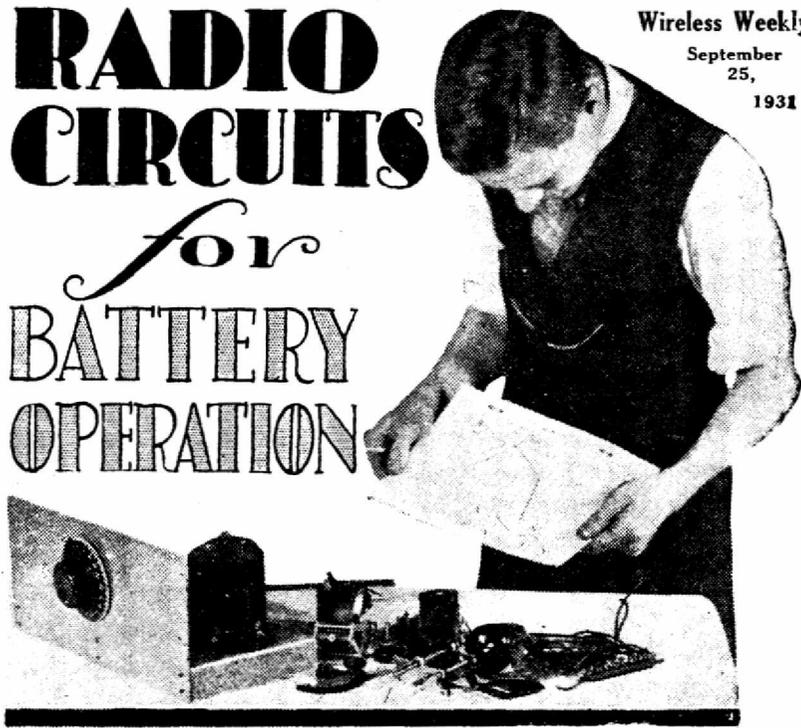


SUPPLEMENT TO  
Wireless Weekly  
September  
25,  
1931

# RADIO CIRCUITS

## for BATTERY OPERATION



*Constructional Details for the*  
SUPER SIX  
NEW ERA FOUR  
NEW ERA THREE  
DIRECT-COUPLED BATTERY SET  
MR. LAKE'S ONE VALVER  
*and a*  
CRYSTAL SET

---

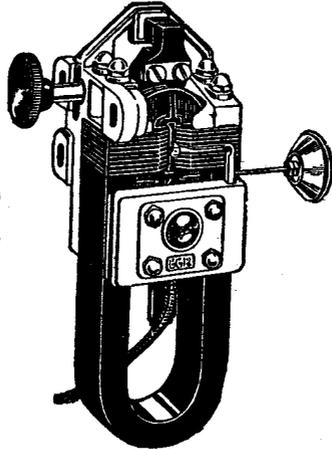
# BLUE SPOT Speakers

## "The Tone's the Thing"

### CHANCERY R SPEAKER,

incorporating the famous  
Blue Spot 66 R unit.  
Highly finished Mahog-  
any Cabinet.

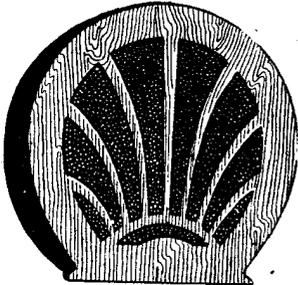
PRICE,  
£4/7/6



### CHANCERY GOTHIC SPEAKER,

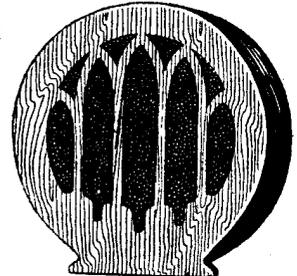
incorporating the well-  
known Blue Spot 66 K  
unit. Highly finished  
Mahogany Cabinet, 12in.  
diameter.

PRICE,  
£3/12/6



### 47/6 UNIT 66 R

SPEAKER UNIT 66 R, a balanced  
4-pole unit capable of enormous  
volume if required. Featuring  
sensitivity and fidelity; reproduces  
the lower notes with hitherto un-  
heard of clarity. Coil windings  
will carry a current of 50 milli-  
amperes without risk. We recom-  
mend this unit to be mounted on  
large baffle boards, preferably  
Celotex, 3ft. x 3ft., and using a  
cone 12in. to 14in. in diameter.



For the battery operated receiver, where tonal reproduction, to-  
gether with full round volume, is desired, BLUE SPOT Speakers  
or Units are ideal. BLUE SPOT are stipulated and used by lead-  
ing manufacturers because of their undistorted volume and faithful  
rendering of both high and low notes.

### OBTAINABLE AT ALL GOOD RADIO DEALERS

#### N.S.W. DISTRIBUTORS:

Fox and MacGillycuddy, Ltd., York Street,  
Sydney.  
Bloch and Gerber, Ltd., York Street, Sydney.  
Harringtons, Ltd., Clarence Street, Sydney.  
Noyes Bros. (Sydney), Ltd., Erskine and York  
Streets, Sydney.

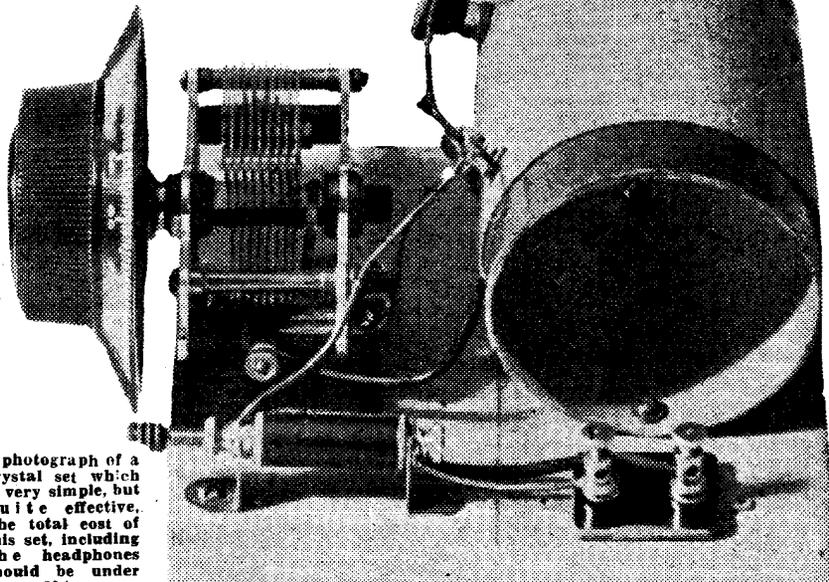
#### INTER-STATE DISTRIBUTORS:

J. C. Price, Perry House, Brisbane.  
Trackson Bros., Ltd., 157 Elizabeth Street,  
Brisbane.  
Carlyle and Co., 915 Hay Street, Perth.  
W. T. Mathews, 95 Grenfell Street, Adelaide.  
W. G. Genders Pty., Ltd., Hobart and  
Launceston.

### THE BRITISH BLUE SPOT CO. LTD.

Factory Representative: H. Hecht and Co., Sydney and Melbourne.

# A CRYSTAL SET



A photograph of a crystal set which is very simple, but quite effective. The total cost of this set, including the headphones should be under 30/-.

**A**LWAYS a popular item, the crystal set has a great many uses. It is cheap to build and does not cost one penny for upkeep. Batteries are not required. The range and selectivity of a crystal set are strictly limited, but nevertheless it will provide much entertainment and is always a source of interest. Many readers who own high-powered valve sets have a small crystal set permanently installed with a headphone under their pillow so that they may be lulled to sleep to the rhythm of dance music.

## The Coil

The coil consists of 40 turns of 22-gauge d.c.c. wire wound on a 3in. cardboard former. Tappings are made at the 10th, 15th, 20th, and 30th turns, and selectivity is obtained by a careful ad-

justment of the two clips which are attached to the coil as shown.

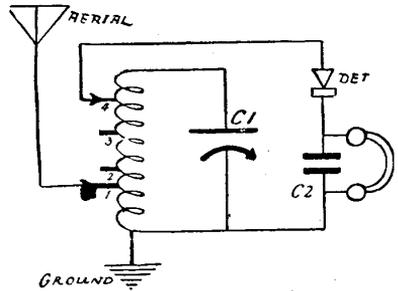
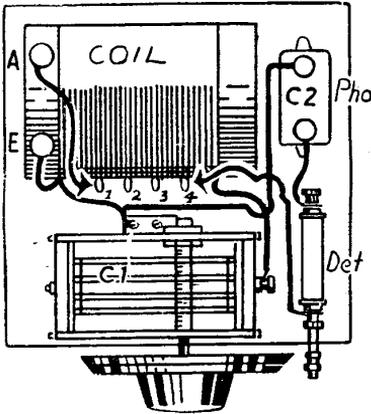
## Aerial and Earth

For best results with a crystal set, it is essential to use an effective aerial and earth. The aerial should be about 50 or 75 feet in length and 30 feet high. It should run straight to the set, which should be earthed by a short and direct wire running to a water pipe or a large tin sunk in damp earth to a depth of about three feet. It is most important that the earth wire makes actual metallic contact with the metal of the pipe or tin, either by soldering or a carefully-scraped and cleaned joint.

## Range

Although occasionally one hears remarkable claims it is seldom safe to guarantee that a crystal set will have a range of more than about 50 miles.

# LAYOUT AND PARTS FOR CRYSTAL SET



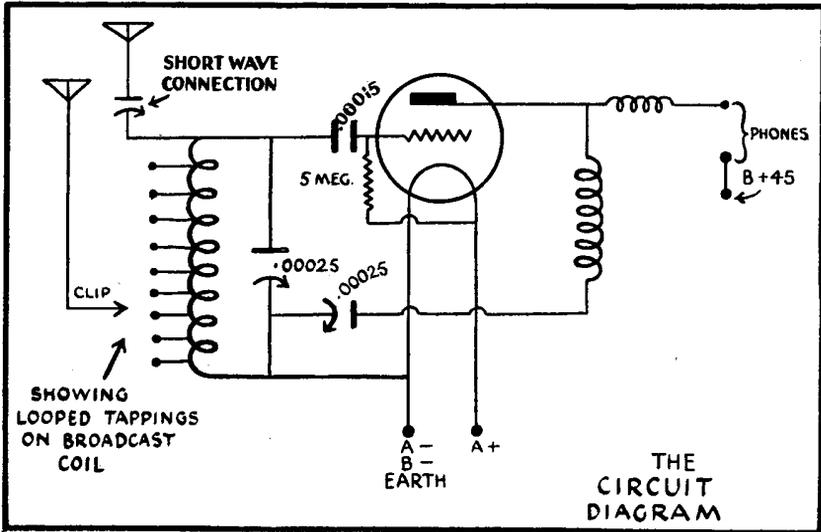
- 1 Tuning Condenser, .0005 mfd. (A.W.A. Radlokes, Pilot.) (C1.)
- 1 Crystal Detector, with holder and mounts.
- 1 Mica Condenser, .001 or .002 mfd. (Renrade, T.C.C.) (C2.)
- 4 inches of 3In. Cardboard Former
- 4oz. 22-gauge d.c.c. Wire.
- 1 pair Headphones.
- Necessary wooden Base and Panel.

## The Aerial and Earth

WITH all crystal and battery sets the aerial and earth connections are most important. If the sets are used at some distance from the broadcasting stations the aerial can be fairly large, as selectivity troubles are hardly likely to occur, and in country stations it is usually possible to erect a long aerial. At the same time it is not advisable to have the aerial too long. For average results we would suggest an aerial of from 50 to 100 feet and about 30 feet high. It should run in a more or less straight line, pointing towards the desired stations. The lead-in should be as short and direct as possible. It should not double back on the aerial itself. The wire used for the aerial is not particularly important, although stranded copper cable is usually employed. If there are any joints in the aerial they should be soldered connections.

### THE EARTH

An effective earth connection is equally as important as the aerial. Where water pipes are available they make good earth connections, except that it is very difficult to solder to the pipe, making a clamp desirable. Before the clamp is fitted the pipe should be scraped quite clean of all rust paint or anything else likely to interfere with an effective metallic connection. Where water pipes are not available an earth can be arranged by sinking a kerosene tin or other sheet of metal at a depth of about three feet in damp soil. The lead in this case should be invariably soldered to the metal so that rust will not interfere with the contact. If the soil is dry a piece of drain pipe should be fitted when the tin is being buried so that should a dry spell be encountered the earth can be dampened with a bucket of water poured down the drain pipe.



# MR. LAKE'S ONE VALVER

ORIGINALLY published in the Radio Fan Forum on account of the remarkable claims of its builder, Mr. Eric J. Lake, of Station 4BK, King House, Queen Street, Brisbane, this set has created no end of interest with readers of all kinds. Many readers have duplicated the performance of the original, but, of course, a lot depends upon location and other factors. In a later letter Mr. Lake slightly amends the original details and gives us the following revised circuit. It is interesting to note by the way that Mr. Lake claims to have received letters from all parts of Australia, and, according to reports, results vary, but in some cases 84 stations have been logged during the first week's use of the set.

### The Coil

For broadcast work, the coil comprises a secondary with windings and the reaction winding, which is on the same former but spaced a quarter of an inch from the secondary. The former is 2 1/2 in.

diameter. The grid coil or secondary consists of 65 turns of 24 s.w.g. D.C.C. wire. Looped windings are taken at the 5th, 10th, 15th, 20th, 25th, 30th, 35th, 40th, 50th and 60th turns, from the end nearest to the reaction coil which is the end nearest of the secondary which runs to the filament. The reaction coil, which is wound on the same former, but spaced a quarter of an inch from the secondary, consists of 50 turns of the same wire wound in the same rotation as the other winding.

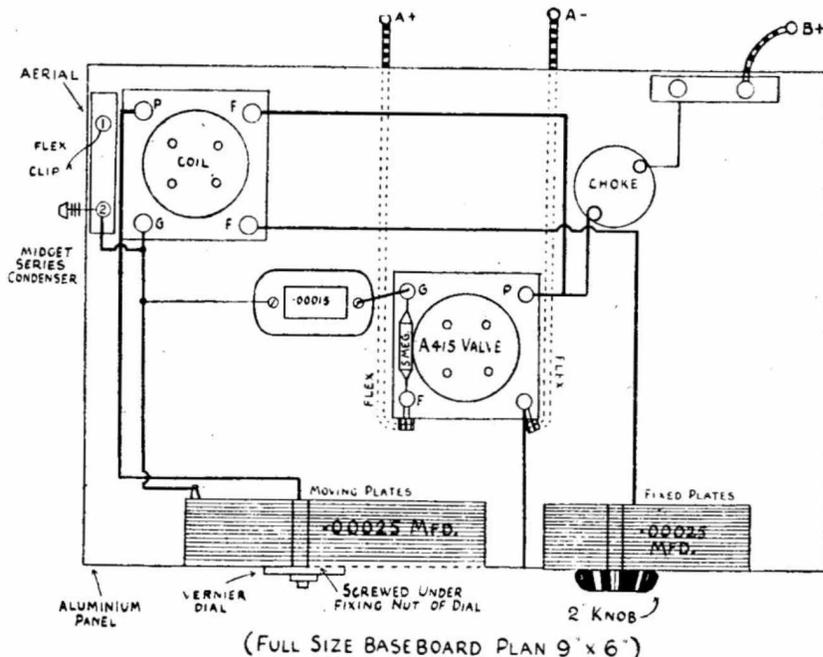
### For Short-wave Work

This receiver can also be used for short-wave work if the special connection is used for the aerial and the coil is changed. For the short-waves about four coils will be required. These are the specifications:—

	SHORT-WAVE		
	Tun-	Reac-	
	ing.	tion.	
15-25 Metres . . . .	3	8	WOUND ON STANDARD UX VALVE BASES.
25-35 Metres . . . .	6	12	
35-50 Metres . . . .	9	14	
50-70 Metres . . . .	13	16	

(26g. D.S.C. Wire.)

## LAYOUT AND PARTS FOR ONE-VALVE SET

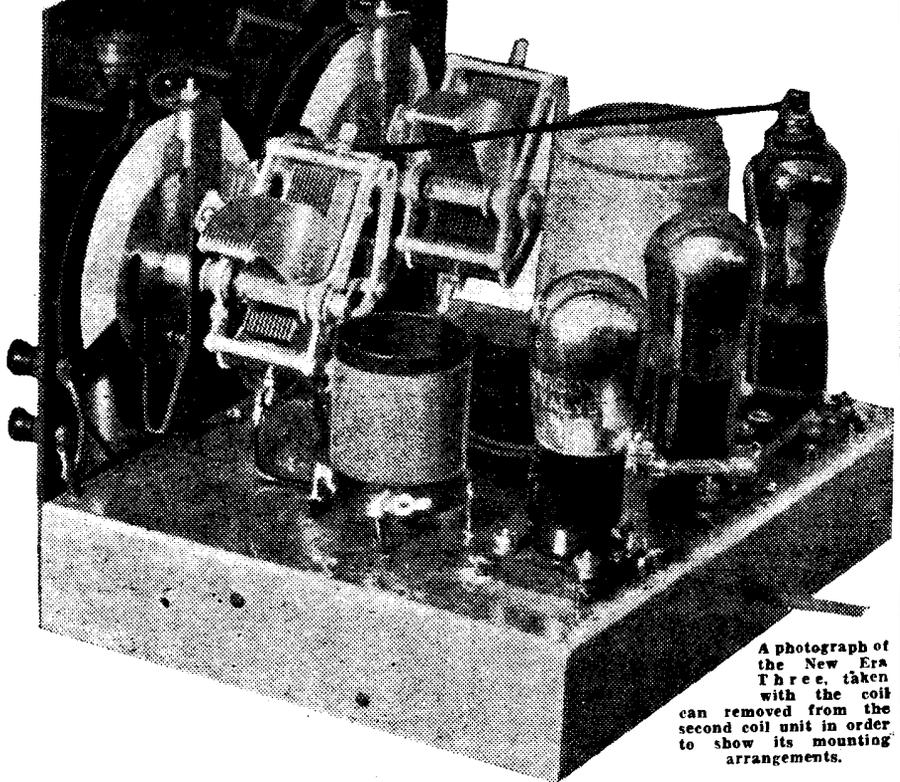


- 2 0.0025 mfd. Variable Tuning and Reaction Condensers. (A.W.A., Pilot.)  
 1 5-meg Grid-leak. (Durham, Renrade, Pilot.)  
 1 00015 mfd. Mica Condenser. (T.C.C., Renrade.)  
 1 Radio Frequency Choke. (Radiokes, Prima Donna.)

- 1 3-plate Midget Condenser (for short-wave work only.) (Radiokes.)  
 Baseboard, panel, terminals, sockets, dials, headphones, wire, former, etc.  
 Batteries: 1 45-vol. "B" battery (Ever-Ready), 1 suitable accumulator.  
 Valve: 1 special detector valve. (Phillips, Mullard, Cossor, Osram, Radiotron, National Union, Ken-rad, Arcturus, etc.)

## Reception Conditions

From the letters received from time to time it would appear that many country readers do not appreciate the vast effect which location may have on signals. In many parts of the country the far distant stations come in better than the nearby ones. This is not a fault in either the set or the transmitter, but is due to factors over which we have little or no control. Similarly the daylight range of all types of sets is far below the range after dark, or in the early morning. Fading is another feature over which we have little control. Although a station may be received strongly in one district it may fade badly in the next. Apparently the only way in which these troubles can be mastered is by increasing the sensitivity of the set or the power of the broadcasting station. Readers should also beware of the claims made by other readers in respect of results. Although the American stations are often picked up with powerful sets there are certain "dead" localities where no receiver on earth could possibly pick them up, as the signals do not reach the location at all. Perhaps it is the uncertainty of radio which makes the hobby so attractive. Even after the set is completed many hours can be spent in obtaining the maximum performance from it. The size and direction of the aerial can be altered in many ways and results noted. The values of the grid-leaks, and the potentials applied to the plate of the detector have a lot to do with the sweetness of reaction, which is a big factor in long distance results. The size of the coils and the number of turns on the primaries of r.f. transformers are other points where the home set builder can experiment for hours, and possibly improve his reception results in no small measure.

*The*NEW ERA  
THREE

A photograph of the New Era Three, taken with the coil can removed from the second coil unit in order to show its mounting arrangements.

**T**HIS is a most serviceable circuit and one which carries our strongest recommendation for all classes of readers. Novices will find it simple to build, but the more advanced amateurs will find that it serves their purpose just as well. In a recent letter a reader from Moss Vale reports loud-speaker reception from Siam, Manila, and Japan, with one of these sets.

#### Ganging

Although it is quite possible to operate this circuit as a single-control job, we candidly advise the use of two separate controls for the tuning condensers. By

this means it is possible to obtain the best possible selectivity and range.

#### The Coils

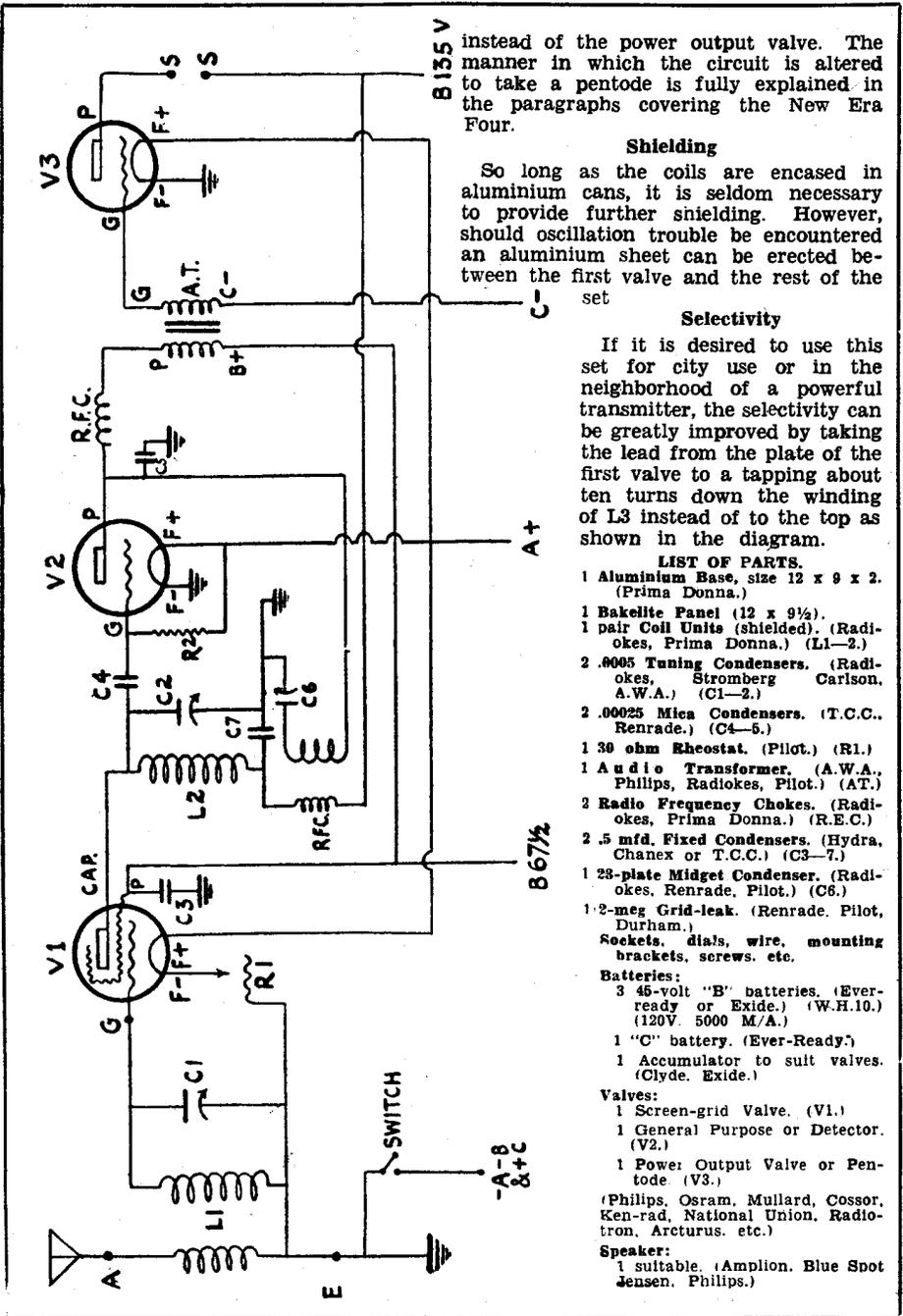
The coils are exactly the same as used in the New Era Four, being actually the first and third coils of that kit.

#### Simplified

Although the circuit as it stands is very simple, it is quite possible to simplify it still further. The condenser C5 can in many cases be omitted without greatly affecting the results.

#### Fitting a Pentode.

If battery consumption is of little consequence, it is possible to use a pentode



instead of the power output valve. The manner in which the circuit is altered to take a pentode is fully explained in the paragraphs covering the New Era Four.

**Shielding**

So long as the coils are encased in aluminium cans, it is seldom necessary to provide further shielding. However, should oscillation trouble be encountered an aluminium sheet can be erected between the first valve and the rest of the set

**Selectivity**

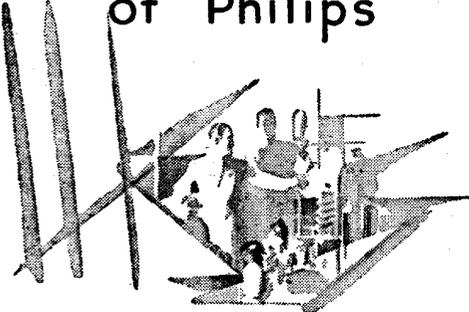
If it is desired to use this set for city use or in the neighborhood of a powerful transmitter, the selectivity can be greatly improved by taking the lead from the plate of the first valve to a tapping about ten turns down the winding of L3 instead of to the top as shown in the diagram.

**LIST OF PARTS.**

- 1 Aluminium Base, size 12 x 9 x 2. (Prima Donna.)
- 1 Bakelite Panel (12 x 9½).
- 1 pair Coil Units (shielded). (Radiokes, Prima Donna.) (L1-2.)
- 2 .0005 Tuning Condensers. (Radiokes, Stromberg Carlson, A.W.A.) (C1-2.)
- 2 .00025 Mica Condensers. (T.C.C., Renrade.) (C4-5.)
- 1 30 ohm Rheostat. (Pilot.) (R1.)
- 1 Audio Transformer. (A.W.A., Philips, Radiokes, Pilot.) (A.T.)
- 2 Radio Frequency Chokes. (Radiokes, Prima Donna.) (R.F.C.)
- 2.5 mfd. Fixed Condensers. (Hydra, Chanex or T.C.C.) (C3-7.)
- 1 23-plate Midget Condenser. (Radiokes, Renrade, Pilot.) (C6.)
- 1 .2-meg Grid-leak. (Renrade, Pilot, Durham.)
- 1 Accumulator to suit valves. (Clyde, Exide.)
- 1 "C" battery. (Ever-Ready.)
- 3 45-volt "B" batteries. (Ever-ready or Exide.) (W.H.10.) (120V. 5000 M/A.)
- 1 Screen-grid Valve. (V1.)
- 1 General Purpose or Detector. (V2.)
- 1 Power Output Valve or Pentode. (V3.)
- (Philips, Osram, Mullard, Cossor, Ken-rad, National Union, Radiotron, Arcturus, etc.)
- 1 suitable. (Amplion, Blue Spot Jensen, Philips.)

# THE MIGHTY PENTHODE

Developed in the laboratories  
of Philips



By giving the radio world the first Penthode valve, Philips achieved the greatest step towards perfect reproduction that has yet been made. The retention of high notes with remarkable amplification are characteristics which have made the Penthode the idea power valve.

No set is truly modern if it has not the advantage of a Philips Penthode in the last stage. The types listed below are the result of many years research—development and improvement—towards the goal of perfect reproduction.

Type	Fil. Volts	Max. Plate Volt.	Price
C243	2	150	27/6
D243	2.5	300	30/-
B443	4	200	27/6
C443	4	300	25/-
E443N	4	400	35/-
F443	4	550	60/-
G443	6	300	32/6

# PHILIPS

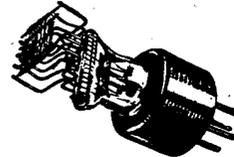
## ORIGINATORS of the PENTHODE



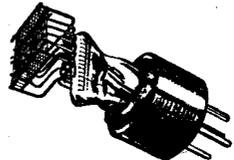
1. The Philips Radio filament—coated by a special process to enable these valves to give their unequalled performance



2. The control grid is next added being wound at right angles to the filament



3. Now the screen grid is added, wound in the same direction as the control grid.



4. The third, or outer, grid is now attached as shown above.



5. The addition of the plate completes the five elements which go to make the mighty Philips Penthode.

*The Choice of our Experts!!!*

# THE "NEW ERA" FOUR

(2 stages Screen-grid R.F.—Screen-grid Detector—Power Amp.)

DAYLIGHT RECEPTION—ECONOMICAL—TONE PERFECT

## REQUIRED PARTS

	£	s	d
1 Aluminium Chassis, 15 x 9 x 2 . . . . .		5	0
1 Illuminated Dial . . . . .		11	6
1 3 Gang Stromberg Condenser . . . . .	1	7	6
1 30 ohm Rheostat . . . . .		2	6
1 23 Plate Midget Condenser . . . . .		6	6
4 Sub. Panel U.X. Sockets . . . . .		2	4
1 New Era Four Coil Kit . . . . .	12	6	
3 Aluminium Coil Shields . . . . .		3	0
1 001 Mica Fixed Condenser . . . . .		1	6
2 00025 Mica Fixed Condensers . . . . .		3	0
2 Cunningham 2 Meg Leaks . . . . .		2	0
4 .5 Chanex Fixed Condensers . . . . .		8	0
1 50,000 ohm Fixed Resistor . . . . .		1	9
3 Radio Frequency Chokes . . . . .		9	0
1 All American Transformer . . . . .	15	0	
3 Grid Leak Brackets . . . . .		1	6
9 Terminals . . . . .		2	3
1 Kit Philips 4v. Matched Valves . . . . .	3	10	0
1 H. and H. Battery Switch . . . . .		1	6
Wiring Wire, Bushes, Screws, Etc. . . . .		5	0

**Complete Kit, £9/10/0**

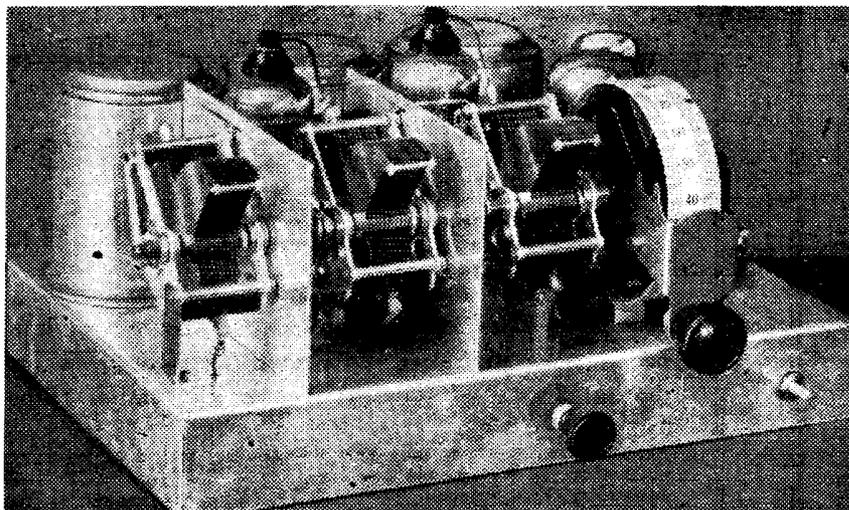
READY ASSEMBLED AND WIRED, £2 EXTRA

Obtain Price's Keen Quote for any Radio Part in this Booklet

Return Post  
Service  
-----  
Add Freight

**PRICE'S RADIO SERVICE**  
"THE RELIABLE STORE"  
5, 6, 7 Angel Place,  
SYDNEY

C.O.D., Rail  
or Post if  
Desired



A view of the completed receiver.

## The NEW ERA FOUR

THE New Era Four represents the last word in theoretical design and is capable of outstanding performance if correctly built. We might sound a warning note that this set cannot be thrown together from any old junk, and it requires quite an amount of careful work. A more efficient four-valve set is unknown to date. For best results we advise the use of aluminium shielding between the condensers and valves, as shown in the photograph. Unless the shielding is used or the parts well spaced out from each other, trouble may be encountered in the form of uncontrollable oscillation.

### Performance

Although not as selective as the Super-six set, the New Era Four is capable of the same range and almost the same volume. Readers in many suitable locations report reception of American broadcasters with this job.

### Reaction

The reaction fitted is by no means essential and those who do not like

squeakers will find that results are very much the same without reaction. If the set tends to be unstable, it is found advisable to insert a 50,000 ohm grid-leak in the lead between the screen of the first valve and the resistance R4.

### Fitting a Pentode

Those who prefer to use a pentode will find that it gives improved volume and range, but at the cost of economy of battery consumption. To fit a pentode all that is required is a lead running direct from B plus maximum to the screen of the pentode. These instructions for fitting the pentode also apply to the "New Era" Three.

### Lining the Condensers

Owing to the different circuit used, this set is not so sensitive to inaccuracies in the tuning of the radio frequency stages, although accuracy is necessary for best results. On this account the "bathtub" type tuning condensers, which are built up in gangs with separate adjusters for each stage, are particularly recommended.

## Some Radiokes Parts You will be interested in

Most of these parts are specified for the building of sets described in this Supplement. A more complete list of new Radiokes parts and prices appears on the back cover of Wireless Weekly, September 18th.

**RADIOKES** Shielded Coils, carefully matched at the factory, and sold singly or in kits as required. Standard Aerial Coil, Standard Pre-selector or Band/Pass Coil, Standard R.F. Coil, Standard Pre-selector or Band/Pass Coil with reaction. One Price, 9/6 each.

### RADIOKES Super Midget Condensers

- 3 Plates, 4/- each.
- 5 Plates, 4/9 each.
- 7 Plates, 5/- each.
- 11 Plates, 5/6 each.
- 13 Plates, 5/8 each.
- 17 Plates, 6/6 each.
- 23 Plates, 7/6 each.

### RADIOKES Variable Tuning Condensers

All one price, 12/- each.

### RADIOKES R.F. Choke

Standard R.F. Choke, 7/6 each.

### RADIOKES Illuminated Vernier Art. Dial

12/- each.  
Full Vision Dial, 22/6 each.

### RADIOKES Audio Transformers

DPAT Double Push-Pull Audio Transformers, Ratio 3 to 1, 16/3 each.

AT3 Audio Transformers, Ratio 3 to 1, 16/3 each.

AT4 Audio Transformers, Ratio 3 to 1, 12/6 each.

### RADIOKES New Type Power Transformers

T5245A, used for 3 valve 245 Set American Tube ..... 39/6 each  
T4300A, used for 3 valve 245 Set Phillips Tube ..... 39/6 each  
T5247, for Variable-Mu Three, 59/6 each  
T5743, New Transformer, for De Luxe Five ..... 59/6 each  
T271A, 171A Tubes, with American R.F. Tubes ..... 39/6 each  
T471A, 171A Tubes, with Phillips Tubes ..... 39/6 each  
T545N 245's, in Push-Full, 49/6 each  
T545D 245, in 1930-4 Set, 49/6 each  
T7250, with 250 tube ..... 59/6 each  
T650A 250's, in Push-Full Secondary ..... 59/6 each  
TF650, Corresponding Filament Transformer to T650A, 39/6 each  
T7243A, for 1930-4, with provision for Speaker ..... 59/6 each  
"P" for "Radio Sir" two stage Amplifier ..... 39/6 each  
Combination Pack for Heavy Duty Transformers and Chokes, in Nickelled Cases, overall, size 8in. x 4in. x 3in. .... 99/6 each

## Whatever Set you are building you will need Radiokes Parts Still further reduced in Price

Radiokes parts are specified in descriptions of almost every set appearing in leading technical radio journals. Greatly increased output and improved manufacturing facilities in the new, modern Radiokes factory have made possible still further price reductions, bringing Radiokes Precision Products to the forefront in value as well as quality among radio parts. Remember, Radiokes parts are covered by a liberal 12 months' guarantee.

## MATCHED COILS BY RADIOKES

The new testing equipment recently installed in the Radiokes factory has made possible the accurate matching of all coils sold in sets, an innovation that greatly improves the performance of any set in which they are installed. These coils are very small in size, being wound on 1-inch diameter formers and mounted inside coil shields of polished aluminium. The standard coils are all finished with colored leads 6 inches long, instead of terminals or lugs, enabling the home constructor to place a coil already wired straight into his set.

## Radiokes Heavy Duty Bias Resistors

All capacities, carrying 25  
mils., 2/-.

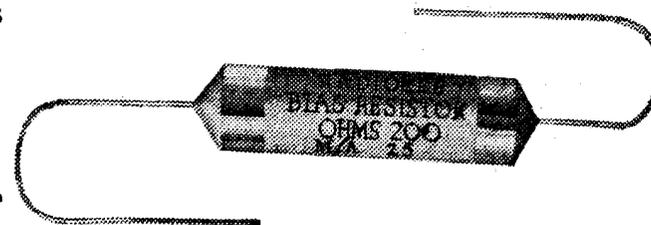
600 ohms, carrying 50 mils.

750 ohms, carrying 50 mils.

1000 ohms, carrying 50 mils.

1450 ohms, carrying 50 mils.

All one size, one price, 2/- each



# RADIOKES PRECISION PRODUCTS

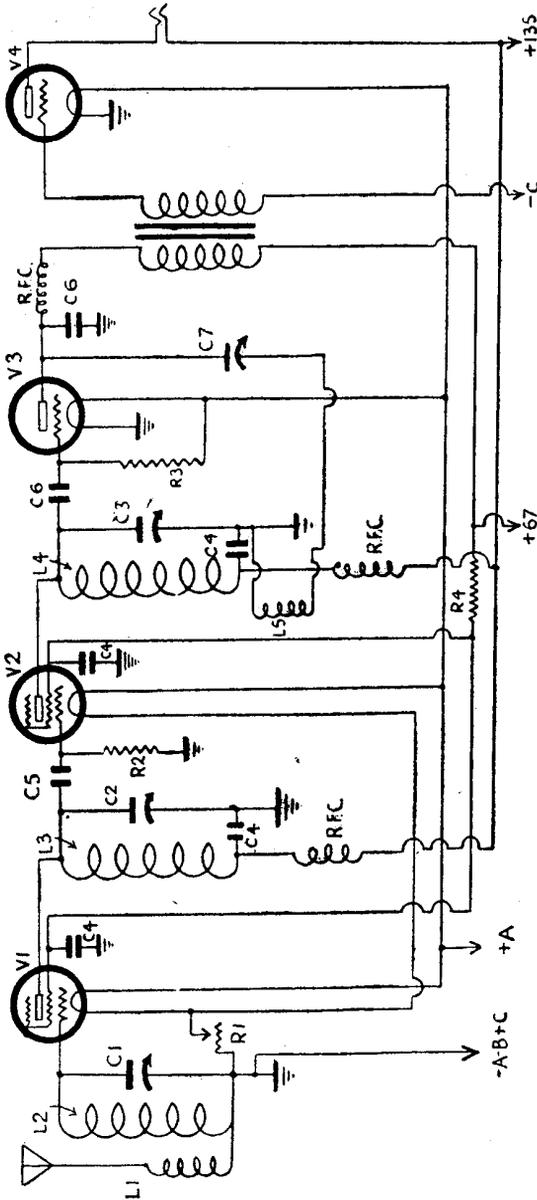
Manufactured and Guaranteed by  
**METROPOLITAN ELECTRIC CO., LTD.**

TRACY HOUSE,  
Cr. Cleveland and George Streets,

REDFERN,

SYDNEY.

## PARTS for the NEW ERA FOUR



- 1 Aluminium Base, size 14 x 9½ x 2. (Prima Donna.)
- 1 Kit of Shielded Coils. (Prima Donna, Radiokes.) (L1-5.)
- 1 3-gang .0005 Tuning Condenser. (Radiokes, Stromberg Carlson, A.W.A.) (C1-3.)
- 1 23-plate Midget Condenser. (Radiokes, Renrade.) (C7.)
- 4 .5 mfd. Fixed Condensers. (Hydra, T.C.C. Chanex.) (C4.)
- 1 .001 mfd. Mica Condenser. (T.C.C., Renrade.) (C5.)
- 2 .00025 mfd. Mica Condensers. (T.C.C., Renrade.) (C6.)
- 2 2-meg Grid-leaks. (Renrade, Durham.) (R2, R3.)
- 1 50,000 Grid-leak (Renrade, Durham.) (R4.)
- 1 30 ohm Rheostat. (R1.)
- 3 Radio Frequency Chokes. (Radiokes, Prima Donna.) (R.F.C.)
- 1 Audio Transformer. (Philips Ideal, Radiokes, Pilot.)
- Sockets, dial, screws, mounts, shielding, wire, and sundries.

### Valves:

- 2 Battery type Screen-grids. (V1-V2.)
- 1 General Purpose or Detector Valve. (V3.)
- 1 Power Output Valve or Pentode. (V4.)

(Philips, Cossor, Osram, Mullard, Radiotron, Ken-rad, National Union, etc.)

Speaker: Suitable Speaker. (Jensen, Amplion, Blue Spot.)

- 3 45-volt "B" Batteries. (Everready or Exide.) (W.H.10.) (120V. 5000 M/A.)

- 1 "C" Battery. (Everready.)

- 1 Accumulator. (Exide or Clyde.) to suit valves.

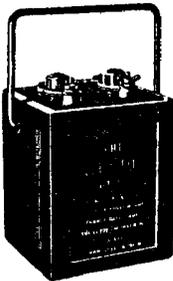
**A**LTHOUGH we are not in favor of home-wound coils, the following data will suffice for those who insist on trying their hands at this rather difficult job:

For the New Era Four and New Era Three sets: All the secondaries are made up of 80 turns of 26 d.s.c. wire wound on 2in. formers. The aerial coil consists of 40 turns of 34 d.s.c. wound on a 1¾in. former mounted inside the earthed end of the secondary. If greater selectivity is required this coil can be tapped at the 20th turn. The re-action winding consists of 35 turns of 34 d.s.c. wound on a 1in. former mounted inside the earthed end of the secondary. All windings are of the same rotation.

**MORE POWER TO YOU**



Clyde 6-volt Radio Battery.



Clyde 4-volt Radio Battery.



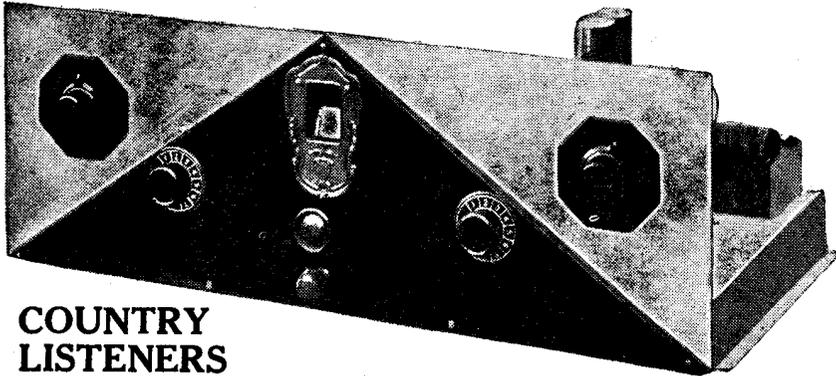
Clyde Heavy Duty 2-volt Cell.

There's punch and power in the Clyde Battery—the kind of steady, dependable power you want for any of the battery-operated receivers described in this supplement. The full range of Clyde Radio Batteries includes 2-volt heavy duty cells supplied with connecting links, 4-volt batteries, and 6-volt batteries. Extra thick plates give long life with very high capacity.

**MORE POWER TO YOU WITH A CLYDE.**

*Clyde Batteries for Radio, Cars, Trucks, Buses, Home Lighting, Train Lighting, Power Schemes, etc., are made by The Clyde Engineering Co., Ltd., Granville, N.S.W., largest manufacturers of storage batteries in Australia.*

**CLYDE**  
**RADIO BATTERIES**



## COUNTRY LISTENERS

..... THIS INTERESTS YOU!

We realise that in Australia there are a great number of radio enthusiasts whose sole means of power for radio entertainment is from batteries. You hear a lot about short-wave reception of International Stations and programmes originating from remote corners of the globe, but you are probably also told that such reception is a difficult feat achieved only by scientific experts.

### THERE IS NO MYSTERY ABOUT SHORT-WAVE RECEPTION

Provided you listen at the correct time you can definitely be assured of good volume, often with tonal quality equal to local stations, in programmes from a great number of overseas stations in America, England, France, Holland, Manila, Java, Indo-China, Russia, and other countries. With the Prima Donna range of receivers you are not confined to short-wave stations alone, for, by the adjustment of a panel control, any wavelength between 15 and 600 metres is covered. No coils to change and split second tuning between G5SW, England, and 2FC, Sydney. There is a Prima Donna Battery set which will do this for you, and there is no listener in Australia that Prima Donna cannot satisfy. Our technical development is under the supervision of Mr. Don B. Knock, who will be pleased to advise you on radio subjects. A stamped addressed envelope enclosed with your letter to this Company will ensure prompt attention.

#### Parts required for sets in this supplement

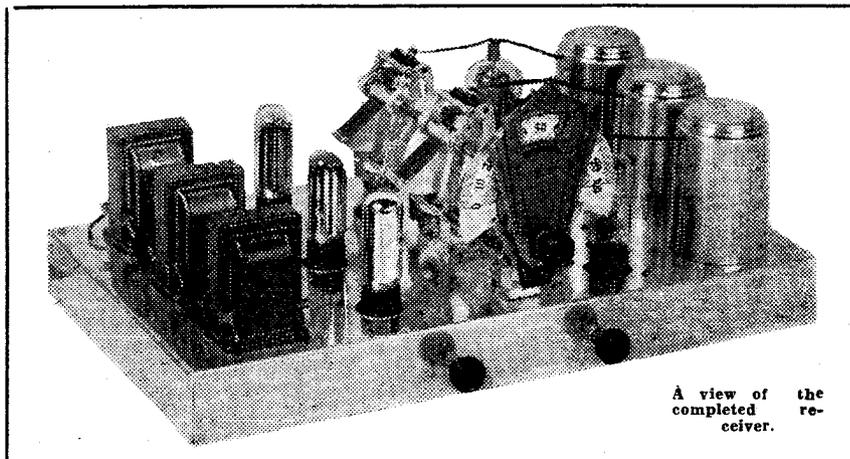
<b>ONE VALVER—</b>	<b>NEW ERA FOUR—</b>	<b>SUPER SIX—</b>	<b>DIRECT COUPLED BATTERY SET—</b>
P.D. R.F. Choke 7/11	Aluminium Base, 14	Aluminium Base, 19	Aluminium Base, 12
<b>NEW ERA THREE—</b>	x 9½ x 2 .. 7/6	x 11 x 2 .. 11/6	x 9 x 2 .. 6/6
Aluminium Base, 12	1 Kit of Coils . 25/-	1 Kit of Coils . 25/-	Coll Kit . . . 17/6
x 9 x 2 .. 6/6	Shields for same,	Shields for same,	Shields for above,
1 Kit of Coils 17/6	each . . . . . 1/6	each . . . . . 1/6	each . . . . . 1/6
Shields for same,	P.D. R.F. Choke 7/11	P.D. R.F. Choke 7/11	Special Tapped Re-
each . . . . . 1/6			sistor . . . . . 8/6
P.D. R.F. Choke 7/11			P.D. R.F. Choke, 7/11

OBTAINABLE ALL GOOD RADIO DEALERS

**PRIMA DONNA RADIO AND CABINET CO.**

HEAD OFFICE: 264 OXFORD STREET, WOOLLAHRA, SYDNEY. FW 2328

**LOOK FOR THE GREEN AND ORANGE PRODUCTS**



A view of the completed receiver.

## THE SUPER-SIX

### *The Best of all Battery Sets*

**D**ESIGNED to employ the new American-type low consumption valves, this job has proved the outstanding set of the season. Although a powerful six-valve set with push-pull output valves, it is quite reasonable in cost and takes less power from the batteries and accumulator than the average three-valve set and many "twos." Practically without exception, readers who have built this set have attained immediate success. In many up-country locations no difficulty is experienced in obtaining broadcast programmes from the American stations. In the average location all Australian stations should be received without difficulty. The Super-six is also an admirable set for use with an eliminator and has plenty of selectivity for use in city areas.

#### Lining up the Condensers

The main trouble encountered by readers has been in the matter of lining up the condensers and getting the coils matched. The slightest difference in the

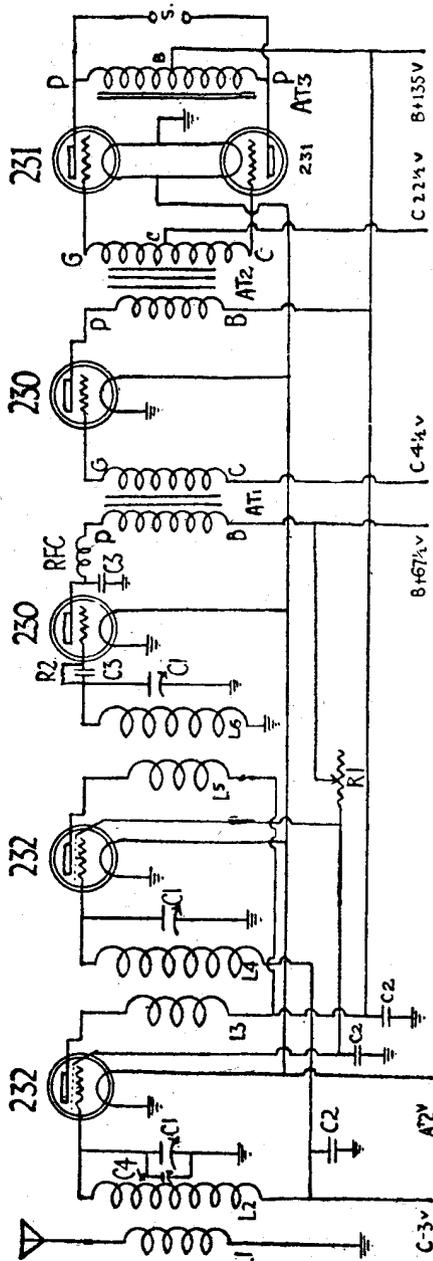
tuning of the stages will spoil the range of the set completely. At the time this set was introduced the various coil manufacturers were inclined to turn out coils which were not accurately matched. Happily this point has now received due attention and little trouble should be encountered.

#### Alternative Valves

If so desired, valves of the continental type can be fitted to this set, but they are liable to give oscillation trouble, and, of course, draw a far heavier power from the batteries than the type specified.

#### As a Five-valve Set

Several readers have reported that they have built up this set as a five-valve job, eliminating one of the push-pull valves. It is quite easy to alter the circuit to use an ordinary transformer for AT2 and, of course, the output choke can be eliminated. The cost of the job is materially reduced but the range is not affected.



## PARTS for the SUPER-SIX

- 1 Aluminium Base, 19 x 11 x 2. (Prima Donna.)
  - 1 Kit of Shielded Coils, (Radiokes, Prima Donna.) (L1-6.)
  - 1 3-gang .0005 Tuning Condenser. (Stromberg Carlson, Radiokes, A.W.A.) (C1.)
  - 1 Audio Transformer, (Ideal, Radiokes or Pilot.) (AT1.)
  - 1 Push-pull Transformer, (Ideal, Radiokes, Pilot.) (AT2.)
  - 1 Centre-tapped Output Choke, (Ideal, Radiokes, Pilot.) (AT3.)
  - 1 5-plate Midget Variable Condenser, (Radiokes, Renrade.) (C4.)
  - 3 .5 mfd. Fixed Condensers. (Chanex or Hydra.) (C2.)
  - 1 Radio Frequency Choke, (Prima Donna, Radiokes.) (R.F.C.)
  - 1 2-meg. Grid-leak. (Renrade, Durham.) (R2.)
  - 2 .00025 mfd. Mica Condensers. (T.C.C., Renrade.) (C3.)
  - Vernier dial, valve sockets, screws, nuts, battery cable terminals, etc., etc.
- Sundries
- 1 2-volt Accumulator. (Glyde, Exide.)
  - 3 45-volt "B" Batteries. (Ever-ready.)
  - 1 30-volt "C" Battery. (Ever-ready or Exide.) (W.H.10.) (120V. 5000 M/A.)
  - 1 Magnetic Speaker. (Blue Spot, Amplion.)
- Valves
- 2 232 type Screen-grids. (V1, V2.) (Radiotron, Ken-rad, National Union, Osram.)
  - 2 230 type General Purpose. (V3, V4.) (Radiotron, Ken-rad, National Union, Osram.)
  - 2 231 type Power Valves. (V5, V6.) (Radiotron, Ken-rad, National Union, Osram.)

OWING to the ganged condensers used in the "Super-six" it is most important that the coils be accurately matched. On this account we recommend the use of factory-wound and matched coil kits. Those enthusiasts who prefer to match their own coils by the trial and error method can work on the following data:-

All secondaries are 90 turns of 26 d.s.c. wound on 1 3/4 in. formers. The primaries, including the aerial coil, can be of from 30 to 60 turns of 34 d.s.c. wound on 1 in. formers mounted inside the earthed ends of the secondaries. The number of turns on the primaries is practically limited only by oscillation and lack of selectivity which will be noticed if too many turns are used. All coils are wound with the same rotation, and the connections to the tops and bottoms are clearly shown in the diagrams. If condensers of .00035 mfd. are used 15 turns extra will be required on all secondaries.

FOR SHORT WAVES

# Exide

*For Every Radio Battery Need*

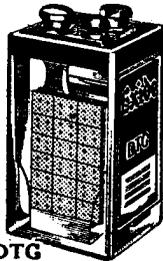
High tension or low tension, the small trickle of current required by a one or two valve set, using dull emitter valves, or the heavy current needed by a six or seven-valve set—whatever the battery needs of your set may be, there is a type of Exide battery built to fit them exactly.

**TYPE DTG.**—For slow discharge without the necessity for frequent re-charging. Ideal for small sets taking not more than .35 of an ampere.

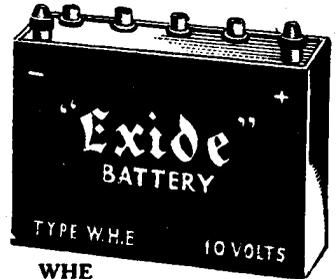
**TYPE CZE.**—For conditions of service requiring an ordinary recharge once a fortnight. This type of battery will give heavy currents for long periods. Also suitable for trickle charging.

**TYPE XH Batteries** have a much larger ampere hours capacity than type CZE, and require charging less frequently.

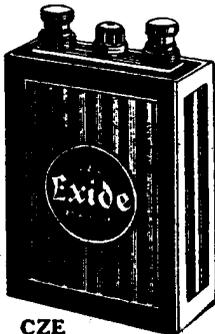
**TYPE WHE (High Tension).**—The only high tension wet batteries made in Australia, and the only satisfactory solution to the high tension problem.



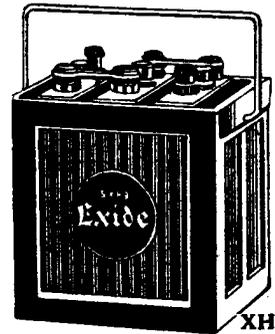
DTG



WHE



CZE



XH

# Exide

The Long Life Battery  
FOR CARS, RADIO AND HOME LIGHTING

**EXIDE BATTERY SERVICE** (Gibson, Battle, and Co., Ltd.),  
Hunt and Commonwealth Streets (off Wentworth Av.), Sydney.  
Also—Noyes Bros. (Sydney), Ltd., 39 York Street, Sydney.

FOR LONG WAVES

**WE RECOMMEND**  
**Mullard**  
~~RADIOVALVES~~

**FOR THE 'WIRELESS WEEKLY'  
 BATTERY SETS**

"One Valve" —

PM 4DX

"New Era Three"

PM 14 (Screen Grid)

and

PM 4DX (Detector)

"New Era Four"

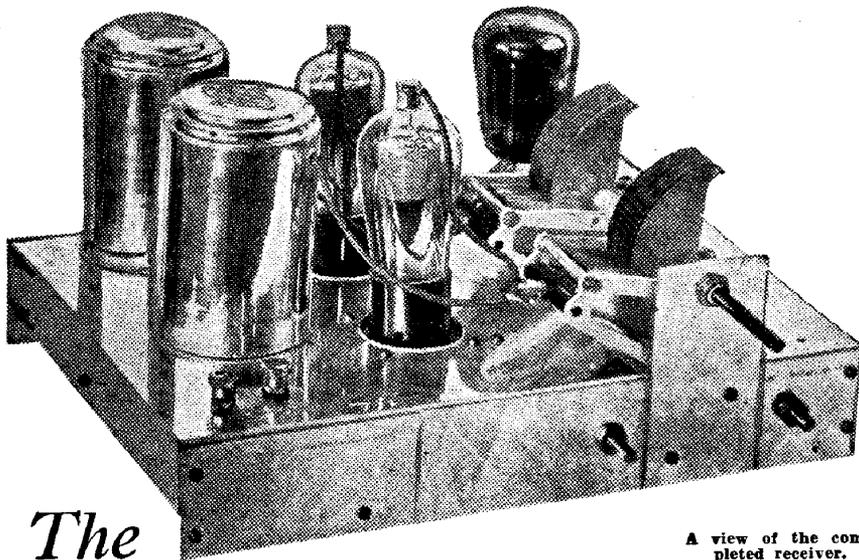
PM 24 (Pentode)

or

PM 4 (Power)

**BATTERY VALVES WHICH MADE  
 THE MULLARD MARK FAMOUS  
 THROUGHOUT AUSTRALIA**

*Available from any Dealer in Radio*



*The*

A view of the completed receiver.

## DIRECT-COUPLED *Battery Set*

A NOVEL set entirely different from any battery sets previously described, the Direct-coupled Battery Set provides most excellent reproduction and plenty of volume. Its range, however, is strictly limited and we do not recommend it for readers who live more than about 50 miles from a broadcasting station. This job is also eminently suitable for use with an eliminator of the Philips 3002 and 3003 types or any eliminator capable of supplying 200 volts at 14 m.a. current. When used with an eliminator we would strongly recommend the use of a dynamic speaker, of the a.c. type, which can draw its current for field energising direct from the lighting or power supply. Although not quite as powerful as the all-electric direct-coupled jobs, under these circumstances this set will give infinitely better tonal quality than any other battery set.

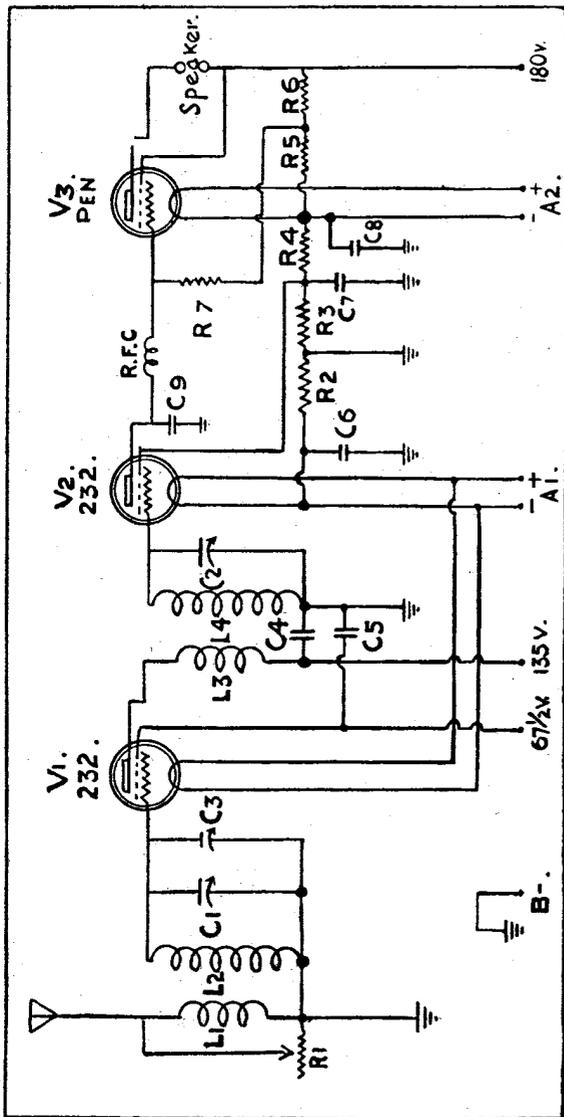
### Cautions

There are many pitfalls in the circuit, which is quite different to any other battery set ever described in these columns or elsewhere, and readers are warned to stick to the circuit in every minor detail as otherwise trouble may be encountered. Two separate accumulators are required for the filaments. As each of these are only two volts, the usual four-volt accumulator will serve if each cell is entirely disconnected. Those who are accustomed to the ordinary battery set will immediately suspect that there are several mistakes in the circuit. This is not so; the circuit is correct, but unconventional.

### Don't Alter the Circuit

On no account must the addition of extra stages of radio frequency amplification be attempted, as this will throw the whole job out of operation.

# CIRCUIT and PARTS for the DIRECT-COUPLED SET



- 1 Aluminum Base, size 12 x 9 x 2. 16 or 18 gauge.
- 2 Coil Units, as specified, with coil cans. (L1, L2, L3, and L4.) (Radiokes or Prima Donna.)
- 3 Tuning Condensers, .0005 microfarads capacity, with mounting brackets and coupling unit. (C1, C2.) (Radiokes, A.W.A. or Stromberg-Carlson.)

1 Vernier Dial. (Radiokes, Pilot or Undy.)

1 Midget Condenser, 5-plate variable trimmer type. (C3.) (Radiokes or Pilot.)

4 Fixed Condensers, .5 mfd. or 1 mfd. capacity, to stand 100 volts. (C4, 5, 6, and 7.) (Hydra, Chanex or T.C.C.)

1 Fixed Condenser, 1 mfd. capacity, to stand 100 volts. (C8.) (Hydra, Chanex or T.C.C.)

1 Mica Condenser, .0005 mfd. capacity. (C9.) (Renrad or T.C.C.)

1 Tapped Resistor, having sections of 910, 2350, and 3540 ohms. (R2, 3, and 4.) (Renrad, Radiokes or Prima Donna.)

2 Grid-leak Type Resistors, 250,000 ohms (1/4 meg.) (R5 and R6.) (Continental, Durham or Carborundum.)

1 Grid-leak Type Resistor, 500,000 ohms (1/2 meg.) (R7.) (Continental, Durham, or Carborundum.)

(Alternately Radiohms can be used to replace these grid-leaks.)

1 Radio Frequency Choke. (R.F.C.) (Radiokes, Prima Donna or Lewcos.)

1 Rheostat, 50,000 ohms (not carrying current. (R1.) (Chanex.)

### Sundries:

3 UX type sockets, 1 7-way battery cable, 2 terminals, 1 pair insulating bushes, 2 s.g. cap clips, 1 piece aluminium, 4in. x 2 in., 5 feet connecting wire, 3 dozen screws and nuts, 1/2 x 1/8.

### Valves:

2 232 American-type Screen-grid Valves. (V1 and V2.) (Radio-tron, National Union Osram or Kenrad.)

1 2-volt Pentode, with UX base and terminal on side of base. (V3.) (Phillips C243, Mullard FM22, or P.M.243. Osram FT240 or Cossor PT230.)

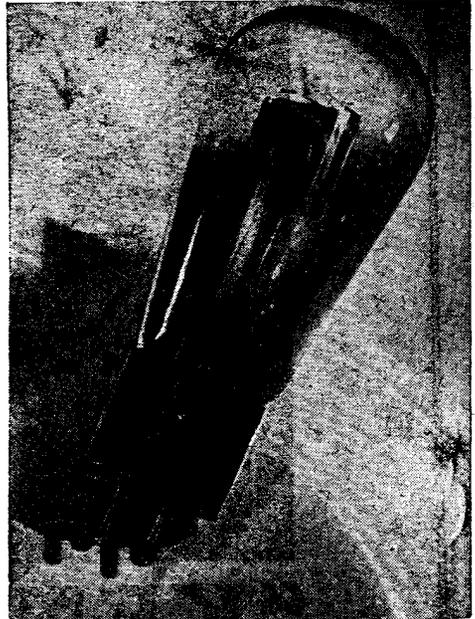
2 2-volt Accumulator Cells. (A1 and A2.) (Exide or Clyde.)

4 45-volt "B" Batteries (Diamond or Ever-Ready) or Philips 3002 or 3003 eliminator or other reliable eliminator which will deliver 180 volts at a drain of approx. 14 mills. or Exide 180V. (W.H.10.) (5000 M/A.)

1 Speaker, Jensen or Amplon, magnetic or dynamic.

FOR EVERY SOCKET  
OF THE  
BATTERY RECEIVER

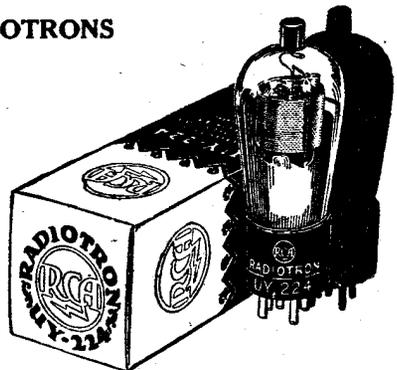
Use  
**RADIOTRON**  
VALVES



Their exceptional performance under all conditions, their durability, and long life are the results of their ultra-scientific manufacture. Infinite accuracy attends every step in the design and manufacture of Radiotron Valves.

**BATTERY OPERATED RADIOTRONS**

- |        |   |                              |          |
|--------|---|------------------------------|----------|
| UX199  | } | General Purpose.             | } 2 Volt |
| UV199  |   |                              |          |
| UX201A | } | General Purpose.             | } 2 Volt |
| UX112A |   |                              |          |
| UX120  |   |                              |          |
| UX222  |   |                              |          |
| RCA230 | } | General Purpose.             | } 2 Volt |
| RCA231 |   |                              |          |
| RCA232 |   |                              |          |
| RCA247 |   |                              |          |
|        |   | Power Amplifier, Screen Grid | Series.  |
|        |   | Power Amplifier, Pentode.    |          |



Obtainable from all Radio Dealers.  
**Amalgamated Wireless (A/sia) Ltd.,**  
47 York Street, Sydney, N.S.W.



# “KEN-RAD”

## THE FINE VALVES OF RADIO!

*Replace  
Those  
Anaemic  
Valves  
With  
KEN-RADS*

**As new as the morning on this market  
As old as Radio in reputation!**

Ken-rad Valves are quite new on this market, but they come to you with a reputation second to none. They have many years of success and experience behind them.

Ken-Rad Valves are manufactured by the Ken-Rad Corporation Inc., Owersboro, Kentucky, U.S.A., and have been used by leading manufacturers of America for the past nine years.

Ken-Rad Valves are licensed under patents owned by the Radio Corporation of America.

**OBTAINABLE FROM**

Miss Wallace,  
No. 6 Royal Arcade.

Bryan's, Ltd.,  
345 George St.

Hardy's Radio Stores,  
No. 25 Royal Arcade.

Martin de Launay,  
Clarence St., Sydney,  
and Newcastle.

*Sole Distributors:—*

### **EASTERN TRADING CO., LTD.**

**KEEP HOUSE, 155 CLARENCE ST.**

Keep House, Clarence St., Sydney.  
Phone, B6305-6.

McEwan House, Little Collins St., Melbourne.  
Phone, F2528.