

**THE
AUSTRALASIAN**

PRICE, 1/-

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

73y

Radio World

VOL. 5 NO. 5

OCTOBER 1940

POWER AMPLIFIER SYSTEM FOR RAILWAY STATION
(see page 3)

**1940 ALL-WAVE
REINARTZ THREE**

**ITSY-BITSY
MANTEL MODEL**

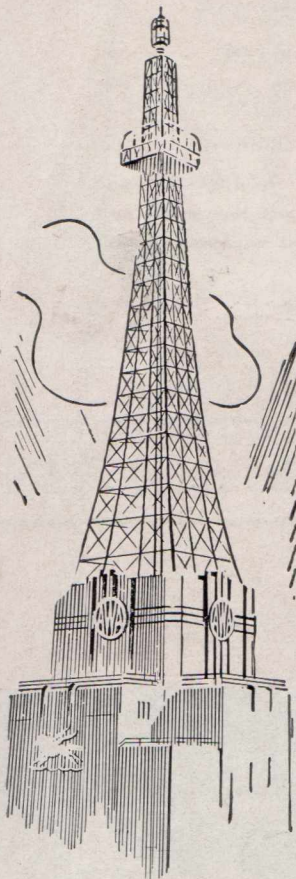
**HIGH-FIDELITY
A. C. FIVE**

**FULL GUIDE TO
SHORT-WAVES**



Be guided by Experience

Marconi School Graduates hold the leading positions in Australian Radio to-day - why not consult the School about your own future?



Marconi School graduates are radio officers in all ships of the Australian and New Zealand Mercantile Marine.

Marconi School graduates staff A.W.A. Beam Wireless Stations in the world's longest and fastest radio-telegraph service.

Marconi School graduates are in charge of Aeradio stations at the principal airports in Australia.

Marconi School graduates operate A.W.A. coastal radio stations throughout Australia, maintaining communication with ships at sea and the Pacific Islands.

Marconi School graduates are engaged in 100 broadcast stations in Australia.

Marconi School graduates operate A.W.A. radio stations in Papua, Fiji and the Mandated Territory of New Guinea.

Marconi School preparatory course graduates, in large numbers, are now in the Signal Sections, Navy, Army and Air Force.

YOU ALSO CAN ENTER UPON A SUCCESSFUL WIRELESS CAREER BY JOINING AND GRADUATING FROM THE MARCONI SCHOOL OF WIRELESS

Marconi School training takes you step by step from elementary electricity to advanced radio engineering.

Marconi School has the course you need, from knowledge of Morse for service with the fighting forces, to complete radio engineering training.

MORSE CODE INSTRUCTION

From £1 Monthly—Day or Evening Classes.

47 YORK STREET - - - SYDNEY
163 QUEEN STREET - - MELBOURNE

MARCONI SCHOOL OF WIRELESS
CONDUCTED BY AMALGAMATED WIRELESS (A/SIA) LTD.

Headquarters:



Wireless Officer in communication with aeroplane.

If you have no technical knowledge of radio and cannot conveniently call at the School for an interview, post the coupon below and we shall be pleased to advise you.

..... CUT OUT AND POST NOW

**MARCONI SCHOOL OF WIRELESS,
A.W.A. BUILDING,
47 YORK STREET, SYDNEY.**

I am interested in radio as a career, and would like your advice, without obligation, as to the most suitable course for me to follow:—

Name.....

Age.....

School Standard.....

Address.....

The Australasian
RADIO WORLD

Incorporating the
ALL-WAVE ALL-WORLD DX NEWS

Vol. 5 OCTOBER, 1940 No. 5

CONTENTS:

| | |
|------------------------------------|----|
| CONSTRUCTIONAL — | |
| Reinartz Three | 5 |
| Itsy-Bitsy Mantel Model | 13 |
| Velco Hi-Fidelity Five | 17 |
| TECHNICAL — | |
| Problems With 1.4 Valves | 11 |
| Oscillator Grid Currents | 25 |
| Intermediate Transformers | 27 |
| Don'ts for Battery Charging | 38 |
| SHORT-WAVE SECTION — | |
| Review | 30 |
| Radio Engineer from Japan | 30 |
| The Month's Loggings | 32 |
| TRADE PARADE — | |
| Calstan Portable Reviewed | 28 |
| Ultimate "World-wave" Model | 29 |
| New Trimmers for R.C.S. | 36 |
| Book Reviews | 42 |
| SPEEDY QUERY SERVICE — | |
| Answers to Readers' Problems | 41 |

OUR COVER

The photograph shows the control room of the R.C.A. sound equipment at the Union Terminal railway station at Los Angeles, U.S.A.

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

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

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

RAYMART
 CRAFT A CREED

You can safely use and recommend Raymart shortwave gear for your construction of the sets featured in this issue of "Radio World."

Acknowledged by leading engineers and technicians as the most outstandingly efficient equipment available — you can't do better than specify RAYMART.

**Everything Radio
 and Electrical**

"The Friendly Wholesale House" can supply the components for all your construction — at the Lowest Prices in the State. Speedy delivery and accurate service is always assured — write now for prices and details of your requirements.

- ROLA — the World's Finest Sound Reproducers.
- RING - GRIP — Radio and Electrical Accessories.
- CROWN RADIO PRODUCTS.
- R. C. S. RADIO PRODUCTS.
- EFCO DIALS.
- EVEREADY BATTERIES and TORCHES.
- AIRZONE FILTERS.
- EMMCO HEADPHONES.
- HENDERSON POWER TRANSFORMERS.
- E.T.C. SOLAR CAPACITORS.
- E.T.C. YAXLEY SWITCHES and POTENTIOMETERS.
- I.R.C. RESISTORS, Metallised.
- I.R.C. RESISTORS, Power Type.
- KENRAD—"The Fine Valves of Radio."
- RADIOTRON, MULLARD & PHILIPS VALVES.
- C.M.A. Wires and Cables.

JONMAR KIT-SETS
 FOR THE SETS IN THIS ISSUE

Time and time again Jonmar Kitsets have proven their superiority and true value to the constructor. Complete in every detail. All parts matched and tested before packing and compiled by experts. **JONMAR Kitsets NEVER LET YOU DOWN!** Write for parts lists and prices now

Telegrams: "Jonmar" Sydney
 Telephone: BW 3109 (3 lines)

JOHN MARTIN PTY LTD **RADIO & ELECTRICAL SUPPLIES**

116-118 CLARENCE STREET, SYDNEY



Martin de Launay's Service Saves Time!

WE'RE in the radio and electrical business to help you — to supply you with the best products — to save you money — to give you the best service in town. We do this because we know it's **GOOD BUSINESS** to treat customers right. You can't beat efficiency and business-like methods. Like to try our service?

To get one of our **ROTARY RESISTOR COLOUR CODE INDICATORS FREE AND WITHOUT OBLIGATION**, pin this advertisement to your letterhead and post to us.

MARTIN de LAUNAY Pty. Ltd.

Cr. DRUITT and CLARENCE STREETS, SYDNEY

M 2691 (5 lines)

And at NEWCASTLE and WOLLONGONG

PERSONAL.

Running a technical radio monthly is a happy job. It is such a friendly business from start to finish that it is hard to call it work.

Of course, to a certain extent, it is a matter of birds of a feather flocking together.

Being such a keen experimenter myself I find it a most interesting pastime to tinker about in my own laboratory and so I am well able to understand the enthusiasm of readers who have similar feelings and who like to tinker about with circuits and sets in the same way.

Another welcome feature of the life is the mail.

Every day there is a bundle of letters from readers who tell of what they are doing, of how they are getting along with the various jobs they are working on. Often they give suggestions for articles.

These suggestions are invaluable.

A good example of the assistance of these suggestions is shown in this month's issue. There are two articles which we feel sure are going to be of much interest and help to our readers, one dealing with grid current in converter valves and the other dealing with the difference in various intermediate transformers.

I doubt if there is a hundred to one chance that I would have thought up the subject matter of these articles if they had not been suggested by readers.

All readers, no matter whether advanced experimenters or just novices, are cordially invited to write to me. It is not always possible for me to answer each letter individually, and often enough I am so busy that I have to put aside the mail for three or four days before I get time to read every letter carefully.

If, by any chance, you have written to me, but haven't received a reply, I do hope that you won't think that I am not interested or that I don't appreciate your kindness.

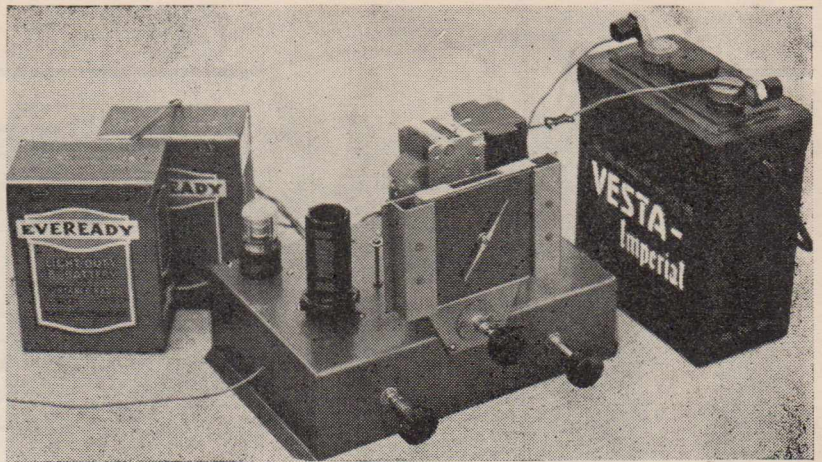
I am pleased to notice that many readers have not forgotten Earl Read, who was formerly editor.

Unfortunately Earl's name does not often appear at the heading of articles these days, as he is devoting practically all his time and energy to the business side of the paper. Earl, however, is still keenly interested, and often takes a few minutes off to peek at the mail and keep in touch with the activities of the members of the DX Club and of other readers.

A. G. HULL.

The 1940 REINARTZ ALL-WAVE BATTERY 3

Based on the world's most popular circuit, this new design offers exceptional value.



The chassis with suitable battery equipment.

If anyone asks "What was the most popular circuit in the world at any time?" the reply could only be "the Reinartz." Of course it was years ago that the Reinartz held sway.

There have been many different versions of the Reinartz, but the basic arrangement is a regenerative detector, followed by two stages of audio amplification.

The proper adjustment of the regeneration allows effective selectivity to be obtained and the audio amplification builds up the signal sufficiently to allow it to give full loud-speaker results with ease.

The Reinartz circuit takes its name from a famous experimenter and technician, John L. Reinartz, who is still active in American radio circles.

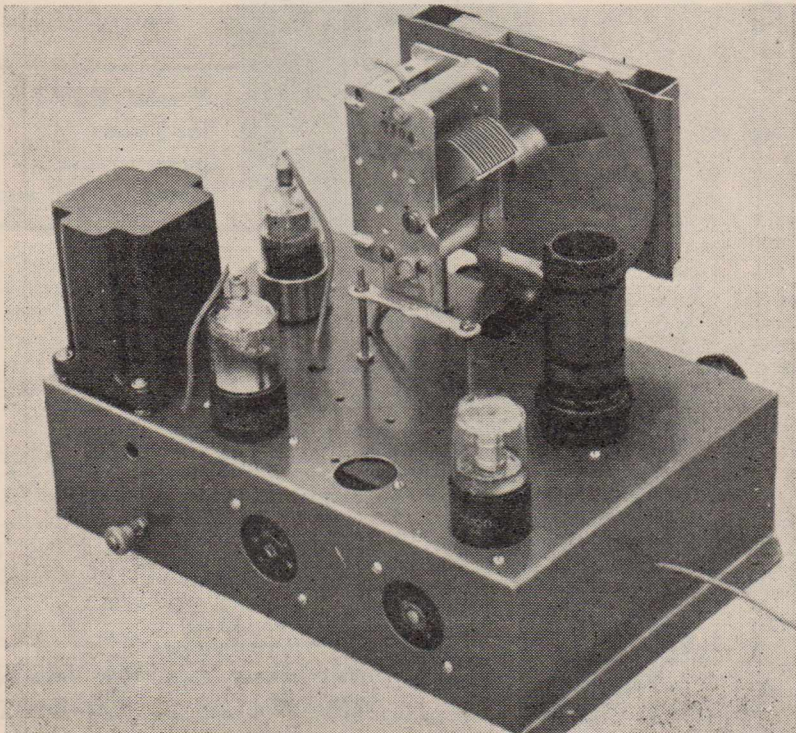
Although the original Reinartz circuits were most popular around 1927 to 1929, there are still thousands in operation throughout Australia, still giving splendid service.

Having lunch with some "old-timers" recently, the discussion got around to the circuits of the past, and someone made a rather sneering remark about the fact that many of the modern single-valve headphone sets are more complicated and costly than

the old Reinartz, and yet cannot give comparable results.

Those remarks seemed to strike home rather deeply, and so it can be said that as an indirect result we have here a circuit which should do quite a bit to startle radio enthusiasts. It is a 1940 version of the original Reinartz circuit, brought right up to the minute to give all-wave tuning. It is a full-powered set, capable of long-range reception with loud-speaker results, yet is particularly economical to build and operate.

A general view of the chassis showing layout.



ACKNOWLEDGMENT

We must pay tribute to Mr. Norman Cohen, manager of the Invincible Radio Company at whose suggestion we developed this receiver design. It was Mr. Cohen's idea that the old Reinartz circuit could be brought up-to-date to provide a much better proposition than many of the complicated single-valve receivers.

Having spent quite an amount of time in the past couple of years working on the development of one-valve sets of elaborate design, the results obtained with this job were surprisingly satisfactory. It has just that last ounce of reserve power which makes all the difference. For example, there is no need to use a large aerial and an effective earth in order to get sufficient strength for the headphones, as is often the case with the one-valve headphone sets.

With the new "Reinartz" you can get full speaker strength from all the locals with a few feet of wire.

With this short aerial the matter of selectivity is not a problem, and in a suburban location we found no difficulty in separating all the local stations and bringing in the stronger



Cut the battery costs of your
1.4 radio by two-thirds with a

VESTA

"A" BATTERY

Vesta R2V11
for 1.4 radios. Capacity: 110 amp.

★ **The most comprehensive, economical range of radio batteries available** ★ ★ **First choice of leading radio manufacturers**

YOU can cut the cost of "A" battery power for your 1.4 radio by two-thirds by fitting a 2-volt Vesta type R2V11 lead acid cell with suitable resistor as detailed by radio experts elsewhere in this journal. For, with a Vesta wet accumulator, the very small cost of recharging once every eight or nine weeks means pounds saved in dry battery non-rechargeable refills.

You'll find, too, that if you use any type of Vesta 2, 4 or 6 volt — Vesta is "By far the best battery buy!"

For the 2-volt battery set, specify Vesta R2V15; for the 2-volt vibrator type: Vesta H2V19.

Vesta has the most comprehensive range of batteries; not only the best available — but absolutely the lowest-priced radio batteries offered anywhere.

Factory Branches in every State — a distributor in every town.

VESTA BATTERY COMPANY PTY. LTD.

Sydney, Newcastle, Albury, Melbourne, Brisbane, Townsville, Rockhampton, Adelaide, Perth, Launceston, Hobart, Burnie, Wellington, Auckland, Christchurch, Dunedin.



Vesta R2V15
for 2 volt
battery radios.
Capacity: 150 amp.



Vesta H2V19
for 2 volt
vibrator radios.
Capacity: 190 amp.

See your nearest VESTA Distributor — TO-DAY!

REINARTZ 3

(continued)

interstate stations in between them.

Operated in the average country location there should be no doubt about getting thirty or forty stations with ease.

Duplex v. Singles

The problem of whether to use a single valve of the duplex type or two separate valves can be brought down to simple economics by a consideration of prices, filament and high tension consumption, and when brought down to figures in black and white we feel that the two separate valves win out in practice.

For example, the 1D8GT is a wonderful little valve and makes possible quite an effective one-valve set, but look at its price. It lists at 27/-, which is nearly twice the price of the ordinary battery valves like the 30 or the 1H4G, which list at 14/6.

A big difference, however, is that if the filament of one portion of the duplex valve becomes damaged, a complete new valve has to be fitted, whereas with single valves only the damaged valve needs to be replaced.

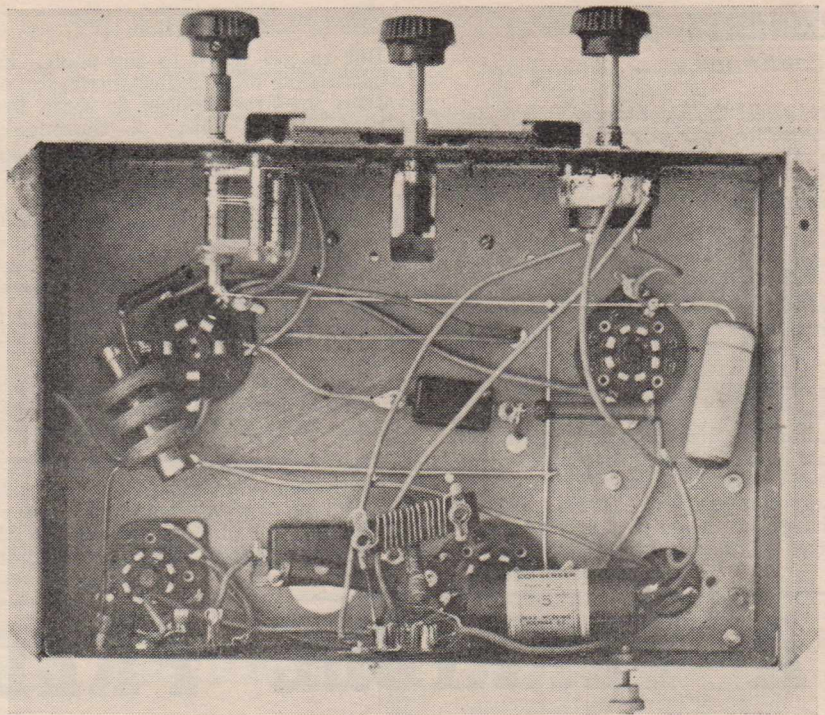
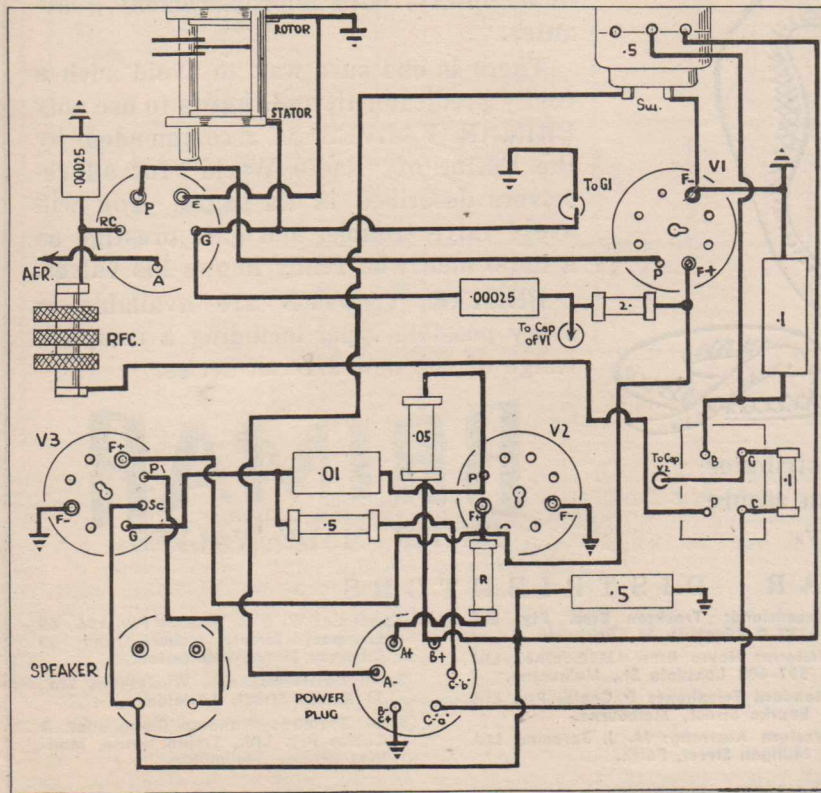
Valve Types

The 1940 version of the circuit, as shown on these pages, is suitable for use with many different types of

valves, and practically any general purpose valves can be used in the audio stages and any pentode in the

output. In every case the circuit schematic remains the same, the filament, high tension and bias voltages being amended to suit the valves used. The picture diagram, however, is drawn to suit valves fitted with octal bases and so is not so universal in its application.

This picture diagram makes assembly easy, even to a novice.



Compare this photo with the picture diagram below.

The Choice

The actual choice of valves will depend on what types are on hand. Most set builders have a few spares about, and this set is a good one for using up odd types.

If a complete set of new valves is to be fitted, the choice will lie between the latest octal types available in either 1.4 or 2 volt types.

Introduced primarily for use in portable receivers, the 1.4 volt valves have proved very popular for all types of battery sets. Just why, we do not quite know. At the moment there seems to be quite a reversal of this trend, and many of our readers are claiming that a 2-volt accumulator is much more economical in the long run than the dry batteries used for sets fitted with 1.4-volt valves. Actually, however, there is no need to be tied to dry batteries when using the 1.4-volt valves.

Whether run from a dry battery or an accumulator, the valves should have a dropping resistor in series with the filament supply.

By using a suitable value for this resistance, it becomes simple enough to use a 2-volt accumulator, and there

(continued)

are several advantages in so doing. Therefore, our circuit as we show it in this article is designed to allow the 1.4-volt valves with a 2-volt accumulator.

In order to make it possible to use 2-volt valves, or, for that matter, 4 or 6 volt valves, it is just a matter of omitting the resistor indicated in the circuit as "R."

The chief advantage of the accumulator is the way in which it can be re-charged. Once a dry cell is exhausted it has to be replaced with a new unit, but an accumulator can be re-charged and re-charged indefinitely for several years. Each re-charge costs only a fraction of the price of a dry cell.

Construction

But to get down to the point, the construction of this fine little three-valver, the first thought is about the kit of parts. Being a thoroughly

COIL WINDING DATA

| | | | |
|------------------|-------|----------|-----|
| Wavelength 16-50 | 40 up | Broadc't | |
| Aerial .. | 3 | 5 | 15 |
| Grid .. | 5 | 15 | 100 |
| Reaction | 5 | 7 | 25 |

All windings are close wound, with a three-sixteenths gap between each winding. All formers are 1 1/4" diameter, and the wire is 32 gauge enamelled for the broadcast coils and 26 d.s.c. or d.c.c. for the short-waves.

modern set, you will want to build it in the modern style, and so a ready-drilled base will be obtained. With a view to cutting down on the num-

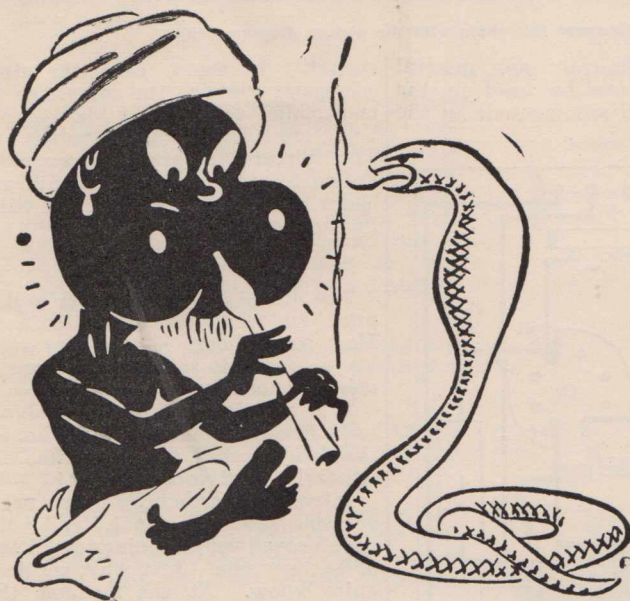
ber of base types made necessary by the ever-changing circuit designs, we always try to use a more or less standard type of base. In this case we found that the base which was originally issued for the "Falcon" makes an ideal one, having one small hole too many, but this is no great drawback. The only other point to be watched is that the hole used for the connections to the audio transformer is hardly big enough. So the transformer, if of the R.C.S. type as used by us, will need to be mounted up from the base by the thickness of a nut in order to avoid the terminal lugs short-circuiting to the metal.

Otherwise everything drops into position, just like assembling a meccano model.

Wiring

The wiring job is a most simple one, and there are only half-a-dozen

A TERRIBLE PREDICAMENT



Your nearest Brimar Distributor has ample stocks, and can assure you prompt delivery.

What's he to do? His reed pipe's blocked and that snake looks nasty. That's the way many set-builders feel after having bought "bargain" valves and found them to be faulty, with no replacement guarantee.

There is one sure way to avoid such a costly predicament, and that is to use only BRIMAR VALVES as recommended by the Editor of "Radio World" for all receivers described in its pages. You will avoid valve trouble, and gain prestige as a radio man who really knows his valves.

BRIMAR VALVES are available in every possible type, including a complete range of the new 1.4-volt series.

BRIMAR

BRITISH MADE VALVES

BRIMAR DISTRIBUTORS

New South Wales: Standard Telephones & Cables Pty. Ltd., 252-274 Botany Road, Alexandria.

Standard Telephones & Cables Pty. Ltd., 71 Magellan Street, Lismore.

S.T.C. Radio Sales and Service, 389 Hunter Street, Newcastle.

Queensland: Trackson Bros. Pty. Ltd., 157-9 Elizabeth St., Brisbane.

Victoria: Noyes Bros. (Melbourne) Ltd., 597-603 Lonsdale St., Melbourne.

Standard Telephones & Cables Pty. Ltd., Bourke Street, Melbourne.

Western Australia: M. J. Bateman Ltd., Milligan Street, Perth.

Tasmania: W. & G. Genders Pty. Ltd., 69 Liverpool Street, Hobart, and 53 Cameron Street, Launceston.

South Australia: Radio Wholesalers Ltd., 31 Rundle Street, Adelaide.

New Zealand: Standard Telephones & Cables Pty. Ltd., Trojan House, Manners Street, Wellington.

1940 REINARTZ BATTERY THREE . . .

Sensational New INVINCIBLE All-Wave All-World Kit

London, Paris, Berlin, Rome, Moscow . . . key-capitals in the greatest war the world has ever known, are at your finger-tips with the 1940 Reinartz Battery Three. This sensational new design gives you an up-to-the-minute version of the most famous circuit known to radio . . . a time-tested favourite with shortwave fans the world over. OUR SPECIAL INVINCIBLE KIT WILL BE SUPPLIED ASSEMBLED AND READY TO WIRE, IF PREFERRED, AT NO EXTRA COST.

Norm. Cohen is "R.W." Kit Specialist

We are Sydney's recognised specialists for "Radio World" kit-sets. All components guaranteed identical with

those used by the Editor. A trial order will prove our prices, quality and service to be unbeatable.

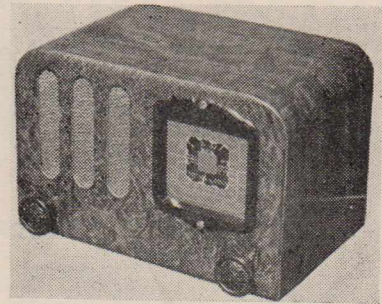
WE CAN SUPPLY ALL YOUR RADIO NEEDS . . . QUOTATIONS SENT FREE BY RETURN MAIL

Invincible Radio & Electrical Company

SHOWROOMS: 102 CLARENCE ST., SYDNEY

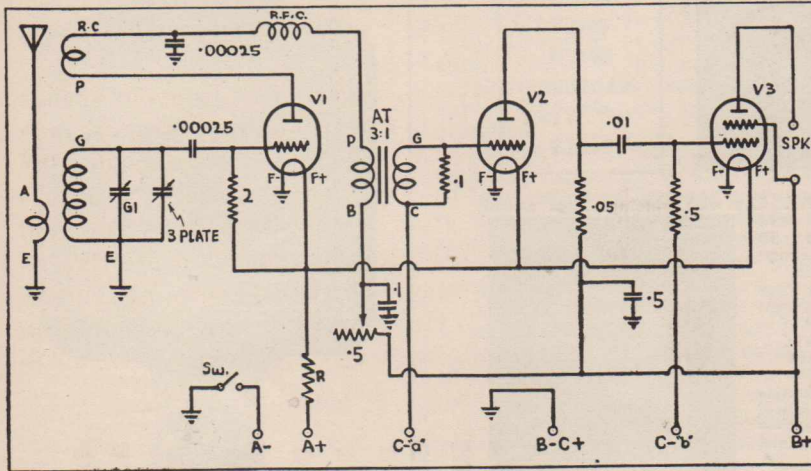
NORM. COHEN, Manager.

PHONE: BW 4115



ITSY - BITSY THREE

Designed to fit in the new Arcadian midget steel cabinet with photo-electric veneer finish, the "Itsy Bitsy Three" packs an amazing punch for so small a set. A 6J8G in a brand-new hook-up drives a 6V6G, with a 5Y3G rectifier. Write now for our quotation on the "Itsy Bitsy" . . . the lowest-priced midget yet.



components to be wired in. Care should be taken, however, to make sure that all earth connections are effective, as otherwise the set may tend to squeal rather than operate smoothly, especially on short-waves. You can't beat a length of tinned copper wire running around to connect up all earthing lugs and take them directly to the earth terminal. You will notice by the photographs how this was done in the original set.

You will find that there are many vacant terminals on the valve sockets.

This is quite in order, as the valves used the 8-pin bases which are practically standard for all valves these days, but only three or four of the pins are used.

The caps of the 1H5GT valves are the grids, and leads have to run through the base to the top side to make connection to these grids. This is not any disadvantage, in fact it allows higher gain with stability.

Operation

In operation the set will be found to require no adjustment of any kind,

REINARTZ THREE FOR 1940

Parts List

- 1—Suitable base, 10 x 7 x 2½ (Arcadian).
 - 1—Single-gang condenser (Stromberg-Carlson).
 - 1—Dial to suit (R.C.S.).
 - 1—Three-plate midget condenser (R.C.S., Radiokes, Raymart).
 - 1—Audio transformer, 3 or 3½ to 1 (R.C.S., Radiokes).
 - 1—Set of coils (R.C.S. type K48, Radiokes).
 - 1—Radio frequency choke (R.C.S., Radiokes).
 - 1—.5 megohm volume control with switch (I.R.C.).
 - 2—.00025 mfd. mica condensers (T.C.C.).
 - 1—.01 mfd. mica condenser (T.C.C.).
 - 1—.1 mfd. tubular condenser (T.C.C.).
 - 1—.5 mfd. tubular condenser (T.C.C.).
 - 1—50,000 ohm 1-watt resistor (I.R.C.).
 - 1—100,000 ohm 1-watt resistor (I.R.C.).
 - 1—500,000 ohm 1-watt resistor (I.R.C.).
 - 1—2 megohm resistor (I.R.C.).
 - 1—Filament resistor, 3.5 ohms.
 - 6—Valve sockets (1 5-pin for coil, 1 6-pin for battery plug, 1 4-pin for speaker, 3 octal for valves).
 - 1—Suitable speaker, permagnetic type (Amplion, Rola).
- VALVES:
- 2—Type 1H5GT, 1—1Q5GT (Brimar, Mul-lard, Philips, Radiotron).
- BATTERIES:
- 2—45-volt "B" batteries; 1 4½-volt "C" battery; 1 2-volt accumulator (Vesta).

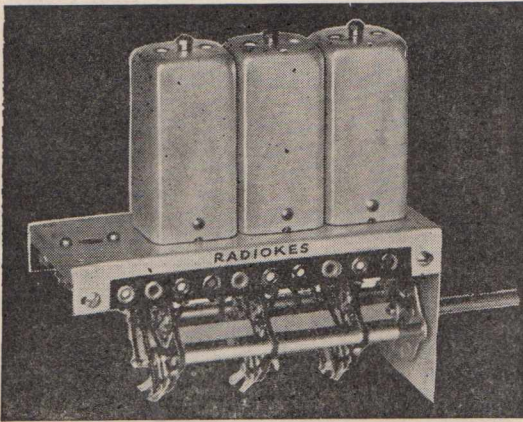
which is quite a change from a big 5-band set which has sixteen trimmer

(Continued on page 38)

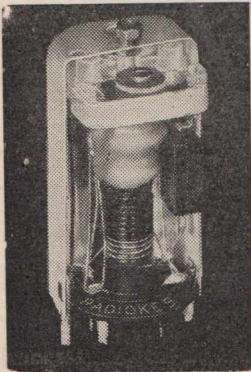
Everybody in Radio always thinks of Radiokes first!

"The Name to Know in Radio"

Radiokes engineers have developed the newly-released Dual-wave Unit with R.F. stage—attaining new peaks of technical perfection! Broadcast 1500 to 550 k.c., shortwave 13.7 to 40 metres, with Aerial, R.F. or Oscillator Coils. For A.C. or Battery operation. Type DWU-3, illustrated below £3 7 6



NEW RADIOKES DUAL-WAVE COIL (at left). Litz wire windings, lugs already

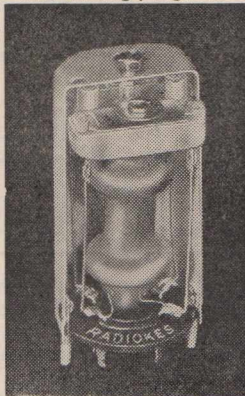


tinned, short - wave range 16 to 50 metres. B.C. range 1500 to 550 k.c.
Type List Price
D.W.C. 14/-

NEW RADIOKES INTERMEDIATE TRANSFORMER (at right)

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

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

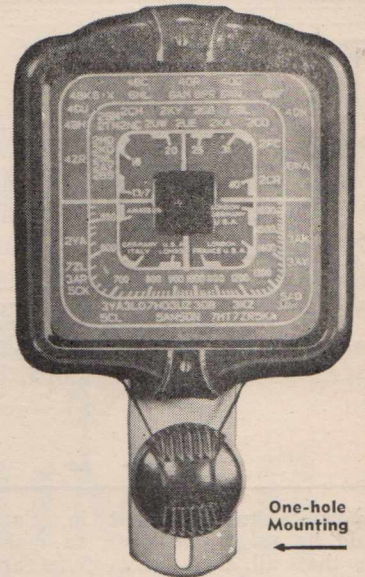


RADIOKES "H" TYPE COILS WILL TRACK ONLY WITH RADIOKES "H" TYPE DIALS

REINARTZ THREE FOR 1940
You'll be delighted with the results you'll get from this set if you use Radiokes with the results you'll get from this Precision wound, and with completely accurate band coverage, these coils ensure first-class results. Specify—
RADIOKES Coil Kit, Type CK1016 19 6
RADIOKES Single Gang Tuning Condenser, Type CV50 9 0
RADIOKES D.W. Dial, Type DWD-8 (see below) 13 6
RADIOKES R.F. Choke, Type RF86 1 6
RADIOKES Audio Transformer, Type TB4 1 0

ITSY BITSY MANTEL MODEL
The use of RADIOKES Trolitul Coils will guarantee the highest standard of results. Specify—
RADIOKES Coil Kit, Type CK1016 13 0
RADIOKES D.W. Dial, Type DWD-7 9 0
RADIOKES Trimmers, Type MTT 1 0

First with the NEW RELEASE!



One-hole Mounting

This new RADIOKES Portable Kit Dial is supplied ready assembled.

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

RADIOKES Dial, Type DWD-8 13/6

If unable to obtain supplies, write direct to the Sole Agents—

RADIO SUPPLIERS PTY. LTD., Sole Agents for Radiokes Products, Wingello House, Angel Place, Sydney. Phone: B 4586.

Please add my name to your mailing list for illustrated folders showing latest Radiokes releases.

NAME

ADDRESS

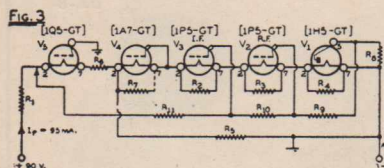
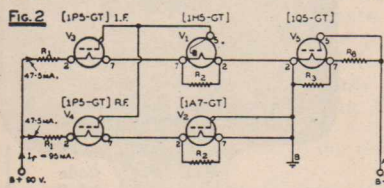
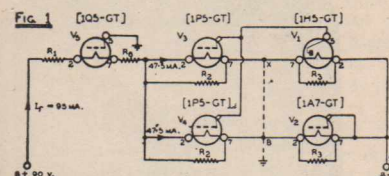
Problems With 1.4 Valves

There are many pitfalls into which the unwary set designer may fall when he uses 1.4 valves from an a.c. supply, as revealed in this article from the latest issue of "Radiotronics."

When 1.4-volt filaments are connected in series or series-parallel for operation from high voltage sources, a number of precautions are necessary to ensure optimum operation of the valves. The operation of 1.4-volt filament valves from A.C. mains, 2-volt and 6-volt batteries has previously been referred to in Radiotronics No. 101, on page 63 and No. 104, on pages 29 and 30.

Filament Voltage and Current for Mains Operation

When 1.4-volt valves are operated



- R1—Filament dropping resistance.
- R2, R3, R4, R7—"Cathode current" shunting resistances.
- R5—Filament current shunting resistance.
- R6—Bias resistance.
- R8—Diode load.
- R9—A.V.C. filter resistance.
- R10, R11—"A.V.C. grid bias" resistance.
- R10 = (R8 + R9). R10 is of the order of 2 megohms per 1.3 volts.

from the mains the filament voltage should be reduced to 1.3 volts for each filament, so that a reasonable tolerance is available for line voltage fluctuation in either the positive or negative direction. No allowance, of course, is to be made for a gradually falling voltage, as is the case with a battery.

Most 1.4-volt valves have filaments which draw 50 mA. at 1.4 volts, but this current is decreased to 47.5 mA. at 1.3 volts. Those types drawing a filament current of 100 mA. at 1.4 volts will draw only 95 mA. at 1.3 volts. A curve of filament current plotted against filament voltage is included for reference (Fig. 4).

The filament circuits may be adjusted by an accurate measurement of the voltage at the filament pins of the valve or the current through the filament. Either method is satisfactory, provided that errors are not introduced by the measuring instruments, but if a voltage measurement is made it is desirable to check several valves of the same type in order that a typical valve may be obtained.

Circuit Design

In the design of series and series-parallel filament circuits the following points should be considered:—

- (a) The failure or removal of one valve should not result in the burn-out of the filament of a second valve.
- (b) Charging or leakage currents from condensers in the receiver or B supply should not pass through the valve filaments in any operating condition.
- (c) The more negative valve filaments in the circuit should be protected from excessive filament current due to the passage of the "cathode current" (plate and screen current) of valves having filaments in a more positive position.
- (d) The valves should be operated within their maximum ratings.
- (e) The A.V.C. should not be less effective with series-filament operation than with parallel-filament operation.
- (f) Adequate filtering is required to reduce the hum in the receiver.
- (g) The switching of the filament circuits from parallel to series or series-parallel should be simple.

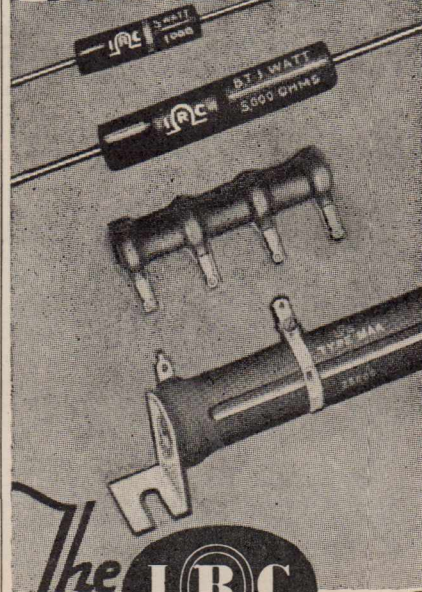
Circuit Diagrams

Several typical circuit diagrams are shown in Figs. 1, 2 and 3. These correspond to a typical 5-valve receiver, Radiotron circuit RA51. These do not by any means include all possible filament arrangements and are merely representative of the most popular circuits.

Fig. 1 is a series-parallel system in which one valve is common to two "chains." This is similar to the ar-

(Continued on page 39)

PROTECTION



Secret of Trouble-Free RESISTORS

It is a matter of record that nine out of ten resistor breakdowns are caused solely by failure of the protective covering, either in its job of keeping moisture from the element, or in dissipating heat properly.

It is also a matter of record that the outstanding popularity of IRC Resistors results in no small part from their perfection in this respect. Hand in hand with engineering improvements inside of the resistors themselves, IRC has pioneered and perfected BOTH Moulded Phenolic insulation for IRC BT Metallised Resistors and other types, as well as the famous Coating for heavy duty power wire wounds.

By whatever test you choose to make — even boiling hot and freezing cold salt water immersion — you'll find these IRC protective coatings supreme.

"They Stay Put"

Sole Agents for Australia:

Wm. J. McLellan & Co.
55 YORK STREET - - SYDNEY

R.C.S.

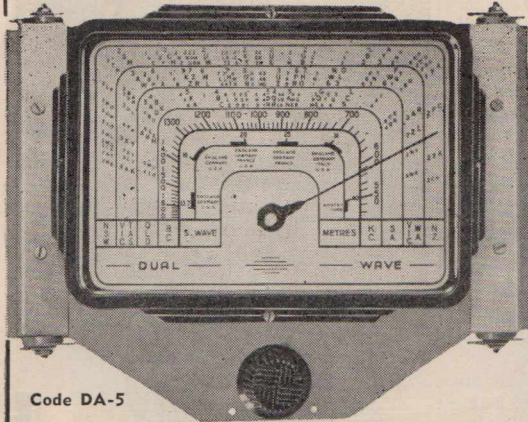
PRESENT NEW DIALS!

R.C.S. Dials and R.C.S. Trolitul Coils Track Perfectly!

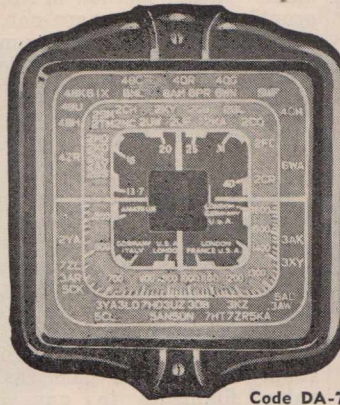
JUST RELEASED — NEW R.C.S. DIALS!

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

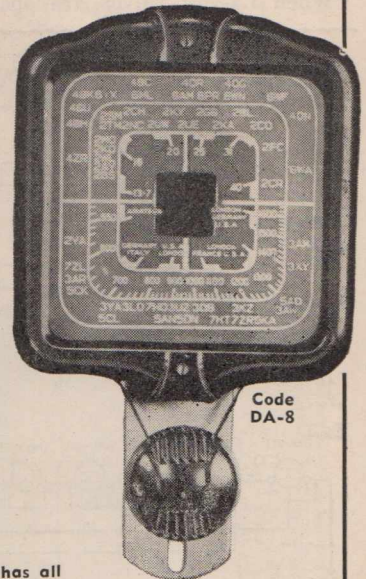
DA-1 Standard D.W. Dial Price 22/6
 DA-2 Communications Dial Price 22/6
 DA-5 13.7 to 40 metres D.W. Dial, "H" Condenser Price 22/6



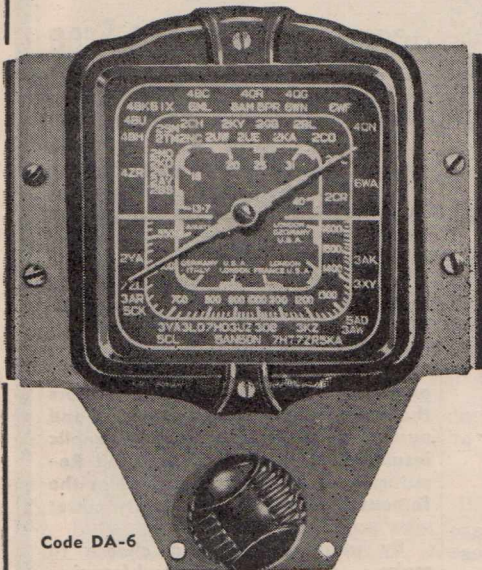
Code DA-5



Code DA-7



Code DA-8



Code DA-6

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

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

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

THE REINARTZ THREE FOR 1940

This set utilises the well-known and widely used R.C.S. Plug-in Type Coils. They are precision wound and guaranteed accurate to band coverage. Specify Code K48 and other parts listed and obtain exactly the same coils as used by the Technical Editor in designing this set.

| | |
|---|-------|
| Coil Kit, Code K48 | 19 6 |
| Single Gang Tuning Condenser, Code CV50 | 9 0 |
| R.C.S. Dial, Code DA-8 | 13 6 |
| R.F. Choke, Code RF86 | 1 0 |
| Audio Transformer, Code TB4 | 1 1 0 |

THE ITSY BITSY MANTEL MODEL

Requires the famous R.C.S. Trolitul Coils to obtain the power and selectivity so necessary in a small set. The sensitivity and selectivity are surprising — Trolitul Coils do it! Specify the following R.C.S. products for your Itsy Bitsy.

| | |
|----------------------------------|------|
| Coil Kit, Code K159 | 13 0 |
| R.C.S. Dial, Code DA-7 | 9 0 |
| R.C.S. Trimmers, Code CG15 | 1 0 |

Obtainable from your local radio dealer

R.C.S. RADIO PTY. LTD.

50 GLEBE STREET, GLEBE
 Phone MW 2405

ITSY-BITSY

MANTEL MODEL

Here is a baby mantel model circuit which is sure to be popular. It is easy to build, costs only a few pounds, and gives a sterling performance.

ONE of the most popular circuits which has appeared in "Radio World" over the past year or so was the little "Companionette" which was detailed originally in our March, 1937, issue, revised in the May, 1939 issue, and again re-designed and described in the February, 1940, issue.

Basically the design employs a twin-purpose valve as an r.f. amplifier and detector valve, with a sensitive pentode in the output. This makes an arrangement capable of giving highly satisfactory performance from an a.c. operated set using only two valves and a rectifier, three in all.

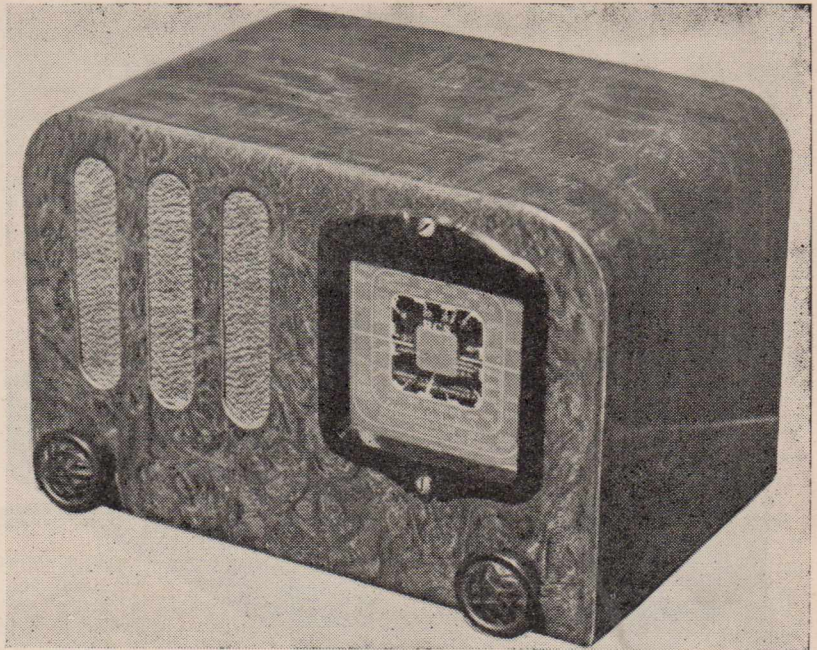
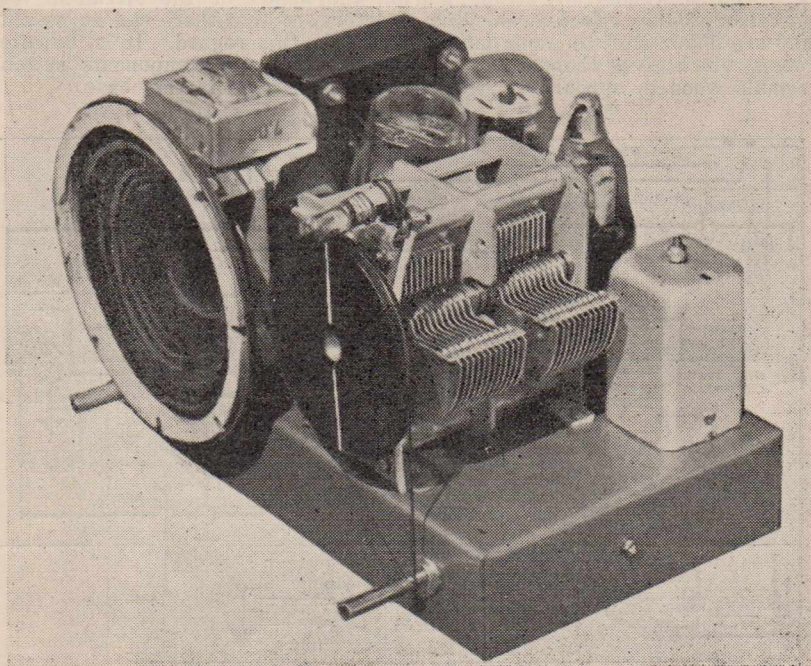
Not being a superheterodyne circuit, there is not that extreme gain and selectivity which is possible with the bigger sets, but at least there is sufficient gain and selectivity to give useful reception in any normal location. In nine out of ten suburbs of Sydney it is capable of playing the

eight local stations with ample volume and good tone.

A kit of parts, on the other hand, does not cost anything like the cost of a kit for a superhet, so that the value offered is an exceptional proposition in economics.

Another attractive feature of sets of this type is their simplicity of construction and adjustment. Even a

A front view of the chassis showing the dial assembly.



The "Arcadian" cabinet looks like finely-grained wood, but is actually made of steel.

ITSY-BITSY MANTEL MODEL

Parts List

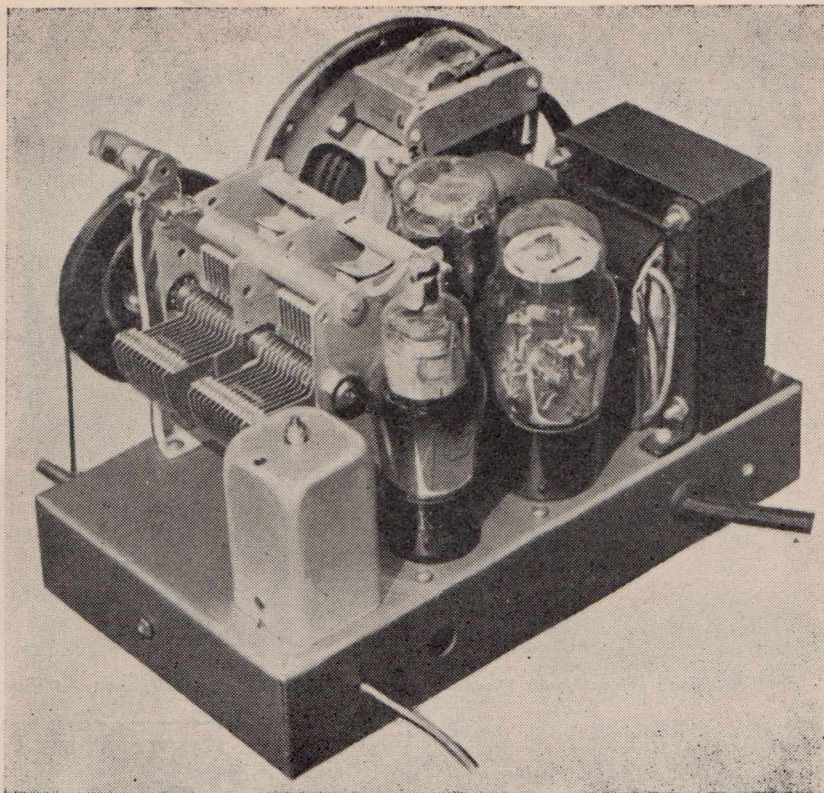
- 1—Base size 9" x 5½" x 1½" (Arcadian).
- 1—Steel cabinet to suit (Arcadian).
- 1—Power transformer, 40 m.a. type.
- 2—Coils (R.C.S., Radiokes).
- 1—2-gang tuning condenser (Stromberg-Carlson).
- 1—Dial to suit (R.C.S., Radiokes).
- 3—Adjustable trimmer condensers (R.C.S., Radiokes).
- T—500,000 ohm volume control (I.R.C.).
- 1—300 ohm resistor, 3-watt (I.R.C.).
- 1—500 ohm resistor, 1-watt (I.R.C.).
- 2—50,000 ohm resistors, 1-watt (I.R.C.).
- 1—5 megohm resistor, 1-watt (I.R.C.).
- 2—8 mfd. electrolytic tubular condensers, 500v. (T.C.C.).
- 2—.1 mfd. tubular condensers, 400v. (T.C.C.).
- 1—.01 mfd. mica condenser (T.C.C.).
- 2—.0001 mfd. mica condenser (T.C.C.).
- 3—Valve sockets (2—octal, 1—UX).
- VALVES:
- 1—6J8G, 1—6V6G, 1—80 (Mullard, Brimar, Philips, Radiotron).
- SPEAKER:
- 1—1,500 ohm field, to suit 6V6G.
- Hardware and Sundries: Power flex, clips, terminals, screws, solder lugs, knobs, dial light, etc.

novice should be able to assemble a complete receiver and get it operating properly in a matter of a few hours, in one evening, if things are kept on the move.

Uses Local Valves

The past descriptions of the various versions of this set having been so successful it might be asked why the need for dealing with it again. The answer is simple. The latest version has been adapted to use local valves.

Previous versions called for the use of imported valves, such as the 6F7 and the 6AG6-G.



Rear view of the chassis.

Now, whilst these valves are still available in limited quantities, the future position is rather obscure. The present trend in import restrictions seems to indicate that, although valves of odd types may be imported for replacement purposes, it is highly desirable that all new sets should use the local valves.

Local valves have proved completely satisfactory in every way, but it has only been sound policy for the local factory to produce valves of popular types, valves used in big quantities in the production of commercial receivers. As a result the 6F7 has been overlooked.

Fortunately, however, an easy solution to this problem has been found, the 6J8G superhet converter valve being an ideal substitute for the 6F7. The 6J8G gives even better performance than the original type of valve used, the triode portion having a higher amplification factor.

The 6J8G is a local valve, and an unlimited supply of valves of this type is assured for all time.

For the output valve the successful 6V6G has been used, and again, in this case, the substitution takes nothing from the original performance.

More Compact

Other modifications in the design include a more compact layout of the chassis, making it into such a nifty

little job that we couldn't resist the temptation to give it the name you see at the top of this page.

The small chassis fits into one of the new steel cabinets, made by the Arcadian base people. These cabinets are, of course, wonderfully strong, and they also provide effective shielding. They are finished off by some lacquer process which gives them a finish to resemble wood in appearance, with a

most attractive "grain."

Volume Control

Another valuable modification is in regard to the volume control. Mr. Ted Soames, for many years chief engineer at R.C.S., is now operating a radio laboratory of his own, and the development work on this receiver was carried out by him.

By reversing the normal connection to the volume control and making a careful selection of component values, he has provided a volume control which gives a certain amount of tone compensation. In effect this means that the full brilliance of the reproduction is maintained at low volume. This is a highly desirable feature in any receiver and especially so with a baby mantel model.

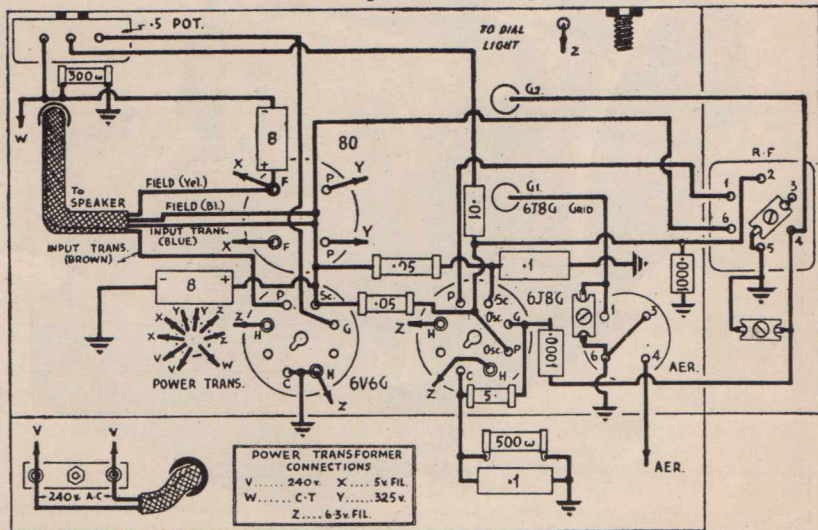
Construction

The assembly of a set of this kind, as we said before, is child's play. This is especially so if the kit of parts has been carefully selected by a dealer with a knowledge of this branch of the radio trade. Many little "snags" can be encountered if the dial does not suit the gang, if the gang doesn't suit the base, if the power transformer is a flush mounting type, while the base is cut for a vertical one, and so on.

Any of our advertisers, on account of their vast experience with this kind of business, are able to watch these points, and we strongly recommend readers to place their orders for parts with our advertisers and not with any ordinary radio dealer who is primarily interested in selling complete receivers.

The base used by us is a standard one, of which the original template is in the hands of the Arcadian base factory, so that there can be no difficulty in this regard. It is, however, essential to use components suitable for the drilling in this base.

Picture diagram of the wiring.



The Gang

A two-gang condenser with trimmers is required for the main tuning, but at the moment there appears to be a shortage of gangs of this type. This is not a great problem, as small trimmer condensers are readily available as separate units. It will be noticed that we have used trimmers of this kind and mounted them directly across the terminals on the coils.

Reaction Control

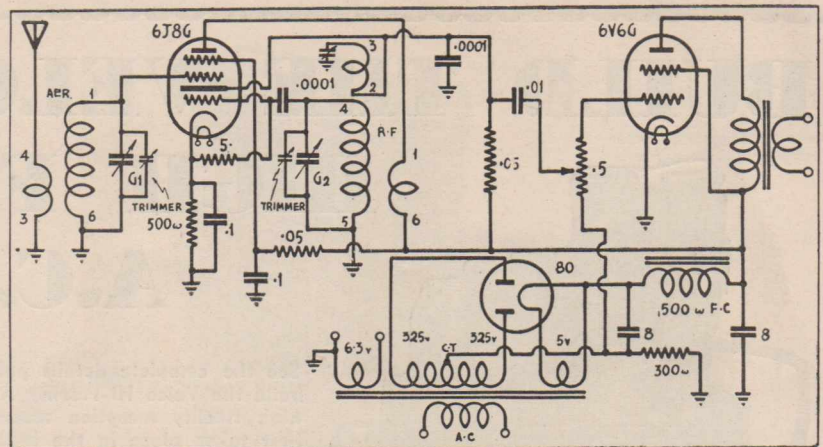
A similar trimmer is used as a fixed reaction condenser. As is readily accepted by all technicians, reaction makes a wonderful difference to the gain and selectivity of any receiver, but a reaction control needs to be intelligently used, as otherwise the set may cause interference with other receivers in the neighbourhood.

In this set we use reaction, but it is not controlled by a knob. It is adjusted with a screwdriver after the set is in operation, brought up to a position a safe distance below oscillation point and then left in this position.

Once adjusted, the reaction control should need no further attention until the set has been in service for many months and the valves are starting to lose their efficiency.

A further adjustment should then be made to bring the performance of the set right back to normal.

The actual reaction condenser is another small trimmer of the same type as used across the coils. The actual type used by us was the R.C.S. type CG15, which has two plates and is mounted on a Trolitul base. A similar type is also available in Radikokes brand.



Circuit schematic diagram.

The Speaker

One of the baby 5" speakers is used and the field coil should have a resistance rating of 1,500 ohms in order to get a comfortable energising wattage of three or four watts.

Too much energising is undesirable, as the amount of heat which can be dissipated in a small mantel model is somewhat limited.

Voltage drop across the field will be about 60 volts, and with the power transformer delivering about 325 volts, as is customary with these small jobs, the output valve is biased back enough to keep the current drain within the limits of the transformer. It still gives ample power output to fully load the loud-speaker.

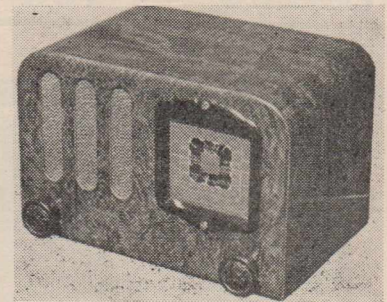
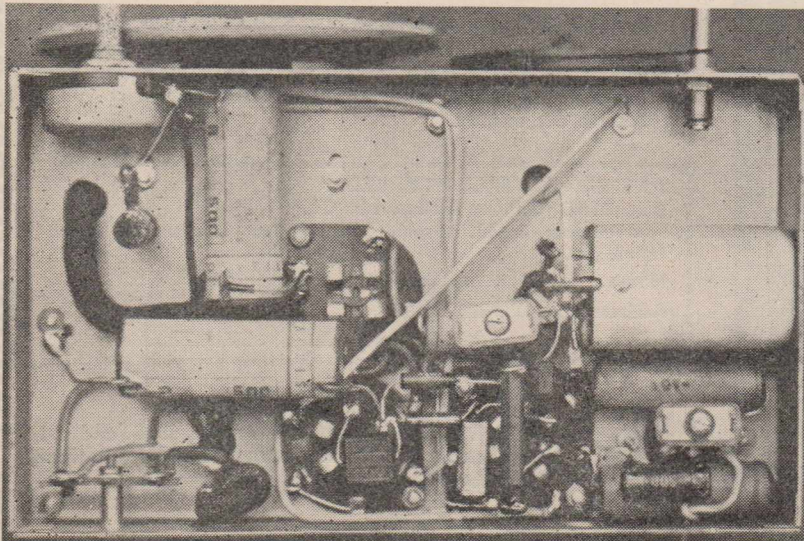
Mounting the Coils

The aerial coil is mounted above the base, but the r.f. coil is mounted below. This arrangement gives the best pos-

sible isolation of these two units and allows the wiring to be short, thereby avoiding uncontrolled feed-back which might otherwise make the set unstable before the full gain is achieved.

The actual mounting of the r.f. coil is carried out by removing the capped nut on the top of the coil unit and using this top screw for the mounting by fitting it in the hole provided in the side of the base and then re-fitting the nut from the outside.

Compare this photo with the diagram opposite.



For Your

ITSY BITSY THREE

Specify an ARCADIAN chassis and photo-electric cabinet as used for the original model.

Correctly punched and drilled chassis are also available for the "1940 Reinartz Three" described elsewhere in this issue.

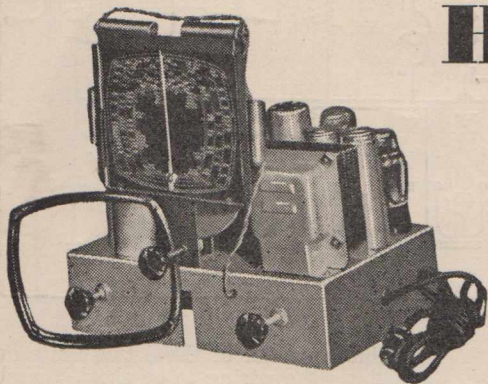
Our Arcadian Specials Department has all the original templates of all "Radio World" and contemporary publications' radio metal work on file. All-steel cabinets are available for all mantel sets in a variety of finishes.

ASK YOUR DEALER ABOUT ARCADIAN PRODUCTS

Arcadian Radio Pty. Ltd.

There's an Arcadian Chassis for Every Radio

BUILD THE VELCO HIGH FIDELITY A.C. Five



See the complete details published elsewhere in this issue — then build the Velco Hi-Fidelity A.C.5 . . . see for yourself what really high fidelity reception means . . . experience reception of ALL that takes place in the broadcast, real true-to-life reception that makes listening in a pleasure and gives music lovers genuine enjoyment and satisfaction.

COMPLETE KIT - SET ONLY £7/19/6

The Velco Kitset embodies everything necessary to build the complete chassis and is priced at only £7/19/6 — or if desired may be purchased complete with Magnavox Speaker, and 5Y3G, 6A3, 6J7G, 6G8G, and 6K8G Valves for a special total price of only £11/19/6 — a

small price to pay for the complete parts to build a modern high fidelity radio at pounds below the list price of an equivalent brand line receiver. Order your kit today — Vealls pay freight to your nearest railway station — the advertised price is your total cost.

VEALL'S — FOR EVERYTHING RADIO AND ELECTRICAL



FREE . . .

Have you received your copy yet?

An essential to every radio fan. Hundreds of illustrations and details covering a complete range of Radio and Electrical goods. Write for your copy today — merely enclose 2d. stamp to defray cost of postage. Mention Australasian Radio World if you do not wish to cut coupon.

ARTHUR J. VEALL PTY. LTD.,
Box 2135, G.P.O., Melbourne, C1.

I enclose a 2d. stamp. Please post a copy of your catalogue.

Name

Address

VEALL'S

Box 2135 G.P.O. Melbourne C1.
490 Elizabeth Street, Melbourne, 168 and 243
Swanston Street, Melbourne, and at Prahran,
Camberwell and Moonee Ponds. F 3145 (6 lines).

VELCO

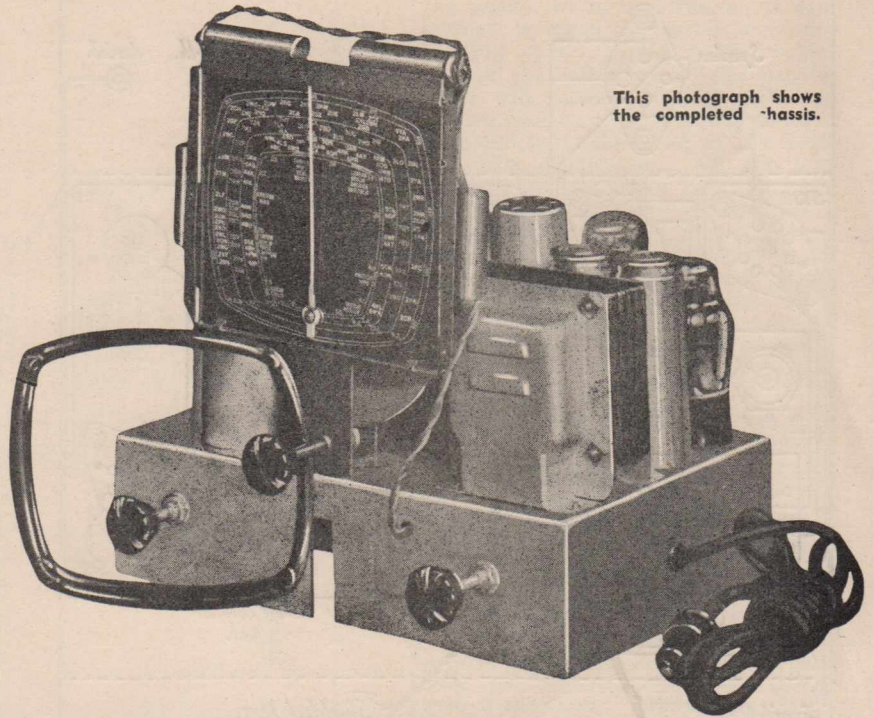
HIGH-FIDELITY

A. C. 5

Step by step, every operation in the construction of this set is detailed for the guidance of novice or expert.

BEFORE attempting to construct the receiver, i.e., if you are an amateur who has not previously built a radio receiver, read very carefully through all of these instructions, which you will find to cover every phase of the construction.

It does not tell you how to use a soldering iron, and you should, at the outset, be proficient in soldering, as one of the most important things when building a kitset is to see that the joints are good — and there are a lot of “joints” in any radio set. Another important thing is to keep all wires as short as possible, and although (in our diagrams) we show them all making right angles, it is left to you to keep the wires as short



This photograph shows the completed chassis.

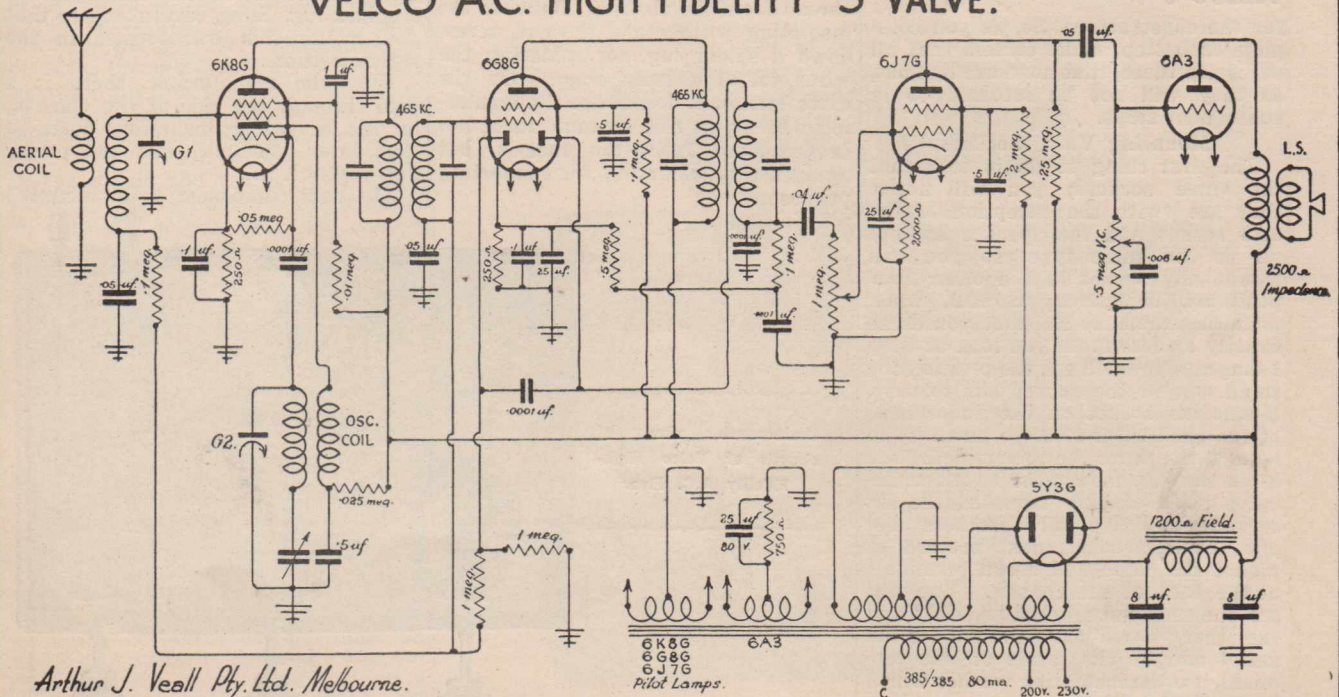
as possible, with a certain amount of attention to neatness.

“Easy Step” Wiring

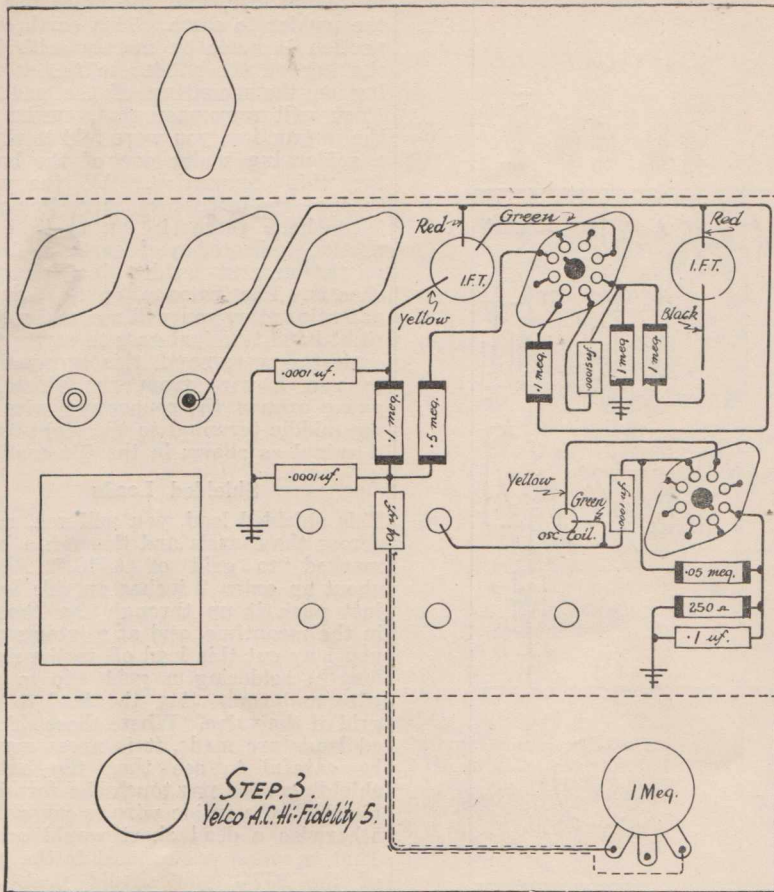
The point to point wiring is shown in three “Easy Step” diagrams and

you must remember that, in this three-step plan, when you complete one step our drawings automatically leave out all of that wiring from the next one, to leave it sufficiently clear

VELCO A.C. HIGH FIDELITY 5 VALVE.



Arthur J. Veall Pty. Ltd. Melbourne.



STEP 3.
Velco A.C. Hi-Fidelity 5.

VELCO 5 (continued)

shielding touching the metal contact of the valve. The same should be done at the other end of the shielded lead, the shielding should be pushed back so that it does not touch the middle terminal, and whilst we show the wire as running to the left of the potentiometer, it could easily be bent back the other way and run straight down to the chassis, across the right-hand terminal.

Leads to Pilot Lamps

You will see two leads marked "to pilot lamps." These leads run from the terminal marked 3a. and 6.3-v. on the power transformer, and need to be made a good eighteen inches long, and merely pushed through a hole near the front of the chassis, quite near to the potentiometer. The lead then runs up and, later, when you mount the dial, will be connected to the pilot light sockets to illuminate the dial.

You will see another lead marked "from aerial coil to G1." This goes through a hole in the chassis, and connects to the stator plate of the front section of the gang condenser. This stator plate lug connection is on

the left-hand side of the gang, looking from the top of the chassis from the front. The lug is near the base of the condenser, just above the small white bush which acts as an insulator.

Arrow Leads

There are also two arrow leads, marked "one from the 465 I.F.," green to the cap of the 6K8G. This lead also needs a screen grid clip attached to it, and before soldering the wire, it should be measured with the valve in position and made the right length, so that it will clip on to the top of the valve through a hole in the side of the valve shield cap. On the 6K8G, you will see an arrow marked "to G1."

You will remember that, previously in the wiring, you were told to connect the lug on to the aerial coil to G1, i.e., the stator plates first section of the gang condenser. Straighten up above that connection, near the top of the gang and just under the trimmer, you will see a similar connection. Attach the wire to this lug and just measure off sufficient length to reach the cap of the 6K8G. A screen grid clip is attached.

All wires should now be carefully checked to make sure that you have actually carried out all the connec-

tions and leads shown on Step 1. However, you will not run the wires exactly as shown in the drawing, but will eliminate quite a lot of joints; you will realise that an artist, in drawing such a diagram as this, has to show the wires as clearly as possible. For instance, starting at the 6K8G, you will see that a wire is run along and an off-shoot of this connects to the 6G8G, and then runs along and an off-shot connects to the 6J7G. Actually, when doing this wiring, you will not make joints like this, but will run the wire direct from the lug on the 6K8G to the lug shown on the 6G8G, and from that lug, you will solder a wire to the lug of the 6J7G. The best way to do this is to measure your wire out the right length, cut it off and solder one end to the lug on the 6K8G socket, the other end to the lug shown on the 6J7G, then from the 6J7G join another piece the right length, and so on. Don't just bare a section of a continuous wire and push back the insulation, as this makes a very ugly-looking job and would spoil the whole appearance of your finished receiver.

Step 2

Starting at the back of the chassis, you will see the speaker socket; there is one component marked 2-meg. and the other marked .25-meg., both starting off at the one point and the .25-meg. seems to be joined about half an inch from the socket, to the 2-meg.

On these components are long leads, and you would carry out point to point connections with them starting by connecting one end of the 2-meg. to the speaker socket and the other to the valve socket; then you would connect the .25 meg. to the speaker socket, and the other end of the .25 meg. to the correct terminal lug of the valve socket. From the terminal of the valve socket, you would then connect one side of the .05 mf., i.e., the .05 condenser, the other end of this .05 condenser being connected to the 4-pin valve socket. To this four-pin socket, connect one end of the shielded lead, which runs back to the .5 potentiometer, and so on.

Earthing Points

Right in the middle of the chassis, you will see .1 uf., .5 uf., another .5 uf. and a 25 uf. 40-pv., and a 2,000 ohm resistor, all connected to a common earthing point. It is quite unnecessary to connect all these earth points together — for instance, on the valve socket, on the right-hand side of the chassis, you will see that a .1 uf. runs to this earthing point; what you actually do is to connect one side of the .1 condenser to the valve socket and the other end of it is earthed to the most convenient earthing point, wherever there is a solder lug.

The same applies to one of the 5

uf's; you will see that one end connects to a valve socket, at the back of the chassis, and the other end connects to earth. You can connect it to wherever convenient, then the 2,000 ohm resistor and the 25 uf. 40 p.v.

They connect to two terminals on one side of the socket, that is, you run a wire from one terminal of the socket to the other terminal of the same socket, and then to either lug of the socket connect the 2,000 ohm resistance.

The other end of this resistance goes to earth. The same applies to the 25 uf. condenser.

Step 3

In the middle of the chassis you will see where a .5 meg., .1 meg., .0001 uf. and a .01 uf., all join together. In the earlier part of this instruction, you were told to mount a bolt with three insulated lugs, right in the middle of the chassis, and as these items have no central supporting point, such as a valve socket, you start by connecting all of these to the three lugs on this central pillar which acts as a support. One side of all these components solders to this pillar, and you then proceed to run the wires on the other end of these components back to the positions shown in the diagram. The .01 uf. is connected to the shielded lead (see the shielding gauze does not touch and cause a short circuit), which runs back to the 1-meg. potentiometer. You will remember, you were told to connect another wire on this 1-meg. potentiometer, and these two shielded leads can be run parallel. You will see a dotted line showing where the shielding is connected to the right-hand terminal of the 1-meg. potentiometer.

Connections of Resistor

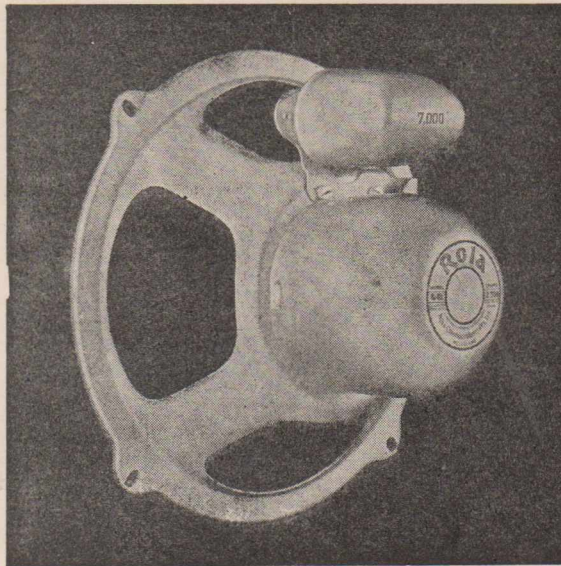
In the back right-hand corner, there is a black wire coming out of the I.F. transformer, which connects to a 1-meg. resistor. The other end of this 1-meg. resistor connects to the valve socket. The easiest way to do this and keep it quite rigid is by connecting one end of the resistor to the valve socket, then standing the resistor vertically, cut the wire of the other end off fairly short and then run the black wire over to it; by doing this, there is no possibility of the loose end of the black wire touching any other component.

The same care will have to be taken with the red wires from the I.F. transformer. You will notice that the wire marked "red" on each I.F. transformer is connected to a wire running right along to the electrolytic condensers, and that the same wire is connected through a .1-meg. resistor to the valve socket. The way to start this wiring is to connect a .1-meg. resistor to the valve socket, make a good rigid joint,

Expressly designed for Console Receivers . . .

ROLA K10

ELECTRO-DYNAMIC REPRODUCER



Covering an unusually wide range of frequencies and being singularly free from frequency discrimination, Rola K10 is ideal for console receivers.

Featuring the newly-introduced Kappa cones, Permafex spiders and improved magnetic circuit, K10 has attained a high peak of mechanical and electrical perfection. This speaker is assembled by a rivetting process, ensuring that it will stand up continuously under hard service conditions. Permacentric construction maintains the voice coil in perfect alignment and simultaneously provides the most effective dustproofing system found in loud speakers.

Matching the smart general appearance of the speaker is the Isocore transformer, which is fitted as standard equipment. Isocore is the only transformer that is absolute proof against electrolysis and which is guaranteed to stand up under all climatic conditions.

To attain its characteristically high degree of efficiency, K10 has a large electro-magnet requiring approximately 9 to 10 watts for full field excitation. Where the circuit is such that this amount of power is not available for excitation, Rola F10 can be used, thus enabling designers to combine the improved response of the 10" speaker with the economy of an 8" speaker.

It will be a pleasure to supply further information on the use of either one or both of these two speakers.

Retail Price of K10 47/-; F10 40/-

Rola Company (Aust.) Pty. Ltd.

The Boulevard, RICHMOND, E.1, Victoria.

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

N.Z. representative: Swan Electric Company Ltd., High Street, Auckland, and Hope Gibbons Bldg., Dixon Street, Wellington.

THE VERY BEST RADIO RECEIVERS USE ROLA, THE WORLD'S FINEST SOUND REPRODUCER

Rola is strictly independent of all affiliations with radio set manufacturers or the personnel thereof.

Velco 5 (continued)

and stand the other end up vertically, then to this vertical position run the red wire from I.F.T. 1 and the red wire from I.F.T. 2. Run them direct, and they will act as a stay to keep this resistor in an upright position.

To this same point, run a wire from the electrolytic condenser, which means that this resistor will stand up more or less like a wireless pole, with three guys going right to the top of it; they all join together and are kept in a rigid position without any possibility of touching any other part. The .00015 uf. condenser is very easy to connect, one end being connected to one lug of the 6GHG socket and the other end to the other lug of the same socket as shown in the diagram and to which you have already connected one of the 1-meg. resistors. One end of one of the other 1-meg. resistors is connected to the valve socket, and the other end should be earthed to the most convenient earthing lug.

Rigid Mounting Essential

Coming back to the valve socket in the right-hand corner, this might appear complicated at the outset, but it is very easy to carry out this wiring. Start with the .0001 uf. condenser;

these condensers are small and have little rigid lugs on them, one lug being soldered to the valve socket and the condenser stood in a vertical position again. To this condenser (i.e., to the other lug) you connect the green wire from the oscillator coil, and then, from this same connection, you run a wire through the chassis to the lug on the fixed plate of the second section of the gang condenser, that is, the section of the gang near the back. You remember that the lug is the terminal just above the white insulating bush on the gang condenser.

Valve Socket Wiring

Going back once again to the valve socket, you will see a .05-meg. resistor; one end of this resistor is connected to the valve lug to which you have already connected the .0001-mfd. condenser, and the other end of this .05-meg. resistor is connected to a lug on the other side of the socket. To this same point, you connect one side of a 250 ohm resistance and also one side of a .1 uf. condenser; the other ends of both of these components are then connected to any convenient earthing point.

This now completes the difficult part of the wiring. The rest of the wiring in this diagram should then be carefully completed and, as you

proceed with construction, you should, after you have completed each section, carefully check to see that all wiring has been carried out. If you have done so, the only thing now remaining for you to do is to connect the power flex. To see where this should be done, refer back to Step No. 1, and on the power transformer you will see one terminal marked "C." The power flex is threaded through the hole in the side of the chassis, to which you have already fitted a bush. Now tie a knot in the flex on the inside, so that should anyone pull the flex, the strain will be on this knot and not on the terminal. Connect one wire of the power flex on to the terminal marked "C" and the other lead to the terminal marked 230, unless, of course, you are living in an area where the voltage is 200-volts or 250-volts; if you require either of these two voltages, instead of attaching this second wire to the terminal marked 230, attach it to the 200 or 250 terminal, according to your voltage.

Above-base Wiring

This should complete your under-chassis wiring, and you should now turn the set round the right way and complete the upper side of the set. You have already received instructions to connect the grid cap of the

NEW! Designed to Revolutionise IDEAS OF HIGH FIDELITY REPRODUCTION

AMPLION

DIPHONIC SPEAKERS

A new design . . . a new conception of reproduction . . . a new force in the speaker field. Make any comparison . . . test them . . . prove to yourself that the Amplion Diphonic System revolutionises sound reproduction. The superb reproduction of the Amplion Diphonic System is a result of the scientific Filter Type Dividing Networks, coupled to special speakers of unequalled response. Suitable for fine Radio, Phono Radio or small auditoriums with outputs up to 15 watts.

Type A Kit, with 12 inch Special De Luxe Electro, and 8P90 Cine Perm. output transformer and two special Diphonic Inductances. Price £10/10/-

Type AP Kit, as above, with 12P64 Perm. in place of Electro. Price £13/4/-

Amplion Diphonic Condensers for above —

33 mfd. 37/6 20 mfd. 21/9

Amplion Diphonic Speakers may be obtained completely wired in a handsome solid veneered cabinet of special design for £7/7/6 extra.

Crisp brilliance of higher tones, resounding depth of low notes, perfect balance and uniform response over a wider frequency range than hitherto possible (with absence of bass modulation). High range covered by 8P90 Cine Perm. Resonance-free "lows" to lower than 40 cycles in the special 12-inch speaker.

The Winner!

Mr. L. G. Hirst, outright winner of the "Radio World" Amplifier Championship, chose Amplion Diphonic Speakers because of their perfect balance between "highs" and "lows," and their even straight-line characteristics extending without any peaks into ranges hitherto un-reached in commercial units.

The official recognition of "Diphonic" leadership demonstrates Amplion's outstanding supremacy in high fidelity speakers.

AMPLION (A/sia) PTY. LTD.

382 KENT STREET, SYDNEY

6K8G to the front section of the gang condenser, and the grid cap of the 6G8G to the lead coming out of the top of the I.F. transformer, and the grid cap of the 6J7G to the shielded lead, which comes up through the chassis and was described to you in Step No. 1.

With all of these connected up, you then place the valves in their sockets according to the figure numbers shown, being particularly careful to see that you place the right valve in the right socket. This is most important, as otherwise the set definitely will not work.

With the dial mounted, you then connect up the pilot light flexible leads. There are two pilot lights supplied and you will see very clearly how they are to be wired. You run the wires up to one pilot light and connect one wire to each terminal and from these two terminals, run another wire across to the other pilot light, i.e., the lamps are wired in parallel.

Fitting the Speaker

You should now fit the speaker to the speaker socket on the back of the chassis. Remove the 5Y3G valve from its socket and connect up the power flex; have this flex connected in a handy way so you can quickly switch the power off if the set does not operate or react correctly. Remember, you have the 5Y3G valve out and therefore only the low tension supply to the set will be available. After the set has been switched on, the dial lights should glow immediately, i.e., if you have them properly screwed into their sockets. Then gradually, you should see the filaments of the valves lighting up. Leave the set running like this for about five minutes, and with it still running, turn it on its side (you cannot do any harm by doing this) and see that there is no smoke coming from the transformer or any of the leads. You can feel the filament leads, i.e., the twisted leads which come up to the dial lights, and see if they are quite cool. If they are hot, or getting very hot, there must be a short circuit somewhere or other, and you will have to go over your wiring again to see whether you have made a mistake. See that everything is correct and then, with the set still switched on, plug in the rectifier valve, the filament of which will gradually become red.

With everything functioning correctly, you should be able to turn up the volume control and, by rotating the dial, tune in some station or other.

Alignment

For best it is necessary to align the receiver in the usual way. An article on this subject is due for publication in next month's issue.



LOOK

LISTEN

AND REMEMBER

**When Buying
a NEW RADIO**

LOOK to see that it is equipped with Australian-made Radiotron Valves

LISTEN to the high quality of reproduction which has made Radiotrons the World's standard valve and

REMEMBER that Radiotrons are now made in Australia and are always available

AN ADVERTISEMENT OF AMALGAMATED WIRELESS VALVE CO. PTY. LTD.



The quality of service a radio technician may render to the public is determined largely by the accuracy and reliability of the equipment he uses. Palec's

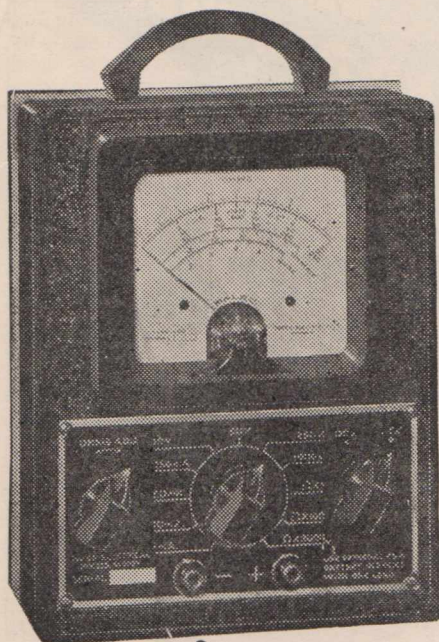
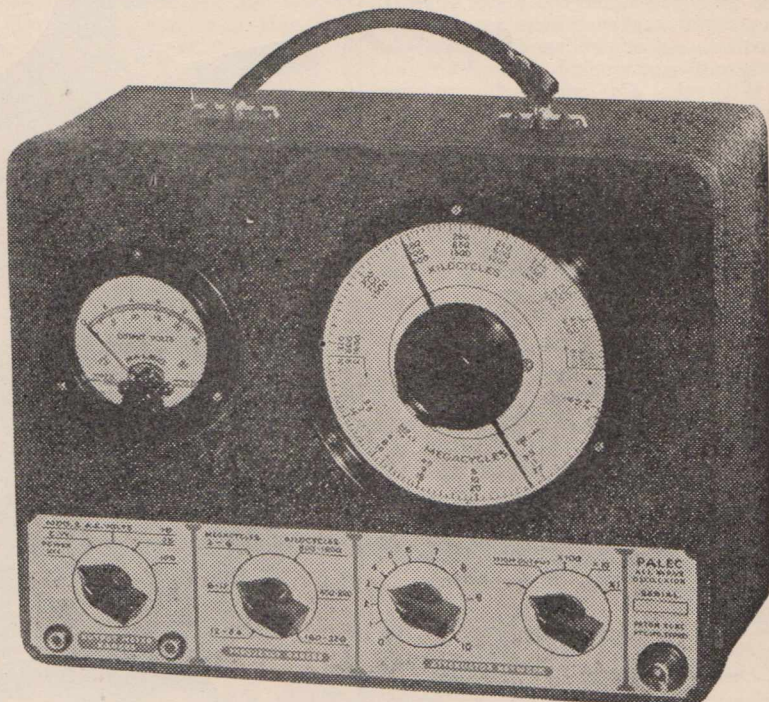
policy has always been "Service for the Serviceman," and in furtherance of this policy, an unsurpassed range of precision testing equipment is available.

SERVING THE RADIO SERVICEMAN

A typical item from the range of "Paley" service equipment is shown below—the "M" series multi-meter. This is a compact and durable volt-ohm-milliammeter designed especially for workshop and field service. Housed in a cast aluminium case measuring only 8" x 6" x 2½", this instrument is provided with a robust, rectangular-case, "K" type meter which has a scale length of 3½ inches. Four voltage and current ranges (10-50-250-1,000 v., and 1-10-50-250 mA.) and three resistance ranges, giving readings from 0.25 ohm to 1.5 megohms, are provided. Two sensitivities are available and prices are as follow:—

| | |
|---|---------|
| Model MCD (1,000 o/v), D.C. only | £4 19 6 |
| Model MCA (1,000 o/v), A.C. and D.C. volts | £7 3 6 |
| Model MXD (10,000 o/v), D.C. only | £7 1 6 |
| Model MXA (10,000 o/v), A.C. and D.C. volts | £9 5 6 |

Leatherette-covered case available at 15/- extra



Another typical item from the "Paley" range is provided by the well-known group of precision-built "Paley" "G" series All-Wave Oscillators, which are available in three basic types, each with or without a built-in output meter, as required, thus making six types in all, as under:—

| | | |
|------------|--|----------|
| Model GA | A.C. operated | £12 5 0 |
| Model GAO | A.C. operated, with built-in Output Meter | £16 10 0 |
| Model GAV | A.C.-Vibrator, dual operation from A.C. mains or 6v. accumulator | £14 7 6 |
| Model GAVO | A.C.-Vibrator with built-in Output Meter | £18 12 6 |
| Model GB | Battery operated | £12 5 0 |
| Model GBO | Battery-operated with built-in Output Meter | £16 10 0 |

These two items from the "Paley" range of testing instruments provide an excellent indication of the type of equipment "Paley" has to offer the radio-electric industries. Also available are a variety of multi-testers, portable and counter type valve testers, meters of all kinds, cathode-ray oscillographs, decade boxes, beat-frequency oscillators—in fact, testing and measuring equipment for every conceivable purpose. All of this equipment is built to meet the highest standards of accuracy, efficiency and reliability and is priced to ensure its availability to the average user.

- ALL PRICES SUBJECT TO ALTERATION WITHOUT NOTICE



PATON ELECTRICAL PTY. LTD.

90 VICTORIA ST. ASHFIELD, SYDNEY

Telephones: UA 1960-1982

LEADING DISTRIBUTORS ALL STATES

- ALL INSTRUMENTS PLUS SALES TAX
- SEND FOR OUR ILLUSTRATED CATALOGUE

What You Should Know About — OSCILLATOR GRID CURRENT

A handy technical article for the practical radio man who wants to make sure that a superhet is operating at maximum efficiency.

Some superhets are better than others. Often enough we get letters from builders of superhets who find that the job does not perform as well as they would like it to do. Perhaps it is noisy, perhaps it goes dead on certain wave-lengths, maybe especially on short-waves.

Generally speaking the modern superhet is straight-forward in every way, and if everything is operating as intended, the results will be completely satisfactory.

Correct Alignment Vital

Of vital importance in any superhet is the correct alignment of the various tuned circuits. The intermediate transformers are especially important, and both transformers must be accurately aligned to the same frequency, if maximum gain is to be obtained without excessive noise. The actual intermediate frequency is not as important as most people imagine. Whether the transformers are tuned to 465 Kc. or to any other suitable frequency between 450 and 480 Kc., should not affect the general performance of the set, provided that the aerial, r.f. and oscillator circuits are properly adjusted.

Changing the intermediate fre-

quency around in this way will perhaps introduce a whistle on to a certain station, due to shifting the position of the harmonics of second spots and so on.

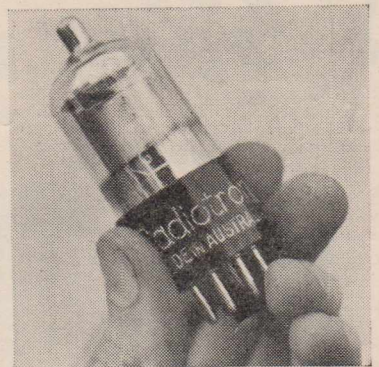
If, however, a certain receiver is properly aligned and still the performance does not come up to standard, it is a pretty safe bet to assume that the converter valve is not operating under proper conditions.

Coils may not be up to standard, wiring may be too long, grid condenser or resistor values may differ from their ratings, or some other factor may make the converter inefficient.

A Speedy Check

Fortunately there is a speedy method of checking the operation of the converter. All that is required is a milliammeter with an 0 to 1 scale. With this meter connected in series with the grid resistor, at its low potential end, we can read off the actual grid current of the oscillator section. This grid current varies with different valves, but is usually around 100 to 500 micro-amperes, which being from one-tenth to one-half of a milliamp, can be read off quite easily on an 0 to 1 milliamp scale.

Herewith we give a list of grid



The latest converter valve, the 1A7GT battery receiver valve, as used in the "Star" battery receiver described in last month's issue.

current for the various popular converter valves, supplied to us by the engineers of the Amalgamated Wireless Valve Company, and you will find it a most helpful guide to the checking of converter operation.

It should be realised, of course, that if the grid current is indicated as being abnormal or subnormal, the next step is to find out the reason why, and take steps to bring it to normal.

The first check is to see that the makers' recommended voltages are applied to all the elements. These can be found from one of the valve data charts which are readily available from any good radio store.

Correct Potentials Desirable

If all elements are at correct potentials, and there is no doubt about the effective resistance of the grid leak or the actual capacity of the grid condenser, it is fairly safe to assume that the coils are at fault, and steps can be taken to remedy the position. One method, as suggested in the Valve Company's article on the battery circuit design in last month's issue, is to put a resistor across the secondary of the oscillator coil winding. A resistor in this position will bring down grid current which is excessively high, on account of too close a coupling between oscillator primary and secondary.

Experimenting

Interesting and instructive experimenting can be done with a milliammeter in circuit to note the effect of altering grid leak values, screen and oscillator plate voltages, and bias resistors. In ninety-nine cases out of a hundred it will be found that once the oscillator grid current is normal, according to our chart, the performance of the set will be at its best, with maximum gain and minimum noise.

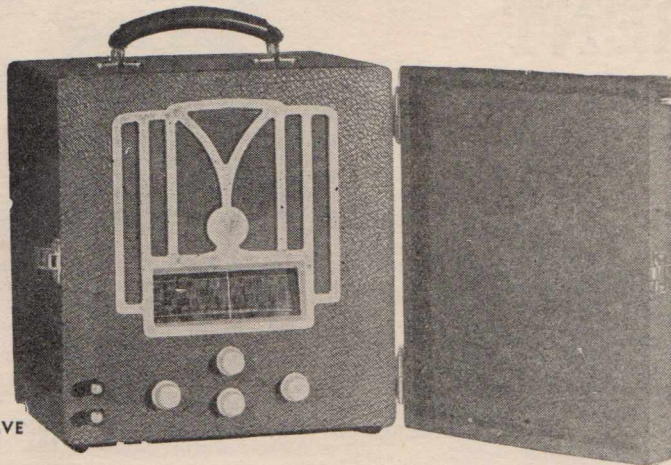
OSCILLATOR GRID CURRENTS OF CONVERTER VALVES

TENTATIVE DATA

| Type | Grid Resistor | For max. gain | Recommended | Extreme Limits | Notes |
|------------------|---------------|---------------|--------------------------------|----------------|--|
| 1A7-G T | 200,000 | 30 | 20-50 | See notes | Cathode current must not exceed 3 mA. |
| 1C6 } 1C7-G } | 50,000 | 120 | {S/W 60-180} {B/C 90-200} | Not below 60 | Zero bias |
| 6A7 } 6A8-G } | 50,000 | 350 | 200-500 | Not below 110 | Cathode current must not exceed 14 mA. |
| 6J8-G | 50,000 | 250 | 150-500 | Not below 100 | |
| 6K8-G | 50,000 | 120 | {S/W 100-200} {B/C 100-250} | Not below 80 | |



Give your PROFITS a



5 VALVE

LIFT with CALSTAN PORTABLES

- Each set is fitted with a tuned loop aerial.
- Provision is made for external aerial and earth connections.
- One PR8 and two PR45 Batteries are used.
- Batteries give approximately 200 hours life
- The new Rola 6" - 11" loudspeaker is installed.
- An R.F. Amplifier stage is used.

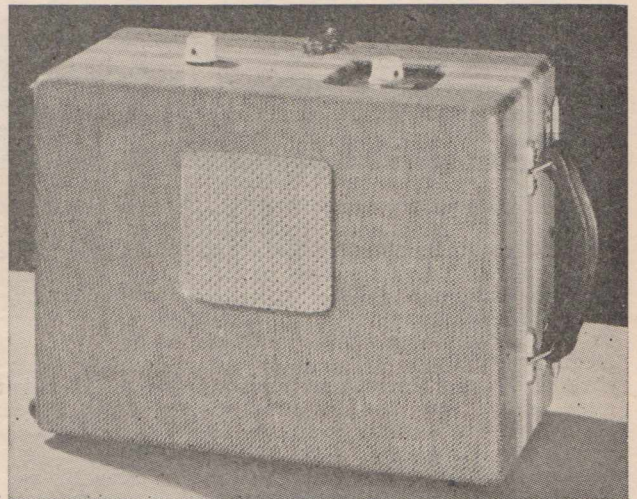
5 VALVE DUAL-WAVE AND BROADCAST MODELS.

Available in two models — Broadcast Model (No. B54P) and Dual-wave Model (No. D54P). Housed in smart leatherette-covered cases, as above illustrated, measuring approximately 12" x 11" x 10." Also in bakelite mantel cabinets for home use . . . good sellers in country.

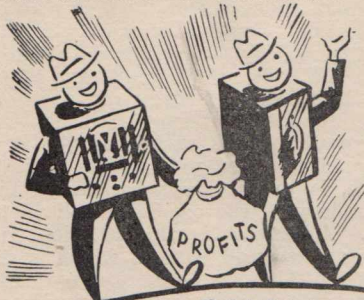
| | |
|------------------------------|------------|
| Model B54P — Broadcast Model | 16 Guineas |
| Model D54P — Dual-wave set | 18 Guineas |

4 VALVE MODEL

Smaller! Lighter! More convenient! Although the weight and size have been reduced to a minimum, both the standard size PR8 and PR45 batteries are being used. Two controls, one for tuning and one for volume (incorporating the battery switch), are mounted on top of the cabinet. A Ready Seller at £14/14/-.



4 VALVE



IT PAYS TO SELL "CALSTAN" SETS

The Calstan Portables show a large margin of profit. Every customer is a "Portable Prospect" . . . the market hasn't been scratched yet, so feature the Calstan 1.4 valve Portables and increase your radio sales.

THESE SMALL SETS CARRY BIG PROFITS FOR YOU!

SLADE'S RADIO PTY. LTD.

LANG STREET, CROYDON . . . Phones UJ5381-82

What You Should Know About —

INTERMEDIATE TRANSFORMERS

You can have stability, gain or selectivity, according to your choice, if you understand intermediate transformer design.

FEW radio enthusiasts appear to know much about the practical side of intermediate frequency transformer design. It has never been a proposition for the enthusiast to attempt to wind his own intermediate transformers. The only safe and satisfactory way is to get hold of a couple of factory-wound intermediates by buying them, and then hoping for the best. By using them according to the makers' instructions, it is usually possible to obtain completely satisfactory results, and nothing more is needed in the way of knowledge beyond the color or number code supplied with the transformers.

Most Suitable Is Best

After a time most radio mechanics get a fair idea of the type or brand of intermediate which suits them best, and so they always use them.

It is noticeable that opinions as to the merits of any particular type of intermediate will vary quite a bit. It is not unusual to find that two equally competent service men will be 180 degrees out of phase with each other, when it comes to an expression of opinion about the merit of the "Blooperdoop" type PPP/675%.

Actually this is easy enough to understand when you go right into the matter. It is merely a matter of using the most suitable type of transformer for the particular job required.

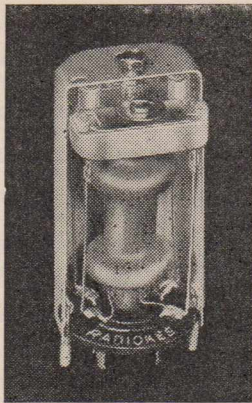
Efficiency

There is not a great deal of difference in efficiency between the best and the worst. Naturally the use of Litz wire, iron-cores, trolitul insulation and such refinements give increased efficiency, but generally intermediates have either gain or selectivity, but not both. In other words, if you prefer gain, you can have it at the expense of selectivity; if you prefer selectivity you can be prepared to sacrifice gain. There are, however, several finer points about intermediates which make it possible to change their phase or pair off different types in order to achieve a desired result.

To Get Greatest Gain

As a practical example, we might mention the case of a small three-

four a.c. mantel model which lacked sufficient sensitivity, although it had ample selectivity. Its performance was vastly improved by fitting two "No. 2" intermediates instead of the usual No. 1 and No. 2. This can be better understood when it is appreciated that the normal arrangement for pairing intermediates is to have No. 1



A "ghosted" photo of a typical intermediate, showing internal construction.

a very selective, but low-gain, unit, and No. 2 a broadly-tuned, high-gain transformer.

Using two No. 2 transformers gives greater gain and broader tuning. In many cases this broader tuning is not by any means a disadvantage, as it gives better tonal quality and still allows ample margin for the separation of all the local stations. On short-waves it makes for easier tuning.

Getting Stability

A reversal of this theory can be applied to a set which is giving trouble with instability, indicated by whistles on weak stations. A set with this complaint, a big job with r.f. stage, was effectively cured by the use of two No. 1 intermediate transformers. These gave much greater stability, also greater selectivity, but lower gain. Since the r.f. stage was an efficient one, the loss of gain was not a serious matter, in fact the owner considered the receiver much improved as the lowered intermediate gain made the set less noisy on overseas reception.

A knowledge of the normal phas-

ing of intermediate windings is also a great help to the practical radio man.

By phasing we refer to the way in which the high and low potential ends are connected. We would consider a transformer to have its windings in phase, if the inside ends of the windings are both connected to low potential circuits, and both outside windings to high potentials. For example, if the plate is connected to the inside of one winding and the grid to the inside of the other, we would assume the connections to be in phase. In such a case, of course, one of the outside ends goes to B plus and the other is by-passed to earth.

Normally, however, intermediate transformers are color coded to be connected out of phase. Reversing the connections to the "B" and "P" terminals, however, will mean that the windings are brought into phase and will give less gain, but greater stability and selectivity.

Fundamental Features

The fundamentals of the intermediate, in a nutshell, are: (1) Broad tuning, high-gain and instability go together; (2) sharp tuning, low gain and stability go together; (3) high intermediate gain usually means high noise level; (4) broad tuning means better tonal quality; (5) No. 1 intermediates are sharply tuned low-gain units; (6) No. 2 intermediates are usually broad, high-gain units; (7) connecting the intermediate windings in phase gives sharp tuning and low gain.

DEMAND FOR TRAINED MEN

In peace time the Marconi Schools rarely have a surplus of trained commercial operators for the numerous positions offered by the Australian mercantile marine, broadcast stations or other spheres of activity where possession of one or other of the P.M.G.'s certificates of proficiency is essential for employment.

The majority of young men graduating from the Marconi School under normal conditions usually spend a few years at sea on overseas or interstate passenger and cargo vessels, acquiring technical and other experience of a nature that is not obtainable in any shore position. So valuable is this experience that a glance at any representative list of commercial radio executives to-day, both in technical and other positions, reveals a remarkably large proportion of ex-marine operators, many of whom graduated from the Marconi School when radio in Australia was in its infancy.

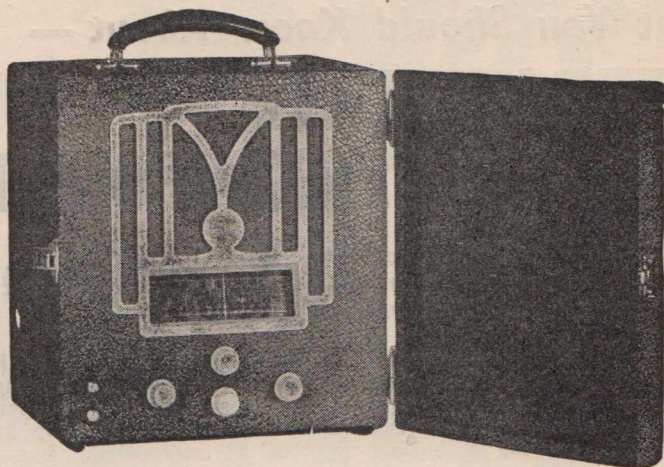
In war-time, however, the demand for properly-trained men has increased enormously, in fact to the extent that the Schools in Melbourne and Sydney at times have found difficulty in supplying men for the positions available.

It is not advisable for obvious reasons to publish details of the number of men appointed to the Australian merchant marine since the outbreak of war, but, in addition, a large number of graduates has been appointed to various stations in Australia, including broadcast, coastal radio and other communication centres.

The New

CALSTAN PORTABLE

One of the neatest and nicest portables is the latest product of Slade's Radio.



SPECIFICATIONS

Brand: Calstan.
Type: Portable.
Model: D54P.
Tuning: Dual-wave.
Valves: 5, including r.f. stage ahead of converter.
Battery equipment: 1—PR8, 2—PR45.
Made by: Slade's Radio Pty. Ltd., Lang Street, Croydon.

The construction of meters for radio use calls for precision workmanship, and delicate testing and calibrating equipment.

It is, therefore, not surprising to find that the "Calstan" receivers, being manufactured in the same factory as the well-known "Calstan" meters, are extremely well made and adjusted. Their performance is considerably beyond normal.

A typical example of "Calstan" design and workmanship is the new portable, which not only gives highly effective results on the broadcast band with its in-built loop aerial, but also splendid short-wave reception when a short external aerial is used.

This was amply demonstrated to us when one of the latest 5-valve "Calstan" portables was supplied to us for testing last week.

Even in the office, in the midst of printing machines with automatic switch gear, we had no trouble in bringing through the news from

Daventry and also "Lord Haw Haw" from Berlin.

As we used a piece of hook-up wire not more than ten feet long for the aerial, we were indeed surprised to get such fine short-wave performance under such difficult conditions.

As a Car Set

Another interesting feature of our test of this Calstan portable was the way it could be used in a car whilst travelling. Normally, the noise from the ignition system can be expected to make reception unsatisfactory, but

we found that by turning the case so that the in-built loop aerial was facing broadside to the source of noise, we could get quite good results.

This was an interesting experiment and one well worth remembering.

Construction

Known as Model D54P, this Calstan portable fits in a leatherette-covered case measuring 12 x 11 x 10 inches.

Compact arrangement of the batteries and chassis inside this case allows the use of a six-inch Rola speaker, which, being larger than the type often found in small portables, is capable of better tonal quality and power, and should also prove more reliable in service.

Price

The list price of the dual-wave model, completely equipped, is 18 guineas.

A straight broadcast model is also available at 16 guineas. The specifications of the broadcast model are otherwise identical to the dual-waver.

Make sure of
maximum efficiency
and longest life—

ADOPT AS YOUR
STANDARD—

Mullard

M A S T E R

RADIOVALVES

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

TELEPHONE: MJ 4688

ULTIMATE "WORLD-WAVE"

Accumulator-operated Portable

When you first read the claim that the new Ultimate portable receiver is "insect-proof," you may feel that it is rather a funny feature of which to boast. But when you get to know the Ultimate portable you realise that it is a receiver which is specifically designed to do the kind of work which is not normally expected of any radio receiver.

On Safari

You can conjure up a picture of a safari making its way up a tropical river when suddenly a large crocodile sees one of these Ultimates being carried by a nigger. The crocodile looks at the leatherette finish and gasps, "Alas, my poor brother!"

But, jokes aside, this portable is something quite beyond the ordinary receiver. As we mentioned when we reviewed the previous model in an issue a few months ago, it offers an entirely new conception of a portable. It is much larger and heavier than the usual self-contained portable receiver. Perhaps it would be better to call it a transportable.

But if its size is big, its performance is immense.

Range, power, tone and general performance are all of the standard usually associated with big a.c.-operated consoles.

Operates From Accumulator

After hearing it in operation, it is hard to believe that such a powerful receiver can be operated from a single six-volt accumulator. The accumulator supplies all filaments, as well as the vibrator unit which converts the current to make it suitable for high tension. No "B" batteries are required.

In many of the islands, on outback station homesteads, gold mines in the hills and such locations, there are facilities for accumulator charging. Under such circumstances this is indeed an ideal receiver. We can readily imagine the thrill it would be to own and operate a receiver of this kind under such circumstances.

Some people seem to have an idea that dual-wave receivers are only a compromise and not capable of giving maximum performance on either band. This is definitely not so with this receiver. Like all the rest of the models

in the Ultimate range, its performance is exceptional on both bands. Even in the most difficult location, if there is a signal in the ether, it can be played on the Ultimate.

Silent Vibrator

There may also be an impression around that vibrator sets are inclined

SPECIFICATIONS

"Ultimate" World-wave Model

Type: Large portable.

Size: About 12" x 14" x 20," without battery.

Power: Operates from a six-volt accumulator, no "B" batteries required.

Tuning: Broadcast from 1600 to 550 kc., short-waves from 16 to 52 metres.

Speaker: 8" Rola.

Valves: 7 valves in all, including push-pull output.

Distributors: George Brown & Co. Pty. Ltd., 267 Clarence Street, Sydney.

to be noisy on short-waves when operating at the most sensitive setting of the volume control. Technically, the elimination of the noise is a problem, but a minute or two at the controls of the Ultimate proves beyond any shadow of doubt that such problems have been completely mastered by the

engineers responsible for the design and construction of this model.

The Circuit

The circuit used in this Ultimate reveals an interesting combination of six-volt and 1.4-volt valves, which has been evolved to get lowest possible current drain without sacrifice of performance.

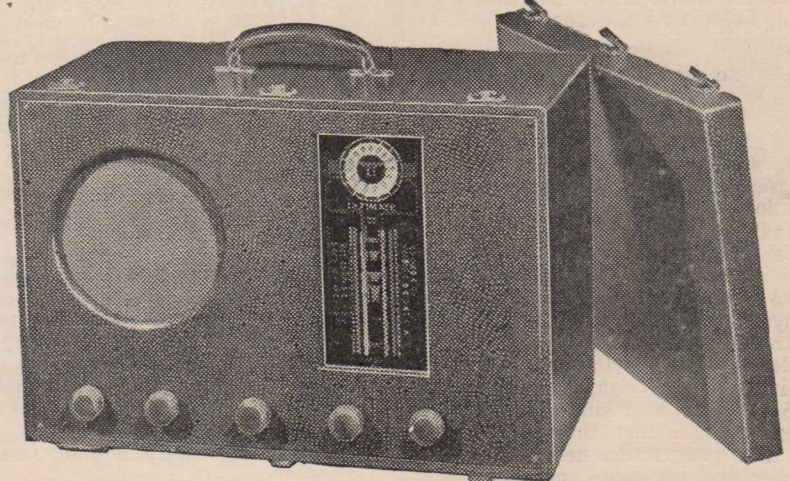
The valve line-up is as follows:—R.F. stage, using a 6S7G, converter valve is a metal 6K8, intermediate amplifier is a 1.4-volt 1D5GP, followed by a 1F7GV detector, 6T7G phase changer and a pair of 6G6G output pentodes in push-pull.

The use of a pair of valves in the final stage is a most effective way of getting good tone and plenty of power, yet keeping the filament current drain at a low figure.

Summary

The Ultimate portable is not the handiest kind of portable to carry on a hike or even to take to a picnic.

We can, however, give it every possible recommendation as a semi communications-type set, capable of extreme sensitivity on both broadcast and short-waves, and capable of tone and power seldom found with any receiver operated from batteries or an accumulator.



Oversize in dimensions, but also oversize in performance, sums up the characteristics of the latest "Ultimate" release. This is a portable receiver, operating from an accumulator, and giving exceptional performance on both broadcast and short-waves.

Shortwave Review

CONDUCTED BY
L. J. KEAST

New Ideas Appeal ★ Spring Makes Itself Felt ★ Bandoeing Changes ★ Swiss Signal Strong ★ Germans Compelled to Close

First of all, thanks for all the nice remarks about these pages, delighted new ideas appeal. Well, we are certainly getting the changes that the vernal equinox invariably brings. Reports from the north of Australia indicate VLR (9580 kc., 31.82 m.) is very good of a night now—a sure sign winter is leaving us. Another noticeable feature is the South Americans are playing up, not being nearly as good as a week or so ago, and a further sign of the times is provided by Moscow, RNE (12,000 kc., 25 m.) at 9 p.m.

Overhauling

Yes, the Spring makes itself felt, and just as some young man's fancy turns to thoughts of love, and others to the Randwick meeting, while housewives figure it a good time for a general dust-up, it's not a bad idea to give the receiver the once over. I don't think it is altogether imagination when, after gently sandpapering the valve pin points, the set reaches out a bit further.

It is very gratifying to note the number of listeners who wrote in re PMH.

As most readers will probably have found by now, PMH, situated in Bandoeng and one of the most consistent stations for years, has moved to 14,630 kc., or 20.51 metres. No sound of them on their old frequency of 6720 kc. for weeks now.

But it is pleasing to find that our reporters, and readers for that matter, cover the whole of the bands and are so quick to notice a change.

Radio Suisse

I am advised by the Consul General for Switzerland that Radio Suisse (6165 kc., 48.62 m.) have extended their schedule; they can now be heard from 4.30 to 7.25 a.m. The signal is still one of the best and loudest at my location.

Radio Pacifique, situated in Noumea, have changed frequency. They are now on 6480 kc., 46.30 m., and give news at 6.30 a.m. and again at 10.30. They are said to be testing on 77.85 metres in the evenings.

Heard JZK (15,160 kc., 19.79 m.) calling GAL, London, one night about 9.15. After a while our Japanese friends told London they were receiving their programme perfectly. What particular frequency Japan chose I do not know, but London on the 13 and 16 metre band was splendid, while

GSI, which replaced GSF some time ago, is still doing a great job.

Heard KGEI announce on September 12 at 10.40 p.m. that all German radio stations were compelled to close at 9 p.m., and that a curfew had been installed for theatres from 11 p.m.

Power of 50,000 watts has certainly

improved WRUW, which can now be heard quite well at 10 a.m. on 15,130 kc., 19.83 m. Generally at this time the subject matter is either an informative talk or a sermon. Coming as it does from the World Wide Radio University in Boston, it is always worth while hearing.

I believe our old friend at Bangkok on Monday nights is using the old transmitter, HS6PJ. Therefore, if you find HSP5 missing on this night on

STATION PARTICULARS

Under this heading, we will give each month brief details of stations. This will not only assist identification, but also help in preparation of reports that are to be sent overseas for verification.

They will be given alphabetically, but particulars will be gladly sent on request to readers desiring same, who forward a stamped addressed envelope for reply.

AUSTRALIA AND OCEANIA

National Stations:

- VLR-3, Lyndhurst, Victoria** (11,850kc., 25.32m.): Daily, 6.30 a.m. to 5.15 p.m.; Sundays from 6.45 a.m.
- VLW-3, Wanneroo, West Australia** (11,830 kc., 25.36 m.): Daily, 8.30 a.m. to 8.45 p.m. Sundays: 9 a.m. to 2.15 p.m., 3 to 8 p.m., 8.15 p.m. to 12.30 a.m.
- VLW-2, Wanneroo, West Australia** (9650kc., 31.09m.): Daily, 9 p.m. to 1.30 a.m.; Sundays, to 12.30 a.m.
- VLR, Lyndhurst, Victoria** (9580kc., 31.32m.): Daily, 5.30 p.m. to 12.30 a.m.; Sundays, to 11.30 p.m.

Open with Station call-sign, close with National Anthem.

Address reports to Australian Broadcasting Commission, Melbourne, Victoria, or Perth, W.A.

AUSTRALIA

Overseas Broadcasts in conjunction with Department of Information.

- VLQ-8, Sydney** (17,800kc., 16.85m.): Daily, Transmission 10, for North America from 3.55 p.m. to 4.45 p.m.
- VLQ-3, Sydney** (15,315kc., 19.59m.): Transmissions to North America discontinued (see VLQ-5).
- VLQ-7, Sydney** (11,880kc., 25.25m.): Daily, Transmission 8, for Northern Europe, 5.30 to 6 a.m. in French; 6 to 6.30 a.m. in German; 6.30 to 7 a.m. English.
- VLQ-7, Sydney:** Special session from 5 to 5.30 a.m. for A.I.F. in Palestine.
- VLQ-2, Sydney:** Daily, Transmission 7, for Southern Europe, 3.55 a.m. to 4.30, English. From 4.30 to 5 a.m., Italian.
- VLQ-5, Sydney** (9680kc., 30.99m.): Daily, Transmission 9, for North America, 9.10 a.m. to 10 a.m.; Transmission 3, for North America, 10.25 p.m. to 11 p.m.; Transmission 4, for South-East Asia, 11.10 p.m. to 11.45 p.m., French; 11.45 p.m. to 12.15 a.m., English; 12.15 a.m. to 12.45 a.m., Dutch; Transmission 5, for North America, 1.25 to 2 a.m.
- VLW-4, Wanneroo, W.A.** (9665kc., 31.04m.): Daily, Transmission 6, for South Africa, 2.55 to 3.30 a.m.
- VLQ, Sydney** (9615kc., 31.2m.): Daily, Transmission 1, for New Caledonia and French Oceania, 8.55 to 9.30 p.m.; Transmission 2, for North and East Asia, 9.40 to 10.15 p.m.; Transmission 10, a special for A.I.F. in Great Britain, 5 to 5.30 p.m.
- VLQ-9, Sydney** (7250kc., 41.38m.): Was being used in special transmission for New Caledonia, but understand now discontinued.

All sessions open with record of Kookaburra Bird (known as the Laughing Jackass). Close with "God Save the King." Address reports to Australian Broadcasting Commission, Market Street, Sydney. They verify with an attractive card.

FIJI

- VPD-2, Suva** (9535kc., 31.46m.): Daily, 3 p.m. to 3.30 p.m. relays French from Daventry. (This may have been discontinued.); 7 p.m. to 8 p.m., except Sundays. All announcements in English. Closes with "God Save the King." Address Amalgamated Wireless Ltd., Radio Suva, Victoria Parade, Suva.
- VPD-4, Suva** (14,425kc., 20.80m.): Only used occasionally, and then most times to call Noumea.

NEW CALEDONIA

FK8AA, Noumea (6120kc., 49.00m.): Daily, 5.30 to 6.30 p.m. Open and close with "Marseillaise," followed by "God Save the King." Very slow at replying to correspondence, but it must be remembered shipping facilities are erratic. Address: Charles Graveau, 44 Rue del Alma, Noumea, New Caledonia.

RADIO PACIFIQUE: Were operating for short while on 7280kc., 41.25m., but now on 6480kc., 46.30m. Give news at 6.30 and 10.30 a.m. Open with a march, "Le Cant du Depart." Power, 100 watts. Said to be also testing on 77.85 metres in the evenings. Service Radioelectrique, Noumea.

TAHITI

FO8AA, Papeete (7100kc., 42.25m.): Wednesdays and Saturdays, 2 to 4 p.m. Opens with "Marseillaise," and closes with "Aloha Oe" (Farewell to Thee). Owners: Radio Club Oceanien.

(To be continued in next issue)

We are desirous of making this an up-to-date, reliable list, and will appreciate any particulars that will assist this object.

11,715 kc., 25.61 m., try 19,020 kc., 15.77 m.

See memo under Hungary re HAS-3, 15,370 kc., 19.52 m.

WNBI, Boundbrook, is now being heard on 11,890 kc., 25.23 m., and is good till 3 p.m.

WLWO, Cincinnati (15,270 kc., 19.64 m.), is being heard daily till closing at 1.55 p.m.

GSE, London (11,860 kc., 25.29 m.), is putting in an excellent signal at 11.45 a.m.

Alterations

There has been one or two alterations in the Australian overseas service. I understand from the A.B.C. that VLQ-9 (41.4 m.) was discontinued after tests with Noumea. They also told me Transmission 9 for North America commencing at 9.10 a.m. is now put over by VLQ-5 (9680 kc., 30.99 m.), instead of VLQ-3 (15,315 kc., 19.59 m.).

International Reply Coupons have been reduced to 6d.—yes, I said reduced. Certainly seems strange these times.

Commencing on October 1 JZ1 (9535 kc., 31.46 m.) will carry same programme as JZJ (11,800 kc., 25.42 m.), instead of JZK (15,160 kc., 19.79 m.).

Yugoslavia

With the object of reaching the 10,000 Yugoslav migrants in Austra-

ALTERATIONS TO SHORT-WAVE STATIONS OF THE WORLD

(See August issue for full list)

ADD to list:

PMH, D.E.I., 14,630kc., 20.51m.
XGRO/A, or X, Shanghai, 11,910kc., 25.15m.
XGOY, Szechwan, 11,900kc., 25.21m.
XGSB, Shanghai, 11,880kc., 25.25m.
XGOA, Peking, 9710kc., 30.9m.
HRPI, San Pedro, Sula, Honduras, 6348kc., 47.26m.
CP-5, La Paz, Bolivia, 6200kc., 48.39m.

ALTER:

RADIO PACIFIQUE, Noumea, 7280kc., 41.25m., to 6480kc., 46.30m.

lia and the 15,000 in New Zealand, the short-wave radio station in Belgrade is broadcasting a special programme daily from 5 to 6 p.m. in the Yugoslav language, through YUG (15,240 kc., 19.68 m.).

I would be grateful if reporters would mention this station particularly in their notes for the coming month. Signal strength here has been surprisingly good and is reminiscent of the old YUC transmitter, which, on 9505 kc., 31.56 m., gave us a fine service around 7 a.m. last year.

Verifications Received

Mr. P. L. Smith, Dunnsborough, W.A., reports acknowledgment from HAS, Budapest (15,370 kc., 19.52 m.).

Mr. Arthur Cushen, Invercargill,

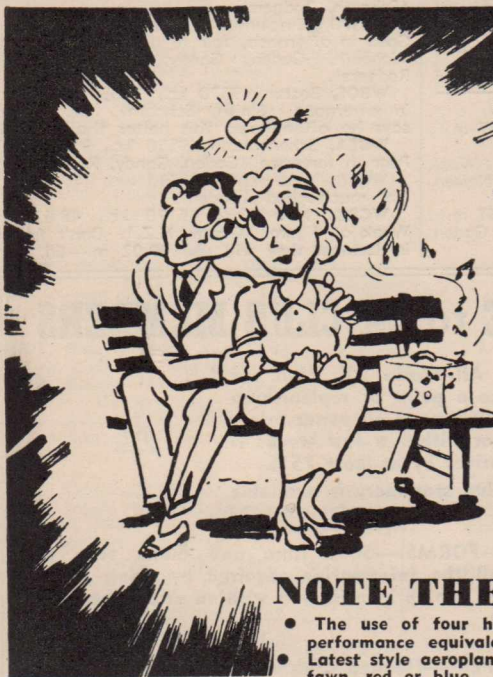
N.Z., has been very fortunate. Here is his list:—YDX, W8XNU, WLWO, XGOY, TG2, OAX1A, PY2LN, and a distinct novelty from Montana, U.S.A. This is in the form of a verification on a sheet of copper. The station was KGIR, and situated in Butte, which is in the centre of the largest copper mining district in the world. As if this was not enough, they also sent him a copper buffalo for his watch chain.

Mr. Cushen also reports a veri from Radio Pacifique, Noumea. They have now moved to 6480 kc., 46.30 m. and commence at 6.30 a.m. They state they are also testing on 77.85 metres.

One more from Arthur, and also unique, is a veri from 2WG, Wagga, N.S.W. It was of course an harmonic, as they were logged in the evening on 3.48 m.c. Signal was R9.

Mr. Cushen concludes this report, of which he can be justifiably proud, by saying the above brings his total to 500 loggings in 18 months.

Mr. J. C. Linehan, South Australia, writes: "I have a lot of reports out, and if all come back O.K., it will bring my country veris to over 120, all on 'phone. I have veris from 41 of the 48 States in U.S.A. on 20 metres and 15 per cent. of the 48 on 10 metres."



"Serenade your sweetie with a PK4 Portable"

BUILD IT YOURSELF

"Serenade your sweetie with a University PK4 Portable"—make this your selling slogan for PK4 Portables. Spring is nearly here, the time when a young man's fancy lightly turns to thoughts of—Portables. PK4's—they're good; you can sell 'em by the bucketful. Why not decide to build one from a Radio Equipment Kit and try its remarkable performance for yourself? This receiver has been designed and produced by Radio Equipment Pty. Ltd. in remarkably efficient commercial form. It possesses all the desirable features striven for by set manufacturers, yet it beats them all, both in technical and sales appeal.



NOTE THESE SPLENDID FEATURES . . .

- The use of four highly-efficient tube types gives performance equivalent to an ordinary 6-valve set.
- Latest style aeroplane cloth-covered cabinet in grey, fawn, red or blue.
- Weight, only 19½ lbs., with heavy 6½-inch speaker for good tone quality.
- Station call-signs are clearly marked on dial.
- Simple, readily accessible plug permits operation from heavy-duty batteries for prolonged work in the home.
- All necessary switching automatically carried out when plug is connected to desired power source.
- Provision for external aerial and earth for reception of weak distant stations.
- Highly-efficient enclosed loop aerial.

RADIO EQUIPMENT PTY. LTD.

E. S. & A. Bank Buildings, Broadway, Sydney.

Phones: M 6391 - M 6392 (At Your Service)

Telegrams: RACQUIP, Sydney.

The MONTH'S LOGGINGS

ALL TIMES ARE AUSTRALIAN EASTERN STANDARD

AUSTRALIA AND OCEANIA

VLQ-8, Sydney (11,800 kc., 16.85 m.): Good, but not as strong as Rome; best at 4 p.m. (Cushen, Gaden, Pepin).

VLQ-3, Sydney (15,315 kc., 19.59 m.): Very strong at 9.15 a.m. but fades and then roars in again (Gaden, Keats).

VLQ-7, Sydney (11,880 kc., 25.25 m.): Very good (Cushen).

VLR-3, Lyndhurst (11,850 kc., 25.32 m.): Just audible at 6.30 a.m. (Schodel). Good in day-time (Gaden, Rodgers).

VLR-6, Lyndhurst (11,830 kc., 25.36 m.): R8 at 7.45 a.m. (Cushen). Understand this is not being used now.—Ed.

VLW-3, Perth (11,830 kc., 25.36 m.): Excellent at 6.30 a.m.; very good most times (Bantow, Gaden, Schodel, Rodgers). Understand now closes at 8.45 p.m.—Ed.

VLQ-5, Sydney (9680 kc., 30.99 m.): Heard very strongly at 9 a.m. (Gaden, Keats).

VLQ, Sydney (9615 kc., 31.21 m.): Strong 5.15 p.m. (Bantow). This is the special transmission for A.I.F. in Great Britain.—Ed. Very fine at 9 p.m. in French session (Gaden).

VLR, Lyndhurst (9580 kc., 31.32 m.): Excellent at 7.30 p.m. (Schodel, Bantow, Gaden). This station, while poor in winter, is splendid in summer.—Ed.

VLW-2, Perth (9650 kc., 31.09 m.): Nearly as good as **VLR** (Gaden).

VLQ-9, Sydney (7246 kc., 41.5 m.): Very fine when giving French at 9 p.m., but not heard lately (Gaden). This was being used for test to New Caledonia, but has been discontinued. Session for this part of the globe is given by **VLQ**, 9615 kc., 31.2 m., from 8.55 p.m. to 9.30 p.m.—Ed.

Fiji:
VPD-2, Suva (9535 kc., 31.46 m.): Heard opening at 3 p.m. on Sunday with fair signal, also between 7 and 8 p.m. (Schodel, Nelson, Rodgers). Not heard 3 p.m. session lately (Gaden).

New Caledonia:

FK8AA, Noumea (6120 kc., 49.00 m.): Weak signal, but getting louder each week (Linehan, Nelson, Rodgers, Gandy, Gaden). I heard them close down at 6.30 p.m. on September 19, and beyond "Ici, Radio Noumea" and short French statement, went off the air. As they have been playing "Marseillaise" followed by "God Save the King," when closing, I wondered if the change in Governors which took place on that day, had any significance, but have since heard them opening with both.—Ed.

AFRICA

Kenya:

VQ7L, Nairobi (6083 kc., 49.31 m.): Fair at 4 a.m. (Linehan).

Mozambique:

CR7BE, Lourenco Marauas (9710 kc., 30.9 m.): R9 at 7.30 a.m., but weakening last few days (Linehan).

AMERICA (Central)

Costa Rica:

TIX, San Jose (5,830 kc., 51.46 m.): Seems pretty regular, but quality poor (Gaden). Closes at 3 p.m. with "Good-Night Melody." Opens again at 10 p.m. or just after with a march.—Ed.

Guatemala:

TG5JG, Guatemala (11,440 kc., 26.22 m.): Heard Sunday, September 1, from 2.30 till 3.15 p.m., spoilt by C.W. (Schooth, Nelson). A later report from Mr. Schooth says, "On 4th and 5th they were better than I have ever heard them."

TGWA, Guatemala (9658 kc., 30.98 m.): English announcements; good (Smith, Gaden). Closes at 2.45 p.m.

Honduras:

HRPI, San Pedro, Sula (6348 kc., 47.26 m.): Heard this new station once at poor strength, opening with a march (Linehan, Gaden). This is referred to elsewhere.—Ed.

Panama:

HP5A, Panama City (11,700 kc., 25.64 m.): Can be good if he doesn't close down too early (Gaden).

RADIO ENGINEER FROM JAPAN

Received a call from Mr. Chuhei Anazawa, radio engineer from Nippon Hoso Kyokai, the Broadcasting Corporation of Japan.

We appreciate that during his forty-eight hours' stay in Sydney, before flying to Java, Mr. Anazawa selected "The Australasian Radio World" to secure first-hand information regarding the reception of the various Japanese transmitters.

Mr. Anazawa left us some informative booklets which clearly show the strides radio has made in Japan, and the regard they have for short-wave transmissions. This literature was printed with the artistic excellence one has long associated with Japanese productions.

AMERICA (North)

WNBI, Boundbrook (17,780 kc., 16.87 m.): Poor now in forenoon (Gaden).

KGEL, Frisco (15,330 kc., 19.57 m.): Weak signal at 2.15 p.m. (Gaden, Smith, Nelson, Schooth).

WGEA, Schenectady (15,330 kc., 19.57 m.): Heard fairly well at 7 a.m. (Pepin, Gaden, Rodgers).

WLWO, Cincinnati (15,270 kc., 19.64 m.): Heard fairly well till 11 a.m. (Cushen, Schooth, Smith, Gaden). Have often heard them closing at 1.55 p.m. and asking for reports.—Ed.

WRUL, Boston (15,250 kc., 19.67 m.): Closed at 7.40 a.m. and announce will reopen at 5.55 p.m. E.S.T. (8.55 a.m. Sydney), on 19 and 49 metre bands.

WPIT, Pittsburg (15,210 kc., 19.72 m.): Good from 11 p.m. (Smith, Pepin, Rodgers). Heard well at Randwick, too.

KKZ, Bolinas, Calif. (13,690 kc., 21.9 m.): Closes at 2.45 p.m. R4-5 on Sundays (Nelson).

WNBI, Boundbrook (11,890 kc., 25.23 m.): Very good at 3 p.m. (Cushen, Smith, Gaden, Rodgers, Gandy).

WPIT, Pittsburg (11,870 kc., 25.26 m.): R9, Q5 at 9.30 p.m. and can be heard till closing at 2 p.m. (Gaden). Terrific strength at 7 a.m. (Bantow, Linehan, Rodgers, Gandy).

WLWO, Cincinnati (11,870 kc., 25.27 m.): Drowned by **VLR** at 4.20 p.m., but fair at 9 p.m. (Schodel). Fair at 3 p.m., good 10.15 p.m. (Rodgers). Excellent at night (Gandy, Keats, Gaden). Closes at 5.30 on Sundays.

News at 10 p.m. is excellent.—Ed.

WCBX, New York (11,830 kc., 25.36 m.): Fair till 9 a.m. (Schooth).

WRUL, Boston (11,790 kc., 25.45 m.): Around 9 a.m., very good (Schooth, Rodgers). Closed at 7.40 a.m. and said would be back again at 5.55 p.m. (8.55 a.m. Sydney time) on 19 and 49 metre band (Gaden).

WRCA, New York (9670 kc., 31.02 m.): At 10 a.m. is best signal on 31 metre band (Gaden). Good in afternoon (Pepin, Schooth, Rodgers, Gandy).

KGEL, Frisco (9670 kc., 31.02 m.): Weak on opening at 3 p.m., but strong from 3.45 till closing at 6 (Nelson, Schooth, Schodel, Bantow, Gandy, Pepin). All reporters are unanimous as to excellence of session from 10 p.m. Very good news service at 10.30. Mr. Nelson got a call in mail-bag session.

WCBX, Philadelphia (9590 kc., 31.28 m.): Not much good in morning (Gaden). Good in afternoon; Tuesday, Friday and Sunday (Schooth, Rodgers).

WLWO, Cincinnati (9590 kc., 31.28 m.): Good in afternoon, fair to good at 9.15 p.m. (Schooth, Gaden, Gandy, Smith, Schodel, Rodgers).

WBOS, Boston (9570 kc., 31.35 m.): Good in afternoon (Smith, Schooth). Dr. Gaden says he often hears this better than **KZRM**.

WGEA, Schenectady (9550 kc., 31.41 m.): Poor in forenoon (Gaden, Gandy, Rodgers).

WGEA, Schenectady (9530 kc., 31.48 m.): Not much good (Gaden).

WCBX, New York (6170 kc., 48.62m.): Weak at 4 p.m. (Gandy, N.Z.). Don't forget in October they will use 49.02 m.—Ed.

SPECIAL NOTICE to DX CLUB MEMBERS

Members of the All-Wave All-World DX Club are advised that they should make a point of replenishing their stock of stationery immediately, as all paper prices have risen, and we expect that within a few weeks it will be necessary to increase prices by at least 25%.

While stocks last the following stationery is available at the old prices, as shown.

REPORT FORMS.—Save time and make sure of supplying all the information required by using these official forms, which identify you with an established DX organisation.
Price 1/6 for 50, post free.

NOTEPAPER.—Headed Club notepaper for members' correspondence is also available.
Price 1/6 for 50 sheets, post free.

DX CLUB STICKERS.—Enlarged two-colour replicas of the Club badge, in the form of gummed stickers, designed for attaching to envelopes, QSL cards, etc.
Price 5 dozen for 1/6, post free.

WPIT, Pittsburg (6140 kc., 48.86 m.): No good now in afternoons (Gaden).

WLWO, Cincinnati (6060 kc., 49.5 m.): Fair at 9 a.m., but weakens quickly (Gaden, Pepin). Not heard on this wavelength afternoon or night.

WRUL, Boston (6040 kc., 49.65 m.): Good at 9 a.m., but weakens quickly (Pepin, Gaden).

WDJM, Miami (6040 kc., 49.65 m.): Heard in afternoons, but never high class (Gaden). (Word from America says this station has now closed down.—Ed.)

WNBI, Boundbrook (6100 kc., 49.18 m.): Rarely heard lately (Gaden).

XEQQ, Mexico City (9680 kc., 30.99 m.): Comes in well, often better than **XEWW** (Nelson, Gaden). Radio Pan Americana heard in Randwick quite often till 4 p.m. Listen for those blasts on the fog-horn.

XEWW, Mexico City (9503 kc., 31.57 m.): Opens at 1 p.m. with Military March on guitar. Interval signal is four chimes. Closes at 4.30 p.m. (Nelson, Schodel, Rodgers, Gaden, Schooth).

XEBT, Mexico City (6005 kc., 49.96 m.): Good from 1.30 to 2.30 p.m. (Gaden).

AMERICA (South)

Bolivia:

CP-5, La Paz (6200 kc., 48.39 m.): Has been heard with fair signal; opens at 9 p.m. (Linehan, Gaden). Slogan is "Radio Illiami."

Brazil:

PSH, Rio de Janeiro (10,220 kc., 29.35 m.): Faded greatly of late (Gaden).

PYA-2, Rio de Janeiro (9205 kc., 32.59 m.): Not heard recently (Gaden).

British Guiana:

VP3BG, Georgetown (6130 kc., 48.94 m.): R4 at 7.30 a.m., but zizzy signal (Linehan).

Chile:

CB-1180, Santiago (11,945 kc., 25.12 m.): Sundays, 1.30 to 3 p.m.; Thursdays, 8 to 8.30 p.m. In English. Very loud at times (Gandy, Gaden).

CB-1174, Santiago (11,740 kc., 25.55 m.): Closes with march at 2 p.m. (Cushen).

CB-1170, Santiago (11,700 kc., 25.64 m.): Good, closes at 2 p.m. (Cushen).

CB-970, Valparaiso (9730 kc., 30.83 m.): Best Chilean I've ever heard. Can be separated easily from **HJFK**. From 10 p.m. (Gaden).

Colombia:

HJFK, Pereira (9730 kc., 30.83 m.): Good signal at 8 a.m. and 10 p.m. (Gaden). (This station, whose slogan is "La Vox des Amigos," is the most powerful in Colombia. Am very glad they are still coming through, as there was talk some time ago that this frequency would be dispensed with. When writing to them don't forget to say how we appreciate their frequent use of English.—Ed.)

HJCF, Bogota (9710 kc., 30.9 m.): Good signal at 8 a.m. and 2 p.m. (Gaden).

HJCT, Bogota (9630 kc., 31.15 m.): Nice signal at 2.30 p.m. (Gaden).

HJCX, Bogota (6018 kc., 49.85 m.): Good at 10 p.m. (Gaden).

HJAB, Barranquilla (4780 kc., 62.76 m.): Heard closing at 2 p.m. with splendid signal (Cushen).

Ecuador:

HCBJ, Quito (12,460 kc., 24.08 m.): Being heard in West Australia from early morning till 10 a.m. Perth time (Smith). Heard daily except Tuesdays (Pepin, W.A.).

HCBZT, Guayaquil (9195 kc., 32.63 m.): Heard at 9 a.m. and 2 p.m. (Gaden).

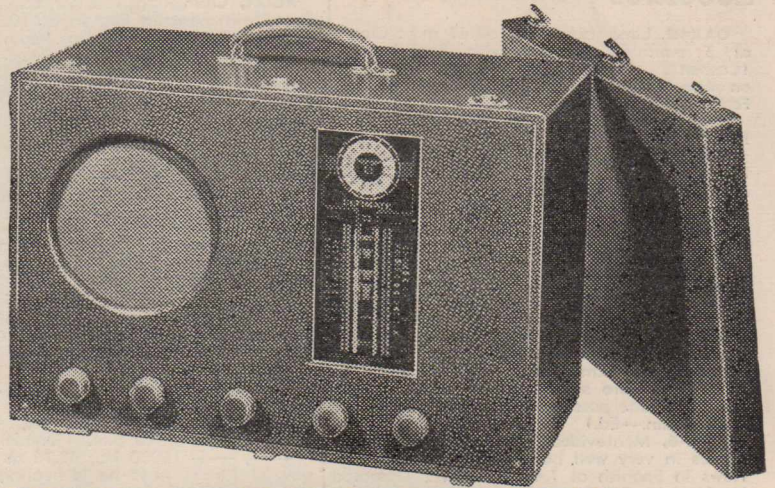
Peru:

OAX4-, Lima (9545 kc., 31.43 m.): Fairly clear at 3 p.m. (Gaden).

OAX5C, Ica (9400 kc., 31.91 m.): Fair signal Sunday afternoons (Schooth, Rodgers, Gaden). Relays **OAX5B**. Known as "Radio Universal"; signs on with organ solo, but NOT "Estrellita," as mentioned formerly. Slogan: "Las Ondas de Ica para todo el Pais" ("The Waves of Ica for all the Country").

OAX4J, Lima (9340 kc., 32.12 m.): Good volume on Sunday afternoons (Schooth, Gaden, Rodgers). (This 500 watt station relays **OAX4I**. See last issue for further details.—Ed.)

(Continued on page 34)



"ULTIMATE"

7-Valve Portable Mantel World-Wave Vibrator Model

SPECIALLY SUITED FOR OUTBACK CONDITIONS

An unique Dual Purpose high quality Set exclusive to "ULTIMATE". Two sets in one—a superior mantel model and easily-carried multi-wave Vibrator Portable. Instantly detachable lid effects the transformation.

Specially suited to Island reception. Magnificent performance under all circumstances. Thorough dependability guaranteed by "ULTIMATE". Will satisfy the most fastidious expert.

Take it anywhere—picnics, meetings, dances, boating parties, car outings, etc., etc.—performance will always be superb! Exclusive Light Ray Tuning (obtainable only in "ULTIMATE"). Five controls: Tone, Volume, Dial Lamp (for conservation of Battery Power), Wave Band and Tuning; Broadcast 1600-550 kilocycles; Short Wave 16-52 metres; special 8 in. Rola Reproducer (sealed against humidity); High Fidelity Push-Pull Output (unusual in Vibrator Models); A.V.C. Spin Tuning, etc., etc. INSECT-PROOF!

Also obtainable in 5-Valve World-Wave Battery Vibrator, in 6-Valve World-Wave, and 8 and 10-Valve All-Wave Electric.

Cut out
this
Coupon
and post
to-day.

GEORGE BROWN & CO. PTY. LTD., 267 Clarence Street, Sydney.
Please send me particulars of "ULTIMATE" Radio Receivers as advertised in 'Australasian Radio World'.

NAME

ADDRESS R.W.

ULTIMATE

Champion Radio

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

LOGGINGS (continued)

OAX4G, Lima (6190 kc., 48.47 m.): Closes at 5 p.m. on Sundays with English. R7 (Cushen). (Slogan, "Radio Grellaud." Signs on with "Marcha de los Granaderos del Rey Federico." 400 watts.)

OAX4P, Huancayo (5975 kc., 50.25 m.): Heard with fair signal till closing at 3 p.m. (Cushen). (Slogan, "La Voz del Centro del Peru." Interval signal, 3 xylophone notes. Power, 250 watts.—Ed.)

Uruguay:

CXA-7, Montevideo (11,480 kc., 26.13 m.): Mr. Nelson, of Cairns, says he has been hearing a Spanish station after 9 p.m., which he thinks may be this one. (As far as I know, **CXA-7** has been silent since December 15, and his station may be **TG5JG**, 11,440 kc., whose schedule I do not know. This Guatemalan transmitter is referred to elsewhere as being heard at 2.30 p.m., but no mention of night time. Therefore some hunting can be done. Still, it is quite possible **CXA-7** may have come back again.—Ed.)

CXA-6, Montevideo (9625 kc., 31.17 m.): Comes in very well between 7.30 and 8 a.m. News in Spanish at 7.45 (Nelson). Operated by Servicio Oficial de Difusion, Radio Electrica (Sodre).

Venezuela:

YV5R0, Valera (4940 kc., 60.75 m.): Heard till 5.15 one evening (Cushen).

YV5RH, Caracas (4830 kc., 62.05 m.): Heard well at 9.15 p.m. (Gaden). (Slogan, "Ondas Populares." Power, 200 watts. QRA., Apartado 1931.)

THE EAST

Burma:

XYZ, Rangoon (6007 kc., 49.94 m.): Good at 10 p.m. (Schodel). Strong at 12.30 a.m. (Bantow). Heard nightly (Pepin, Gaden).

China:

XGOX, Chungking (15,190 kc., 19.75 m.): Heard with news in English at 10.30 a.m. on Sundays; R6 signal (Nelson, Pepin).

FFZ, Shanghai (12,050 kc., 24.85 m.): News in English at 10 p.m., followed by musical numbers till after 11 (Nelson, Smith, Gandy, Rodgers, Gaden, Keats).

XGRA/O, Shanghai (11,910 kc., 25.15 m.): Comes in well from 8.30 p.m. with news (Bantow, Gaden, Rodgers).

XGOY, Chungking (11,900 kc., 25.21 m.): Strong at 8.50 p.m. (Schodel, Gaden, Gandy). Strong at 4.30 a.m.; fair 10.30 p.m. (Bantow, Keats).

XGSB, Shanghai (11,880 kc., 25.25 m.): Fair at 9 p.m.; heard first August 25 (Bantow). (See reference elsewhere.)

XMHA, Shanghai (11,855 kc., 25.3 m.): Fair at 8 p.m. (Cushen, Bantow, Smith, Pepin). Poor at 10 p.m. (Schodel). Dr. Gaden says, "Improved a lot lately, and is O.K. when sharp morse is off."

XGOK, Canton (11,650 kc., 25.75 m.): Strong at 9 p.m. (Gaden).

XPSA, Kweiyang (6980 kc., 42.98 m.): Weak to fair at 10 p.m. (Schodel).

_____, _____ (6030 kc., 49.76 m.): Mr. Nelson, of Cairns, says he is hearing a Chinese station from 10 p.m. I have no particulars, beyond the fact that Dr. Gaden mentioned it last month. It may be the new one at Peking that is due to open any time.—Ed.

Portuguese China:

CRY-9, Macao (6080 kc., 49.34 m.): Only fair when opening at 10.30 p.m. (Linehan). Only heard on Monday nights.

Dutch East Indies:

?**PMH**, Bandoeng (14,630 kc., 20.51 m.): Have heard this chap since August 6, opening at 7.30 p.m. Am taking it for granted that it is **PMH**, as programmes are similar and **PMH** has been missing on 6720 kc.,

With the Reporters
Many thanks to the following readers for reports:—

Official Observers:—

Wm. Bantow, Edithvale, Vic.
Arthur T. Cushen, Invercargill, N.Z.

J. C. Linehan, Leabrook, S.A.
W. H. Pepin, Maylands, W.A.

P. L. Smith (AW537DX), Dunnsborough, W.A.

S. I. Nelson (AW577DX), Cairns, Qld.

Dr. K. E. Gaden, Wallumbilla, Qld.
R. C. Schooth, Deagon, Qld.

Chas. Schodel, Brisbane, Qld.
N. E. Gandy, Wellington, N.Z.

M. Rodgers, Hunter's Hill, Sydney.
M. Bowser, Chullora, Sydney.

B. W. Keats (AW565DX), Launceston, Tas.

44.64 m. for quite a while. (Have heard this chap several times, and I think Observer Pepin's deductions are quite likely correct.—Ed.)

YDC, Bandoeng (15,150 kc., 19.8 m.): Strong day and night (Bantow, Pepin, Gaden, Schodel). Believe they now open in afternoons at 1.30.—Ed.

PLP, Bandoeng (11,000 kc., 27.27 m.): Fair at 8.50 p.m. (Schodel, Schooth, Gaden). Good at 9 a.m. (Gaden, Keats).

PMN, Bandoeng (10,260 kc., 29.24 m.): Weak at 7.30 p.m.; only just audible at 8.30 (Schodel). Strong at 10.45 p.m. (Schooth, Pepin, Bantow, Gaden, Keats).

YDB, Soerabaya (9550 kc., 31.41 m.): Sometimes just audible (Schodel).

YDA, Tandjongpriok (7250 kc., 41.38 m.): Heard in afternoons quite well (Gaden).

YDX, Medan (7220 kc., 41.55 m.): Fair 8.45 a.m.; very strong at 10 p.m. (Bantow).

PMH, Bandoeng (6720 kc., 44.64 m.): Not heard this month; was for 2½ years most consistent station (Bantow). (See memo under **PMH**, 14,630 kc.—Ed.)

PMY, Bandoeng (5145 kc., 58.3 m.): Good nightly (Pepin).

YDE-2, Solo (4810 kc., 62.37 m.): O.K. nightly (Pepin).

YDA, Tandjongpriok (3040 kc., 98.68 m.): O.K., if not troubled with high noise level (Pepin).

French Indo China:

Radio Saigon, Saigon (11,780 kc., 25.47 m.): Excellent always. I think this sums up the opinion of our reporters and also mine. I'm sure listeners, with me, will, however, welcome an early adjustment of the "differences" between this intriguing country and a not nearby neighbour. It has been too clearly evident that there has been more than a little sadness in the voice of our lady announcer.—Ed.

Radio Saigon, Saigon (6116 kc., 49.05 m.): Same programme as 25.47, but not at anything like the same strength or clarity (Nelson, Schodel).

Hongkong:

ZBW-3, Hongkong (9525 kc., 31.49 m.): Strong at night; always reliable (Schodel, Smith, Rodgers, Gaden, Keats).

India:

VUD-3, Delhi (15,290 kc., 19.62 m.): Weak in the afternoon (Smith).

VUD-4, Delhi (11,830 kc., 25.36 m.): Strong at 10.30 p.m. (Bantow, Smith, Gaden, Pepin, Gandy, Keats).

VUD-2, Delhi (9590 kc., 31.28 m.): Strong at 10.15 p.m. (Bantow, Smith, Gandy, Pepin).

VUM-2, Madras (4920 kc., 60.98 m.): Good (Pepin).

VUB-2, Bombay (4880 kc., 61.48 m.): Good (Pepin). I think this is now known as **VUD-8** and situated in Delhi.—Ed.

VUC-2, Calcutta (4850 kc., 61.86 m.): Good (Pepin).

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.....

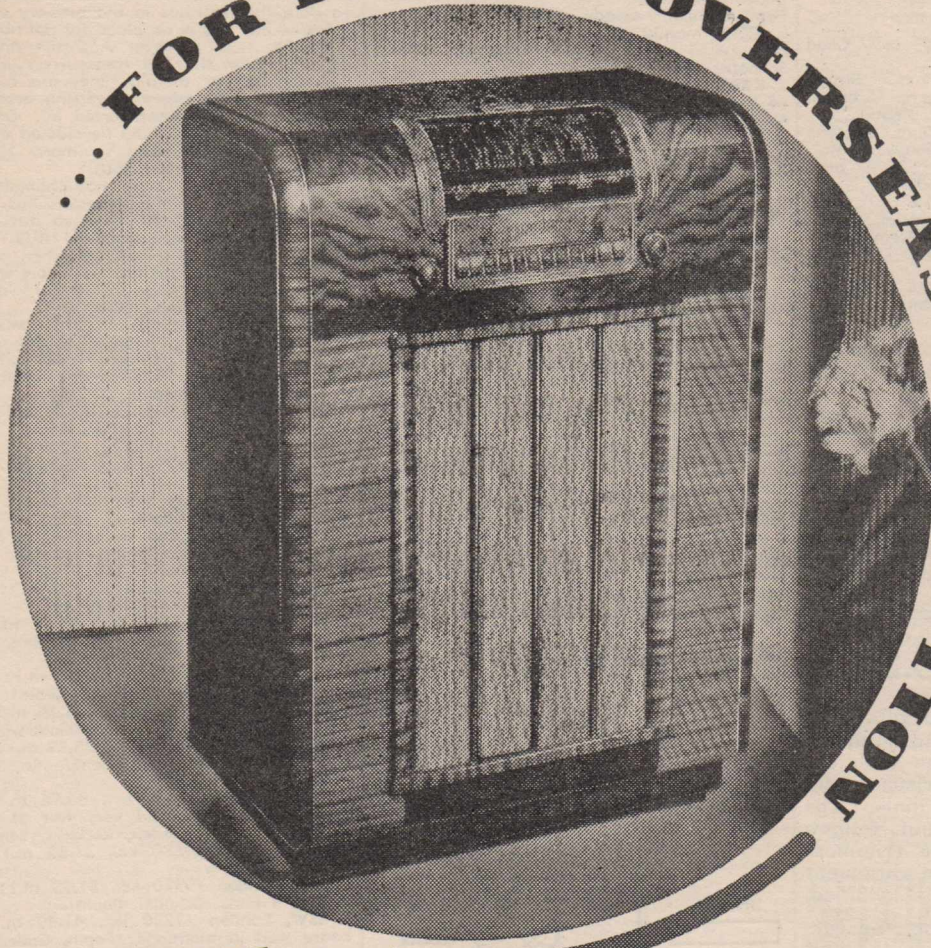
(Give make or type, number of valves, and state whether battery or mains operated).....

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).

... FOR FINEST OVERSEAS RECEPTION



**SHORT-WAVE
BANDSPREADING**

Enables short-wave stations to be selected as easily as those on standard medium wave band.

This entirely new Fisk Radiola (Model 282) gives the highest standard of overseas reception. Price, £47/16/-

SPECIAL FEATURES

Four tuning ranges with bandspreading on short-wave. ● Large convex dial clearly and accurately calibrated. ● Brilliant tone quality with Beam power push-pull output. ● Particularly handsome de luxe console cabinet.

● MANUFACTURED AND
GUARANTEED BY
AMALGAMATED WIRELESS
(A/SIA) LTD.

THE  FISK
RADIOLA

AUSTRALIA'S FINEST BROADCAST RECEIVER

LOGGINGS (continued)

Japan:
JVH, Tokyo (14,600 kc., 20.55 m.): Good to strong at 10 p.m. (Schodel).
JZK, Tokyo (15,160 kc., 19.79 m.): Strong at 6.20 a.m. and also at 10.30 p.m. (Schodel, Bantow, Pepin, Gandy, Scooth, Keats).
JZJ, Tokyo (11,800 kc., 25.42 m.): Strong at 10.30 p.m. (Bantow, Pepin, Gandy, Keats).
MTCY, Hsinking (11,755 kc., 25.48 m.): Fair at 6.40 a.m. (Schodel, Gaden).
JVW-3, Tokyo (11,720 kc., 25.6 m.): Good to strong from 7.30 p.m. (Schodel, Smith, Scooth, Gandy, Gaden, Bantow, Keats).
JIB, Taiwan (10,535 kc., 28.5 m.): Fair at 8.45 p.m. (Schodel).
JDY, Dairen, Manchukuo (9925 kc., 30.23 m.): Weak at 9.35 p.m. (Schodel).
JZI, Tokyo (9535 kc., 31.46 m.): Weak signal, nights only (Gaden).
MTCY, Hsinking (6125 kc., 48.98 m.): Strong night station (Gaden, Schodel, Pepin).
Malaya:
ZHJ, Penang (6090 kc., 49.24 m.): Reliable night station always (Gaden, Rodgers, Bantow).
ZHP, Singapore (9700 kc., 30.94 m.): Good at 8.30 p.m. (Bantow, Gaden, Rodgers, Schodel, Keats).
Philippines:
KZRH, Manila (9640 kc., 31.12 m.): Good at 6.30 p.m., strong at 8 p.m. News at 11.45 (Schodel, Scooth, Gandy, Gaden, Rodgers, Bantow, Pepin, Smith, Keats).

KZRM, Manila (9570 kc., 31.35 m.): Very good night station (Schodel, Smith, Bantow, Pepin, Scooth, Gandy, Keats).
KZIB, Manila (9500 kc., 31.58 m.): Good from 8.15 p.m. (Pepin, Bantow, Gandy, Scooth, Schodel, Keats).
KZRF, Manila (6140 kc., 48.86 m.): One of the best of the Manila stations (Bantow, Smith, Linehan, Scooth, Rodgers, Schodel).
KZRC, Cebu (6100 kc., 49.18 m.): Strong night station. News at 8.35 p.m. (Bantow, Pepin, Linehan, Scooth, Schodel, Rodgers).
KZIB, Manila (6055 kc., 49.54 m.): Heard well in W.A. (Pepin). Is noisy here.—E.D.
Thai:
HSGPJ, Bangkok (19,020 kc., 15.77 m.): Mondays only from 10.30 to 1 a.m.
HSP5, Bangkok (11,715 kc., 25.61 m.): Nightly except Mondays from 10.30 to 1 a.m. (Smith, Nelson). Often spoiled by C.W.
GREAT BRITAIN
 "If it were possible for an overseas listener to be so situated that he could receive everything radiated in the B.B.C. short-wave service throughout the entire twenty-four hours of one day, he would find that in the course of the day he had received no fewer than twenty-two different wave-lengths. He would find, too, that this total included at least one wave-length in each of the bands normally available for short-wave broadcasting." I have clipped that from a paper to hand from the B.B.C. It is surely a reminder of the splendid service the Empire station gives us. Has anyone heard a finer session than "Radio News-reel"? If by chance you have not heard it,

tune to GSN (25.38 m.) at 12.30 p.m. I heard the 76th Edition to-day, September 21 (a date that will live in the memory of quite a few—but this is no place for politics).
 Reports from all over Australia and New Zealand show that all transmitters intended for reception at certain times are behaving splendidly, while others traversing across this continent can be sweethearted in. Only objection to this, if it could be classed as such, is: one hears the news so many times it becomes a little monotonous.
 I hinted in last issue that changes could be expected in London transmissions, and I am therefore surprised that so far Transmission 1 has not been extended till 8.15 p.m., which is the usual procedure when we approach the vernal equinox. Listeners who can should take advantage of the 13 and 16 metre bands for Transmission 2.
GST, London (21,550 kc., 13.92 m.): Getting better weekly (Gaden, Rodgers, Keats).
GSJ, London (21,530 kc., 13.93 m.): Very good now from 9 p.m. (Rodgers, Gaden). Fair to good in W.A. (Pepin).
GSH, London (21,470 kc., 13.97 m.): Night only, sometimes quite well (Gaden).
GSG, London (17,790 kc., 16.86 m.): Night only, very fine now (Gaden, Rodgers).
GSP, London (15,310 kc., 19.60 m.): Excellent in mornings and also at 4.30 p.m. (Schodel, Gaden, Keats).
GSI, London (15,260 kc., 19.66 m.): Excellent at 4.25 p.m. and strong at 9 p.m. (Pepin, Gandy, Schodel, Gaden).
GSO, London (15,180 kc., 19.76 m.): Strong at 6.25 a.m. (Pepin, Schodel).
GSF, London (15,140 kc., 19.82 m.): Excellent at 6.25 a.m. and in afternoons (Pepin, Gandy, Schodel).
GSD, London (11,750 kc., 25.53 m.): Always good (Pepin, Gandy, Schodel, Keats).
GSE, London (11,860 kc., 25.29 m.): Fair, not much good in forenoon (Gaden, Pepin).
GSN, London (11,820 kc., 25.38 m.): Splendid after mid-day (Gaden). In this I thoroughly concur.—L.J.K.
GRX, London (9690 kc., 30.96 m.): Very good at 6.27 a.m. and very fair at 4 p.m. (Linehan, Gandy, Gaden, Rodgers, Schodel).
GSC, London (9580 kc., 31.32 m.): Good (Pepin, Gandy).
GSB, London (9510 kc., 31.55 m.): Excellent at 4 p.m. (Schodel, Pepin).
GSW, London (7230 kc., 41.49 m.): Still heard well in mornings (Pepin, Gaden).
GSL, London (6110 kc., 49.10 m.): Good (Pepin).
GSA, London (6050 kc., 49.59 m.): R7 with Empire news at 8 a.m. (Linehan). Heard well at Thargomindah by Dr. Gaden at 5.30 p.m.

New R.C.S. Trimmer Design

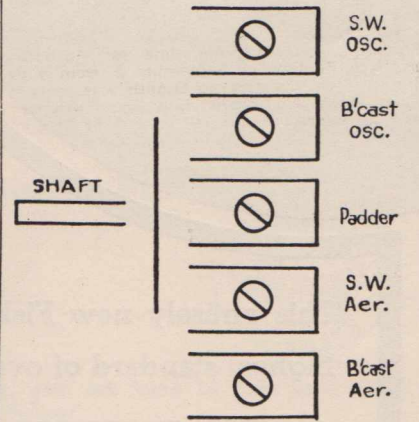
The latest dual-wave brackets from the R.C.S. factory are being supplied in a type suitable for use with the "H" type Stromberg-Carlson gang condensers and "H" type dials. The general design of the unit follows previous practice, but five trimmers are fitted in a row and the alignment procedure has been slightly modified.

Here are the instructions for correct alignment. For a start, the unit is switched to broadcast and the dial set by putting the gang condenser fully closed and then tightening the dial grid screws with the dial needle set to the end of the scale. A station is then tuned up at that end of the dial, preferably on a frequency about 600 kc., and the padder set for maximum gain. Whilst this is being set, the dial is rocked to and fro across the approximate dial position of the station. When a peak position for the padder has been found, the dial needle can be set to indicate the station correctly.

The next step is to tune to a station at the high frequency end of the dial, around 1450 kc. for preference, and then adjust the oscillator trimmer until the dial readings agree with the station being tuned. Finally, the aerial trimmer is adjusted for maximum gain, also at this end of the dial.

On Short-waves

For correct alignment on short-waves the first step is to get on to a station on the 19-metre band, and then adjust the short-wave oscillator trim-



mer until the dial reading is correct. Then tune to the 16 metre band and adjust the short-wave aerial trimmer for best gain or greatest noise level. There is no padder adjustment required for short-waves.

Correct Dials

It should be noted that, with this method of alignment, it is essential to have the dial to suit the coils. The R.C.S. "H" type coils for use with "H" type gangs, will only track with R.C.S. "H" type dials. The R.C.S. Standard coils will track with R.C.S. "F" type dials, and also with Efco dials which are calibrated from 1500 to 550 kc., but not with those calibrated down to 1600.

EUROPE
France:
 Call-signs unknown, but Paris is heard on 19.68 and also on 31.51 metres. I thought I heard them on their old wave-length of 25.6 m., but I am not sure.
Germany:
 When writing the short-wave pages for "Smith's Weekly," I dubbed the German transmitters in one general term as "Station Ananias." It was Boake Carter who said: "In time of war, the first casualty is truth." I guess the implication is merited.
 But if you would like to hear the exponents of "Poisonality," tune in on a Sunday at 12.25 p.m. and listen to Fritz and Fred, the friendly quarrellers, followed by Charlie's Cabaret. At 1.40 you will be given the week's programme details and at 1.50 the most puerile "feature," "Hold the Wire." This is supposed to be a telephone operator on the Pittsburg "Tribune" talking to a friend. **DJL**, 15,110 kc., 19.85 m., and **JDJ**, 11,770 kc., 25.49 m., provide the outlet.
Remarks hereunder apply to quality of signals, not subject matter.
DJH (17,845 kc., 16.81 m.): Very strong from 8 p.m. onwards (Gaden, Rodgers).
DJE (17,760 kc., 16.89 m.): Heard well at 8 p.m. (Schodel, Gaden, Rodgers, Scooth).
DJR (15,340 kc., 19.56 m.): Good in evenings (Scooth, Schodel).
DJQ (15,280 kc., 19.63 m.): Excellent.

DJB (15,200 kc., 19.74 m.): Strong at 6.25 a.m., very good at 4.20 p.m., but only fair at 9.5 p.m. (Schodel, Pepin, Gandy, Rodgers).

DJL (15,110 kc., 19.85 m.): Good at 6.25 a.m. (Pepin, Schodel, Keats).

DXH (14,460 kc., 20.75 m.): After 8.30 a.m. strong to excellent (Rodgers, Pepin, Schodel).

DJD (11,770 k., 25.49 m.): Very good in afternoon till closing at 5 p.m. (Schooth, Gandy).

DZD (10,530 kc., 28.5 m.): Reported by Mr. P.B.C. as being heard in special broadcast to N.B.C. and C.B.S. in New York.

DJX (9675 kc., 31.01 m.): Strong at 6.27 a.m. (Gaden, Schodel). (Lord Haw-Haw at 6.45 a.m.—Ed.)

DJW (9650 kc., 31.09 m.): Poor at 7 a.m. strong at 4 p.m. (Schodel, Keats).

DXB (9610 kc., 31.22 m.): Good from 2 p.m. onwards (Gandy, Pepin, Gaden).

DJA (9560 kc., 31.38 m.): Fair at 6.20 a.m., excellent at 4 p.m. (Scholel, Gandy).

DXJ (7240 kc., 41.44 m.): Very poor signals when closing at 6.40 a.m. (Schodel).

DXQ (6170 kc., 48.64 m.): Weak at 7 a.m. (Schodel).

DJC (6020 kc., 49.84 m.): Very strong at 7 a.m. (Gaden).

Hungary:
HAS-3, Budapest (15,470 kc., 19.52 m.): Mr. P. L. Smith (AW537DX), W.A., has just received a card from this station, acknowledging his report. He heard them with English announcements during their 1 to 2 a.m. session on a Monday. (This is most interesting, particularly as we were told this transmitter was off the air.—Ed.)

Italy:
Some radio magazines still refer to Rome as **12RO**, etc. It is **2RO**. Authority for this statement is programme booklet received from Rome—yes, since the war.—Ed.

2RO16, Rome (21,510 kc., 13.95 m.): Has been heard well in afternoons (Gaden).

2RO8, Rome (17,820 kc., 16.83 m.): Fairly good at 9 p.m. now (Gaden).

2RO20, Rome (17,780 kc., 16.87 m.): Excellent in afternoon in special transmission to Australia (Schooth, Gandy, Keats).

2RO6, Rome (15,300 kc., 19.61 m.): Weak at 6 a.m., but good from 5 p.m. (Schodel, Gandy, Gaden, Smith, Keats).

2RO4, Rome (11,810 kc., 25.40 m.): R9 at 5.30 p.m. (Gandy, Schooth, Bantow, Keats).

2RO15, Rome (11,760 kc., 25.51 m.): Never heard well (Gaden).

2RO3, Rome (9635 kc., 31.15 m.): Heard at excellent strength with news in English at 6.30 a.m. At 6.45 on two occasions they interviewed British prisoners of war taken off the submarine "Oswald" (Nelson, Cairns). Splendid at 6.20 a.m., 4 p.m. and 5.30 p.m. (Pepin, Schodel, Gaden, Gandy, Rodgers).

2RO11, Rome (7220 kc., 41.55 m.): Good at 6.15 a.m., and at 7.40 with news (Linehan, Schodel, Gandy, Gaden). Splendid signal at Randwick at 6.30, too.—Ed.

Vatican City:
HVJ, Vatican City (15,120 kc., 19.84 m.): Mr. Schooth, of Brisbane, reports hearing on Friday afternoons, from about 4.20 to 4.33, a session which from its nature suggests that it is from this station. Unfortunately no call sign is given or wave-length mentioned. The names of Italian residents in Australia are called. They are spelt in English and reference is made to the Society of Jesus.

Portugal:
CSW-7, Lisbon (9740 kc., 30.80 m.): Good at 8.30 a.m., but not as strong as a week ago. Fades after 9 a.m. (Linehan, Gaden, Schodel, Keats).

CSL, Lisbon (6,150 kc., 48.72 m.): Fair at 7 a.m. (Gaden).

Russia:
RW96, Moscow (15,140 kc., 19.47 m.): Very fine from 7.30 p.m. onwards (Gaden). Strong at 9 p.m. (Rodgers).

RW96, Moscow (15,180 kc., 19.76 m.): Good at 6.25 a.m. Exercises at 4.40 p.m. (Schooth, Bowser, Rodgers, Schodel, Gaden, Gandy, Keats).

RKI, Moscow (15,180 kc., 19.95 m.): Sometimes fair, never good (Gaden). (About two years ago, when this station first opened, it was one of the most consistent of the U.S.S.R. outlets. From 10 a.m. it was splendid during the winter.—Ed.)

R, Moscow (14,720 kc., 20.38 m.): Good at 9 p.m. English session (Gaden). Excellent in Randwick, too.

RNE, Moscow (12,000 kc., 25.00 m.): Very good 7 a.m. fair at 4.20 p.m., good 9 p.m. (Schodel, Gaden, Gandy, Keats).

R, Moscow (11,752 kc., 25.61 m.): Good at 4.20 p.m. (Schodel, Gandy).

R, Moscow (11,645 kc., 25.77 m.): Heard closing at 4.25 p.m. on September 8 with R9 signal.—Ed.

RW96, Moscow (9520 kc., 31.51 m.): Good at 6.15 a.m. (Schodel, Gandy, Rodgers).

RV-59, Moscow (6030 kc., 49.75 m.): Good (Pepin).

RV-15, Moscow (4250 kc., 70.59 m.): O.K. if free of QRN (Pepin).

Spain:
EAQ, Madrid (9860 kc., 30.43 m.): 7 a.m. to 8 a.m., fair to good (Nelson, Schodel). (This station at 8 a.m. gives a most unusual bugle call.—Ed.)

Radio Malaga (14,400 kc., 20.78 m.): Can still be heard at 10 a.m., just above **DJH**, but not nearly as strong as **DJH** (Gaden).

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

HBO, Geneva (11,402 kc., 26.31 m.): Very good on September 1 (Schooth).

Radio Suisse, Schwarzenburg (6170 kc., 48.66 m.): Excellent at 7.15 a.m. (Linehan, Cushen). (Schedule is now: 4.30 a.m. to 7.25 a.m. Also news at 9 p.m. and 10.45 p.m., but not likely to be heard here at that hour on that wave-length.—Ed.)

Yugoslavia:
YUG/F, Belgrade (15,240 kc., 19.68 m.): Started a musical programme for Australia and New Zealand on September 2, from 5 to 6 p.m. Unfortunately no English was spoken. Slovak music was played and signal was terrific (Schooth). Heard well in W.A. at 11 a.m. (Smith). See special article elsewhere.—Ed.

MISCELLANEOUS

Canada:
CJRX, Winnipeg (11,720 kc., 25.6 m.): Getting very weak in afternoons now (Gaden, Smith, Nelson, Rodgers, Schooth). Could only just hear at Randwick.—Ed.

CFKX, Vancouver (6080 kc., 49.34 m.): Fair signal till closing at 7.30 p.m. on Sundays (Nelson, Gaden, Cushen). (Closes at 6 p.m. week days.—Ed.)

Eire:
Radio Eire, Dublin (6190 kc., 48.47 m.): Heard in English news at 7.15 a.m. (Cushen, Linehan).

Iran:
EQC, Teheran (9680 kc., 30.99 m.): Good strength, opening at 11.45 p.m. (Nelson).

Turkey:
TAP, Ankara (9460 kc., 31.70 m.): Excellent signal from 12.30 a.m. till closing at 6.30 a.m. (Nelson, Rodgers, Bowser, Schodel, Gaden).

TAQ, Ankara (15,195 kc., 19.74 m.): Excellent in afternoon (Bowser, Gaden, Rodgers, Schooth). (Were opening at 2.40 p.m.; seems later now.—Ed.)

Canton Island:
KF6JEG, Canton Island (14,177 kc., 21.16 m.): Usually calls Honolulu at 2.30 p.m., but have not heard lately. Often calls Pan-American Clipper (Smith, Gaden, Schooth).

WEST INDIES

Cuba:
COGF, Matanzas (11,940 kc., 25.13 m.): Very good (Smith).

COCC, Havana (11,570 kc., 25.93 m.): Fairly strong at 10.15 p.m. (Pepin, Bantow). In afternoons, if free of morse, nice signal (Cushen, Gaden, Keats).

COCH, Havana (9440 kc., 31.78 m.): Very good (Pepin).

COCX, Havana (9200 kc., 32.61 m.): Good at 9 a.m., also at night (Gaden).

COBZ, Havana (9030 kc., 33.32 m.): Radio Salas is heard well over here (Pepin, W.A.).

COCC, Havana (8830 kc., 33.98 m.): One of the best Cubans heard in W.A. (Smith). Very good station (Cushen, Rodgers, Gaden, Gandy).

COCO, Havana (8700 kc., 34.48 m.): "Emisoras Cubanitas"; good night station (Gaden).

COHI, Santa Clara (6455 kc., 46.50 m.): Very loud signal and English announcement at 10 p.m. (Smith, Gaden, Rodgers). (Listen for "Popeye" selections.—Ed.)

COX-4, Havana (6396 kc., 46.95 m.): Heard strongly till closing at 10 a.m. (Gaden).

COCC, Havana (6365 kc., 47.14 m.): Fairly strong at 10 p.m. (Rodgers, Schodel, Gaden, Bantow).

COCW, Havana (6324 kc., 47.4 m.): Good night station (Gaden).

Haiti:
HH3W, Port-au-Prince (9890 kc., 30.33 m.): Observer J. C. Linehan, Adelaide, heard this new station at 9 a.m., but says quality is poor.

French West Indies:
Radio Martinique, Fort-de-France (9705 kc., 30.92 m.): Opens at 8.30 a.m., but quality poor (Linehan).

SCANDINAVIA

Norway:
LKQ, Oslo (11,735 kc., 25.57 m.): Nice clear signal at 4 p.m. (Gaden, Keats).

Sweden:
SBT, Motala (15,155 kc., 19.8 m.): Not heard recently (Gaden).

SBP, Motala (11,705 kc., 25.63 m.): Fair at 7 a.m. (Gaden).

SBU, Motala (9530 kc., 31.46 m.): Heard fairly well after 7 a.m. (Gaden).

SBO, Motala (6065 kc., 49.50 m.): News in English at 7.15 a.m., followed by German. Closes at 7.34 a.m. R9 at present (Linehan).

Do You Want A SPECIAL CIRCUIT?

INSTRUCTIVE READING MATTER?
GENERAL TECHNICAL ARTICLES?

You can get them from our special back-number department.

★ MAKE YOUR OWN HOME RECORDINGS!

Described in the June, 1939, issue.

★ MAKE A REISS MIKE!

Described in the April, 1939, issue.

★ BUILD A FREQUENCY METER!

Described in the September, 1939, issue.

★ BUILD THE AIR-CELL D/W FOUR!

Described in the May, 1938, issue.

Dozens of Interesting Issues Available

All back numbers more than THREE months before the current issue are available at the SPECIAL PRICE of

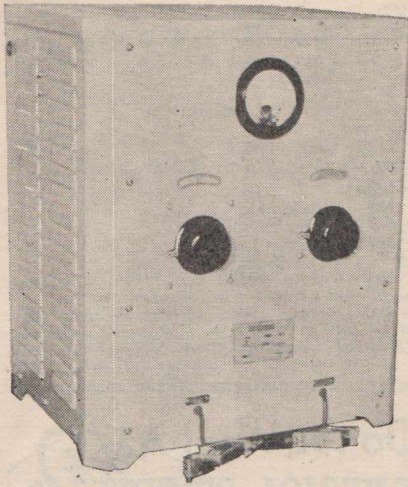
6^d each POST FREE

You can order direct or through your local newsagent.

When ordering direct, please remit in penny stamps

A DOZEN DON'TS FOR BATTERY SERVICEMEN

Battery Charging Does Pay — The **BOSS** Way!



The BOSS dry-plate battery charger illustrated above was specially designed for the discriminating radio serviceman or garage operator who realises that there are times when a greater initial outlay is sound economy because of lower operating costs and greater profit-making opportunities.

**NEARLY 50% LESS POWER
CONSUMPTION
NO VALVE REPLACEMENTS**

This new Boss appliance, built to the traditional standards of workmanship that have made Boss chargers famous for 16 years, employs a full-wave, dry rectifier in place of thermionic valves. This means no valve replacements, nearly 50 per cent. saving of power consumption for the same amount of work, and greater unit profit. The dry-plate rectifiers do not require replacement.

WRITE FOR FULL DETAILS: ALSO OF OUR EXTENSIVE RANGE OF BOSS VALVE TYPE CHARGERS.

BOSS ELECTRICAL MFG. CO.

776-778 PARRAMATTA ROAD, LEWISHAM, N.S.W.

Established 16 years

Phone: LM 1197

From his thirty years' experience in manufacturing the many hundreds of Boss battery chargers of all types that are now in use throughout the Commonwealth, Mr. F. E. O'Sullivan gives readers the following twelve pointers on battery maintenance.

DON'T allow a wet battery to remain in a discharged condition, or the plates will be irreparably damaged. Have it charged immediately.

DON'T use tap water for "topping up"—the iron compounds in solution will ruin the plates. Distilled water is essential.

DON'T add water to acid when mixing new electrolyte—an explosion is liable to occur due to the intense heat generated. Always add the acid to the water.

DON'T examine a battery with a naked light, particularly while it is being charged. The hydrogen and oxygen given off form an explosive mixture. For the same reason...

DON'T remove the connections unless the charger is switched off. A spark can easily ignite the gases mentioned above.

DON'T allow the battery to become damp and dirty, thus encouraging current leakage and corrosion.

DON'T charge a battery at a rate greater than 1/20th of the ampere

hour capacity. For example, a 60 amp. hour battery should be charged at 3 amps.

DON'T neglect to use a hydrometer regularly to ascertain state of charge. The following readings will provide a reliable guide:

| Specific gravity | |
|------------------|-------------------|
| 1.280 | .. Fully charged |
| 1.260 | .. Three-quarters |
| 1.225 | .. One-half |
| 1.160 | .. One-quarter |
| 1.150 | .. Discharged |

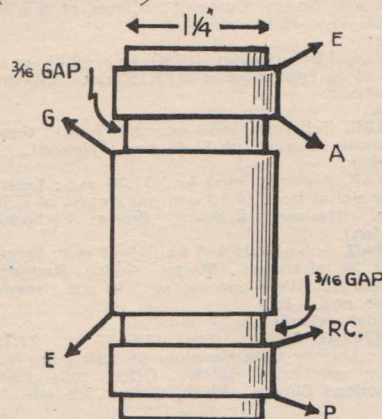
DON'T, however, rely on a hydrometer to indicate the condition of the plates, particularly if the battery has been mistreated. An instrument such as the Boss high discharge cell tester is necessary to provide an infallible indication.

DON'T discard a sulphated battery without giving it a long charge at a very low rate, to ascertain if an improvement can be effected. If not, a replacement is indicated.

DON'T allow the temperature of the electrolyte to exceed 110°F. when charging. Undue temperature rise and violent gassing indicate too high a charging current.

DON'T forget to keep terminals and connectors free from corrosion, by scraping regularly and smothering with vaseline.

REINARTZ 3 (continued)



adjustments. All that you have are the three main controls.

The volume control and switch are on the right. Retarding the volume fully switches off the set. Care must be taken not to advance the volume control too far, as the sensitivity builds up until the set reaches its

maximum and then squeals.

Under no circumstances must the set be left operating in a squealing condition.

The Trimmer

The left-hand control is the three-plate midget condenser which is fitted in parallel with the main tuning condenser.

Its purpose is to give you a finer tuning adjustment for short-wave reception. Of course, it also operates on the broadcast band. You can tune in to a station in the ordinary way and then use the little trimmer to get perfect tuning.

On short-waves it will be found that you can tune the main control, say, to the 19-metre band, and then tune in two or three short-wave stations on the trimmer condenser. In this way it gives you band-spread tuning just like that fitted to the best all-wave receivers.

Owing to pressure on our space the amplifier circuits promised for this issue have been held over until next.

"Obviously, my dear . . .

. . . the people downstairs have had their radio repaired. It's better to-night than it's been for months.

"And even more obviously the service man who did the job has had the good sense to put in new Philips valves. You can tell that from the marvellous tone, AND the greater clarity on short-wave. You can't beat Philips for making an old set new."

He's right! Philips valves will give any radio — YOUR radio — amazing new tonal brilliance and outstanding performance in every way. Replace tired valves with Philips to-day.

PHILIPS VALVES



Problems with 1.4 Valves

(Continued from page 11)

range frequently used with 2-volt 120 mA. valves for operation from a 6-volt accumulator.

Fig. 2 is a modification of Fig. 1 in which the common filament is placed at the negative end and two separate dropping resistors are used.

Fig. 3 is a straightforward series filament arrangement.

These are to be examined for their more important features.

Filament Failure

The failure or removal of V1 may result in the failure of V2 and V4. If points B and X are linked, the failure or removal of V1 will result in the failure of V2. This form of series-parallel connection is not a desirable arrangement since it results in secondary valve failures, which are not experienced with the circuits of Figs. 2 or 3. A receiver incorporating the circuit of Fig. 1 should display a warning notice stating that valves should not be removed from their sockets while the filament supply is switched on.

Earth Connections

Any of the systems may be earthed at B— or more conveniently at a positive point such as B (Figs. 1 and 2).

In any case the circuits should be arranged to prevent excessive filament currents due to the charging or leakage currents of the condensers in the receiver or B supply.

Cathode Current

When several filaments are connected in series, the plate and screen currents (i.e., the cathode current) of each valve must pass through the filaments on its negative side. The filament at the extreme negative end of the "chain" must, therefore, carry the whole of the cathode currents of all the remaining valves in the "chain."

With the 1.4-volt series of valves the ratio of "cathode current" to filament current is particularly high, thus it becomes necessary (in order to avoid incorrect filament voltages) to provide a shunt resistance across the filaments of the more negative valves in either series or series-parallel operation.

The correct value of each resistance may be found by calculation or experimentally.

A.V.C.

It is more difficult to design an efficient A.V.C. circuit with series or series-parallel operation than with parallel filament operation. In the normal type of A.V.C. circuit the grid returns from the several controlled

stages are brought to a common point and the zero signal grid voltage on these stages is the same.

With series or series-parallel operation, however, the filament voltages differ, with the result that the zero signal bias on one or more stages may differ from zero by a multiple of the filament voltage.

Switching

The switching of the filaments should not present any great problem. The shunt resistors may be connected permanently across the valve filaments, in which case they will increase the "A" battery drain with parallel filament operation, or they may be switched out of circuit for parallel filament operation.

Filtering

Inductance — capacitance or resistance — capacitance filters or both may be used to smooth the rectified A.C. Hum voltages due to poor smoothing of the rectified A.C. for the filament circuit may appear as a distressing "modulation hum" in the receiver output when a signal is received.

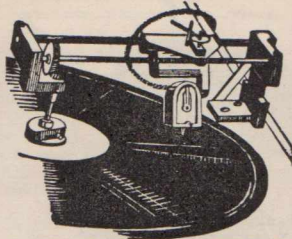
Further Data

Full information on this subject is contained in the "Radiotronics" technical bulletin, available from the Amalgamated Wireless Valve Company, 47 York Street, Sydney.



MORSE CODE PRACTICE OUTFITS. Complete with Buzzer and Lamp, with switch to changeover. 25/-. With heavier type Morse key, 30/-. Book, "How to Learn Morse Code," 1/-. Professional buzzer, 15/-. Complete De Luxe Morse Key and Light Sets, 42/6. With light practice key, 35/-. Buzzers, 4/9, 15/-.

Collapsible Frame AERIALS. Cost £9/9/-. Now, 30/-. Costly imported articles, slight defects, easily adjusted.



MAKE YOUR OWN RECORDINGS. Cutting head and overhead cutting unit complete, 98/6. Plain Records, 2/11, 3/11, 4/11, 5/11. Cutting Needles, 2/-.

LIKE-A-FLASH Overhead Cutting Head and Cutting Gear £4/18/6

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

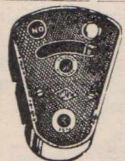
RADIO PUBLICATIONS

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

ACCUMULATORS. All guaranteed 12 months. You can't beat these values. Packing Cases, 1/- to 1/6 extra, according to size.



RADIO ACCUMULATORS.
2v. 110a. 17/-
2v. 150a. 20/-
4v. 65a. 20/6
4v. 90a. 22/6
6v. 90a. 36/3
6v. 110a. 45/6
6v. 130a. 66/-
6v. 150a. 73/9



"Bulgin" English LIGHTNING ARRESTER SWITCH, 5/-.



"Ormond" 3in. two - action VERNIER DIAL. 8/6.



Police Patrol Insulated AERIAL, multi-strand wires, rubber covered. 50 ft., 2/6; 100 ft., 5/-.

4in. BLACK FRONT-OF-PANEL BAKELITE, 1 to 100 DIALS, 1/2-in. shaft, with lock-nut fixing for Condenser Spindle, 3/6.



Lessen English 4000-ohm HEAD-PHONES, 19/6.

ERICSSON'S 4,000 ohm Professional Head Phones, 32/6. S.T.C. or B.T.H., British, 30/-.

"Like-A-Flash" 4,000 ohms, 17/6, 21/-.

Other types, 9/6, 11/6, 12/6. Acme De-Luxe Flyweight Headphones, 4,000 ohms. U.S.A., 15/9. Acme Special, 12/11. British 'phone cords, 3/9.

Newnes ELECTRICAL POCKET-BOOK. A University course, 8/-.

COLLARO Gramophone Motors and Turn-tables. Complete, 52/6 and 56/6.

Sturdy built 240-volt Electric Motor, with all fittings; were listed to sell at 75/- from over-time Customs Sale; now 40/-.



Remote Control, complete, 25/-.

Get more shaves from your Razor Blades!

RE - JUV Sharpener 2/6.



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



THE METER ENGINEER'S POKET Book, 8/-.

Splendid volume. CRYSTAL SETS AND CRYSTALS Famous All-Station Model. Charts 6d. All Parts 25/-. Built 35/-, in Cabinet 45/-.

Phones 12/6. Aerial—Earth 2/6. CRYSTALS A.1. Semi Fixed, 2/6. "Tec" Fixed Crystal 2/6. Liontron 5/6. Lion Micro 5/6. Refills 2/6. Red Diamond 4/6.

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

MIGHTY MITE Crystal Set 22/6. In neat cabinet — a fine job. Phone, 15/-; Aerial-Earth, 2/6.

VALVES. We have always on hand part-used Valves which are near or 100%. We guarantee these or replace them. Let's know what types interest you.

Used 57, 58, 6/6. New 4XP, 5/-.

New MH4, 2/6. 44Su Rectifier, new, 5/-.

New 41MRc, ML4, 2/6. Used 1C6, 6A6, 6A7, 6A8, 6B7, 6F6, 6F7, 6L7, 6/6. Used 6F7, 6J8, Ek2, 2B7, 2A3, 5/6.

2-Volt, 4-Volt, 6-Volt Batt. Valves, used, 5/-.

42, used, 6/6. 201A Types, 2/6. Let us know your wants.

Packing Case for Valves up to 3 Valves, 9d.; 6 Valves, 1/-. Postage extra. Inquiries welcomed.

VALVES, MADE IN U.S.A.

| Type | Price | Type | Price |
|--------|-------|------|-------|
| 57 | 10/6 | 85 | 12/- |
| 58 | 10/6 | 6D6 | 11/- |
| 33 | 12/9 | 6C6 | 11/- |
| 32 | 11/3 | 6A7 | 11/9 |
| 2A5 | 10/6 | 6B1 | 12/- |
| 2B7 | 14/- | 42 | 12/- |
| 27 | 11/9 | 80 | 9/6 |
| 6E5 | 9/- | 71A | 11/9 |
| 1D8-GT | 24/3 | 19 | 13/6 |
| 5Y3 | 8/9 | 75 | 11/- |
| 6J7 | 11/3 | 24A | 11/3 |
| 2A7 | 13/- | 30 | 11/6 |
| 6H6 | 12/9 | 247 | 13/3 |

Latest 1A7G 1.4-volt pentagrid converter valve. Usual price, 19/6. Our price, 15/-.



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

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

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

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

Highest grade well-known HAMULAND Electric Alarm Clocks. Perfect. Brand new. £6/6/- NOW 39/6.

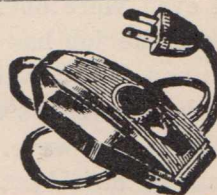


Model Electric MOTORS. Work off small wet or dry batteries. 5/9, 10/6, 12/6

Write for latest Test Morse Code Sets Buzzers and Keys



As illustrated. Long or Short Tappers, 12/6. Adjustable all ways. Bakelite base. Nickel-plated fittings.



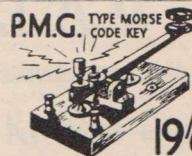
'VICO' highest-grade Electric Dry Shavers, with County Council O.K. 240 volts A.C. £5/5/- value; now 40/-.

Guaranteed perfect. In original cartons.



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

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



P.M.G. TYPE MORSE CODE KEY 19/6

P.M.G. ADJUSTABLE EVERY WAY MORSE CODE KEYS, 19/6.

"Emicol" POCKET VOLT METER, with leads. 0-30 M.A.; 0-6; 0-150 volts, 12/6. Write for full list of Meters and Testers.



SEND 8' NOW FOR YOUR EXTRA EXTRA LEVENSON'S WONDER BOOK SPECIALTIES

Contains 2/- Rebate Coupons. Illustrated from cover to cover. Full of Bargains and New Things galore. Radio, Games, Hobbies, Tricks, Jokes, Culinary, Sports, etc.

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.

SPEEDY QUERY SERVICE

Conducted under the personal supervision of A. G. HULL

T.T. (North Sydney) sends in a circuit for using a microphone with "Big Boy" amplifier. using a pre-amplifier valve.

A.—No, the circuit you suggest will not give you the added gain you require. In order to get phase-changing and gain at the same time, the signal input to the phase-changer valve has to be between grid and cathode. With the signal input between grid and earth, the valve will give correct phase-changing, but will not have any gain. We suggest you use a pentode pre-amplifier, then the volume control, and next a triode amplifier feeding into the phase-changer. Draw up the circuit again and let us have it for approval.

A.L. (Delungra) writes: "The 1.4-volt valves seem all right on paper, with their low battery drain and all that, but they are not worth a cracker. Few last more than six months and some don't see their ninety days out. They are too costly, anyway, and I am done with them."

A.—Your views on these valves seem to be pretty drastic, and apparently you have had a particularly bad run with them. There is something in what you say, however, and without doubt the more robust two-volt valves can be expected to give better service in a household receiver.

K.R. (Carnegie) is interested in home recording.

A.—This subject was treated very fully in articles appearing in our issues for December, 1938, and February, 1939. If you have not seen these issues, we can supply them at our special back number price of 6d. each, post free.

Mr. S. J. Rodgers, of Melton, Victoria, writes: "I should like to draw the attention of fellow readers to the excellence of the "Dandy Three" in the March issue. I have made up several of these, and am using one on a 110-volt d.c. lighting plant, on which its performance is even better than on a.c., and it draws only about 1/5th of an ampere."

A.—Yes, this little job should be ideal for the purpose. The main difficulty, however,

is to obtain supplies of the types of valves specified.

S.L.B. (Narrogin) enquires about vibrator-powered sets for short-wave reception.

A.—There is bound to be difficulty in suppressing the noise of the vibrator on short-waves, and when the set is working at its most sensitive position trying to get weak short-wave stations. Each set design would be likely to require individual attention. The task is not hopeless, however, as there are many completely satisfactory vibrator-powered dual-wavers. We have in mind, for example, the Ultimate job which we have had out on test recently. They have made a perfect job of suppressing the hash from the vibrator.

R.L.T. (Melbourne) wants to modify the Communications Nine to suit parts he has on hand.

A.—The 6G8G can be used in place of the 6B6G simply by tying the plate and screen together. To use the full gain of the pentode portion of the 6G8G would tend to make the set unstable unless inverse feedback was used. You could use a 6F7 as suggested as second i.f. The field coil of 1500 ohms would be quite O.K. Either value would be O.K. for dropping resistor mentioned. Sorry if there has been delay, but when letters arrive with odd amounts of money and the rules are not adhered to, there is always the tendency to put it all aside until there is time to sort it out—result is anything up to a fortnight's delay.

H.G. (Kensington, Vic.) wants a circuit for an a.c.-operated two-valve all-wave receiver.

A.—In response to your letter we have sent you a copy of the back number which contained details of the "Jones Super Gainer" two-valve job, which should serve your purpose, being suitable for operation from an a.c. power pack or one of the old "B" battery eliminators. Generally speaking, we don't recommend two-valvers for a.c., but you should find this job is O.K. if you keep the pack a few feet from the set.

J.W.H. (Charleville) wants to know whether a five-band unit can be supplied without

broadcast coils but with coils to tune from 600 to 1000 metres.

A.—No, coils of this type are not available. Trouble is that you can't tune in on a 465 kc. wave-length fundamental if you are using that frequency for the intermediate channel. So far as we know, the Stor-bat device is not available on the Australian market.

H.P. (Malanda, Q.) wants to use the "War News Booster Unit" with a vibrator-powered set.

A.—Yes, this is quite possible, and no alteration is required in the circuit. Simply take the high tension from the set and the heater current direct from the six-volt accumulator. Sorry about the delay, but your letter got tangled up in the system somehow and the fact that your reply didn't get into the August issue has just been revealed.

Mr. W. G. Redfern, of 85 Carter Street, North Sydney, writes:

"Many thanks for publishing the circuit of that very fine little set, 'The Tip Top.'"

"I built this set, and find it exceeds all expectations. In fact, the set as it is now is in my opinion as good as any 4-5 set on the market."

"To date, I have received upwards of 60 stations on this set including the New Zealanders 1YA and 2YA, mostly very loud."

"Owing to its extreme selectivity, I am able to receive as many as four and five stations between the Sydney B-class stations, and all distant stations very free from statics."

"I might say that I added a .05 condenser across the speaker transformer leads and also put in a dial light with a jewel in front of the cabinet, which makes the set appear a very nice job. The only trouble I have now is to bring the stations to track on the dial, although they very nearly do so. I receive the stations a little closer together than the dial

(Continued on page 42)

A.W.A. OFFERS NEW CATHODE RAY OSCILLOGRAPH

A new Cathode Ray Oscillograph, type R6673, has been developed by Amalgamated Wireless to provide, at low cost, all features previously associated with larger and more expensive instruments of this type.

The instrument employs a Radiotron 902 with 2 in. screen, and is supplied in a metal case 12 in. x 8 in. x 8 in., complete with leather carrying handle. The case is finished with grey wrinkle enamel and a black and silver process plate used as the front panel. Linear time base circuit covers a frequency range of 35 to 40,000 cycles in eight ranges of coarse frequency control and a continuously variable fine frequency control. External time base may also be employed.

Separate amplifiers are provided for both horizontal and vertical plates. These amplifiers are flat within 0.5



decibel and have a gain of more than 30 decibels over the audio range. The gain is 20 decibels at 100 kilocycles. Vertical and horizontal shift and amplifier gain, focus and intensity, and time base controls are conveniently arranged on the front panel. Operation is arranged for 200-250 volts 50-cycle supply, the power demand being approximately 50 watts.

The valve equipment is 1 Radiotron 902, 1 Radiotron 884, 2 Radiotrons 6J7G, 2 Radiotrons 5Y3G.

Just Arrived!

SYLVANIA TUBE MANUAL

272 Pages of Information for all
Radio Enthusiasts

5/- 4d. postage

AIRCRAFT RADIO AND ELECT. EQUIPMENT

By H. K. Morgan

274 Pages. Many illustrations and diagrams. An American book which will be in demand by all operators interested in Aircraft Radio.

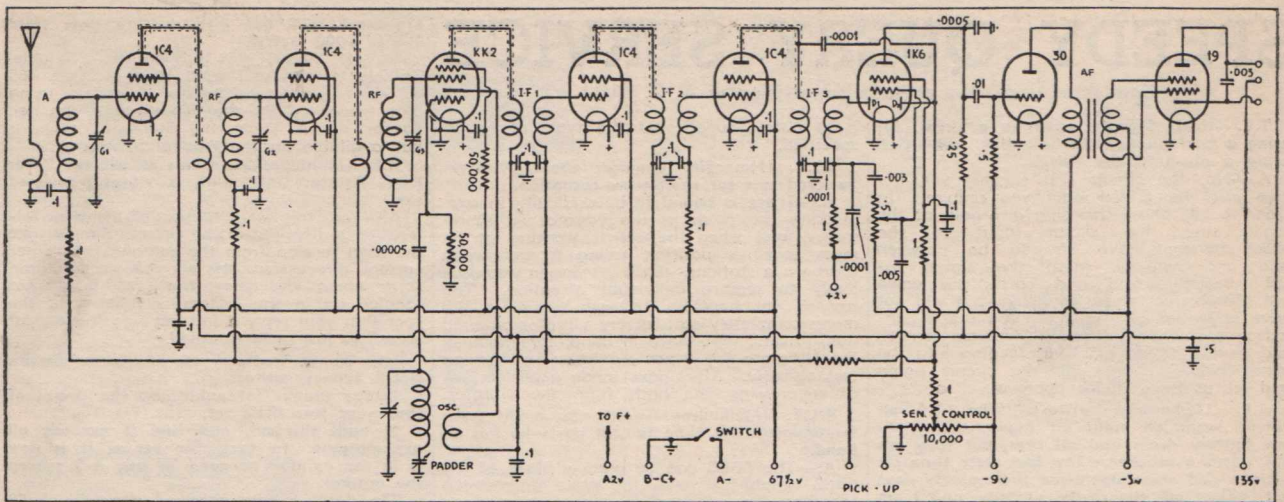
34/- 10d. postage

SUBSCRIBE TO YOUR RADIO
MAGAZINES

From

McGill's Agency

183 ELIZABETH STREET
MELBOURNE, C1



QUERIES (continued)

indicates. Perhaps through your Query column you may inform me how to rectify this.

"As this is my first attempt at building an electric set, I am very pleased with the result."

A.—There is no easy way of altering the tracking of the tuning with the dial, as this depends primarily in the shape of the plates of the tuning condenser. Apparently, the dial you are using is not matched with the coils and tuning condenser. We are glad to hear that you were so successful with your first receiver.

S.S. (Cowra) wants to run a two-volt set to a circuit similar to the "Star" battery set.

A.—There are one or two points to be watched about this. In the first place the valves you mention are intended for use with

Since our article in the March issue, in which we showed the circuit used by "Donald" we have had enquiries for further details about this set. As a matter of fact, "Donald" has now built a new receiver with an extra r.f. stage as shown in the circuit above. He still prefers the two-volt valve types shown. Results are exceptional, as might be expected with two r.f. stages. We hope to give further details of this set in next month's issue.

67½ volts on the screens, and if you ran them with 90 on plate and also 90 on screen they would draw excessive current. On the other hand, the 1.4-volt valves are designed for use with the 90 volts on both elements. The 1L5G will work well on 90 volts with about 3 volts bias, with ample power output to give quite fair volume with a modern permanent speaker.

J.L. (Deepdene, Vic.) enquires about audio transformers in the "De Luxe Fidelity Eight" of the May issue.

A.—We can't understand why it is, but you must be the third or fourth to claim that we said that the old audio transformers like the AF5C were no good. We have re-read the article and stand by what we said, which was simply that a few years ago you had to import an audio transformer to get a really good one. We did not say that the Ferranti transformers weren't any good. As a matter of fact they are fine transformers and we have never disputed their ability to give splendid reproduction. If you have one on hand we wouldn't hesitate to recommend you to use it. But if you are about to buy a

Radio Book Review

Technical Manual

In the introductory chapters of the 1940 "Technical Manual," published in America by the manufacturers of Sylvania valves, some useful information is given on fundamental properties of valves and on the various amplifier classifications.

The next 200 pages are devoted to giving characteristics and circuit application data on nearly 400 American valve types, including the 1.4's, GT's and loktals.

Next follows a selection of typical radio receiver and amplifier circuits, chosen to illustrate recommended practices for popular valve types. The appendix contains useful formulae, and a particularly comprehensive bias resistor chart.

("Technical Manual," compiled and published by Sylvania Radio Tube Division, Penna., U.S.A. Our copy from McGill's, Melbourne).

Aircraft Radio and Electrical Equipment

There are many people connected with aviation who would like to know more about electricity and radio. "Aircraft Radio and Electrical Equipment," by H. K. Morgan, has been written specially for them, in that the fundamentals of both subjects are dealt with in detail in the first three chapters.

Accessory equipment is the subject of Chapter 4, which deals with electrical systems in aircraft and outlines principles of operation of such devices as electrical thermometers, fuel gauges, exhaust gas analysers, etc.

Transmitter and receiver fundamentals, together with circuit data of typical commer-

cial aircraft transmitters and receivers, occupy the next few chapters.

Radio waves and static, direction finding and ultra high frequency equipment are then discussed, the book concluding with a chapter on inspection and maintenance.

Each chapter concludes with a set of questions on the subject matter, answers being given in an appendix.

("Aircraft Radio And Electrical Equipment," by Howard K. Morgan, B.S. in E.E., published by Pitman Publishing Corporation, New York. Our copy from McGill's, Melbourne).

Television

"Television," by V. K. Zworykin, E.E., Ph.D., and G. A. Morton, Ph.D., both of the R.C.A. Electronics Research Laboratory, is the latest and one of the most authoritative works on television yet published.

The opening chapters are devoted to a consideration of the fundamental physical phenomena involved in television, i.e., emission of electrons, fluorescence, electron optics, etc. Part II deals broadly with the field of television as a whole—with the transmission and reception of signals and the more important methods of pick-up and reproduction of images.

Part III deals in turn with the iconoscope, kinescope and electron gun, while the concluding section is devoted to a description of a working television system used in the R.C.A.-N.B.C. television project.

("Television," by V. K. Zworykin, E.E., Ph.D., and G. A. Morton, Ph.D. Published by John Wiley & Sons, Inc., New York. Our copy from McGill's, Melbourne).

"STAR" WITH ACCUMULATOR

The "Star" battery circuit detailed in last month's issue is ideal for operation from a 2-volt accumulator. The only alteration necessary is to use a resistor of 2.3 ohms in the filament circuit, instead of the .25 ohm resistor shown in the original circuit. This allows a rechargeable accumulator to be used instead of the dry cell otherwise required.

transformer we strongly advise you to investigate the proposition offered by the Airzone, which is cheaper, yet capable of giving you true "high-fidelity reproduction."

B.E. (Rose Bay) has a three-valve midget receiver which he built from a circuit in another publication, but he finds that there is not sufficient gain to bring in 2UE on a short indoor aerial.

A.—The obvious solution to the problem is to erect a more effective aerial, for preference outside. Even a few more feet of length to the present indoor aerial should help a bit. To get greater gain in the set you could use another No. 2 intermediate in place of the present No. 1, or you could convert the circuit over to our "Tip-Top," which, as you suggest, has a lot more lift on account of the extra stage of amplification.

All you ask for and more!

DELTA D1200 Volt-Ohm-Milliammeter

PUSH BUTTONS OPERATED

This is the latest addition to the "Delta" range of Testing Equipment, and incorporates the Tripplett twin instrument with a sensitivity of 2,000 ohms per volt on the D.C. scales.

SCALE READINGS

D.C.: 0-10-50-250-1,000 volts at 2,000 ohms per volt; 0-1-10-50-250 milliamperes; Low ohms: $\frac{1}{2}$ to 500, 1500 ohms and 1.5 meg-ohms. A.C.: 0-10-50-250-1000 volts.

BACK-UP OHMMETER CIRCUIT

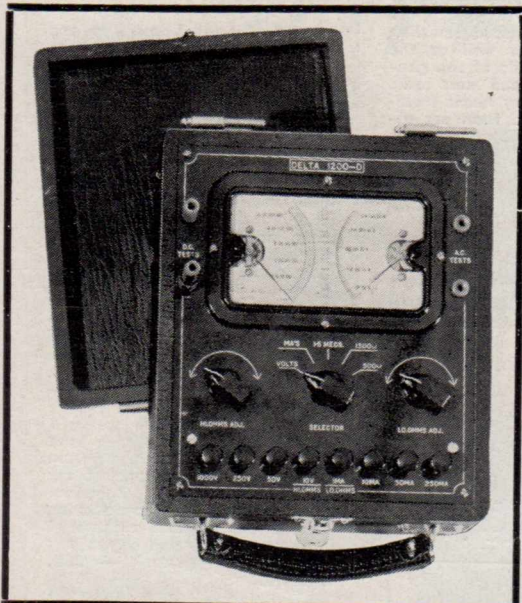
For reading low ohms, $\frac{1}{2}$ to 500, with minimum contact error.

PUSH BUTTONS

For selecting correct range of D.C. and A.C. volts, D.C. Milliamperes and high and low ohms. Separate zero adjusters for high and low ohms. Selector switch for volts, milliamperes, 1.5 megohms, 1500 ohms and 500 ohms.

- Leatherette carrying case, 9" x 7 $\frac{3}{4}$ " x 5 $\frac{1}{2}$ ", with handle for portability. Bakelite engraved panel, test prods and leads and all self-contained batteries supplied.

PRICE, £8

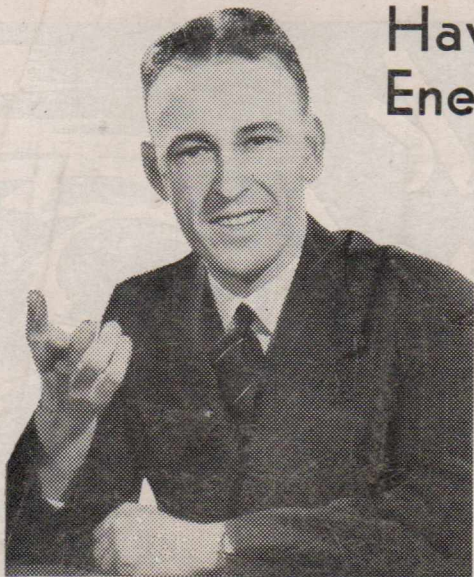


- You are cordially invited to inspect the complete Delta range at our showrooms. Remember efficiency in your business is largely dependent upon up-to-date equipment.

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

279 CLARENCE STREET, SYDNEY

Phone: M 4331 (6 lines)



Have You a Id. Stamp and the Energy to Fill in a Coupon? . . .

**LET'S SEE SOME ACTION —
HERE'S THE OPPORTUNITY
OF A LIFETIME**

SEND FOR THIS FREE BOOK NOW!

Never let it be said that you're content to plod along with the crowd — to potter along through life with just a "job"! Let me show you how to make real money in Radio. Now don't just read this advertisement! — let's see some action NOW. A stamp is not much to spend on a book which has literally been the starting point of amazing new careers for hundreds of fellows like yourself.

TRAINED MEN WANTED FOR RADIO

Right now, the Radio industry is literally panting for trained men and is willing to pay good money to get them. War, much as we may all deplore it, has had a most beneficial effect on the industry, which is expanding at a rate never before witnessed in Australia.

Let me show you how to cash in on this wonderful Radio business, let me take you in hand, train you for a good-pay Radio job. How would you like to be a design engineer, television engineer, sale-service engineer?

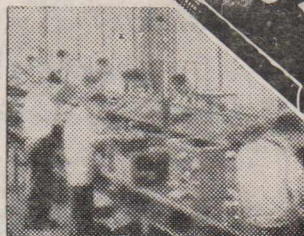
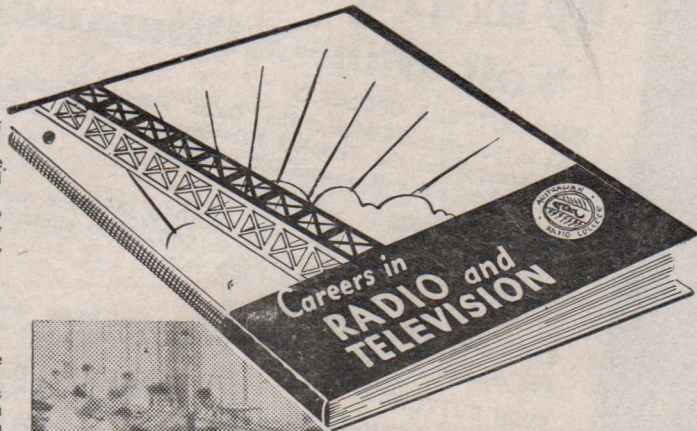
PREVIOUS KNOWLEDGE UNNECESSARY

You don't need a knowledge of Radio or Electricity. I'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 that you want presented in a manner that is easy both to learn and use and you learn FAST!

EARN WHILST LEARNING AT HOME

You don't have to wait a year or even six months before you start earning. Quite early in your course you'll find your accumulation of knowledge such that you can earn quite a few pounds in spare-time Radio work.

A.R.C. training costs less than many men spend on tobacco each week, and thousands of students testify to our successful methods. Let's not waste any further time in reading — get the coupon into the post NOW!



**THESE MEN STARTED
BY READING MY BOOK**

Australian Radio factories are working at high pressure fulfilling Defence contracts as well as the ever-increasing demands of the general public for more and more radio receivers. The industry needs trained men — more indeed than are offering — here is YOUR opportunity.

"I have started work in the Radio business, and I have been very busy."

"It was the College badge that got me the job." — **M.E., Murwillumbah.**

"When I think of the trouble you and the staff of the College have taken to fit me for my work, and to find me the position here, I feel deeply grateful, and proud to have been a student of the Australian Radio College." — **R.R., Bowral.**

"No doubt you will be pleased to know that I have just got a new job with the _____ Agency here, in charge of the Service Department. Thanking you for the great help you have given me, wishing the A.R.C. the success it deserves." — **W.A.S., Devonport, Tas.**

"During the last two weeks I have added over £33 with sales and repair work, exclusive from my regular weekly wage, to my bank account . . . I cannot stress enough my appreciation of the benefit and pleasure I have received since I began your instructional course." — **J.R., Lismore.**

AUSTRALIAN RADIO COLLEGE PTY. LTD.

Broadway, Sydney.

Phone: M 6391-2

MAIL COUPON NOW — MAIL COUPON NOW — MAIL COUPON

To Mr. L. B. GRAHAM, Principal,
Australian Radio College Pty. Ltd.,
Broadway (opp. Grace Bros. Ltd., Sydney).
Phone: M 6391-2.

Dear Sir,
I am interested in getting ahead. Please send, without obligation on my part, the free book, "Careers in Radio and Television."

NAME

ADDRESS A.R.W.7

MAIL COUPON NOW — MAIL COUPON NOW — MAIL COUPON