

**THE  
AUSTRALASIAN**

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

# Radio World

**1/-**

**VOL. 12 . . . . . NO. 4**

**SEPTEMBER 15, 1947**

*An AUSTRALIAN Organisation  
Working for AUSTRALASIA*

In these days, goods of all descriptions are in abnormal demand and the radio industry is no exception. Under these conditions, it is inevitable that there are some people who cannot be fully satisfied. Some of these people start looking for a reason other than the most obvious one—that the industry cannot immediately supply the inflated and unstable demand.

All sorts of tales come to light—some true, some with a vestige of distorted truth and others entirely false. You may have heard some of these yourself. You may have heard for instance, that Rola is exporting a large proportion of their production to newly found overseas markets. Such is far from the truth, and we say quite definitely that Rola products are not going out of Australasia, which corner of the globe, it is our bounden duty to serve.

The new markets that are opening up are not for Rola until our customers in Australasia have been satisfied.

Rola Co. (Aust.) Pty. Ltd. is a completely independent Australian organisation working one hundred per cent for Australasia.



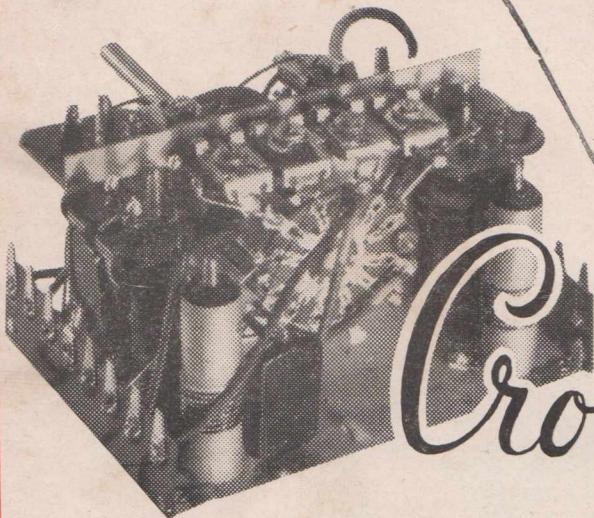
**ROLA**

**ROLA CO. (AUST.) PTY. LTD.**

**The Boulevard, Richmond, Victoria**



To Be Released  
Shortly!  
The "FECO" Series  
of new  
Miniature Coils  
and I/F Transformers



# Crown DP 3A

## TUNING UNIT

B/C AND S/W 13 TO 42 METRES

*This unit incorporates iron cored coils for both B/C and S/W bands. Each band consists of aerial R/F and oscillator coils.*

*Inbuilt, fixed Padder condensers are incorporated, Padder adjustment is by the iron core in the oscillator coils. The use of iron cores in the S/W coils ensures better tracking as the inductance of each coil can be individually adjusted. This will give you more efficient overall performance.*

**PRICE, £4/17/- Including Sales Tax**

**Crown**   
**RADIO PRODUCTS PTY. LTD.**

51-53 MURRAY ST.  
PYRMONT, SYDNEY. TELEPHONE: MW 2628



# THE AUSTRALASIAN RADIO WORLD

*Devoted entirely to Technical Radio*

and incorporating  
**ALL-WAVE ALL-WORLD DX NEWS**

★ EDITOR  
★ PUBLISHER  
★ PROPRIETOR—  
**A. G. HULL**

Balcombe St., Mornington,  
Vic.

★ SHORT-WAVE EDITOR—  
**L. J. KEAST**

6 Fitzgerald Road, Ermington,  
N.S.W. Phone: WL1101

★ HAM NOTES By—  
**D. B. KNOCK (VK2NO)**  
43 Yanko Av., Waverley, N.S.W.

★ ADVERTISING  
REPRESENTATIVE FOR VIC.—  
**W. J. LEWIS**  
20 Queen St., Melbourne  
Phone: MU 5154

★ ADVERTISING  
REPRESENTATIVE FOR N.S.W.—  
**AMALGAMATED PUBLICATIONS  
PTY. LTD.**  
83 Pitt St., Sydney  
Phone: B 1077

★ SUBSCRIPTION RATES—  
6 issues ..... 5/3  
12 issues ..... 10/6  
24 issues ..... £1  
Post free to any address in  
the world.

Address for all correspondence:  
**AUSTRALASIAN RADIO WORLD**  
Balcombe St.  
Mornington  
Victoria

Vol. 12

SEPTEMBER, 1947

No. 4

## C O N T E N T S

CONSTRUCTIONAL—	
Signal Tracer for Service .....	7
Build Your Own Oscillator .....	9
TECHNICAL—	
Anisotropic Alnico .....	17
Beams, Beams, Beautiful Beams .....	21
The Kingsley "K.S.9'er" .....	23
A Review of Ferrotune .....	25
Ideal Broadcast Station Console .....	32
Among Our Readers .....	34
Calling CQ .....	41
SHORTWAVE REVIEW—	
Notes From My Diary .....	46
THE SERVICE PAGES—	
Speedy Query Service .....	50

## EDITORIAL

For some weeks past the Atlantic City Allocations Committee has been fixing the future bands for amateur operation. This is a vital matter for "hams" and so a number of keen listeners have been tuning in to W1AW, the official station of the American Radio Relay League, in order to get the official announcements as they have been decided.

On August 9th an announcement was made that the ten-metre band had been settled on a world-wide basis as from 28 to 29.7 Mc.

On August 12th came over news that South Africa, Australia and New Zealand were now pushing with the Americans for the use of the 11-metre band, shared with diathermy and electrical appliances.

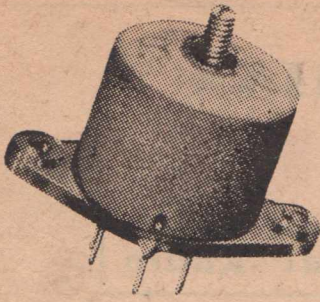
By August 19th the fate of the higher frequencies had been sealed, but on a complicated formula which will be explained in detail later. Apparently it is on the lines of existing allocations from 31.7 to 10,500 mC., but there will be no 220 mC. band for Australia and New Zealand. For Europe and Africa the 144 mC. band has been cut down to only 2 mC. wide.

On August 25th the details were released of the popular DX band, 20 metres. The amateur frequencies were fixed at 14,000 to 14,350, indicating that after a seven-weeks' battle the amateurs lost 50 kC. to fixed services. With the present crowding on this band the loss is a sad one, but quite a few have given a sigh of relief to know that the cut is only 50 kC.

At the moment the lower frequency allocations have not yet been settled, but judging by results so far the prospects are quite bright.

A. G. HULL.





This is the midget coil for personal radio. Both broadcast and shortwave are available—this midget coil is reproduced actual size.

The  
**Iron Clad  
 Magnasonic Coil**  
 for mantel and personal radios . . .

**PERSONAL RADIO KIT**

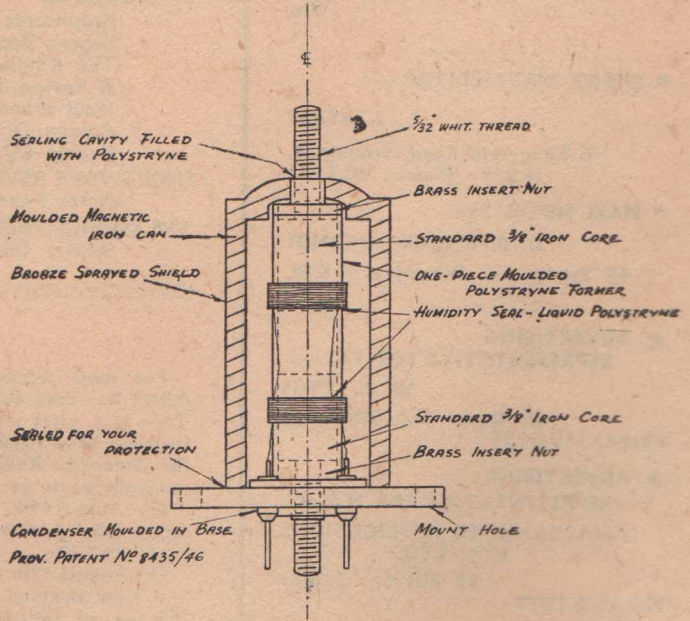
Midget Loop Aerial Coil Kit—Type K118

Comprising—

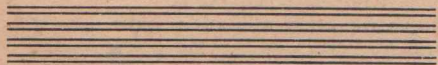
- 1 only Type E354 Midget Oscillator Coil.
- 1 only Type F125 Loop Aerial Coil.
- 2 only Type IF168 Miniature Intermediate Trans.
- 1 only Type P21 Padding Condenser.



Stability and a high "Q" rating are the two major requirements in successful coil design. Stability under the extremities of climatic conditions in this R.C.S. Magnasonic development is obtained throughout with polystyrene sealing, and the use of polystyrene formers. Whilst Polystyrene itself is well known for its high "Q" factor and non tracking qualities which, coupled with the shielding propensities of the patented bronze sprayed iron core can, result in a coil unit of highest efficiency.



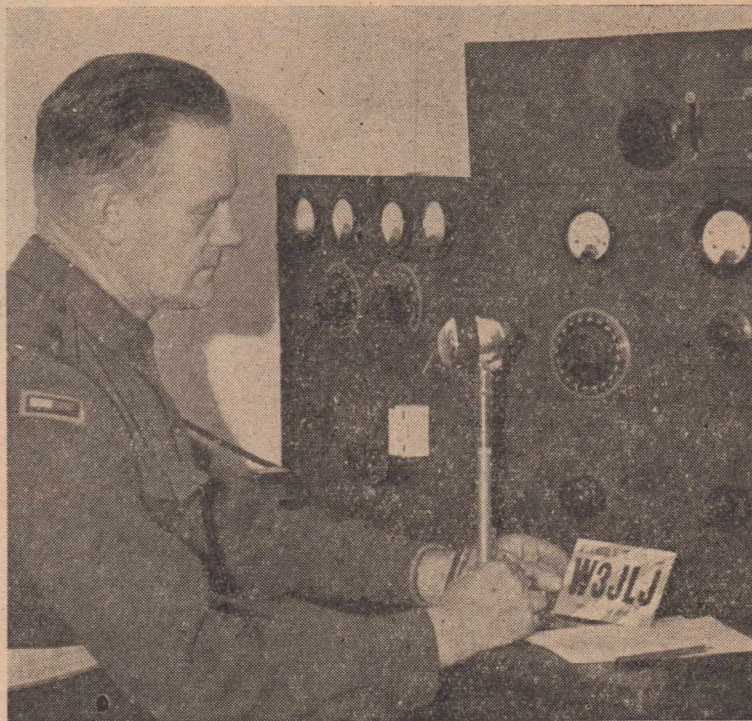
SEALING FOR YOUR PROTECTION  
 CONDENSER MOULDED IN BASE  
 PROV. PATENT NO 8435/46



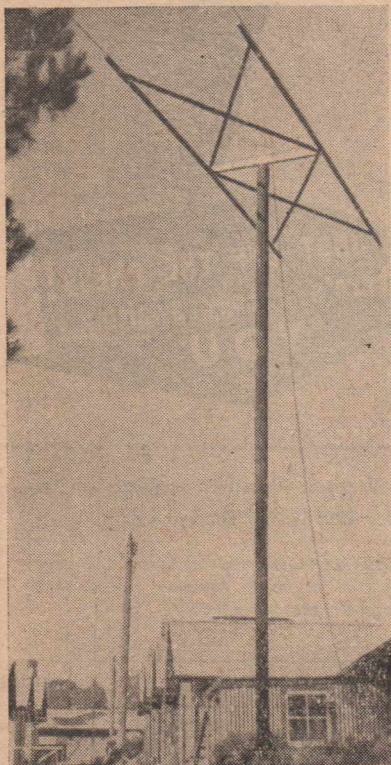


# A SOLDIER'S AMATEUR STATION

BREATHES there the ex-A.I.F. Signals Officer or Signalman recruit of those not-so-long-ago hectic training days who does not remember "Pip" Every . . . otherwise Lieut.-Col. George Every, M.M. If you did your A.I.F. Signals Officers' schooling in the 1940-41 era, at Casula, N.S.W., not far out of the then military township of Liverpool, you carry vivid memories of rigorous Sigs. Tactical exercises, interspersed by a marching pace of around 120 to the minute . . . and with the arms well up . . . during those morning parades. You had to be good . . . and an old soldier saw to it that you *were* good by the time you qualified . . . or you didn't qualify. That soldier was, in pre-war times, a radio amateur in off duty moments, and with the stress of war once again in the background, he is again back on the air.



Lieutenant-Colonel Every, M.M., at his "ham" station, VK3GE.



Antenna at VK3GE, located at Balcombe military camp, Victoria.

You will run across George . . . VK3GE . . . at odd times on the 14 mC. band, both on CW and phone. What this long experienced soldier doesn't know about the Army and its methods of communication (to say nothing of its discipline) isn't worth knowing, but with the return to the air of Amateur Radio, VK3GE is to be heard with the easy-going "Procedure" of the amateur's way of doing it . . . with the other kind of Procedure kept for the military form of communication. VK3GE is installed at a well known Australian military camp at Balcombe, Victoria, where the owner-operator is C.O. of 1 Sig. Training Battalion. On a recent day when this writer was in QSO with VK3GE it was the lunch hour, and VK3GE hadn't too much time available, having a "bit of a job to do in getting a guard ready for Monty." As those who have drilled

with him know, the guard that VK3GE would turn out would be snap-perfect . . . or else! It was, by the way, during the Kaiser's war that George acquired his MM. His station is strictly crystal controlled and at present is active only on 14 mC. There will be alternative activity very soon . . . on the 50 mC. bands. Telegraphy is used mainly . . . and the DX bag includes the Old Country, Switzerland, Sweden, U.S.A., Canada, Russia, Puerto Rico, Hawaii, China, Japan, and Fiji. Despite the lure of DX, George is always available for a telephony chat with VK's, ZL's, etc. VK3GE was once VK7GE in Hobart and figured in emergency work during the Xmas period of 1931 when the submarine cable went out of order. The station was used by the P.M.G. to clear the rush of telegrams. On the Mainland, the  
(Continued on page 19)



**CABLE AND WIRELESS LIMITED**  
INCORPORATED IN ENGLAND



The first line of this Telegram contains the number of the particular Telegram sent. Office of Origin. It may be followed by the number of the particular Telegram sent. Office of Destination. It may be followed by the number of the particular Telegram sent. Office of Destination. It may be followed by the number of the particular Telegram sent. Office of Destination.

Cable Routes  
 Wireless Routes

Circuit: \_\_\_\_\_  
 Clerk's Name: *W. S. Lee*  
 Time Received: \_\_\_\_\_

I HAVE EXAMINED PHILIPS MANUAL OF RADIO PRACTICE  
 COMPILED BY EG BEARD AND CONSIDER IT AN  
 EXCELLENT COMPENDIUM OF FUNDAMENTAL AND  
 DATE INFORMATION COVERING ALL RADIO SUBJECTS  
 IN THE FIELD OF BROADCASTING AS A PRACTICAL  
 HANDBOOK STOP IT RANKS IN MY OPINION WITH  
 THE FAMOUS ADMIRALTY HANDBOOKS BUT COVERING A  
 FIELD EXCLUDED FROM THOSE AND OF GREAT  
 PRACTICAL VALUE TO ALL ENGAGED IN TECHNICAL  
 WORK FOR BROADCAST TRANSMISSION OR RECEPTION  
 STOP IT HAS THE AUSTRALIAN CHARACTERISTICS OF  
 BOLDNESS THOROUGHNESS AND SIMPLICITY STOP  
 CONGRATULATIONS TO THE PHILIPS ORGANISATION  
 AND TO MR EG BEARD  
 ERNEST FISK

**A  
 MESSAGE  
 from  
 SIR  
 ERNEST  
 FISK**



NO ENQUIRY RESPECTING THIS TELEGRAM CAN BE ATTENDED TO WITHOUT PRODUCTION OF THIS COPY.

MARK YOUR REPLY "Via Imperial"

**JUST OFF THE PRESS!**  
 there's a copy awaiting  
**YOU**

**22/6**  
 POST PAID

**T**HAT Sir Ernest Fisk, one of the greatest names in radio, should pay such high tribute to the Philips Manual of Radio Practice as to rate it with the Admiralty Handbooks is a clear indication of the book's value to all interested in radio. Fully bound, the Manual's 496 pages include 250 diagrams, 400 formulae, 105 charts and tables, and 122 valve curves. Compiled by E. G. Beard, M.I.R.E. (Aust.), Philips Manual of Radio Practice is virtually a radio library under one cover and a "must-have" for every serviceman, engineer, amateur, experimenter and student.

Published by . . .  
**PHILIPS ELECTRICAL INDUSTRIES  
 OF AUSTRALIA PTY. LTD.**

TO . . . Philips Electrical Industries of Australia Pty. Ltd., Box 2703 C, G.P.O., Sydney.

Please forward post-free to the address below one copy of the Philips Manual of Radio Practice, for which I enclose cheque/postal note for 22/6.

NAME.....  
 ADDRESS.....

(WRITE IN BLOCK LETTERS) A.R.W.2

OR OBTAINABLE FROM ALL LEADING BOOKSELLERS



# Signal Tracer For Service

## A Tested Design With In-built VTVM

As can be seen from the circuit diagram a Signal Tracer is by no means a complicated piece of apparatus, yet it is by far the most useful piece of service equipment I have come across. I have been using a similar Tracer for

choice will shortly be seen. The R.F. input is via a .0001  $\mu$ f condenser and 100 K resistor, thus keeping the input impedance relatively constant for all frequencies. The rest of the EK32 circuit is conventional, except for the oscillator circuit.

grid winding, spaced about one-eighth inch. With an ordinary trimmer across the gang to raise the minimum capacity and a little juggling with the slug a coverage of about 150 to 1700 kC. was obtained. This just takes care nicely of 175 kC. and 455 kC. I.F.'s, the broadcast band coils and 1600 kC. I.F.'s. If required a second coil could be wound to cover the short-wave bands. The only disadvantage of this method, if it could be called such, is that the low frequency end of the B/C band is a bit crowded, but not enough to cause any trouble. The R.F. probe was constructed from an instrument probe with a needle insulated by a bit of Nylex off hook-up wire jammed into a small hole bored into the brass end. Nylex insulated shielded lead was used to connect the probe to the tracer, cutting out direct pick-up.

By

**J. WETHERILL**

141 George Street

Launceston, Tas.

### I.F. CHANNEL

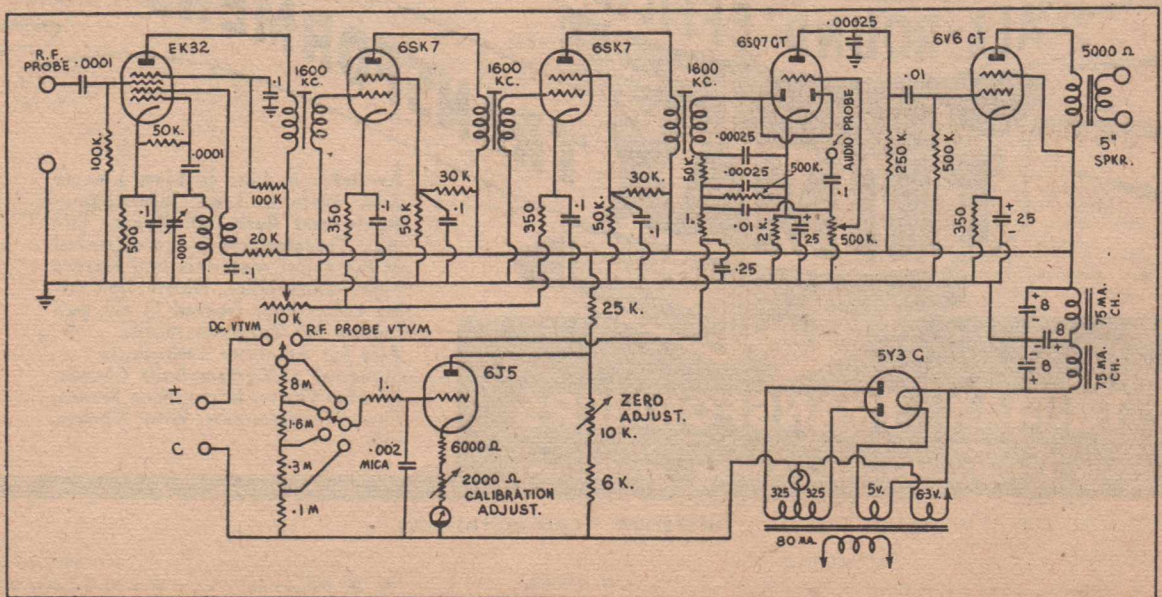
As an I.F. of 1600 kC. is used, in order to cover all frequencies normally met with in a commercial receiver, namely, 150 to 1700 kC., it is only necessary to tune the oscillator from 1750 kC. to 3300 kC. This is easily accomplished by one sweep of a .0001 (or thereabouts) variable condenser, thus obviating the necessity for bandswitching. In this particular tracer a single gang A.W.A. type variable was cut down by removing the centre plate from the rotor, leaving two plates either side of centre and removing the remainder. The stator was left as is. The coil was wound on an iron cored standard S/W coil former, about 20 turns 32 S.W.G., plate winding and 55 turns 32 S.W.G.

The I.F. amplifiers are straightforward, an R.F. gain control being incorporated in the cathode circuits.

*(Continued on next page)*

some considerable time and consider any other method of servicing a waste of valuable time. The D.C. VTVM (centre zero type) is simple and well worth the slight additional expense.

An EK32 was chosen as frequency changer mainly because of its availability at the time. Any of the other types would be equally satisfactory. This tracer, incidentally is a superhet type using 1600 kC. I.F.'s, the reason for which





## SIGNAL TRACER

(Continued)

so that the R.F. end may be cut out when tracing audio circuits. The second detector and output stage are also straightforward, the 6V6 feeding a 5-in. speaker. The audio probe is fed to the high end of the volume control via a blocking condenser in order that the probe may be placed on points at high voltage without damage to the tracer.

A.V.C. is not applied to the tracer for the fairly obvious reason that it would tend to mask increases and decreases in gain throughout a set under test. However, simple A.V.C. is taken off the detector diode via a 1 megohm resistor and .25  $\mu$ f filter network and is applied as a negative D.C. voltage to the VTVM. This voltage is a useful indicator when chasing troubles in oscillator circuits.

The power supply is conventional any well filtered supply putting out

about 250 volts on load will suffice. It may be necessary to include a suitable heavy duty resistor in the H.T. supply to drop the voltage if a premag. speaker is used, depending on the resistance of the filter chokes.

The D.C. VTVM is after Ryder and is used as a centre zero meter, getting over the necessity of reversing leads to read Positive and Negative volts. An 0-1 milliammeter is used as an indicator in conjunction with a 6J5, or similar high mu triode. With the values shown the voltage ranges are 5, 25, 125, and 500 volts, covering A.V.C., bias, screen, plate and high tension voltages. The negative scale is not linear below about 60 per cent. of the scale due to valve characteristics but can be calibrated quite accurately enough for all practical purposes. The probe for the VTVM was made from an ordinary instrument probe, a 1 megohm half watt resistor being placed in series with the probe tip inside the plastic body

of the probe handle, giving in all an input resistance of about eleven megohms. As a result, negligible loading is placed on any circuit under test.

The VTVM is calibrated by juggling the "calibration adjust" control and "zero adjust" control until the meter reads "Centre Zero" and gives almost full scale deflection when placed across a 4.5 volt bias battery. Since the higher scales are multiples of the low scale, the one calibration will hold within all practical limits for all ranges. Since the "positive side" of the meter is linear the bias battery can be used to mark the 1½V., 3V., and 4½V., points which can then be interpolated for as many reference points as required. The negative side down to 3V., is near enough linear, but is crowded from there to the 5V., point.

A common earth lead with a 10 amp battery clip is used to connect the tracer to the set under test.

The image shows a transformer unit with a label that reads: "TYPE 2U No. 4571 TA17 75 MAX. WELSHETS UNBALANCED (H-X) 0.5 IN". A banner across the unit says "ALL-ROUND EFFICIENCY". Below the unit, the text "TRIMAX TRANSFORMERS" is written in large, bold letters. At the bottom of the unit, a smaller label reads: "CG 6 C1C TRIMAX TRANSFORMERS WELSHOURNE AUSTRALIA".

## TRIMAX TRANSFORMERS

Division of Cliff & Bunting Pty. Ltd.

29-35 FLEMINGTON RD., NORTH MELBOURNE

Available in Line to Line, Line to Grid, Plate to Line, Interstage—Single and Push-Pull Types, Trimax Transformers are constructed of the finest materials and feature high Permeability, Nickel Iron Alloy core—heat treated in our own factory for Optimum results. Also for Amplifier enthusiasts . . . Standard or Custom built Chassis, Speaker Flares, Microphone Stands, Power Transformers, Filter Chokes, etc.

### Interstate Representatives:

N.S.W.:

L. B. Graham,  
5 North York Street,  
SYDNEY

QUEENSLAND:

Chandlers Pty. Ltd.  
Cnr. Albert & Charlotte  
Streets,  
BRISBANE

S.A.:

C. N. Muller,  
Worando Buildings,  
Grenfell Street,  
ADELAIDE

W.A.:

R. D. Benjamin,  
197 Murray Street,  
PERTH

TASMANIA:

W. & G. Genders Pty. Ltd.,  
53 Cameron Street,  
LAUNCESTON

INQUIRE FROM YOUR NEAREST SUPPLIER



# Build Your Own Oscillator

Kit Now Available for Calibrated Service Equipment

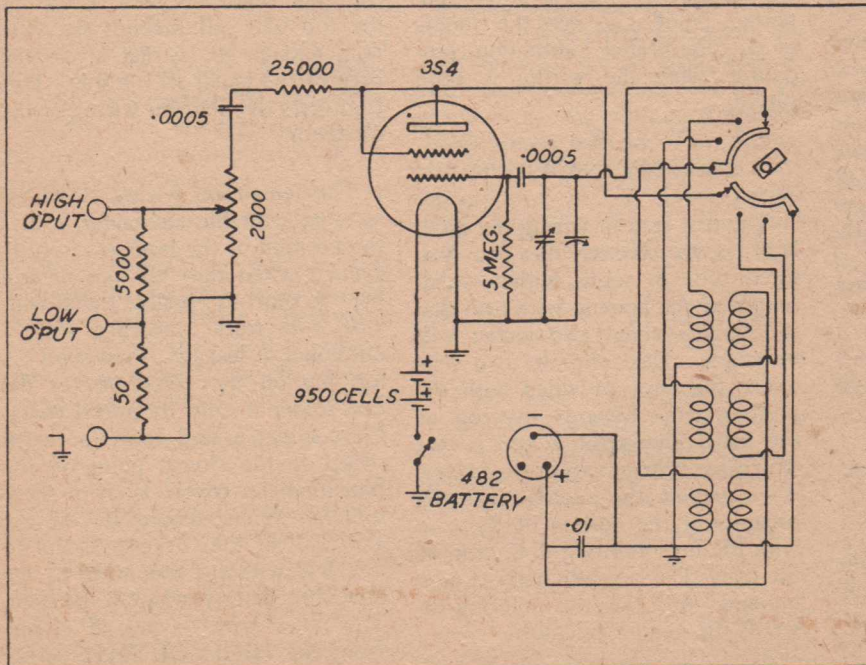
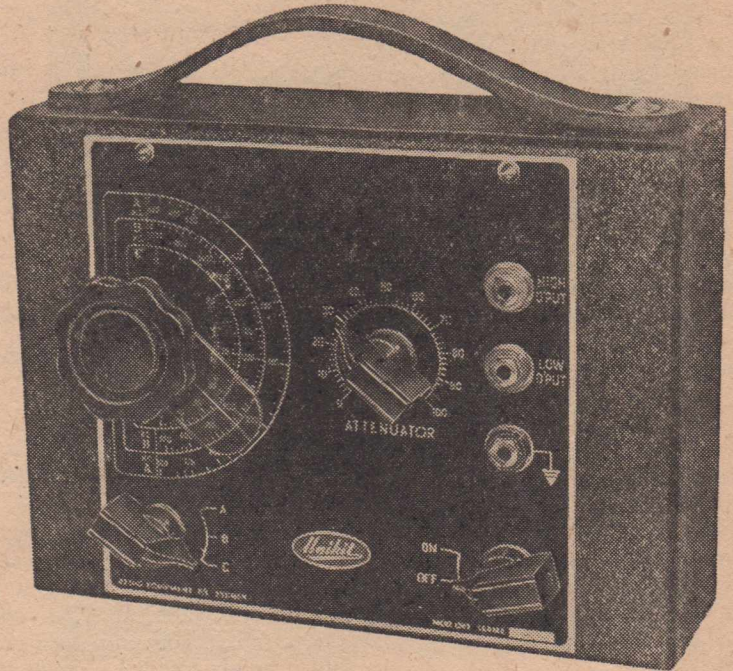
**A**N oscillator is one of the most valuable pieces of equipment to the Radio Serviceman, the Home Builder and the Radio Enthusiast generally. The price of commercially-built oscillators is such that the average person may think before purchasing one for experimental use. The next solution is to buy a kit of parts and construct your own oscillator, but in the past this has been very difficult because

BY THE TECHNICAL STAFF OF  
RADIO EQUIPMENT PTY. LTD.

of the difficulty of having the finally-built instrument calibrated.

This difficulty has now been overcome and it is possible for the home

(Continued on next page)



CIRCUIT DIAGRAM FOR OKI OSCILLATOR

## PARTS LIST

- 1—Metal case with lid.
- 1—Coil unit.
- 1—Output lead.
- 1—482 battery.
- 2—950 cells.
- 1—Single gang condenser.
- 1—Trimmer condenser.
- 3—Pointer knobs.
- 1—2000 ohm potentiometer.
- 1—Battery switch.
- 1—5000 ohm  $\frac{1}{2}$  watt resistor.
- 1—50 ohm  $\frac{1}{2}$  watt resistor.
- 1—25,000 ohm  $\frac{1}{2}$  watt resistor.
- 4—Self tapping screws.
- 2—"A" battery clamping strips.
- 1—"B" battery clamping strip.
- 3—Tip jack sockets with nuts, lugs and lockwashers.
- 1—Tuning knob and pointer.
- 2—.0005 mfd. mica condensers.
- 1—5 megohm resistor.
- 1—354 tube.
- 1—Leather handle with screws, washers and lockwashers.
- 1—Brass label.
- 1—"B" battery plug.
- Hookup wire.
- Solder.



## OSCILLATOR

(Continued)

builder to purchase a kit of parts to build an accurate and modern oscillator and yet to have an accurately-calibrated instrument in the final result. Radio Equipment Pty. Ltd., who some months ago introduced the popular MK1 Multimeter Kit, have now brought out a companion instrument in the Model OK1 oscillator kit.

This comprises all the parts necessary to build an oscillator which has a wide frequency range. Every nut and bolt and every component part is supplied and a complete book of instructions is given so that assembly and wiring is simple.

All that part of the oscillator kit which needs calibration is pre-calibrated in the factory. The coil and tuning unit and the calibrated dial are pre-adjusted so that when assembly and wiring is carried out with a few simple tools, the oscillator is ready for use when completed and the calibrations are right on the dot.

In this article we set out for you general details and the constructional details for a battery-operated oscillator of a type which is extremely valuable for the alignment of dual-wave radio receivers and many of the other operations performed in radio service work. As stated, a minimum number of simple tools is required for the building of this oscillator and if care is taken in assembly and wiring, an accurate instrument will result.

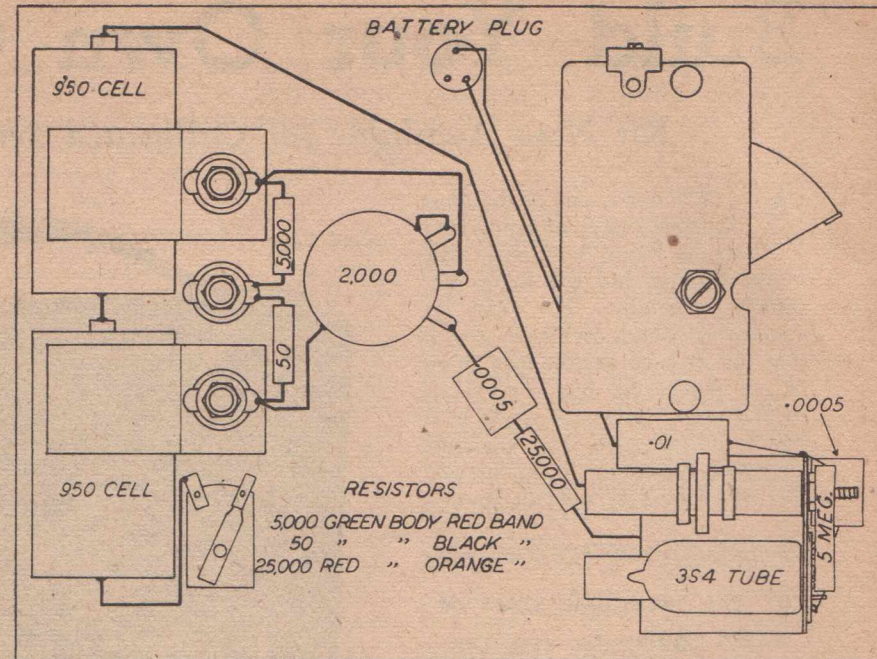
The frequency ranges covered by this oscillator are set out below:

"A" band—160 to 490 kC.

"B" band—550 to 1600 kC.

"C" band—16 to 45 metres.

There is also set out here a complete list of parts which comprises the kit. In the kit most of these components are already mounted and soldered in place. The dial has been set and the coil ironcores and



WIRING DIAGRAM FOR OK1 OSCILLATOR

trimmer adjusted in the factory, so on no account should the wax seals be broken on these and any re-adjustments made to these components. Each coil unit is adjusted with highly-accurate equipment after the tuning condenser and dial are assembled. This is a very important point as it saves the trouble of a complicated calibration procedure when the wiring is completed.

### ASSEMBLY AND WIRING

The first step in wiring the oscillator is to connect the two 950 torch cells in series with a small length of the hookup wire provided in the kit—about two inches will be ample. Next slip the two cells under the clips provided with the positive ends towards the top of the panel (the positive end is that which has a brass cap in the centre). Then mount the switch near the batteries at the bottom of the case with the lugs pointing to the top of the case. The potentiometer is next mounted with the lugs pointing towards the gang condenser.

Now solder a lead from the bottom or negative end of the lower

cell to the lug closest to the batteries on the small switch. If any difficulty is experienced in soldering to the bottom of the cell it should be scraped lightly first when it will be found to solder readily. Next solder the long single wire from the coil unit onto the positive cap of the top 950 cell making the wire long enough to lay flat across the back of the panel all the way. This completes the filament wiring of the oscillator.

The remaining wiring is all associated with the attenuator and if the position of the leads is carefully studied when they are put in and kept as short as possible the attenuator will work smoothly with a minimum of leakage. First bend the top lug on the potentiometer flat and solder it onto the metal cover. Next solder a lead from the earth socket to the closest point on the potentiometer cover. Both of these soldered joints should be on the side wall of the cover so as not to interfere with the mounting of the type 482 battery when it goes in. The other wire to put in is one from the HIGH OUTPUT socket to the centre of the potentiometer. Next solder the 5,000 ohm resistor



## OSCILLATOR

(Continued)

between the HIGH OUTPUT socket and the LOW OUTPUT socket and the 50 ohm resistor from the LOW OUTPUT socket to the earth socket. Then connect one end of the .0005 mfd. condenser to the remaining lug on the potentiometer. The other end is soldered to the 20,000 ohm resistor which is mounted on the switch. If the wiring has been checked carefully the 482 battery can now be put in position. Screw the metal strip firmly on the gang condenser so that it lies across the battery holding it in place. After that the three-pin plug is inserted into the socket in the top end of the battery. If the 3S4 tube is placed in the socket and the oscillator turned on it will now function. All that is left to do before screwing the instrument in the box is to fasten the handle to the box with the nuts and bolts provided and slip the sheet of prespahn along the top of the box to come between the negative end of the 950 cell and the case. Finally, put on the knobs and tighten them in position.

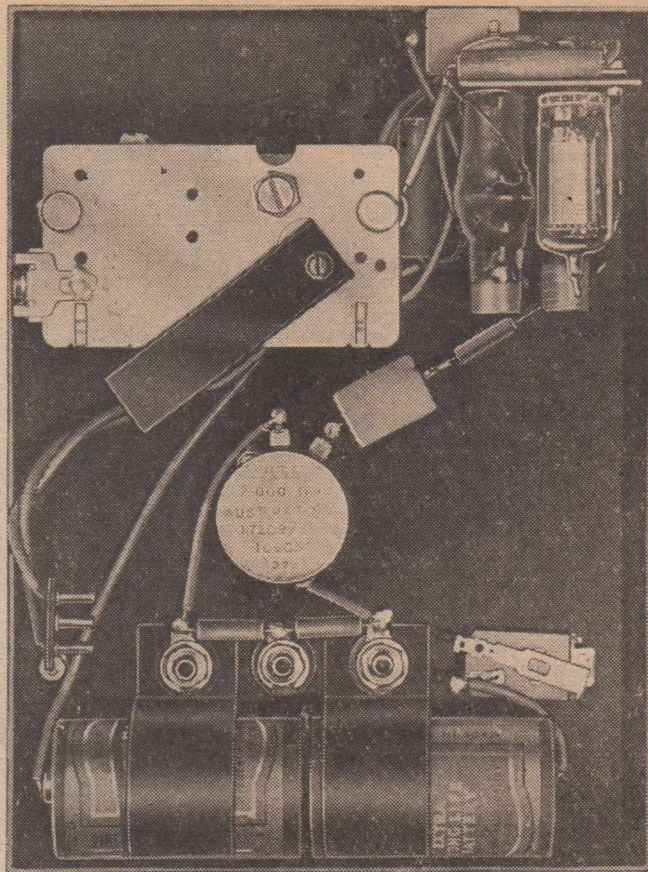
When the oscillator is built, check your wiring very carefully, also check to see that no solder has run down under the lugs on either the tip jack sockets or the potentiometer, as a short circuit at any of these points will prevent the instrument functioning.

### REPLACING BATTERIES

With normal use quite a long life may be expected from the batteries in this oscillator. However, it will be found that the 950 cells require much more frequent replacement than the 482 "B" battery.

### RECALIBRATION

If for any reason it should ever be necessary to recalibrate the oscillator, the coil iron core positions are as follows. Looking at the end of the coil bracket with the panel upright the "A" band iron core adjustment is above the 3S4 socket, the "B" band iron core is beside the "A," closest to the panel and the



"C" band iron core is beneath the "B" iron core beside the 3S4 socket. The iron cores affect principally the low frequency end of each band, so that any readjustment should be made with the tuning condenser plates almost fully in. The trimmer should be set at the higher frequency end of "A" band, preferably on 455 kC. These adjustments will not be necessary under normal circumstances.

### USING THE OSCILLATOR

Apart from alignment, an oscillator of this nature can be used for several other purposes almost as important in radio service work. Its uses are set out below:

- (1) Alignment of I.F. and R.F. circuits.
- (2) Adjustment of dial tracking.
- (3) Checking automatic volume control characteristics.

(4) Testing valve and circuit components under working conditions.

(5) Signal tracing.

#### 1. ALIGNMENT

Alignment of modern superheterodyne receivers has been fully dealt with from time to time in various technical articles and, consequently, only a brief description is given here.

The first point in aligning superheterodyne receivers is the adjustment of the intermediate frequency transformers. To do this, the hot (red) oscillator lead is connected to the grid of the intermediate tube, while the earth lead connects to the chassis earth. If the receiver possesses two intermediate stages, the lead is connected to the second intermediate tube before the first one. The oscillator is now switched on and the dial turned until the needle  
(Continued on next page)



## OSCILLATOR

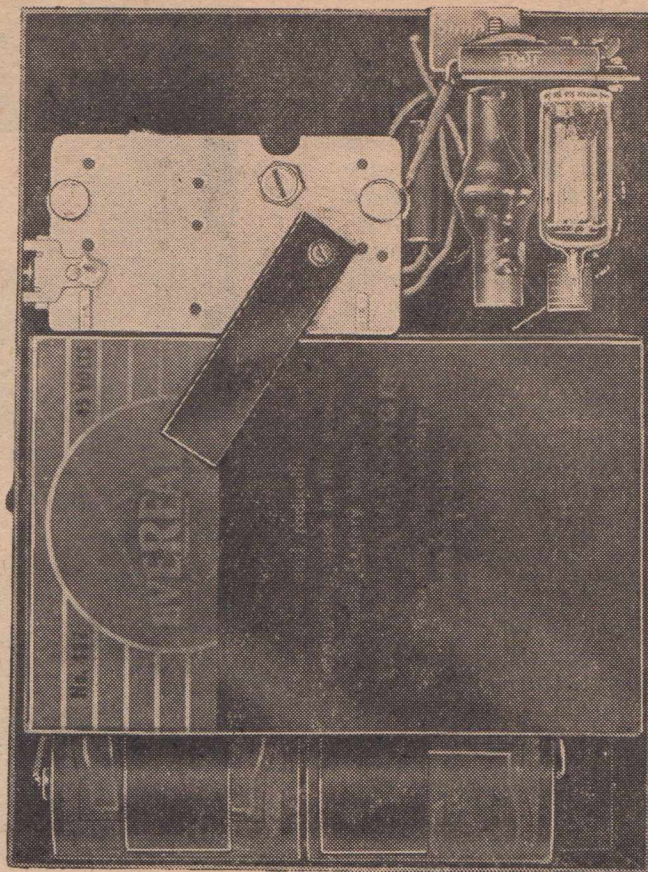
(Continued)

points to the intermediate frequency required by the receiver under test. The intermediate transformer following the tube to which the oscillator is connected, is now adjusted to give maximum reading on an output meter or the maximum signal is judged by the ear. When this action is completed the hot lead is transferred to the first intermediate tube or the first detector, as the case may be, and the action already described is carried out on the remaining I.F. transformer. The one which has been previously aligned should now be readjusted to give maximum output. It is a wise precaution, when aligning sets with automatic volume control, to keep the signal input as low as it can conveniently be kept. This prevents the automatic volume control from interfering with the correct alignment.

After having aligned the I.F. transformers the hot lead of the oscillator should be transferred to the aerial terminal and the range switch turned to the broadcast band. The oscillator should now be tuned to a frequency of 1400 kC., and the receiver tuned in to the signal. From this position, the oscillator and R.F. trimmers should be adjusted. The oscillator and receiver are then tuned to a frequency of approximately 600 kC., and the padder adjustment made. After having adjusted the padder, the action previously carried out on 1400 kC. should be repeated.

### 2. DIAL ALIGNMENT

The adjustment of the dial is part and parcel of the alignment of the receiver. The work of the oscillator in this adjustment is to supply the correct frequency, so that by adjusting the oscillator trimmer and the needle of the dial, the correct frequency setting will be registered. For this purpose, the oscillator should be fed into the aerial and earth as previously described, and the range selector switch turned to the broadcast band when



the desired frequencies can be taken from the calibrated dial.

### 3. CHECKING A.V.C.

The action of automatic volume control may be checked very easily with an oscillator. The test consists of feeding the signal into the aerial and earth at various frequencies and noting the effect of the automatic volume control voltage on one of the tubes controlled by the A.V.C. In a valve using a bias resistor in the cathode circuit, it is only necessary to place a meter across the cathode resistor, having sufficient range to measure the full bias voltage, and to increase the signal from the oscillator from zero to maximum, noting the effect of this signal on the voltage developed across the bias resistor. If the automatic volume control is working properly, the voltage registered by the meter will decrease as the signal strength is increased. The amount

of automatic volume control voltage can quite readily be judged by the reduction of bias voltage. This action should be tried on all tubes which are controlled by the automatic volume control system.

In tubes such as octodes or pentagrid converters, the majority of the cathode current is made up not by the ordinary plate current but by screen and oscillator plate current, the effect of automatic volume control will be hardly noticeable with a meter connected across the resistor in the cathode circuit. In this case, as in the case of valves which are biased by a back bias method, it will be necessary to insert a milliammeter in series with the plate circuit or the screen circuit and note the effect on the increased signal on the plate or screen current. As the automatic volume control increases, the plate or screen current will be reduced. The effective change is again an indication of the auto-



matic volume control voltage. Of course, the range of the milliammeter must be correct for the type of tube being tested.

#### 4. VALVE AND CIRCUIT TESTING

Frequently in radio service work, various components will test quite in order under normal testing conditions, but when operated in a receiver may cause considerable trouble. In such cases, it is obviously necessary to test these components under their actual working conditions. The oscillator may be used very conveniently for this function, as it can be made to feed an unvarying signal strength into the receiver and, consequently, any variation which takes place in the output will be due to some fault in the receiver itself. By feeding a signal of broadcast frequency into the aerial and earth terminals, and by adjusting the attenuator unit to a reasonable signal strength, various components in the receiver can be replaced to see whether they are working satisfactorily or not. It is advisable to use some form of output meter to measure the output being obtained, as the ear is very inaccurate in judging changes of signal strength. In this way, if a valve is suspected of being faulty, it may be tested under its actual conditions by replacing with one known to be good while the test is being undergone. Any increase in output represents greater gain from the new tube than from the old and, consequently, the old tube may be considered as being inefficient. Various minor components such as resistors and condensers may be tested in a similar manner.

#### 5. SIGNAL TRACING

An efficient means for locating a fault in a radio receiver for service consists of what is known as stage testing. Stage testing is a means of localising particular faults being experienced, to one individual stage. The various components of this stage may then be checked quite readily, resulting in a greatly reduced time of operation. The os-


cillator is a very fine instrument for locating faulty stages. To do this, the oscillator should be switched on and the range switch and dial turned to the correct intermediate frequency of the set under test. The hot lead should then be fed into the grid of the last intermediate tube, while the earth lead connects to the chassis. The receiver is now functioning only from the last intermediate stage and, consequently, if the function here is quite normal, it immediately eliminates the second detector, power tube, speaker and power supply unit. The hot lead should then be transferred to the first intermediate or first detector, and if the receiver still continues to function, then the fault exists before this first intermediate or first detector, and the remaining sections between the intermediate or detector and speaker have been proved to be in good order.

Switching now to a broadcast

frequency and feeding the signal into the aerial and earth terminals will locate the fault in the remaining stages.

In conclusion we would point out that this is a carefully designed instrument and with careful and thoughtful use can give you many years of service. The manufacturers, of the component parts who are putting this in kit form, have spent a great deal of time and thought in presenting a kit that can be easily constructed and yet will give accurate service. Radio Equipment Pty. Ltd., of 5 North York Street, Sydney, provide another advantage in this oscillator kit insofar that it is exactly the same physical size as Model MK1 Multimeter Kit. Thus, the two instruments are companions and in themselves provide an excellent small team for general radio service work and radio set building.

**SAVE MONEY  
WITH A  
SUBSCRIPTION!**



Order Yours To-Day

Make sure you get every issue as soon as it is published. Place an order with your newsagent or send direct to us for a subscription.

**IT SAVES YOU MONEY!  
IT SAVES YOU TIME!**

We guarantee that every subscriber has his copy posted the same day it comes off the press.

RATES	
★ 6 issues	5/3
★ 12 issues	10/6
★ 24 issues	20/-
<b>POST FREE</b>	

Enclosed please find remittance for 10/6 in payment for an annual subscription to the "Australasian Radio World," commencing with the..... issue.

NAME .....

STREET and NUMBER .....

CITY..... STATE.....

**AUSTRALASIAN RADIO WORLD**

Balcombe Street  
Mornington

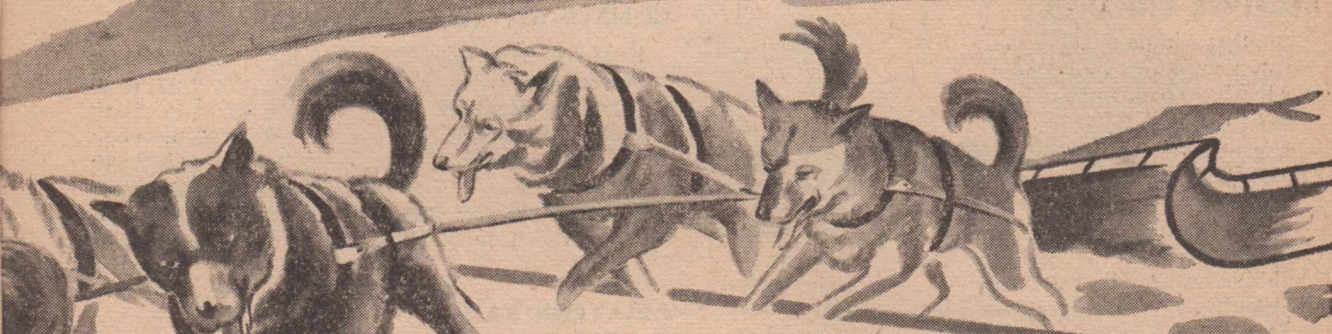


*There's always a leader.*



AMALGAMATED WIRELESS VALVE COMPANY





In Polar exploration, only leadership, born of skill and experience, can be depended upon to win through. In electronic communication, valves are the cornerstone from which all research develops—Radar to seek out the safe channel; radio compasses to plot positions accurately; echo sounders to gauge ocean depths, and constant communication with bases to keep informed. In all these devices, Radiotron Valves provide the pulse beat, facilitating the work of pioneers and improving radio in all its applications.



PTY. LTD.



# INDEX TO VOLUME 11

At the request of several readers we publish this index to Volume 11. Back numbers are available at 1/- each, post free, by sending postal note (or 8 1½d. stamps) to Australasian Radio World, Balcombe Street, Mornington, Victoria. The complete set of twelve issues is available for 10/-, post free.

## RECEIVER CIRCUITS

Another Single-Gang Super .....	June 1946
Latest in Direct-Coupling .....	July 1946
All-Wave Bandsread Two .....	Aug. 1946
Sky-Cruiser Battery 4 .....	Aug. 1946
Regenerative Pre-Selector .....	Sept. 1946
Sky Hawk 4 .....	Sept. 1946
Problems of Commercial Design .....	Oct. 1946
Radiotron 5 and 6 Valve Circuits .....	Oct. 1946
Circuit for A.C. or Battery .....	Nov. 1946
Simple Super. from the Past .....	Feb. 1947
Sensitive 4-Valve Circuit .....	Mar. 1947
Easy Reflex Circuits .....	April 1947

## THEORY AND FUNDAMENTALS

Possibilities in 2 mC. I.F. ....	June 1946
Understand Valve Curves .....	June 1946
Advantages of Ferrotune .....	July 1946
Designing Battery-operated Sets .....	Jan. 1947
The Control of Tone .....	Jan. 1947
Choice of Intermediate Frequency .....	Jan. 1947
Trends in Design .....	Feb. 1947
Electro-Acoustic Coupling .....	Mar. 1947
Radio Frequency Chokes .....	Mar. 1947
Trends in Pick-Ups .....	April 1947
Visual-Tuning Indicators .....	April 1947
Visual Tuning Indicators (Part 2) .....	May 1947

## HINTS AND TIPS

Receiving Beam for "Ten" .....	June 1946
Experiences with Noise Suppression .....	June 1946
Estimating Receiver Performance .....	June 1946
Getting Started at Set Building .....	Aug. 1946
Effective Noise Limiter .....	Sept. 1946
Importance of Lay-out .....	Sept. 1946
Dealing with Man-Made Static .....	Oct. 1946
Don't Take any Risks .....	Nov. 1946
The Care of Batteries .....	Nov. 1946
Making Dial Scales .....	Feb. 1947
Experiences with Gangless Tuning .....	Mar. 1947
A Relay from old Transformer .....	April 1947
Experiments with Single-Gang Supers. .....	April 1947
How to Use Photo-Electric Cells .....	May 1947

## CONSTRUCTIONAL ARTICLES

Deaf-Aid Amplifier .....	June 1946
Powerful 8-Valve Dual-Waver .....	July 1946
Ferrotune Reinartz .....	Aug. 1946
Fidelity Broadcast 5 .....	Aug. 1946
The Connoisseur .....	Sept. 1946
Max-Plus 5 .....	Oct. 1946
Ferrotune Mantel Model .....	Nov. 1946
Two More Connoisseurs .....	Feb. 1947

## AMATEUR RADIO

Exciter Unit for 50 mC. ....	June 1946
Further Notes on the VK2NO-V6 .....	June 1946
Do You Want to be a Ham? .....	June 1946
Absorption-Type Wave-Meter .....	July 1946
Operating the 807 .....	July 1946
Outlook for the Ham Market .....	Aug. 1946
Beam With a Reputation .....	Aug. 1946
A Band Checker .....	Sept. 1946
Ham Exam Papers .....	Oct. 1946
More Restrictions for Hams .....	Nov. 1946
How to go on 166 mC. ....	Dec. 1946
How not to Report Reception .....	Feb. 1947
Re-vamping the FS6 .....	Feb. 1947
Another Type of Beam Array .....	Mar. 1947
Double Superhet. for Ham Use .....	May 1947

## GENERAL

Post-War American Receivers .....	June 1946
More About the Hammond Organ .....	June 1946
Politics of Ham Radio .....	July 1946
Ham Lingo is Snappy .....	Aug. 1946
Index to Volume 10 .....	Aug. 1946
New "Valve" is Crystal .....	Aug. 1946
Sparks as a Career .....	Oct. 1946
New Home for Radio World .....	Nov. 1946
Technical Radio in South America .....	Nov. 1946
Truth About Television .....	March 1947
Listening Without Phones .....	April 1947
Medical and Biological .....	April 1947
Printed Wiring Methods .....	April 1947
Problems of Trade Discount .....	May 1947
Starting a Radio Business .....	May 1947



# ANISOTROPIC ALNICO

Some details of the material which makes possible the new light-weight high efficiency speakers

JUST as the loudspeaker is the voice of your radio set, so Anisotropic Alnico is the heart of the modern loudspeaker.

Anisotropic Alnico is a newly developed magnet alloy which is three times as powerful as the next powerful alloy which is known as Alnico 2 or Alnico.

## FUNCTIONS OF MAGNETS

The two general classes of magnets are *electro magnets* and *permanent magnets*.

The *electro magnet* in its simplest form is a solenoid or coil of copper wire through which an electric current flows. The provision of this electrical energy is not always a simple matter, and in many ap-

plications it is preferable to use a permanent magnet.

A *permanent magnet* may be found in its natural state in some hard stones, but a commercial permanent magnet consists, as a rule, of hardened alloy steels specially heat treated.

Magnets are used in many and varied types of apparatus, including engineering equipment, instruments, articles of everyday use, such as bicycle generators, compasses and

compass correctors, telephones, loudspeakers, certain types of switching apparatus, motors, generators, and in toys.

Until recently most applications of magnets required electro-magnets, but so much have permanent magnets improved that today this type of magnet can generally be used in place of the electro-magnet with increased efficiency, economy of space and with less cost.

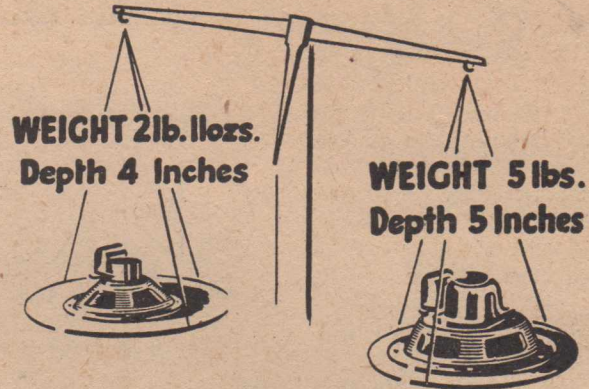
For this reason new applications for magnets are being found every day.

## DEVELOPMENT OF ANISOTROPIC ALNICO

Some years ago the type of permanent magnet in general use was one made of tungsten steel, and the horseshoe type of magnet with which most people are familiar was generally made of this material.

This was followed by various types of cobalt and chrome steels, but a very big step forward was taken when the Alnico alloy was developed approximately ten years ago.

Given proper design of the magnet-using equipment, Alnico 3 (or



## EFFICIENCY EQUAL



Rola speakers by the thousand . . . one of the last operations in the speakers' manufacture is the final magnetising process.

(Continued on next page)



# ALNICO

(Continued)

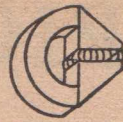
Alni) is four times as effective as tungsten steel, and, as better alloys developed, this figure was improved.

In striving to make even better magnets, two English scientists, just before the war, made a very important discovery. They found that by heat-treating Alnico material in a magnetic field, the flux can be concentrated in one direction—i.e., if a cube of the specially heat-treated material were magnetised first in one direction, and then in the other—the field in one direction would be considerably greater than the other. Ordinary magnet material is such that, if a cube is magnetised first in one direction and then in the other, the resultant fields are the same in each direction.

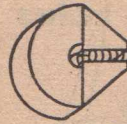
## APPLICATION OF ANISOTROPIC ALNICO

The discovery of the British scientists initiated the development of special alloys to take advantage of the heat-treatment principle which they defined. In a short time considerable improvements in the alloys were effected, and material three times as effective as Alnico 3 (or Alni), or approximately eleven times as effective as tungsten steel was developed.

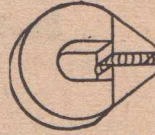
These developments were made



Anisotropic Alnico.



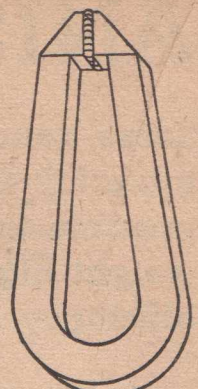
Alnico III



42% Cobalt



Tungsten



Chromium

All these magnets produce the same flux across the same gap.

during the war, and their effect on the design of instruments of war was considerable. Their contribution is particularly marked with radar.

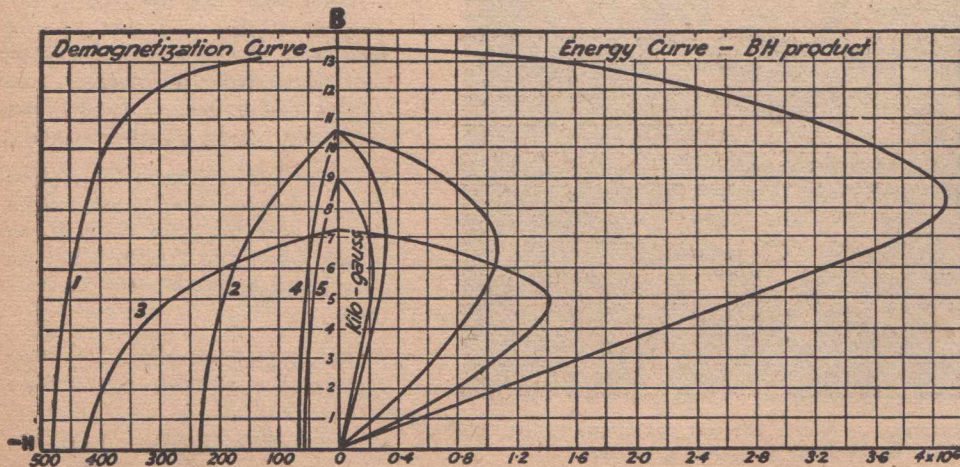
Various names have been given to magnet alloys heat-treated in a magnetic field. In America Alnico 5 is widely known; on the Continent a special material, known as Ticonal, has been developed, and has found wide application there; and in England, where also a material known as Alcomax is popular. The Russians developed a material known as Magnico. In Australia, Rola Company (Aust.) Pty. Ltd. developed an Alnico using Anisotropic principles to which the descriptive name of Anisotropic Alnico (literally Alnico with unequal

properties in different directions) has been applied

Alnico material with anisotropic qualities was made available to the Australian and Allied defence forces and was used in radar, field radio sets, pedal generators which were smuggled into Japanese-held islands, microphones and receivers in tanks, and other apparatus used by the Services.

## ANISOTROPIC ALNICO IN LOUDSPEAKERS

In the most common type of loudspeaker a magnet is used to provide magnetic flux through an airgap in which a coil which carries an electric current is free to move. Interaction of the magnetic flux and the current in the coil cause the coil to move, and with it the



Demagnetisation and energy curves for various magnet materials, in OERSTEDS (GILBERTS per cm.): (1) Anisotropic alnico; (2) 42% cobalt; (3) Alnico III; (4) Tungsten; (5) Chromium.



diaphragm, and so sound is produced.

With the end of the war it was natural that Anisotropic Alnico should be applied to loudspeakers, where lightness, compactness and efficiency are of profound importance. This the Rola Company did as soon as their war commitments had been liquidated, and one by one the new Anisotropic Alnico-using speakers appeared on the market.

Compare, for example, an 8-in. permanent magnet speaker using an Anisotropic Alnico magnet with one of the older type speakers. The new model 8K permanent magnet speaker, for instance, which replaces and does the same work as the old model K8 electro-dynamic speaker, is only about half the weight. Even when the new model 8M is compared with model 8/21 permanent magnet model using an Alnico magnet, the comparison is most marked—8/21 weighed 4½-lbs., against the 8M 2-lbs. 13-ozs.

The models of Rola speakers released to date using Anisotropic Alnico are—

3C—3½-in. Speaker—

½-in. voice coil; 3.7 ohms voice coil impedance.

5C—5-in. speaker—

¾-in. voice coil; 3.7 ohms voice coil impedance.

6H—6⅝-in. speaker—

¾-in. voice coil; 3.7 ohms voice coil impedance.

8K—8⅛-in. speaker—

1-in. voice coil; 2 ohms voice coil impedance.

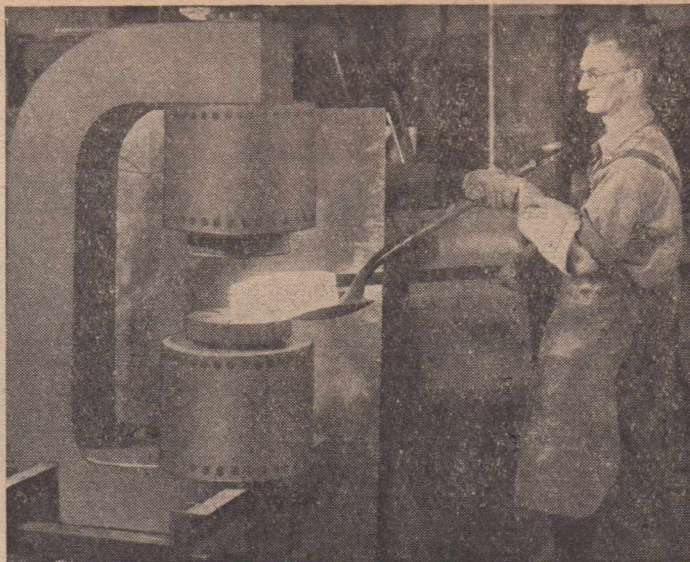
8M—8⅛-in. speaker—

1-in. voice coil; 2 ohms voice coil impedance.

There is a difference in efficiency between 8K and 8M of approximately 2 db, the latter being generally recommended for battery and vibrator set operation or in applications where the extra efficiency can be utilised to advantage.

#### THE NEW SPEAKERS IN RADIO SETS

Radio manufacturers were quick to realise the great advantages offered by speakers with Anisotropic Alnico, and immediately re-design-



A muffle box containing white-hot magnets being placed in the air-gap of an electro-magnet at the Rola factory.

ed their sets to take advantage of these speakers. The new, modern, compact sets now coming on to the market are made possible because of these new speakers.

Their use in the larger type of set has been scientifically exploited by manufacturers, and efficiency and tonal quality not previously associated with 8-in. speakers is forthcoming from consoles equipped with 8K and 8M.

#### SPEAKERS FOR GENERAL SALE

Rola speakers with Anisotropic

Alnico are now reaching the general trade. Because of its popularity, 5C was the first speaker made in really large quantities, but other models are becoming available in increasingly greater quantities.

Whether you buy a speaker or a radio set, it is well worth remembering that there are seven years of development between the speaker using an Alnico magnet and one using Anisotropic Alnico. If you want the most modern speaker, make sure that it is a Rola speaker, equipped with Anisotropic Alnico.

---

#### VK3GE

(Continued)

traffic was handled by Ray Jones, VK3RJ, at Box Hill, Vic., and thence by landline to Melbourne G.P.O. Prior to moving to Balcombe in January this year, Col. Every was active in Brisbane as VK4EY. Despite the handicaps of combining amateur radio with military service, VK3GE has spared no effort with radiating systems. A handy 2 element array is used as shown, for 14 mC. DX. The driven element is fed by coaxial line.

The results obtained by VK3GE are in no way considered to be outstanding by the owner-operator, but in the limited time available to him for operation they are extremely gratifying.

As a soldier long versed in the ins and outs of Signals, he knows the value of a sound working knowledge of radio communication in connection with Military needs, and as an amateur, he considers that there is no finer hobby to commend itself to the youth of the community.

—D.B.K.

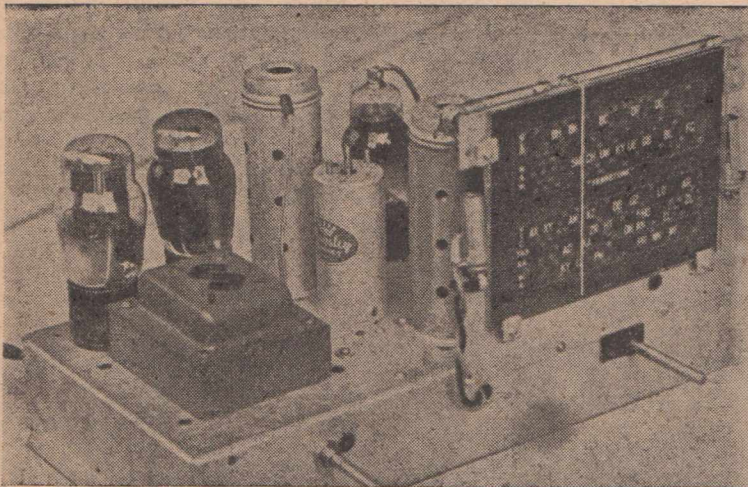
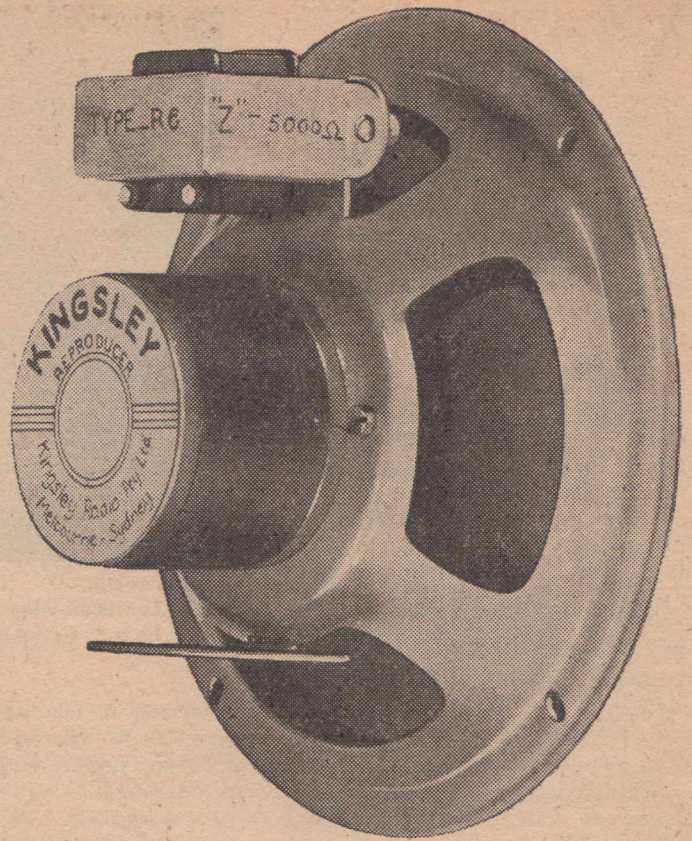


# HEALINGS

have  
Ample Stocks  
of the  
**NEW**  
"Kingsley"  
Speakers

Use them with the  
**"FERROTUNE"**  
FOUNDATION KIT-SETS

Described in  
this Journal



"Ferrotune" 4/5 Broadcast Table Model  
(Type KFT1, illustrated at left) includes  
dial, chassis and I.F. transformers.

Retail Price ..... £5/18/-

"Ferrotune" 2/3 Valve Broadcast, Reinartz  
Kit Set, Mantel Model (Type KFT2).

Retail Price ..... £3/12/-

"Ferrotune" 3/4 Valve Broadcast Kit Set,  
Mantel Model (Type KFT3).

Retail Price ..... £5/12/-

ABOVE PRICES SUBJECT TO GENEROUS DISCOUNTS TO TRADE

*Authorised Kingsley Distributors*

# HEALINGS PTY. LTD.

261 SWANSTON STREET, MELBOURNE

Phone: Central 2064-5



# Beams, Beams, Beautiful Beams

## Details of One of the Finest Amateur Arrays

Sometime early this year, there were scenes of activity in and around the residence of VK3KU, Howard Kingsley Love, at Mount Waverley, Victoria. Plans were being put to maturity after having progressed through the drawing board stage in the Kingsley Radio factory, St. Kilda Rd., Melbourne. Truth was that H.K.L. had reached a fed-up stage at trying temporary fixed beam arrays, especially for the 14 mC. band, and had decided to build the Beam to end all Beams. It was to cater for everything that he would be likely to need, and with Howard, that meant all the

---

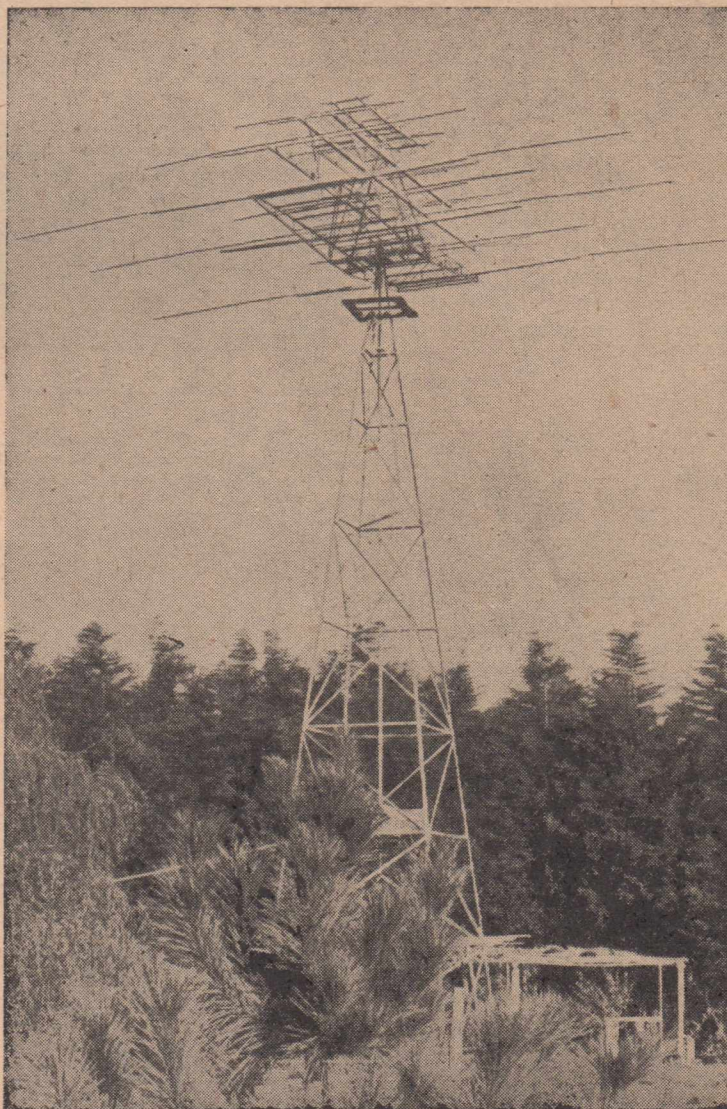
Described by

**DON B. KNOCK**

VK2NO

---

useful bands, with controllable directivity for 14, 28, 50 and 166 mC. The scheme was to defy assertions that there would be severe interaction between the different elements and to arrange a composite assembly on the one Tower, motor-driven from the operating position in the shack. It was done, and it worked out nicely, as anybody who observes H.K.L. battling over the DX on 14 and 28 mC. will know. The betting is that when the 50 mC. DX breaks through as expected this coming summer, VK-3KU should be well in the picture there, too. The whole structure as finalised weighs about 4 tons, and as such is a solidly built affair on which gale force winds have no effect—a mighty comfortable feeling that doesn't exist in most shacks along the Eastern VK coastline, especially when the equinoxials start to howl.



**Culmination of a progressive radio amateur's ideals. Weathering the gales well, she has piled up the DX contacts consistently.**

Largest of the arrays on this Tower is the 14 mC. section, and this uses a carefully matched "inductive" dipole with parasitic elements; reflector and director. It is fed by 120 twin coaxial cable. Above this is placed the 28 mC.

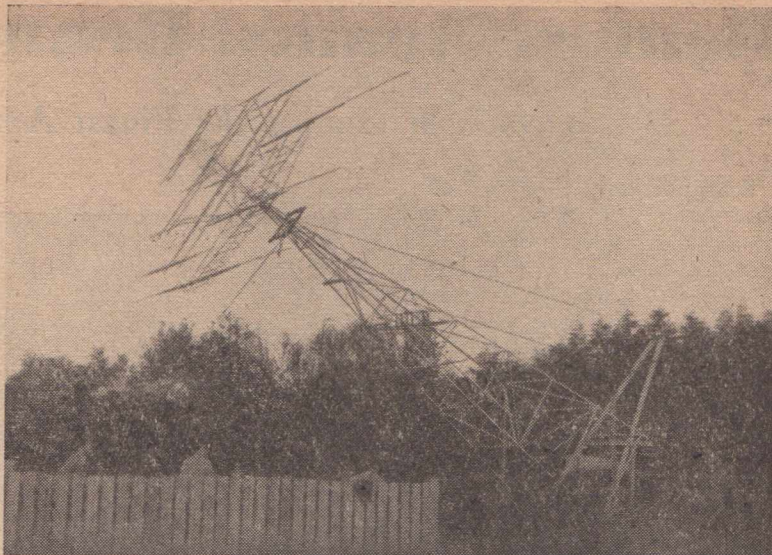
beam, which, with the others, employs a principle not properly appreciated in Amateur spheres of communication; i.e., the "Marconi Franklin Series-Phase" system. Reference should be made to Terman

*(Continued on next page)*

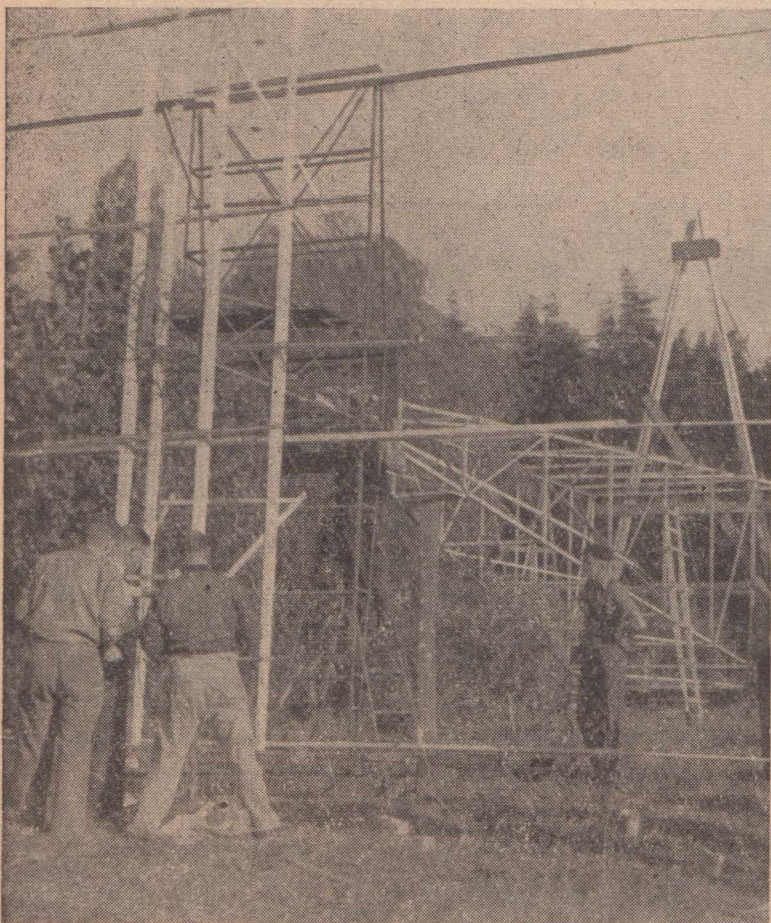


*(Continued)*

for the full data, but in 1945 "Q.S.T." had a brief reference to one for the old 112 mC. band. It was detailed for 50 mC. in "A.R.W." recently, and referred to VK3KU's application. This 28 mC. Franklin is a 3 section assembly and possesses the virtue, as do the others, of drawing R.F. from the transmitter without any fuss or element adjustment. A most valuable feature is that all elements are excited—there are no parasitics. VK-3KU would have applied the scheme on 14 mC. also, but for the inconvenience of construction at the larger size. Underneath the 28 mC. array is that for 50 mC., which in this case has four Franklin



**Will she make it? She does, and the boys just beat the coming darkness.**



**Final inspection by VK3KU. The beam contains (1) 3-element parasitic for 20, (2) 3-element series-phased for 10, (3) 4-element series-phased for 6, and (4) 6-element series-phased for 166-170 mC. The tower itself is tuned as a vertical on 40.**

elements. Finally, atop the lot, is the 166 mC. Franklin, using six elements. So much for the rotary beams carried on the tower, but that doesn't complete the picture, for that tower is insulated from ground and the whole affair tuned as a vertical quarter-wave radiator is needed, for 7 mC. Obviously, it becomes a vertical with quite a bit of useful top capacity! First view shows VK3KU and some of the VK's who helped him, working on the assembly with the tower on the ground. Next view shows the Colossus at about 45 degrees, being hauled into the vertical as dusk chases Time, and finally, the whole creation up where it is wanted, and where, since erection some months ago, it has been doing sterling service, especially on 14 and 28 mC. It is, as the heading of this brief story implies, a Beautiful Example of a Composite Beam Array to delight the heart of the Radio Amateur, DX chaser or otherwise. Next time you work VK3KU, you can visualise just what kind of a Signal Squisher packs the punch behind his signal. Anybody got any old windmill towers for sale?

—D.B.K.



# THE KINGSLEY "K.S.9'er"

## Aerial Coupling Unit for Efficiency on "6" or "10"

THOSE readers who listen on the amateur shortwave bands, frequently hear one station operator reporting to another that his signal is Q5—S9.

These figures indicate to the remote transmitting station that his signal on arrival at the receiving station is Q5, at maximum read-

By

**H. K. LOVE**

(VK3KU)

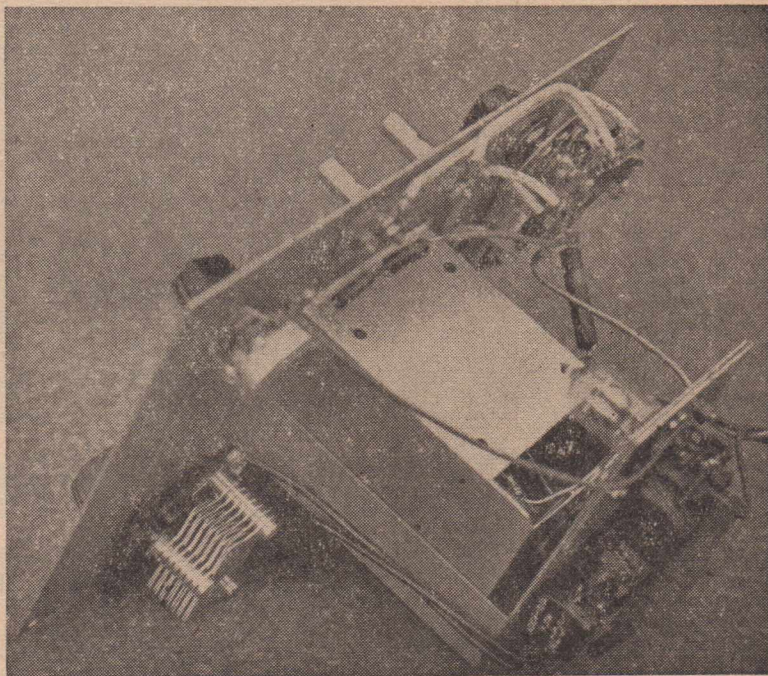
Kingsley Radio Pty. Ltd.

bility, and has a carrier strength of full scale on the signal meter of a receiver.

Such a report is a very satisfactory one to the transmitting station, particularly if it is 6 to 10,000 miles distant from the receiver.

In many cases, operators of stations, or owners of purely listening stations, find it difficult to receive a signal, particularly on 10 and 6 metres, at anything approaching S9, and if they do, it is mixed with

so much noise that the signal is certainly not Q5.

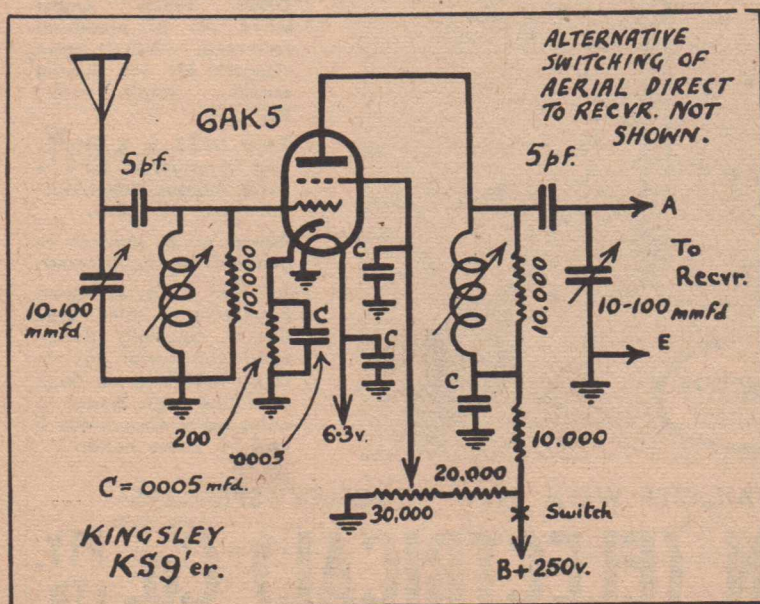


Rear view of the KS9'er, showing valve mounting.

This may not be, by any means, the fault of the transmitted signal, but rather due to the falling off in sensitivity of the receiver at these high frequencies, unless special care is exercised in the tube selection and lay-out. Not the least of the causes of such falling off of sensitivity is the difficulty of matching the aerial system to the receiver.

The K/S9'er is a unit which is designed to achieve the S9 signal. This is made possible by a system of matching the aerial to the K/S-9'er—building up the received signal by using the gain of a special high frequency valve—and matching the output of this tube to the receiver.

When examining the circuit, do not fall into the trap of believing that this is a condenser tuned grid plate amplifier of the normal type.



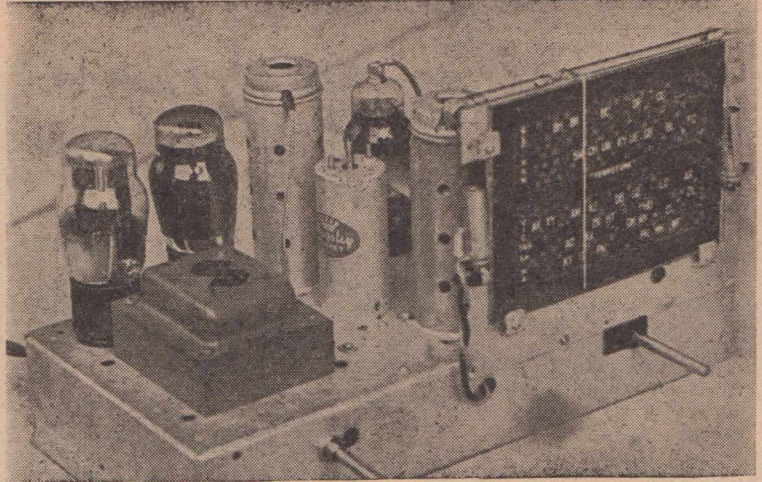
Circuit of the KS9'er, which is neither a converter nor an r.f. pre-amplifier.

(Continued on page 32)



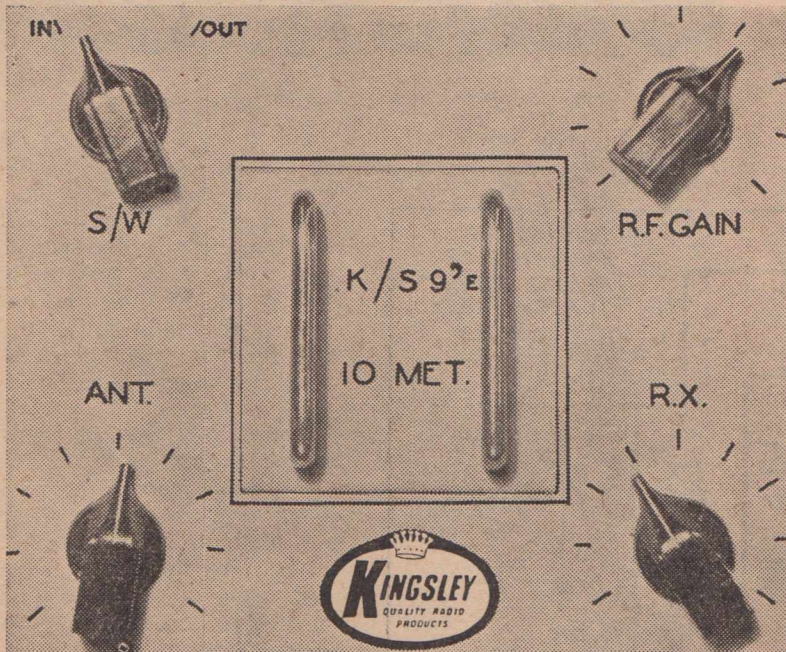
# Gibson Electrical Announce

THAT THEY  
 HAVE BEEN  
 APPOINTED  
 DISTRIBUTORS  
 FOR



## KINGSLEY PRODUCTS

AND HAVE COMPREHENSIVE STOCKS AVAILABLE  
 ASK FOR Mr. F. N. KINNEAR



Above is pictured one of the ferrotune foundation kit sets, type KFT1.

This is a 4/5 valve table model. Kit includes dial, chassis and intermediate frequency transformers. Retail price, £5/18/-.

Other types, model KFT2 is a broadcast ferrotune 2/3 valve rienartz kit set mantel model. Retail price, £3/12/-.

Type KFT3 is a broadcast ferrotune kit set 3/4 valve mantel model. Retail price, £5/12/-.

Above prices subject to generous trade discount.

At left is a ferrotune preselector unit type K/S 9'er. Specially developed for aerial to receiver matching plus high gain and high signal to noise ratio. Covers the 6 and 10 metre bands.

KIT SETS NOW AVAILABLE WITH NEW KINGSLEY SPEAKERS

# A. H. GIBSON (ELECTRICAL) Co. PTY. LTD.

416 BOURKE STREET, MELBOURNE - - - - - MU 8121 (10 lines)







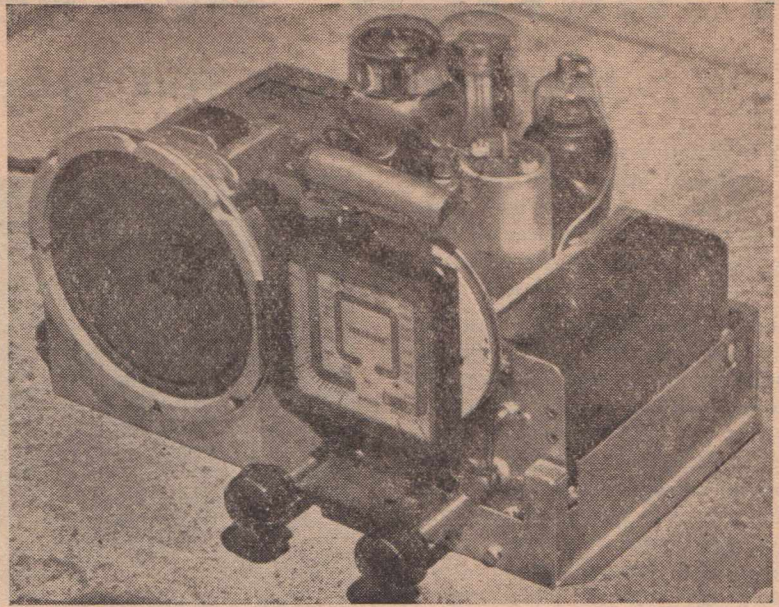
## FERROTUNE

(Continued)

iron-dust cores, which slide in and out of the coils, controlled by mechanical means. The scheme is unusual, but completely sound in both theory and practice, and has several distinct advantages for those who build their own sets and lack elaborate equipment for aligning and adjusting.

The problem of tracking a super-het is greatly simplified because the tuning of aerial and oscillator circuits can be kept at a correct frequency different by positive mechanical means, instead of by the somewhat hit and miss method of padding as used in normal practice.

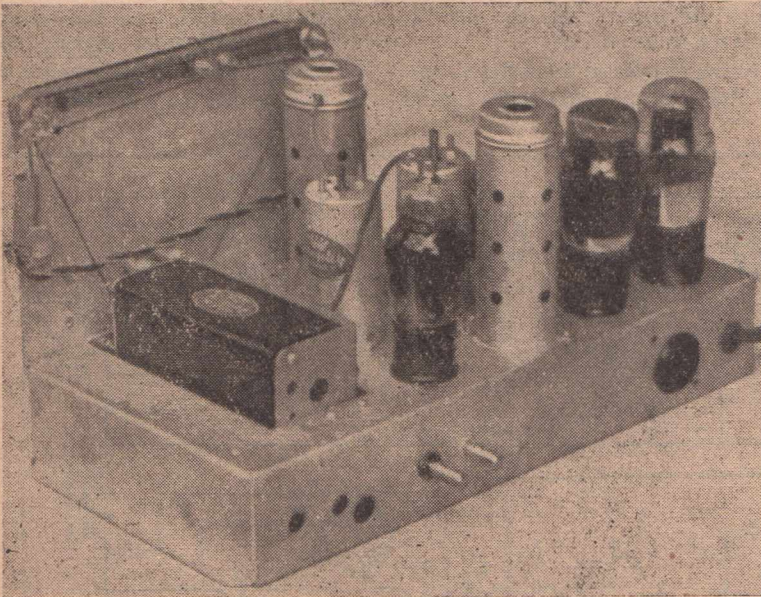
Unfortunately, however, when the Kingsley units were first introduced there were various shortages of raw materials which caused production bottlenecks, so that many enthusiasts who set out to buy Ferrotune units found that they would have to place orders and then wait weeks and maybe months



The Kingsley KFT3 kit makes up this snug little mantle model.

for delivery. Eventually the Ferrotune production was organised to meet demands, but by this time the speaker shortage had become acute and few dealers were able to offer complete kits.

The Kingsley organisation is a large and powerful one, however, and they determined to see that nothing prevents the Ferrotune units from achieving the popularity which they deserve. So the speaker shortage has been met by the introduction of the Kingsley range of loudspeakers. The new Kingsley speakers are being supplied to distributors who handle the Kingsley "Ferrotune" foundation kits. So now there is no reason why anyone should be denied the opportunity of building up sets with inductance tuning and enjoying the advantages of this method.



Rear view of the full-size chassis built up from the KFT1 Ferrotune kit.

There are three main types of "Ferrotune" foundation kits in the Kingsley range.

The first is listed as kit type KFT1 and makes up a medium-sized five-valve chassis, which will fit in a larger type of mantel cabinet, but is really more suited to use in a console cabinet.

The second is the foundation kit type KFT2, which makes up into







# FERROTUNE

(Continued)

quality reproduction. Bias is arranged in all cases by the fitting of resistors in the cathode circuits and in every way the circuit is devoid of trick and short cuts. As shown, the circuit is suitable for use with a permagnetic speaker, but if an electro-dynamic speaker is on hand it can be used by having a 385 volt transformer and replacing the choke shown in the circuit by the field coil of the speaker. The field coil resistance should be between 1,500 and 2,500 ohms.

For the KFT2 or 6J7G detector is used with regeneration control by adjustment of the screen voltage. The output valve is a 6V6G, used without inverse feedback in order to allow greatest gain. For the KFT3 mantel model kit the 6J8G converter valve is retained, but the i.f. amplifier is one of the high-gain Philips types, EBF35, and in the output valve is that extremely sensitive type EL3NG. Resistors in the negative high tension return gives semi-fixed bias for the output valve and also a voltage to allow the most efficient type of delayed a.v.c arrangement.

## THE KITS

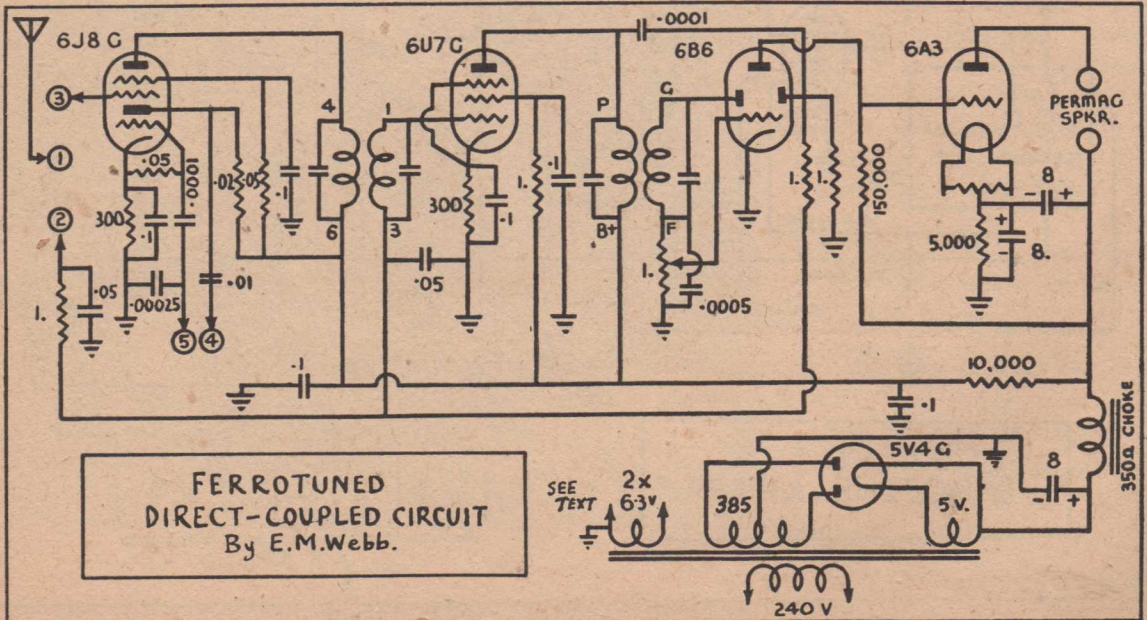
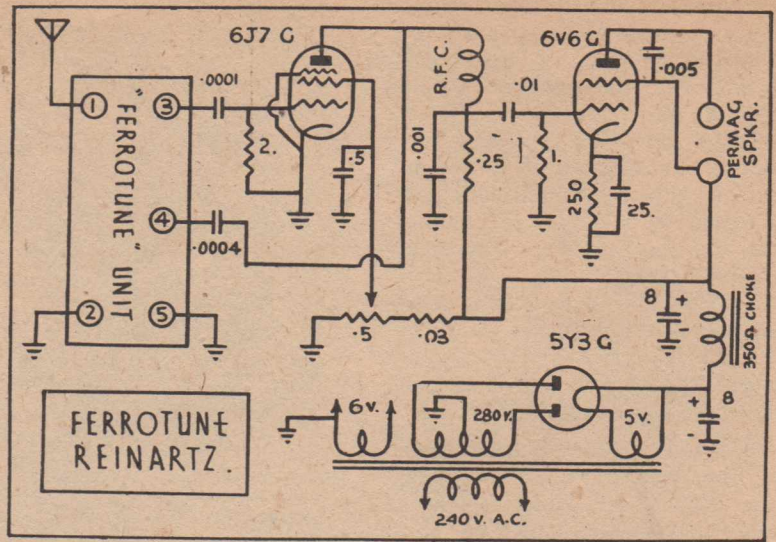
The Kingsley foundation kits

consist of the "Ferrotune" tuning unit which covers the broadcast band only, and not the shortwaves. It is completely boxed and sealed and is aligned at the factory, together with positive "padding", which is mechanical and adjusted at the factory, too. A calibrated dial with plastic escutcheon and glass window is supplied, also the intermediate transformers (in the case of the two superhets) and the steel

chassis, which is cadmium plated and ready drilled for all required holes and cut-outs. This ensures correct lay-out and is still another factor which ensures that a set built with a Kingsley foundation kit is certain to be a complete success.

For the little Reinartz set the Ferrotune kit is known as type KFT2 and comprises the metal

(Continued on next page)





# **Homecrafts** *Special* *Offer of* **KINGSLEY** **KIT SETS**



**KFT1** COMPLETE KIT INCLUDING RADIO-  
TRON VALVES AND KINGSLEY 6" SPEAKER **12 Gns.**

*Inspect our range of Cabinets for these Kit Sets*



**KFT2** COMPLETE KIT INCLUDING RADIO-  
TRON VALVES AND KINGSLEY 6" SPEAKER **9 Gns.**

*Homecrafts, Leaders in Radio—Established since 1908*



**KFT3** COMPLETE KIT INCLUDING RADIO-  
TRON VALVES AND KINGSLEY 6" SPEAKER. **10 Gns.**

*A staff of trained experts is available to give you  
technical data*



**H O M E C R A F T S   P T Y .   L T D .**

HEAD OFFICE: MELBOURNE, 290 Lonsdale Street and 211 Swanston Street; 139  
Moorabool Street, GEELONG; 307 Sturt Street, BALLARAT; 100 Clarence Street,  
SYDNEY; 26 Hunter Street, NEWCASTLE; 161 Pirie Street, ADELAIDE; HOBART,  
LAUNCESTON and BURNIE, TASMANIA



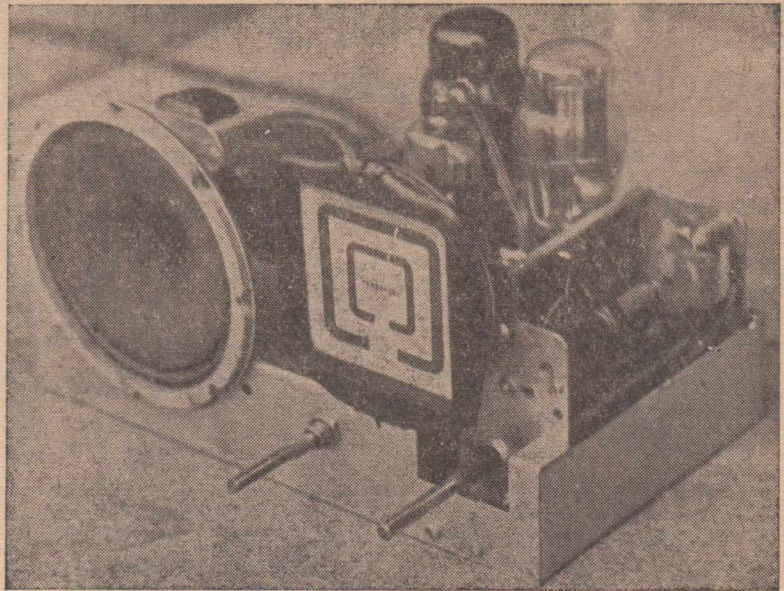




vary the capacity factors in the tuned circuit, so that the reaction control is not more critical at one end of the band than at the other. As we mentioned above, the operation of the regeneration control, on this account, is not nearly so critical as with the old-style sets.

There is no need to get scared at the mention of the trimmers, for neither of these is at all critical and no matter how they are adjusted the unit should still give good results. One is for the setting of the dial calibrations, while the other is a series capacity in the aerial lead-in, thereby adjusting the aerial loading to compensate for different lengths of aerial which may be used with the set. To a certain extent it gives a control over the effective selectivity and sensitivity of the set. It is extremely easy to adjust and can be set by ear to the position which appears to give the greatest gain at the same time as adequate selectivity for the particular location in which the set is being used.

It will be found that as it is screwed in (clockwise) this trimmer control will give greater volume, other things being equal, but with less selectivity, so that the limit is reached when stations start to overlap. The setting may also



Front view of the Reinartz version with cover removed from the Ferrotune unit.

have some effect on the reaction control. In certain difficult locations it may be found necessary to pay attention to the length of the aerial used, but in most cases the trimmer will provide sufficient control over the aerial loading.

To those who have never operated sets with regeneration it is necessary to point out that the set

gives its best performance at the setting of the reaction control just back a shade from where the set bursts into a squeal. Operated at this point a regenerative set has far greater gain and far sharper selectivity than without reaction. Advanced too far, the reaction control causes a squeal which not only makes reception impossible, but also re-radiates to cause interference with sets in the neighbourhood over a large radius, so the set must never be left in an oscillating condition.

#### FOR COUNTRY USE

We might mention, in passing, that the Kingsley Ferrotune units can also be used with battery-operated converter valves, and make fine sets for country use, either for operation from dry batteries or vibrator units powered from an accumulator.

#### BACK NUMBERS

The full circuit and constructional details of the Ferrotune circuits were given in the following issues—KFT1 in May, 1946; KFT2 in August, 1946; and the KFT3 in November 1946. Copies of these issues are available from our back dates department at 1/- each, post free.

## KINGSLEY LOUD SPEAKERS

Intense interest has been shown in the samples of Kingsley Reproducers shown in Sydney and Melbourne during this month.

The first of the range of Kingsley speakers is Type R-6, a six-inch model, and supplies of these have already been released in large quantities.

Kingsley Type R-6 reproducer is of the permanent magnet type employing high-grade Alnico magnets. It is equipped with transformer and can be supplied in a variety of impedances. Filter chokes are available if required.

Windings of both the transformer and the filter chokes are

contained in pre-moulded bakelite formers, insuring good insulation and freedom from breakdown of winding to frame.

It is interesting to note that the normal bracket on the speaker for mounting in table models, is also designed to accommodate the filter choke when the speaker is used in a console cabinet, thereby saving chassis space.

The cone movement is absolutely dustproof and the die-pressed steel frame is cadmium-plated.

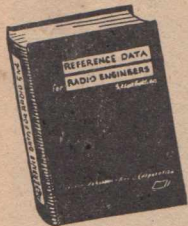
The remainder of the Kingsley speaker range comprises a 3-inch model, to be followed at short intervals by a 5-inch model and then a 10-inch model.



# USEFUL RADIO BOOKS

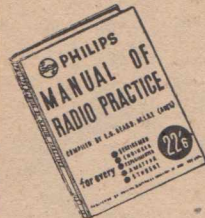
## FROM ANGUS & ROBERTSON LTD.

### 1. New Edition by Federal Telephone and Radio Corporation "REFERENCE DATA FOR RADIO ENGINEERS"



Revised, enlarged edition as an aid in the fields of research, development and education. Additional material on transformers and room acoustics, revisions on radio propagation and noise, cathode-ray tubes etc. 322 indexed pages. 18/- (post 6d.)

### 2. PHILIP'S MANUAL OF RADIO PRACTICE FOR SERVICEMEN



Compiled by E. G. Beard M.I.R.E. (Australia). This is a strikingly complete work covering radio and broadcasting today. Sections on reception, receiver technique, principles and components, service, tables and charts, valve data, etc. 494 pages of helpful instruction. 22/6 (post 1/2.)

### 3. New Edition of Drake's CYCLOPEDIA OF RADIO AND ELECTRONICS



12th Edition of the book that has kept abreast of all latest developments right up to the present radar, F-M radio, and electronics in industry. Easily understood. In alphabetical order with hundreds of diagrams and charts. 42/- (post 1/2.)

### 4. For Testing Radio Receivers PRACTICAL WIRELESS SERVICE MANUAL



Written by F. J. Camm, this book is the MANUAL of radio servicing. Simple testing for the amateur and modern methods for the professional. Covers all faults and quick diagnosis. 13/9 (post 5d.)

### 5. Complete Guide on Valves RADIO TUBE VADE-MECUM

231 pages of tables and valve data compiled by P. H. Brans. 1946 edition re-arranged, and including tubes used in wartime. Cross reference for corresponding models. 19/6 (post, 8d.)



### 6. RADIO UPKEEP AND REPAIRS

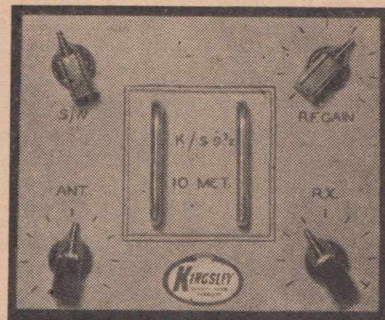
By A. T. Witts A.M.I.E.E. A thoroughly practical and highly popular handbook on fault maintenance for the radio mechanic, the servicemen, and the keen amateur. 6th edition. 237 pages, 166 figures. 1944. 11/- (post 6d.)



### KS9'er (Continued)

The condensers marked in the circuit do not tune the grid or plate coils. Since they are in series with a 5 mmf. condenser, their action is simply to match the impedance of the input and output circuits.

The coils, which are provided with special iron slugs, are made quite broad in order to cover the 6



Front panel of the KS9'er, a unit to give extra performance on 6 and 10 metres.

and 10 metre band. The circuit, therefore, functions as a signal booster as well as a matching device.

In practice, it has been found that on the 10 metre band, signals which read only S2 to 3 on a signal meter, and which are Q2, will rise to S8 or 9 at Q5. On measurement, the unit has been found to exhibit a gain of approximately 30 D.B., while the noise will only increase approx. 8 D.B.

The K/S9'er can at present be purchased as a complete unit, or you may later be afforded the opportunity of building it from a kit.

### KINGSLEY CATALOGUE

Kingsley Radio Pty. Ltd., of 380 St. Kilda Road, Melbourne, has just released a catalogue of their many new lines and standard radio components. The book is packed with technical data and contains several circuits, including those of the new Kingsley communications receivers with grounded-grid r.f. stages. If you want to keep up to date on technical advances you should send for your copy immediately, mentioning "Radio World" to be sure that your request receives special attention.

## POST THIS ORDER TODAY

### ORDER FORM ANGUS & ROBERTSON

89 CASTLEREAGH STREET, SYDNEY

Please send me the books whose numbers I have encircled

1 2 3 4 5 6

(A) for which I enclose payment, (B) charge to my account.

NAME .....

ADDRESS ..... (Tech. R.W. 9/47)



# AMPLIFIER FOR D.C. MAINS

## Interesting Direct-coupled Circuit

REFERENCE to valve charts will reveal that the 25B6 (G) valves have very attractive ratings.

With  $E/p=200$  and the other specified ratings an output of 7.1 watts is obtainable. With  $E/p=135$  volts output is 4.3 watts. The latter rating gave me the idea of using these tubes in a direct coupled amplifier on D.C. mains.

My intention was to use a twin triode as twin drivers to the out-

By

**W. E. LOVELAND**

C/- Electric Supply  
Quambatook, Vic.

put tubes, but I have been unable to obtain one with a heater rating of .3 ampere suitable for series heater operation.

Again, I didn't want to use two separate tubes as drivers so I considered the possibility of modifying the old "Barnes Mystery Circuit" for direct coupling.

The method of biasing the second 25B6 (G) presented a problem.

One idea was tried out after another.

The present system was finally adopted and proved very satisfactory. Both output grids are maintained at the same D.C. potential with respect to earth by being connected back to the plate of the driver tube (V1).

R5, C2 and grid stopper R8 form an efficient audio frequency filter so as to maintain the grid of (V3) at earth potential so far as A.F.'s are concerned.

Any signal reaching the grid of V3 from V1 would, of course, be in phase with those applied to V2 and cancellation would occur in the outputs of V2 and V3.

One advantage of this system of biasing and drive is that balancing

of V2 and V3 is not materially affected by changes in V1.

Actually this amplifier is incorporated in a pre-war 3 band super with R.F. stage and separate diode detector.

I converted the original job from A.C. to D.C. operation and replaced its audio section with this job.

Heater wiring is quite conventional, as shown.

Heaters of the 25B6 (G's) are at a potential of from 40 volts to 90 volts above earth, but as the cathodes of these tubes are at 75 volts above earth, risk of breakdown here is avoided.

If the amplifier was built as a self-contained unit it may be advisable to connect a dropping resistor between V1 and V2 heaters to raise V2 and V3 heater voltages to about 80 volts.

Earthing of the chassis is in accordance with wiring regs. and is through a .1 mfd. condenser. A direct earth on the chassis is prohibited.

Output feeds a 12E22 speaker which I originally used with a pair of 2A3's some years ago. The field of 750 ohms just worked in nicely. Although the speaker is slightly under-energised, the tranny is of

5000 ohms P.-P., while the recommended value for the operating conditions is 3400 ohms P.-P.

However, I have hopes of getting a big permag. shortly and will attend to the correct matching then.

The F.C. will then be replaced with a resistor of about 600 ohms, which will enable me to use V2 and V3 under their specified operating voltages.

At present V2 and V3 are over-biased in order to keep them up to 132 volts, anode to cathode voltage.

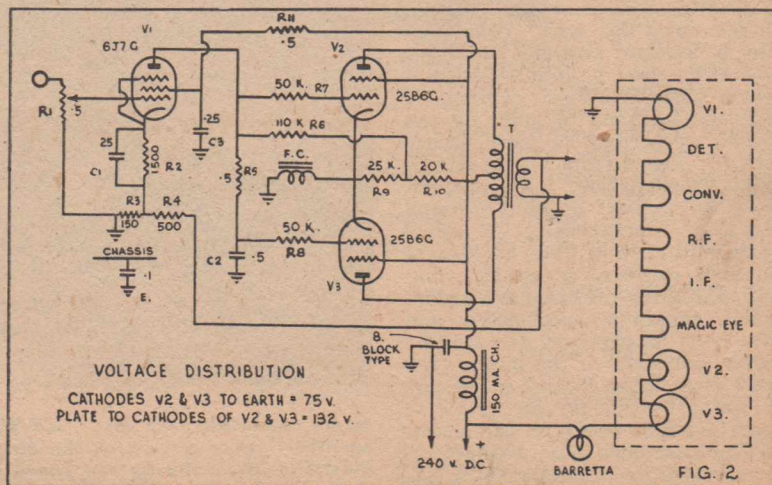
My ear is my only guide as to the quality of this job, so that I can't make any claims as to frequency response and distortion content, etc.

However, it sounds extra good and I have tried out a crystal pick-up on the job and it is quite O.K.

Another tube which could be used is the 25L6 (G). These require less driving voltage, but have considerably less output. An A.C. version of this amplifier would, I think, be a great success.

Later on I intend to put in a pre-tone control stage, but time is the trouble.

In passing I may add that I am one of the old W.W. fans and still going strong.





# AMONG OUR READERS

## Personal Details About Some of Our Readers

When sending out renewal notices to subscribers we ask them to let us know why they read our publication, which features they like best and to add a few personal particulars so that we can get to know them better.

Many of our subscribers are too busy to write back in full, but this week we seem to have had a good crop of interesting letters from widely-scattered locations. They afforded us a lot of pleasure in reading them, and the thought occurs that they would also interest other readers, so here are a few typical examples.

If you would like to let us know more about yourself and your likes and dislikes there is no need for you to wait until your subscription expires before writing us a letter. Do it now!

"I am not as yet a ham, but hope, when I have completed a Uni. course and finally got myself on my feet again after a few years away, to be one. At the moment I am one of the many enthusiasts of the 'hi-fi' type and look for these articles with interest. My present gear consists of a Telefunken pick-up with equalisers into a 5-valve straight amplifier with 807's class A, into a G12 in a heavy absorbent-lined cabinet. I hope to find time to build up the 'F.F.R.' described a few issues back. It seems from all reports to be an excellent job. I am particularly keen myself on high-powered amplifiers operating at 2 or 3 watts output, and like the idea of damping resistors across the voice coil. My three brothers are ardent model sailplane enthusiasts and have been on my back for a radio control for some of the larger (ten feet) span jobs. I think some sort of authority should be given to operate radio control on the higher frequencies, such as on 400 mC., as is allowed in England."—R. G.

Taylor, 12 Mildura Street, Killara, N.S.W.

"I am an electrical fitter by trade, 23 years of age. I have always been interested in radio since my school days, but never had the opportunity to study it until 12 months ago when I took on a correspondence course with the A.R.C. My ambition is to become an amateur operator. I always look forward to the amateur notes by VK-2NO, and am always interested in the technical and constructional articles. I am very pleased to note that you hold sufficient trust in your subscribers to forward issues after their subscriptions have expired. I received the July issue even though my subscription lapsed with the June issue. It makes one feel more like a member of a club than a subscriber to a commercial paper."—H. H. Bampton, 2 Church Street, Wollongong, N.S.W.

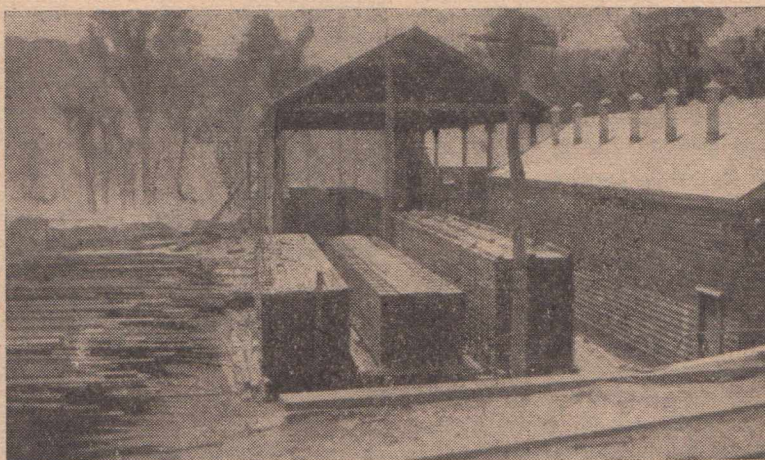
"Am radio serviceman. Enjoy your magazine very much. Like reading any articles in electronic line, anything new in radio, servicing gear, etc."—A. Croft, 51 Graves Street, Castlemaine, Vic.

"I enjoy reading the Australasian Radio World as I like to know

all the latest in radio as a hobby."—A. F. Wright, Sandgate Road, Nundah, Queensland.

"Whilst not a ham myself, I like to read the sections dealing with this phase of radio and know just what is cooking. I also enjoy your articles on new releases, but as I am a radio serviceman would very much like to see a section of special interest to those doing this type of work."—Fred J. Bailey, 163 Wellington Street. Northam, West. Aust.

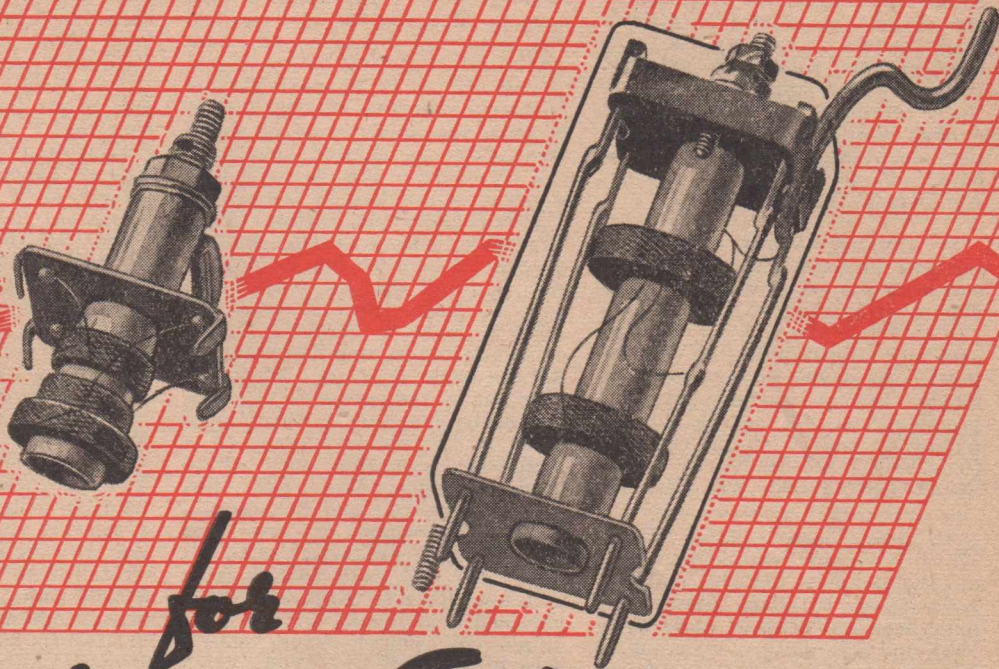
"As you can see by our letterhead, we are principally engaged in public address work and contract for most of the big functions of both civic and commercial nature, such as centenary celebrations, visiting celebrities, etc. We owe a great deal to the valuable information in your magazine as all our equipment is built on the premises, ranging from small 6-volt units to large 807 jobs with dual power supplies. As a lot of this work is seasonal we also do a fair amount of radio service and sound installation. Our staff consists of three seniors and two juniors, so you can see that it takes a fair bit of work to keep us going. I would like to take this opportunity of thanking you for the excellent work you and your  
(Continued on page 36)



Radio enthusiasts who read "A.R.W." are scattered all over the Commonwealth. Here is a view of the boards stacked at a timber mill in West Australia where the rip saw bench is operated by one of our readers, Mr. J. T. Bax, who sent us the photograph.



# Modern Miniatures



## for Maximum Efficiency

Save space in your set but never needlessly sacrifice efficiency! AEGIS presents these popular versions of the smaller components—they're compact, yet they are big enough to avoid the troubles to which many midget parts are unavoidably subject.

### COILS

Illustrated actual size above is the new AEGIS Coil . . . of the unshielded variety, permeability tuned and having one-hole mounting ideal for under chassis fitting. These new Coils are Type M5 Aerial, M6 R.F., and M7 Oscillator. Retail price, each

6/9

### I/F'S

These new AEGIS releases are only  $2\frac{5}{8}$ " x  $1\frac{1}{8}$ " square (exact size as illustrated above). Scientifically designed to give Optimum gain, these I.F.'s are particularly suitable for high fidelity receivers where maximum high frequency response is required, and special features include Trolitol Lo-Loss Trimmer Base and windings carefully treated and impregnated in special Lo-Loss Trolitol. Type J1 is Interstage and Type J2 Diode. Retail price for both, each . . . . .

10/6

# AEGIS

**MANUFACTURING COMPANY PTY. LTD.**

208 LT. LONSDALE ST., MELB.

**ATTRACTIVE DISCOUNT  
TO TRADE AND  
AMATEURS**

#### VICTORIA:

Replacement Parts Pty. Ltd.  
J. H. Magrath & Co.  
Lawrence & Hansen Elec. Pty. Ltd.  
John Martin Radio & Elec. Pty. Ltd.

#### N.S.W.:

Geo. Brown Pty. Ltd.  
John Martin Pty. Ltd.

#### W.A.:

Nicholsons Ltd.  
Atkins (W.A.) Ltd.

#### S.A.

Healings Ltd.  
Harris Scarfe Ltd.  
Newton, McLaren Ltd.

#### QUEENSLAND:

Chandlers Pty. Ltd.

#### TASMANIA:

Le Rossignol Pty. Ltd., Hobart.  
Lawrence & Hansen Elec. Pty. Ltd., Launceston

DISTRIBUTORS:



management have done in the past and trust you will keep up the good work for many more years."—S. E. G. Rogers, manager, Amplifiers W.A., 359 Murray Street, Perth, West Australia.

"I have been trying to get myself a ham licence, but hope that I did all right for myself. I should get the results back in a week or two. I can only suggest one thing for your mag. and that is for all new stations to send in their call-signs so that you can publish them. Your readers could then keep their lists right up-to-date."—F. A. Freeman, 52 Clarendon Street, Chilwell, Vic.

"I read it because I am interested in some phases of radio, and have not yet found any magazine covering radio so fully as does yours. I am afraid I cannot suggest any improvements at the moment. No doubt as new developments become commercial and practical you will not be slow in finding articles of interest covering them."—R. E. Hall, 34 Berry Street, Clifton Hill, N8, Vic.

"I have been reading Radio World for many years and appreciate the technical features, particularly those by Paul Stevens. I have been dabbling in radio since 1921 and get quite a kick out of playing around with communication receivers, amplifiers and test gear (some home-made) when the cash customers leave me alone for a while. My main business is electrical contracting and I also service between 200 and 300 sets a year, but regard this as a sideline. It robs me of a good deal of leisure."—Fred H. Hicowe, Sorrento, Vic.

"I am a licensed 'ham' (VK4ZS), have been on 5 metre pre-war, but would like to get on to the 20 and 40 bands. I have been getting Radio World a long time now, I think since the first issue. I also get some other radio magazines, but shy off those at 4/- each."—C. E. Ryan, 202 Denham Street, Rockhampton, Q.

"I have been reading Australasian Radio World since 1938. Since my discharge from the army, fifteen months ago, I have been doing part-time radio servicing, so naturally find the constructional items of most interest."—J. S. Marchant, Cygnet, Huon, Tas.

"By trade I am a telephone mechanic in the P.M.G., but I think I am just as interested, if not more

so, in radio generally. Ever since leaving day school I have been doing radio courses at night school. Three years in the RAAF as a wireless mechanic enabled me to get a better idea of transmitters, but it will be a few years before I will be putting out any r.f. myself. As regards your query about improvements, I am afraid I have none to offer. So far as I can see you cover all branches of radio pretty well. Catering for the tastes of one and all is no mean accomplishment, but you certainly seem to have the game sown up down there. But no matter how hard you try there is always some bird who will squeal that he is not getting enough of one certain thing. Generally his criticism centres around the learner but he doesn't stop to think that he himself had once to learn. Still it takes all sorts to make a world. I myself am interested in amplifiers mainly. At the moment I am busy constructing a radiogram for myself. I recently completed a ribbon mike using a new alnico magnet off a telephone generator such as is used in maggy sets. The mike works extra well and has equally as much output as my own commercially-produced mike. I have also had good results from pick-ups fitted to guitars. I have obtained best results with a large single coil wound on an oblong core of Swedish iron. Only catch with this method is that the shape of the core does not permit of a winding machine, and it is a long tedious job to wind 5,000 turns of 48 gauge by hand."—Keith Davie, Oakleigh Street, Oakleigh, Vic.

"I read Radio World because I find it less stodgy than the opposition and because I believe that honest competition is good for all concerned. I like the multiplicity of contributors, as this adds variety to the matter presented. I'm not interested in 'ham' news, but I don't begrudge the space so long as the general side of the magazine doesn't suffer."—E. W. E. Beal, 37 Crow's Nest Road, North Sydney, N.S.W.

"I am a radio serviceman and am particularly interested in the technical and constructional articles, but we have a d.c. supply and no prospects of a.c. for some years. I will be pleased if you will indicate any of the a.c. testing equipment which can be adapted to d.c. or 6-volt operation."—R. J. Chapman, Rupanyup, Vic.

"I like the 'ham' notes by VK-2NO, also constructional articles

and descriptions of testing gear. Have not had the time to get my transmitter going again since the war but keep the licence going. I find a bit of time to service a few broadcast receivers, but that's about all. You may wonder why I am so busy, so I will tell you a little of how we are situated. Our farm is 1,000 acres and on this we keep about 500 sheep and usually have about 150 acres of wheat. This year we have had 210 acres under wheat; a special effort to give more foodstuff. Apart from shearing, a day or two with hay-making and carting wheat to the silo at Yanco, I do all the work myself, as it is almost impossible to get any help on the farms these times. All the farm work is done by tractor. It is hard to get spare parts and much of my time is taken up in repairing the ageing machinery. The farm has been in our hands many years, being selected by my grandfather some fifty years ago. My wife and I have two small sons, Gary, aged 8, and Max, aged 3. I am glad to say they are both strong and well. You can guess how these boys also take up some of my spare time in answering questions and explaining why we do not go about like we tell them we did ten years ago. Petrol rationing and the lack of accommodation in cities and pleasure resorts keeps us home."—H. R. Brown, VK3NN, Yanac, Victoria.

"As you can see from my address, I'm in the RAAF. My address has been rather transient for the past twelve months, so I get your publication sent to my home, where I intend spending quite some time on my back, reading A.R.W. when I get home. I first became interested in radio when I started to work at Kingsley Radio nearly four years ago. When I first arrived on this unit, being the only wireless mechanic here, I had to keep six transmitters, a direction-finding station and an ionospheric recorder on the air. Things are easier now. I am afraid this letter isn't as complete as I would like it to be, but the weekly kite south is due in the next half-hour and I want this letter to go on it."—M. C. Millist, RAAF.

"I find your paper most useful in keeping me abreast in radio matters and I look forward to the receipt of each month's issue. I retain each copy for future reference, as doubtless most of your subscribers do, and I think it would be a definite advantage if something in the nature of a file



with an index were available at the end of each year to take care of the preceding twelve copies."—Robert Anderson, 87 Hare Street, Kalgoorlie, Western Australia.

"I am a country schoolie. I hope some day to take out an amateur licence if the code obstacle can be surmounted. I read Radio World because it deals with radio exclusively and I like your constructional articles best. How about a vibrator-powered communications receiver—just like that! A grouch—some of the semi-technical articles by some of your contributors are a bit on the thin side."—A. Robertson, Public School, Topi Topi, N.S.W.

"Mostly I am interested in audio amplifiers and tuners for good quality. At present I am using a 3-valve t.r.f. tuner with a.v.c., feeding into a direct-coupled amplifier, the pick-up being an Audioscribe, into two triodes as pre-amplifiers, into two 6C6's as triodes in a tone control stage, 6C6 audio into a Trimax TA3 transformer, then two 6SJ7G's direct-coupled to a pair of 2A3's. The speaker is a Jensen A12 in a vented box for lows up to 1500. 15,000 c.p.s. up is covered by an 8/42 and Rola T5 tweeter, using a dividing network. This amplifier also has volume expansion on it using a 6L7, 6C5 and 6H6. For suggestions—filters for pick-up scratch, speaker baffles, dividing networks and audio test equipment such as BFO, oscilloscopes and their use."—L. Wilkins, 32 Miles Street, Ivanhoe, Vic.

"I like this journal because of the fine radio circuits it has and also the 'ham' notes by VK2NO. I often listen to him contacting other 'hams' on Sundays. I was a subscriber to Wireless Weekly when your proprietor, A.G.H., was editor many years ago and I still have copies of circuits designed by him. I would like to see some big vibrator sets described in your journal, such as six-valve class B output. Most people in the country nowadays have their own electric plant, usually 32-volt, so why worry about battery drain? I read with great interest the articles by John Bistoe, of Maryborough, as they are most interesting. I would like to see the i.f. go back to 175 or 210 kc. because, from my experience with radio out here, they are far superior to 455."—E. J. Simpson, Ernroy, Surat, Queensland.

"I'm only a young chap, 20 to be exact, and am serving the third year of an electrical engineering traineeship. I have not done so

## FREE BOOKLETS AVAILABLE

Several booklets, leaflets, and reprints have come into our hands lately, and we hasten to pass on the good news to our readers. By sending along for these items you will get some worthwhile information quite cheaply.

From the Aegis Manufacturing Co., of 208 Little Lonsdale Street, Melbourne, there is a leaflet on the construction of a cathode ray oscilloscope to use the recently-released disposals valves which can be obtained so cheaply.

From the Amalgamated Wireless Valve Co., 47 York Street, Sydney, a folder giving a quick-reference guide to the types of miniature valves available in both battery-operated and a.c. types, with full operating data and valve socket diagrams.

From Philips Electrical Industries, Box 2703, G.P.O., Sydney, full characteristics of their new series for A.C./D.C. receivers, including types 12SA7GT, 12SK7GT, 12SQ7GT, 50L6GT and

very much with radio, mainly because of lack of time. Also the parts position is not too good over here, there being a lack of speakers, electrolytics and 285-volt transformers. I read the Radio World because there is no other book like it; when I'm reading it I don't feel like I'm reading a book, but as though I was sitting with a bunch of friendly fellows, chaps willing to lend a hand or pass on information, chatting about the whys and wherefores of radio. Don Knock's tips, as well as articles, make interesting reading. The only improvement—make it bigger!"—Alex. Lillia, 4th Av., Mellor Park, South Australia.

"I am a Warrant Officer Signals on instructional duties on the local station. I am applying for my own call-sign shortly and hope to operate on a restricted basis in a temporary location in the garage. At present a lot of my radio work is confined to studies and reading of topical trends. Australasian Radio World is a good publication that arrives at a good time of the month to tie in with reading of service publications. Your selection of articles is good and varied to suit tastes. I find that every issue has its full quota of interest from cover to cover. Whilst on the

35Z5GT.

From Trimax Transformers, 29 Flemington Road, North Melbourne, full details of their high-fidelity transformers, which are now available in a couple of dozen different types.

From J. H. Magrath & Co., 208 Little Lonsdale Street, Melbourne, a list of surplus war stocks of radio valves which are now available to the public at low prices. Note particularly the c.r. tubes, transmitting valves and the special high-gain types which were so popular for radar work.

From Kingsley Radio, 380 St. Kilda Road, Melbourne, a full catalogue of their many new lines, with circuit diagrams galore and a wealth of technical data, about the 22 different types of i.f. transformers they produce, for example.

All of the above leaflets and booklets are available free of charge by writing to the firm concerned, mentioning Australasian Radio World.

subject, Don Knock is due for some attention, as his section is looked forward to every issue. As a 'ham' of long and good standing, Don knows what he is talking about. His hints and kinks on disposal items are especially welcome. In closing, once again I will remark—keep up the good work. If all future issues are as good as they come now, then little more can be said."—S. C. Broadbent, 164 Victoria Street, Ballarat, Vic.

"Although I'm interested in every article, the features which appeal to me most are those relating to acoustics. The May, 1946, and March, 1947, issues contain two such articles which I consider to be A.R.W.'s best."—E. J. Kemp, 3 Belhaven Street, Launceston, Tas.

"I think Australasian Radio World is run well on the different subjects in each issue. I live in the timber country of the south-west of Western Australia and work a rip saw bench for Bunning Brothers, but my hobby is wireless. I have a good few verifications which I got before the war, but have not started again since the war ended."—J. T. Bax, Nyamup, via Manjimup, Western Australia.



# TRENDS IN MUTUAL CONDUCTANCE

**I**N the very early days of radio, all mutual conductances were comparatively low owing to the poor emission obtainable from the filaments. As the knowledge of the art progressed, and the emission obtainable from filaments became greater, the mutual conductance increased noticeably. It was about 1927, however, before the oxide-coated indirectly heated cathode was

introduced on a commercial basis and formed the basis from which have developed the remarkable advances in radio valve design during the past 20 years.

In these early days there was a marked difference between American and European designs, the former tending to use a larger number of valves each having a medium mutual conductance, while English and European receivers used a smaller number of valves each of which had higher mutual conductance and gain. Some of the European valves had extraordinary high mutual conductances, quite a number being over 10,000 micromhos. Experience indicated that these extremely high slopes, as they were called, were not entirely free from difficulties, included among which were the problem of instability and the greater variations in plate current from valve to valve. As the trend developed towards superheterodyne receivers, triode valves became less popular and multigrid valves came to be used in all positions of a typical receiver. The only position in the receiver in which these extremely high slope valves were popular was the output stage, particularly in small sets not having an audio frequency amplifier. Many manufacturers produced two principal varieties of output valve, one with very high slope for sets without an audio amplifier and the other for the larger receivers. At the same time, the mutual conductances of the radio frequency, converter and intermediate frequency stages were higher than those used in America.

A very interesting trend has, however, shown itself in the period up to the outbreak of the second World War. American designs

showed a generally increasing mutual conductance for all stages and particularly in the power valve, e.g., type 25L6 was introduced, as a power valve suitable for small sets, having a mutual conductance of 9,500 micromhos. It is, therefore, in the same class as the later English and Continental designs for the same application. It is interesting to note that both American and English valve manufacturers use lower slope valves for the output stages in receivers not requiring such high gain. The American type which has proved most generally acceptable is type 6V6-GT, which has very close parallels in England.

General purpose triode valves in America had mutual conductances from 1,450 micromhos for type 76, increasing to 2,000 for type 6C5 and 2,600 for type 6J5. The latter is quite a normal slope for corresponding English and Continental types.

A similar trend of increasing mutual conductance in American types and decreasing values in European types has also taken place with the intermediate frequency amplifiers. Type 78 had a mutual conductance of 1,450 micromhos, increasing to 1,600 in type 6D6 and 2,000 in type 6SK7-GT. Corresponding values used in England are between 1,600 and 3,000 micromhos. Too high gain in the i-f amplifier is not desirable, particularly on account of the danger of instability.

In converter valves there have not been such marked differences between the two countries, both manufacturing a wide range of both high and medium conversion conductance valves. Modern American valves have conversion conductances from 290 to 950 micromhos.

## AN APOLOGY

*We wish to apologise to those many enquirers for the Q-Plus 3¼ Pounder Kit Set.*

*Through circumstances beyond our control these Kit Sets will not be available for approximately two weeks.*

*May we advise those interested to post their orders early, as stocks will be limited at the beginning.*

**R. W. STEANE  
& CO. PTY. LTD.**

**KEW, VICTORIA**



Recent trends towards use of the frequency bands up to about 100 mC. for F-M and television have resulted in a number of special valve types being produced for these frequencies. Although some of them are capable of being used under limited conditions in receivers operating at lower frequencies, the general trend is for special types to be used for these higher frequencies alone, so that the present broadcast band types are likely to continue in popularity. All of these high slope valves have higher input circuit damping than they would have with lower mutual conductances, and in many types the gain is so high as to be difficult to control in standard broadcast receivers. The mutual conductances of present r-f pentodes for these frequencies varies between 3,800 and 9,000 micromhos with the most common types around about 4,000 to 5,000 micromhos. Valves of somewhat similar mutual conduct-

ance are also being used in the intermediate frequency stages of F-M receivers where the frequency is usually 10.7 mC. and the gain obtainable from standard valves is too low.

During the past ten years, there has been an observable approach between the characteristics of English, Continental and American valve types which appear to have reached very close to the most satisfactory economic values of mutual conductance. In each country there are types suitable for all current applications, some of which require medium and some high slope. Valves which are now in common use have proved their reliability and general performance over a number of years and no outstanding changes in normal characteristics appear likely in the near future.

—From "RADIOTRON Q"  
published by A.W.V.

## RADIO ENGINEERS' EXAMINATIONS

The 1947 Final Examinations for Radio Engineers will be held on September 26 and 27, 1947, at centres throughout Australia to suit candidates. Exemption from the Preliminary is granted to applicants who have passed an Examination of Matriculation standard in English, Mathematics and Physics.

The Final Examination includes Radio Technology (3 hours), Radio Engineering (3 hours), and any one of eight specialised subjects (3 hours), i.e., Radio Measurements; Radio Transmission; Radio Reception (Receiver design

and practice); Television; Audio Frequency Engineering; Industrial Electronics; Pulse Technique; Micro-wave Technique.

The Examinations are conducted by the Institute of Radio Engineers Australia and successful candidates qualify for Corporate membership of the Institution subject to age and the necessary practical experience qualifications.

To meet the ever growing complexities in radio science, particularly in the Broadcasting and Television field and industrial applications, the Institution has raised the standard of qualifications and widened the scope of examinations. Universities and Technical Colleges are co-operating with revised and extended courses.

Industry is playing its part by encouraging and assisting its technical employees to take full advantage of the education facilities to meet these modern requirements.

**NEXT MONTH!**

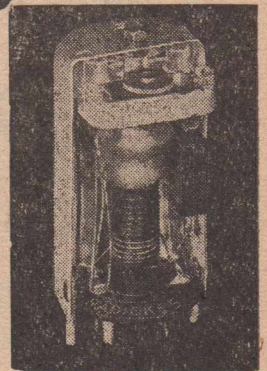
**A  
BUMPER ISSUE**

**Order Now!**

*Radiokes*

**THE NAME  
TO KNOW  
IN RADIO!**

*Radiokes*



**RADIOKES D.W. UNITS.** Highly selective with exceptional wide range. To match 'H' type gang condenser. Incorporates 4-in-1 padder. Solidly mounted with coils. Ask for type DWO-1

*When buying radio parts and components, follow the lead of amateurs and experts alike — specify Radiokes — your guarantee of test-set performance, precision construction and technical excellence.*

**RADIOKES**

**PTY. LTD.**

**P.O. BOX 90**

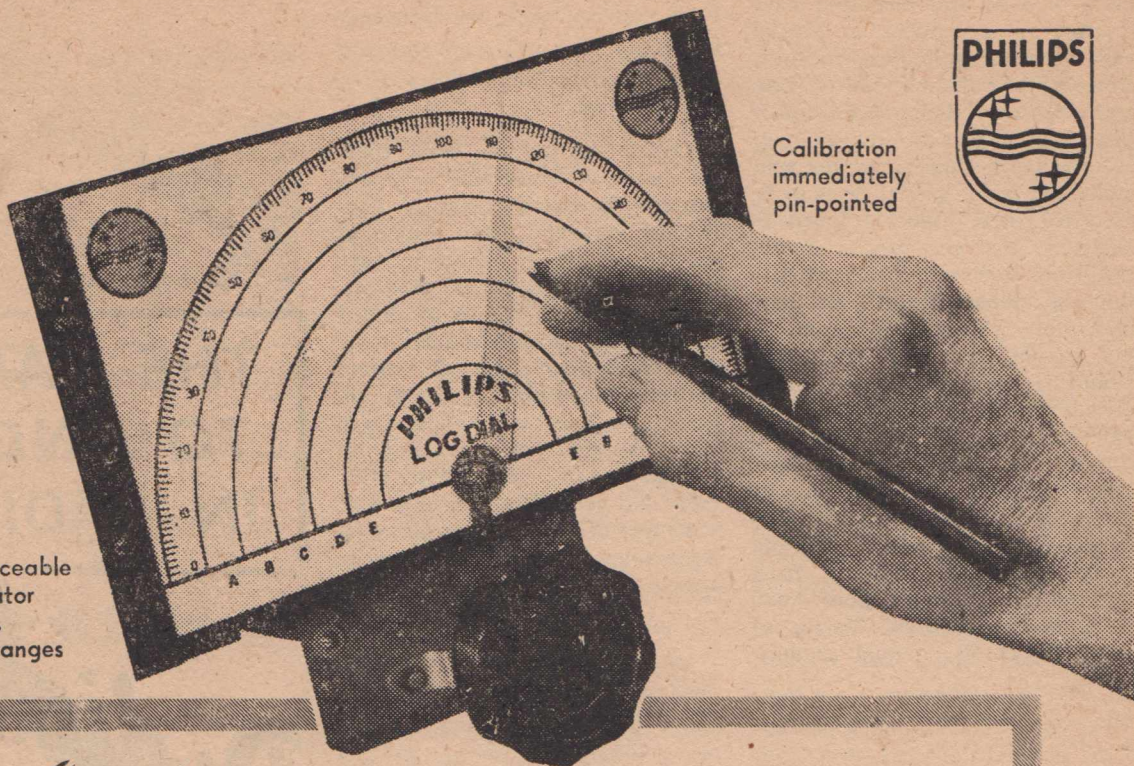
**BROADWAY — SYDNEY**

R-56





Calibration immediately pin-pointed



Replaceable Indicator Scale. Five ranges

*Available NOW!*

# PHILIPS LOG DIAL

for easy, accurate, individual calibration

Specially designed for transmitting radio amateurs, short wave listeners and equipment engineers, the new Philips "Log-Dial" is the ideal control and indicator mechanism for VFO (Variable Frequency Oscillator) Transmitter application, Amateur Band HF Receiver bandspreading, VHF Receiver tuning, Frequency Meters, Monitors and for many other radio and electrical applications. The Philips "Log-Dial" mechanism provides positive, smooth running with no slip or backlash. It has an ample reduction ratio for

quick or slow tuning; calibration cannot be affected by mechanical troubles. The off-set Cursor provides instant logging without the need for scale reference or movement. The two colour scale is removable, two are included with each "Log-Dial", and replacements are available. It may be mounted on front of or behind instrument panel. The Philips "Log-Dial" is designed for  $\frac{1}{4}$  inch shaft drive but is adaptable to larger sizes. It is finished in attractive Florentine Bronze.

25/-

● The "Log-Dial" is available *now* from your nearest Philips branch; the price is only 25/- with special reduction for licensed amateur radio transmitters.

Dimensions  $8\frac{3}{4}$ " x  $4\frac{7}{8}$ "



**PHILIPS ELECTRICAL INDUSTRIES OF AUSTRALIA PTY. LTD.**

Sydney • Melbourne • Adelaide • Perth • Brisbane



## CALLING CQ!

By Don Knock, VK2NO

The Sydney FM station operating ostensibly around 92.8 mC is a mighty strong signal at the writer's location, not only at the fundamental, but at half the frequency. Unfortunately, things don't at present appear to be staying put; that overtone lands fair inside the lower frequency end of our 50-54 mC. band at times. On the afternoon of July 22 it was R Max on 50.3 mC., which would indicate that the fundamental had got way off 92.8 mC. to around 100.6 mC. The service is, of course, very much in the experimental stage, but the 6-metre gang in and around Sydney can do very nicely without that unwanted signal.

Friend VK2OC, Owen Chapman, of Wyong, N.S.W., is due to put

in an appearance on 6 metres any time now. He purchased a number of very excellent ex-British Navy transmitters that have been adjusted to 50-54 mC., and at the time of writing has a number available. By the way they are being rushed they won't last long. An old hand at Gosford, VK2RU, will be starting up on the band about the same time as Owen. These two stations will provide an intermediate link for Sydney and Newcastle, and good results are expected from the start. They are both equipped with ground plane aerials.

\* \* \* \* \*

The 14 mC. band is temperamental so far as early morn European DX is concerned. One day

the G's get through well from 3 a.m. and vanish at 5. The next day they will hold up until 7.30 a.m. And the day after that they won't be heard at all. Must be something to do with the WX over the Old Country . . . G5DQ in Cambridge told me on the morning of July 23 that it "had been around 90 degrees all day long there." Yes, summer in G.B. can be very enjoyable. Not too many G's feel like staying in the shack chasing DX when the long summer evenings prevail and the sun subsides finally around 11 p.m.

Those who favour W8JK beams shouldn't overlook the full-wave single section type, 70 feet per side on 14 mC.—an elongated "pitchfork" fed by tuned lines. Bruce Chapman, VK2BA, is making a nice hole in the DX lanes with such a radiator. Pattern is similar to the usual full-wave single wire, a 50 degree clover-leaf, but has the advantage of lower vertical angle directivity. One placed E-W or N-S will be a good performer in the most useful World DX directions.

\* \* \*

That there is scope for an interesting phase of radio experimentation on VHF's is shown by recent activity by Nev Williams (VK-2XV), Merrylands, N.S.W. He has been making disc recordings of all active Sydney stations on "Six" and has acquired quite a collection of cuts. Plan is to play them over at a forthcoming WIA meeting to let the gang know just what they sound

(Continued on next page)

---

## VICTORIAN RAILWAYS INSTITUTE WIRELESS CLUB (VK3RI)

The 21st birthday of the V.R.I. Wireless Club was recently celebrated by this Club, and after many difficulties associated with the shortage of parts they celebrated this occasion with resuming activities on phone on the 40 metre band. Prior to the war their activities were mainly concentrated on the 200 metre band they are now regularly heard on 7090 kC. on Sundays between 2.30 p.m. and 9.30 p.m. EST. They will shortly commence operations on the 20 and 10 metre bands and within the next few months join the enthusiasts on the 6 metre band.

Formed in June, 1926, this Club is the oldest Wireless Club in Australia and during the war instead of disbanding they concentrated their activities on assisting the Victorian Railways' Patriotic Fund, during which they raised over £250. With an enthusiastic committee now operating they are making many experiments to overcome the noise associated with their location on the roof of the Flinders Street Station buildings and they have every hope of improving their reception considerably. Reports on their transmissions from listeners will be acknowledged by the station card.



## HAM NOTES

(Continued)

like at the other fellow's station. Regulations forbid "playing back" of recorded transmissions over the air, so it's no use anybody asking to hear what they sound like without going to the meeting! That regulation could well do with revision . . . a play-back can be very much a genuine experiment. One thing that could be done with advantage is to appoint special recording stations to shoot back at offenders some of those really bad phones one hears at times on 40 and 20.

There would be red faces . . . or would there?

One Sydney station active these nights on 50 mC. is happier than a week or so ago. Then, despite all attempts to chase out the gremlins, he had a mass of carriers . . . seventeen of 'em . . . all over the lower freq. section of the band. Might have been one way of snaring DX when it happens along, but now, with one hefty carrier only from a 6 section 8JK beam, all is well . . . with the station concerned . . . and the gang who couldn't get away from the extra signals previously.

There is talk of putting out the

N.S.W. WIA Sunday morn B/cast on 50 mC. additionally to 7 mC. A fine idea provided the station doing the job is one that reaches out to all and sundry on the Sydney and district "Six Metre" air. A sound suggestion would be to radiate it from the top of the city building where VK2JU puts out a massive signal from a pair of 812's in his final. There would be no question about it being heard. The 50 mC. band should be utilised thus by all WIA Divisional broadcasters.

\* \* \*

On July 27, 1947, at 7.40 p.m., EAT, the first two-way contact direct on the 50 mC. band was established between the station of Owen Chapman, VK2OC, of Wyong, N.S.W., and the writer's station, VK2NO, at Waverley, Sydney. For months the stations have been working cross-band with VK2OC replying on "80." Now, with the G-P antenna at Wyong "putting out" on 50.8 mC., the circuit is a normal feature, day or night. VK2OC is heard at VK2NO better than some quasi-distant stations at much closer range. Distance to Wyong is about 50 miles, but portion of the path is heavily screened. There is an initially good start-off from the Waverley end though . . . just about over water along the coast-line. At the start, VK2OC was S7 . . . and raising the G-P antenna another 12 feet at VK2NO brought him to S8/9 and the signal from Waverley to R Max at Wyong. A station somewhat closer in to Sydney in that area who is expected to reach Sydney well is VK2RU, of Gosford, who is at present testing temporary antennas. On the night of 27/7/47, VK2FO, North Strathfield, Sydney, contacted VK5CU, S.A., on "Six" for a brief flash . . . at 7.20 p.m. EAT. There is sporadic E DX about and it will probably have broken in N.S.W. long before these words hit print. Vic and Q'ld. have had a good innings during July.

\* \* \*

Of direct interest to those using and constructing VHF converters or receivers is the new Philips "Log-Dial." This will be available about the time this issue is published.

## FREQUENCIES FOR SIX

With more stations appearing on the Six Metre scene in and around Sydney, the time is fitting to publish a list of stations and frequencies. This list may be taken as fairly accurate, but there is likely to be some alteration as activity increases. It will be seen that there is need for stations to make use of the region between 53 and 54 mC. which is quite unpopulated as yet.

Station	Frequency (mC.)
VK2AGL	50.
VK2ZN	50.04
VK2JU	50.1
VK2JU	50.1
VK2AHF	50.16
VK2NO	50.4
VK2ABZ	50.6
VK2EM	50.7
VK2BG	50.75
VK2ALQ	50.92
VK2AZ	50.94
VK2WR	50.94
VK2QG	50.94
VK2AC	51.
VK2XV	51.
VK2MQ	51.1
VK2YQ	51.14
VK2ABB	51.13
VK2BZ (Newcastle)	51.4
VK2LS	51.6
VK2NP	51.7
VK2LY (Katoomba)	51.84

VK2LZ (Wentworth Falls)	52.12
VK2FO	52.15
VK2AFE	52.2
VK2ABC	52.38
VK2AFO	52.5
VK2WJ	52.8
VK2DF	52.9
VK2AHG	53.32
VK2IQ	53.52
VK2BM	53.52

It must not be assumed from this list that any of these stations have "monopolised" the frequencies quoted . . . many of them have alternative crystals for other positions in the band, but especially among the long established stations identification has become synonymous with the frequency quoted. There is ample room for dozens of stations in any Metropolitan Area between 50 and 54 mC., providing that the right kind of gear is used. By that is meant technique fully in accord with lower frequencies. Very few stations are using VFO; two in the Sydney area being VK's 2IQ and 2BM. VFO application calls for careful engineering and a veritable succession of stages originating in quite a low frequency before any real measure of control and stability is achieved. Therefore crystal control is an easier way to get into action on "Six" and is recommended for preference.



There are a lot of features about it that make it an ideal for the "Ham," for it was designed especially by an active amateur who has been twisting dials now for 36 years. The dials are obtainable from the nearest Philips Branch Office.

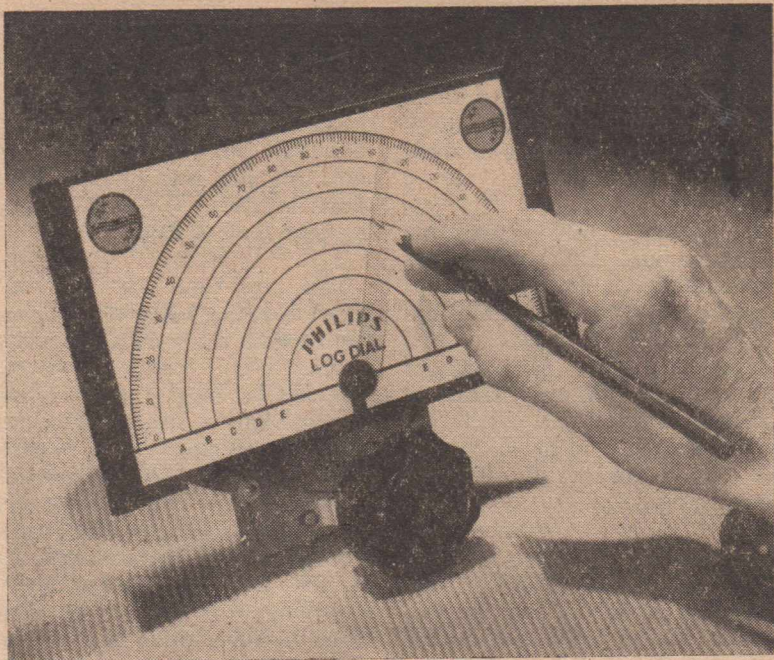
Those ex-ASV receivers now about in quantity, and applicable with a little titivating to 166 mC. . . . you can set to and "broad-band" the IF channel . . . change the second detector and audio arrangements . . . and the job is done. Another way is to leave the RX almost "as was" and to use it as the front end of a dual conversion unit. One of those ex-RN 6 mC. I.F. amplifier units with a frequency changer between it and the ASV outfit will serve the purpose. What's more, if you like to be fussy you can make that second F/C valve crystal controlled and then you really have something.

\* \* \*

Re those VT90 "Micropup" valves advertised by sundry Disposals dealers at £2 each. They were available much cheaper than

**". . . BUT GOT NO MONEY AT ALL!"**

No prizes are offered for the solution to the cryptic heading on these Notes, but the idea is to take up the phrase where friend "Grem-lin" left off. Lots of people will have forgotten the song, anyway! If there is anything needing castigation in the modus operandi of Amateur Radiophone it is the vast amount of "monkey-chatter," mainly in the technical sense, that issues forth from many VK2's, in and around Sydney. Heard a station with a shocking amount of side-band "zizzle" saying blandly that "everything is O.K. according to the C.R.O." That being so, it seems that it is time the CROW was overhauled. Would be a good idea for W.I.A. to establish "Honest Reporter" stations, fitted out with Recorders—these stations to call offenders and tell 'em to "listen to your own transmission OM." But one supposes the Reporter stations would be accused of having faulty Recorders or something!



The new Philips "Log Dial" for amateur band receivers, V.F.O.'s, and similar equipments. Designed by Don B. Knock of Philips Experimental Radio department, it is available from Philips branches and dealers at an attractive price. Scale can be replaced and spares are obtainable.

that 18 months ago; in fact, one dealer I know was giving them to the lads to get rid of a valve type not likely to have much demand with "Hams." The VT90 will bat out lashings of RF at up to 300 mC. at full rating, but, a word of warning, they MUST be cooled by air blast—about 30 cu. feet per minute of it. Otherwise they will die an unnatural death fairly speedily. The reason? Small space confining a very hot filament—8 volts at around 8 amperes per valve—and very little glass envelope. Without air blast, the seal will go, air will enter, and that's the end of the story.

\* \* \*

The meeting of VHF Section of WIA (N.S.W. Div.) on August 1 at 10 Clarence Street, Sydney, was noteworthy for an excellent demonstration of 166 mC. gear by VK's 2PW, 2AGL and 2AEE. Communication was maintained with excellent reliability between the meeting room and two "Handie Talkies." VK2PW was able also to work direct with VK2AHG (Haberfeld) and the strength of

telephony was remarkable in view of the screening around the city location. No outside antenna was used, but a coaxial type on the table adjacent to the gear, which was ex-RN VHF (disposals) material. Forty-five members attended and several brought along VHF equipment or accessories for display.

\* \* \*

Westralia isn't wasting any time in getting going with the new FM facilities, for VK6FL told me per 14 mC. phone that VK6LW is already using NBFM on the 50 mC. band. The VK6's are confident that this summer should fill in the gap for the Easterners who only need Westralia to have WAAS on "Six."

\* \* \*

Noticed an ad in an American magazine for ex-U.S. Sig. Corps. "Walkie Talkies" to "cover the Ten and Six Metre bands." A point that will no doubt cause a bit of a buzz among the users of those bands over there for the reason that the equipment quoted is of early type, using

(Continued on next page)



## HAM NOTES

(Continued)

modulated oscillator and squegger receiver. Advent of such gear on Six, to say nothing of Ten, will not be particularly popular in these times.

\* \* \*

In Sydney, that indefatigable brass-pounding DX man, Ray Priddle, VK2RA, has made an appearance on 50.02 mC. with a nice MCW signal on the carrier. Now, wonder what could have brought Ray on to Six? The old DX chasers had better look to their laurels, because VK2RA is likely to conjure DX signals out of an ostensibly silent band.

\* \* \*

Condolences to Ross Weeden, VK2PN, of Tumut, N.S.W. Ross is isolated so far as DX or even anybody else to work with on Six is concerned, but sticks at it on the band, trying first one antenna after another. Here's wishing you a goodly measure of DX on Six during the summer openings, Ross.

\* \* \*

Called in to wish your scribe au revoir on August 6, 1947—Elgar Treharne, VK3AFQ — England-bound on Commonwealth duties for the next two years. A keen VHF man, Elgar will get around the G stations quite a bit and will be

heard talking to brother VK2IQ and Dad VK2BM very soon from prominent 14 mC. G stations. With Elgar on the P. & O. "Stratheden" went Ken McTaggart, VK3NW—the keenest VHF amateur that Victoria, and probably VK, has ever seen. He also goes to G.B. for a couple of years. We shall be hearing from both of them.

\* \* \*

This cross-band "80 and 40" phone craze that has gained momentum between a few ZL's and VK's. Seems a useful scheme OM's, but shouldn't be done to death. It can develop into a rather annoying form of operation if a waiting party wants to attract the attention of any particular person. Some idea can be gleaned of how VK phones roar into ZL on 40, and how the ZL CW men must feel about it. Something *does* need to be done about the sub-division of "40" for CW and phone if we are all to maintain our equilibrium.

\* \* \*

There's another craze springing up among VK's—at least—those fortunate enough to own cars. That is the quest for VK registration numbers. One or two VK2's are sporting registration plates showing the call sign, or the next best thing to it. The idea started off in U.S.A. in 1935 with W8ZY, and caught on very speedily.

## EXPERIMENTAL RADIO SOCIETY OF N.S.W.

Three meetings were held at the society's rooms, Melody Hall, George Street, Burwood, the first, on July 3, taking the form of a social evening to which YL's, XYL's and friends of members were invited. All who attended had a thoroughly good time.

The other meetings, held on July 17 and 31 respectively, were well

---

---

### SPECIAL NEWS FLASH

#### Australian Makes Record-breaking Two-way Six Metre Contact

A telegram dated August 26th, from Darwin, N.T., was received at VK2NO, and read as follows:

"WORKED W7ACS PEARL HARBOUR 1240 26th AUGUST SIX METRES.

"SIGNED, CLARRY CASTLE."

The sender of that telegram is VK5KL, Clarry Castle, of Aeradio, Darwin, and Australasian Radio World offers sincere congratulations for this first overseas two-way communication on the 50 mC/s band outside this continent. —D.B.K.

---

---

## FREQUENCY MODULATION ALLOWED

Australians are now permitted to use FM and PM experimentally, the PMG announced as from August 1, 1947. Bands where these forms of transmissions may be used are:

For F.M.—

- 27,185—27,455 mC.
- 50—54 mC.
- 166—170 mC.
- 1345—1425 mC.
- 2500—2700 mC.
- 5250—5650 mC.
- 10,000—10,500 mC.

For P.M.—

- 166—170 mC.
- 1345—1425 mC.
- 2500—2700 mC.
- 5250—5650 mC.
- 10,000—10,500 mC.

N.B. Megacycles, not kilocycles! There is considerable scope for both wide range and narrow band FM on the "eleven metre" band in particular, and in fact it could easily become established as the No. 1 FM stamping ground. As for 50 mC., there seems no reason why NBFM shouldn't be applied almost at once, but in that score it is as well at this stage to suggest . . . let us get the promised DX season over first before loading "Six" with any unknown quantities! "Six" is on the way to showing an increasingly active population in and around the capital cities, and there is evidence that the country lads are up and doing also.

---

---

attended in spite of the cold weather, and lectures were delivered by Sid Clark, VK2ASD—"Data on Service Types of Tubes," and John Warren, VK2QX—"The Control and Switching of Broadcast Programmes."

The society's membership is still growing steadily. The treasurer's annual report, duly audited, was presented to the meeting on July 17, and showed the society's affairs to be in a very healthy condition.

---

---

### HAMS!

The October issue will interest you.

Order Now!



## SIX-METRE BAND OPEN AGAIN

50 mC. sporadic E openings are not usually expected in winter-time, but such was the case on Sunday, July 27, last, when in the afternoon and early evening VK4 and 3's were able to work with each other for almost four hours. In Sydney the band opened for South Australia for a brief flash at 7.15 p.m. when VK2FO worked VK5CU and VK5QR was heard. In Melbourne they made "hay whilst the sun shone" and an account of doings on the band is here detailed by Quentin Porter, of 51 Pakington Road, Kew, Victoria. "The band first showed signs of life at 1407 when I heard VK4ES R5 S4-6 operating portable and signing off with a local. At 1409 he called CQ and contacted VK3HT . . . his signal had risen to S9. VK4ES stated that he was using a DR106 with PP 807's at 50 watts and a dipole aerial. The next was VK4HR at 1419 calling CQ or VK3EH . . . at S9. He tied up with VK3HT and VK4ES meanwhile worked with VK3GG. At 1435 VK4AW, S9, was heard calling VK3GG but the latter hooked VK4RT. Later, VK4AW QSO'd VK3EH and at 1450 VK4PG Bundaberg worked with VK3GG. Times and contacts then noted are as follows:

1453: VK4SN heard working VK4CT, who was S9 plus.  
 1455: VK4ZU in contact with VK3HT at S6.  
 1458: VK3ABA (using 3 watts) QSO VK4AW, who was S9.  
 1500: VK4ES with VK3EH S9.  
 1505: VK4HR with VK3ZL Ballarat at S9.  
 1515: VK4CT with VK3HT at S9.  
 1518: VK4ES with VK3ZL at S8.  
 1520: VK4AW with VK3HT at S9.  
 1540: VK4SN calling VK3HT at S5.  
 1544: VK4AW heard calling VK4SN at S7.  
 1546: VK3YS QSO with VK4ES, who was S9.  
 1548: VK3BD with VK4ES at S8.

1600: VK4CT QSO with VK3ZL.

1604: VK4HR called VK3YS at S9.

1607: VK4AW QSO with VK3BW at S9 plus.

1611: VK4CT QSO VK3EH at S9 plus.

Conditions were like this for some time, and other Queensland stations heard included VK's 4RY, 4KK, 4CU, 4KP, 4FN, 4TR, 4ZU . . . with signals averaging S6-9. Other Victorians on the band included VK's 3CP, 3YP, 3YJ, 3KX (Colac) and VK3MJ, who came on just before the band closed. The last Queenslander heard here was VK4HR, who faded out when in contact with VK3HT at 1830. The band was open for about 4 hours and most VK4's worked with 14 or 15 Victorians.

Receiver used here is an 8-valve superhet built for 6 metres only, with two EF50's as RF stages, ECH4 mixer/oscillator, 6SK7GT I.F. amplifier at 455 kC., 6J5GT second detector, 6SJ7GT audio, 807 output and 6J5GT beat oscillator. Antenna is a folded dipole utilising a length of "Nylex" lamp cord."

All of which makes most fascinating reading from the VHF short-wave listener point of view in particular. Listeners such as Mr. Porter, who specialise in VHF observations are to be congratulated on their enthusiasm . . . their co-operation is much appreciated by the transmitter fraternity . . . and their listening efforts are likely to be increasingly rewarded by positive results as evidenced in the foregoing log of stations heard over a 1,000-mile range.

Who will be the first SWL or, to put it correctly, "VHFL," to hear interstate DX on the 166-170 mC. band? Such instances are likely to occur during the latter end of this year. The writer imagines, however, that concentration *will* be, and justifiably, on the 50 mC. band, for the reason that *international* DX is expected there almost any tick of the clock.

—VK2NO.

## The "Ham" Mart

Power Transformers 500x500 170 m/a, 4 Volts 4 Amps. Primary 230 Volts 50 Cycles. Test to earth 3,000 Volts. English makes . . . . . £3/10/0.  
 Filament Transformers 230/4 Volts and 11 Amps. . . £17/0/0.  
 Other Power transformers, Chokes, etc. Write for complete list.

### CONDENSERS:

4 Mfd 2000V. Working £1- 7-6  
 4 Mfd 1000V. Working 12-6

### TUBULAR:

.1 Mfd 350V. Working 7  
 .25 Mfd 350V. Working 7  
 .25 Mfd 500V. Working 8  
 .5 Mfd 350V. Working 8

### CAN TYPES:

.01, 2500 volt working 1-6

### CERAMICONS:

3.3 pf . . . . . 3  
 7. pf . . . . . 4  
 30 pf . . . . . 6  
 50 pf . . . . . 6

Tuning, midgets, Butterfly type Cap. 55 pf 5-0  
 Packet of 10 condensers Mica and Paper 5-0

### RESISTORS:

Packet of 100, ranging in from 47 ohms to 10 meg. . . . . 10-0

### POTENTIOMETERS:

Carbon types, 2. meg, .25 meg and 10,000 ohms, 3 for 5-0

### METER ODDMENTS,

comprising 0-3 amps R.F., 0-500 m/A DC, 0-10 volts D.C. and others. These are fully guaranteed and in most cases are new . . . . . £1-0-0

### CO-AXIAL CABLE in

lengths to 100 feet. Impedance 54 ohms per yard . . . . . 2-0

### RELAYS:

100 ohm type . . . . . 4-0  
 1000 ohm type . . . . . 5-6  
 3000 ohm type . . . . . 6-0

Also other A.C. and D.C. relays in stock  
 "RESLO" P.A. Speaker Units, Voice Coil 15 ohms, fit standard horn . . . . . £4-10-0  
 Set of four . . . . . £16-0-0

### ALL NEW — ALL GUARANTEED

F.O.R. Only. Freight and Postage Extra.

## The "Ham" Mart Rgd.

132 MADELINE ST., BELMORE N.S.W.



# Shortwave Review

CONDUCTED BY

L. J. KEAST

## NOTES FROM MY DIARY—

### NEW BBC CHAIRMAN

The appointment has been announced of Lord Simon of Wythenshawe as Chairman and Governor of the BBC.

Lord Simon (formerly Sir Ernest Simon) succeeds Lord Inman, who resigned the chairmanship in April to accept the Cabinet post of Lord Privy Seal in H.M. Government.

Lord Simon is well known as an authority on housing, and has written numerous works on housing and slum-clearance.

He was Lord Mayor of Manchester in 1921, and entered Parliament two years later as Liberal Member for the Withington Division. He joined the Labour Party last year. He is Chairman of the Council of Manchester University.

I note the Governor of the BBC is well known as an authority on housing. So am I, as, like my boss, A.G.H., I am building a home and building it myself with the aid of two or three friends. And before it is completed, Don Knock, although he does not know it yet, will be called upon, with the aid perhaps of the technical heads of Philips, to erect the "greatest and most wonderfulest" aerial system.

I am at present using a Philips 4462 Radioplayer and a very nice job, too.

### MALANDA TIGER PROWLs AGAIN

A very welcome letter arrived this week . . . from our old friend, Hugh Perkins, of Malanda, Queensland. Time was when these pages always had a few and interesting notes from the Atherton Tableland. In fact, Hugh was amongst the top-notchers in landing firsts as regards new stations and frequencies: But in the cow country, long hours and early ris-

ing compelled Hugh to give up "twirling the dial" for some time, but the old urge has again taken effect and I can see by the report shown elsewhere in these pages together with his letter that when he becomes again acquainted with "what's on" we can expect some good notes from Bananaland.

### SHORT-WAVE NOTES TO "UNIVERSALITE"

Subscribers to this monthly magazine from California will doubtless be sorry to read that Lee Neidow Jr. has been compelled through pressure of work to give up writing the Short-wave pages of "Universalite," but his place has been taken by Walter E. Welch, who is well qualified for the job, and reports should be sent to: Walter E. Welch, 30 Elaine Ave., So. Peabody, Mass., U.S.A.

Lee, like his predecessor, Bill Howe, has done a great job and will be missed.

### WOULDN'T

Whilst it is nothing new for me to get a call from overseas, I still

admit I like to hear it when it comes. I think I was one of the first to hear the new Canadian outlet and immediately sent an air-mail report, so consequently I was sorry to have missed my call which, according to Roy Matthews, secretary of the Short-wave League of West Australia, came over on Sunday, August 13th.

## SAYS WHO?

Hugh A. Perkins, Malanda, Queensland, writes: "Guess it's ages since I wrote you but don't for one moment think I have forgotten you or the DX game; no, sir, far from it. But it is winter-time here and I like to tune in the BCB band before the static arrives again. That, however, does not mean I entirely forsake the Short-wave, as I often listen to the 15mc at night . . . VLA-6, KCBR and KGEI mostly. These three come in at terrific power and have some grand programmes. I often think back on the old war-time days when I was doing that monitoring job for you. Guess you were pretty broken up, too, when the sets you

## NEW STATIONS

CE-604, Santiago, 6.04mc, 49.62 m: This new Chilean station was reported in August issue by Des. Hickey, of Petone, N.Z. Arthur Cushen now sends some more information on same. He says "Radio Sociedad Nacional de Minería" sign off at 2 p.m. Signal is very poor.

KZOK, Manila, 9.69mc, 30.96 m: An air-mail from KZPI, Manila, states the Philippines Broadcasting Corporation have moved KXPI to 9.50mc, and the new KZOK for Spanish-Tagalog is on 9.69mc. Both use 250 watts. KZOK is on 24 hours a day, all

Spanish-Tagalog, except 2-7.30 a.m. English, but station is silent 2-7.30 a.m. on Mondays for maintenance. Report by Arthur Cushen.

ZLO, Waiouru, N.Z., 6.80mc, 44.11m: Arthur Cushen sends an air-mail letter advising this new station was heard testing with records at 7 p.m.

ZL-2 (?), Wellington, 9.54mc, 31.45m: And another N.Z., this time Rex Gillett, advises Jim Paris heard them on August 11th signing off at 7.50 p.m. The occasion was John Charles Thomas's final concert in N.Z.



were using had to go. (Hugh did a lot of good checking for me when I was conducting the U.S. Office of War Information Listening Post and has not forgotten how I used to enthuse over the sets they provided me with—sets I always hoped I could purchase after the war was over, but, no, they were "NOT FOR SALE.") Hugh evidently still likes the Yankee stations, apparently, as he reports: KNBA, 9.65, R6 at 6.15 p.m.; KNBI, 9.49mc, R5 at 6.15 and at 7.15 KCBF, 9.7mc, as also KCBA, 9.75mc, but strength on this one is R5; KGEX, 11.73, KWIX, 11.89; KWID, 11.9; and KGEI, 15.13mc, are all R5-6 around 6.30 p.m. At 9 o'clock KRHO on 15.25mc is R8. Radio Macassar, 9.25mc, R5-6 at 10 p.m.; SEAC, 15.12mc, R5 at 9 p.m.; and SEAC, at 10 p.m., on 17.77, R6, whilst Singapore, 15.275, is R6, and on 15.13mc, R3, at 6.45 p.m.

And from N.Z. we hear from Arthur Cushen: LRS, "Radio Splendid, Buenos Aires, now heard on three frequencies, 5.995, 9.315 and 11.97mc, the latter a new station, LRS-2. All sign at 2 p.m. at good strength. LRA-1, 9.69mc, heard at fair strength till sign off at 1 p.m.; YNDG, Leon (Nicaragua), "La Voz de Leon," heard on 7.66mc, till 2.50 p.m., the extended schedule believed to be due to recent eruption nearby. YNPS, Managua, 6.75mc, regular good signal till sign off at 2.30 p.m. with "Goodnight Melody."

ZPA-3, Asuncion "Radio Teleco," 11.87mc, heard at fair strength around noon.

HCJB, Quito, back now on 6.28 mc from 6.359 and not as good as on the old frequency.

HC2AN, 7.35mc, followed at 4 p.m. on Sundays when signs with March . . . morse interference rather severe.

TGWA, Guatemala, usually signs on 9.78mc, after news at 3 p.m. from New York.

TGOA, Guatemala City, "La Voz de las Americas," on 6.102 mc now heard to sign off at 4 p.m. News in Spanish at 2.30 p.m. . . . uses "Stars and Stripes Forever" before this.

TGQA, Quezaltenago, 6.40mc, signs just after 3 p.m. with marimba tune, whilst TG2, Guatemala City, "Radio Morse," on 6.62mc, heard sometimes till 2.40 p.m. and then often till 3 p.m.

HJAE, Cartagena, 4.965mc, and HJCA, Bogota, both heard till 3 p.m. Sundays.

HJEX, Cali, "Radio Pacifico," regularly opens at 9 p.m.

XMAG, Nanking, 4.275mc, heard well with AFRS broadcasts, signs at 1 a.m. Has San Francisco news at 11 p.m. ZGOA, Nanking, 15.35mc, heard with programme in English from 6.30 p.m., talks at 6.40 and 7.30 . . . news is given at 7 p.m.

Batavia transmissions heard with news in English at 8.30 p.m. on 4.96, 6.175, 9.555, 10.06, 10.38 and 15.145mc. Indonesian transmission in Hindustani on 4.935mc. till 4.10 a.m. daily.

COBC, Havana, "Radio Progreso," 9.365mc, good signals, all Spanish, signs at 3 p.m.; COKG, Santiago, 8.96mc, heard opening at 9.30 p.m. in English. (Slogan is "Cadena Oriental de Radio."—L.J.K.)

Batavia transmissions to U.S.A. heard at 10.40 p.m. through PLO, 9.86mc, and PLU, 11.44mc. Batavia when signing at 2 a.m. gives calls as PMI, 10.38mc, and PLR, 4.865mc.

Rex Gillett advises: The Director of Regional Station XURA 9, formerly XUPA), Taiwan Broadcasting District, indicates that his station operates on 670, 750 and 1020kc and 7.223mc. The short-wave channel is located in North-

ern Taiwan and has a power of 3 k.w.

KZPI, Manila, is now using 9.50mc, and KZOK is on 9.692mc. English is used on the former, whilst KZOK uses Tagalog and Spanish.

The American-operated XMAG, located at Nanking, and broadcasting AFRS programmes on 4.275 mc, is being heard until sign off at 3 a.m. Sign off is "Star Spangled Banner."

OAX4J, Lima, was heard on a recent Sunday afternoon until after 3 o'clock on 9.34mc. The slogan "Radio Colonial" was often given. (This is pretty good, Rex, as station according to my records only has a power of 250 watts.—L.J.K.)

Radio Luxembourg is again being heard on Tuesdays in English until closing at 7.45 a.m. This was a request programme on 6.09mc.

(?) Johannesburg, on 6.005mc, has been heard until sign off at 1.40 a.m. This may be Capetown . . . signals were good. (It is quite likely it was Johannesburg, as Johannesburg III is listed on 6.007 mc. Power is 5,000 watts.—L.J.K.)

Radio SEAC is now using 15.225mc in relay with others. It is very difficult to copy clearly owing to interference from stations at 10.30 p.m.

XORA, Shanghai, has been noted on 11.725mc at night instead of on 11.70mc.

EPB, Teheran, has been heard again with news in English from 10.15-10.30 p.m. on 15.10mc. Identification is "This is Teheran calling."

Mr. K. E. Rowe, of Richmond, South Australia, writes: "I always read your columns in A.R.W. and would like to offer my congratulations on the manner in which they



are conducted. I have been keen on Radio; mostly the amateur side of it, for about ten years, and wouldn't miss my copy of the mag. The receiver here at present is a three-tube Super and the antenna a 60 ft. single-wire . . . end fed. This seems to do O.K., as I have logged 970 stations with it since December 1st, 1946. I hope to erect a vertical doublet shortly and this should be an improvement." Mr. Rowe sends a list of stations he has logged on 14mc, and I have sent these on to Don Knock.

And here are some interesting items taken from "Radio News":

Roy Dunlop, director of English programmes for CBA, Chungking, says that he hopes two new 20 kw. short-wave transmitters in Nanking will be in operation shortly. He is most anxious to receive reports on XGOA and XGOY. A new station is to be erected on Fernando Po (an island in Bay of Biafra, off West Africa). Will have a power of 200 kw. and be called Radio Atlantic. Probably 17 months before completion. The site is 60 acres at Mosula, 40 miles west of capital city, Santa Isabell. Will beam Europe, Africa, United States and South America mainly in Spanish, English, Portuguese, German, Italian and French and will operate on 13 and 17 metre bands.

#### VERIFICATIONS

Arthur Cushen has received verifications from: XECC, Puebla, Mexico, 6.185mc. Power is listed as 50w; WLWR, 9.70mc; WLWL, 9.70mc; WRUW, 17.75mc; WLWL, 17.955mc; WRUS, 15.13mc; WRUA, 15.13mc; SEAC, 9.52mc; WOOW, 9.49mc; WNRX, 9.75 mc.

Rex Gillett is naturally pleased at being notified his report to Radio Tetuan on 6.065mc, and Radio Brazzaville on 7.00mc, were the first from Australia. Other verifications are: FBS, Jerusalem (third report from Australia); Brazzaville, 9.98 and 11.97mc; Kuala Lumpur, 6.045mc; XLRA, 11.50 mc; XUPA, 7.22mc; Radio Sofia, 9.35mc and 7.67mc; Johannesburg, 3.45mc; CR7BV, 4.925mc; Bandoeng, 3.015mc; CKRA, 11.76mc; JCKW, 7.22mc; Radio Polskie, 6.10mc; Malaya, 4.825mc; AFN, 6.08mc; CFRX, 6.07mc; ZEA, 3.66mc; CR6RB, 9.165mc; XE-WW, 9.50mc; Dakar, 15.39mc; Leipzig, 9.73mc; Radio Algeria, 11.835mc; Radio National de Espana, 9.37mc; and CE1180, 12.00mc. This brings countries verified to 83, with reports out to 17 others . . . new ones during the past month being Spanish Morocco, Bulgaria, Taiwan (formerly Formosa) and Angola.

#### BRIEF MENTION

The Swedish Radio has ordered two 100 kw. transmitters, expected to be used with beam antennae in six directions on seven frequencies. Completion of the project is forecast for 1950.—"Universalite."

\* \* \*

Listeners to short-waves in New Zealand have been compelled to shorten their periods of tuning by power restrictions, electricity being prohibited from 11 p.m.-3 a.m. N.Z. time.

\* \* \*

A new FM transmitter is in service at Manila on 101mc, using 250 w.

\* \* \*

HI2T, Monsenor Nouel (Dominican Republic), one of the best Central Americans, is now on two frequencies, 11.90 and 7.275mc.

---



---

#### HELP WANTED

Can anyone help Rex Gillett with his query? He asks do I know who the Latin is that he is hearing on 6.10mc from about 10.30 p.m. with a religious service. Noise at my listening post prevents me hearing it. (latter moved from 6.48 mc), and

## GEORGE BROWN & CO. PTY. LTD.

267 CLARENCE STREET, SYDNEY. Phone: M 2544

DISTRIBUTORS TO THE TRADE FOR

ROLA SPEAKERS • EVEREADY BATTERIES • AEGIS

RADIO COMPONENTS • ULTIMATE RADIOS • MULLARD

VALVES • I.R.C. RESISTORS

And All Brand Line Radio Components

★ AEGIS 4 VALVE AND 5 VALVE KIT SETS COMPLETE NOW AVAILABLE



latter moved from 6.48 mc), and heard to sign off at 3 p.m. Slogan is "La Voz del Yuna."

\* \* \*

The Brazilian "Radio Nacional" is again active on PRL-8, 11.72mc, from 8.30-10 p.m. on Saturdays and daily on PRL-7, 9.72mc, till 2 p.m. . . . often announces in English. PRI-3 heard on 6.00mc at 7 a.m. with fair signal.—Cushen.

\* \* \*

OTC-5, Leopoldville, 17.745mc, is reported as heard in West Australia from 5-7.45 a.m. (I do not know whether the call letters were actually heard but OTC-5 is listed on 17.70mc, whilst the call-sign for 17.45mc is shown as OTM-6. The former is credited with 50,000 watts power and the latter as 20,000 watts.—L.J.K.

\* \* \*

Radio Nacional de Espana, Madrid, is now verifying with a card showing the station's antenna array.

\* \* \*

Radio Sofia is verifying with an attractive card showing a map of the Balkans, picking out Bulgaria in red. Details of verification are on the back.—Gillett.

\* \* \*

CR6RB's card is an attractive one depicting an elephant with its trunk pointing to Angola on a map of Africa. The card is done in green, red, white and black. Address is Radio Clube de Benguela, Caixa Postal No. 19, Benguela, Angola.

\* \* \*

Radio Club de Mozambique verified its station CR7BV with a new card. It is printed in red, white and blue and shows a map of Africa with Mozambique in red. The call letters on the card are CR7BD.

\* \* \*

Two new cards but plain are Radio Saigon and The Forces Broadcasting Service, Jerusalem. PCJ is yet another station with a new card. It is very attractive and has as its theme a map of Holland.

## AND MISS SANDERSON SENDS AS USUAL A FINE BUNCH OF LOGGINGS:

### EUROPE

Station	Band	Mcs	Time heard	Remarks
PCJ	31.28	9.59	7.15 am	News and Music.
			2.00 pm	News in The Netherlands.
PCJ	19.71	15.22	7.30 pm	News in The Netherlands. Music.
Azores	61.98	4.84	7.30 am	News in French and music.
SDB2	27.83	10.78	7.45 am	Good musical programme; news.
SBP	25.63	11.70	5.15 pm	Music and English lesson.
HEI7	19.58	15.32	12.00 pm	News and music. Opens 9.30 a.m.
HEI5	25.61	11.71	6.15 pm	Swiss musical programme.
HER5	25.28	11.86	6.30 pm	Musical programme and news.
Madrid	32.00	9.37	8.00 am	News in French and music. R9.
OLR2A	49.92	6.01	7.15 am	News in French and music.
Radio Italia	25.40	11.18	7.15 am	Music, news in Italian. Interval signal notes by nightingale.
Leipzig	30.83	9.73	3.00 pm	News in German; children singing.
Radio Tetuan	49.49	6.06	7.30 am	News in Spanish, given by man and woman.
CNR3	33.04	9.08	6.45 am	News in French and music.
Andorra	50.02	5.98	6.15 am	News in French and music.
Paris	31.37	9.56	3.30 pm	News in French.
Paris	25.22	11.88	4.15 pm	News and music.
Paris	25.34	11.84	3.30 pm	News and music.
SUX	38.15	7.86	6.30 am	Wailing type music.
Munich	48.62	6.17	6.45 am	News and music.
CWS6	27.27	11.04	7.15 am	Good musical programme; news in French.
PCJ	25.57	11.73	6.45 am	News in Dutch, English.

### INDIA, CEYLON, BATAVIA, JAPAN, FRENCH INDO-CHINA

VUM2	31.28	9.59	9.00 pm	News and good musical programme.
VUD10	16.83	17.83	1.15 pm	Programme details, music.
Hanoi	31.68	9.47	10.00 pm	News in English and music.
Hanoi	25.21	11.90	10.15 pm	News in French and music.
Batavia	10.82	15.14	7.30 pm	News in English and music.
Batavia	29.10	10.36	7.45 pm	News and music. Signal good.
Batavia	31.39	9.55	7.00 pm	News and music.
WLKS	49.14	6.10	7.30 pm	News and music; good signal.
SEAC	19.83	15.12	10.15 pm	News and views; music.
Ceylon				
Ceylon	16.90	17.77	8.00 pm	Good musical programme.
PLY	29.79	10.06	10.15 pm	News in Dutch and music.
Singapore	19.61	15.30	8.30 pm	News in French and music.
Singapore	44.31	6.77	9.45 pm	Musical programme; news.
Singapore	62.74	4.78	9.15 pm	Talk on care and treatment of dogs.
KZRH	31.12	9.64	8.30 pm	News and music.



# Speedy Query Service

**R.P. (Preston) enquires about a circuit with triodes and inverse feedback, which we published some years ago.**

A.—This amplifier was published in the issue of April, 1942, but we are now completely out of stock of this issue. The article was reprinted from the American "Radio," but we can't remember just which issue it was. Should be something about a month or two before the above date. The amplifier was an excellent one and quite suitable for use with locally made components. Although it may not meet with the approval of the valve manufacturers, quite a few of our readers run the 2A3 triodes with the full high tension from a 385 volt transformer. With a 750 ohm resistor for bias, the actual plate voltage from plate to filament is not much over 300 and the valves will stand this voltage easily. Some American magazines recommend the 2A3's with 400 actual plate volts, plus about 80 for bias.

\* \* \*

**F.T. (Murwillumbah) is in doubt about the assembly of his "Voyager" kit-set.**

A.—The spindle for the tuning control is mounted in the bracket which is supplied for the purpose. The bracket is bolted in position so that it has the spindle mounting hole about three-eighths of an inch below the

underside of the base, considering this item as in a normal chassis. The spindle then mounts in the hole from underneath. Actually the chassis is upside down in this set, speaking rela-

## SUBMARINE RECEPTION

**"I have no personal knowledge of radio reception in submarines, but was speaking to Mr. Weatherall, the Chief Radio Inspector in Sydney today, and as he was a submarine man in World War I, mentioned it to him. He said that on sub J1 he used a ten-valve superhet with French "R" valves, resistance coupled, and receiving on 60 kC. and submerged up to six feet, reception was carried out over 2,000 miles, the object being to receive reports on enemy sub movements in the Atlantic. The transmitters were very high powered, probably 50 kW. I think VK2SX also told me years ago that he used a similar arrangement in the J72."—From J. A. Mead, VK2AJA, 13 Salisbury Avenue, Bexley, N.S.W.**

tively to normal practice, the spindle coming out through the top of the carrying case.

\* \* \*

**C.T.S. (Liverpool) wants to know the value of the screen feed resistor in the tuner section of the Natural Response article in the July issue.**

A.—Yes, the value of this resistor seems to have been omitted by the artist who drew the circuit. The value should be 50,000 ohms. The wire for the choke in this amplifier was specified as 40 standard wire gauge. The nearest equivalent in the B. & S. gauge would be 37.

\* \* \*

**F.R. (Camberwell) points out a slight error in the parts list of the "Voyager" in the June issue.**

A.—Yes, there is a slight error in the list of resistors. The 50,000 ohm oscillator grid resistor is not shown in the list, but two 100,000 ohm resistors are listed, but not required. You can check from the circuit diagram to make sure, if still in doubt.

## BARGAIN CORNER

Advertisements for insertion in this column are accepted free of charge from readers who are direct subscribers or who have a regular order placed with a newsagent. Only one advertisement per issue is allowed to any subscriber. Maximum 16 words. When sending in your advertisement be sure to mention the name of the agent with whom you have your order placed, or your receipt number if you are a direct subscriber

**WANTED. Ammeter, 60-0-60 amps, and Voltmeter, 0-30 or 0-50 D.C. Volts. Preferably Paton K35 or similar. P. W. Butler, 1 Darley Road, Randwick, N.S.W.**

**WANTED TO BUY. Handbook on Wireless Set No. 11, cables with 10 and 3-pin sockets. C. C. Chirnside, Panmure, Vic.**

**FOR SALE. Heavy-duty double-spring Thorens grammo. motor, £3/5/-; Garrard "E" magnetic pick-up, £2/15/-. Kevin Butler, Denison Street, Cooma, N.S.W.**

**WANTED TO SELL. 22 modern valves, a.c. and battery types, for £10, or swop for a 906 or 5BP1 cathode ray tube with socket. M. J. Vincent, 18 York Street, East Ipswich, Q.**

**WANTED. One each of types 954 and 956 Acorn tubes, preferably new in original cartons. State price, R. Keeshan, 2 Riverview Street, Milton Heights, Q.**

**FOR SALE. 5-inch permag speaker, 8,000 ohm input transformer, and one used 0-100 scale dial. 35/- the lot, postage 2/- extra. H. Hearne, Victoria Flat, Binda, N.S.W.**

**WANTED. 35mm. Camera, in working order. Send details and price. A. K. Head, 12 Peverill St., Balwyn, Vic.**

## NEW ZEALANDERS!

**The quickest and simplest way of subscribing to the**

**"AUSTRALASIAN RADIO WORLD"**

**is to get in touch with**

**H. BARNES & CO.**

**4 Boulcott Terrace**

**Wellington**

**SUBSCRIPTION: 10/6 Per Annum**

They will arrange all the details and give you prompt and courteous attention.

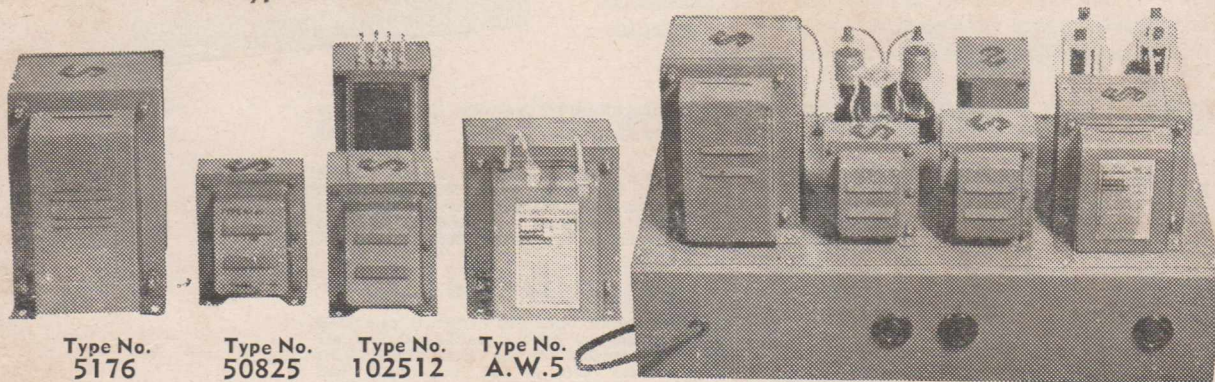
**DO IT NOW!**



RED  LINE

EQUIPMENT  
TRANSFORMERS and CHOKES  
For the **F.F.R.** Amplifier

Type No. AR2



Type No.  
5176

Type No.  
50825

Type No.  
102512

Type No.  
A.W.5

*Precision in Design and Construction*

*Red Line Equipment Includes:*

- High Tension Plate Transformers
- Low Tension Filament Supplies\*
- Class B Driver Transformers
- Multi Impedance Modulation Transformers
- Heavy Duty Power Supplies
- Swinging and Smoothing Chokes
- Wide Range Audio Equipment
- Frequency Dividing Networks

*(\*Insulated up to 4000 volts if Required)*

**SWALES & SWANN**

Technical Service, Wholesale and  
Manufacturers

A. T. SWALES, Cen. 4773  
2 Coates Lane, Melbourne



Trade Sales: Allen SWANN

MU 6895 (3 Lines)

157 Elizabeth Street, Melbourne

**A GUARANTEE**

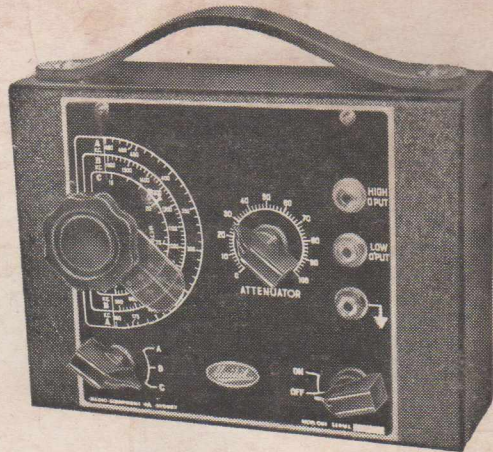
**OF DEPENDABILITY**



NOW AT LAST YOU CAN--

# Build Your Own Oscillator!

Here's the kit you've waited for—an oscillator kit which covers all the fundamental frequencies necessary to line up the modern receivers.



## EASY TO CONSTRUCT WITH ORDINARY TOOLS

The new OKI oscillator is a simple kit which you can build at home with a few ordinary tools yet which, when completed, will give accurate and lasting service for many years. A complete book, giving pictures and wiring diagrams, and constructional details, included in every kit. The frequency ranges covered by this oscillator are in three distinctive separate bands. The A band covers 150 to 490 kilocycles, the B band covers from 550 to 1600 kilocycles, and the C band covers from 16 to 45 metres. All fundamental frequencies in the average receiver are well covered and lining up is permanent and simple.

### USES STANDARD BATTERIES

"University" pioneered oscillator kits and many are still in use. Model OKI is a companion to our famous multimeter kit model MKI and they make a handy pair—readily portable and easily built.

The OKI oscillator operates from built-in bat-

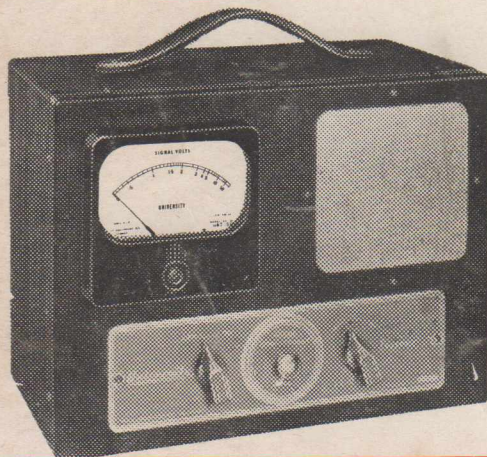
teries and these batteries are standard types that may be easily purchased everywhere. The "University" OKI oscillator kit comes to you with a completely calibrated dial which is pre-calibrated in the factory before going out in kit form.

### PRE-CALIBRATED DIAL

This means that when you construct according to directions you have a calibrated dial off which frequencies can be read direct. Most home-builders' kits in the past have had an ordinary 0/100 dial which limited the effective use of the oscillator.

Available from all distributors, the OKI oscillator will be in ready demand. It is available to you at a new low price with everything included, right down to the last nut and bolt. Order your model OKI today!

PRICE £7/10/0 (plus tax)



## NEW SINGLE TRACER ENSURES FOOLPROOF TESTING

Tracing the signal RIGHT THROUGH the radio receiver from start to finish, the new "University" S.T.B. Signal Tracer makes fault finding easy and quick. When the probe strikes a faulty section, indications are given on both meter and speaker. Portable—light—sturdily constructed, the S.T.B. is the versatile post-war service instrument you MUST have. Quantities are limited. Order early. Ask for Model S.T.B. "University" Signal Tracer.

Price £14-0-0 (Plus Tax)

# University INSTRUMENTS

MADE BY RADIO EQUIPMENT, PTY. LTD.  
5 NORTH YORK STREET, SYDNEY. PHONES B 3678, M 6391