

THE AUSTRALASIAN

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Radio World

VOL. 5 NO. 11

APRIL 1941

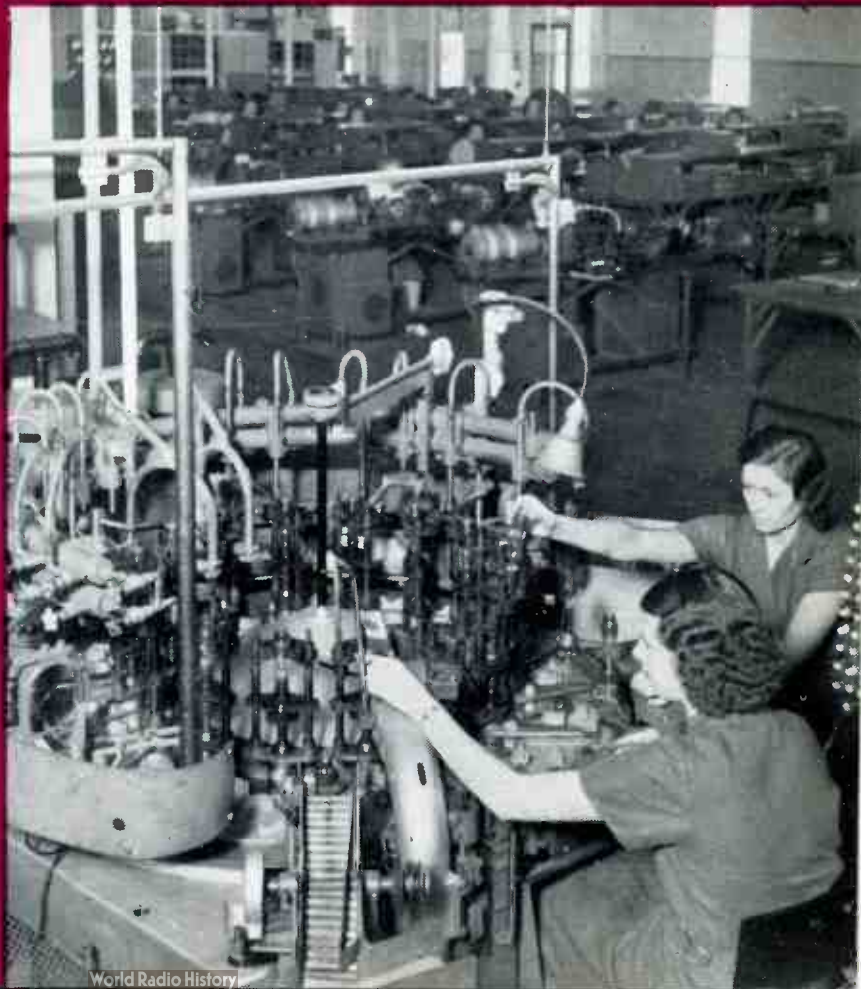
AUSTRALIAN VALVES IN THE MAKING
A scene in the Radiotron works: (see page 31)

**MASTER FOUR
BATTERY SET**

**AUTO-RADIO FOR
YOUR MOTOR CAR**

**CLUB SPECIAL
WITH VIBRATOR**

**FULL GUIDE TO
SHORT WAVES**



for the R.W. AUTO RADIO and MASTER BATTERY "4"

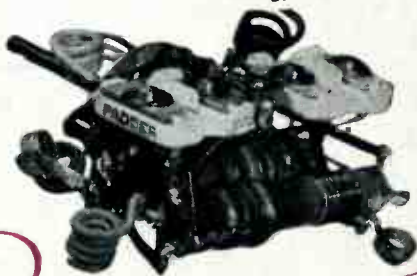
*Choose Crown
Coil Kits!*

You can make no finer choice than Crown Coil Kits, for all Crown components are Trolitul moulded and impregnated. This renders Crown units impervious to moisture and atmospheric changes. Thus Crown Coils are lighter, stronger and give better all-round performance. Choose "Crown" for complete satisfaction.

The "R.W." Auto Radio

- CK2 Crown Coil Kit,
comprising —
- 1 C47 Aerial Coil
 - 1 C48 R.F. Coil
 - 1 C49 Osc. Coil
 - 1 T29 I.F.T.
 - 1 T30 I.F.T.
 - 1 T12 Podder

Price
£1/15/-



Master Battery 4

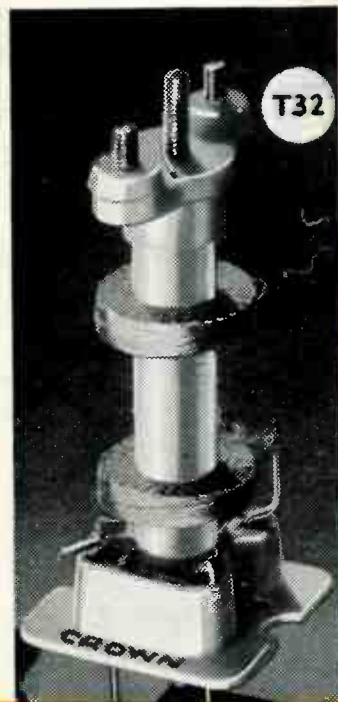
- CK3 unit consists of —
- 1 DC2 13-42B
 - 1 T31 I.F.T.
 - 1 T32 I.F.T.

Price **£2/15/-**

Dial to suit FD3B, "H"
Gong, 24/-

**TROLITUL
MOULDED &
IMPREGNATED**

ILLUSTRATIONS: At left is a view of the DC2 13-42B unit, whilst at right is an illustration of the T32 Permutone Trol I.F.T. number 2. Price, 13/9.



"THE

The Australasian

RADIO WORLD

Incorporating the

ALL-WAVE ALL-WORLD DX NEWS

Vol. 5

APRIL, 1941

No. 11

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

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Telephone: MA 2455.

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OUR FRONT COVER

Sealing and Exhausting Valves

More adept than human hands, more accurate in vacuum control than the element of human judgment, the "Sealex" Machine produces finished valves that are uniform in both characteristics and quality. No less than 22 operations are completed as Radiotron valves pass through the sealing and exhausting process.

PERSONAL

This war can't last for ever.

Already there is plenty of talk about the reforms which are to take place when Hitler and Musso have been cleaned up.

We'd like to chip in with a word or two about amateur radio.

Thousands of people are studying the morse code and are starting to take an interest in radio communication theory. After the war they will be ideally suited to swell the ranks of amateur radio. They must be encouraged to do so.

Never again should there be any need for a stampede to obtain radio operators and communications engineers. There is room in the ether around the United States for 40,000 amateur transmitters, and equally as much room in the ether around Australia.

Amateur radio must be subject to control, but let us have a post-war motto, "As Free as the Ionosphere," with official recognition and encouragement of radio transmitting as a scientific hobby.

A. G. HULL

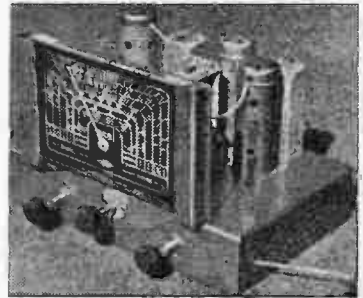
HOMECRAFTS

open in Sydney!

Can supply complete range of
"Radio World" Kits

MASTER DUAL-WAVE BATTERY FOUR

Designed to give maximum performance at minimum cost, the "Master Four" gives a superb performance both on shortwave and broadcast. Four latest-type octal battery valves ensure exceptionally high gain with low running costs. All parts in our Homecraft's kit are guaranteed exactly as specified.



WRITE NOW FOR OUR
SPECIAL LOW INTRODUCTORY KIT OFFER

AUTO-RADIO FIVE

This three-unit car radio is designed for use in all types of cars. Fractional microvolt sensitivity ensures an ample reserve of power for successful operation under the most difficult conditions.

WRITE NOW FOR FREE QUOTE



CLUB SPECIAL

(Vibrator Model)

Designed specially for shortwave fans living outside a.c. areas, this vibrator model of the "Club Special" gives the same magnificent performance as the a.c. model featured last month.

QUOTATION SENT FREE BY RETURN MAIL

HOMECRAFTS Pty. Ltd.

100-102 CLARENCE STREET - - SYDNEY

RADIOKES

for HIGH FIDELITY RECEPTION

THE "CAR RADIO"

Designed specially for this set, and consisting of Aerial, R.F. and Oscillating Coils, Air Core I.F.'s and Padder, Radiokes Coil Kit CK1035 will guarantee results equal to the Editor's! Specify—

Radiokes Coil Kit CK1035	£1/16/9
DWD-7 Dial, to track	9/-
Radiokes Vibrator RC75S	£6/6/-
or Type RC78S	£6/19/-
Radiokes Audio Trans. RTB6	18/6

THE "COUNTRYMAN'S 4"

For this Super Set you MUST have these Super Radiokes Components!

Radiokes Coil Kit CK1036	£1/7/6
Use Radiokes I.F.'s I.F.P. No. 1	13/9
Radiokes I.F.'s I.F.P. No. 2	13/9
DWD-5 Dial	£12/2/6

RADIOKES DIALS

FOR THE CAR RADIO: DWD-7

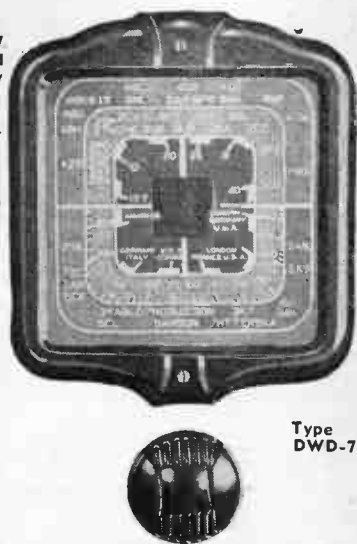
- Dial shows broadcast and dual-wave stations clearly marked in white on green.
- This dial can be edge-lit!
- Neatly finished walnut escutcheon of attractive design.
- The aperture required for the dial is 3 in. x 3 in.
- For "H" Gang, B.C. 1600 to 550 k.c. and S.W. 13.7 to 40 metres.

Radiokes Dial —	
Type DWD-7	9/-

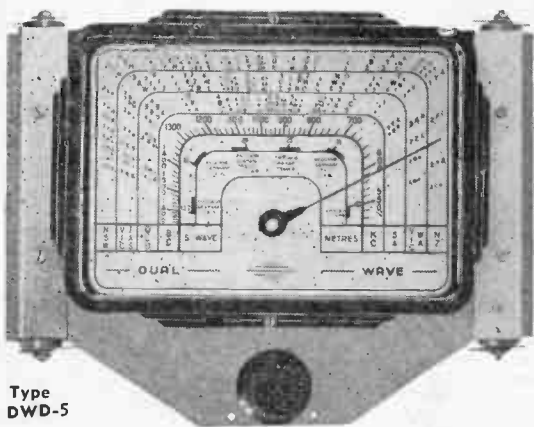
FOR THE COUNTRYMAN'S 4: DWD-5

Types DWD-1 and DWD-2 are single glass dual-wave, the type DWD-2 having been designed especially for use with the Five-band Communications Receiver, Coil Kit and "H" type condenser. Type DWD-1 is a standard dual-wave dial for use with Radiokes coils and "F" type condenser. The DWD-5 dial is for use on the 1600 to 550 k.c. and 13.7 to 40-metre bands, with "H" type condenser. All this series is edge-lit and wedge-driven. Aperture for the escutcheon is approximately 7 in. by 4-7/8 in.

DWD-1-2-5	price £12/2/6
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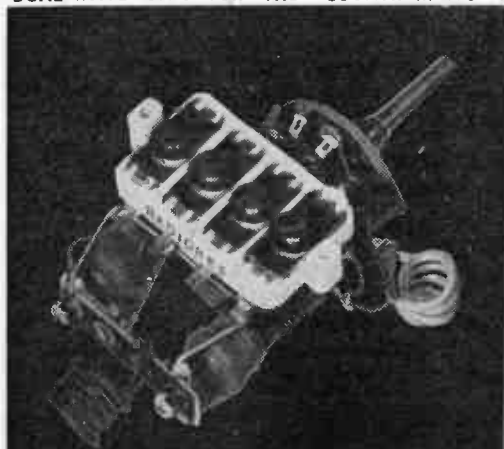


Type DWD-7



Type DWD-5

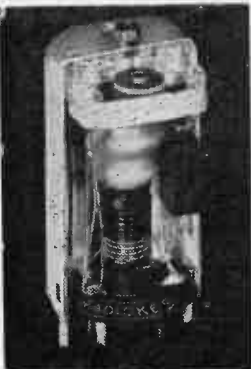
DUAL-WAVE UNIT FOR THE "COUNTRYMAN'S 4"



RADIOKES D.W. UNIT

Highly selective unit with exceptionally wide range. To match "H" type gang condenser. Incorporating 4-in-1 padder. Solidly mounted with coils.

Type DWU-1 —	
List Price	27/6



RADIOKES B.C. COIL
Trolitul rigid construction, available in air core and permeability types.
Type ACB, Aer., R.F. or Osc.
List Price

RADIOKES "H" TYPE COILS WILL TRACK WITH RADIOKES "H" TYPE DIALS ONLY.

RADIO SUPPLIERS PTY. LTD.
Sole Agents for Radiokes Products,
Wingello House, Angel Place, Sydney. 'Phone B 4586.
Radiokes can give you delivery from stock of any of the following Precision Products—

Audio Transformers	I.F. Transformers	Terminals
Audio Chokes	Line Filters	Trimmers
Bakelite Stampings	Laminations	Volume Controls
Coils of all types	Midget Condensers	"Trolitul" Mouldings
Coil Units	Power Chokes	Formers, etc.
Dials	Solder Lugs	

If you have difficulty in obtaining immediate delivery of any Radiokes Products, let us have your name and address. We can arrange supplies. Our new Radiokes leaflet is available post free.

NAME

ADDRESS

R.W. April

MASTER BATTERY 4 for 1941

Designed for reliability and performance, not economy, this battery receiver carries the strongest recommendation.

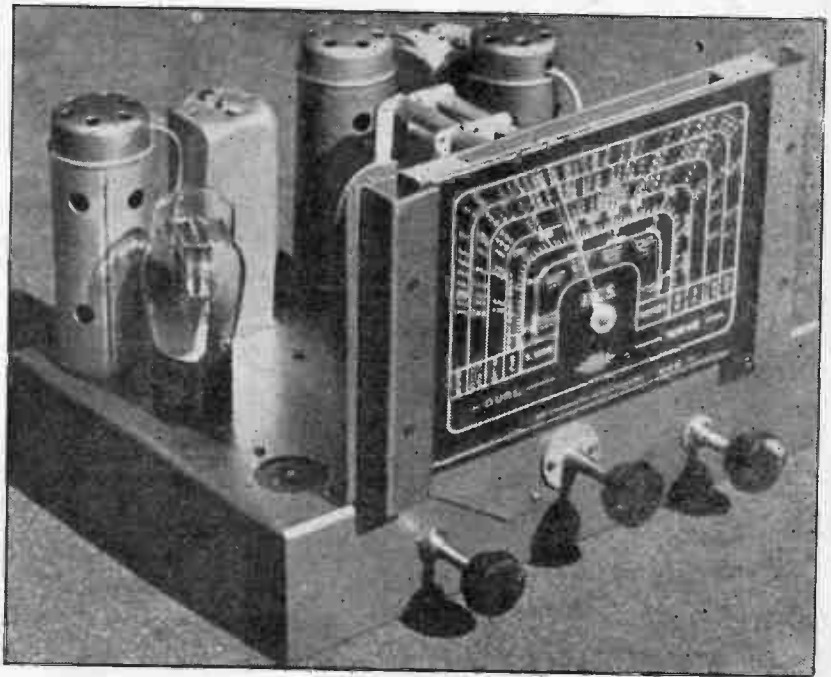
MODERN radio receivers are, for the most part, completely reliable.

They can be depended upon to give years of service without attention. But it always takes an exception to prove the rule, and so we find that there have been some complaints about the performance of battery-operated receivers.

Ordinary broadcast receivers are easy enough, but when it comes to a dual-waver there has been considerable difficulty with short-wave operation of converter valves.

Most of the trouble has been in connection with the 1.4-volt types, as these are particularly critical of the way in which they are used.

The slightest lack of efficiency in the associated coils, or any other losses, can result in the valve failing



Front view of the chassis, with the speaker socket in the foreground.

MASTER BATTERY FOUR FOR 1941 Parts List

- 1—Base, size 12 x 8 x 2½ (Arcadian).
- 1—Coil bracket (Britannic, R.C.S., Radiokes, Crown).
- 2—Intermediate transformers (R.C.S., Crown, Radiokes, Britannic).
- 1—2-gang condenser (Stromberg type "H").
- 1—Dial to suit coils (R.C.S., Radiokes, Crown).
- CONDENSERS:**
- 2—.00005 mfd. mica condensers (T.C.C.).
- 2—.00025 mfd. mica condensers (T.C.C.).
- 1—.005 mfd. mica condensers (T.C.C.).
- 1—.01 mfd. mica or tubular condenser (T.C.C.).
- 2—.02 mfd. tubular condensers (T.C.C.).
- 5—.1 mfd. tubular condensers (T.C.C.).
- 1—25 mfd. electrolytic condenser (T.C.C.).
- RESISTORS:**
- 1—25 ohm grid stopper (optional) (I.R.C.).
- 1—500 ohm 1-watt (I.R.C.).
- 3—50,000 ohm 1-watt (I.R.C.).
- 1—1 megohm 1-watt (I.R.C.).
- 1—.25 meg. 1-watt (I.R.C.).
- 1—.5 meg. 1-watt (I.R.C.).
- 2—1 meg. 1-watt (I.R.C.).
- 3—2 megs. 1-watt (I.R.C.).
- 1—.5 meg. volume control with switch (I.R.C.).
- 4—Octal sockets.
- 2—UX sockets.
- 3—Valve cans.
- BATTERY EQUIPMENT:**
- 3—45-volt "B" batteries (Eveready).
- 1—2-volt accumulator (Clyde, Vesta).
- VALVES:**
- 1—1C7G, 1—1M5G, 1—1K7G, 1—1L5G (Radiotron, Brimar, Mullard, Philips).
- SPEAKER:**
- Permagentic type to suit 1L5G (Rola, Amplion).

to give proper performance on the short-wave bands. Various schemes have been suggested to effect a cure for this difficulty, but so far they have not been completely successful. Unfortunately (or maybe fortunately), the 1.4-volt valves are practically unobtainable at the moment, so that we need not waste further space to deal with these valves and their problems.

Trouble enough, however, has been found with short-wave operation of the more robust two-volt valves. Taken all round, these valves are far more reliable and satisfactory than the 1.4-volt types. This is only to be expected, as the filaments are more rugged. It seems to be a big problem to obtain extreme economy of operation in any battery valves without making the filaments so fragile that they are unable to stand up to hard work, vibration and jars.

For ordinary broadcast receivers the two-volt valves have proved entirely satisfactory, but there has been a little doubt about the converters in dual-wave receivers.

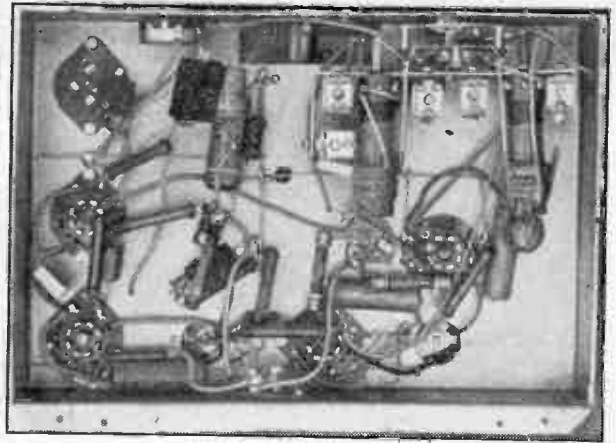
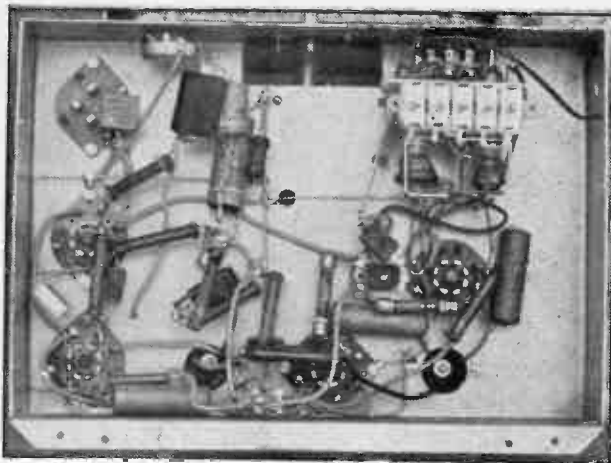
Some of this difficulty has been caused by the use of unsatisfactory coil units. In many cases we suspect that ordinary coils which were designed for operation with 6J8G and other

big converter valves have been pressed into service in battery sets without due attention to the modifications necessary to ensure proper performance with the battery valves.

Padder Feedback

Many ideas were thought of in an attempt to obtain satisfactory operation of battery valves on the short-wave bands, one idea being detailed at great length in our issue of September last. This scheme was worked out to provide padder feedback to strengthen up oscillation on the shorts, with a loading resistor across the broadcast secondary to steady things up on the broadcast band. Full data for the construction of suitable coils for this circuit were given in this issue, and, when used with these coils, results were completely satisfactory. Unfortunately, however, coils to the specifications given were not readily available in the leading brands on the market.

In these enlightened days few people go to the trouble of attempting to wind their own coils, especially when litz wire has to be used, with honeycomb windings and other windings in turned grooves. It is there-

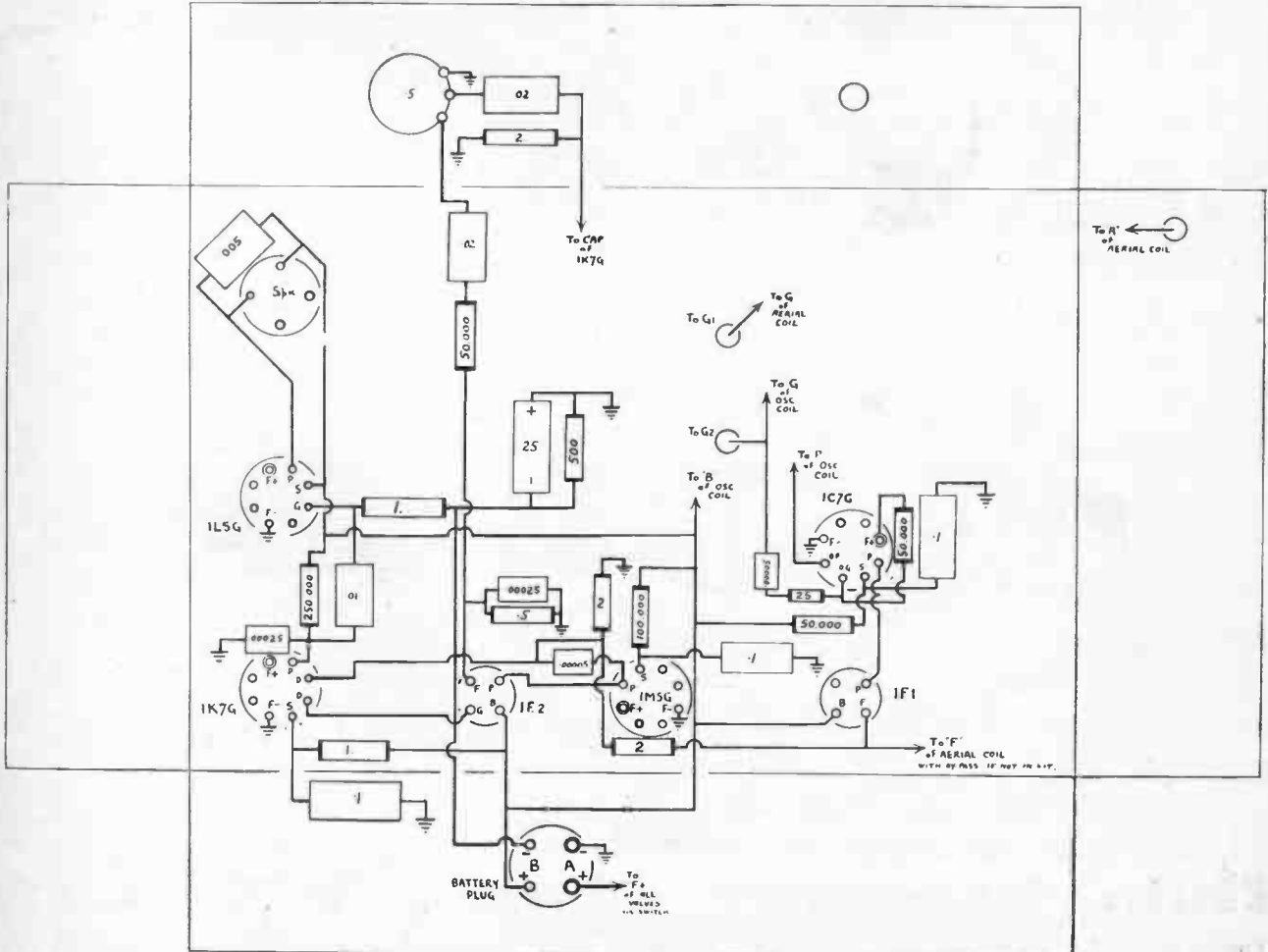


Great attention has been paid to the finer points, and no detail has been too small to receive consideration. As a result a larger number of minor components are used than with many similar sets, but these only cost a few shillings extra, and do good work by

ensuring that every set built to the circuit will be certain to give the same sterling performance as the original.

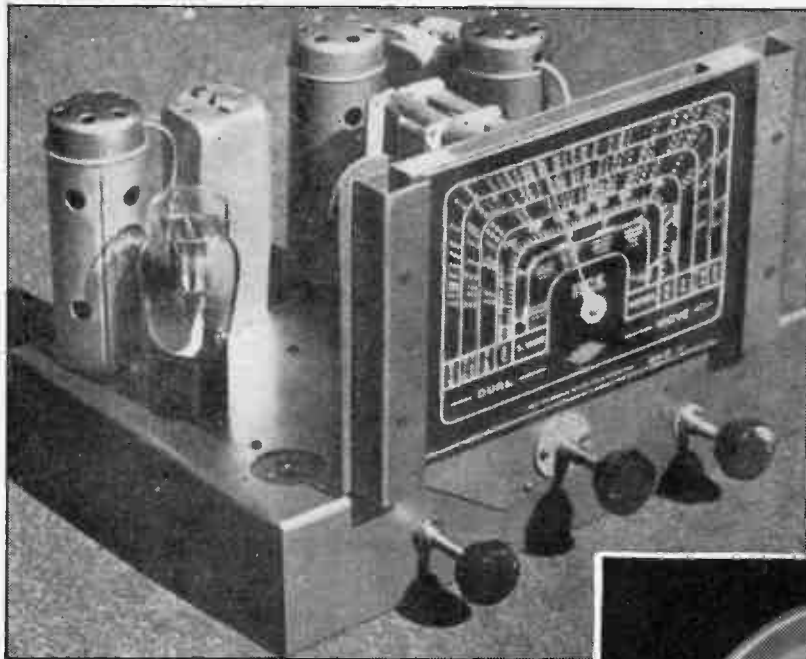
To go over a few of these refinements we might refer to the oscillator circuit, where it will be noticed that a 25 ohm stopper resistor has been

fitted in the oscillator grid circuit. Then, in the volume control circuit it will be noticed that a couple of extra resistors and condensers are used to provide an arrangement which allows the volume control potentiometer to operate without actually



Here is the picture diagram, with coil unit removed for simplicity. Above are two photographs of the wiring, with R.C.S. coil bracket at left and with Britannic coil bracket at right.

Specified for the . . .



MASTER BATTERY FOUR . . .

*Rola 8-20 has
high sensitivity;
greatest fidelity*

ROLA 8-20 DATA :

- A low-priced but highly-efficient 8" speaker suitable for console and mantel cabinets. As Model 8/20 functions perfectly with low-power outputs, it is therefore very suitable for use with the "Master Battery Four."
- By employing permacentric construction, all forms of voice coil centring have been eliminated, and it is impossible for the diaphragm to move out of alignment. Permacentric construction also ensures dust-proofing by the most positive method known to radio engineers.
- A large isocore transformer, which adds to the general dependability of Model 8-20, is fitted. A frequent cause of transformer failure — electrolysis — has been entirely eliminated.
- A re-designed moulded diaphragm is responsible for even better performance than has been obtained in the past. These diaphragms are especially treated to withstand wide climatic variations.

RETAIL PRICE, complete with plug 48/3

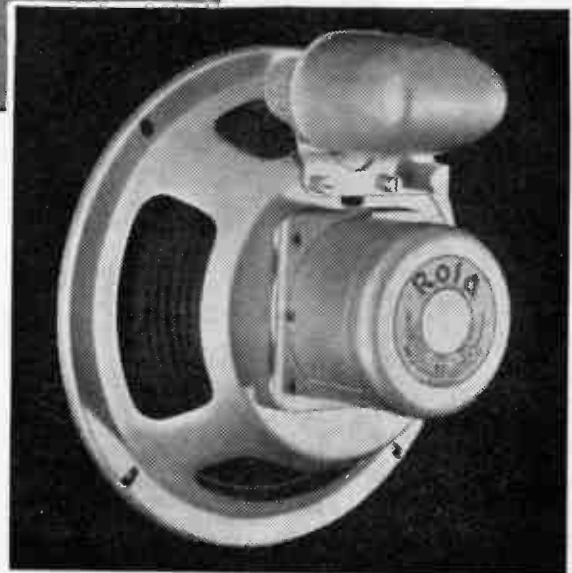
"THE VERY BEST RADIO RECEIVERS USE ROLA SOUND REPRODUCERS"

WRITE NOW FOR NEW PRICE LIST AND ABRIDGED SPECIFICATIONS

Rola Company (Aust.) Pty. Ltd.

The Boulevard, RICHMOND, E1, Victoria
JA 5351

116 Clarence Street, SYDNEY, N.S.W.
B 5867



**There's A Rola Speaker For Every "Radio World"
Receiver And Amplifier**

For every receiver — midget mantels, standard consoles, and de luxe multi-valve specials — for auto radios, portables, and public address installations, there is a ROLA model that is ideal for the purpose. Write for latest illustrated price list, sent post free, on request.

MASTER 4 (continued)

carrying any r.f. circuits or direct current and yet avoid the distortion-introducing circuits which are sometimes used in order to avoid the possibility of the volume control action becoming noisy. These may appear to be only minor details, but in practice they make all the difference to the finished set.

Oscillator Circuit

Another matter which is not revealed in the circuit schematic is the arrangement of the dual-wave coil switching.

In order to simplify the circuits and make them easier to understand it is not our practice to show the full details of the coil switching, as they do not affect the building of the set. The coil brackets supplied for sets of this type are normally supplied with the coil switching completely wired up, and it is only a matter of connecting up the colour-coded leads in order to fit the bracket into the receiver.

With these new coils the switching has been arranged so that the primaries of both aerial and oscillator sections of the coils are both kept in series no matter whether the set is tuned to short-waves or broadcast.

When tuned to broadcast, the primary of the short-wave oscillator section acts as a damping choke to restrain the oscillation and make it more constant over the whole of the broadcast band, at the same time allowing sufficiently close coupling to ensure complete reliability.

When the set is switched over to short-waves the primary of the broadcast oscillator coil acts as a radio frequency choke to the fixed padder condenser of .007 mfd., which becomes switched in between the connection of the two primary windings

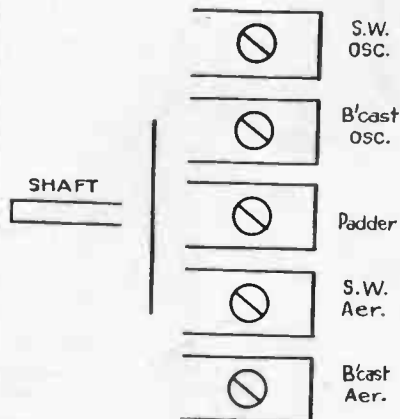
and earth. In this position it provides a degree of padder feedback which strengthens up the oscillation on the high frequency end of the short-wave band.

This appears to be a clever way of killing several birds with a single stone or, rather, providing several desirable characteristics at a single throw of the coil switching.

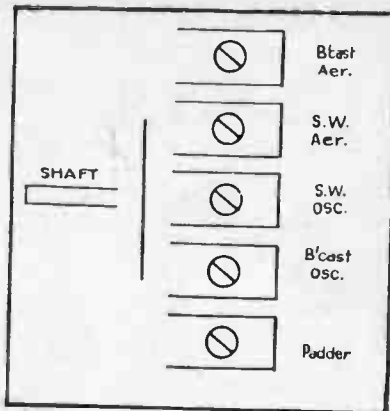
Checking Performance

With any converter valve the truest check to performance is to take a careful reading of the grid current, as described in detail in our issue of October last on page 25.

Putting an 0 to 1 milliammeter in series with the grid resistor (at the low potential end, between the 50,000 ohm resistor and the positive side of the filament of the converter valve), the grid current should be measured. It should vary according to the setting of the dial, but should keep within the limits of 90 to 200 microamperes on the broadcast band and between 60 and 180 on the short-wave band.



Padder layout for the Radiokes and R.C.S. coil brackets.



Padder layout for Crown coil bracket.

There is a considerable difference in the performance of individual valves, and of three valves tested in the original receiver it was found that one ran between 60 and 100 on short-waves, another between 60 and 120 and the third between 80 and 160. There was practically no difference in performance between the three valves in actual gain, and the set appeared to work well with any one of them. The measurement of the grid current is a reliable guide, however, and one we strongly recommend in all cases where performance is in doubt.

Layout

As will be noticed from the photographs of the set, the layout adopted follows standard lines, and this layout should be strictly followed. It will be noticed that the signal travels around the base in one direction, and from the output valve it travels still onwards to a speaker socket, which is mounted in the top of the base. Work with this receiver when built on an

(continued on page 28)

Peak Performance . . .

First choice of radio engineers the world over, MULLARD VALVES set a standard of perfection in manufacture and performance that has never been excelled. You, too, can ensure peak performance by insisting on . . .

MULLARD . . . THE MASTER VALVE

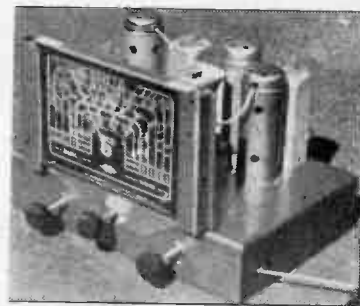
VIBRATOR CLUB SPECIAL

Highest possible sensitivity with lowest noise level, both so essential for peak short-wave performance, are assured if you specify Mullard Valves for your vibrator model of the "Club Special" described this month. Types required: 1—6U7G, 2—6J8G's, 1—6B8G, 1—5Y3G.

AUTO-RADIO FIVE

Because of their exceptionally high sensitivity combined with a ruggedness of assembly that vibration cannot affect, Mullard Valves are YOUR logical choice for the "Auto-Radio Five" described in this issue.

Types needed: 2—6U7G, 1—6J8G, 1—6B6G, 1—6V6G.



MASTER BATTERY FOUR

Designed for maximum results on both short-wave and broadcast, YOUR "Master Four" will give the same performance as the original if you INSIST on Mullard Valves. Types required: 1—1C7G, 1—1M5G, 1—1K7G, 1—1L5G.

NEW VALVE CHART. GET YOUR COPY NOW

The latest Mullard Valve Characteristics Chart contains full data on over 300 valve types. Send 6d. in stamps NOW for your copy, to Mullard-Australia Pty. Ltd., 367-371 Kent Street, Sydney, N.S.W.



Mullard

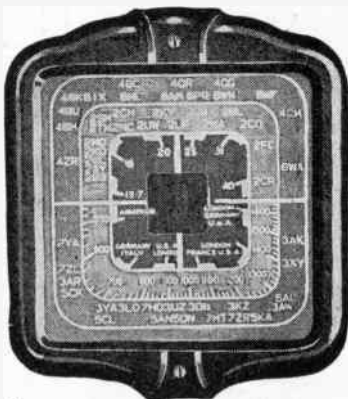
RADIO AND RADIO VALVES

Insist on R.C.S. TROLITUL COILS and R.C.S. DIALS

R.C.S. Dial for the CAR RADIO

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/-

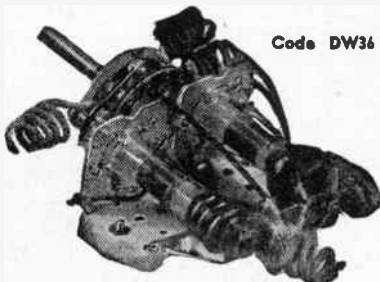


Code DA-7

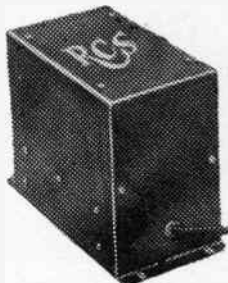
R.C.S. D.W. Unit for the "COUNTRYMAN'S 4"

Type DW36, as illustrated, consists of Aerial and Oscillator Coils, Wave Change Switch, the necessary B.C. and S.W. Trimmers and Padder mounted together, wired up ready to assemble into a set utilising 465 k.c., the bands being S.W. 16 to 50 metres, and B.C. 1500 to 550 k.c.

Code DW36



R.C.S. Code DW36 Dual-wave Unit £17/6



C755

For the CAR RADIO

The R.C.S. Coil Kit for this set consists of Aerial, R.F. and Oscillator Coils, Air Core Intermediates and Padder exactly as used in the original design shown in the photograph of the set mounted in a car.

R.C.S. Coil Kit K175	£1 16 9
Use —	
DA-7 Dial	9/-
TB6 Audio Transformer	18/6
Choice of 2 Vibrators — C755	£6 6 0
Or C785	£6 19 0

(See illustration below)

For the "COUNTRYMAN'S 4"

For tonal clarity, increased range and dependability, specify R.C.S. Coil Kit K176 and these High "Q" Trolitul components —

R.C.S. Coil Kit K176	£1 7 6
IF162—1st Perm. I.F.	13 9
IF163—2nd Perm. I.F.	13 9
DA-5 Dial	£1 2 6

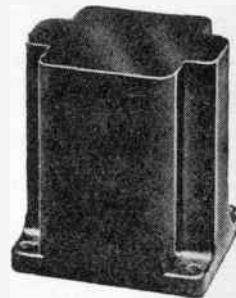
R.C.S. VIBRATOR UNIT

These vibrators have been very carefully designed to avoid the usual pitfalls found in car radio design. To obtain results similar to those produced in the original Car Radio, you must use either of these R.C.S. Vibrators:

	Input Output			
	Volts	Volts	M.A.	Price
C785—Indirectly heated	6	220	60	£6 19 0
C755—Indirectly heated	6	135	30	£6 6 0
Other R.C.S. Vibrators for all purposes				
C895—Directly heated	2	135	30	£6 19 0
C875—Directly heated	2	100	15	£6 19 0
C885—Indirectly heated	2	220	60	Quote
S835—Directly heated	4	135	30	£6 19 0
C845—Indirectly heated	4	220	60	£6 19 0
C745—Directly heated	6	135	30	£6 6 0
C795—Directly heated	12	135	30	£6 19 0
C805—Indirectly heated	12	220	60	£6 19 0

R.C.S. AUDIO TRANSFORMER

Long experience in the production of highly efficient transformers, combined with extensive research into raw materials and design, has resulted in the production of an audio transformer of excellent performance and complete reliability.



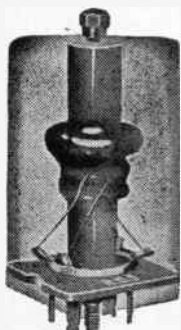
TB6—"B" Class	18/6
TA1—Audio Choke Bakelite Case	30/-
TM1—Modulation Transformer—Power	20/-
TB4—Single Input "A" Class Bakelite	21/-
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R.C.S. TROLITUL BROADCAST COILS

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HEMOCRAFTS Pty. Ltd.,
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RADIO Pty. Ltd.

50 GLEBE STREET, GLEBE
Telephone: MW 2405

THE "R.W." AUTO-RADIO

At last — a set for the car which is within reach of the amateur set builder.

TO MANY of our old readers it will come as a bit of a surprise to find that we are publishing constructional details of a receiver designed for use in a car.

It has always been our policy to discourage the amateur set-builder from attempting to build car radios. Often enough, we have answered queries on the subject by pointing out all the difficulties.

Now comes a complete reversal of policy, and naturally it is going to take some explaining away.

To cut a long story short, we suppose the quickest way would be to run over the pitfalls of car radio and then explain how we are surmounting them. A word of warning, however: don't get discouraged until you have read this article right through.

The History

There is nothing very new about car radio. We can recall the late Ross Hull coming home for the Christmas of 1929 with a car radio, using indirectly-heated a.c. valves, although the 224 was about the only valve of this type at that time.

By a natty arrangement of series-parallel for the heaters, Ross used those 2.5-volt valves to good purpose, and the set was a great performer in every way. It was not, however, until many years later that the car radio boom swept over America, and not until about 1934 that car radios were made available on the Australian market.

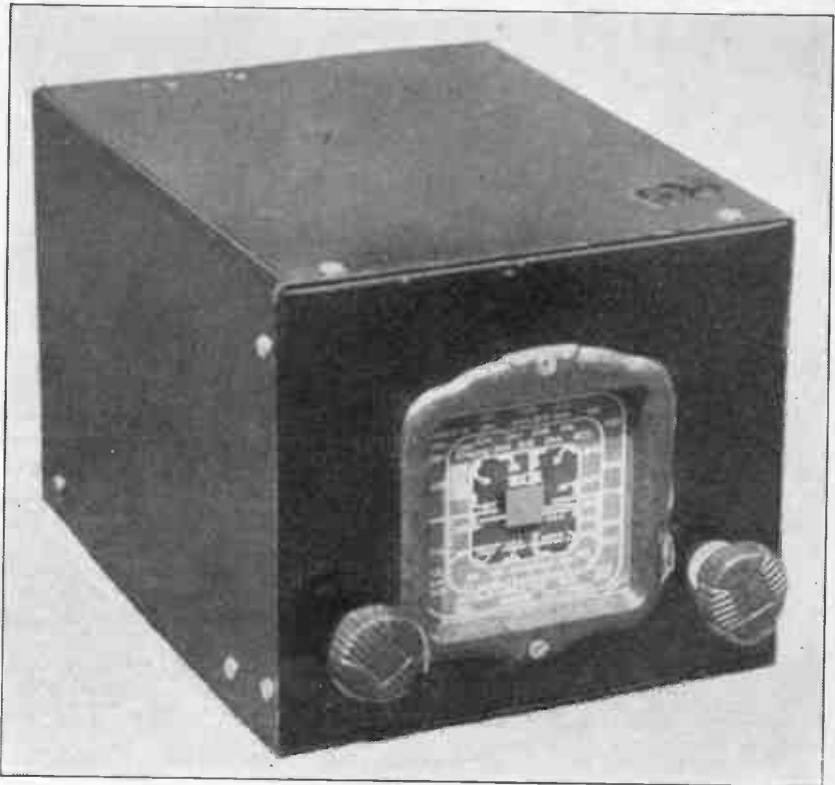
The principal factor in the introduction of car sets at that time was the development of the vibrator type of high-tension supply.

In the original car set of which we have just spoken, the high tension supply was taken from batteries. Now, as everybody knows, high tension batteries are costly, bulky and heavy, and it was immediately recognised as a great advance when the vibrators came along to deliver suitable high tension, and yet operate from the car battery.

They made the all-electric car radio set a possibility, and it became practical to operate a set in the car without any running cost at all.

Why Not More Popular?

Once the all-electric car receiver became a reality it was expected by



Front view of the receiver unit.

certain people that it would be only a matter of months before every car would have one fitted. Nobody could deny the joy of driving along country roads to the accompaniment of broadcast music. And for parking, well!

But in this country car radio did not achieve any immediate popularity; in fact, even to-day there are only a few thousand car receivers in use and only a small percentage of the cars on the road are radio equipped.

Why?

Probably one of the biggest factors has been price.

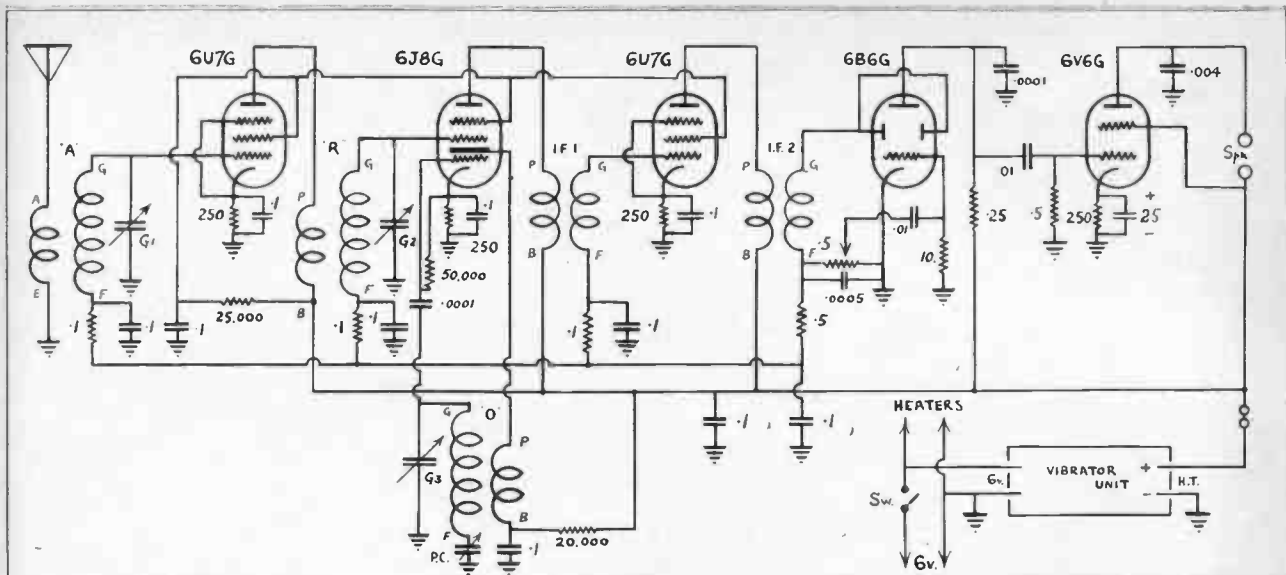
Until fairly recently it was not possible to get a good car set installed for less than about £30, and probably the average home radio set does not cost that much. Car owners seemed to expect that a little car set should be cheaper than a full-sized console. Unfortunately, however, there are just as many costly components in a car set as in a bigger model; in fact, even more, and there does not appear to be any easy way out of that particular problem.

There are some models now avail-

able at list prices of less than twenty pounds, but an extra charge is made for the aerial equipment and also for the installation charges, so that the total cost is usually over twenty pounds by the time the finished job is ready for the road.

Performance

Performance has also been a possible factor in the failure of car sets to really grip the market. Most car sets can give excellent performance when operated fairly close to a powerful transmitter, and not too close to tramlines. All along tramlines there abounds the demon of man-made static, and there is no easy way of dealing with this problem. This tends to detract from the value of the entertainment from the car set when running along suburban tramlines. Then, when you get out into the open country there is the problem of the weak signal strength. Especially in daylight, few of the local stations put a really hefty signal beyond a range of a hundred miles. A weak signal becomes mixed up in the radiation of noise from the ignition system and there is nothing much you can do in

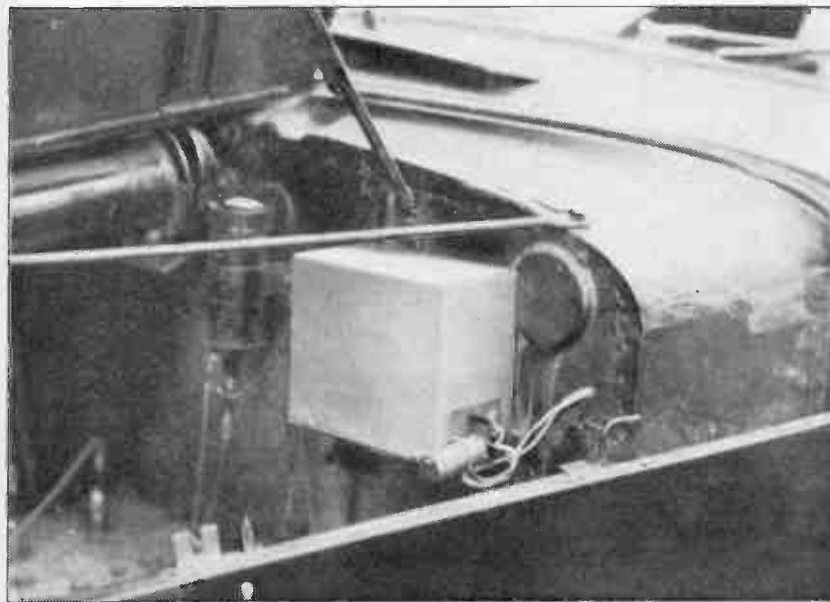


AUTO-RADIO

(continued)

the set to reject the noise and accept the signal.

All of which is also partly due to the inconvenience of carrying a long aerial at the top of a pair of forty-foot poles. Which (with our sense of humour) is one way of mentioning that you must always think of car radio in terms of being able to use an effective aerial of nothing better than two or three feet of wire or rod, and even that, partly screened by the metal work of the car and without any effective earth return at all.



The vibrator unit can be mounted on the firewall, as shown here.

Sensitivity Needed

On account of the inefficiency of the aerial pick-up it becomes necessary to use a receiver having a high degree of sensitivity and it is highly desirable to use an r.f. stage ahead of the converter valve, as the noise level should be kept as low as possible.

As is generally recognised, such a type of receiver needs careful alignment and adjustment, a nerve-racking job if you install the set under the dashboard of a car and then start to work on it.

It is one thing to work on a receiver when it is nicely laid out on a workshop bench or even a kitchen

Circuit diagram of the receiver unit, showing also the vibrator connections.

table. Working on it after it has been installed in a car is another thing altogether.

It has been said that proper installation is an important factor in getting satisfactory performance from a car receiver, and this statement brings to mind to mention that to work on car radios a man needs to be a combined car mechanic and radio mechanic.

Our Solution

After a thorough study of the whole situation, we have designed a car receiver which we think will be a really practical proposition for the average radio enthusiast and amateur set-builder.

The installation is designed in three separate units, which makes it infinitely easier to build, install, adjust and service.

Unit number one is the vibrator power supply, which we strongly advise to be purchased as a ready-made unit. These are not very dear and cost only a few shillings more than the kits of parts which were made available some time ago.

To have a ready-made, and tested, unit supplying ripple-free high tension current is one of the biggest helps to avoiding difficulty in the direction of noise. Furthermore, we strongly advise that this unit be fitted at least a couple of feet away from the actual receiver, the high tension current being taken to the set through a shielded wire.

In our particular example we found it most convenient to mount the vibra-

tor unit on the engine side of the firewall, under the bonnet.

High Tension Voltages

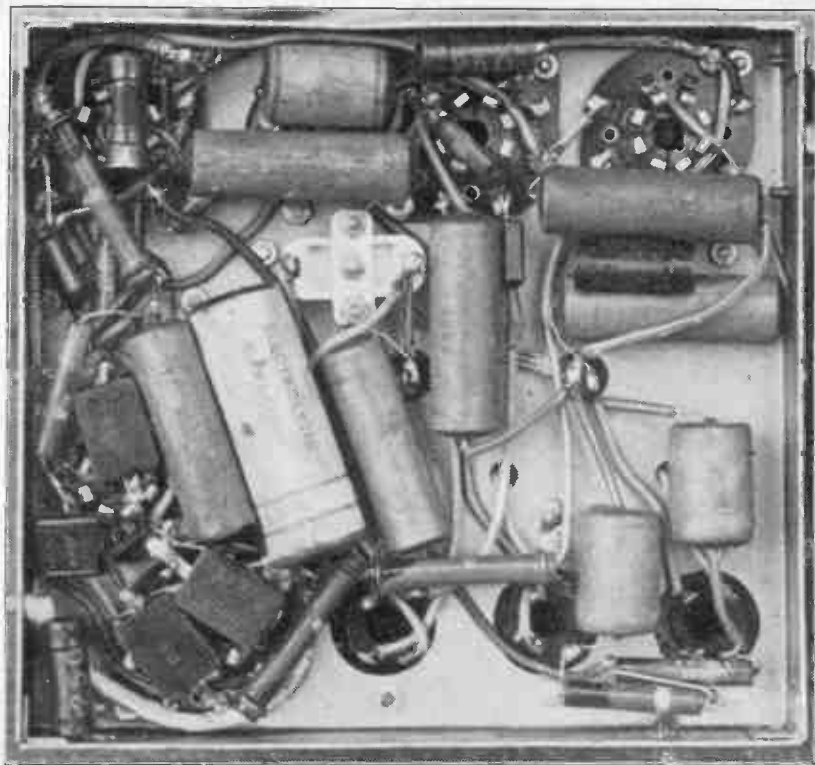
There are several different types of vibrator units. Three we can call to mind have output ratings of 135 volts, 220 volts and 250 volts.

We have designed the set to operate from any one of these units without any appreciable difference in general performance, apart from lowered power output with the smaller units.

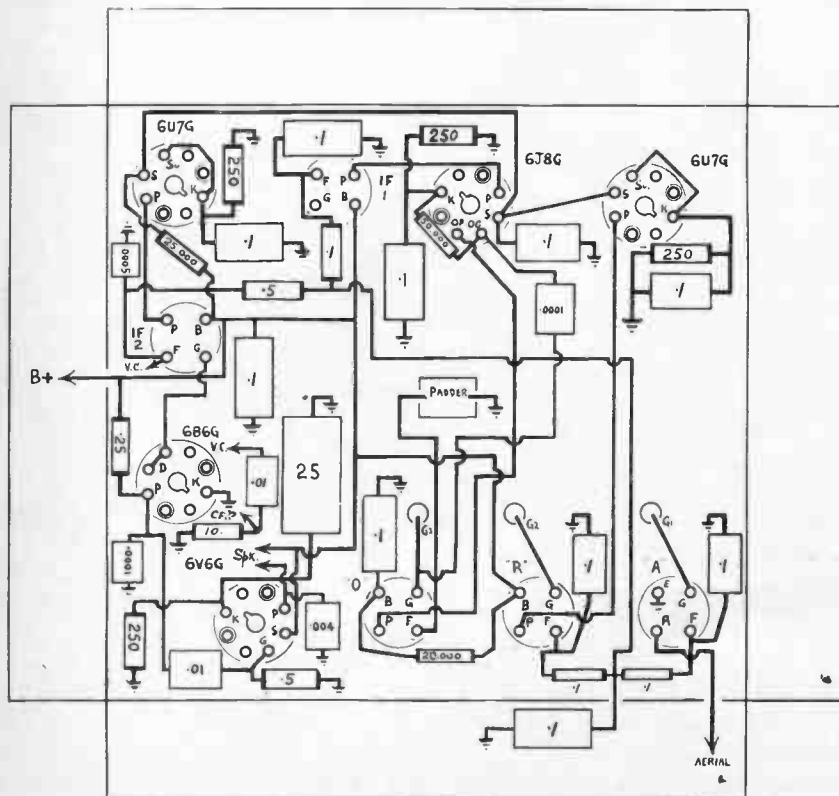
This drop in power output is offset, of course, by lowered current drain on the battery.

The modern American cars have been fitted with generators capable of delivering a heavy charging rate to the battery when necessary, thereby taking care of the drain of a car set, even if it borders on the heavy side. With these cars the matter of current drain becomes unimportant, and we suggest the bigger vibrator units, with greater power output from the set.

On the other hand, if the set is to be used with an older car, or one of the smaller sports models, likely to be fitted with a car battery of lower capacity and with a generator of lower charging rate, well, in that case we advise the use of one of the 135-volt vibrator units.



Compare this photograph of the wiring with the picture diagram below and you can't go wrong.



Reliability

Generally-speaking, the vibrator units are completely reliable and satisfactory in every way, but sometimes the points of the vibrator need attention after a year or two of service. The heavier the current drain, the more likely it is that the points will need attention, which tends to indicate that greater reliability would be obtained with the lower voltage units. We doubt if this is really noticeable in practice, however.

The Set

The second unit is the set itself, and this chassis is fitted into a small metal case, with an in-built dial, and fits just under the dash, alongside the steering wheel.

To have used a remote-control dial with flexible shafting would have been nicer, perhaps. But such a refinement would have meant extra cost and many minor difficulties.

The circuit used for the set follows normal superhet practice, with five of the latest Australian-made valve types, similar to those used in ordinary all-electric receivers.

There is an r.f. stage ahead of the converter, the usual intermediate stage, and a diode-triode detector. Only point of interest is the use of a 10 megohm grid leak to provide bias

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AUTO-RADIO (continued)

for the triode portion, thereby allowing the cathode to be earthed. The output valve is the big 6V6G beam power valve. This valve is capable of delivering about four watts of undistorted output when fully loaded with a high tension voltage of about 265 volts, and even with the more humble 185 volts, it is still capable of delivering plenty of power and good tone.

The Speaker

The third unit is the loud-speaker, which can be any type of permagnetic unit, selected according to price or taste. To a certain extent the type of vibrator unit selected may affect the choice of a speaker. For example, if the vibrator unit is to supply the higher voltage, then it might be a good scheme to get one of the larger sizes of permagnetics in order to safely carry the considerable amount of power available. On the other hand if the lower high tension voltage is used, then a small speaker should have ample power handling ability.

The mounting of the speaker will require individual thought, according to the type of car used. In some cases a small box can be made and fitted under the dash on the opposite side of the car to the set.

In many of the 1937 and later models of big sedans there will be found an in-built baffle up in the crown of the hood, over the centre of the windscreen. This is normally hidden by the felt lining, but, feeling about, you may be able to discover this baffle hole, which will then be used with an appropriate size of speaker.

In fact there are many ways of installing the speaker unit, and we think it best to leave that entirely to the set-builder to settle to suit himself.

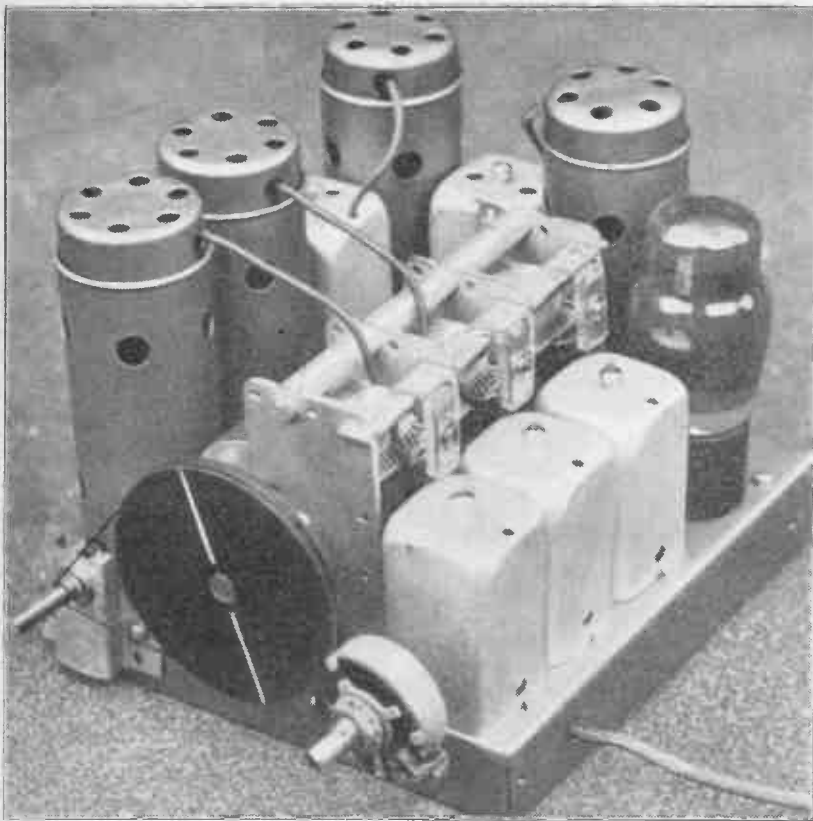
Assembly

The building of the chassis is simple enough, and the usual set-building precautions are necessary.

There are several extra precautions, however.

The heater wiring, for example, should be carried out with shielded wire.

This heater wiring is connected more or less directly to the car battery, which is a possible source of noise. Therefore shielded wire, or wire which is encased in copper braid, is used right throughout the set. At each socket one of the heater terminals is earthed to the braiding or shielding as well as earthed to the actual metal of the base, while the "live" side of the wiring is kept in-



A general view of the chassis, showing the layout which allows full-size components to be used.

R.W. AUTO RADIO

Parts List

- 1—Bose, size 6½ x 7 x 1 (Arcodian).
- 1—Case to suit (Arcadian).
- 1—Set of coils, with intermediotes and padder (Crown, R.C.S., Britannic, Radiokes).
- 1—3-gang type "H" condenser (Stromberg-Carlson).
- 1—Dial to suit (R.C.S., Radiokes, Crown).
- 3—Trimmer condenser to suit gang (R.C.S., Radiokes).

CONDENSERS:

- 2—.001 mfd. mica condensers (T.C.C.).
- 1—.0005 mfd. mica condenser (T.C.C.).
- 1—.004 mfd. mica condenser (T.C.C.).
- 2—.01 mfd. mica condensers (T.C.C.).
- 10—.1 mfd. tubular condensers (T.C.C.).
- 1—25 mfd. electrolytic condenser (T.C.C.).

RESISTORS:

- 4—250 ohm 1-watt resistors (R.C.S., I.R.C.).
- 1—25,000 ohm 1-watt resistors (I.R.C.).
- 1—25,000 ohm 1-watt resistors (I.R.C.).
- 1—50,000 ohm 1-watt resistors (I.R.C.).
- 3—.1 megohm 1-watt resistors (I.R.C.).
- 1—.25 meg. 1-watt resistor (I.R.C.).
- 2—.5 meg. 1-watt resistors (I.R.C.).
- 1—10 meg. 1-watt resistor (I.R.C.).
- 1—.5 meg. volume control (I.R.C.).

SUNDRIES:

- 4—Valve cons, 5 octal sockets, copper braiding, knobs, screws, etc.
- Vibrator Unit—to deliver 135, 220, 250 volts, according to taste (R.C.S., Slode-Calstan).
- Speaker—suitable permagnetic type, 5,000 ohm load (Rolo, Amplion).

side the shielding as effectively as possible. The heater lead then runs out through the end of the base, the inside wire being the "live" side and the shielding the return.

While on the subject of the heater wiring we would mention that we have made a special point of omitting an in-built switch. It is just dandy to have a switch built into the volume control potentiometer, but in practice it introduces a whale of a lot of trouble, as it means that direct wires from the battery have to be taken and run through the midst of the general wiring of the set. We strongly advise a separate switch, built into the battery leads and located a couple of feet away from the set. We feel sure that you won't have any trouble in finding a handy position for it.

The High Tension Lead

A second lead, consisting of a shielded wire, connects up the high tension from the vibrator unit. Again in this instance the shielding is used as the negative return, whilst the inside wire is the positive supply of high tension. The shielding is effectively earthed to the metal of the base immediately it gets inside the chassis, but the shielding continues right up to the main high tension terminal,

where a .1 mfd. tubular condenser is fitted from the positive to earth,

Two leads are required for the speaker and, again, these are completely encased in shielded wires, or run inside a sheath of copper braiding.

The Volume Control

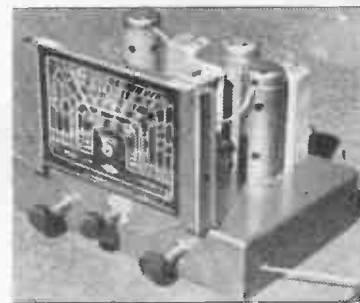
The volume control is mounted in the front of the metal cabinet which encases the whole of the set, and the leads to it are therefore encased in shielding in order to avoid any chance of noise pick-up.

It will be noticed that great stress is laid on the need for effective shielding and earthing.

Alongside the volume control is the mounting for the dial spindle. An angle of sheet metal is required at this point, as will be seen in the photographs. It can be cut from a jam-tin if a piece of heavier iron or aluminium is not available.

Wiring

Once the heater wiring has been completed, the rest of the wiring can be done, the main point being to watch the mounting of the by-pass condensers and other bulky components. The depth of the base is only just one inch, and it means that the components have to be neatly stacked in a single layer in order to make sure that nothing can short circuit to the



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Arcadian Radio Pty. Ltd.

AUTO-RADIO

(continued)

base plate when the chassis is fitted into the metal cabinet.

A short cut to obtaining rigid and neat wiring, but one which we really should not recommend, is to use the vacant terminal pins of the octal sockets as mounting terminals. The valve manufacturers depreciate this practice, but it is mighty handy and never seems to do any harm.

Testing

One of the big advantages of this design, and the main reason why we used separate units, is discovered when it comes to testing and aligning the set.

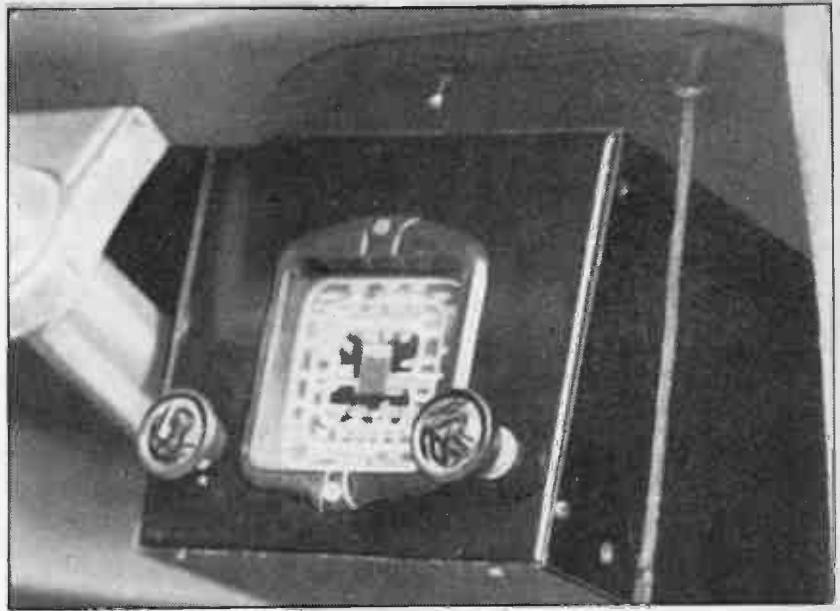
The chassis can be placed on the bench and connected up to almost any modern all-electric set. A pair of leads are taken across from the 6-volt a.c. heater supply, and high tension is taken from the screen terminal of the output valve of the set or any other suitable position.

The car set can then be operated just like an all-electric set, and tuned up to perfection with a small aerial, before it is installed in an inaccessible position in the car.

The Case

The all-metal case for the receiver chassis is held together with self-tapping screws, making for easy assembly. Brackets are not supplied as standard, but can be made up to suit any special requirements.

The design of the original case has been placed in the hands of the metal cabinet-makers, so that similar cabinets are readily available from all radio dealers, as advertised in this issue.



A view of the finished receiver mounted alongside the steering column.

As An All-electric

In conclusion, we might suggest to the keen enthusiast that it is quite a sound scheme to build up the car set exactly as described here and fit it in the car with some form of mounting which makes it easily removable.

Then, by building up a simple high tension supply unit, it can be taken from the car into the home and used with this unit to make it into an all-electric receiver for use as a secondary home set.

Warning

There are lots of easy ways of using directly-heated valves in car sets, and also many schemes for run-

ning portable sets from vibrators and the filaments from the car battery. All such schemes should be most carefully considered, as they present positive death-traps for the unwary.

In the first place, the voltage of a car battery is not really constant. It may drop to less than four volts when the starter is being used, and may rise as high as 12 volts when the generator is charging fully. Such variations of voltages can be accepted by the rugged heaters of the indirectly-heated valves, but will spell disaster to ordinary battery-type valves. Then, again, there is the matter of insulation between cathode and heater. With the valves which are designed for a.c. operation there is sufficient insulation between heaters and cathodes to avoid even the hum of 50 cycle a.c. getting through to cause hum in the set. Naturally, this same insulation is invaluable in the matter of avoiding ignition noise from feeding through the battery and heaters into the car set.

To use directly-heated valves is almost certain to feed noise from the battery straight into the set in a most hopeless manner.

Lastly, the rugged heaters will withstand vibration, whereas the threadlike filaments of low-consumption battery valves are easily damaged by vibration and jars, especially when the filaments are alight.

All of which is just a repetition of the many warnings we have had to give to the many enquirers who think that it would be nice to have a car set running with 1.4-volt battery-type valves.

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By taking over the Lamplough Radio Company, of 102 Clarence Street, Sydney, the well-known Melbourne radio firm of Homecrafts Pty. Ltd. has recently established a wholesale branch in Sydney.

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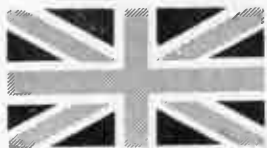
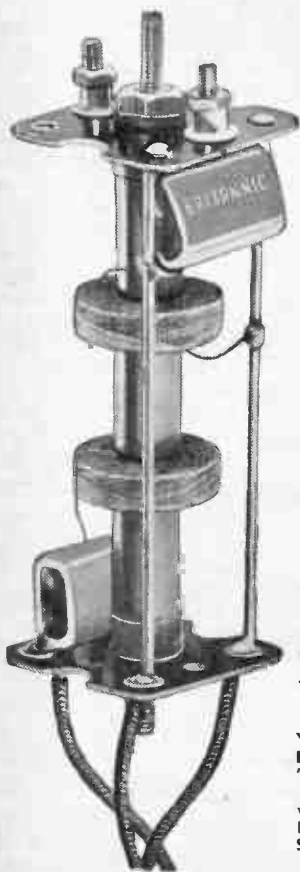
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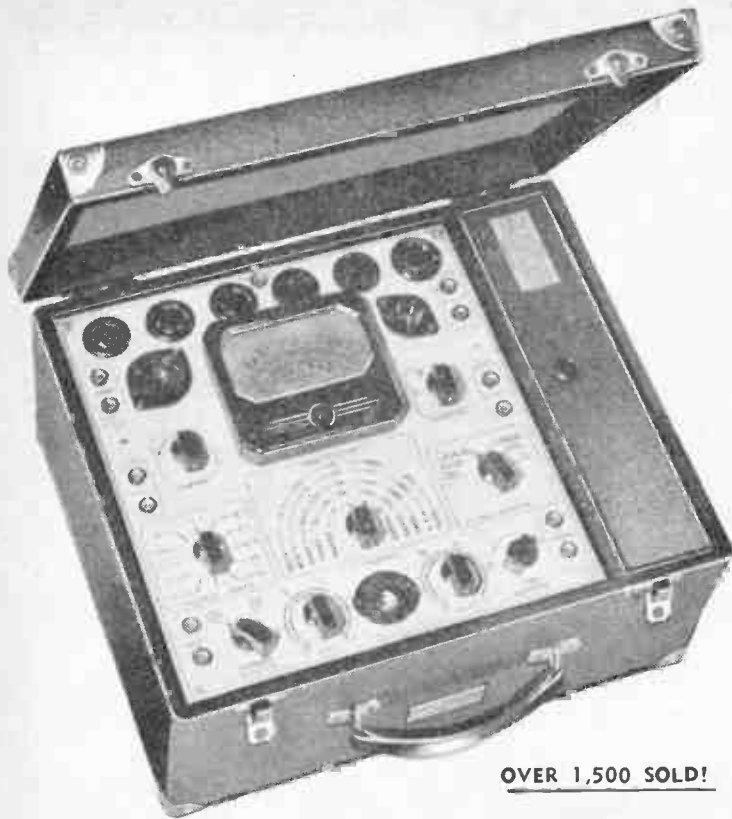
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CLUB SPECIAL WITH VIBRATOR

For the country reader the "Club Special" can be used with a vibrator unit.

IN response to several requests from readers living in country districts, we show herewith an adaption of the original circuit to allow the use of a vibrator unit.

By fitting the vibrator and making the necessary alterations it becomes possible to operate the set from a six-volt accumulator. The current drain is fairly high, but by no means unreasonable for anyone having battery charging facilities. Performance remains at a high standard.

As mentioned in the article on car radio, elsewhere in this issue, there are various types of vibrators available, and various factors must be considered in making a choice. We suggest that the new car radio article should be read over on this subject.

With regard to the layout and wiring of the set we are not able to give full picture diagrams, but the information given in last month's issue should be helpful in this respect.

When operating at high sensitivity on short-waves there may be a chance of a certain amount of hash from the vibrator unit coming through to make the noise level higher than desirable, but this can be dealt with by means



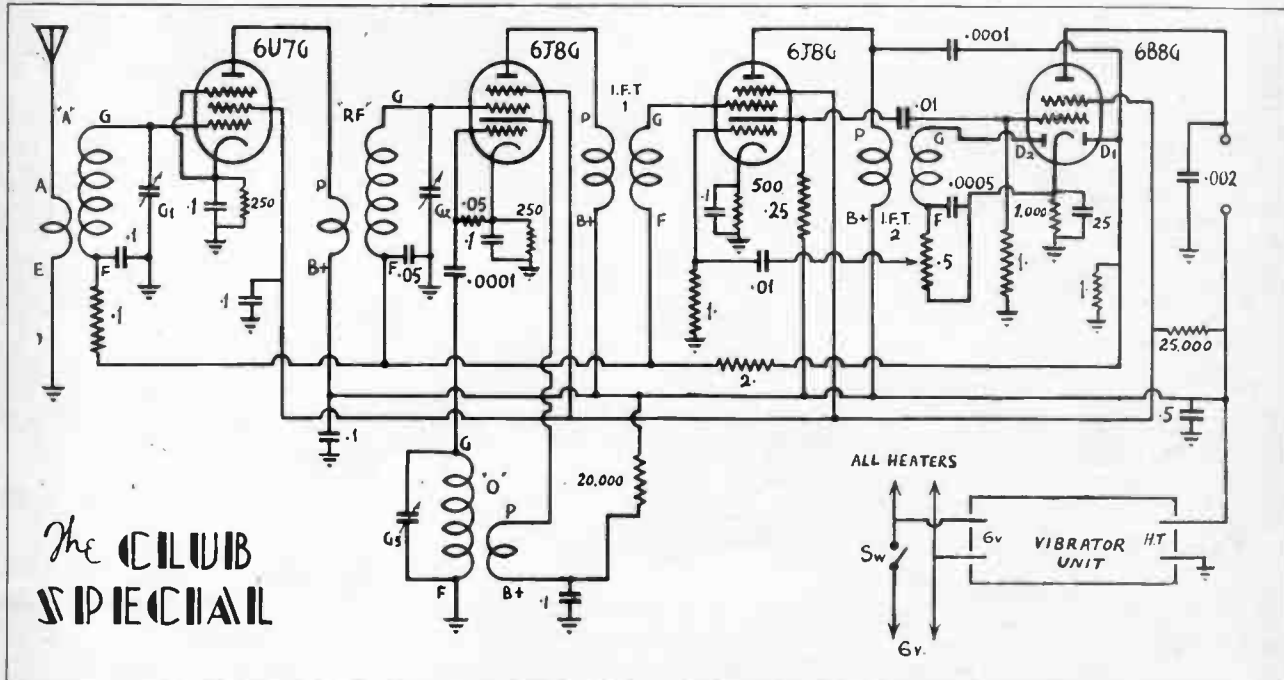
The "Club Special," which was fully described in last month's issue.

of chokes and condensers. Further data on the subject of eliminating noise from vibrators is contained in an article which we planned to run in this issue, but which we have been forced to hold over until next issue.

For preference, the vibrator unit should be mounted at least a couple of feet away from the receiver, and of course the aerial will be kept as far from the vibrator as possible.

The Circuit.

Dealing with the circuit it will be noticed that the back biasing system has been completely changed, with separate bias resistors and by-passes for each stage. This has been found desirable in the interests of stability, the regulation of the average vibrator not being up to the same standard as the power transformer and rectifier of the original a.c. version.



The circuit of the "Club Special" adapted to make it suitable for operation from a vibrator unit.

Shortwave Review

CONDUCTED BY

L. J. KEAST

NOTES FROM MY DIARY

Spots I Don't Like

Daily we are told over the commercial radio and, in case we don't hear it, the papers remind us how blemishes can be eradicated, but will someone please do something about sunspots? At any time they are bad enough, but at the week-end it's unbearable, particularly if it is the first Sunday in the month and we want to hear Geneva. If I have any petrol ration tickets to spare at Easter, I think the Bush for me, and I'll get a few new epithets from the first bullocky that comes my way. May not improve reception, but guess it will get rid of that pent-up feeling.

More Cooe Than Coné

Every day in every way the Deutschland's Kurzwellsender is getting better and better in copying Daventry. Latest stunt is a young lady on DJL, 19.85 metres, who at 10.30 p.m., gives news in English. There is not the slightest trace of foreign accent. At the end of the news she will tell you the wavelength of Bremen, Luxembourg and other German broadcast stations and then thank you for your attention. As you doubtless know, at 11 p.m. this station is used by the N.B.C. and C.B.S. reporters for about ten minutes.

Ariel From Aerial

The staff of the British Broadcasting Corporation has sent Lord Beaverbrook £5,000 as a contribution to the cost of a Spitfire fighter 'plane. The 'plane is to be called "Ariel."

New Order in the East

Tokyo has with commendable decency left VPD-2, Suva, 31.46 metres, in the clear by closing down at 6.30

p.m. Result is we can now enjoy the sixty-minutes' programme from our neighbour in Fiji from 7 o'clock.

A very good Japanese station is JLG-2, 31.57 metres, who from 5 to 8.30 a.m., give a special session for Europe. Many languages are used, and at 6.15 the signal is excellent. Just a fraction above XGOY, Chungking, on 31.58 metres, can be heard from 5 to 7.20 a.m. in a special programme for Asia and the South Seas.

JLG-4, 15,105kc, 19.86 metres, opens up at 11 a.m. and is heard quite well in a programme for eastern districts of North America.

Britain's Oldest Colony

VONG, St. John's, Newfoundland, 9,475kc, 31.68 metres, is reported heard from 11.30 p.m. It quickly fades out, although schedule is from 11.30 p.m. to 3.30 a.m. Can be identified by the three-tone chime which is used often. Those sending correct reports will be rewarded by a beautiful verification card 3½ inches by 5½ inches, white, with blue map of Newfoundland. If a Dxr does get any time for sport he will be pleased to know the owners of the station, The Broadcasting Corporation of Newfoundland, with studios in the Newfoundland Hotel, Box E5372, will send also a descriptive folder of the fish and game attractions of Britain's oldest colony.

The Big Circle

While I have been typing "Notes from My Diary," I have listened to the tumultuous welcome given to the units of the American Pacific Fleet. It recalls, however, the tragedy that accompanied the departure of the last visit of the U.S.A. Navy, the news of which I first heard by short-wave

"WISHFUL THINKING"

This expression has come in for a lot of prominence in regard to war activities, but I am afraid it can with equal significance be associated with some Dxers. My long experience in listening to the short-waves has brought so many surprises that I hesitate to doubt what at first blush may appear incorrect. But, listeners when hearing something decidedly unusual, would do a great favour to these pages and listeners in general if they would send a short story with it or at least make known the circumstances or conditions under which the station was heard.

For instance, for anyone to say they

heard a station on 74.95 metres at R5 at 11 p.m., a station I have not seen or heard of being reported in this country, most certainly calls for more than passing reference.

With the exception of our old friend in Khabarovsk, who, by reason of his geographical position and power, has been one of our most consistent night stations, and HCJB2 in Quito, Ecuador (who I have not heard mentioned here), no other 70-metre stations are shown in any of my lists.

Therefore, the station in question goes, for the time being, into the category that heads this article.

from U.S.A. I was tuned to the amateur band and heard a "ham" in California telling a pal of his in New York State the particulars surrounding the Rodney disaster that he had learnt a very short while earlier from a Sydney amateur. It was several hours later that I heard locally of the happening.

British-American Ambulance Corps Broadcast

While everyone will appreciate the thought that inspired "Tribute to Valour," broadcast through WRUL, Boston, and relayed by the A.B.C. on Monday, March 24, there must be many who, like myself, regretted the very poor impression it would give to those who do not often tune to the short-waves. While the Australian Broadcasting Commission cannot be blamed, the broadcast was woeful and even VLW-3 (from where the reception could be expected to be better because of the advantage of time) apologised for the unsatisfactory transmission.

But who chose 9.30 a.m.? I would like to have heard it at 7, despite the inconvenient hour. "Friendship Bridge," a daily feature conducted by the same society, is heard at 7 a.m. with clarity and at great strength. The news that follows from WRUL at 7.30 can invariably be copied with ease, and often the station can be heard till closing at 8.35. That extra hour makes all the difference.

The above was written immediately after hearing the broadcast, but, with my customary precaution, I tuned into WRUL at 6.50 this morning, Tuesday, March 25, to see if my contention was correct. Imagine my surprise when, just as I was about to tune to another band, I heard the announcement that the feature for "Friendship Bridge" this morning would be "Tribute to Valour." And so I listened to it again. I would never have dreamed it was possible to get so soon and so surely a confirmation of my wish outlined above.

Brief Mention

My mail has assumed such proportions that it takes a little while to get all letters answered, especially where "mysteries" are mentioned, but please be tolerant and I'll send a reply some time.

VPD-2, Suva, was heard closing down at 3.30 the other afternoon after a session in French.

While I enjoy and seldom miss a commentary from London just after the news summary at 6 each night,

I was particularly pleased to notice the cheerful tone on March 17 of P. G. E. Bailey's remarks. It was palpably plain by his almost feverish eagerness the effect that President Roosevelt's speech had made in Great Britain.

Talking of news, WLWO, Cincinnati, on 25.62 metres, gives "Behind the News" at 8.30 every morning. Signal is loud and clear.

The Russian station on 31.36 metres heard at great strength nightly is situated in Khabarovsk (Siberia). They quite often relay programmes from Moscow. They are also heard on 49.06 metres and 70.2 metres.

LKQ, Oslo, 25.58 metres, is being heard again at midnight.

Singapore has been heard on another wavelength. Carrying the same programme as ZHP-1, 30.92, they are now using ZHP-2 on 6.175kc, 48.62 metres.

ZRO-6, Rome, on 19.61 metres, is conducting an experimental broadcast to the East from 10.45 to 11.50 p.m.

Mr. Muller, of Newtown, tells me of two new German transmitters. Operating on 24.73 and 49.77 metres and carrying the same programme, which is often a language similar to Dutch, they are heard at quite good strength from 5.30 a.m.

The Department of Information has made a slight alteration. Known as Transmission 2A, a session is put over VLQ, 31.2 metres, from 10 to 10.45 p.m. to Latin America. News and talk in Spanish.

I have done my best with the Cuban stations under "Loggings," but the number of alterations in frequencies and schedules has caused my "Bible" to look more like a pak-a-pu ticket than a station list.

At 6.45 p.m. daily London, on GSF, 19.82 metres, gives "London Calling." This is a summary of to-morrow's programme, together with times.

London has brought GRZ, 21,640kc., 13.86 metres, into use, and same has been heard in French session from 9.15 p.m.

One of the seldom-reported German transmitters, DJA, 31.38 metres, gives a special programme for America. At 7.50 a.m. the German gongs, so strangely like the opening bars of the "Marseillaise," can be heard, followed by an announcement in several languages. At 7.55 a musical programme commences.

My reward for reporting the tests made last November by JZJ on 25.42 metres was a very attractive verification card, together with some beautiful photographs of Broadcasting House, Tokyo, and some studio scenes.

Listeners will welcome the news that KGEI will move to the Fairmount Hotel and increase power to 50 k.w. around May 1 (I.S.W.).

What Made the Savage Savage

?



NO WONDER! He's just started to invite the boys over, when bang, went his message drum. Even in civilisation things go phut like that . . . especially "bargain" valves.

Nothing makes a set-builder more savage than to have the performance of his favourite DX job ruined by the failure of a "dud" valve — and "bargain" valves are usually "dud."

If you're wise, you won't take risks with "bargain" valves. Play safe always with BRIMAR, the British-made valves that were selected for use in the radio equipment of the "Queen Mary" and "Queen Elizabeth."

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EVERY BRIMAR VALVE IS 10 TIMES TESTED

The MONTH'S LOGGINGS

ALL TIMES ARE AUSTRALIAN EASTERN STANDARD

Several have written in appreciative terms regarding my attempt to give schedules, so more have been added. But, as I am continually reminded by the proprietor, space is limited. Therefore, reporters must not take umbrage if names do not appear after each station. Where unusual happenings are mentioned, the one responsible for the advice will be credited.

AUSTRALIA AND OCEANIA

- VLQ-8**, Sydney 17,800kc, 16.85m
7.05 to 7.50 a.m. Transmission VIII. to Latin America, news and talk in Spanish.
- VLQ-7**, Sydney 11,880kc, 25.25m
Schedule: Trans. V. to North America, 1.25 to 2.10 a.m.; Trans. VII. to British Isles, 6.25 to 7 a.m.; Trans. IX. to North America, 7.55 to 8.45 a.m.; Trans. X. to North America, 3.55 to 4.45 p.m.; Trans. to A.I.F. in Palestine, 5 to 5.30 a.m.
- VLQ-2**, Sydney 11,870kc, 25.27m
Schedule: Trans. II. to North-East Asia, 9.40 to 10.15 p.m.; Trans. IV. to South-East Asia, 11.10 p.m. to 12.45 a.m.
- VLR-7**, Lyndhurst 11,840kc, 25.33m
Schedule: Relays A.B.C. National programmes on week days from 6.30 a.m. to 10.15 a.m., noon to 6.15 p.m., and on Sundays from 6.45 a.m. to 2 p.m., 3 p.m. to 6.15 p.m.
- VLW-3**, Wanneroo 11,830kc, 25.36m
Schedule: 8.30 a.m. to 11.45 a.m.; 1.30 p.m. to 8.45 p.m.; Sundays, 9 a.m. to 2.15 p.m.; 3 p.m. to 8.45 p.m.
- VLQ-5**, Sydney 9680kc, 30.99m
Trans. III. to North America, 10.20 to 11.05 p.m.; Trans. VI. to South Africa, 4.10 to 4.45 a.m.
- VLQ**, Sydney 9615kc, 31.2m
Trans. to A.I.F. in Great Britain, 5 to 5.30 p.m.; Trans. I. to New Caledonia and French Oceania, 6.25 to 7.25 p.m.; Trans. to A.I.F. in Palestine, 5 to 5.30 a.m.; Trans. 2A, to Latin America, 8 to 8.45 p.m.
- VLR**, Melbourne 9580kc, 31.32m
Relays A.B.C. programme from 6.30 p.m. till midnight daily, 6.30 to 11 p.m. Sundays.
- VLW-2**, Wanneroo 9560kc, 31.38m
Schedule: 9 p.m. to 1.30 a.m. daily, 9 p.m. to 12.45 a.m. Sundays.
- Trans. IV. to South-East Africa, 11.10 p.m. to 12.45 a.m. Trans. VI. to South America, 4.10 to 4.45 a.m. Also on **VLQ-5**, 30.99m.
- VLW-5**, Wanneroo 6180kc, 48.54m
Not in use at present.

Fiji:

- VPD-2**, Suva 9535kc, 31.46m
Schedule: 7-8 p.m. except Sunday.
Splendid news service at 7 p.m. **JZI** appears to have conveniently withdrawn for this period. Heard French session close at 3.30 p.m.—Ed.

New Caledonia:

- FK8AA**, Noumea 6130kc, 48.94m
Schedule: 5.30 to 6.30 p.m.
On closing, plays "Marseillaise," "God Save the King," and has now added "The Star-Spangled Banner" (Gaden).

AFRICA

- Abyssinia:**
- 12AA**, Addis Ababa 9650kc, 31.09m
Schedule unknown, but heard around 5 a.m.
- Algeria:**
- TPZ**, Algiers 12,120kc, 24.76m
Schedule: 4 a.m. to 9 a.m.; 5.30 p.m. to 6.15 p.m.
Much stronger on 33.48 in mornings.
- TPZ-2**, Aigiers 8960kc, 33.48m
Schedule: 4 a.m. to 9 a.m., 5.30 p.m. to 6.15 p.m.
- Belgian Congo:**
- OPL**, Leopoldville 20,040kc, 14.97m
Schedule: 9 to 9.14 p.m.
- OPM**, Leopoldville 10,140kc, 29.59m
Schedule: 4.55 a.m. to 5.45 a.m.

Not as strong as formerly. Said operating simultaneously on 19.67, 25.58, 31.40 and 49.42m.

Egypt:

- SUX**, Cairo 7865kc, 38.15m
Schedule: 4.30 a.m. to 6.30 a.m.
Good signal.

French Equatorial Africa:

- FZI**, Brazzaville 11,965kc, 25.06m
Schedule: 6-7 a.m., 4-4.30 p.m.
Getting weaker in morning, but fair in afternoon (Schooth). English session from 5.45 a.m. direct to U.S.A.

Gabon:

- FHK**, Libreville 9320kc, 32.18m
Schedule: 7 to 9.15 or 9.30 a.m.
Mr. Taylor, of Mosman, reports hearing this station close at 9.15 a.m. at R4.

NEW STATIONS

FHK, Libreville, Gabon (9320kc, 32.18m): Heard from 7 to 9.15 a.m., sometimes 9.30. I have not yet logged the station. The information is to hand by last American mail. Some of those located in more fortunate localities should have no difficulty in finding same. Who's first? (Gabon or Gabun is a colony included in French Equatorial Africa, and produces ivory, ebony, palm oil, etc.)

ZHP-2, Singapore (6175kc, 48.62m): This long-awaited additional transmitter has at last shown up and is heard at quite good strength carrying same programme as **ZHP-1**. My attention was first drawn to this by Mr. Edols, of Philips Radio Centre, King's Cross.

XGOA, Chungking (5995kc, 50.04m): Heard from 6 to 6.50 a.m. The Chinese Broadcasting Corporation seems to be jumping about. Why it forsook 25.21 for 30.85 metres I'm sure I do not know.

PLG, Bandoeng (15,950kc, 18.81m): This station has been heard for short periods after midnight, giving special programme for San Francisco.

OPL, Leopoldville (20,040kc, 14.97m): This is not a new one, but this telephone station is supposed to be operating again from 9 to 9.14 p.m.

Camerouns:

FIB, Yaunde or Yaounde (6825kc, 43.96m and 11,290kc, 26.57m): No advice as to schedule, but owing to its location will probably be heard around 5 to 7 a.m. when it does take the air. My information only says frequency has been allotted. It is certainly worth trying for.
So far I have been unable to get any line on Yaunde, but the Camerouns (Kameruns), a region of West Africa, formerly a German colony, is now divided between the British and French. The British portion has an area of 31,000 sq. miles and is attached to Nigeria. The French portion is included in French Equatorial Africa. (Acknowledgments to "Universalite.")

French Morocco:

- CNR**, Rabat 12,831kc, 23.38m
Schedule: 4 a.m. to 7 a.m.
- CNR-2**, Rabat 11,940kc, 25.13m
Not reported.

French West Africa:

- Senegal:**
- FGA**, Dakar 9405kc, 31.90m
Getting very weak around 6 a.m.

Gold Coast:

British West Africa:

- ZOY**, Accra 4915kc, 61.04m
Schedule: Tuesday, Thursday and Saturday, 2.30 to 3 a.m. Daily, News in English, 4 to 4.30 a.m. Daily, Native dialects, 3 to 4 and 4.30 to 5 a.m. Thursday, Sessions for schools, 1.10 a.m.
Power is small, so may be hard to hear.

South Africa:

Kenya:

- VQ7L**, Nairobi 6083kc, 49.31m
Schedule: 2.15 a.m. to 5.15 a.m. News at 2.30 and 4.
Generally an excellent signal.

ZRH, Pretoria 6007kc, 49.94m
Heard around 3.30 a.m.

ZNB, Mafeking 5900kc, 50.95m
Heard at 3.30 a.m.

Rhodesia:

- THE POST OFFICE STATION**, Salisbury 7317kc, 41m
Schedule: 2 a.m. to 6 a.m. Relays Daventry at 4 a.m. Closes with "God Save the King." Good (Keats).

Portuguese East Africa:

Mozambique:

- CR7BE**, Lourenco Marques 9710kc, 30.9m
Schedule: 5 to 7 a.m. except Mondays. News 5.55.
- CR7AA**, Lourenco Marques 6035kc, 49.75m
Weak, but audible just at opening at 5 a.m.

Portuguese West Africa:

Angola:

- CR6AA**, Lobita 7614kc, 39.39m
Fair signal on Sundays at 5.30 a.m. (Cushen).
Believe schedule is: Tuesday, Thursday and Sunday, 5.30 a.m. to 7.30 a.m. Listen for going, three times.—Ed.

Natal:

- ZRO**, Durban 9750kc, 30.75m
Closes at 7 a.m. after B.B.C. News.

Spanish Morocco:

- Radio Falange**, Tangiers 7090kc, 42.31m
Schedule: 6 to 8 a.m. All Spanish.
Heard well in mornings (Beattie).

Tunisia:

- Radio Tunis**, Tunis 15,650kc, 19.17m
May be heard between 2.30 and 6 a.m.

Madagascar:

- RADIO TANANARIVE**, Tananarive 6063kc, 49.48m
Not reported.

AMERICA

Central:

Costa Rica:

- TIPG**, San Jose 9620kc, 31.19m
Loudest of the Central Americans. Weak in afternoon, good at night (Cushen).

TIEP, San Jose 6695kc, 44.82m
Opens weakly at 10 p.m. R3 at 10.45 p.m. (Byard).

TILS, San Jose 6165kc, 48.66m
Schedule: Opens at 10 p.m.
Fair signal.

El Salvador:

- YSPA**, San Salvador 10,400kc, 28.55m
Schedule: 11.10 p.m. to midnight; 4-6 a.m.; 9.30 a.m. to 2.30 p.m.
Signal is now weak (Byard).

YSPB, San Salvador 6575kc, 45.63m

Guatemala:

- TGWA**, Guatemala City 15,170kc, 19.77m
Monday mornings from 5.30 a.m. to 8.15 a.m.
Good (Beattie).

TG5JG, Guatemala City 11,440kc, 26.22m
Has been reported heard in late afternoon.

TGWA, Guatemala City 9685kc, 30.98m
Heard on favourable days till 2.30 p.m.

TGQA, Quetzaltenango 6400kc, 46.88m
Excellent Sunday afternoons at 4.30 p.m.

TG-2, Guatemala City 6200kc, 48.39m
R7 at 5 p.m. (Cushen). Weak at 10.45 p.m. (Rogers).

Honduras:
HRN, Tegucigalpa 5875kc, 51.11m
Schedule: 4.30 to 5.30 a.m., 9 a.m. to 2 p.m.
"La Voz de Honduras." Not likely to be heard here.—Ed.

HRPI, San Pedro, Sula 6350kc, 47.26m
Schedule: 9 a.m. to 1.30 p.m. and 9 to 10.30 p.m.
"El Eco de Honduras." Identified by marimba music.
Received at terrific strength in Kansas, U.S.A. (Olthoff).

British Honduras:
ZIK-2, Belize 10,600kc, 28.30m
This Government-owned station, according to reports from U.S.A. by last mail, is, after an absence of nearly a year, being heard again. Sydney time is: Wednesday, Friday and Sunday, 4 to 4.30 a.m., 11.30 to 11.50 a.m. Reports, please.—Ed.

Nicaragua:
YNOW, Managua 6850kc, 43.80m
Schedule: 10 a.m. to 1 p.m.
Slogan, "La Voz de America Central Managua."

Panama:
HP5G, Panama City 11,780kc, 25.47m
HP5A, Panama City 11,700kc, 25.64m
Schedule: 10 p.m. to midnight.
Only heard weakly now after 10 p.m.
HP5J, Panama City 9607kc, 31.22m
Schedule: 10 p.m. till midnight.
Signal has improved.

HP5K, Colon 6005kc, 49.97m

North:
WCBX, New York 21,570kc, 13.91m
Not audible at Randwick.

WCBX, New York 17,830kc, 16.81m
Schedule: 11 p.m. to 4 a.m. News, midnight, 1.15.

WNBI, Boundbrook 17,780kc, 16.87m
Schedule: Midnight to 10.45 a.m. News 1 a.m.
Fair to good at 7 a.m. and sometimes till closing.

WRUW, Boston 15,350kc, 19.54m
Schedule: 5 to 8.35 a.m. News at 6.30 and 7.30 a.m.

KGEI, 'Frisco 15,330kc, 19.56m
Heard from 1.30 p.m. with fair signals (Beattie). Closes at 3 p.m. (Schooth).

WGEA, Schenectady 15,330kc, 19.56m
Schedule: 2.15 a.m. to 9 a.m. News, 4.45 and 7.55 a.m.

WCBX, New York 15,270kc, 19.63m
Weak at 7.30 a.m.

WLWO, Cincinnati 15,250kc, 19.67m
Schedule: 11 p.m. to 7.45 a.m. News 11 p.m. and 4.45 a.m.

WPIT, Boston 15,210kc, 19.72m
Heard up till 10.15 a.m. (Gaden).
Schedule wanted.—Ed.

KKZ, Bolinas 13,690kc, 21.93m
Sundays at 2 p.m.

WBOS, Boston 11,870kc, 25.26m
Schedule: 7 a.m. to 2 p.m. News, 9 a.m. Good on opening (Beattie).

WCBX, New York 11,830kc, 25.36m
Schedule: 4.30 to 6.30 a.m.
Opens at 4.30 a.m. with News.

WRUL, Boston 11,790kc, 25.45m
Schedule: 1 a.m. to 3 a.m. (News 2.45 a.m.); 5 a.m. to 8.35 a.m. (News 6.30 and 7.30).

WRUW, Boston 11,730kc, 25.58m
Schedule: 9 a.m.-1.50 p.m. News 10 a.m.

WLWO, Cincinnati 11,710kc, 25.62m
Schedule: 8 a.m. to 10.45 a.m. News, 8.30 and 9.25 a.m.
Good right through.

KGEI, 'Frisco 9670kc, 31.02m
Schedule: 4 to 6 p.m. (News 5.55 p.m.); 10 p.m. to 3.10 a.m. (News 10.30 p.m., 12.30 a.m., 1.30 a.m., 3 a.m.).
Opened at 10.15 a.m., Sunday, March 16.
Heard Roosevelt's speech at 12.30 p.m. Good (Gaden).

WRCA, Boundbrook 9670kc, 31.02m
Very good from 3-4 p.m.

WCBX, New York 9650kc, 31.09m

Schedule: 7 to 9 a.m. News at 7 and 8.45.

WLWO, Cincinnati 9590kc, 31.28m
Heard closing at 4 p.m. Weak signal.—Ed.

WGEA, Schenectady 9530kc, 31.48m
Schedule: 6 a.m. to 8.45 a.m. News 7.55.

WCBX, New York 6170kc, 48.62m
Heard late afternoons.

WCAE, Philadelphia 6060kc, 49.5m
Heard at 4 p.m.

Mexico:
XEQQ, Mexico City 9680kc, 30.99m
Schedule: 11 p.m. to 2 a.m.
Good signal.

XEWW, Mexico City 9503kc, 31.57m
XEXA, Mexico City 6160kc, 48.54m
Opens about 11 p.m., but I'm backing
Saigon.—Ed.

South:
Bolivia:
CP-5, La Paz 6200kc, 48.39m
Heard at 10 p.m. (Gaden).

Brazil:
PSE, Rio de Janeiro 14,935kc, 20.08m
PSF, Rio de Janeiro 14,690kc, 20.42m
PSH, Rio de Janeiro 10,220kc, 29.35m
The best Brazilian (Gaden).

PYA-2, Rio de Janeiro 9205kc, 32.59m
PRA-8, Pernambuco 6010kc, 49.92m

British Guiana:
VP3BG, Georgetown 6130kc, 48.94m
Schedule: 9 p.m. to 10.30 p.m.; 2 a.m. to 3 a.m.; 6 a.m. to noon.

Ecuador:
HCJB, Quito 12,460kc, 24.08m
Fair signal at 5.45 a.m. Heard in West Australia till 10 a.m. (our time) by Mr. Smith.

HC2AK, Guayaquil 9440kc, 31.78m
According to "QRC" has moved from 9360kc, 32.40m. No chimes or bells are used, but identification is possible by repeated reference to Colgate products ("Use Col-

gate — embellece las dientes"—"Use Colgate — it beautifies the teeth"). At 2 p.m., close down with "Hasta mañana a las doce del día, la primera transmisión" ("Until to-morrow at 12 noon, the first broadcast").

HCQR, Quito 5975kc, 50.21m

Chile:
CB-1180, Santiago 11,980kc, 25.04m
Bugle notes when closing at 3 p.m. Note slight change in frequency.

CD-1190, Valdivia 11,910kc, 25.19m
American mail says "Now off the air," as also **CB-1185**.

CB-1170, Santiago 11,700kc, 25.64m
Schedule: 9 a.m. to 2 p.m.

CB-970, Valparaiso 9730kc, 30.83m
Reliable Chilean. Good 10 p.m. (Taylor).

Colombia:
HJFK, Pereira, Caldas 6095kc, 49.22m
Schedule: 10 p.m. to 2 a.m.
Note new frequency.—Ed. "La Voz Amiga" ("The Friendly Voice").

HJBB, Cucuta, Santander del Norte 4815kc, 62.31m
Schedule: 2 a.m. to 3 a.m.

Peru:
OAX4R, Lima 15,150kc, 19.81m
According to U.S.A. advice, schedule is 7-8 a.m., on Sundays only.

OAX4T, Lima 9562kc, 31.38m
Schedule: 10-11 p.m.; 2.30 a.m.-4.30 a.m.

OAX5C, Ica 9430kc, 31.82m
Very good in afternoon (Schooth, Taylor).

OAX4J, Lima 9340kc, 32.12m
Heard near 4 p.m.

Uruguay:
CXA-8, Montevideo 9640kc, 31.12m
Best signal on 31-band when closing at 2.30 p.m. (Gaden). Note new closing time.—Ed.

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).

CXA-19 , Montevideo 11,705kc, 25.63m Is this the station being heard at 7 a.m.? Would like reports, please.—Ed.	XPSA , Kweiyang 6980kc, 42.98m Good at 9.15 p.m. (Schodel). Better at 10.30.—Ed.	YDA , Tandjongpriok 3040kc, 98.68m Schedule: 7.30 p.m. to 1.30 a.m.
Venezuela: YV5RM , Caracas 4890kc, 61.35m Relays YV5RB of the long-wave. Sunday nights about 11.30 p.m.	XGOA , Chungking 5995kc, 50.04m Schedule: 6-6.50 a.m.	French Indo-China: Radio Saigon , Saigon 11,780kc, 25.47m Schedule: 8.40 p.m. to 2 a.m. News, 8.45 p.m., 1.45 p.m. "The Voice of France in the Far East." Radio Saigon , Saigon 6160kc, 48.54m Schedule: 8.40 p.m. to 2 a.m. Very loud signal.
THE EAST	Portuguese China: CRP-9 , Macao 6080kc, 49.34m Schedule: 10.30 p.m. to 1 a.m. Mondays only. Quality is invariably poor.	Hong Kong: ZBW 9525kc, 31.49m Schedule: 8 p.m. to 1 a.m. Relays B.B.C. News at 11 p.m.
Burma: XYZ , Rangoon 6007kc, 49.94m Schedule: 9.45 p.m. to 1 a.m., except Sun- days. News at 12.30 a.m. Heard well from opening.	Thai: HS6PJ , Bangkok 19,020kc, 15.72m Monday nights from 11 p.m. till 1 a.m. HSP5 , Bangkok 11,715kc, 25.61m Schedule: 10.50 p.m. to 1 a.m. except Mon- days. News, 11.45 p.m. Mr. Nelson, of Cairns, says: "I often hear them opening at 8.30 p.m. with clack chiming. They close down later and open again at 10.30 p.m. They call Bandoeng occasionally.	Indo: UD-3 , Delhi 15,290kc, 19.62m Schedule: Noon to 3 p.m. (News at 1.20 p.m.); 4.30 p.m. to 6.30 p.m. (News at 6 p.m.). Consistently fair at midday (Gaden). UD-4 , Delhi 11,830kc, 25.36m Schedule: 9.30 p.m. to 3.20 a.m. News, 10.30 p.m., 1.50 a.m., 3.15 a.m. UD-2 , Delhi 9,590kc, 31.28m Schedule: 9.30 to 2 a.m. News, 10.30 p.m., 1.50 a.m.
XZZ , 3490kc, 86.00m In parallel with XYZ .	Dutch East Indies: PMA , Bandoeng 19,380kc, 15.48m Schedule: 10.15 to 11.15 p.m. News, 10.45. PLG , Bandoeng 15,950kc, 18.81m Heard after midnight in programme for San Francisco. YDB , Soerabaya 15,315kc, 19.59m Schedule: 1.30 to 5 p.m.; Sundays, from 10.30.	VUC-3 , Calcutta 6110kc, 49.1m Heard between 2.15 and 2.45 a.m. VUE , Delhi 6085kc, 49.30m Opens at 11.30 p.m. 4960kc, 60.48m UD-2 , Delhi U.d. schedule was: 8.30 p.m. to 2.30 a.m., but Mr. Cushen advises they move to 87 metres at 11.45.
China: XOZ , Chengtu 15,510kc, 19.34m Can be heard some nights from 9 p.m.	YDC , Bandoeng 15,150kc, 19.80m Schedule: 8.30 to 10.30 a.m., 1.30 to 5 p.m., 7.30 p.m. to 1.30 a.m.	VUB , Bombay 4880kc, 61.48m VUC-2 , Calcutta 4840kc, 61.98m Weakening (Hastings). VUB-2 , Bombay 3480kc, 86.20m Good from midnight (Cushen). VUD , 3450kc, 86.95m Opens at 11.45 p.m.; good signals but noisy (Cushen). VUM-2 , Madras 3430kc, 87.46m Good from midnight (Cushen). I must confess I was surprised how well the Indians are coming through, as also some of the Venezuelans on this band.
XGOX , Chungking 15,200kc, 19.74m Schedule: 10-11.5 a.m.; 2.30-6.5 p.m. Eng- lish news at 5.20 p.m. News at 9.30 a.m., followed by talk in English. Excellent (Gaden).	PLJ , Bandoeng 14,630kc, 20.51m Schedule: 7.30 p.m. to 3 a.m.	Japan: (Tokyo considered source of supply unless otherwise mentioned) JZK 15,160kc, 19.79m No particulars. JLG-4 , 15,105kc, 19.86m Schedule: 11 o.m. to 1 p.m. This is a special programme for Easter districts of North America. JVH 14,600kc, 20.55m No particulars. JVZ , 11,815kc, 25.39m
FFZ , Shanghai 12,090kc, 24.83m Schedule: 8 p.m.-1 a.m. News 11 p.m. Fair at 10 p.m.	PLS , Java 11,650kc, 25.75m Reported testing around 10 p.m.	
XGRS , Shanghai 12,015kc, 24.97m Schedule: 7 p.m. to 1 a.m. "The Voice of Europe." News 10.30 p.m. and 12.15 a.m.	PLN , Bandoeng 11,600kc, 25.86m Reported testing at 10.50 p.m.	
XOY , Shanghai 11,900kc, 25.21m Not heard for weeks; appears to have moved to 30.85.	PLP , Bandoeng 11,000kc, 27.27m Schedule: Same as YDC .	
XMHA , Shanghai 11,885kc, 25.24m Schedule: 7 p.m. to 1 a.m. News, 10 p.m., 12.15 a.m. Children's session 7 to 7.15 p.m.	PLQ , 10,680kc, 28.09m Same remarks as PLN .	
XGOK , Canton 11,605kc, 25.75m Strong each night. News at 10.30 p.m.	PMN , Bandoeng 10,260kc, 29.24m Schedule: Same as YDC .	
XOZS , 10,040kc, 29.88m R4 at 10.30 p.m. This is a new one re- ported by Mr. Byard and Mr. Keats, of Launceston.	YDB , Bandoeng 9,550kc, 31.41m Schedule: 7.30 p.m. to 1.30 a.m. 9419kc, 31.85m	
XGOX/XGOY , Chungking 9,720kc, 30.85m Not sure of current schedule; probably combining both 25.21 and 30.85. See Febru- ary issue for times.	PLT , 9,419kc, 31.85m Same remarks as PLN and PLQ .	
XGOY , Chungking 9,635kc, 31.14m Schedule: Midnight to 12.55 a.m. News at midnight.	YDA , Tandjongpriok 7,250kc, 41.38m YDX , Medan 7,220kc, 41.55m Excellent from 9 p.m.	
XGOY , Chungking 9,500kc, 31.58m 5 a.m. to 7.20 o.m. in Chinese.	PMY , Bandoeng 5,145kc, 58.3m Schedule: 7.30 p.m. to 1.30 a.m.	
XPSA , Kweiyang 8484kc, 35.36m Schedule: 8.30 p.m. to 2.10 a.m. Strong nightly (Beattie).	YDF , Soerabaya 4,960kc, 60.48m Loud but noisy (Hastings). YDE-2 , Solo 4,810kc, 62.37m Good, when QRM not too bad (Taylor). YDH-4 , 3,320kc, 90.36m	
XGOY , Chungking 9,500kc, 31.58m Often heard at 6.30 a.m. (Gaden).		
XHHB , Shanghai 7,970kc, 37.6m Heard regularly at 11 p.m. (Keats).		

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and longest life—

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STANDARD—

Mullard

M A S T E R

RADIOVALVES

MULLARD - AUSTRALIA PTY. LTD., 367 KENT STREET, SYDNEY

TELEPHONE: MJ 46

Schedule: 7 p.m. to 12.30 a.m., 11 a.m. to 1 p.m.
 News at 11 a.m. (Gaden).
JZJ 11,800kc, 25.42m
 Schedule: 1.30 to 4 p.m., 7-8 p.m., 8.30 to 9.25 p.m., 9.30 to 12.30 a.m., 1 a.m. to 2.55 a.m., 3 a.m. to 4.30 a.m., 9 a.m. to 10.30 a.m.
JVW-3 11,720kc, 25.6m
 Schedule: 7.15 a.m. to 8.30 a.m., 6.45 p.m. to 11.30 p.m.
 After eight years, has cut out news at 7.55 p.m.—Ed. Physical exercises to accompaniment of piano at 7.30 a.m.—Ed.
JIB, Formosa 10,530kc, 28.48m
 Opens at 8.30.
JDY 9920kc, 30.23m
 No particulars of schedule.
 Fair signal, poor quality.
JIE-2, Taiwan 9695kc, 30.96m
 Schedule: 11 p.m. to 1.30 a.m.; News at 12.15 a.m.
JVW-2, 9674kc, 31.01m
 Schedule: 6.45 p.m. to 11.30 p.m.

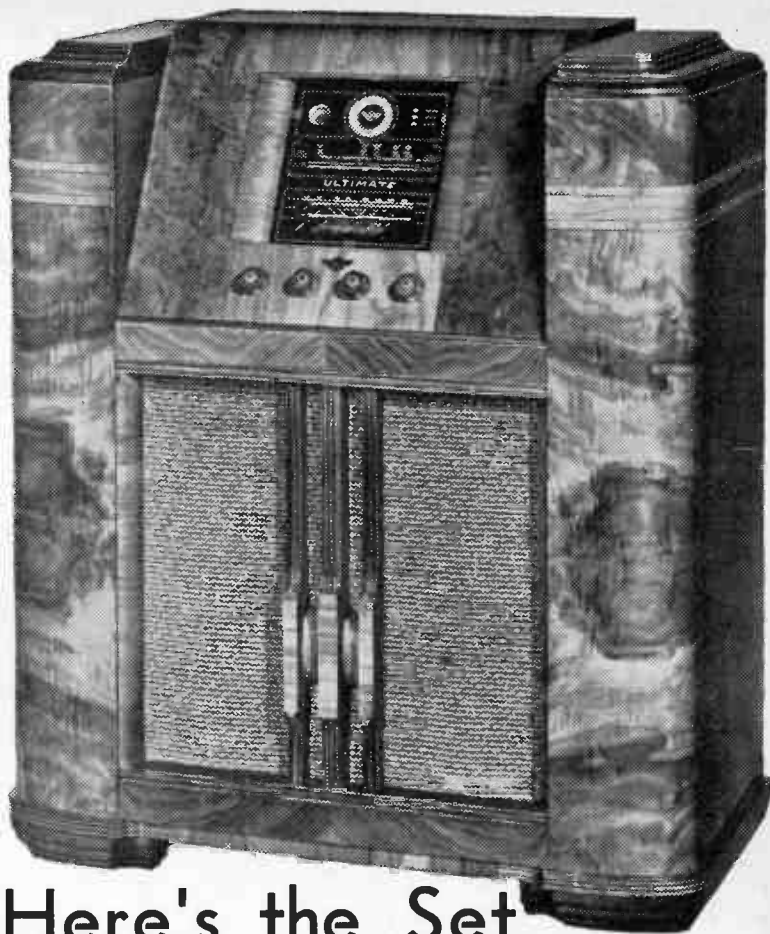
WITH THE REPORTERS

Those helping this month are:—
 Wm. Bantow, Edithvale, Vic.
 A. Beattie, New Lambton, N.S.W.
 P. Byard, Launceston, Tas.
 A. T. Cushen, Invercargill, N.Z.
 A. Deppeler, Edmonton, Q.
 Dr. K. B. Gaden, Wallumbilla, Q.
 R. Hallett, Enfield, Sydney.
 B. W. Keats, Launceston, Tas.
 G. Muller, Newtown, Sydney.
 S. I. Nelson, Cairns, Q.
 D. L. Overheu, Donnybrook, W.A.
 Martin J. Olthoff, Independence, Kansas, U.S.A.
 N. G. Phillips, Gympie, Q.
 R. C. Schooth, Deagon, Q.
 M. Rogers, Hunter's Hill, Sydney.
 C. Schodel, Brisbane, Q.
 E. J. Shields, Boulder Creek, California, U.S.A.
 P. L. Smith, Dunsborough, W.A.
 E. J. Stanke, Mt. Gambier, S.A.
 R. Taylor, Mosman, Sydney.

Gentlemen, I thank you.

Send in reports as fast as you hear anything unusual; also items for "Help Wanted."

JZI 9535kc, 31.46m
 Schedule: 1.30 to 4 p.m.; 4.30 to 6.30 p.m.; 1 a.m. to 2.55 a.m.; 3 a.m. to 4.30 a.m.; 9 to 10.30 a.m.
JLG-2, 9505kc, 31.57m
 Schedule: 5 a.m. to 8.30 a.m.
JIE, Tyureki 7290kc, 41.15m
 No particulars.
JVW 7257kc, 41.34m
 Schedule: 5 a.m. to 8.30 a.m.; News at 6.5 a.m.
JLT 6190kc, 48.47m
 No particulars, but believe same schedule as **JVW**. Fair at 7.15 a.m.
MTCY, Hsinking 11,775kc, 25.48m
MTCY, Hsinking 9545kc, 31.43m
 Heard from 1 a.m. to about 7 a.m.
Malaya:
ZHP-1, Singapore 9700kc, 30.92m
 Schedule: 7.40 p.m. to 12.40 a.m.; News, 9 p.m. and 11 p.m.
ZHP-3, Singapore 7250kc, 41.38m
 Schedule: 7.40 a.m. to 12.40 a.m. French and Malay.
ZHP-2, Singapore 6175kc, 48.62m
 On parallel with **ZHP-1**.
ZHJ, Penang 6090kc, 49.26m
 Fair signal at night; relays B.B.C. at 11.
Philippines:
 (Manila, unless otherwise stated)



Here's the Set that gets Results!

798 verified Radio Stations were received on a Standard ULTIMATE Receiver—a world's record! An ULTIMATE was used by Commander R. E. Byrd at the South Pole; the Australian adviser to the British Broadcasting Commission depends on an ULTIMATE. Ask the leading Short-wave Experts and Technicians about ULTIMATE performance—that's proof! Obtainable in 8 and 10 Valve Electric Console; 7-valve Dual-wave Vibrator Console; 6 and 8 Valve Dual-wave Electric Mantel; 7-valve Dual-wave Vibrator Mantel.

OVERSEAS ENGLISH SESSIONS LOG CHART—FREE

Cut out this Coupon and post to-day.

GEORGE BROWN & CO. PTY. LTD., 267 Clarence Street, Sydney.
 Please send me your free overseas English Sessions Log Chart and particulars of ULTIMATE Receivers.
 NAME
 ADDRESS R.W

ULTIMATE

Champion Radio

GEORGE BROWN & CO. PTY. LTD., 267 Clarence St., Sydney

KZRH 11,890kc, 25.23m
Is reported to be operating again between
2 and 3 a.m.

KZRH 9640kc, 31.12m
Schedule: 7.30 a.m. to 9.30 a.m. (News
8.15 a.m.); 6 p.m. to 2 a.m. (News 11.45
p.m.).

KZRM 9570kc, 31.35m
Schedule: 6.45 p.m. to 1.30 a.m. News,
8.35, 10.45 and 11.45 p.m., also 12.45 a.m.
Difficult to hear because of tremendous
power of **RW-15**, 31.36.
Can be heard opening at 7.45 a.m.

KZIB 9500kc, 31.58m
Very poor quality of late.

KZRF 6140kc, 48.86m
Just audible at 9.15 p.m. (Schodel).

KZRC, Cebu 6100kc, 49.18m
Very strong at 11 p.m.

KZIB 6060kc, 49.50m
Noise spoils this otherwise loud signal.

GREAT BRITAIN

E.T., Eastern Transmission; **P.T.**, Pacific
Transmission; **A.T.**, American Transmission.
"This is London calling. Here is the News."

GRZ 21,640kc, 13.86m
Heard in French session at 9.15 p.m. Ap-
pears to close at 9.30 (Gaden).

GST 21,550kc, 13.92m
E.T., 8.55 p.m. to 2.30 a.m.

GSJ 21,530kc, 13.93m
E.T., 11.45 p.m. to 2.30 a.m.

GSH 21,470kc, 13.97m
E.T., 8.55 p.m. to 11.30 p.m.

GSV 17,810kc, 16.84m
E.T., 10.15 p.m. to 11.30 p.m.; E.T. (Part
II.), 11.45 p.m. to 2.30 a.m.

GSG 17,790kc, 16.86m
E.T., 8.55 p.m. to 11.30 p.m.

GSP 15,310kc, 19.60m
P.T., 5.30 p.m. to 8 p.m.

GSI 15,260kc, 19.66m
P.T., 4.10 p.m. to 8 p.m.; E.T., 8.55 p.m.
to 11 p.m.; 2.55 a.m. to 8 a.m.

GSO 15,180kc, 19.76m
Heard faintly from 10.30 p.m.

GSF 15,140kc, 19.82m
E.T., 8.55 p.m. to 11.30 p.m.; P.T., 5.30
to 8 p.m.; 2.55 a.m. to 8 a.m.

GRV 12,039kc, 24.92m
Schedule unknown, but heard in French at
7.15 a.m. Peculiar noise on top.

GSE 11,860kc, 25.29m
8.55 p.m. to 2.30 a.m.

GSN 11,820kc, 25.38m
8.55 p.m. to 2.30 a.m.; 6.45 a.m. to 8 a.m.

GSD 11,750kc, 25.53m
E.T., 8.55 p.m. to 2.30 a.m.; P.T., 4.10 p.m.
to 8 p.m.
A.T., 8.20 a.m. to 2.45 p.m.; African ses-
sion, 2.55 a.m. to 8 a.m.
Getting louder at lunch-time, but still
erratic.—Ed.

GRX 9690kc, 30.96m
2.55 a.m. to 9 a.m.; 3.30 p.m. to 8 p.m.
Good at 6 p.m.

GRY 9600kc, 31.25m
A.T., 8.20 a.m. to 2.45 p.m.; P.T., 4.10
to 5 p.m.; E.T., 8.55 to 10 p.m.; 2.55 a.m.
to 8 a.m.
Another lunch-time station that appears to
be on the improve.—Ed.

GSC 9580kc, 31.32m
P.T., 4.10 to 5.30 p.m.; A.T., 8.20 a.m. to
2.45 p.m.; 5.30 a.m. to 8 a.m.
Weaker than **GRY** of mid-day.

GSB 9510kc, 31.55m
E.T., 11.45 p.m. to 2.30 a.m.; P.T., 4.10
p.m. to 8 p.m.

GRU 9450kc, 31.75m
E.T., 11.45 p.m. to 2.30 a.m.
Also being heard in African session at 6.15.

GSW 7230kc, 41.49m
No particulars, but heard in early mornings
at fair strength.

GRT 7132kc, 42.06m
2.55 a.m. to 4.15 a.m.

GRW 6140kc, 48.82m
Appears to be silent.

GSL 6110kc, 49.10m
A.T., 8.20 a.m. to 2.45 p.m.

GRR 6080kc, 49.34m

1 a.m. to 9 a.m. News, 3 a.m. and 6 a.m.
Excellent signal, too.—Ed.

GSA 6050kc, 49.59m
3.30 p.m. to 8 p.m.; 8.55 p.m. to 2.30 a.m.;
2.55 a.m. to 9 a.m.
Morning session is generally spoilt by noise,
but is improving.

EUROPE

Bulgaria:
RADIO SOFIA, Sofia 10,310kc, 29.09m.
Heard at fair strength around 7 a.m., what
I took to be this station faded out by
7.30 (Schooth). This is quite likely, as I
heard on March 9, at 7 a.m., what I
thought was Sofia, but heard no English.—
Ed.

Owing to pressure on space,
"Station Particulars" and "Help
Wanted" have had to be
omitted.

Germany:
"Station Ananias," despite references to bre-
men, Hamburg, etc., is counted as coming
from Berlin.
Lord "Haw-Haw": **DJW**, 31.09m, and
DJQ, 19.63m

DJS 21,450kc, 13.99m
Heard most afternoons from 3 p.m., rather
weak (Gandy, N.Z.). (Cannot be heard at
my home at any time.—Ed.)

DJM 17,845kc, 16.81m
Schedule: 5.30 p.m. to 2 a.m. News, 7.30
p.m. and 10 p.m.
Champion when no interference.

DJE 11,144kc, 16.87m
Schedule: 5.30 p.m. to 11 p.m. News, 7.30
p.m.

DZG 15,360kc, 19.53m
Heard at midnight (Muller).

DJR 15,340kc, 19.56m
Schedule: 3 p.m. to 2 a.m. News 5 p.m.
and 10 p.m.
Good at 10 p.m. with News, when free of
swirling noise.

DJQ 15,280kc, 19.63m
Schedule: 4.30 p.m. to 2 a.m. News, 5
p.m., 10 p.m. and midnight.

DJB 15,200kc, 19.74m
Schedule: 2.10 a.m. to 6 a.m. News, 2.30,
3.30 and 6.30 a.m.

DJL 15,100kc, 19.85m
Schedule: 9.30 p.m. to 11.45 p.m. News,
9.30, 10.30 and 11.30 p.m.
Heard weakly in English news at 7.15 a.m.

DXH 14,460kc, 20.75m
Fair at 7 a.m.

DJP 11,855kc, 25.31m
Schedule: 3 p.m. to 2 a.m. News, 5 p.m.
and 10 p.m.
Excellent at 10 p.m. Good at 4 and 6 p.m.

DJD 11,770kc, 25.49m
Schedule: 1.40 to 7.30 a.m. News, 2.15,
5.15 and 7.15 a.m.
Fair signal at 5.30 a.m. (Keats).

DXB-2 11,740kc, 25.55m
Very good at 11 p.m. Opens at 11 with
N.B.C. service.

DZA 10,087kc, 29.75m
Strong at 5.30 to 6.30 a.m.

DZB 10,040kc, 29.86m
Excellent at 6.30 a.m. (Keats, Gaden).

DJX 9675kc, 31.01m
Schedule: 1.40 to 7.30 a.m. News, 2.15 and
7.15 a.m.
Good at 6 a.m. (Schooth, Keats, Taylor,
Gaden).
Beautiful at 5 p.m. (Goden, Keats).

DJW 9650kc, 31.09m
Schedule: 3 p.m. to 2 a.m. News, 5 p.m.,
10 p.m. and midnight.
Good in afternoon (all reporters).

DXB 9610kc, 31.22m
Good from 4 p.m. (Gandy, Taylor).

DJA 9560kc, 31.38m
Special programme for American from 7.55
a.m. Listen for gongs at 7.50 a.m.

DJN 9540kc, 31.45m
Not heard lately.

DXM 7270kc, 41.27m
Schedule: 2.10 to 7 a.m. News, 2.30, 3.30
and 6.30 a.m.
Good at 5 a.m. (Beattie, Nelson, Gaden).
(Very good at Randwick, too.—Ed.)

DJC 6020kc, 49.84m
Schedule: 3.40 to 7.30 a.m. News, 5.15
and 7.15 a.m.
R6 at 7 a.m. (Taylor).

Holland:
PCV, Amsterdam 18,070kc, 16.6m
Can be logged when noise abates. R8 at
12.30 a.m. (Byard).

PCJ-2, Huizen 15,220kc, 19.71m
Opens at 9.30 p.m. R9 at 12.30 a.m.
(Byard).

Italy:
(Source of supply counted as Rome)

IRW 19,520kc, 15.37m
Schedule: 8 p.m. to 12.45 a.m. News 8.45,
11.35.
Very good.

ZRO-8 17,820kc, 16.83m
Schedule: 8 p.m. to 12.15 a.m. (News 8.45,
11.35); 2.30 to 8.55 a.m. (News 2.45,
4.50).
Fair to good of an evening (Schooth).

ZRO-20 17,780kc, 16.87m
Good at 4.30 p.m. and late at night.

ZRO-6 15,300kc, 19.61m
Schedule: 4.15 to 5.30 p.m. (News 4.30);
8 p.m. to 8.55 a.m. (News 8.45, 11.35
p.m.); 6.35 and 8.30 a.m.
Talk at 7.15 a.m.; terrific strength.

ZRO-14 15,230kc, 19.7m
Schedule: 2.30 to 8.55 a.m. News 2.45,
4.50, 6.35, 8.30.
Good at 5 a.m. and at 7 a.m.

..... 15,053kc, 19.93m
Same programme as 15.3m, News at 11.35
p.m. (Muller). (Schedule is: 10.15 p.m. to
12.45 a.m.—Ed.)

ZRO-4 11,810kc, 25.4m
Schedule: 12.30 a.m. to 8.55 a.m. News
1.40, 1.55, 2.45, 4.50, 6.35, 8.30. Talk at
7.15 a.m.
Dr. Gaden is hearing **ZRO-4** at 1.30 p.m.
Would like schedule.—Ed.

ZRO-15 11,760kc, 25.51m
Schedule: 2.30 to 8.55. News, see **ZRO-14**.
Heard at 6.30 a.m. (Gaden).

IQY 11,673kc, 25.70m
Closes at 6 a.m., same programme as **IRF**
(30.52m). English session at 5.50 a.m.
(Muller).

IRF 9835kc, 30.52m
Excellent at 4 a.m., closes at 6 (Cushen,
Muller). English session at 5.50 a.m.
(Muller).

..... 9765kc, 30.72m
Closes most mornings at 6.15. Signal louder
than **ZRO-3** (Muller).

..... 9683kc, 30.98m
Appears to open at 6.15 a.m., just as 30.72
closes (Muller).

ZRO-9 9670kc, 31.02m
Good at 6.30 a.m. (Gaden, Nelson, Beattie).

ZRO-3 9635kc, 31.15m
Schedule: 3-4 p.m., 4.15 to 5.30 p.m., 1.30
a.m. to 8.55 a.m.
Very good in afternoon session (Hallett).
Splendid at 2.30 a.m. (Bantow). News at
6.35 a.m. (Flegg). Fair 6.30, 8.15 a.m. and
5 p.m. Talk at 7.15.—Ed.

ZRO-11 7220kc, 41.55m
Schedule: 2.30 to 8.55 a.m. News, see
ZRO-14.
Splendid of a morning (Schooth, Beattie,
Nelson).

Vatican City:
HVJ 15,120kc, 19.84m
Tuesdays: 11.30 to 11.55 p.m. (English).
Heard on Friday afternoons (Beattie).

HVJ 6190kc, 48.47m
(English session is: 5.15 to 5.30.—Ed.)

Lithuania:
LYR, Kaunas 9280kc, 32.33m
Heard on February 21 at 2.35 p.m. (Gaden).

Portugal:
CTV-2, Monsanto 11,148kc, 26.91m
Heard at 3 a.m.

CSW-6, Lisbon 11,040kc, 27.17m
Schedule: 3 a.m. to 6.45 a.m.
Very good at 5 a.m. Best at 6 a.m.

CSW-7, Lisbon 9740kc, 30.8m
Schedule: 6.50 to 9 a.m. Talks: On Wednesday, Friday and Sunday from 6.50 a.m. to 7.30 a.m.

CSW-8, Lisbon 7260kc, 41.32m
Schedule: Wed., Fri. and Suns, 7.05 to 8 a.m. Reports, please.—Ed.

CS2WB, Portugal 6200kc, 48.38m
Schedule: 6 to 9 a.m.
Slogan is "Emisora Catholica Portuguesa." Heard at good strength at 6, noisy by 7. Only Portuguese spoken (Rogers, Keats).

Rumania:
Radio Bucharest 9245kc, 32.45m
Heard very weakly at 6 a.m. (Gaden). According to my records, this is only an experimental station of 250 watts power.

Russia:
("This is Radio Centre, Moscow, calling")

RW-96 19.47m
Schedule: 8 p.m. to midnight.

RW-96 15,180kc, 19.76m
Schedule: 4 p.m. to 5.30 p.m.; 7.07 p.m. to 7.50 p.m.; News, 7.7 p.m.

RNE 12,000kc, 25.00m
Schedule: 4 p.m. to 11 p.m.

RAL/RVG 11,645kc, 25.77m
Anyone hearing this and what is call-sign?

RW-15, Khabarovsk 9565kc, 31.36m
Schedule: 6 p.m. to midnight; 5.50 a.m. to 8.30 a.m.
Terrific signal at night.

RW-96 9520kc, 31.51m
Schedule: 10 p.m. to 5 a.m. News, 2.45 a.m.
..... Moscow 6110kc, 49.10m
Good from 6 p.m. and good in morning around 7 a.m.

RW-96 6061kc, 49.5m
Midnight to 8 a.m. News, 6 a.m.
Same programme as **RW-15**, 31.36 (Schooth).

RV-59 6030kc, 49.75m
Great signal in morning.

RV-15, Khabarovsk 4273kc, 70.2m
Good from 8 p.m. (Rogers).

Spain:
EAQ, Madrid 9860kc, 30.43m
Good in mornings.

Radio Espagno, San Sebastian, 7210kc. 41.6m
Fair at 6.30 a.m.

EAJ-9, Malaga 7170kc, 41.75m
Very good at 6.30 a.m.

Radio Malaga, Malaga 7120kc, 42.1m
Heard at fair strength at 6.30 a.m.

Switzerland:
HBH, Geneva 18,480kc, 16.23m
Schedule: 11.45 p.m. Fridays to 1.10 a.m. Saturdays. News at 12.5 a.m.

HBJ, Geneva 14,535kc, 20.65m
First Sunday in the month. 3.45 p.m. to 5.10 p.m.

Radio Suisse, Schwarzenburg, 11,870kc, 25.28m
Not heard lately. Spoilt by **VLQ-2**.

HBO, Genoa 11,402kc, 26.31m
Same remarks as **HBJ**. Fair signal.

Radio Suisse, Schwarzenburg, 6165kc, 48.56m
Schedule: 4.30 to 7.30 a.m.

Yugoslavia:
YUF, Belgrade 15,240kc, 19.68m
Schedule: 5 to 6 p.m.
Very nearly as good as **ZRO-6**, often better than Daventry (Schooth).

YUB, Belgrade 6110kc, 49.18m
Schedule: 2 to 7.30 a.m. News, 7.25.
Good.

SCANDINAVIA

Norway:
LKQ, Oslo 11,735kc, 25.57m
No reports.

Sweden:
SBT, Stockholm 15,150kc, 19.8m
Schedule: 6 p.m. Sundays to 7 a.m. Mondays. Daily: 4 a.m. to 7.15 a.m.; 11 a.m. to noon.

SBP, Stockholm 11,710kc, 25.63m
4 a.m.-7.30 a.m.; 11 a.m. to noon; 3 p.m. to 4 p.m. (Sundays, 6 p.m. to 7 a.m. Mondays).

MISCELLANEOUS

Arabia:
ZNR, Aden 12,110kc, 24.76m

Very poor at 3.30 a.m. (Gaden).

Canada:
CKFX, Vancouver 6080kc, 49.34m
Schedule: 12.30 p.m. to 6 p.m. (Sundays to 7.30 p.m.).
Heard regularly 4.45 to 5 p.m.

CJCX, Sydney, Nova Scotia 6010kc, 49.92m
Landed him again at 10 p.m. (Gaden).

RADIO CANADA, Quebec 6160kc, 48.70m
Frequently says "Ici, Radio Canada." Only French spoken. Does not appear to be on every night, and schedule varies. Generally heard from about 9.30. Heard quite well (Taylor, Keats).

Greece:
SVJ, Athens 9825kc, 30.54m
SYM, Athens 9935kc, 30.196m
Schedule: 5.40 to 6 a.m. News 5.45.
Twenty minutes in English directed to United Kingdom. Splendid signal.

SYM, Athens 7075kc, 42.4m
Schedule: 4.45 to 8.50 a.m. Hardly audible at Randwick.—Ed.

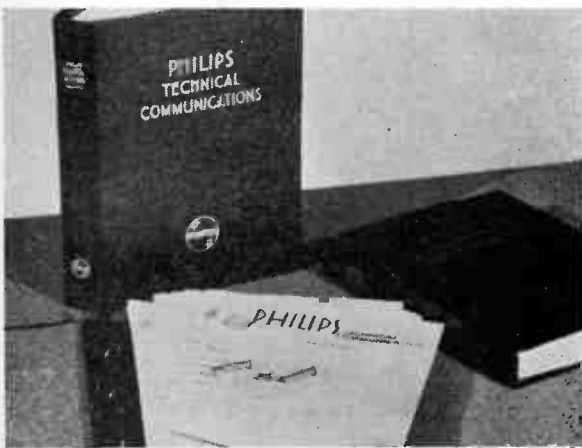
Iran (Persia):
EPB, Teheran 15,100kc, 19.85m
Heard from 5.45 p.m. till after 7. Programme was as before, all recordings. Fair strength (Schooth).
Schedule is supposed to be: 6 to 8.30 p.m.

Iraq:
HNF, Baghdad 9820kc, 30.55m
EQC, Teheran 9680kc, 30.99m
Schedule is: 11.45 p.m. to 2.45 p.m.
Mr. Cushen has advice that this station is being withdrawn in favour of **EQB**.

EQB, Teheran 6155kc, 48.74m
Schedule is: 11.45 p.m. to 6 a.m. News 4.30 a.m.
Fair in early mornings.

Syria:
RADIO FRANCAIS, Libre D'Orient 9045kc, 33.17m
Mr. Cushen reports hearing this station at 3.30 a.m. (The locality has not been definitely established, but indications point to a

(Continued on page 34)



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MASTER 4

(Continued from page 9)

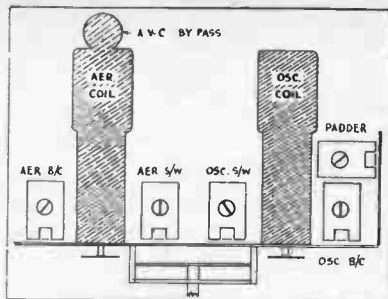
experimental base proved that any attempt to run the output back to a socket half-way down the rear of the chassis results in feedback introducing a shrill whistle which could not be eliminated even with a condenser across the speaker. With a battery set the utmost gain must be obtained, and intermediates of the highest efficiency should be used. But all the gain in the world is quite useless if instability results.

Careful attention to layout is a big help when striving for this stability.

As another example of how easy it is to introduce a feedback circuit was given to us when we ran the volume control leads a little too near to the speaker socket. Immediately this was done the audio end of the receiver set up an incessant howl. Perhaps a shielding for the grid lead would be an advisable precaution, although stability is easily obtained if the proper attention is paid to the layout and the arrangement of the wiring.

The Speaker

Any of the modern permagnetic speakers are suitable for this receiver. The main thing is to order the right kind of input transformer, and the only really reliable way of doing this



Britnonic Trimmer Layout.

is to order a permagnetic suitable for use with an output valve type 1L5G.

The next important thing is to have the speaker properly baffled. Proper reproduction cannot be obtained without a baffle of some sort. If the set is being installed in a console receiver, the baffling will be looked after automatically, but if the set is to be used without a cabinet, then the speaker should be mounted at the rear of a suitable circular hole cut in a sheet of timber or plywood at least two feet square. For best results the baffle should be fairly thick, say three-quarters of an inch, and a yard square.

It is amazing what an improvement a baffle board of this kind will make to any set, and especially to any battery set. It allows the speaker to work

with much greater efficiency than if standing out in the open.

Battery Leads

A four-pin plug is needed for the batteries, and this should be arranged with two short leads for the "A" battery and two long leads for the "B" battery.

Then by keeping the "B" batteries at a distance from the set, it is impossible to accidentally burn out all the filaments by allowing the "A" leads to dangle across or become in any way in contact with the high-tension terminals of the "B" battery.

Battery equipment required is a two-volt filament accumulator and a set of three 45-volt "B" batteries.

For the filament accumulator a fairly heavy unit is desirable, as we have made no attempt to keep the filament current low. Three of the valves draw 120 milliamps each, and the output valve draws 240, making a total drain of .6 of an ampere. This current drain could be more than halved by using valves with filaments which are less robust, but in the interests of complete satisfaction we strongly advise the types specified, even though they are a little heavy on the filament battery. With a good battery, however, there should be little difficulty in getting 150 to 200 hours running from each charge, so this is not really a problem.

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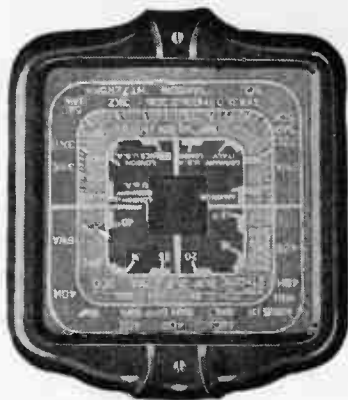
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Current Drain

The high-tension current drain is just 12 milliamperes in all, and this can be obtained from any heavy duty "B" batteries, although it will probably be found that the heaviest possible are the cheapest in the long run.

With hardly any appreciable effect on performance, the high-tension current drain of the set can be cut back to about ten milliamperes by using a bias resistor of 600 ohms, instead of 500. Those who want to have the utmost in economy might care to go to the trouble to fit a switching arrangement so that two bias resistors are used in series, with one switching out of circuit when best tone and range is required. This would be quite a simple matter, and we suggest two resistors of 400 ohms each. With both in circuit the current drain would be cut to an absolute minimum. With one of them shorted out of circuit by the switch, the set would be capable of giving maximum power and general performance.

Speaking of switches reminds us to mention that a switch was not fitted in our experimental chassis and does not appear in the photographs. The picture diagram of the wiring, however, shows how it can be fitted if required.

Normally, if a switch is fitted it will be embodied in the volume control potentiometer.

Variables

Apart from the bias, there are one or two variables which can be worked on by the set-builder in order to get the utmost in performance.

It will be noticed that the screen of each valve is treated quite independently, with a separate dropping resistor and by-pass condenser. This was just another of those attentions to detail in the interests of absolute reliability and stability with maximum gain. It would be quite possible to use one resistor and one condenser for the lot, but we strongly advise the expenditure of the extra shilling or two as a good investment.

The values of the resistors can be varied a little to suit circumstances.

If the set is found to be completely stable, the resistor for the intermediate valve might be reduced to 75,000 or even 50,000 ohms. The lower the value the higher the gain will be, but, of course, the higher the gain the more likelihood of instability.

Similarly, the resistor for the screen of the converter valve might be reduced in value by a little to give greater gain. In the case of the detector valve, however, the 1 megohm resistor should not be varied.

Crown Coil Bracket

The circuit as described is fundamentally suitable almost for any type of dual-wave coil bracket, but minor

alteration may be necessary in some cases. One example is with the latest type Crown coil bracket, type DC2B, which is ideally suited for this job. One amendment is desirable, however. This is in the matter of the high tension voltage for the oscillator plate when operating on the broadcast band. A series resistor of 20,000 ohms should be fitted in the special B plus lead provided, with a .1 mfd. tubular condenser as a by-pass as near as possible to the coil.

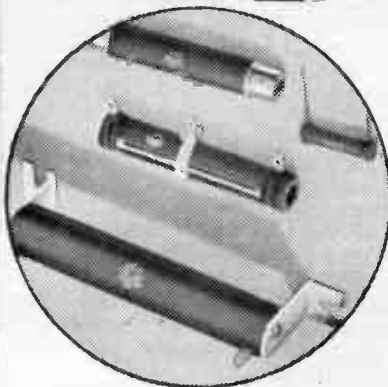
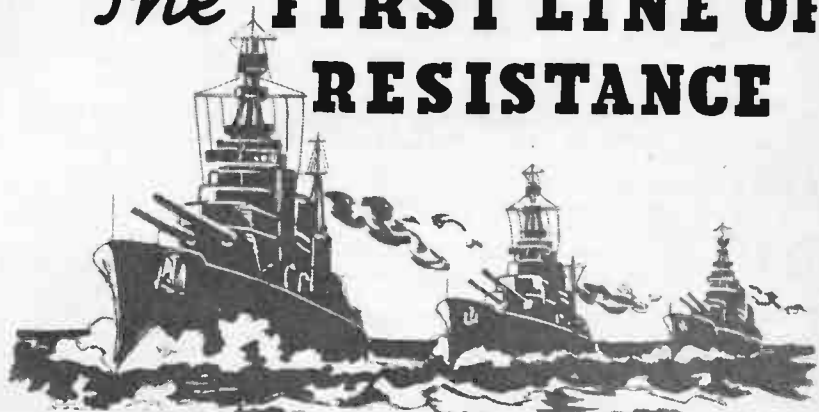
The idea is to drop the oscillator plate voltage on the broadcast band, leaving the full 135 volts to ensure proper oscillation on the short-waves. With some of the older type Crown brackets there may be only one high tension lead, but an examination will

soon show how it is joined up to two lugs from the ends of the coils. With such a bracket it is necessary to disconnect these two lugs from each other and run separate high tension leads to them. One lead, that from the short-wave coil primary, will run straight to the full high tension. The other, from the broadcast coil primary, will need to be taken to high tension through a 20,000 ohm resistor. Both terminals will need to have .1 mfd. tubular by-pass condensers fitted to them.

When Crown coils are used it is also suggested that the grid condenser value should be changed to .00005 mfd. instead of the .0001 mfd., shown in the circuit. This point, however, is not critical.



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EIGHT-INCH ELECTRICALLY-WELDED MODEL

Amplion (Australasia) Pty. Ltd. announce that a new Amplion 8" permanent magnet type speaker has been added to the Amplion electrically-welded range.

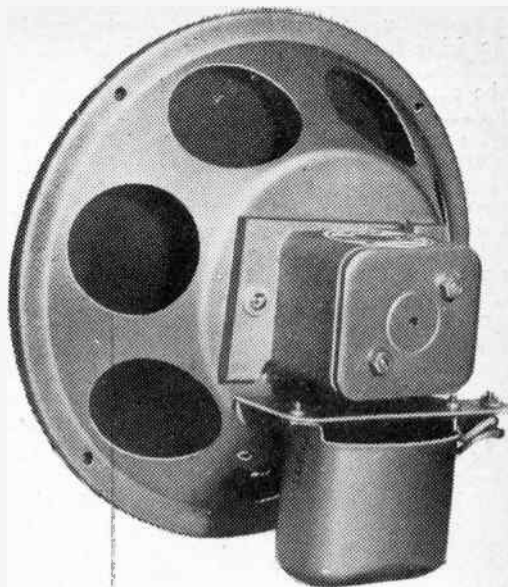
This new speaker, the 8P20, marks the redesigning of the very popular Amplion 8" Permag.

The impedance of the voice coil has been raised in extending the frequency range and is now 4 ohms. The latest method of voice coil suspension and centring has been adopted, and the diameter of the centring spider is 4."

A new cone has been specially developed for this speaker, giving excellent sensitivity coupled with a very fine response characteristic. The speaker is dust-proofed back and front of the cone, so that it is impossible for any magnetic or dust particles to enter the annulus and foul the gap.

The speaker uses a new Alnico ring magnet of 20 oz. weight and rectangular proportions. Special steel is em-

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The new Amplion eight-inch permagnetic speaker, which uses an Alnico ring magnet. The whole construction is electrically welded.
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ployed in the magnetic circuit beyond the actual magnet for end plates and centre pole or core.

The methods employed in electric-

ally welding the essential parts of the speaker housings ensures that once the cone is centred it should never need further attention, but if re-centring is required, it can be very simply effected per medium of two adjusting screws.

The transformer is of ample proportions, and the windings are impregnated and sealed in the case with a specially-developed wax. The winding and transformer laminations are insulated from the case, and there is no possible chance of electrolysis causing breakdowns either in climate or under any conditions.

The weight of the complete speaker is 4.9 lbs., and stocks are immediately available. The list price is £2/18/6, and special discounts are available to the trade.

BOOK REVIEW

RADIO HANDBOOKS AVAILABLE

Import restrictions, control of the dollar exchange and embargoes in general seem to make it hard to get the things you want, but fortunately, this does not apply to good technical books. It is indeed grand to be able to get hold of the latest overseas radio publications, as they can provide a wealth of information which must be invaluable in the future development of Australia.

The maintenance of communication is vital, whether in civil life, in the army, the navy or the air force. Men trained in the art of radio are certain to be in demand in the years to come. A good start for such training, and essential for reference, is a library of technical books.

For example, the three Radio Handbooks available from Angus and Robertson's contain a perfect foundation for radio as a career or a hobby.

The first of these handbooks is the 1941 edition of the famous Radio Amateur's Handbook, published by the American Radio Relay League and available here at 11/-. It contains 552 pages, weighs about three pounds and every line consists of information of value to anyone interested in radio communication.

The second handbook is the seventh edition of the Radio Handbook, published by the Editors of "Radio"

(West Coast, U.S.A.). About the same weight as the A.R.R.L. Handbook but containing over 600 pages, it is available from Angus and Robertson at 15/-. As with the other handbooks, every aspect of radio receiver and transmitter theory, construction, and operation is covered in a comprehensive manner.

The third handbook is slightly smaller, but no less helpful than its American brothers, it is the second edition of the Amateur Radio Handbook published by the Incorporated Society of Great Britain. It is available at 9/6.

Another technical radio book which we can strongly recommend for the advanced amateur and the radio technician, is the latest work from the pen of John F. Rider, entitled "The Oscillator at Work." As will be realised after you have glanced through this book, the oscillating valve is a big factor in radio receivers, transmitters, and test equipment. Its operation is fully covered in a thoroughly practical way in this worthy addition to any workshop bookshelf. Price is 12/-.

All of the above books are available from Angus and Robertson at the prices listed, plus postage. As stocks are limited we strongly advise any readers who are interested to place their orders for them without delay.

PRACTICAL MAN IN CHARGE

Personal notes about executives in the radio trade are not usually of great interest to our readers, but we feel sure that every amateur set-builder will be pleased to hear that the coil and dial factory of Crown Radio Products Pty. Ltd. has now come directly under the control of a new managing director, Mr. Lay Cranch, who is a thoroughly practical radio engineer.

Mr. Cranch has spent many years in actually building and experimenting with receivers in the laboratory, and we feel certain that this experience will prove valuable in ensuring that all Crown products will maintain a high degree of reliability and service.

Crown coils, dials and other components are available to suit all the receivers described in our columns.

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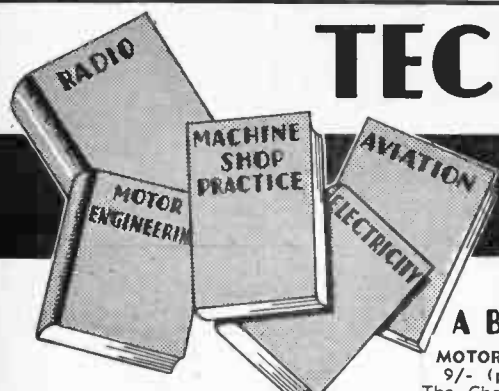
We sincerely hope that none of our readers have failed to take advantage of the offer of Philips Lamps to supply their technical communications bulletins at a fee of 1/- per year. This fee is only a nominal one and bears no relation to the cost or value of these splendid technical articles which are published from time to time, about eight times a year. Anyone who has not enrolled their name and paid their shilling fee should do so right away by writing to the nearest branch of Philips Lamps, mentioning "Australasian Radio World."

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Communications you will immediately realise how valuable they are and you will want to preserve them in good condition for future reference. You will appreciate Philips latest offer of a special binder for these Technical Communications. The binders, complete with brass inter-locking screws, stiff covers with gold-embossed lettering and rounded corners, make it a simple job to file away the Communications so that they are kept in good condition and are always ready for immediate reference. These binders are available at a price of 3/6 each, representing exceptional value for such a well-finished article.

Mr. Robert R. Chilton, radio engineer, Mullard (Aust.) Pty. Ltd., A.M.I.R.E. (Aust.), Dip. W.I.A., has been elevated to Full Membership of the Institution of Radio Engineers (Australia), in recognition of his very valuable contribution by way of an illustrated paper, entitled "A Practical Wave Analyser for Distortion Measurements," which he recently delivered before the Sydney Division of the I.R.E.

Mr. Chilton has been a keen radio worker for the past twenty-odd years, also an active member of the Wireless Institute and the I.R.E. (Aust.). His technical articles have been featured several times in the "Australasian Radio World."



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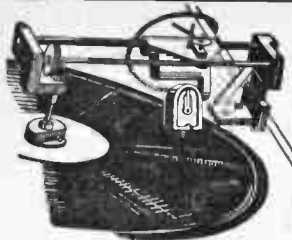
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HOME RECORDING
MAKE YOUR OWN RECORDINGS. Cutting head and overhead cutting unit complete, £6/6/-.
 Plain Records, 2/11, 3/11, 4/11, 5/11. Cutting Needles, 2/-.
 Aluminium discs, 1/-, 1/6.
LIKE-A-FLASH Overhead Cutting Head and Cutting Gear £6/6/-.



RAZOR BLADE SHARPENER
 Highly recommended
 "Re-juv" Razor Blade Sharpener
 7/6. NOW 2/6.

Pick-up Heads. Fit and suit all tone arms and gramophones. Far operating gramophone through radio.
 15/-, 19/6 each.



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.



TRICSSON HEAD PHONES
 British
 Headphones—12/6, 15/-, 17/6, 21/-.
 Ericsson's Professional 4,000-ohm 'phones, 47/6.

RADIO PUBLICATIONS
 Learn Morse, 1/-.
 Radio Dictionary, 1/-.
 Beginners' Radio Book, 1/-.
 Everyman's Radio Book, 5/6.
 The Television and Short-wave Handbook, 5/6.



"PRESTO" THE MAGIC BOX
 The most Amazing Trick—Just out

"Presto"—the grandest, most alluring and outstanding little trick ever introduced. 2/9, post free. Money back if it's not the best yet. Special quantity price.



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

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



THREE-INCH BACK PANEL ILLUMINATED DIAL, 5/-.

Five-cell Focussing Torches, 8/6.

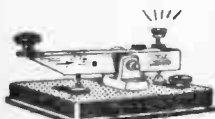
VALVES. MADE IN U.S.A.

Type	Price	Type	Price
57	10/6	85	12/6
58	10/6	6D6	11/-
38	12/9	6C6	11/-
32	11/3	6A7	11/9
2A5	10/6	1D8-Gt	24/3
2B7	14/-	42	12/-
27	11/9	2A7	13/6
6E5	5/-	71A	11/9
19	13/6	47	13/3
5K3	8/9	75	11/-
6J7	11/3	1A7G	15/-
2B7	10/-	30	11/-
6H6	12/9	80	9/6

VALVES AT SANE PROFIT PRICES. ALL GUARANTEED.

New 227 Valves, 5/9; used, 3/6.
 New 4XP, 5/-; S215, 5/-; MH4, 2/6. 38, 78, used 5/6.
 Raytheon B.H. Rectifier, new, 15/-;
 DU10, 5/-; 2A6, 35, used, 5/6.
 Used 224, 5/6. 610RC, 610XP, new, 6/6. Used 42, 5/6. New 41MRC, ML4, 3/-.
 445U Rectifier, 5/-.
 PM22, new, 7/6. Used 1C6, 6A7, 6A8, 6B7, 6U7, 6F6, 6F7, 6L7, 6/6. Used 57, 58, 59; 6/6; 201A, 3/6; A409, 6/6; A615, E406; E452, 6/6. Used PM6, PM5B, A609, 6/6. Used 6J7, 6J8, AL2, EK2, 2B7, 226, 5/6. New PM12, PM2A, 18/-.
 Let's know your valve wants.

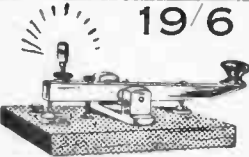
Cone Speaker Units. Leading makes. Were up to 35/-.
 Now 7/6 and 10/6.



No. 1.—Adjustable Morse Code Key, with long or short taper arms, splendidly made and finished. Strong reliable

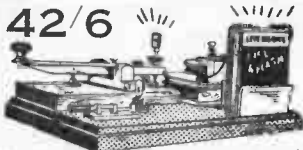
heavy plated fittings mounted on bakelite moulded base, 12/6. P.M.G. Type Sounders 35/-.

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. Perfect action.



19/6

42/6



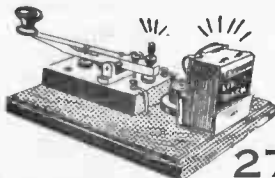
No. 3.—Set comprising No. 2 Morse Code Key P.M.G. Type, with light. Professional De Luxe Buzzer Battery. Throw-over Switch for buzzer or light. Use as required. Mounted on baseboard. Complete.



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

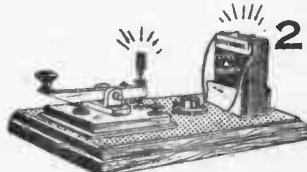


At left: PYREX TYPE INSULATORS. 3-inch barrel type, 1/-.
 Pyrex 4-inch, 3/6; 5½-inch, 6/6; 7½-inch, 30/-.



27/6

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.



22/6

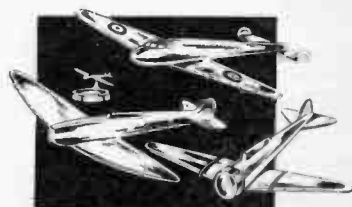
No. 6.—A real good little outfit which incorporates the No. 1 adjustable Morse Code Key, in moulded bakelite base, with a smart little adjustable buzzer all complete to operate. Junior model, 12/6.

No. 102 — "Like-a-Flash" adjustable Buzzer. 4/6. Bakelite Case High Pitched.



Ormond Slow Motion Front Panel 2-action Vernier Dial, 8/6.

Model Electric MOTORS. Work off small wet or dry batteries. 5/9, 10/6, 12/6.



Brass Rough Castings of Model Planes. Hurricanes, Spitfires, Wirraways, Hudsons, 3/- each. Small Wirraway for mounting, with screws, etc., polished and chromed, 2/6. Small Props, 6d.; Cocades Transfers, 6d. sheet.

SET TESTING LEADS WITH SILK FLEX and METAL TIP ENDS. 3/9 value. NOW 2/6

Police Patrol Multi-Strand Rubber-covered Aerial. Needs no separate lead - in. 50ft., 2/6; 100ft., 5/-.
 Man-o'-war Heavy Duty Insulated Aerial, multi-strand wires, 50 ft., 5/-; 100 ft., 10/-.



Felt Pennants. A.I.F., R.A.N., R.A.A.F., R.A.E., Signallers, Army Service Corps. All branches of Fighting Forces. 3/6 each.

SPEEDY QUERY SERVICE

Conducted under the personal supervision of A. G. HULL

H.M.L. (Woodford, Q.) is interested in compensated acoustics.

A.—It would be quite a sound scheme to use a single 6L6G in this circuit and you would be able to get an extra watt or two of power output without any difficulty. From our point of view, unfortunately the idea doesn't interest us one bit, because the 6L6G is not any longer available in commercial quantities. We get into trouble enough without specifying or recommending valves which are not available. With regard to the diode pentode circuit, this has been thoroughly tried out, and is quite practical and reliable in every way. Actually the difference in the amount of effective gain obtained from a 6B6G and a diode pentode is not as great as might be imagined, and even for short-waves it is hardly worth while, bringing up more hum and noise, other things being equal. Effective voltage gain with the triode would be about 55 to 60, as against 75 to 80 with pentode. To use two valves in parallel is O.K. except that the heavy current flow in one direction through the output transformer tends to saturate the core, whereas in push-pull the currents flow in opposite directions, and the effect on the flux cancels out. A heavy output transformer could be designed to overcome the difficulty, but the extra cost would offset the cost of the resistor or two necessary for phase-changing.

DXER (Camden) appears to be in doubt about the effect of the band-spreading which is being featured with latest model receivers.

A.—The band-spreading does not actually affect the selectivity of the tuning, and if two stations are operating on almost identical frequencies they will be bound to interfere with each other, whether band-spread or not. The inherent selectivity of the modern receiver is of a high order, however, and we doubt if selectivity is ever a real problem. To try and obtain or use greater selectivity would be sure to spoil the tone and make the set extremely critical of adjustment. The band-spreading makes the tuning much easier, being the electrical equivalent to gearing down the action of the control knob. In the hands of an expert a receiver without band-spread could perhaps play the same stations, but when it comes to short-wave tuning by an ordinary person, the band-spreading is a great advantage.

R.H. (Seven Hills) asks about battery drain and battery sizes.

A.—We can't find the list at the moment, but we fancy that the figures proved that it was not a sound proposition to load up the light duty to more than about eight milliamps. For anything over 12 milliamps, the heaviest of Superdynes would be the most economical in the long run.

K.B.M. (Muswellbrook) suggests that the "Club Special" would be ideal for use with a vibrator unit for country use.

A.—Yes, it would be a wonderful job it operated in the way you suggest and, although the total current drain would be fairly heavy, compared to an ordinary battery set, it would not be at all unreasonable if you have charging facilities on hand.

F.G. (Abbotsford) enquires whether we have any back numbers in which test equipment construction is described.

A.—Yes, there must be at least eight issues available, with details of building multimeters, vacuum-tube voltmeters, output meters and suchlike test equipment. These are available at 6d. each, post free.

D.D. (Five Dock) enquires about the oscilloscope articles promised.

A.—Nothing has been done in this line yet. If you are impatient, however, we suggest the couple of articles on this subject which appeared a while ago. These back issues, two of them, are available at 6d. each, post free. There was also an earlier series of about half a dozen articles, but unfortunately one of these back numbers is now out of stock, so that we cannot supply the complete set.

NEXT MONTH:
Another bumper issue,
with Special Servicemen's
Supplement.

D.W. (Bourke) asks about the internal construction of vibrators.

A.—We had a full article on this subject ready to run in this issue, but it had to be held out on account of lack of space. We will be holding it for the time being, but will drop into the first space available.

D.D. (Rose Bay) has a valve with a rattle in the base.

A.—There is no need to worry about this rattle. Some actual-based valve types require insulation between leads coming down to the base pins, and in the past it has been usual to adopt "spaghetti" tubing as most satisfactory for this purpose. It has been found, however, that the high-frequency characteristics of the tubing now available are very poor and that serious losses may occur through its use. In order to improve the valve performance, some Radiotron types are now being fitted with glass tubing in place of "spaghetti." The high-frequency performance is thus improved, although there is a tendency for the valves to rattle when shaken. This rattle is in no way a sign of a defective valve and should rather be accepted as an indication of a valve having a good electrical performance.

J.E.H. (Karragullen) wants compensated acoustics for battery sets.

A.—So far we have not done anything in this direction, mainly because a battery set needs all the power it can get from any given battery consumption. Inverse feedback, on the other hand, tends to waste power and gain, there being plenty to spare with an all-electric receiver. Feedback would be harder to introduce into directly-heated valves, too, as they don't have the convenient cathode. Will think about it, however, and see if something can be done.

Another Novel Crystal Circuit

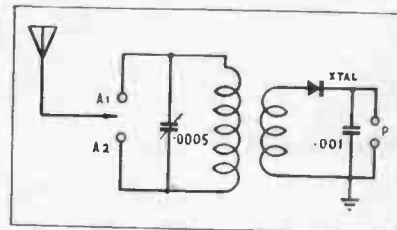
FROM Mr. N. F. Jones, of 17 Ellis Street, Stone's Corner, Brisbane, comes a crystal circuit which has a couple of novel features which we doubt if we have ever seen suggested before.

Mr. Jones says: "Having done a lot of experimenting with crystal sets since the good old days, they still hold a fascination for me.

"I am enclosing a circuit which appeared in a Brisbane Sunday paper years ago and is the best ever, so far, although it is not my design.

Construction of Coil

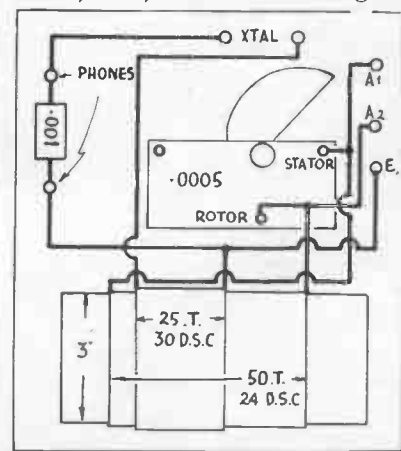
"Wind 12 turns of 24-gauge D.S.C. wire on one end of the three-inch former, and, without breaking the



wire, stop winding, and punch two holes in the former, and thread the end of the 30-gauge wire through these holes to make it secure. Then continue the winding with both 24 and 30 gauge wire so that for the next 25 turns the coil is so wound as to have a turn of 30-gauge wire between each turn of 24-gauge wire. When 36 turns of 24-gauge and 25 turns of 30-gauge wire have been wound on, stop winding and, without breaking the 24-gauge wire, break the 30-gauge and secure it by punching two holes in the former and threading it through these.

"Now continue winding with the 24-gauge wire for another 13 turns, and then securely fasten by punching a further two holes in the former.

"The aerial coil, which is tuned, has two aerial points without any earth connection. The detection and output circuit is untuned, and has the receiver's earth connection. It is a very unusual arrangement, but works well, as you will find if you try it."



QUERIES

(continued)

M.A. (Randwick) enquires about getting stocks of the 6L6G beam power valves.

A.—The transmitting valve known as type 807 has electrical characteristics similar to those of the 6L6G, the main difference being that the plate is brought to a cap on top of the glass envelope. It is quite O.K. to use this valve in high-powered amplifiers, and they are commercially available at a special nett price of 35/- each. The only difficulty is that they are rated as transmitting valves, and as such can only be supplied after authority has been obtained from the Senior Radio Inspector at the Haymarket Post Office building. So long as you don't have any trouble in convincing him that you are not a Fifth Columnist or German spy, you should be able to get the authority easily enough. When building up the amplifier be careful to take some steps to protect the caps from being accidentally touched, as they will be at high potential and will be a source of danger.

W.W. (Wodonga, Vic.) sends for a special circuit.

A.—Gosh! Isn't it bad enough to get enquiries of this type without having to pay fourpence postage due for the pleasure? You forgot to stamp your envelope and, anyway, we cannot possibly undertake to design special circuits for individuals. When we design a set at present it is of interest to hundreds of readers, and we can't hope to devote hours of time to each of thousands of individual readers. If we can't do it for all, we don't think it would be fair to do it for one.

J.H. (Hurlstone Park) points out that we have used different values of condensers for by-passing the a.v.c. line in the "Club Special" and asks whether this would not upset the tuning.

A.—Normally we use condensers of the same value, and it is general practice to do so, but the value of the condenser used should not have any appreciable effect on the tuning. With regard to the tone control, we usually prefer a network across the speaker, but we have never gone deeply into this point. We doubt if the effect is very different in practice. Glad to know everything else O.K.

R.C. (Pennant Hills) wants to know whether he can come into our laboratory to pick up some hints on radio servicing.

A.—No, sorry, but we have a lot of work to do, and time is money. In fact more than money, for we can't even hope to hire anybody capable of doing the specialised type of work which takes up most of our time. We can only suggest that you approach one of the radio colleges. Teaching radio as a profession is their job.

RADIO PARTS AND KIT-SETS

We supply anything you require in radio. We have stocks of all radio parts — Kit-sets or assembled chassis. All makes of sets supplied. Our prices are the lowest offering, and we supply only quality goods.

Send your order to

DAVIS RADIO CO.

WHOLESALE RADIO DISTRIBUTORS
FIRST FLOOR, WEMBLEY HOUSE
841 GEORGE STREET, SYDNEY

Phone: M 3917

(Open Friday nights till 8.30 p.m.)

Radio Sets Repaired. All Work Guaranteed.

R.H.V.G. (Croydon, S.A.) mentions in passing that he is buying a Kriesler receiver, as advertised on our front cover a couple of issues back.

A.—Yes, the set is O.K., and you should be perfectly happy with it. In the matter of picking up interference from the power wires carrying 30,000 volts, you are bound to strike the same trouble as before. All you can hope to do is to use an aerial as far as possible from these wires, with a shielded lead-in. It would be a good idea to get up and dust off the insulators carrying the high-tension wires, but we don't advise you to do this job yourself!

NEXT MONTH :

Controlled volume expansion, with acoustic compensation, in a simple amplifier described by C. Porry.

K.G.S. (Cremorne) enquires about line filters.

A.—We agree with the radio mechanic that a line filter is likely to be a help, and that you should try one. We doubt, however, if it is likely to completely cure the noise or which you complain. It should help considerably. Suitable line filters are available in a number of different brands, listing at prices around £1. Your repair man will be able to recommend a good line and quote you a price. We strongly advise a few days' trial with it, if such a trial can be arranged. You can then judge the effect of the filter by the improvement in results which you actually notice.

LOGGINGS OF THE MONTH. Continued from page 27

town in Syria, probably Damascus or Beirut.—Ed.)

Newfoundland:

VONG, St. John's 9475kc, 31.68m
Schedule: 11.30 p.m. to 3.30 a.m.
Heard at R6, 11.45 p.m. (Taylor, Keats).
(See note under "Diary."—Ed.)

VONH, St. John's 5970kc, 50.25m
Schedule: 7.30 a.m. to 12.30 p.m.
Mr. Taylor says he heard them at R5 at 11.30 p.m. on 50.17m.

Turkey:

TAQ, Ankara 15,190kc, 19.74m
Schedule: 3 p.m. to 4 p.m., 7 p.m. to 9.30 p.m. News 9.15 p.m.

TAP, Ankara 9465kc, 31.70m
Schedule is: Midnight to 6.30 a.m. News at 4.15, and on Sundays a talk in English at 5.50.

Location Unknown:

"Christian Peace Movement," 9440kc, 31.76m
or 9530kc, 31.46m or 9228kc, 32.51m
May be any of these, between 5.45 and 6 a.m. (Muller).

German Freedom Station 9804kc, 30.6m
Opens at 6 a.m. with familiar "Achtung! Achtung!" Irregular.

WEST INDIES

Cuba:

Havana unless otherwise mentioned
COKG, Santiago 8960kc, 33.48m
Schedule: 9.45 p.m. to 2 p.m. next day.
Good station.

COCY 11,460kc, 26.17m
Schedule: 11 a.m.-2.55 p.m.; 9.45 p.m. to midnight.
Note change in frequency.

COHI, Santa Clara 11,500kc, 26.09m
Not shown in Radio-Guia list.

COCM 9835kc, 30.51m
Schedule: 11 p.m. to 3 p.m.
Heard well at 7 a.m., 2.30 p.m. and from 11 p.m.

COBC 9360kc, 32.04m
"El Progreso Cubano." Fair at 11.10 p.m. and also in mornings.

CLASSIFIED ADVERTISEMENTS

WANTED TO BUY—Trickle type battery charger. Must be in good condition. Write giving full particulars and price to J. W. Niven, Keepit Dam, Carrol Gap, N.S.W.

M.B. (Dubbo) enquires about DX Club stickers.

A.—No, sorry we were not able to send the stickers, as these are now right out of stock, and present difficulties in the printing business make it look as though we will not be able to carry on with this line. Even if we do get a batch put through, it is almost certain that the price will have to be doubled, so it doesn't seem as though it is worthwhile. Fair stocks of report forms and notepaper are on hand.

T.K. (Canberra) enquires about a circuit for push-pull with direct-coupling.

A.—The circuit you have in mind would be that of the amplifier used by Mr. Dobson in the Amplifier Championship. The circuit was given in the January issue. Copies are still available at 6d. each, post free, if you have mislaid your copy of this number.

T.T. (Granville) enquires about the new orders regulating the use of oscillators.

A.—The order applies only to oscillators which are capable of developing a power of more than 10 watts at a frequency of greater than 10,000 cycles per second. Your service oscillator would not be capable of developing more than 10 watts, and so the order would not apply to it.

COCH 9437kc, 31.82m
Note change in frequency. This is from Radio-Guia, the Cuban magazine. Is anyone hearing this station?

COBY 9215kc, 32.55m
This is no longer shown on Cuban lists.

COCK 9200kc, 32.61m
Heard well nightly from 11.

COBZ 9030kc, 33.32m
Weak at 2 p.m. (Keats, Byard).

COCC 8850kc, 33.90m
Gives religious service at 11 p.m., English and Spanish.

COCD 8700kc, 34.48m
Schedule: 10.30 p.m. to 3 p.m. next day. One of the best Cubans.

COHI, Santa Clara 6455kc, 46.48m
Very good at 3.45 (Gaden).
Good from 9.45 to midnight.—Ed.

COCC 6365kc, 47.14m
Fair at 4 p.m. (Gaden). But static bad. I think this chap has moved to 6350kc, 47.26m. Would welcome reports.—Ed.

COCW 6324kc, 47.47m
Just audible at 10.15 p.m. (Schodel).

Haiti:

HH3W, Port-au-Prince 9883kc, 30.35m
R7 at 5.45 a.m. (Byard).

Dominican Republic:

HIIN, Trujillo City 12,486kc, 24.03m
R4 at 11.20 p.m. (Byard, Nelson).

HI2G, Trujillo City 9295kc, 32.28m
Occasionally heard at 2.30 p.m. (Gaden).

HI3U, Santiago 6020kc, 49.43m
Opens faintly just after 10 p.m.

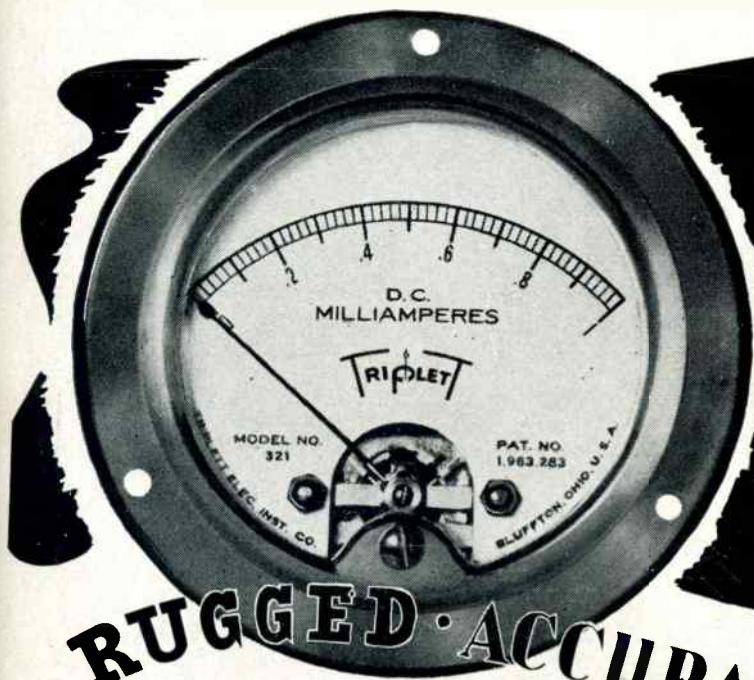
HI1J, San Pedro de Macoris 5970kc, 50.25m
Closes at 3 p.m. with march (Cushen).

Guadeloupe:

FG8AH, Point-a-Pitre 7440kc, 40.32m
"The Voice of Colonial France" broadcast pro-Vichy programmes from 9 to 10 a.m. Reports please!

Martinique:

RADIO MARTINIQUE, Forte-de-France
9705kc, 30.92m
Can be heard weakly at 8.30 a.m. (Gaden).



TRIPILET
Precision Built
INSTRUMENTS

RUGGED · ACCURATE · DURABLE

Model 321 D.C., actual size

... built in many types and sizes!

Triplet instruments have established a new standard of quality in the field. Precision accuracy at low cost, simplicity with extreme ruggedness and bridge type construction are features that evidence the most approved engineering practice.

Magnets of laminated construction have each lamination exactly gauged after hardening, thus assuring accurate printed scale characteristics. This is one reason accuracy of scales, when not hand-drawn, can be as low as 1%.

Triplet's exclusive method of maintaining absolute uniform pole piece accuracy supplants the more expensive milled soft iron type, and is far superior to those formed of soft iron. Cast magnets of cobalt and other alloys are used in some of the larger and more sensitive Triplet instruments and relays.

D.C. Instruments are the D'Arsonval type with an extra light moving coil and reinforced parts. A.C. instruments are the movable iron repulsion type; are air damped and have light moving parts. Both A.C. and D.C. have selected sapphire jewel bearings and highly polished pivots; white enamelled metal dials and moulded zero adjusters. Accuracy within 2% except rectifier type instruments which carry a 5% guarantee. Instruments supplied with painter stops.

THERMO AMMETER

High Frequency Accuracy 2%

Triplet Thermo Ammeters correspond in size, etc., to corresponding D.C. models. All have moulded cases. Have external couples which withstand 50% overload connected to meter with 2-foot leads. Couples are easily replaced when necessary. Internal couples to order. External couples only, for any model.

The Model 321, 3-inch dial, illustrated above, is available in 5 and 2 inch dials designated Models 521 and 221.

Typical "321" ranges are: 0-1, 0-10, 0-50, 0-100, 0-250, 0-500, 0-1000 Milliampères.



529-D.C.



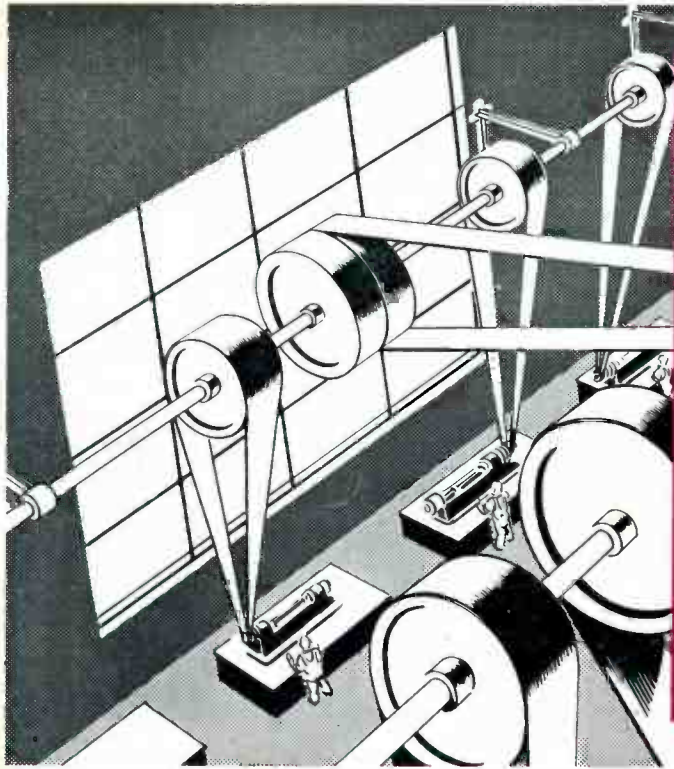
539-A.C. Thermo Ammeter

W. G. WATSON & CO. PTY. LTD.

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Distributors of "WATRIC" Products



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in the factories
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TO TAKE YOUR
PLACE IN A
VITAL INDUSTRY

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Total war, as its name implies, means conscription of the nations' resources in men, materials and wealth. It's up to you as an individual, therefore, to **DECIDE FOR YOURSELF**, before it is too late, just what place you are going to occupy in the national effort. The Radio and Communications Industry is attractive from two main angles: (1) It is a vital war industry that **NEEDS** skilled men; (2) it **MUST** grow and expand **AFTER** the war, thereby ensuring a bright **FUTURE** for the men who have the courage and foresight to **TRAIN NOW!**

WE CAN TRAIN YOU AT HOME OR AT OUR OWN BENCHES

The Australian Radio College offers ambitious men a sound, proven course in Radio Engineering. Sound because it is the result of many years' successful operation, proven because hundreds of ex-students owe their present jobs and success to the College. You can learn with equal facility in your own home (by means of our correspondence course) or attend night classes at the modernly-equipped college workshops.

PREVIOUS KNOWLEDGE UNNECESSARY

You don't need a knowledge of Radio or Electricity. We'll give you all you need of both—you'll start at the beginning, building-up knowledge just as carefully and

systematically as you would lay brick after brick in its place when building a wall. You get the knowledge you want presented in a manner that makes it easy to learn **FAST**. **COSTS LITTLE**

Think of this—for a few pence per day—actually less than many fellows spend on tobacco, you can prepare yourself for a man-sized job in Radio.

SEND FOR FREE BOOK

First thing to do if you want to secure the facts about Radio is to send in for "Careers in Radio and Television," a lavishly-illustrated book published by the College and available to approved enquirers. Send in coupon for your copy now. **IT'S FREE AND POST FREE!**

CONVINCING PROOF FROM EX-STUDENTS

"... I am writing to let you know that I, who took your service engineering course, am now in camp with the 1st Corps HQ Sigs. of the 2nd A.I.F. I am in as a radio maintenance man and instrument (radio) mechanic. Because of the training I received from you, I am able to take my place as engineer in a wireless station or mobile van radio station.

"Because of the training I have had I am able to pass tests set by the instructors where many fail, and it will probably mean two or three stripes for me as N.C.O. in charge of full transmitting equipment."—C.T.S., Melbourne.

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