 a.m. (Bantow, Melbourne, Gaden, Beatty).

KKZ, Bolinas, Calif. (13,690kc., 21.9m.): Fair, closes at 2.45 p.m. (Nelson). Heard best on Sunday afternoons.—Ed.

WPIT, Pittsburg (11,870kc., 25.26m.): Good from 6 to 8 a.m. (Schooth, Bantow, Nelson, Gaden, Beattie). Excellent, closing at 1.55 p.m. (Cushen).

WLWO, Cincinnati (11,870kc., 25.27m.): Good Sunday afternoons and very strong at 11 p.m. (Bantow, Rogers, Schooth, Cushen).

WRUL, Boston (11,790kc., 25.45m.): Fair 6 to 8 a.m. Talks at 7 a.m. (Schooth, Gaden, Beattie).

KGEI, 'Frisco (9670kc., 31.02m.): Best Yankee in afternoons (Schooth, Nelson, Bantow, Gaden, Beattie).

WRCA, Boundbrook (9670kc., 31.02m.): Poor (Schooth).

WLWO, Cincinnati (9590kc., 31.28m.): Good 3 to 5.30 p.m.; fair to good some nights (Nelson, Rogers, Schooth, Gaden, Beattie).

WCAB, Philadelphia (9590kc., 31.28m.): Good (Schooth).

WBOS, Boston (9570kc., 31.35m.): Fair (Schooth).

WGEO, Schenectady (9530kc., 31.48m.): Strong at 7 a.m. (Bantow).

Mexico:

XEQQ, Mexico (9680kc., 30.99m.): Good in afternoons (Schooth, Nelson, Cushen).

XEWW, Mexico (9503kc., 31.57m.): Good in afternoons (Nelson, Schooth).

AMERICA

Central:

Costa Rica:

TIEP, San Jose (6690kc., 44.82m.): Heard closing with good signals at 3 p.m. (Cushen).

TIX, San Jose (5830kc., 51.46m.): Still being heard with good signals till 3 p.m. (Cushen).

Honduras:

HRPI, San Pedro, Sula (6348kc., 47.26m.): Weak at 9.30 a.m. (Linehan).

HRN, Tegucigalpa (5875kc., 51.11m.): Weak at 3 p.m. when closing (Cushen). "Lavoz de Honduras" signs on with "Good Night Melody." Reported from America that they DO NOT verify reports.—Ed.

Guatemala:

TGQA, Quezaltenango (6400kc., 46.88m.): Good signals at 3 p.m. (Cushen).

TGWB, Guatemala: Mr. Cushen advises they appear to have moved from 6460kc., 46.45m., to 6480kc., 46.30m.

South:

Brazil:

PSE, Rio de Janiero (14,940kc., 20.08m.): Terrific signal from 7 to 7.30 a.m. on Thursday, October 17. I understand this is a special session for Thursdays only. Usual times are 9 to 10 a.m. and 6 to 6.30 (Fridays).

CB970, Valparaiso (9720kc., 30.85m.): Good signals; closes at 3 p.m. with "Land of Hope and Glory" (Cushen).

Chile:

CB-1180, Santiago (11,945kc., 25.12m.): Opens at 9.30 with splendid signal (Gaden, Nelson).

CB1174, Santiago (11,740kc., 25.55m.): Heard closing at 2 p.m. with march, "Marching Through Georgia" (Cushen).

CB1170, Santiago (11,700kc., 25.64m.): Heard testing on one occasion till 3.30 p.m. (Cushen).

Ecuador:

HCJB, Quito (12,460kc., 24.08m.): Excellent at noon (Cushen).

HC1GQ, Guayaquil (9170kc., 32.72m.): Heard with good signals till 2 p.m. Closes with "Blue Danube" (Cushen).

Peru:

OAX5C, Ica. (9400kc., 31.95m.): Best of Peruvians at 3 p.m. (Schooth, Rogers).

OAX4J, Lima (9340kc., 32.12m.): Fair (Schooth).

Peru:

OAX4G, Lima (6190kc., 48.47m.): Still excellent till closing shortly before 5 p.m. on Sundays (Cushen).

OAX4Z, Lima (6080kc., 49.30m.): Heard with fair signals at 2 p.m. (Cushen).

Uruguay:

CXA-19, Montevideo (11,705kc., 25.63m.): Heard daily from 7 till after 8 a.m. (Gaden). Excellent signal at Randwick also.—Ed.

THE EAST

Burma:

XYZ, Rangoon (6007kc., 49.94m.): Heard nightly from 10 o'clock (Nelson, Bowser, Rogers).

China:

XGOX, Chungking (15,190kc., 19.75m.): Heard giving news in English at 5.30 p.m. (Nelson).

FFZ, Shanghai (12,050kc., 24.85m.): Rather weak now (Nelson, Keats, Bantow, Gaden).

XGRX, Shanghai (11,910kc., 25.15m.): Fair from 7 p.m., strong at 11 p.m. (Schooth, Gaden, Bantow, Rogers, Bowser, Cushen, Beattie). Although last letter may be F, I'm calling it X, as in my school-days X equalled the unknown quantity.—Ed.

XGOY, Shanghai (11,900kc., 25.21m.): Strong 7.45 a.m., fair 10.45 p.m. (Nelson, Bantow, Gaden, Cushen, Beattie).

XGSB, Shanghai (11,880kc., 25.25m.): Is anyone hearing this chappie now?—Ed.

BELGIAN CONGO HEARD

I am indebted to my friend, Mr. G. Muller, of Newtown, for advice re new station in Belgian Congo, Africa. Situated in Leopoldville, a little town above the cataracts of the River Congo—founded by Stanley—**Radio Congo Belge,** on 10.14 mc., 29.59m., puts in a signal comparable with Daventry, from 5 to 5.45 a.m.

Classical records are played, punctuated by call-sign, **"Radio Congo Belge, Leopoldville."** Just prior to closing, a statement is made in French and appears to refer to other frequencies, which I have not been abie to decipher. Would appreciate word from any reader who can oblige. Mr. Muller told me I would be surprised at the volume — I was, and at the clarity also, and do not regret the early morning effort. There was a station listed as **Radio Leo,** on 15.17mc., 19.78m., also situated in Leopoldville, but I do not know of any one in this country having logged it. It was supposed to be on the air from 4 to 5 a.m.

Another is **OQ2AA,** also in Leopoldville, on 6140kc., 48.86m., said to be heard from 8.35 to 10 p.m. We would not be likely to hear this, as, being on the same frequency as **KZRF,** I would back the laddie from Manila.

PACIFIC EDITION OF RADIO NEWSREEL

A.B.C. Treats You to a Morse Obliggato

GREAT BRITAIN

Well, there is no doubt Daventry certainly have us in their minds. The new Pacific session, which has replaced the old Transmission 1, is splendid, and, thank goodness, runs till 8.15 p.m. We poor souls who had to rush home from the city to hear the tail end of the news at 6 can now dine in comfort and listen to the Pacific edition of Radio Newsreel at 7.45. But, I give it to you in the terms of strongest recommendation, tune to London direct. Of the several transmitters available, the A.B.C. (who relay same at this hour) have a wicked knack of tuning in the wrong one, and it's a "dollar to a gooseberry" you will be treated to a Morse obligato. This will reach fortissimo just as a modest Australian or New Zealand air-pilot is scheduled to give a talk on his exploits.

Radio Newsreel has also brought us Robin Duff in a new role, a commentator, and a jolly good one, too. Listeners will remember him as the B.B.C. news reader for years. The surprise of the new schedule is the wonderful reception of transmitters not meant for us. Transmitters such as **GRX** (9690kc., 30.96m.), **GSA** (6050 kc., 49.59m.), **GSN** (11,820kc., 25.38m.) and **GSE** (11,860kc., 25.3m.), intended for the European service, can be picked up at almost any time, while **GRW** (6145kc., 48.82m.), used for the home service, is putting in a remarkable signal round about 6.45 p.m. and 7 a.m. Quite often, if you have missed the news service specially directed to us, you can pick up the European news, which differs a little from ours.

When paying a compliment to the Department of Information the other day for the splendid reception of **VLQ** in California, Mr. Gus Gallagher, the well-known amateur of San Francisco, said: "We can only compare you with Daventry with its synchronised transmitters beamed to North America, which we think is the top ranking short-wave transmitter of the world to-day." That is a fine acknowledgment, and I think a lot of us will regard Daventry as the yard-stick by which all good signals are measured. And doesn't it make you feel good to hear Big Ben? — a sure sign that "All's Well."

LOGGINGS *(continued)*

XMHA, Shanghai (11,855kc., 25.3m.): Has improved a lot (Gaden). (Very patchy at Randwick, but sometimes bursts of excellence before 10 p.m.—Ed.)

XGOK, Canton (11,650kc., 25.75m.): Strong night station (Nelson, Gaden).

XPSA, Kweiyang (6980kc., 42.98m.): I think these people have moved to 8.470kc., 35.40m. Heard news in English at 10.50 p.m. on October 2. This is one of the few Chinese controlled stations left.—Ed.

——, —— (6030kc., 49.76m.): Has anyone heard the call-sign of this laddie?

Portuguese China:

CRY-9, Cacao (6080kc., 49.34m.): Only heard on Monday nights from 10.30, and only fair (Linehan).

PMA, Bandoeng (19,380kc., 15.48m.): Opens at 10.15 p.m., news in English at 10.20, closes at 11.15. Announces this is a special programme for Europe.

YDB, Soerabaya (15,310kc., 19.59m.): Fair at night (Keats). Not heard at Randwick.—Ed.

YDC, Bandoeng (15,150kc., 19.8m.): Very poor lately (Schooth). Weak, but improving (Nelson). Strong 9.30 to 9.45 a.m. (Bantow, Beattie).

PLJ, Bandoeng (14,630kc., 20.5m.): Very good nightly.

PLP, Bandoeng (11,000kc., 27.27m.): Best of D.E.I. stations from 8.30 to 9.30 a.m. and early evenings (Keats, Nelson, Schooth, Cushen, Beattie).

PMN, Bandoeng (10,260kc., 29.24m.) Weak but improving (Keats, Nelson, Gaden, Cushen).

YDB, Bandoeng (9550kc., 31.41m.): Strong at 12.30 a.m. (Bantow, Gaden).

YDX, Medan (7220kc., 41.55m.): Fairly strong at 9.30 p.m. (Nelson, Bantow).

YDA, Tandjongpriok (3040kc., 98.68m.): My favourite D.E.I. station (Gaden).

French Indo China:

Radio Saigon, Saigon (11,780kc., 25.47m.): Splendid signal, good musical programme, interesting news (Bantow, Nelson, Keats, Rogers, Beattie, Gaden, Bowser. Me, too.—Ed.)

Hongkong:

ZBW-3, Hongkong (9520kc., 31.49m.): Fairly strong 11.45 p.m. (Bantow, Keats). Excellent from opening (Nelson).

India:

VUD-3, Delhi (15,290kc., 19.62m.): Very good on some afternoons towards evening (Schooth).

VUD-4, Delhi (11,830kc., 25.36m.): Strong 10.45 p.m. (Bantow, Keats, Nelson).

VUD-2, Delhi (9590kc., 31.28m.): Same remarks apply (Bantow, Keats, Nelson, Bowser, Rogers).

Japan:

JLS-2, Tokyo (17,845kc., 16.8m.): Fair on opening at 11 a.m., better later (Schooth).

JZK, Tokyo (15,160kc., 19.79m.): Very good from 5 to 6 p.m., strong at 9.45 p.m. (Schooth, Keats, Nelson, Bantow, Gaden, Beattie).

JZJ, Tokyo (11,800kc., 25.42m.): Fair at 6 a.m. (Nelson). Strong at 10.30 p.m. (Bantow, Nelson, Gaden).

MTCY, Hsinking (11,775kc., 25.48m.): Fair to good around 7 a.m. (Schooth, Rogers, Nelson, Keats, Gaden, Cushen).

JVW-3, Tokyo (11,720kc., 25.6m.): Best of Japs, especially from 6.45 p.m. (Nelson, Bowser, Schooth, Gaden, Cushen).

JIE-2, Taiwan (9695kc., 30.96m.): Weak (Keats).

JZI, Tokyo (9535kc., 31.46m.): Heard nightly from 10 p.m. (Gaden).

MTCY, Hsinking (6125kc., 48.98m.): Rather weak. News in English 7.45 p.m. (Nelson, Gaden).

MTCY, Hsinking (9545kc., 31.43m.): Heard nightly from 1.30 a.m. and also at 7 a.m. When I say 7 a.m. I should add "with luck." If you want to hear the champion noisy corner of the dial, tune to 31.43 at 7 a.m.

Malaya:

ZHJ, Penang (6090kc., 49.24m.): Good nightly (Bantow, Nelson, Cushen).

ZHP, Singapore (9700kc., 30.94m.): Poor on opening at 7.40 p.m., but improves (Schooth, Bantow, Nelson, Keats).

ZHP-3, Singapore (7250kc., 41.38m.): Good signal from 9 p.m.

Philippines:

(Manila unless otherwise mentioned)

KZRH (11,890kc., 25.23m.): Sometimes heard about 2 a.m.—Ed.

KZRH (9640kc., 31.12m.): Good from 6.30 p.m. (Schooth, Nelson, Keats, Gaden, Beattie).

KZRM (9570kc., 31.35m.): Good nightly (Keats, Nelson, Schooth, Beattie).

KZIB (9500kc., 31.58m.): Very fair (Schooth, Keats, Nelson, Beattie).

KZRC, Cebu (6100kc., 49.18m.): Patchy (Nelson). One of the best on 49 in the evenings (Cushen).

KZRF (6140kc., 48.86m.): Strong at 9.45 p.m. (Bantow, Nelson, Cushen).

KZIB (6040kc., 49.67m.): Has improved considerably. Good at 8.30 p.m. (Cushen).

Thai:

HS6PJ, Bangkok (19,020kc., 15.72m.): Mondays only from 10.30 p.m. to 1 a.m.

HSP6, Bangkok (11,705kc., 25.63m.): Nightly except Mondays from 10.30 p.m. to 1 a.m.

EUROPE

France:

The stations shown hereunder are presumably under Nazi control, but are listed by old call-signs for quick reference. Announcement is usually "Ici Paris."

TPB-3 (17,765kc., 16.88m.): Heard at 9 p.m. (Gaden).

TPA-2 (15,243kc., 19.68m.): Good when on (Schooth). Heard daily at 1.30 p.m.—Ed.

TPC-5 (11,845kc., 25.33m.): Heard occasionally (Gaden).

TPA-3 (11,885kc., 25.24m.): Heard occasionally (Schooth).

TPB-4 (11,720kc., 25.60m.): Heard weakly from 3.30 p.m. quite often (Schooth).

TPC-13 (9520kc., 31.51m.): At 4 p.m. (Gaden).

Germany:

I don't think there is any necessity to mention the usual German transmitters, but two new ones appear to have come on the air:

Call-sign unknown (11,843kc., 25.33m.): Prefaced by a most peculiar bugle effect just before 6.30 a.m.

Call-sign unknown (9966kc., 30.1m.): Can be heard at 6.30 a.m. in same programme as **DXB,** 9610kc., 31.22m.

Hungary:

HAS-3, Budapest (15,370kc., 19.52m.): Mr. P. L. Smith has written me that it was last November, when he logged this station.

Italy:

Beyond acknowledging the excellent reception of **2RO4, 2RO3** and **2RO11** round about 7 a.m., am only mentioning the new transmitter on approximately 1937kc., 15.49m., see reference elsewhere. Would appreciate call-sign if anyone hears it. Think it may be **IRW.**

Vatican City:

HVJ (15,120kc., 19.84m.): Good on Fridays, from 4.10 to 4.30 p.m. (Schooth).

HVJ (6190kc., 48.47m.): Talk in English at 5 a.m. on Wednesdays and Saturdays only).

Owing to pressure on space, "Station Particulars" will have to be omitted this issue, as also "Help Wanted."

Dutch East Indies:

Holland:

PCV, Amsterdam (18,070kc., 16.61m.): Splendid signal when free of interference, from 11 p.m. (Gaden, Rogers, Bowser).

PCJ, Huizen (15,220kc., 19.71m.): Heard sometimes from 4.30 to 6.30 p.m. and also around 11 p.m. (Schooth, Gaden, Bowser, Rogers).

Lithuania:

LYR, Kaunas (9280kc., 32.33m.): Heard opening at 2.35 p.m. with "International." Now Russian-controlled, signals fair (Cushen).

Portugal:

CSW-7, Lisbon (9740kc., 30.8m.): Fairly strong at 7.30 a.m. (Nelson, Bantow, Keats, Linehan). One of the good 31's (Gaden). Talks at 6 a.m.—Ed.

Russia:

RV96, Moscow (15,410kc., 19.47m.): Poor on opening at 6.50 p.m. (Schooth, Gaden).

RV96, Moscow (15,180kc., 19.76m.): Good from 3.30 p.m. to news at 6 p.m. (Schooth, Gaden, Beattie).

RNE, Moscow (12,000kc., 25.00m.): Very good when not interfered with by morse. Splendid at 4 p.m. (Schooth, Gaden).

——, Moscow (11,900kc., 25.21m.): Same as 25 metres. News at 4.33 p.m. (Schooth).

RW96, Moscow (11,752kc., 25.61m.): Opens at 7 a.m. weakly (Gaden).

RW96, Moscow (9520kc., 31.51m.): Very loud at 7 a.m. (Schooth, Gaden).

And just as if the U.S.S.R. were short of transmitters, they appear to be even using frequencies, some of which were 'phone stations:—

Call-sign unknown (18,540kc., 16.18m.): 4 p.m. and 9 p.m.

Call-sign unknown (16,090kc., 18.61m.): 4.25 p.m.

Call-sign unknown (15,735kc., 19.07m.): 2 a.m. to 2.45 a.m.

Call-sign unknown (15,500kc., 19.35m.): 4 a.m.

Spain:

EAQ, Madrid (9860kc., 30.43m.): Weak between 7 and 8 a.m. (Keats). Easily identified by bugle call.—Ed.

Radio Malaga, Malaga (14,400kc., 20.78m.): Often heard till 10 a.m., but only at fair strength.

EAJ-9, Malaga (7220kc., 41.55m.): Excellent at 6.30 a.m. (Linehan).

Radio Espana, San Sebastian (7210kc., 41.6m.): If free of noise at 7 a.m., O.K.

Switzerland:

Radio Suisse, Schwarzenburg (6165kc., 48.66m.): Good till closing at 7.30 a.m. (Linehan, Gaden).

——, (11,870kc., 25.28m.): Not much good yet, but may improve with time (Gaden). See reference elsewhere.—Ed.

Yugoslavia:

YUF, Belgrade (15,040kc., 19.68m.): Excellent between 5 and 6 p.m.

YUB, Belgrade (6100kc., 49.18m.): Talks at 6 p.m., news at 7.25 a.m.

ANOTHER NEW STATION IN AFRICA

Radio Brazzaville, French Equatorial Africa, 11.95 m.c., 25.10 m. First heard at 6.35 a.m. on 26th October. Speaks in French very, very slowly and announces frequently "Ici Radio Brazzaville." Just before 7 a.m. he announces (in French) that they are on the air 6 G.M.T., 13.00 G.M.T., and 20.30 G.M.T. It is this last time that I heard. At closing he mentions Government General of French Equatorial Africa, says "Bon Soir Mesdames, Bon Soir Mamsells, Bon Soir Messeuirs. Vive le France Libre, Vive de Gaulle!"

It is a coincidence that we should hear Leopoldville in Belgian Congo a few days ago and now pick up another station only a few miles away.

MISCELLANEOUS

Canada:

CJRX, Winnipeg (11,720kc., 25.6m.): Not heard lately (Gaden).

CKFX, Vancouver (6080kc., 49.34m.) Seems to be missing of late (Gaden).

Eire:

Radio Eire, Dublin (6190kc., 48.47m.): Heard on one occasion at 7.15 a.m. with fair signals (Cushen).

Turkey:

TAQ, Ankara (15.195kc., 19.74m.): Good in afternoons, fair at night (Schooth, Nelson, Cushen, Keats). Not heard lately (Gaden).

TAP, Ankara (9405kc., 31.70m.): Excellent in dance music at 6 a.m. (Schooth, Nelson, Gaden, Beattie). Continues till 7.30 a.m. now.—Ed.

SCANDINAVIA

Norway:

LKQ, Oslo (11,735kc., 25.57m.): Very loud in mornings and afternoons (Schooth, Keats, Cushen, Rogers). Sometimes in afternoon, stronger than **GSD** at 4.15 p.m. (Gaden).

Sweden:

SBT, Motala (15,155kc., 19.8m.): Weak round about 7 a.m. (Schooth). Weak on opening at 6 p.m. Sundays (Nelson).

SBO, Motala (6065kc., 49.46m.): Have noticed several times have gone off the air suddenly in the middle of giving the news in English. Thought perhaps may have been one of the balloons from London fouling the aerials (Linehan). (News is given daily at 7.25 a.m.—Ed.).

SBP, Motala (11,705kc., 25.63m.): Weak on opening at 6 p.m. on Sundays (Nelson).

WEST INDIES

COGF, Matanzas (11,800kc., 25.42m.): Fair at 8.30 a.m. (Bantow).

COK, Havana (11,570kc., 25.93m.): Heard regularly till closing at 4 p.m. Announces in English that same programme is on **COCQ.** Weak at 9.15 p.m. (Schooth, Gaden, Rogers, Bantow).

COBC, Havana (9360kc., 32.04m.): Fair at night (Keats).

COCX, Havana (9200kc., 32.61m.): Fair (Keats, Cushen).

COBZ, Havana (9030kc., 33.32m.): Fair from 11 p.m. (Keats).

COCQ, Havana (8830kc., 33.98m.): Not as strong as previously (Nelson, Keats).

COCO, Havana (8700kc., 34.48m.): Good at night from 10.15 (Keats).

COHI, Santa Clara (6455kc., 46.50m.): Weak signal from 9.45 p.m. (Nelson). Excellent at 4 p.m. (Cushen).

COCQ, Havana (6360kc., 47.14m.): Fairly strong at 9.30 p.m. (Bantow, Nelson).

Dominican Republic:

HI2G, Trujillo City (9295kc., 32.28m.): Heard with good signals till closing at 2.30 p.m. (Cushen).

Haiti:

HH3W, Port-au-Prince (6570kc., 45.66m.): p.m. (Cushen). (Note new frequency.—Ed.) Heard closing weakly on one occasion at 2.55

S.W. STATIONS OF THE WORLD

IN ORDER OF FREQUENCY

WRCA, 21.63, 13.85, Boundbrook.
WCBX, 21.57, 13.91, New York.
GST, 21.55, 13.92, London.
WPIT, 21.54, 13.92, Pittsburg.
GSJ, 21.53, 13.93, London.
WCAB, 21.52, 13.92, Philadelphia.
2RO-16, 21.51, 13.94, Rome.
WGEA, 21.5, 13.95, Schenectady.
PH13, 21.48, 13.96, Huizen.
GSH, 21.47, 13.97, London.
WRUL, 21.46, 13.98, Boston.
DJS, 21.45, 13.99, Berlin.
PMA, 19.38, 15.48, Bandoeng.
RADIO ROMA, 19.37, 15.49, Rome.
HS6PJ, 19.02, 15.72, Bangkok.
——, 18.54, 16.18, Moscow.
HBH, 18.45, 16.26, Geneva.
PCV, 18.08, 16.6, Amsterdam.
KHE, 17.97, 16.69, Hawaii.
——, 17.84, 16.81, Dublin.
DJH, 17.84, 16.81, Berlin.
JLS2, 17.84, 16.81, Tokyo.
WCBX, 17.83, 16.81, New York.
LRA-5, 17.83, 16.82, Buenos Aires.
HVJ, 17.84, 16.82, Vatican City.
2RO-8, 17.82, 16.83, Rome.
GSV, 17.81, 16.84, London.
OZI, 17.81, 16.84, Skamlebaek.
OIH, 17.80, 16.85, Lahti.
XGOX, 17.8, 16.85, Szechwan.
VLQ8, 17.80, 16.85, Sydney.
GSG, 17.79, 16.86, London.
2RO-20, 17.78, 16.87, Rome.
WNBI, 17.78, 16.87, Bound Brook.
PHI2, 17.77, 16.88, Huizen.
TPB-3, 17.76, 16.88, Paris.
DJE, 17.76, 16.89, Berlin.
FZE, 17.28, 17.38, Djibouti.
——, 16.09, 18.61, Moscow.
——, 15.73, 19.07, Moscow.
——, 15.65, 19.30, Tunis.
XOZ, 15.51, 19.34, Chengtu.
——, 15.50, 19.35, Moscow.
——, 15.50, 19.42, Pitcairn Is.
RW-96, 15.40, 19.47, Moscow.
HAS-3, 15.37, 19.52, Budapest.
LRA-4, 15.35, 19.54, Buenos Aires.
DJR, 15.34, 19.56, Berlin.
WGEA, 15.33, 19.57, Schenectady.
KGEI, 15.33, 19.57, 'Frisco.
OLR5B, 15.32, 19.58, Praha.
DXU, 15.32, 19.58, Berlin.
RADIO LUXEMBOURG, 15.32, 19.58, Luxembourg.
OZH, 15.32, 19.58, Copenhagen.
VLQ3, 15.31, 19.59, Sydney.
GSP, 15.31, 19.60, London.
CP-7, 15.30, 19.61, La Paz.
CXA-18, 15.30, 19.61, Montevideo.
KZRM, 15.30, 19.61, Manila.
YDB, 15.30, 19.61, Bandoeng.
HB-—, 15.30, 19.60, Berne.
XEBM, 15.30, 19.61, Mexico City.
2RO-6, 15.30, 19.61, Rome .
VUD-3, 15.29, 19.62, Delhi.
TPB-4, 15.29, 19.62, Paris.
LRU, 15.29, 19.62, Buenos Aires.
CR7BG, 15.28, 19.63, Mozambique.
DJQ, 15.28, 19.63, Berlin.
WLWO, 15.27, 19.64, Cincinnati.
HI3X, 15.27, 19.65, Trujillo.
WCAB, 15.27, 19.65, Philadelphia.

The stations listed on this and the following pages are those that are being heard here in Australia. The columns are listed as follows:—

Call Sign,
Megacycle,
Wavelength,
Location.

WCBX, 15.27, 19.65, New York.
GSI, 15.26, 19.66, London.
WRUL, 15.25, 19.67, Boston.
TPA-2, 15.24, 19.68, Paris.
CRFBD, 15.24, 19.68, Mozambique.
YUG/F, 15.24, 19.68, Belgrade.
2RO-7, 15.23, 19.70, Rome.
DXT, 15.23, 19.70, Berlin.
OLR5A, 15.23, 19.70, Praha.
PCJ-2, 15.22, 19.71, Huizen.
CSW-4, 15.21, 19.72, Lisbon.
WPIT, 15.21, 19.72, Pittsburg.
DJB, 15.20. 19.74, Berlin.
MTCY, 15.2, 19.73, Hsinking.
XGOX, 15.2, 19.75, Szechwan.
TAQ. 15.19, 19.4, Ankara.
KZRM, 15.19, 19.75, Manila.
OIE, 15.19, 19.75, Lahti.
RV-96, 15.18, 19.76, Moscow.
GSO, 15.18, 19.76, London.
TGWA, 15.17. 19.77, Guatemala.
CP-43, 15.16, 19.78, Tupiza, Bolivia.
RADIO LEO, 15.17, 19.78, Leopoldville.
LKV, 15.16, 19.78, Oslo.
JZK, 15.16, 19.79, Tokyo.
DXS, 15.16, 19.79, Berlin.
XEWW, 15.16, 19.79, Mexico.
SBT, 15.15, 19.80, Stockholm.
YDC, 15.15, 19.80, Bandoeng.
OAX4R, 15.15. 19.81, Lima.
GSF, 15.14, 19.82, London.
JLU-3, 15.13, 19.82, Tokyo.
TPB-6, 15.13, 19.83, Paris.
WRUW, 15.13, 19.83, Boston.
HVJ, 15.12, 19.84, Vatican City.
CSW-4, 15.12, 19.84, Lisbon.
DJL, 15.10, 19.85, Berlin.
2RO-12, 15.10, 19.87, Rome.
RKI, 15.08, 19.95, Moscow.
PSE, 14.94, 20.08, Rio de Janiero.
RWG, 14.72, 20.38, Moscow.
KQH, 14.92, 20.11, Kahuku, Hawaii.
PLJ, 14.63, 20.5, Bandoeng
JVH, 14.60, 20.55, Tokyo.
HBJ, 14.53, 20.65, Geneva.
DXH, 14.46, 20.75, Berlin.

VPD-4, 14.42, 20.80, Suva.
MALAGA, 14.44, 20.78, Malaga.
HF6JEG, 14.18, 21.16, Canton Is.
YN3DG, 13.90, 21.58, Leon, Nicaragua.
SUZ, 13.82, 21.70, Cairo.
KKZ, 13.69, 21.90, Bolinas.
HIIN, 12.48, 24.03, Trujillo.
HCJB, 12.46, 24.08, Quito.
TFJ, 12.24, 24.52, Reykjavik, Iceland.
TPZ, 12.12, 24.75, Algiers.
——, 12.09, 24.81, Moscow.
FFZ, 12.09, 24.83, Shanghai.
——, 12.08, 24.85, Moscow.
RNE, 12.00, 25.00, Moscow.
H12X, 11.97, 25.08, Trujillo.
PIRATE, 11.95, 25.10, unknown.
CB1180, 11.94, 25.12, Santiago.
KKQ, 11.95, 25.11, Bolinas.
MAROC, 11.94, 25.13, Rabat.
XGRX, 11.93, 25.13, Shanghai.
XGOZ/V, 11.91, 25.17, Szechwan.
CD1190, 11.91, 25.18, Valdivia.
HANOI, 11.90, 25.21, Hanoi.
XGOY, 11.90, 25.21, Chungking.
——, 11.90, 25.21, Moscow.
CXA10, 11.89, 25.22, Montevideo.
2RO-13, 11.90, 25.23, Rome.
WNBI, 11.89, 25.23, Boundbrook.
TPA-3, 11.88, 25.24, Paris.
VLR-3, 11.88, 25.25, Melbourne.
VLQ-7, 11.88, 25.25, Sydney.
VLQ-2, 11.87, 25.27, Sydney.
WPIT, 11.87, 25.27, Pittsburg.
WLWO, 11.87, 25.27, Cincinnati.
RADIO SUISSE, 11.86, 25.28, Schwarzenburg.
GSE, 11.86, 25.29, London.
DJP, 11.85, 25.31, Berlin.
CB1185, 11.85, 25.31, Santiago.
VLR-3, 11.85, 25.31, Melbourne.
PRFS, 11.85, 25.3, Rio de Janiero, Brazil.
XMHA, 11.85, 25.31, Shanghai.
HAD, 11.85, 25.32, Budapest.
OAX2A, 11.85, 25.32, Trujillo.
TPC-2, 11.84, 25.33, Paris.
——, 11.84, 25.33, Berlin.
OLR4A, 11.84, 25.34, Prague.
CSW-5, 11.84, 25.34, Lisbon.
VLW-3, 11.83, 25.36, Wanneroo.
VLQ6, 11.83, 25.36, Sydney.
VUD-4, 11.83, 25.36, Delhi.
WCBX, 11.83, 25.36, New York.
XGOK, 11.83, 25.38, Canton.
CXA-14, 11.83, 25.38, Colonia.
XEBR, 11.83, 25.38, Hermosilla.
WNBI, 11.82, 25.38, New York.
GSN, 11.82, 25.38, London.
2RO-4, 11.81, 25.40, Rome.
JZJ, 11.80, 25.42, Tokyo.
ZTE, 11.80, 25.42, Durban.
COGF, 11.80, 25.42, Matanzas.
DJZ, 11.80, 25.42, Berlin.
WRUL, 11.79, 25.45, Boston.
HP5G, 11.78, 25.47, Panama City.
SAIGON, 11.78, 25.47, Saigon.
OFE, 11.78, 25.47, Lahti.
DJD, 11.77, 25.49, Berlin.
MTCY, 11.77, 25.48, Hsinking.

S.W. STATIONS

(continued)

TGWA, 11.76, 25.51, Guatemala.
CB-1174, 11.76, 25.51, Santiago.
2RO-15, 11.76, 25.51, Rome.
TG5JG, 11.75, 25.53, Guatemala.
GSD, 11.75, 25.53, London.
CR6RC, 11.74, 25.55, Loanda, Angola.
HVJ, 11.74, 25.55, Vatican City.
CB-1174, 11.74, 25.55, Santiago.
YUE, 11.73, 25.57, Belgrade.
LKQ, 11.73, 25.58, Oslo.
LRA-3, 11.73, 25.58, Buenos Aires.
ZP14, 11.73, 25.59, Villarica.
WRUW, 11.73, 25.6, Boston.
CJRX, 11.72, 25.6, Winnipeg.
ZP14, 11.72, 25.6, Paraguay.
HSP6, 11.71, 25.61, Bangkok.
JVW-3, 11.71, 25.6, Tokyo.
TPA-4, 11.71, 25.6, Paris.
YSM, 11.71, 25.62, San Salvador.
——, 11.71, 25.62, Moscow.
SBP, 11.71, 25.63, Stockholm.
CB1170, 11.70, 25.64, Santiago.
CXA-19, 11.70, 25.63, Montevideo.
HP5A, 11.70, 25.64, Panama City.
ZP-7, 11.70, 25.63, Paraguay.
IQY, 11.67, 25.70, Rome.
PRA-9, 11.67, 25.71, Pernambuco.
XGOK, 11.65, 25.75, Canton.
RW96, 11.64, 25.77, Moscow.
COK, 11.57, 25.93, Havana.
COCQ, 11.57, 25.93, Havana.
SPD, 11.53, 26.01, Warsaw.
CXA-7, 11.48, 26.13, Montevideo.
TG5JG, 11.44, 26.22, Guatemala.
——, 11.44, 26.2, Moscow.
HBO, 11.40, 26.31, Geneva.
CSW-5, 11.04, 27.17, Lisbon.
PLP, 11.00, 27.27, Bandoeng.
CR6RY, 10.86, 27.60, Benguela, Angola.
JIB, 10.53, 28.48, Taiwan.
ZIK-2, 10.60, 28.30, Belize, B.H.
DZD, 10.53, 28.5, Berlin.
YBG, 10.42, 28.77, Sumatra.
YSP, 10.40, 28.85, San Salvador.
EAJ43, 10.36, 28.93, Canary Is.
LSX, 10.35, 28.99, Buenos Aires.
ORK, 10.33, 29.04, Brussels.
SOFIA, 10.31, 29.09, Sofia.
PMN, 10.26, 29.24, Bandoeng.
DZC, 10.29, 29.25, Berlin.
PSH, 10.22, 29.35, Rio de Janiero.
——, 10.14, 29.6, Moscow.
RADIO CONGO BELGE, 10.14, 29.59, Leopoldville.
ANTI-NAZI, 10.10, 29.8, Location unknown.
SUV, 10.055, 29.85, Cairo.

CONTRIBUTORS NOTE

I would appreciate it if reporters would list loggings in "Countries" order similar to printed list, as this will greatly expedite compilation of notes.

Please have same in by November 17.

DZB, 10.04, 29.86, Berlin.
——, 9.96, 30.1, Berlin.
JDY, 9.91, 30.23, Manchuria.
RADIO TANANARIVE, 9.87, 30.4, Madagascar.
HH3W, 9.89, 30.33, Haiti.
EAQ, 9.86, 30.43, Madrid.
COCM, 9.83, 30.51, Havana.
SVJ, 9.82, 30.54, Athens.
HJAG, 9.81, 30.58, Barranquilla.
HH3W, 9.77, 30.67, Port-ou-Prince.
HNF, 9.77, 30.69, Baghdad, Iraq.
ZRO, 9.75, 30.75, Durban.
HJFH, 9.75, 30.77, Armenia.
CB970, 9.73, 30.83, Valparaiso.
CSW-7, 9.74, 30.80, Lisbon.
HJFK, 9.73, 30.83, Pereira.
CR7BE, 9.71, 30.9, Lourenco Marques.
HJCF, 9.71, 30.9, Bogota.
RADIO MARTINIQUE, 9.70, 30.92, Forte de France, F.W.I.
ZHP, 9.70, 30.94, Singapore.
JIE-2, 9.69, 30.95, Formosa.
LRA, 9.69, 30.96, Buenos Aires.
GRX, 9.69, 30.96, London.
TI-4NRH, 9.692, 30.96, Heredia.
TGWA, 9.68, 30.98, Guatemala.
RW-96, 9.68, 30.98, Moscow.
EQC, 9.68, 30.99, Persia.
XEQQ, 9.68, 30.99, Mexico.
VLQ-5, 9.68, 30.99, Sydney.
TPC28, 9.68, 30.99, Paris.
DJX, 9.67, 31.01, Berlin.
WRCA, 9.67, 31.02, New York.
KGEI, 9.67, 31.02, 'Frisco.
2RO-9, 9.67, 31.02, Rome.
VLW-4, 9.665, 31.04, Wanneroo.
LRX, 9.66, 31.06, Buenos Aires.
CS2WA, 9.65, 31.09, Lisbon.
WCBX, 9.65, 31.09, New York.
DJW, 9.65, 31.09, Berlin.
VLW-2, 9.65, 31.09, Wanneroo.
12AA, 9.65, 31.09, Addis Ababa.
XGOY, 9.645, 31.10, Szechwan.
LLH, 9.64, 31.11, Oslo.
KZRH, 9.64, 31.12, Manila.
CXA-8, 9.64, 31.12, Uruguay.
JFO, 9.63, 31.13, Formosa.
HJCT, 9.63, 31.15, Bogota.
2RO-3, 9.63, 31.15, Rome.
CXA-8, 9.625, 31.17, Montevideo.
HAT-5, 9.62, 31.17, Budapest.
TIPG, 9.60, 31.19, San Jose.
VLQ, 9.61, 31.2, Sydney.
DXB, 9.61, 31.22, Berlin.
LLG, 9.61, 31.22, Oslo.
HP5J, 9.61, 31.22, Panama.
ZRL, 9.60, 31.23, Capetown.
CB970, 9.60, 31.25, Santiago.
RADIO ST. DENIS, 9.60, 31.25, Reunion Is.
RAN, 9.60, 31.25, Moscow.

ALL-WAVE ALL-WORLD DX CLUB

Application for Membership

The Secretary,
All-Wave All-World DX Club,
117 Reservoir 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).

S.W. STATIONS

(continued)

WCAB, 9.59, 31.28, Philadelphia.
WLWO, 9.59, 31.28, Cincinnati.
VUD-2, 9.59, 31.28, Delhi.
PCJ, 9.59, 31.28, Huizen.
HBL, 9.59, 31.28, Geneva.
VLR, 9.58, 31.32, Melbourne.
GSC, 9.58, 31.32, London.
WBOS, 9.57, 31.35, Boston.
KZRM, 9.57, 31.35, Manila.
HJAB, 9.57, 31.35, Barranquilla.
OAX4T, 9.56, 31.38, Lima, Peru.
VLW, 9.56, 31.38, Wanneroo.
DJA, 9.56, 31.38, Berlin.
——, 9.56, 31.38, Moscow.
WGEA, 9.55, 31.41, Schenectady.
YDB, 9.55, 31.41, Bandoeng.
OAX4T, 9.54, 31.43, Peru.
MTCY, 9.54, 31.43, Hsinking.
DJN, 9.54, 31.45, Berlin.
SBU, 9.53, 31.46, Motala.
HEC, 9.535, 31.46, Switzerland.
JZI, 9.53, 31.46, Tokyo.
VPD-2, 9.53, 31.46, Suva.
KGEI, 9.53, 31.48, San Francisco.
WGEO, 9.53, 31.48, Schenectady.
ZBW-3, 9.52, 31.49, Hong Kong.
TPB, 9.52, 31.51, Paris.
RV-96, 9.51, 31.50, Moscow.
GSB, 9.51, 31.55, London.
YUC, 9.50, 31.56, Belgrade.
OFD, 9.50, 31.58, Lahti.
XGOY, 9.50, 31.58, Szechwan.
XEWW, 9.50, 31.58, Mexico.
KZIB, 9.49, 31.60, Manila.
SAIGON, 9.49, 31.62, Saigon.
VONG, 9.48, 31.68, St. Johns.
TAP, 9.46, 31.70, Ankara.
CXA-9, 9.44, 31.76, Montevideo.
HCODA, 9.445, 31.77, Guayaquil.
COCH, 9.44, 31.78, Havana.
OAX5C, 9.40, 31.91, Ica, Peru.
COBC, 9.36, 32.04, Havana.
HCETC, 9.35, 32.05, Ecuador.
HBL, 9.34, 32.12, Geneva.
OAX4J, 9.34, 32.12, Lima, Peru.
VOICE OF SHANGHAI, 9.30, 32.25, Shanghai.
HI2G, 9.29, 32.28, Dominica.
XTC, 9.295, 32.28, Shanghai.
BUCHARESTI, 9.23, 32.48, Bucharest.
COCY, 9.22, 32.52, Havana.
PYA-2, 9.205, 32.59, Rio de Janiero.
ZMBF, 9.20, 32.61, Sunday Is.
COCX, 9.20, 32.61, Havana.
HC2ET, 9.19, 32.63, Guayaquil.
HC1GQ, 9.17, 32.72, Guayaquil.
HC2CW, 9.13, 32.86, Guayaquil.
HAT-4, 9.12, 32.88, Budapest.
COBZ, 9.03, 33.22, Havana.
TPZ-2, 8.96, 33.48, Algiers.
COCQ, 8.85, 33.90, Havana.
CNP, 8.79, 34.13, Casablanca.
COCO, 8.70, 34.48, Havana.
COJK, 8.66, 34.64, Havana.
VOICE OF SHANGHAI, 8.56, 35.00, Shanghai.
XPSA, 8.47, 35.40, Kweiyang.
ANTI-NAZI, 8.47, 35.4, unknown.
XP5A, 8.42, 35.4, Kweiyang.
HP6J, 8.25, 36.36, Panama.
KVZC, 8.10, 37.03, Canton Is.
——, 8.07, 37.17, Moscow.
YSD, 7.894, 37.99, San Salvador.
HSP6, 8.00, 37.65, Bangkok.
SUX, 7.865, 38.15, Cairo.
HC2JSB, 7.85, 38.2, Guayaquil.
ZAA, 7.84, 38.22, Tirana.
CR6AA, 7.61, 39.39, Lobita, Angola.
RKI, 7.54, 39.76, Moscow.
RKI, 7.51, 39.89, Moscow.
FG8AH, 7.44, 40.32, Guadeloupe.
RWG, 7.36, 40.76, Moscow.
German Secret Station, 7.35, 40.80, unknown.
CR6RC, 7.31, 41.01, Loanda, Angola.
JIE, 7.29, 41.13, Tyureki.
DJI, 7.29, 41.15, Berlin.
TPB-11, 7.28, 41.21, Paris.
PACIFIC, ——, 41.25, New Caledonia.
VQ2CM, 7.26, 41.32, Luanshya, N. Rhodesia.
OZU, 7.26, 41.32, Skimlebaek.
JVW, 7.25, 41.34, Tokyo.
YDA, 7.25, 41.38, Tandjongpriok.
ZHP-3, 7.25, 41.3, Singapore.
DXJ, 7.24, 41.44, Berlin.
GSW, 7.23, 41.49, London.
12RO-11, 7.22, 41.55, Rome.
YDX, 7.22, 41.55, Medan, Sumatra.
EAJ-9, 7.22, 41.55, Malaga.
RADIO ESPAGNA, 7.21, 41.6, San Sebastian.
CR6AA, 7.17, 41.75, Lobita, Angola.
——, 7.12, 42.1, Malaga.
FO8AA, 7.10, 42.25, Papeete.
RADIO VOLONTE, 7.10, 42.25, Saigon.
HNF, 7.08, 42.37, Baghdad, Iraq.
XPSA, 6.98, 42.98, Kweiyang.
XOJD, 6.85, 43.8, Hankow.
SUR, 6.78, 44.24, Cairo.
PMH, 6.72, 44.64, Bandoeng.
TIEP, 6.69, 44.81, San Jose.
HBQ, 6.67, 44.94, Geneva.
HH3W, 6.57, 45.66, Port-au-Prince.
ANTI-NAZI, 6.49, 46.20, unknown.
RADIO PACIFIQUE, 6.48, 46.30, Noumea.
TGWB, 6.46, 46.45, Guatemala.
COHI, 6.45, 46.50, Santa Clara.

TGQA, 6.40, 46.88, Quezaltenango.
COX7, 6.39, 46.95, Havana.
ZIZ, 6.38, 47.02, St. Kitts, B.W.I.
COCQ, 6.36, 47.14, Havana.
HRPI, 6.34, 47.26, San Pedro, Sula.
OAX1A, 6.33, 47.36, Ica, Peru.
COCW, 6.32, 47.4, Havana.
RADIO BOY LANDRY, 6.21, 48.27, Saigon.
CP5, 6.20, 48.39, La Paz, Bolivia.
HVJ, 6.19, 48.47, Vatican City.
RADIO EIRE, 6.19, 48.47, Eire.
TG-2, 6.19, 48.47, Guatemala.
OAX4G, 6.18, 48.54, Lima.
XEXA, 6.17, 48.58, Mexico.
CXA-21, 6.17, 48.62, Montevideo.
RADIO SUISSE, 6.17, 48.62, Schwarzenburg.
WCBX, 6.17, 48.62, Wayne, N.J.
CXA-21, 6.17, 48.62, Montevideo.
TILS, 6.16, 48.66, San Jose.
DXQ, 6.17, 48.64, Berlin.
CSL, 6.15, 48.72, Lisbon.
CJRO, 6.15, 48.78, Winnipeg.
EQB, 6.15, 48.74, Teheran.
GRW, 6.14, 48.82, London.
WPIT, 6.14, 48.86, Pittsburg.
KZRF, 6.14, 48.86, Manila.
RADIO SAIGON, 6.19, 48.87, Saigon.
CR7AA, 6.13, 48.88, Lourenco Marques.
VLW, 6.13, 48.92, Wanneroo.
CHNX, 6.13, 48.94, Halifax, Nova Scotia.
VP3BG, 6.13, 48.94, Georgetown, B. Guiana.
MTCY, 6.13, 48.98, Hsinking.
CXA4, 6.12, 48.98, Montevideo.
FK8AA, 6.12, 49.00, Noumea.
——, 6.12, 49.02, Moscow.
WCBX, 6.12, 49.02, New York.
RADIO SAIGON, 6.11, 49.05, Saigon.
XOJD, 6.10, 49.14, Hankow.
GSL, 6.11, 49.10, London.
YUB, 6.10, 49.18, Belgrade.
KZRC, 6.10, 49.18, Manila.
WNBI, 6.10, 49.18, New York.
ZHJ, 6.09, 49.23, Penang.
ZRK, 6.09, 49.23, Klipheuval.
ZNS, 6.09, 49.25, Nassau, Bahamas.
CRCX, 6.09, 49.26, Toronto.
VQ7LO, 6.08, 49.33, Kenya, Nairobi.
CFKX, 6.08, 49.34, Vancouver.
CRY-9, 6.08, 49.34, Macao, Portuguese China.
OAX4Z, 6.08, 49.30, Lima, Peru.
ZAA, 6.08, 49.34, Tirana.
CFRX, 6.09, 49.42, Toronto.
VE9CS, 6.07, 49.42, Vancouver.
SBO, 6.06, 49.46, Stockholm.
WLWO, 6.06, 49.5, Cincinnati.
RADIO TANANARIVE, 6.06, 49.5, Madagascar.
GSA, 6.05, 49.59, London.
YDD, 6.04, 49.63, Bandoeng.
WRUL/W, 6.04, 49.65, Boston.
WDJM, 6.04, 49.65, Miami, Florida.*
KZIB, 6.04, 49.67, Manila.
RW-96, 6.03, 49.75, Moscow.
XEKW, 6.03, 49.75, Morelia, Mexico.
CR7AA, 6.03, 49.75, Lourenco Marques.
——, 6.03, 49.76 (Chinese).
DJC, 6.02, 49.83, Berlin.
HJCX, 6.01, 49.85, Bogota.
CJCX, 6.01, 49.92, Sydney, Nova Scotia.
PRA-8, 6.01, 49.92, Pernambuco.
DXO, 6.01, 49.92, Berlin.
ZRH, 6.01, 49.94, Pretoria.
XYZ, 6.01, 49.94, Rangoon.
XEBT, 6.00, 49.96, Mexico.
HP5K, 6.00, 49.97, Colon, Panama.
RW-96, 6.00, 50.00, Moscow.
XEBT, 6.00, 50.00, Mexico.
VONG, 5.97, 50.25, St. Johns.
——, 5.93, 50.59, Pitcairn Is.
REBEL, 5.92, 50.63, unknown.
ZNB, 5.90, 50.95, Mafeking.
HRN, 5.87, 51.11, Tegucigalpa, Honduras.
TIX, 5.83, 51.46, San Jose.
PMY, 5.14, 58.3, Bandoeng.
YV5RM, 5.01, 59.88, Caracas.
YV3RX, 4.99, 60.12, Barquisimeto.
YV1RJ, 4.97, 60.31, Caracas.
YDF, 4.96, 60.48, Soerabaya.
HJCW, 4.94, 60.73, Bogota.
VUD-8, 4.92, 60.98, Delhi.
YDA, 4.90, 61.22, Java.
VUB-2, 4.88, 61.48, Bombay.
VUC-2, 4.84, 61.98, Calcutta.
YV5RH, 4.83, 62.05, Caracas.
YDE, 4.81, 62.37, Bandoeng.
RW15, 4.25, 70.59, Khabarovsk.
RADIO PACIFIQUE, 3.86, 77.65, Noumea.
YDA, 3.04, 98.68, Batavia.

*Said to be off the air.

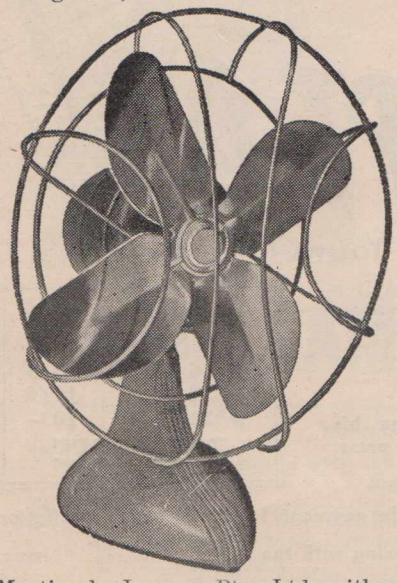
TRADE PARADE

"MARDEL" FANS AT MARTIN DE LAUNAY'S

With every indication of an early summer, Martin de Launay Pty. Ltd. have wasted no time in securing large stocks of "Anti-Summer" appliances. No. 1 on their "Anti-Summer" campaign is the Mardel de luxe high-speed fan. We see no reason why this line should not enjoy great popularity in the coming season. Australian-made throughout, the unit is of very sturdy construction and the chromium-plated blades are of the full 8" type. The heavy wire guard which fully surrounds the blades is also plated and when the blades are in motion it forms a striking contrast to the dull crackle finished base and motor housing.

The power unit is one of the latest type 240-volt A.C., induction motor, with grease-packed bronze bearings. A common failing in most high-speed fans is that, after many hours of continuous running in summer heat, the motor tends to become overheated. To overcome this, the Mardel unit has a specially designed air-cooled motor housing which ensures motor coolness. Long life, with no mechanical attention whatsoever, is thereby assured.

To secure stocks of this quick-selling line, retailers should contact

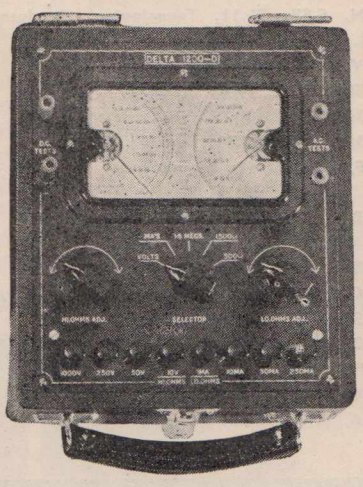


Martin de Launay Pty. Ltd. without delay as the demand is bound to be abnormal. Situated on the corner of Clarence and Druitt Streets, Sydney, Martin de Launay Pty. Ltd. will be only too pleased to hear from you concerning this or any other matter dealing with the radio and electrical trade.

NEWCOMER TO DELTA RANGE

The Delta 1200D volt-ohm-milliameter recently introduced to the Sydney radio trade is becoming increasingly popular. There is little reason to doubt this when one considers the work done by this efficient little instrument.

One glance at the technical features



set out below is enough to convince any serviceman that the Delta 1200D is here to stay.

PUSH BUTTON OPERATED

Incorporates the Triplett twin meter with a sensitivity of 2,000 ohms per volt on the D.C. Scales.

SCALE READINGS

D.C. 0-10-50-250-1,000 volts at 2,000 ohms per volt; 0-1-10-50-250 milliamperes; low ohms; ½ to 500, 1,500 ohms and 1.5 megohms. A.C. 0-10-50-250-1,000 volts.

BACK-UP OHMMETER CIRCUIT for reading low ohms, ½ to 500, with minimum contact error.

PUSH BUTTONS for selecting correct range of D.C. and A.C. volts, D.C. Milliamperes and high and low ohms. Separate zero adjusters for high and low ohms. Selector switch for volts, milliamperes, 1.5 megohms, 1,500 ohms and 500 ohms.

LEATHERETTE CARRYING CASE, 9" x 7¾" x 5½," with handle for portability. Bakelite engraved panel, test prods and leads and all self-contained batteries supplied.

W. G. Watson and Co., Pty. Ltd., the sole Australian agents of "Delta" test equipment, extend to all "Radio World" readers a cordial invitation to inspect the elaborate range at their spacious showrooms, situated at 279 Clarence Street, Sydney. A visit to their store will convince you that efficiency in your business is largely dependent upon up-to-date test equipment.

MORSE COMBINATION UNITS

A new line just released by Invincible Radio and Electrical Pty. Ltd. is an Australian-made morse practice set. Of particularly strong construction, the unit is ideal for those wishing to learn the morse code, a hobby that has recently become so popular owing to the international situation.

Consisting of a high-grade key and high-tone buzzer, mounted on a shaped wooden base, the unit is comfortable to handle, and speedy sending can be dealt with. A common failing in most low-priced morse sets is that the wiring is very poorly connected. It is quite annoying to get half-way through a message when a badly-connected wire breaks the circuit, thus ruining the practice.

However, in the Invincible model, all connections are neatly soldered, and all wiring is elevated off the ground in the hollow base.

The price of this efficient little practice set, complete with Eveready C battery and morse instruction card, is only 12/9 at Invincible Radio and Electrical Pty. Ltd., of 102 Clarence Street.

Call in and see Mr. Norm. Cohen, manager of Invincible Radio. He will be only too pleased to show you the complete stock of morse equipment available from this firm.

CRYSTAL REPAIRS

Is there any firm in the radio trade which is prepared to undertake repairs to crystal pick-ups and microphones? From time to time we get enquiries from readers who want us to put them in touch with such a firm. Can anyone help?

TRADE *(continued)*

EXPANSION AT JOHN MARTIN'S

The radio wholesale house of John Martin Pty. Ltd. is enjoying well-earned popularity and an expansion has been found necessary to handle increased business.

The present handy shop is being retained for speedy service for radio parts and electrical accessories, but space has been more than doubled by taking a floor upstairs in the same building, where a spacious showroom for radio receivers, refrigerators and electrical appliances has been fitted out as well as a thoroughly equipped radio laboratory and repair department and also additional office space.

We feel sure that everyone in the radio trade will join with us in congratulating Mr. Martin on his success and achievement. In the space of a few years Mr. Martin has built up a progressive, yet thoroughly sound, wholesale house. His many happy clients speak highly of his speedy and completely satisfactory service, both

TRANSVERSE CUTTING GEAR AVAILABLE AT LEVENSON'S

We have been informed by Mr. Lewis, manager of Levenson's Radio Store, of 226 Pitt Street, Sydney, that they still have a number of low-priced transversed cutting gear kits for home recording in stock. Of good make, the gear is supplied ready to be mounted on to any gramophone turntable, either electric or spring driven. By means of a clamp that fits over the turntable drive spindle, the cutting head is drawn slowly to the centre of the record by a series of gears, that automatically space the groove cut by the needle.

Full wiring diagrams for attaching to either radio set or amplifier are supplied with each kit. Instructions for operating are also included, and Levenson's technical department is always at your disposal. Priced at £4/18/6, complete with cutting head, they represent outsanding value for those who are interested in this fascinating hobby.

Situated at 226 Pitt Street, Sydney, Levenson's Radio have complete stocks of record blanks, needles, etc., and will be pleased to hear from any "Radio World" reader interested in home recording.

NEW DIALS BY RADIOKES PTY. LTD.

So as to assure perfect dial tracking for coils of their manufacture, Radiokes Pty. Ltd. have released a number of very attractive dial units that should be well received by members of Sydney's radio trade. Type DWD-1 is a single glass dual-wave unit produced for use with Radiokes coils and an "F" type condenser. Type DWD-2 is also a single glass dual-wave dial, having been especially designed for use with the Five-band Communications receiver coil kit, and an "H" type condenser.

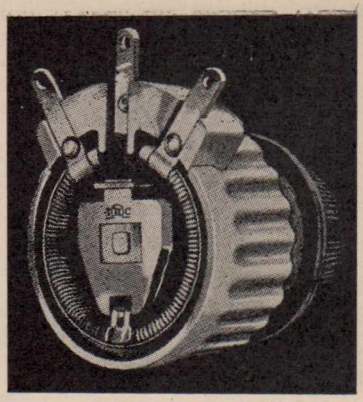
The DWD-5 dial is for use on the 1600 to 550 k.c. and 13.7 to 40 metre bands, with an "H" type condenser. All of this series are edge-lit and wedge-driven. Aperture for the escutcheon is approximately 7 in. x 4⅞ in.

The DWD-6 dual-wave dial is a smaller version of the larger dials and is suitable for mantel sets. The escutcheon aperture is approximately 3 in. x 3 in., and the dial is for use with "H" type condenser on the 1600 to 550 k.c. and 13.7 to 40 metre bands. Price, 18/9.

The new dual-wave portable kit dial, type DWD-7, has all parts supplied ready to assemble, and has a glass scale with both B.C. and S.W. stations clearly marked. The walnut escutcheon is easy to fit and requires an aperture of 3 in. x 3 in. This is the only portable dial that can be edge-lit. Price, 9/-.

The DWD-8 dial has the same specification as the DWD-7 except that the components are ready mounted on a bracket which requires only 1 screw to fit to the chassis. The DWD-8 sells at 13/6.

Further details are available from the sole agents for Radiokes products, Radio Suppliers Pty. Ltd., Wingello House, Angel Place, Sydney.



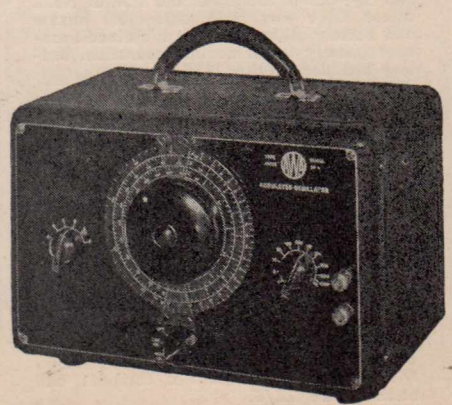
POWER RHEOSTATS BY I.R.C.

A line of heavy duty power rheostats is being handled by W. J. McLellan Pty. Ltd., sole agents in Australia for I.R.C. products.

Full dissipation at partial rotation is claimed by the manufacturers. The housing is of die cast aluminium alloy. Resistance element is wound on a strip of aluminium core, insulated by asbestos. A flat clock-spring connects the slider to the centre terminal. Pressure is provided by a separate steel spring not in the current-carrying path. Single ⅜ in. hole mounting. Back-of-panel dimensions, 1-21/32 in. diameter, 21/32 in. depth. Shaft is insulated, ¼ in. diameter by ½ in. long.

Type PR-25 is available in following ratings: 1 ohm (5,000 mA), 2 ohms (3,450 mA), 3 ohms (2,880 mA), 6 ohms (2,040), 8 ohms (1,770), 10 ohms (1,580), 15 ohms (1,290), 25 (1,000), 35 (845), 50 (709), 75 (575), 100 (500), 125 (445), 175 (375), 250 (315), 350 (267), 500 (222), 750 (173), 1,000 (155), 1,500 129), 2,500 (100), 3,500 (84), 5,000 ohms (70 mA).

A.W.A. MODULATED OSCILLATOR



A high-grade instrument which we can strongly recommend for all radio technicians and repair men, is the new A.W.A. modulated oscillator. For servicing and aligning all types of receivers it is invaluable.

It has output right down to 30 megacycles, using fundamentals only, making it ideal for use with modern dual-wave receivers. Correct ailgnment is a great help on the short-wave band of any dual-waver.

It can also be used as a monitor tuning device for keen short-wave listeners.

LEVENSON'S WIRELESS

Wholesale, Retail. Wholesale, Retail.

Games, Hobbies, Novelties, and Slot Machine Specialists.

226c PITT STREET, SYDNEY

Everything from A to Z in Radio at Sane Profit Prices.
'Phones: M 2525 and M 2526-7. Goods forwarded C.O.D. Post or Rail. (C.O.D. Mail within N.S.W. only. Not Interstate). We welcome Prepaid Telegrams and Long-Distance 'Phone Calls.

Listen in comfort. Rubber HEADPHONE PADS give a new thrill to listening. Priced 2/6 per pair.

RADIO PUBLICATIONS

The Australian Official Radio Service Manual. A Standard Circuit Book for all Radio, 1939. 7/6 and 10/6 (stiff cover). General information, circuits, valve connections, wire tables in full — all you want to know.

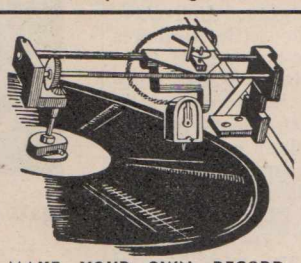
Just arrived from London: Book of Ten Tested Circuits, 2/-.

The HOME MECHANIC ENCYCLOPAEDIA, by F. J. Camm. Covers making of Glue, Ink, Wireless, Electric Motors, etc., etc. Nearly 400. 6/11.

THE WIRELESS CONSTRUCTORS' ENCYCLOPEDIA, 7/6. A splendid book for young and old. amateurs or professionals. Nearly 400 pages, properly illustrated.

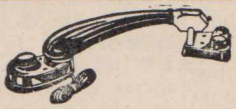
TELEVISION AND SHORTWAVE HANDBOOK, 5/6. Up to the moment; lavishly illustrated — a splendid publication; over 250 pages.

The METER ENGINEER'S POCKET Book, 8/-. Splendid volume.



MAKE YOUR OWN RECORDINGS. Cutting head and overhead cutting unit complete, 98/6. Plain Records, 2/11, 3/11, 4/11, 5/11. Cutting Needles, 2/-.
LIKE-A-FLASH Overhead Cutting Head and Cutting Gear £4/18/6

British Manufactured RADIO PICK-UP NEEDLES. 150 gilded Radiogram 5-min. Needles, 4/6. 100 15-minute Needles, 3/6. 50 40-minute Needles, 4/3. Multi-tone Talkie Needles, 2/-. 50 loud-tone Brit. Needles, 1/-. Asst. Gram. Needles, 4 pkts 2/6.



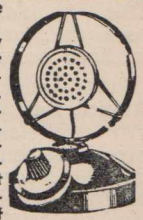
COSMOCORD CRYSTAL TYPE BRITISH BUILT AND DESIGNED GRAMOPHONE PICK-UP DE LUXE, with volume control built in as illustrated, 59/6.

AMPLION British built Gramo-Radio Pick-up with volume control. Moulded bakelite tone arm. List Price 37/6 Now 32/6. Dealers write for wholesale price.

Heavy-duty ELECTRIC 240 a.c. GRAMOPHONE MOTORS, complete, 45/-.

COLLARO Gramophone Motors and Turn-tables. Complete, 52/6 and 56/6.
Sturdy built 240-volt Electric Motor, with all fittings; were listed to sell at 75/- from overtime Customs Sale; now 40/-.

Hand - holding MICROPHONE. Batteryless; plugs into pick-up terminals of any set, 22/6.

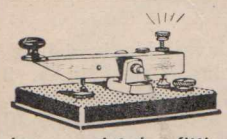


B.G.E. Table Type Microphone, highly recommended for amateur or professional use. Built-in Transformer and Battery, with volume control incorporated. Just plug into pick-up terminals of any set or amplifier. 39/6.

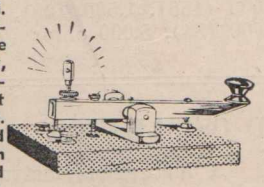
CRYSTAL SETS AND CRYSTALS
Famous All-Station Model. Charts 6d. All Parts 25/-. Built 35/-, in Cabinet 45/-. Phones 12/6. Aerial—Earth 2/6.
CRYSTALS A.1. Semi Fixed, 2/6. "Tec" Fixed Crystal 2/6. Liontron 5/6. Lion Micro 5/6. Refills 2/6. Red Diamond 4/6.

CRITERION CRYSTAL SET featured elsewhere in this issue. For your kit of parts SEE LEVENSON'S FIRST. Our quote will be cheaper and the components of better quality. Write now for full details.

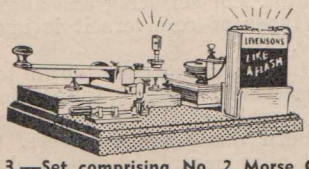
MORSE CODE KEYS, SETS and BUZZERS



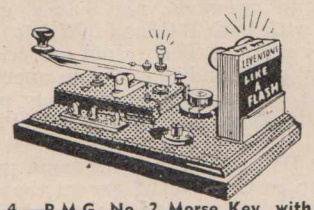
No. 1. — Adjustable Morse Code Key, with long and short tapper arms, splendidly made and finished. Strong reliable heavy plated fittings mounted on bakelite moulded base, 3¾in. x 2¾in. x ½in. Price, 12/6.



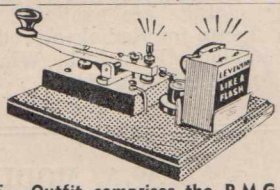
No. 2.—P.M.G. Type adjustable Morse Code Key, strong and reliable; will last a lifetime. Heavy plated fittings on thick solid wooden base, 4¾in. x 3in. x 15/16in. Perfect action. Price, 19/6.



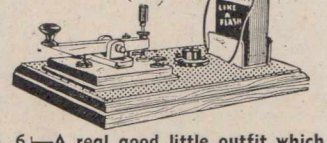
No. 3.—Set comprising No. 2 Morse Code Key P.M.G. Type, with light; No. 8 professional De Luxe Buzzer Battery. Throw-over Switch for buzzer or light. 8-7/8in. x 6-1/8in. x 1in. use as required. All suitably mounted on wooden baseboard. Price complete ready for use. 42/6.



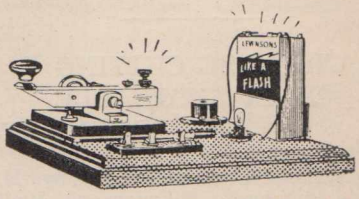
No. 4.—P.M.G. No. 2 Morse Key, with adjustable buzzer and light throwover switch (buzzer to light). All mounted on wooden baseboard complete with battery — 100% reliable outfit. Price 30/-.



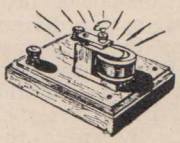
No. 5.—Outfit comprises the P.M.G. No. 2 Morse Code Key, with adjustable buzzer and battery all mounted on a stained baseboard, ready for immediate operation. Battery included. Price 27/6.



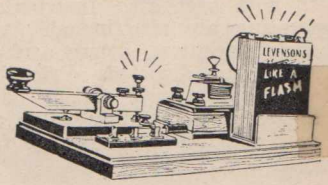
No. 6.—A real good little outfit which incorporates the No. 1 adjustable Morse Code Key, in moulded bakelite base, with a smart little adjustable buzzer and battery all complete, ready to operate. All mounted on a stained, solid baseboard 8-7/8in. x 6-1/8in. x 1in. compact and neat. Price 22/6.



No. 7.—Morse Code Set with No. 1 Key, buzzer and light. All components mounted on solid, stained wooden base, neat and compact with switch for light or buzzer. Complete with battery ready for use. Price 25/-



No. 8.—De Luxe adjustable buzzer as illustrated, precision product of excellence. Smooth high tone non-irritating note. A real professional's job for amateur, ship, or plane use. Price 15/-
The buzzer not illustrated 3/9, and 4/6. High pitch buzzer in metal case 4/9, in bakelite case adjustable. Price 5/6.



No. 9.—A smart reliable outfit, comprising No. 1 Morse Code Key and No. 8 professional buzzer with switch (light to buzzer) and battery all mounted ready for use on a red stained wooden baseboard 8-7/8in. x 6-1/8in. x 1in. only priced at 35/-

SPEEDY QUERY SERVICE

Conducted under the personal supervision of A. G. HULL

Power Unit (Colac) is interested in the power unit detailed in the August issue.

A.—It is not unexpected that our advertisers do not offer kits of parts for this job as it is not a straightforward affair like the set we describe using standard components always readily available from stock. For the unit you would have to look around a bit to pick up suitable parts. We understand that there is a Lionel train motor available which serves well and that you should have little difficulty in making up the whole unit for less than 30/-. A certain amount of initiative will be required, however.

* * *

W.W.K.S. (Narrogin) wants details of a vibrator power supply to suit the "Big Boy" amplifier.

A.—We doubt if there is any vibrator available which would be capable of handling the many amperes which would be drawn from an accumulator in order to get sufficient wattage to run a big amplifier like the "Big Boy." Even the filaments alone would draw more than two amperes. A possibility would be a power supply unit like the one described on page 20 of the August issue, but we haven't had any practical experience with this unit so we cannot go far in the direction of recommending it. Why not stick to the "Vibra" amplifier of the May issue?

* * *

G.H.N. (Ormond) wants a circuit for a car receiver.

A.—There was a circuit for a car receiver in the March issue, but only the circuit and not the full constructional details. We have lots of enquiries for a good strong article on the subject but unfortunately the necessary parts do not appear to be readily available, especially the vibrator units, except in expensive power packs, and the remote control units at a reasonable price. Then the big difficulty is the installation and getting rid of the noises which may be there. To install a car set properly you want a good motor and radio mechanic in one.

* * *

C.E.R. (Rockhampton) has built the Companionette, but with a 42 pentode and finds not sufficient output. Some facts about power sensitivity seem to be what is required to explain his difficulty.

A.—You can usually tell the sensitivity of a power valve by the amount of bias specified for a given power output. For example you know that if a 45 type valve wants 50 volts bias when rated to give 1½ watts power output it will need a signal input of almost that amount to give that power. The 42 with a bias of 16½ volts for 3 watts power output is far more sensitive but is still not comparable with the 6AG6G, which operates with 6 volts bias and consequently needs a signal of only 6 volts to drive it to full power output. The 6V6G is another very sensitive power valve. There may not be much difference in the maximum power output capabilities of the various valves you mention, but what really interests you in practice is the amount of power output available for any given signal input. If this is not clear to you now, don't hesitate to write again and we will see if we can manage a full-page article explaining the difference between the various valves commonly used.

J.C. (Arncliffe) uses a portable receiver in a launch and finds reception is not too good, with interference from the engine and signal strength not too good.

A.—From what we gather, you are using only the original loop aerial of the receiver and operating it in the cabin quite close to the engine. It would be far better to erect an outside aerial a few feet high and as far away from the engine as possible. It might be worth trying an earth wire from the set to the framework of the engine mounting bolts. Beyond the suppressor in the spark plug lead and the condenser across the points, there is little you can do to suppress the noise at its source.

* * *

T.P. (Gladesville) offers to supply an article on some test gear which he has made up.

A.—Yes, we would like further details about the equipment, and we would be glad to talk it over with you if you ever get a chance to drop in at the office.

* * *

W.J.A. (Adelaide) wants a circuit for a two-valve set, also a list of terms and abbreviations.

A.—We have back numbers with several circuits of the kind you mention. They are available at 6d. each, post free. With regard to the circuit abbreviations and symbols, you should find it an interesting and instructive half hour to compare one of the picture diagrams with one of the schematics and parts list. Start with something simple, like the "1940 Reinartz," and work through to one of the big a.c. sets and you will soon learn the symbols.

TRANS-PORT

(Continued from page 8)

that the aulio end of the set is in order, and so a step is taken back to the cap of the intermediate amplifier. This may not make as much noise as the detector cap. It will indicate, however, if the intermediate amplifier and second intermediate transformer circuits are in order.

Next step back is to the cap of the first valve, which will indicate the condition of the first intermediate transformer and the frequency changer valve.

By this process it is usually possible to locate the cause of any failure to handle signals.

Oscillation Trouble

To find out why a set is silent and to remedy the trouble is usually a simple matter, but the real test of a radioman's ability to tune up a set comes when he finds that it squeals or whistles.

In most cases it is merely a matter of turning back the volume control to stop the whistle. In such a case, the first thing to try is a small mica condenser across the speaker. A condenser of .01 mfd. capacity, with long leads soldered to its lugs, is a handy little gadget to have on hand in a case like this. It can be held in place across the terminals of the speaker socket while the volume control is adjusted to see whether it can be further advanced before the set squeals.

A small mica condenser of about .0005 or .001, from the plate of the 6B6G to earth, may also help to stabilise the set. If the instability is very bad it may be found desirable to isolate the frequency changer and intermediate amplifier circuits by using separate bias resistors and bypass condensers for the cathodes of these two valves. Resistors should be about 500 ohms each, with .1 mfd. condensers. Another help to attain stability is to put a .5 mfd. tubular condenser across the high tension (from the B plus terminal of the first intermediate transformer to earth) up at the r.f. end of the set. Actually this condenser is then in parallel with the second electrolytic filter condenser, but owing to the difference in the condenser's characteristics and its location it can often cure a set of oscillation trouble.

QUERIES *(continued)*

L.B. (Preston) asks two queries about suggested modifications to the "Communications Nine."

A.—We doubt if there is any real advantage to be gained by taking the r.f. for the a.v.c. diode from the primary. We did it with the "World Standard" and ran into trouble with leaky condensers. Reversal of the volume control arrangement as suggested appears quite feasible, and we doubt if there is any objection to it. We doubt, however, whether it is a more standard arrangement than the one we showed.

C.C.M. (Temora), after saying many nice things about the magazine, asks what he can do with a commercial set which distorts the signals.

A.—There are many possible causes for distortion, the most common being a faulty valve. With battery sets it is often due to the valves being incorrectly biassed. Whenever the "B" batteries are renewed, the bias battery should be renewed too, even if it does not appear to be exhausted. Then, of course, the connections to it must be made correctly. Where a set has a resistance-coupled stage there is always a chance that a leaky coupling condenser is causing the distortion. Glad to hear you like the improvements.

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Readers should note that our radio information service has now been re-organised and we offer two distinct forms of assistance.

Letters received by the 15th day of any month will be answered in these columns in the next issue. There is no charge for this service, no coupon is required and all readers and their friends are invited to use the service for any queries dealing with radio, photography, model aeroplanes, and any other subjects for which we are likely to be able to get helpful information.

The other service is for a reply by mail, and in this case a fee of 1/- is charged.

Every effort will be made to get replies to such queries away within 24 hours, but no guarantee of this can be given, as there may be times when pressure of other work will make it necessary to hold over queries for a day or two. Answers to such queries are limited to a single sheet of letter paper, and there is no hope of such a service covering the design of special circuits, the calculations for special power transformers, coil windings, etc.

Address all correspondence to

AUSTRALASIAN RADIO WORLD

117 Reservoir Street, Sydney.

CRYSTAL SET

(Continued from page 24)

connected. This lever comes out on the front panel and by manipulating it the coils can be inductively adjusted. The bank coil is mounted flat down on the base directly under the spider coils. It can be either screwed down by brass clips or, as was done in the original, secured by means of a piece of strip wood placed across the coil and screwed in the centre.

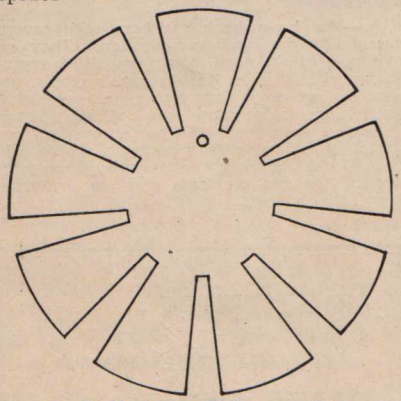


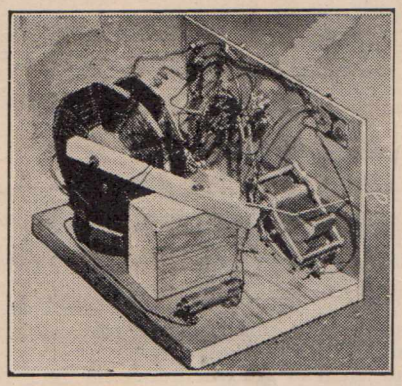
Diagram 1: Measuring 5½" across the centre, this is the shape for the spider-web coil former.

Coil Switching

As can be seen in the circuit diagram, the various coils can be made to work with each other or by themselves by an ingenious switching system. The wiring is clearly shown in the diagram, and no bother whatsoever is expected in this stage of construction. When finished, however, a little practice on how to manipulate the coils for better reception will improve the set's performance.

Detector

Here it is more of a matter of choice rather than of duplicating the original. Some people prefer the cats-whisker type, i.e., the one with the wire on the little arm, whilst the fixed type also gets an even number of supporters. The original set was found to work quite well powered by a detector of the fixed type.



A back view of the set. The method of attaching the moving coil arm to the wooden block is clearly shown.

The fixed detector might be termed as the most popular, inasmuch as it is not so likely to be put out of action when someone slams the lounge-room door, or causes some other commotion.

It should be remembered that when using enamelled wire for hook-up and wiring purposes it should be thoroughly scraped of all insulation where the joint is about to be formed. If this step is taken beforehand it will save many headaches later on in the construction of the set.

Aerial Efficiency

As the crystal set depends solely on the signal picked up by the aerial to drive the phones, it is advisable to have an efficient aerial (out-of-doors preferably) to be assured of best possible results. However, when the set is going it is time to start experimenting with such things as aerials, earths, etc.

The original was found to work five stations with comfortable 'phone strength at Kogarah, on only eight feet of aerial wire thrown on the floor.

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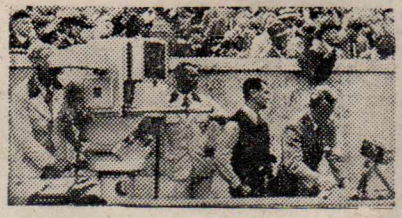
Think of this — for a few pence each day — actually less than many fellows spend on tobacco — you can prepare yourself for a good pay proposition in Radio. You can whilst learning make money. Many A.R.C. students earn £3 and up to £6 per week at SPARE TIME WORK.

Below: Outside Television



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