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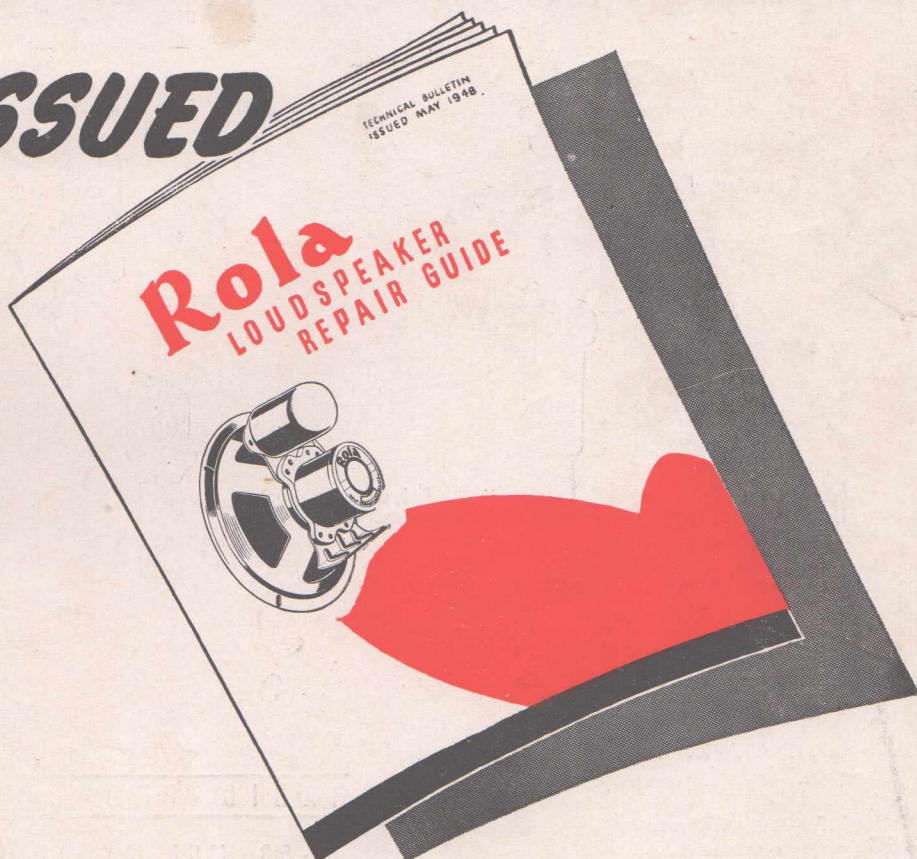
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*Domestic*

**VOL. 13 . . . . . NO. 1**

**JUNE 15, 1948**

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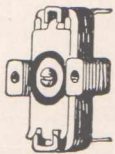
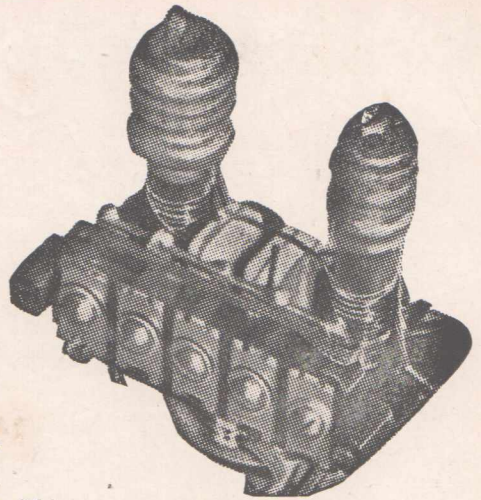
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JUNE, 1948

No. 1

## CONTENTS

### TECHNICAL—

Fidelity Tuner With A.V.C. ....	5
Interesting Pre-Amplifier .....	8
Well-Tested Inter-Com. System .....	11
Oscillator for Code Speed .....	13
Communications Coil Assembly .....	17
The "Economy Three" .....	19
Service By Substitution .....	24

### SHORTWAVE REVIEW—

Calling CQ .....	27
Notes From My Diary .....	31

### THE SERVICE PAGES—

Questions and Answers .....	34
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## EDITORIAL

Last month's editorial has had a strong reaction. A large number have written to say that they think the obvious solution to the problem is to increase the price of each issue, enlarging and improving it so that it will be worth the money. Several point out that the value of good technical advice on radio matters is worth more than pence, and may actually save the reader pounds of hard-earned cash. One reader suggested, apparently quite seriously, that the price should be advanced to 5/-. He said that if we did he still wouldn't ever miss an issue.

Since production costs have been so much increased the actual nett return from sales has been less than the production cost. The revenue from advertising has kept the business on a paying basis, but there has always been the thought in the back of my mind that the fewer copies I sell the more profit I make. Such a state of affairs does not provide an incentive to turn out attractive issues.

So now it seems that in the near future the price will be raised to 1/6 or perhaps even 2/- per copy, which is the usual price of technical magazines overseas. Such a price increase, however, will not be made until I can get together the technical staff to provide additional editorial matter, nor until the printer is able to handle the extra load without delaying the publication date.

Just in case anyone jumps to the conclusion that this story is an invitation to readers to express opinions as to what improvements should be made, I may as well add that I know just exactly what I want to do, and it is mainly a matter of getting the required organisation into gear. Then when it can be arranged you will have a better publication, but at a higher price.

—A. G. HULL.



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20 metres . . . . .	16 MC	to	5.5 MC.
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This coil kit is suitable for use with a Stromberg H. Type condenser and will give a band spread as above. A smaller gang will give less overlap at each end and amateurs may use our type CV49 double spaced condensers for band spreading in conjunction with the H gang.

A six bank double sided switch with shorting plate, the 2nd side being used to short circuit all unused coils. IT IS NECESSARY to shield between the Aerial, R.F. and Oscillator sections of switch.

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 40 metres . . . . . 0015 fixed condenser.

20 metres . . . . . 004 fixed condenser.  
 10 metres . . . . . 004 fixed condenser.  
 These are made to suit R.C.S. Intermediate Transformers. Type IF162 and Type IF163.

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A six bank double sided switch with shorting plate. The 2nd side being used to short circuit all unused coils. IT IS NECESSARY to shield between the Aerial, R.F. and Oscillator sections of the switch.



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### 5 BAND SHORT WAVE COILS

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H125 10 metre R.F. . . . .	4/6
H126 10 metre Oscillator . . . . .	4/6
H127 20 metre Aerial . . . . .	4/6
H128 20 metre R.F. . . . .	4/6
H129 20 metre Oscillator . . . . .	4/6
H130 40 metre Aerial . . . . .	4/6
H131 40 metre R.F. . . . .	4/6
H132 40 metre Oscillator . . . . .	4/6
H133 80 metre Aerial . . . . .	4/6
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RF82 3 pie 1.7 M/H R.F. . . . .	4/6
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RF84 5 pie 4.0 M/H R.F. . . . .	4/6
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IF162 1st Stage Permatune Iron Core . . . . .	13/9
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Standard 175 k.c.	
IE174 1st Stage Permatune Iron Core . . . . .	13/9
IE175 2nd Stage Permatune Iron Core . . . . .	13/9

### MIDGET VARIABLE CONDENSERS

Type	mmfd	Plates	Price
CV34 . . . . .	10	2	4/-
CV35 . . . . .	15	3	4/3
CV36 . . . . .	25	4	4/6
CV37 . . . . .	35	5	4/9
CV38 . . . . .	50	7	5/3
CV39 . . . . .	70	9	5/10
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3-2 plate trimmers complete in one solid block of trolitul

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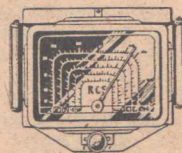
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This is a solid metal plate in black with raised letters. Diam. 1 1/2 ins. with 3-8 ins. centre hole, to fit standard switch.

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Type	mmfd	Plates	Price.
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CV42 . . . . .	15	3	7/9
CV43 . . . . .	25	4	8/4
CV44 . . . . .	35	5	9/-
CV45 . . . . .	50	7	9/6
CV46 . . . . .	70	9	10/-
CV47 . . . . .	100	14	11/3
CV49 . . . . .	25	7	11/3

This Condenser is Double Spaced.



# FIDELITY TUNER WITH A.V.C.

THE idea of using a T.R.F. circuit for wide-band reception of local stations has been used in many sets over the years. It gives a far fuller and flatter response than any superhet. circuit, excepting those using specially designed and highly ex-

fact, the diode tuned circuit contributes little or no selectivity to the tuner. This condition could possibly be improved by designing and utilising a special coil, which would have to be rather more closely coupled in order to overcome the loading effect of the diode, but no such coil is available.

There is, however, the well-known "infinite impedance" detector which is in effect a plate detector in which a large percentage of negative feed-back is used. This circuit does not load the coil feeding it, and gives equal if not better fidelity than the diode. One of the main disadvantages of the infinite impedance detector is that A.V.C. may not be obtained without using a separate A.V.C. amplifier and rectifier. In the accompanying circuit diagram a method is shown whereby A.V.C. voltage is obtained without detector loading.

pensive flat-topped I.F. transformers. The ordinary superhet with average I.F. transformers seriously cuts the side bands and thus lowers the high-note response of the tuner.

One of the two types of favoured detector circuits used in T.R.F. tuners is the diode—the second diode may be used to provide A.V.C. I have found, however, that using three tuned circuits (the final one feeding the diode detector) the overall selectivity is not sufficient to give adequate station separation in many localities. In

For those desiring to construct this tuner as per circuit diagram, the line-up is as follows: A 6SK7 tube is used as first R.F. amplifier, screen voltage being obtained from a dropping resistor with a bypass condenser, cathode bias is obtained with a 300-ohm cathode resistor,

## PARTS LIST

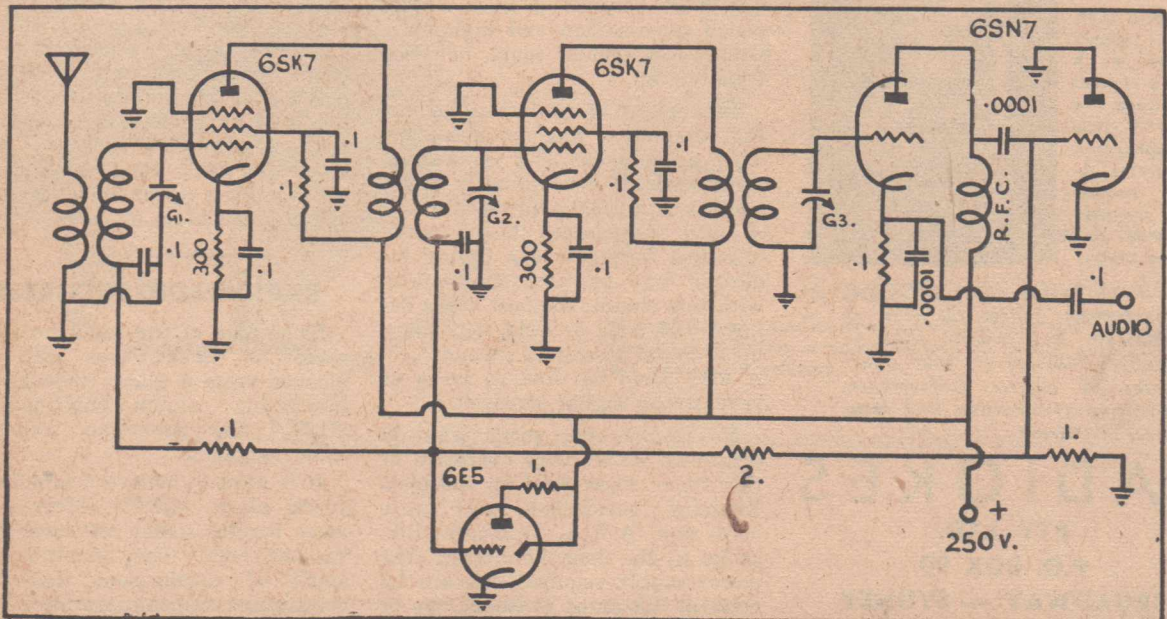
- 1—Aerial Coil.
- 2—R.F. Coils.
- 1—High impedance R.F. choke.
- 7—.1 mfd. 400v. tubular condensers.
- 2—.0001 mica condensers.
- 2—300 ohm, 1 watt resistors.
- 4—.1 meg. 1 watt resistors.
- 1—1 meg. 1 watt resistor.
- 1—2 meg. 1 watt resistor.
- 1—3-gang tuning condensers to suit dial.
- 3—Trimmers.
- 3—Octal sockets.
- 2—6SK7 tubes.
- 1—6SN7 tube.
- Chassis, wire, terminals, etc.
- ADDITIONAL FOR EYE CIRCUIT—**
- 1—6E5 tube.
- 1—1 meg. 1 watt resistor.
- 1—6-pin socket.

and a .1 mfd. bypass condenser. Grid return of the aerial coil is bypassed to earth by a .1 mfd. condenser and connected through a .1 meg. resistor to the A.V.C. line.

The plate of the first R.F. amp. feeds through an R.F. coil to the second R.F. amp., another 6SK7, the circuit of which is similar to the preceding stage.

The second R.F. amp. feeds one section of a 6SN7 tube operating as an infinite impedance detector.

(Continued on next page)



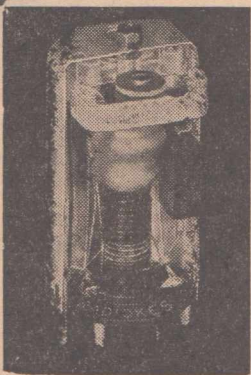


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## TUNER

(Continued)

The .1 meg. resistor in the cathode circuit supplies bias for the detector and is also the audio load, audio signal being taken directly from the cathode through a coupling condenser for the audio amplifier. The cathode resistor is bypassed by a .0001 mfd. condenser for R.F. only. The plate of the detector which is usually returned directly to H.T. is in this case taken through an R.F. choke.

In operation an R.F. voltage will be developed across the choke and this is fed through a .0001 mfd. condenser to the grid of the second section of the 6SN7 which is operating as a diode plate, cathode and triode plate being earthed. A.V.C. voltage is developed across the 1 meg. A.V.C. load and fed to the R.F. amplifiers through a 2 meg. resistor. A high impedance R.F. choke should be chosen that has a resonant frequency well below 500 kC/s, so as to obtain a level response over the broadcast band.

A 6SN7 tube was chosen for this position, which requires a diode and triode, because it has separate cathodes. There are alternative tube combinations which will readily suggest themselves. A 6SJ7 could be used as a pentode detector, with an EBF2 or 6SF7 as second R.F. amp. and A.V.C. rectifier. 6SK7's were chosen as R.F. amplifiers because of their single-ended construction and high gain. Other R.F. tubes could be used equally well.

Decoupling of the plates of the R.F. amplifiers was not necessary when good layout with short leads were used. If decoupling is found necessary, a 2,000 ohm resistor and .1 mfd. condenser should prove effective. A magic eye tuning indicator may be used successfully with this circuit, the best types being a 6E5, EM1 or EM2, depending upon signal strengths encountered. A 6U5 could be used in areas of very strong signal strength.

No trouble was encountered in obtaining satisfactory operation of this tuner when built as specified. Kingsley permaclad coils were used and A.W.A. iron-core R.F. choke in the detector circuit. The power supply requirements are 6.3 volts at 1.2 amps (without eye or dial lamps), and 250 volts high tension at about 25 mA. Alignment

is very simple, the iron cores being peaked at the low frequency end and the trimmers at the high frequency end. Tube shields were not found necessary, but No. 1 pin of the R.F. amplifiers should be earthed.

This tuner is at present being used in combination with a single type of 807 amplifier with a G12 speaker and 3-inch tweeter and sounds very impressive, particularly on the national stations.

Another application of the A.V.C. arrangement used in this tuner would be in short-wave receivers where a plate detector is used and A.V.C. is required, without loading the final I.F. transformer.

It is hoped to describe in one of the following issues a simple push-pull amplifier to complete this article. I would appreciate reports or suggestions on the circuit and results obtained from this tuner.

## SIMPLE TONE CONTROL

In the latest issue of "Electronic Engineering" from England there is a simple tone control which is suitable for application to conventional circuits using a single pentode or beam power output valve. The ordinary half-meg grid-leak is replaced with a potentiometer, with the rotor arm terminal running to the plate of the output valve via a mica condenser of .0004 mfd. This allows a certain amount of inverse feed-back or of audio by-pass, according to the position of the rotor in respect to the grid or earth end of the resistance strip. The scheme is said to give a wide range of control, and has the great advantage of using a minimum of components.

## RAPID RADIO PROGRESS

Some idea of the rapid progress made in short-waves can be gleaned from a glance through an interesting column published in "QST," the American technical radio magazine.

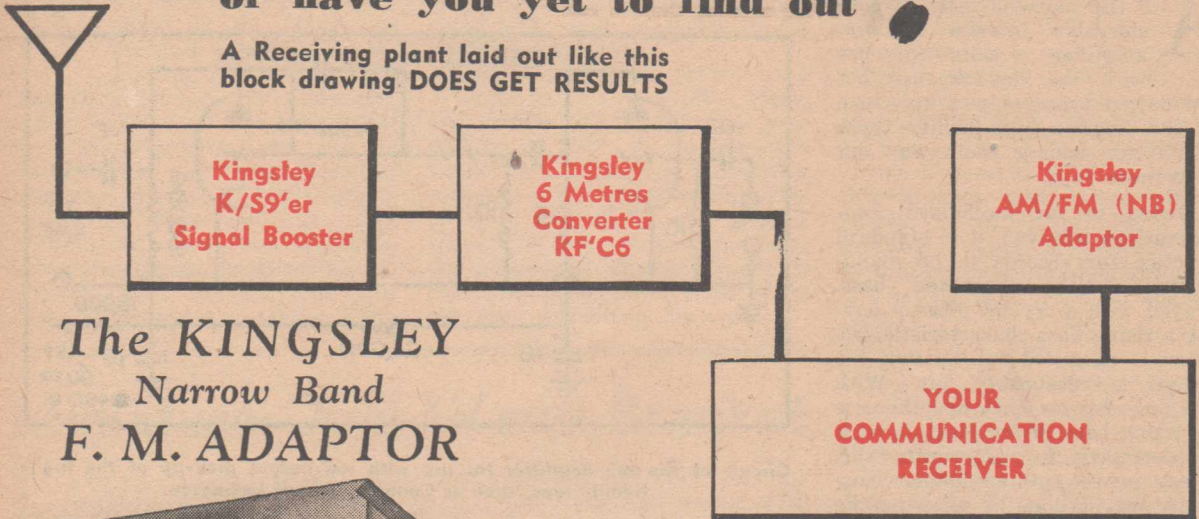
It is hard to believe it is only 25 years since "QST" referred to wave lengths under 100 metres as "a new field." They mention in a spirit of wonderment that "receivers and transmitters have been made to work in the vicinity of 50 metres."



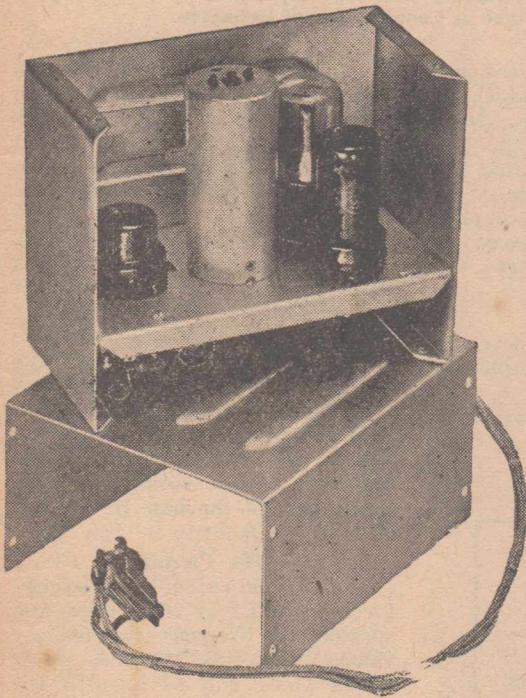
# Do You Know?

or have you yet to find out

A Receiving plant laid out like this block drawing DOES GET RESULTS



## The KINGSLEY Narrow Band F. M. ADAPTOR



The Kingsley narrow band F.M. Adaptor (illustrated here) is intended for use with any communications type or dual wave receiver with a final I.F. frequency of 455 KC's and a signal tuning range covering the 20, 11 and 6 metres bands or higher frequencies, and consists of a Cathode follower to couple to the receiver I.F. Channel, a limiter and a phase difference discriminator giving Audio frequency output, to be coupled back to the Audio frequency Channel input Circuit. When ordering, please designate type required—KA1 or KA2—the latter having been developed for use with the AR7 Communication Receiver.

### AM/FM ADAPTOR

£2/16/-. Valves extra.

### KS9'er

Signal Booster, £5/5/- plus tax. Valves extra.

### KF/C6

6 metres Converter, £6/18/6 plus tax. Valves extra.

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# INTERESTING PRE-AMPLIFIER

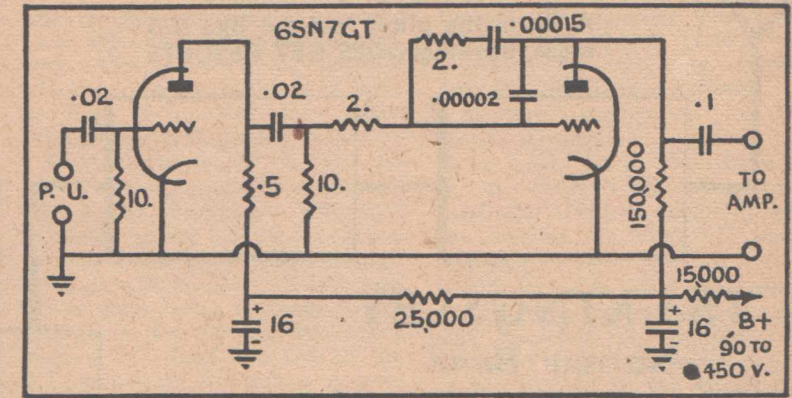
## Bass Compensation by Feedback

At the moment there is considerable interest in pre-amplifier circuits for use with the flat-response but low output types of pick-ups, such as the English high-fidelity types which are finding their way out here these days.

Owing to the mechanical considerations involved, it is standard practice for records to be manufactured with attenuated bass. Played with a crystal pick-up having a rising bass characteristic, the effect is cancelled out, so that the output is reasonably flat. With the flat-response pick-ups there is no rising bass in the pick-up, so it is necessary to incorporate this effect in the pre-amplifier. Normally this is done by allowing the pre-amplifier to reproduce the lowest notes at full gain, cutting back the high end as required.

Now in the latest issue of "Audio Engineering" from U.S.A. comes a circuit for a pre-amplifier which is somewhat different from the old run of bass-compensating pre-amplifiers, and is said to do the required job with several quite important advantages.

According to the author, this pre-amplifier circuit is cheaper and



Circuit of the pre-amplifier for use with low-output pick-up of the high-fidelity type, such as Connoisseur and Lexington.

simpler than the conventional, using negative feedback which reduces harmonic distortion. Noise and hum originating in the pre-amplifier are also attenuated and the very low output impedance enables the use of shielded coupling cable without causing severe attenuation of the higher frequencies.

### Construction

The pre-amplifier, as described in "Audio Engineering," is built on

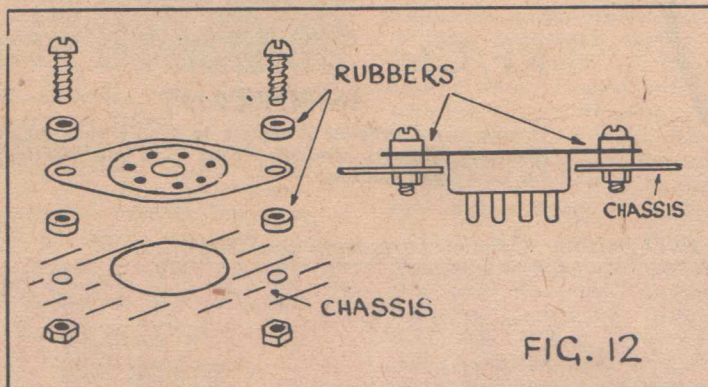
a folded aluminium chassis, measuring 4 x 2 x 1 inches, with a bottom cover. The valve is mounted in the usual way, but shielded. The filter condenser also comes out through the top of the base.

Hum trouble is dealt with by having the valve socket mounted close to the power supply socket which is mounted in the side of the base. The terminals of the two valve sockets are so close that the actual filament wiring consists of only the shortest of straight wires. This means that there are no extensive a.c. fields as found around ordinary heater wiring when it roams around the base in and out of other components.

### The Circuit

The original circuit was designed for types 6SC7 or 7F7 valves, and specified the overseas-style resistor values, such as 390,000 ohms, 27,000 ohms and so on. To the Australian radio trade these would be considered odd values and would not be normally available. Taking into account permissible tolerances, we have re-drawn the circuit to show our normal resistance values and the type 6SN7GT twin-triode valve which is likely to be easier to obtain. Actually this valve gives somewhat lower gain than the 6SC7, which can be used if obtainable.

## A HANDY HINT



To save the valves in a portable set from shock and vibration it is a good plan to insulate the valve sockets with rubber washers, as shown above.



# PILLOPHONES FOR TEST CRICKET

WITH rationing of electricity power in the offing, the prospect of sitting up beside the radio to hear the Test cricket broadcasts is anything but a warm one. The logical answer to the problem is to take the radio to bed with you. However, even the smallest of radio sets is hardly the most comfortable sort of thing to take to bed. Thinking along these lines, the Kingsley engineers have brought out two types of extension speakers. They

should prove a great benefit for those who want to listen to the cricket broadcasts.

The first type is known as a "Pillophone," listed at 35/- retail, and known by the Kingsley type number of KR3. It consists of a three-inch Kingsley speaker mounted in a moulded bakelite case of snug dimensions and rounded shape. It fits comfortably under the pillow and allows the cricket enthusiast to listen all night without even disturbing his wife.

For the listener whose wife is also interested in the cricket broadcasts, or is a heavy sleeper, there is another model which is intended to sit on a table alongside the bed. This is a straight-out extension speaker unit, consisting of a 6-inch speaker in a streamline pressed-metal case, fitted with a switch. Known as the KR6, it lists at £2/18/6 retail. It is available in several colours, including gold, silver, brown, blue, green, cherry and ivory.

## Miniature Dual-Wave Bracket

LATEST release from the Kingsley factory is a miniature dual-wave bracket, designed to facilitate the construction of a small mantel model dual-waver.

The new bracket follows conventional lines for this type of unit, but on a greatly reduced scale, so that the unit is only a couple of inches across, as will be seen from the photograph on this page which shows the new unit standing alongside a matchbox, a baby three-inch speaker, and a pair of the latest miniature intermediate transformers.

To ensure greatest efficiency with the several types of converter valves at present on the market the new Kingsley bracket is to be made available in four different types. Type KU35 is designed for operation with the Philips high-gain valves, such as types ECH35, ECH33, EK2 and the rather-hard-to-get American-type 6K8G. Type KU36 has been specially designed for battery-operated valves and works well with the 1A7G, 1C7 and the IR5 peanut. It is also recommended for use with the 6A8G. Type KU37 bracket is for the 6SA7GT with the cathode-tap type of converter circuit. Lastly, the type KU38 is designed solely to get the absolute maximum from the 6J8G converter valve.

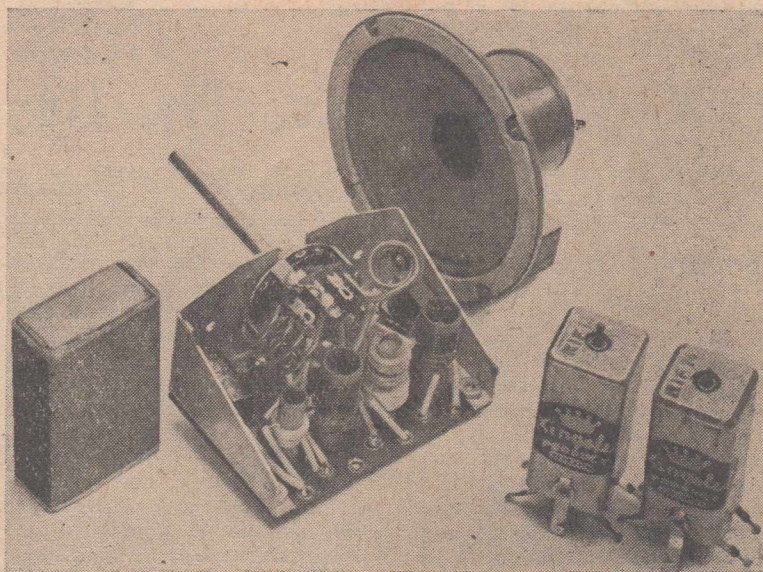
The padders, both on broadcast and short-wave band, are of the

fixed type and are built into the unit. Iron cores are sealed, with four capacity trimmers ranged along the top of the bracket in a most accessible position.

Frequency coverage is 5.95 to 18.5 megacycles on the short-waves, equal to approximately 16 to 50 metres. The broadcast band is covered with adequate overlap. The required gang condenser can be either M.S.P. or Stromberg Carlson type "H."

Fitting the extension speaker is simply a matter of hitching its voice coil in parallel with the voice coil of the speaker in the receiver. If the speaker of the set is to be silenced at the same time as the extension is in use, the voice coil is left open circuited. The mismatching which results from having the two voice coils in parallel is not noticed in practice, the lower impedance in the plate load with the usual pentode simply meaning a slight falling off in maximum power output with lower distor-

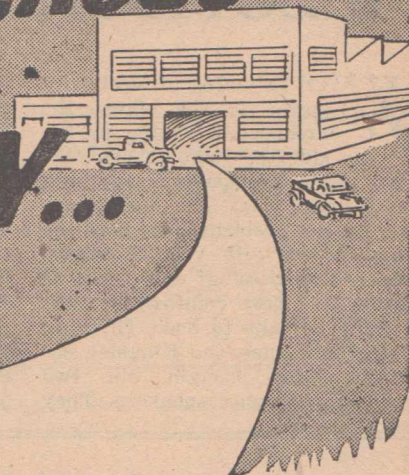
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The new Kingsley dual-wave bracket, with a match-box alongside for a comparison of size.



# COMING RELEASES FROM OUR NEW FACTORY...



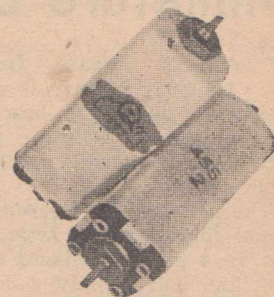
## CAR-RADIO COIL KIT



### COMPRISING:

- 2 "Q Plus" Midget Iron Cored IF's.
- 1 "Q Plus" Midget R.F. and Osc. Coil Iron Cored.
- 1 "Q Plus" Special Aerial Coupling Coil and Interference Trap.

Supplied Complete with Instructions, etc.



### Some of the Ever-increasing Range of "Q Plus" Lines:

1. IR5 Midget Oscillator Coil .....	4 9	6. Dual-Wave Bracket for 6J8, IR5, ECH35, etc., without R.F. Stage (later release with R.F. Stage) .....	44 0
2. Midget Permeability Tuned IF's ( $\frac{1}{2} \times \frac{1}{2}$ ) .....	13 9	7. Flush-Fitting Knobs in All Colours .....	1 3
3. Midget Permeability Tuned Aer. RF plus Osc. Coils .....	6 11	8. Dial Transfers for Knobs .....	4
4. Midget Loop Aerial with Loading Coil .....	6 11		
5. Air-Cored Broadcast Coils—large diameter for High "Q" .....	4 9		

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Factory Reps., N.S.W., Queensland, S.A.:

A. J. Phillips Agencies, 27 Hunter Street, Sydney, N.S.W.

New Zealand:

Carrel & Carrel, 41 Shortland Street, Auckland.

### PILLOPHONE

(Continued)

tion. For any given amount of distortion the power output is not affected to an appreciable extent. Lengths of leads, their resistance and capacity effects might also be thought to be of consequence, but in practice, using any flex for the leads and dealing with distances likely to be found in the ordinary home, these effects are negligible in practice.

The simplest way to connect the extension leads is to solder them

directly to the two terminals on the speaker's terminal strip to which the flexible voice coils leads of the original speaker are also soldered, care being taken not to damage the cone of the speaker and so on. The task is not a difficult one to anyone accustomed to doing such jobs. The person who is keen on cricket, but not technical radio, may be well advised to enlist the aid of a practical experimenter. The problem is somewhat eased, in the case of the Kingsley extension speakers, as each unit is supplied with full writ-

ten instructions for its fitting, including a diagram for the connections.

\* \* \*

Remember the popular type 82 mercury vapour rectifier . . . the small sized job with a 2.5 volt heater and plenty of uses? The Philips people are now able to supply the type from stock. It is a handy type to have around if you have any of the old-time BC power transformers with 2.5 volt heater winding thereon.



# WELL-TESTED INTER-COM. SYSTEM

AS the demand for inter-com. systems appears to be increasing, the enclosed details of a system manufactured here may be of some interest.

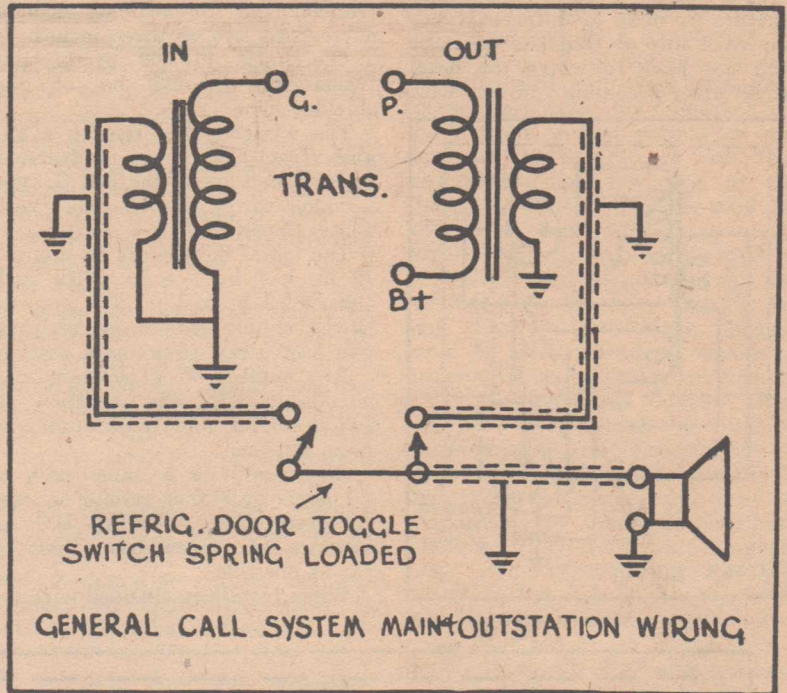
From personal observation many systems seem to suffer from one

By

**RAY BROWN**

C/- Harvey Ivers

Taree, N.S.W.



or more of the following disadvantages:

1. Fifty-cycle hum introduced into the microphone transformer.
2. Installation difficulty and high cost of multiple cable leads, between stations.
3. Oscillation before maximum output of amplifiers is reached.
4. Earthing problems to reduce hum when long runs are made.

The enclosed system is entirely free from these shortcomings, requires no earthing whatsoever and has sufficient output for use in many machine-shops, etc.

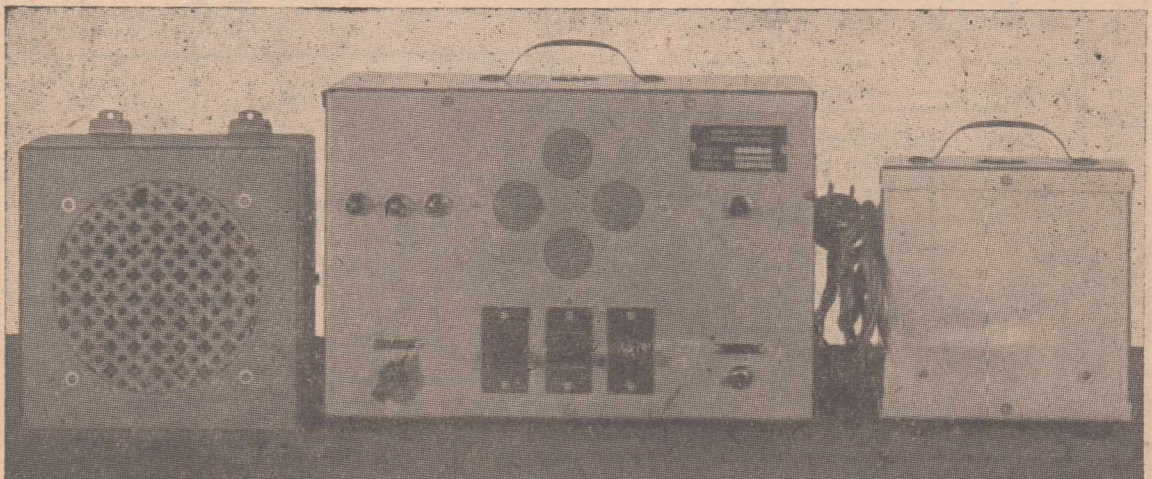
The first system requires a per-

manent operator and would no doubt be generally located in an office where someone is constantly in attendance.

The line indicator has both a bezel pilot and buzzer or bell alarm

and, while it may seem extravagant to use a separate buzzer for each line, the cost of this item is more than offset by the fact that only two wires are required be-

(Continued on next page)



A photograph of the equipment showing the main station in the centre, with an out-station on the left and the power unit on the right.

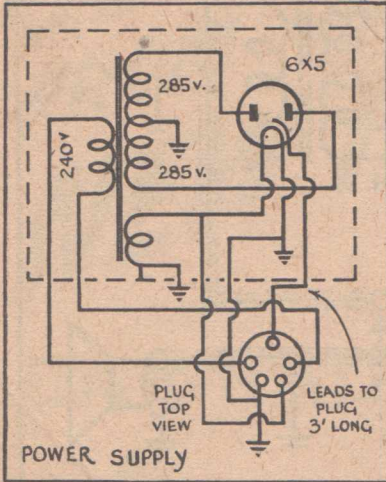


# INTER-COM.

(Continued)

tween points—that is, one shielded and one bell wire.

It is quite a good scheme to use buzzers or bells of different types for each line so that the operator will not have to watch the bezel at all after becoming familiar with



the sound of each line.

Re the construction of the main station—an intelligent approach to layout is desirable and leads from secondaries of input and output transformers to switches should not exceed two or three inches.

The input (15,000 or higher) transformer should be of the shielded type.

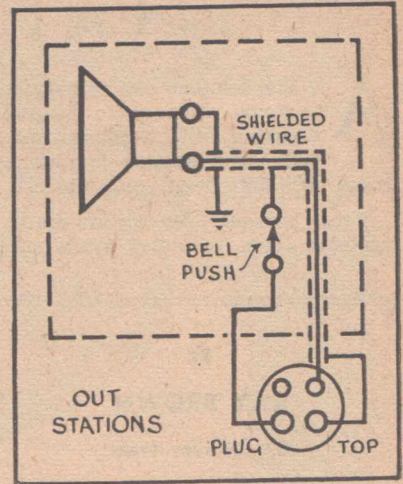
The switches are readily available from Telephone Industries, Sydney, and are of the P.M.G. type—double-throw double-pole with neutral position.

The metal box should be approx. 12 in. x 8 in. x 6 in., with such chassis 12 in. x 6 in. x 2 in., and power supply should be at least two feet away from main station.

Any number of out stations may be used with the addition of switch, bezel pilot and buzzer to main station.

Speakers with a value each of 3.7 ohms or higher should be used for preference to alleviate D.C. resistance of transmission lines as far as possible.

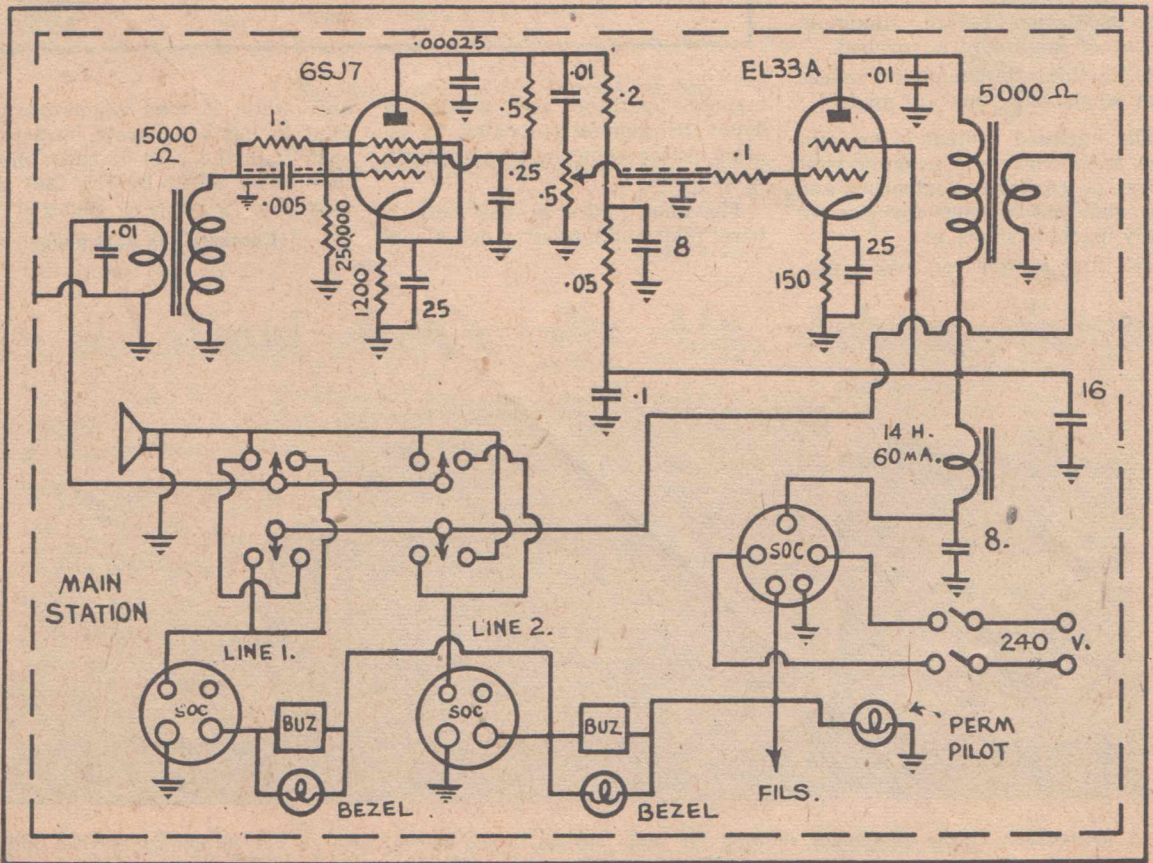
When installing shielded wire be-



tween points it is advisable to keep the braid off conduits or metallic surfaces of any description by the use of spaghetti sleeving, otherwise hum trouble may be encountered.

The second system requires the use of two shielded wires between

(Continued on page 34)





# OSCILLATOR FOR CODE SPEED

**R**ECENTLY I found it necessary to build up a code oscillator to obtain speed of sending for marine operator's ticket as I have found that the usual buzzer method, while being quite satisfactory in most cases, falls short of being ideal when a really good note and speed as well as several outlets are required. When completed and adjusted this outfit left nothing to be desired. The note is very realistic, has several outlets for keys and speakers and as regards speed it can take

By

**L. S. HARRISON**

C/- Yengarie P.O.

Maryborough, Q.

all that you can give it; furthermore, it would be just the thing for code classes. However, let's get down to business.

## Valve

The valve used in the original was a C243N only because it was on hand idle, but seeing that there is very little difference between this type and a 1D4, either can be used; in fact, a 1D4 was tried and the ear could not recognise the difference. This set-up is very economical to run; the portable type batteries can be used and their life will be found to be long. This is only to be expected seeing that the operation is only intermittent. This does not stand to say that a 1D4 or a C243N type tube must be used; other types such as 1F4, etc., could have been used. However, the tubes used gave excellent performance and no need was found to change them.

## Grid Condenser and Leak

When the unit was first tried and I thought I'd save myself a lot of time by using a leak of .25 meg. such as is done in some designs in the A.R.R.L. Amateur's Handbook, using a 1G4G; this arrangement was found to be hopeless. The sound was terrible. In other words, the oscillator was very unstable, so the leak was quickly changed to 50,000 ohms across a .01 mfd.

paper condenser, and away she went, as good as gold.

## Oscillator Transformer

Some may be horrified at first glance to note that two audio transformers are used; this is soon remedied when it is learned that the oscillator transformer is nothing more than a haywire wound tranny, wound in slots as shown in Fig. 2, just like winding a slot-type R.F. choke. The core 2 used was an old audio tranny core of  $\frac{1}{2}$  sq. inch area and wound on approximately 1,200 turns of 40-gauge enamelled copper wire in the centre slot for the primary and the same amount in each of the other slots connected in series for the secondary, giving approximately a 2:1 step up. A good quality transformer definitely is not required here. In fact, if you wind one as stated you can't go wrong. Further, it should be realised that the primary of this transformer is nothing more than a feed-back coil, the real load for the tube being the speaker transformer. Another point to remember, too, is that in an oscillator the feed-back is positive, meaning that the correct voltage in the primary must be in phase with the secondary current and in order to achieve this it may be necessary to swap over the B + 9 voltage plate leads.

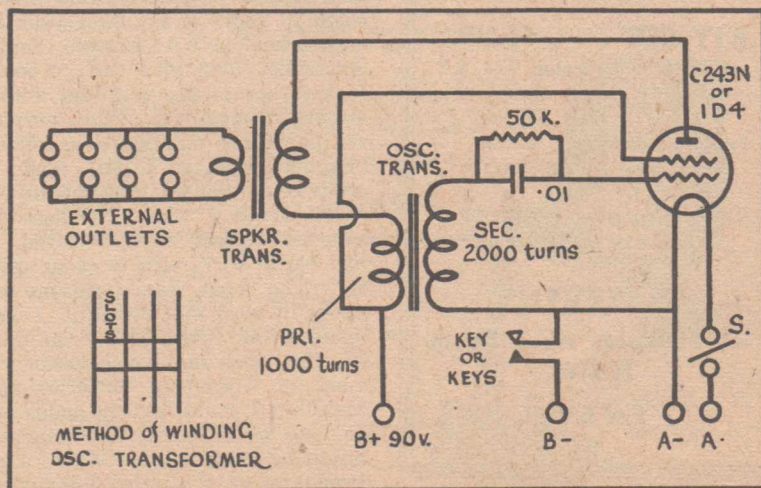
## Plate Transformer

The transformer labelled speaker transformer is used to load the valve and is nothing more than an

old speaker transformer (single ended) of 15,000 ohms to match the valve; but here again this is not critical. A 10,000-ohm tranny could be used with very little difference in output. As is marked in the diagram, several outlets are indicated. This is quite in order so long as one does not rush into it blindly. Attention must be paid to impedance matching, a subject which everyone with a knowledge of radio is familiar, so will not be treated here. Another thought is also that low impedance phones could be used instead of speakers, provided steps are taken to ensure an equal impedance match. This may be accomplished by adding more turns to the voice coil turns already there, provided, of course, that these voice coil turns are on the outside of the main primary winding, which they are in most cases. Some experimenting may be necessary but it is quite practical. Most low-impedance phones now being disposed of are in the vicinity of 100 to 130 ohms and it is not a great task to make this transformer alteration. This oscillator has been constructed and is giving sterling service; so if you want a good reliable little job with some flexibility, here it is.

## Note

With the transformer (oscillator tranny) wound as indicated, no secondary shunting condensers to improve the tone across the secondary were necessary. The natural tone was very pleasing.





# AMONG OUR READERS

CONSIDERABLE interest continues to be displayed in the remarks from subscribers.

One or two readers seem to think that it is hardly befitting our modesty to publish so many laudatory remarks. Since no letters are published without the writer's full name and address it is quite clear that no coercion has been used! We must admit that some of the letters make us blush. Take, for example, the first one this month, a letter from one of our strong supporters who now lives in England but still continues his subscription.

"By now you will have received my bank draft for £1, being my subscription for two years. I would like to add a few remarks on the Negative Feedback amplifier, as reprinted from the *Wireless World*. I have built it, also have two more, one you described in April, 1942, using 2A3's with feedback. It

sounds as good to me, if not better, as all my amplifier friends agree. But the one that beats the lot is a 6L6 direct-coupled job built from Radio-craft of October, 1939. I got it finished last Christmas and a chap came to hear it who had just bought his wife a — outfit which cost him £200. Since then I have built him one. 'Nuff said? I had the amplifier tested for distortion and at 15 watts it is as near nil as to be able to say that it hasn't any. For my own speakers I am using the old Australian Amplion diphonic outfit, which I think I like better than Goodmans or Wharfedale, which is another good English speaker. I would like to say the first thing I ever attempted was your old direct-coupled set, way back in 1930. I have not missed a copy of 'Radio World' since you took over. All I know about wireless I learnt from your articles in *Wireless Weekly* and *Radio World*. Also, if you ever want to sell your new home, will you give me first chance? It would be lovely after all this smoke and soot to smell burning gum leaves again."—Frank Pearce, 32 Little Horton Green, Bradford, Yorks, England.

"Regarding your request that I should write about myself; first, let me say that I have enjoyed reading similar letters, but you may be running a risk in making such a request to conceited persons like myself. I first became interested in radio in my first year at high school in Port Lincoln, South Australia. Reading a science book, I came across a crystal set and a simple transmitter. The crystal set parts list mentioned a coil of 'magnet' wire, so I duly made a crude coil wound with about 12 turns of iron wire. Needless to say, no signals were received. I had better luck with the transmitter. The local 'ham' told me all about it, most emphatically. I was using a Ford spark coil! From then on, the yard and house became a mass of wires, old batteries and anything I could lay my hands on, so long as it looked as though it might be electrical or radio. I soon graduated to a 3-valve Reinartz—

I duly commenced my career as an electrical apprentice with the B.H.P. at Whyalla—my transfer to Newcastle put a stop to my hobby, as I was doing an electrical engineering diploma course and my interest waned to the drastic extent of stopping my subscription to A.R.W. A couple of years without radio became too much, and I started collecting junk again. My subscription to A.R.W. was started again, with the result that my interest in radio became as great as ever again."—W. H. Jacobs, 11 Everton Road, Strathfield, N.S.W.

"I am at present working on a farm. We grow wheat, millet, etc., for grain, and also run cows and pigs. I first became interested in radio at school a few years ago. I read and studied any radio articles I could find, especially those in A.R.W. I was later working in a radio store in Dalby, 25 miles away, but ill-health stopped that and I had to return home to the farm. I then started a Serviceman's Course by mail and recently gained my diploma with 74 per cent. pass. I subscribe to other magazines but I do prefer your magazine as it is exclusively technical. I like Paul Stevens' articles. I have a great respect for that man as he is thoroughly practical, no unnecessary frills—that is the way radio ought to be. I have no complaints to offer, only praise for the way you pack your journal with the right stuff and for getting it out so regularly mid the present trouble with paper. I would like, however, to see a few more articles by your good self. Have just designed and built an amplifier to work off the FS6 vibrator pack. It gives 10 watts of audio. I am going to use it at the Bushman's Carnival here next month."—J. A. Rogers, "Waverley," Bell, Queensland.

(I am sure a great many of our readers would appreciate the story and circuit of the amplifier if you can manage to get the article ready for publication. Many thanks, in anticipation.—A.G.H.)

"I thoroughly enjoy the articles in your publication and have been

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a regular reader for many years now. Even when I was away in the Services my fiancee sent them on to me, and then my wife sent them on when I went away again,

### BATTERY SET

In a recent issue we made some rash promises about detailing a Kingsley circuit. Owing to the promising results being obtained in the Kingsley laboratory with an experimental chassis using the new KU36 type dual-wave bracket it was decided not to go ahead with the original idea. It is expected that a description of the set using the new KU36 coil unit will be ready for next month's issue.

so I never missed a one of them. By the way, my fiancee and my wife are the same person."—Reg. M. Ellis, 60 Ninth St., Mildura, N.S.W.

"I have been reading your magazine for quite some time now and intend to continue to do so. I find it to be most interesting and I think it is the best available for a man past the beginner's stage, although I am sure that new chums profit as much as I do.

"I am now doing the second year communication engineering diploma course at the Melb. Tech. under the C.R.T.S. Consequently I have little time for radio as a hobby. What little time I can spare is directed to running a small servicing business to help supplement my rehab. allowance."—Mr. L. Ralph, 83 Park St., Abbotsford, N.9, Vic.

"I had hoped to submit details of a receiver which I have under construction, but it is still in the design stage. In an attempt to secure good reproduction, an ex-Army No. 11 receiver I.F. Channel, band-passed 451 to 459 kC/s, has been adopted as the basis. There will be two R.F. stages, possibly one having an EF50. The converter stage, on which there will be no A.V.C., an ECH35. I consider the easiest way out of possible troubles with A.V.C. on converters is to leave it off, especially

where there are multiple R.F. and I.F. stages. The two I.F. stages will have 6SK7 tubes, and the second detector will be a 6H6, wired in the "compensated diode" circuit described in the Radiotron Designers' Handbook, which have been found very satisfactory in the past. The audio channel may include a volume expander circuit, although the value of this with modern recordings is doubtful. It may be of some use to improve the poor transmission of some of our broadcast stations. Tone compensation based on variation of in-

verse feedback will probably be incorporated. The speaker to be used is a Hartley-Turner.

"As often happens with experimental sets, almost anything might happen before it is completed.

"Incidentally, also under construction at the moment is a two-tube oscilloscope, each tube fed from the same time base, to provide monitoring of both input and output of an amplifier under test."—C. McI. Janes, 48 Maitland St., Narrabri, N.S.W.

(Continued on page 26)

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## Multiple Telephone Conversations

AUSTRALIAN papers recently reported a statement of the Postmaster - General, announcing that a new radar telephonic transmission system will soon be tried out to relieve the load on trunk lines. This system will be able to carry 24 conversations at the one time. Senator Cameron also stated that in America systems able to carry 100 conversations per channel were being developed.

It may be of interest to Australians—especially those who frequently use trunk lines—to know that both in Switzerland and Holland telephone systems are in use which carry 1152 simultaneous conversations per channel. The system used is an invention of Philips, the Dutch electrical and radio concern, and is called the carrierwave cable system.

Two cables are used, each containing 24 pairs of wires. On each pair of wires 48 people can speak in one direction without interference; over the two cables 24 x 48 = 1152 conversations can thus be carried on simultaneously both ways. With the telephonic systems in general use at present 4 cables, each 7 centimetres in diameter, would be required to accommodate the same number of conversations. The two cables of the carrierwave system are only 3 centimetres (1.18 inch) in diameter. In view of the world shortage of cable material, which is holding up extension of telephone networks everywhere, this new carrierwave system is obviously of great importance. But even in normal times the saving effected in the cost of material and of installation are so large that general adoption would no doubt be assured.

The first carrierwave cable exchange in Switzerland was built by Philips in Chur, 56 miles from Zurich. It was named "Ratolanda," a contraction of "Ratia," the Swiss province in which the exchange was erected, and "Olanda," which means Holland. The first people to make use of it were the hundreds of journalists who attended the recent Olympic winter games at St. Moritz.



# COMMUNICATIONS COIL ASSEMBLY

*Ambitious Design by Aegis Co.*

ONE of the most ambitious designs of coil assemblies is soon to come on the market.

This is the Aegis type KC4, which is to be supplied as a complete sub-assembly ready to drop into a big chassis, making up a most powerful receiver, with 16 control knobs!

Supplied complete in the coil assembly are two three-gang condensers, one for band setting and the other for band spreading. Mounted under the coils, but also as a part of the assembly, are the three valve sockets for the r.f. amplifier, converter valve and separate oscillator. Also supplied as part of the big coil assembly are two slow-motion drive units and a calibrated plastic dial.

Wave-lengths covered are right from ten metres to the broadcast band, in four main bands, viz., (1) from 550 to 1500 kC/s; (2) from 1500 kC/s to 4 mC/s; (3) 4 mC/s to 11 mC/s and (4) from 11 mC/s to 30 mC/s.

Band spreading is provided for five "ham" bands, as follows: (1) 3.5 mC/s to 4 mC/s; (2) 6.9 to 7.3 mC/s; (3) 14 to 14.4 mC/s; (4) 20.5 to 22 mC/s and (5) 27 to

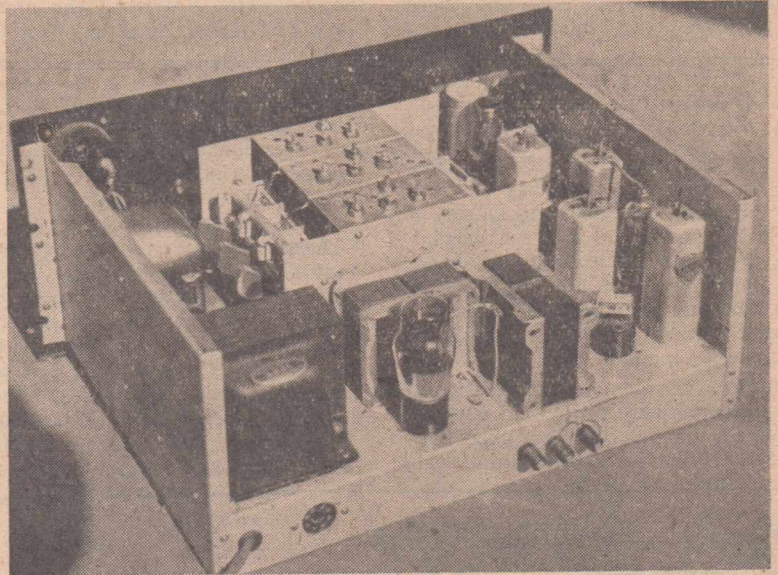
30 mC/s.

The circuit for the body of the receiver with which the coil assembly is to be used can be designed by the builder to suit his own taste or he can follow a circuit recommended by the Aegis de-

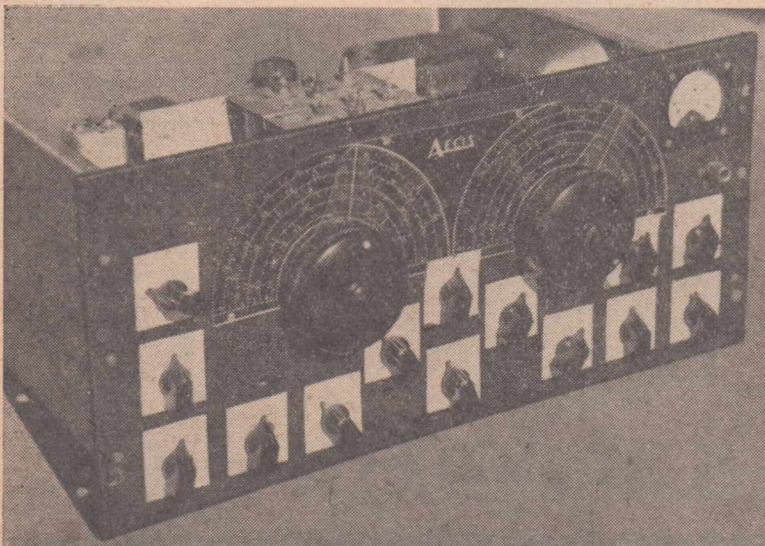
signers. However, the r.f. amplifier should be a 6SK7GT, the converter a 6AC7-1852 and the separate oscillator a 6SK7GT. The sockets for these valves are not only fitted to the coil unit, but are also completely wired up so there is no question about the correct circuit for use at this end of the set. Construction of the coil unit is interesting as it is actually built up in three sub-sections. Concentric air trimmers are used throughout, and a six-section oak switch includes shorting banks to short out all coils not in use. An aerial trimmer control is brought out through the front panel with a quarter-inch shaft. Screws for adjustment of the iron cores in all coils are readily accessible from the top of the unit, as are the trimmer screws, too.

Our photographs show the experimental chassis which has been used for the initial design work and testing of the new coil assembly. Further details of this set are being prepared and should be ready for description in next month's issue if all goes well. It is not the

(Continued on next page)



Rear view of the prototype chassis, showing the coil assembly in the centre.



Front view, showing the impressive array of controls on the panel.



# THE RIBBON BEAM

Following on the "Ribbon Beam," Commander Ironmonger, G8PO, says: "The phase delay that occurs in a transmission line is dependable only where no standing waves exist on the line. In other words, if there is a mismatch between

feeders and antenna, the operation of the system will be upset. Although one might appear to have a match between line and antenna, say, by using a 72-ohm line, and assuming the centre of the dipole to be 72 ohms, in actual fact the

line can still have standing waves on it due to the antenna 72 ohms being reactive instead of resistive. The point is that many amateurs do not realise this. Thus we have the reason for the main feeders having to be of critical length. Just whether or not that critical length is an even number of quarter waves is yet undecided. In certain cases one would only be able to correct for standing waves on the line can still have standing waves This is bound up with the type of reactance the dipole shows to the feedline. If it is a capacitive reactance the main feeders would be an odd multiple of quarter waves long. This is due to the line in the capacitively loaded case acting as an open-circuited line, and in the inductively loaded case as closed-circuited. The standing waves are differently placed in either case. Some experiments have been made by G8NY, using a variable delay

## COILS

(Continued)

present invention of the Aegis Manufacturing Company to market this unit as a complete kit-set, but rather as a coil and r.f. assembly which can be used by an experimenter to build up into a receiver with any standard components or with parts which he happens to have on hand.

At the moment of writing the price of the unit has not been fixed, but as will be expected it will be a fairly solid amount, but

not unduly so, when the amount of material in the unit is considered, or when you take into account the value of the completed receiver which can be built from it.

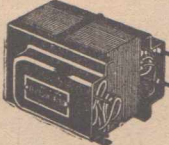
### Another New Line

Another new line from the Aegis factory is a range of plastic nameplates which are claimed to be the first plastic nameplates on the Australian market. The nameplates list at a few pence each and are available with the following letterings: Pick-up Volume, Microphone Volume, Pick-up Tone, Output, Tone, Input and Volume.


(Continued on page 25)

# MAGRATHS HAVE THEM..


**FERGUSON OUTPUT TRANSFORMER,** Type O.P.5 . . . multiple tap primary and secondary output transformer — 15 watts. Priced at 5/6. All other Ferguson's transformers stocked.



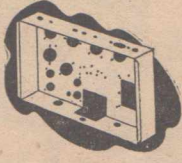
**ABAC (Trimax) TRANSFORMERS.** All types, including TA3 Single or Push-Pull . . . 10,000 ohm PLATES to Push-Pull Grids. Turns ratio 1-2 40,000 ohms PRI 160,000 ohms, SEC plus 1.0 db. 30/10,000 C.P.S. Priced at 70/- each.



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# THE "ECONOMY" THREE

*Simple Set Available in Kit Form*

WE, of Aegis, believe that many suburban families are desirous of an extra radio in the home, but feel that they cannot afford to pay present-day prices for that second

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Designed and Described

by

**ENGINEERING STAFF**

Aegis Manufacturing Co.

Melbourne

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radio. The necessities for a second radio are numerous. A few examples, for instance. The housewife usually enjoys listening to the week-day morning serials and since much of her work is accomplished in the kitchen, that is the ideal place for it. Every morning at breakfast, one who has to be at work on time (and who doesn't?) is constantly reminded of the correct time if there is a radio in the kitchen. Or perhaps the children have special sessions they like listening to, so with a second radio in their room they can have their own radio entertainment without annoying the adults of the family. Another popular use would be to take the set out of doors into the garden where the man of the house can listen to the races and ball games while at the same time accomplishing his Saturday afternoon work.

With this thought in mind we have developed the "Economy Three" Kit Set, a moderately small mantel radio, attractive in appearance, light in weight, economical to operate, and at a price within everyone's reach. Yet with a "built-in" aerial as a special feature it will give ample volume on all local stations. Anyone who can solder and use a few ordinary tools can built it and no laboratory equipment at all is needed for alignment when the kit has been completed.

## Assembly

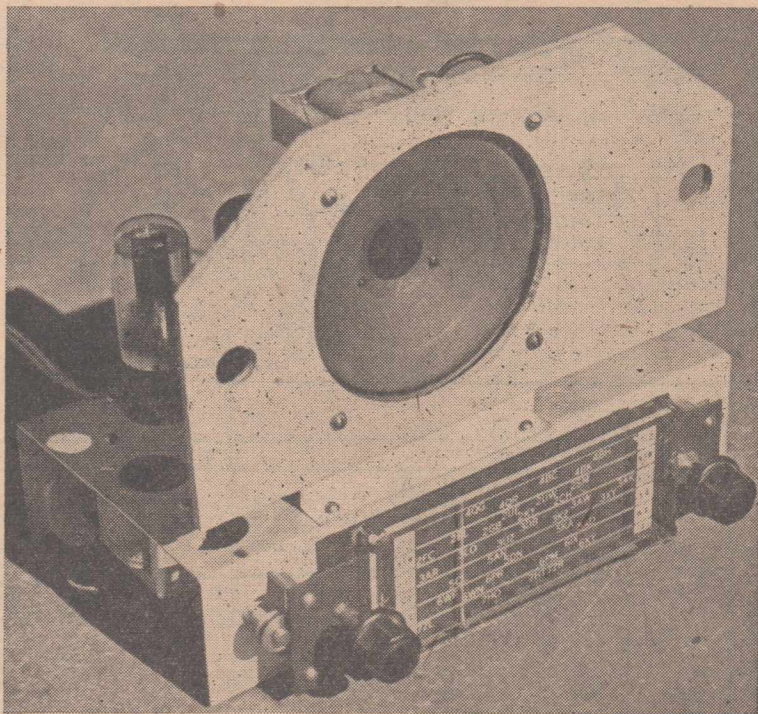
First of all, examine all the diagrams and study the correct positions of all the components, and, having done this, mount the three valve sockets on the underside of the chassis, using the ¼-inch x ⅛-inch screws and nuts. Now group all parts for the dial assembly together and with the two special diagrams on this subject placed in front of you, carefully assemble all the parts in the manner shown. Tubular spacers of two lengths are now furnished for positioning the dial backplate out from the chassis the proper distance. This is the only change from the procedure shown on the diagram. The next operation is mounting the tuning condenser, or gang, whichever you choose to call it. This unit is mounted up from the top of the chassis with three ⅜-inch

spacers and three ½-inch x ⅛-inch screws. Following this, close the rotor plates so they are fully meshed and slip the dial drum on the shaft underneath the chassis. Rotate the drum to its correct position, as illustrated on the dial diagrams, line up the edge with the pulleys, and tighten the grub-screws.

## Instructions For Fitting The Dial Cord

Start with the pointer carriage and thread the dial cord through Hole 1, and out through Hole 9, so that 24 inches of cord is left free from both holes. With the gang condenser at maximum capacity, adjust the dial drum so that the cord slots are in the position shown. Pass the cord around pulley 2, then pulley 3, through the hole in the chassis 4, around the

(Continued on next page)



Front view of the chassis after it has been removed from its moulded-bakelite cabinet.



(Continued)

drum 5, through the slot 6, through the tension spring 7, and without tying any knots on the spring, attach the cord to a screw in the centre of drum 8, temporarily. Taking the rest of the cord, attached to the pointer carriage 9, put two turns around the tuning spindle 10, making sure to start from the front and top of the spindle. Then pass the cord around pulley 11, through the hole in the chassis 12, around the drum 13, through the slot 14, and pass through the tension spring 7, from the opposite side to the first cord. Free the first cord and holding one cord in each hand, tie a single overhand knot, as though tying a bootlace. Then by pulling with both cords, the tension can be increased until it is satisfactory, and the knot pulled tight at the same time. This knot will hold sufficiently to check the operation of the tuning mechanism and when it proves satisfactory a couple of extra knots can be tied and the surplus cut off.

THE AEGIS "ECONOMY THREE"

Parts List

- |  |                                     |
|--|-------------------------------------|
| 1—Cabinet, bakelite, inc. grille and baffle. | 2—8 mfd. electrolytic condenser.    |
| 1—Dial assembly complete with glass.         | 1—25 mfd. electrolytic condenser.   |
| 1—Dial drum 3-inch.                          | 6 ft. Power flex.                   |
| 1—"Aegis" M12 coil.                          | 5 ft. Black hookup wire.            |
| 1—"AWA" single-gang condenser.               | 6 inches Red hookup wire.           |
| 1—"Rola" speaker with transformer, type 5C.  | 6 inches Green hookup wire.         |
| 2—Knobs, "Aegis."                            | 6 inches Spag. insulation.          |
| 1—Universal chassis, "Aegis."                | 18 inches Tinned copper wire.       |
| 1—Speaker bracket, "Aegis."                  | 1—Soldering lug.                    |
| 1—Red terminal.                              | 3—3/8-inch spacers.                 |
| 3—Octal valve sockets.                       | 11—1/4-inch x 1/8-inch R.H. Screws. |
| 1—40 mA. power transformer.                  | 3—1/4-inch x 1/8-inch R.H. Screws.  |
| 1—"Rola" filter choke, type 6/60.            | 4—5/8-inch x 5/32-inch R.H. Screws. |
| 1—1/4-inch rubber grommet.                   | 4—1/4-inch x 1/8-inch C.S. Screws.  |
| 1—Mounting Strip.                            | 4—5/32-inch Nuts.                   |
| 1—420 mmf. mica condenser.                   | 8—1/8-inch Nuts.                    |
| 1—250 mmf. mica condenser.                   | 1—1/8-inch Shakeproof washer.       |
| 1—100 mmf. mica condenser.                   | 1—3/8-inch Shakeproof washer.       |
| 1—.1 mfd. paper condenser.                   | VALVES REQUIRED—                    |
| 1—.01 mfd. paper condenser.                  | 1 each 6J7G, 6V6GT, 5Y3GT.          |
| 1—.004 mfd. paper condenser.                 |                                     |

CARBON RESISTORS

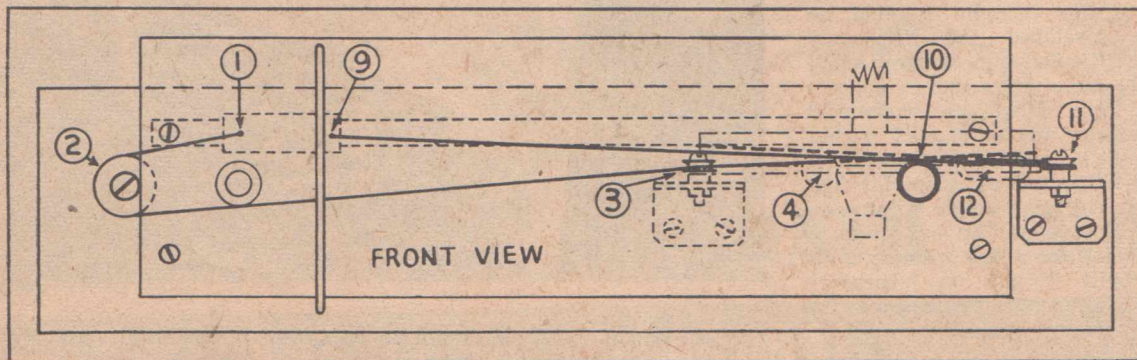
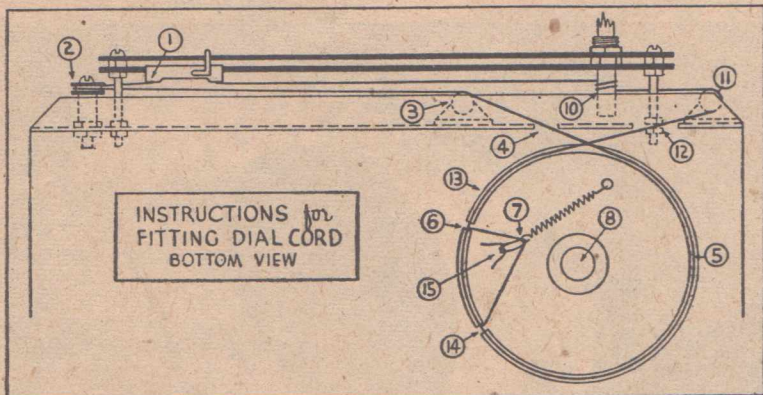
Value	(Body)	Colour Code (End)	(Dot)
1—1 megohm 1 watt	Brown	Black	Green
1—5 megohm 1 watt	Green	Black	Yellow
1—.25 megohm 1 watt	Red	Green	Yellow
1—1 megohm 1 watt	Brown	Black	Yellow
1—250 ohm wire wound.			
1—.25 megohm potentiometer.			

Further Assembly

Mount the power transformer. First remove the two nuts and in-

sert it through the square hole from the top of the chassis. Make certain the side marked 0-210-240 is positioned at the centre line of the chassis underneath. Next mount the M-12 Coil and H.T. Choke as illustrated. Follow up by screwing on the speaker mounting bracket in front of the power transformer, insert the rubber grommet in the large hole at the rear of the chassis, and mount the red terminal as illustrated. Take care that the terminal screw does not make contact with the metal chassis. The speaker and baffle are left off until the wiring is completed.

The fitting of the dial cord may be a little tricky until you follow out these diagrams.









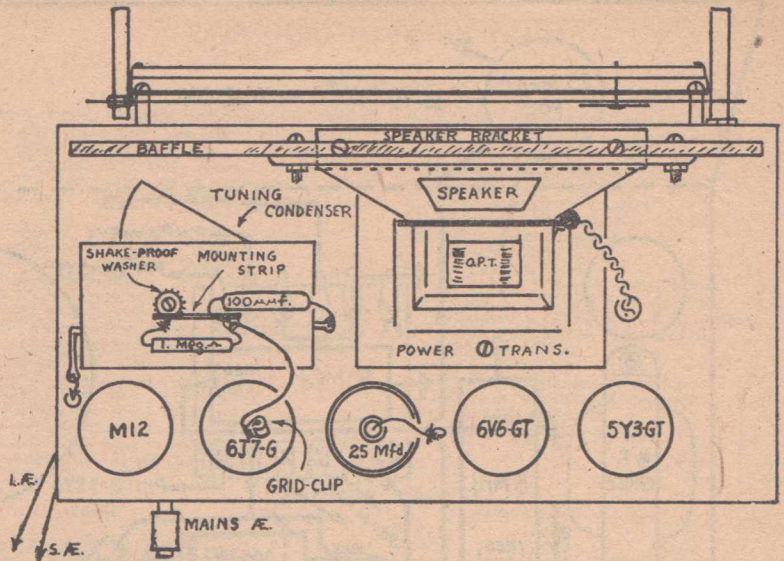
## ECONOMY 3

(Continued)

leads on the condenser are long enough to reach directly across from the terminal to the transformer and it should be connected in this manner. First, though, before soldering in, cut off all excess length of wire lead and slip on a bit of spag. insulation to ensure no possible contact between the condenser leads and other parts. Last of all, wire in the speaker and don't forget to wire in the grid clip on the top side of the gang. Another picture diagram illustrates this.

### First Test

Now is the moment you have been waiting for. Connect the short aerial lead, or red wire, to the red terminal. Plug in the 6J7-G and the 6V6-GT. Don't forget to connect the grid clip. Turn the volume, or regeneration control, all the way to the left or counter-clockwise, and plug in the power. Allow the valves to warm up for thirty seconds, then plug in the 5Y3-GT, but watch very closely that the plates of the 5Y3-GT do not get red hot or a blue glow does not appear on the inside of



the glass. If either appears, quickly turn off the power, because this will indicate you have a short circuit somewhere in the high voltage wiring. In this case, recheck your wiring carefully. If, on the other hand, everything seems normal, advance the regeneration control until a squeal is heard, then back just enough to eliminate it.

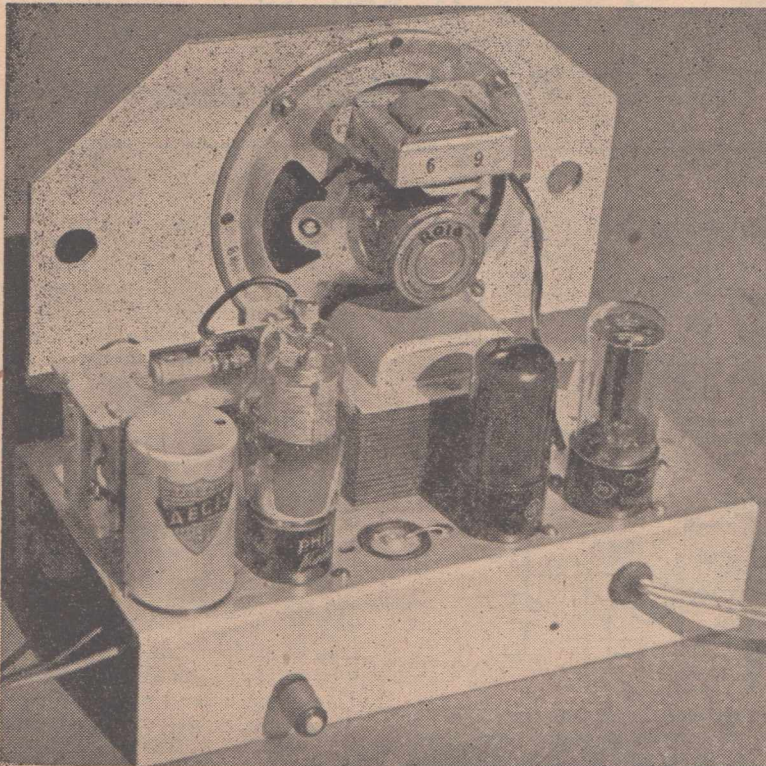
Turn the dial until a station is heard clearly near the 1300-1400 kC/s end. When you have identified the station, loosen the grub-screws on the dial drum and rotate it until the pointer coincides with the station call letter on the dial. Having done this, tighten the grub-screws and your alignment is complete.

### Operation

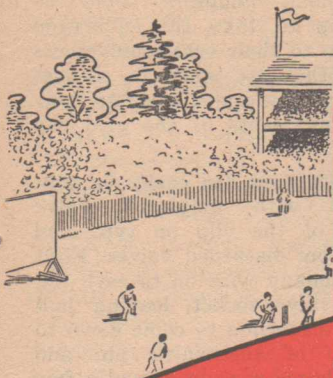
Don't be alarmed at the squeals which occur when the volume is turned up. Every set of this type does that; always has and probably always will. You will also find that selectivity is best at high volume. That, too, is characteristic of its type.

### Aerial Experimentations

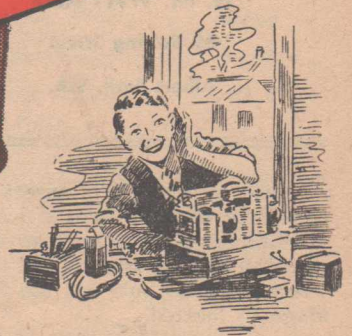
If you like to experiment with radios, here's a good chance for you. When an external aerial, and perhaps an earth, are used, you will find it will work best on only one of the two aerial leads coming out from the radio. You will also find that various lengths of aerial will shift the stations on the dial and the pointer will have to be reset. Selectivity will also be affected. With further experimentation you will no doubt find a fixed length of aerial which will give you greater volume and selectivity than the mains "built-in" aerial. If that is what you desire, well there's something interesting for you to work out for yourself. Radios of this type are very critical of aerials and each one has to be adjusted individually as to external aerial length and to the locality.







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Yes, the cricket enthusiasts can monopolise the radio—now that the family has its "second set"! Despite the lowest Aegis price ever offered, this "easy to build" A.C. Kit has all the quality features you want, such as—

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- ★ Cadmium-plated Metal Parts, including Chassis.

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# SERVICING BY SUBSTITUTION

**T**HE first step is to localise the fault.

If a set fails to operate, place the finger on the grid caps of the various valves and if the set doesn't respond to this disturbance test, the faulty stage is located.

If on the other hand the trouble

By

**H. M. WATSON**

89 Botting Street

Albert Park, S.A.

is noise or distortion, insert a .5 condenser between grid and earth, starting from the output valve and working back to the 1st RF stage, when the noise cuts out the faulty stage is located.

A resistor box such as that described in the January issue and a condenser box built on similar lines (Fig. 1.) can quickly check all resistors and condensers in the stage that is giving trouble. If this is unsuccessful unsweat one end of each condenser in twin, again making a substitute test, this will reveal a shorted condenser.

So much for the condensers and resistors, the next step is to check the valves; this is accomplished with a set of octal valves, a few adaptors that can easily be constructed to convert the older types of 4, 6 and 7 pin valves to their octal equivalents and a filament transformer.

The adaptors are made up from old valve bases and octal sockets and the following connections will cover most of the 6.3 and 2.5 volt series that one is likely to come across.

The filaments leads are left protruding on the adaptors so that they may be attached to a filament transformer if necessary. If the original valve is a 6.3 volt type, connect each of the two red leads to each of the blue leads. For a 2.5 volt original valve, connect the two reds to the 6.3 volt winding

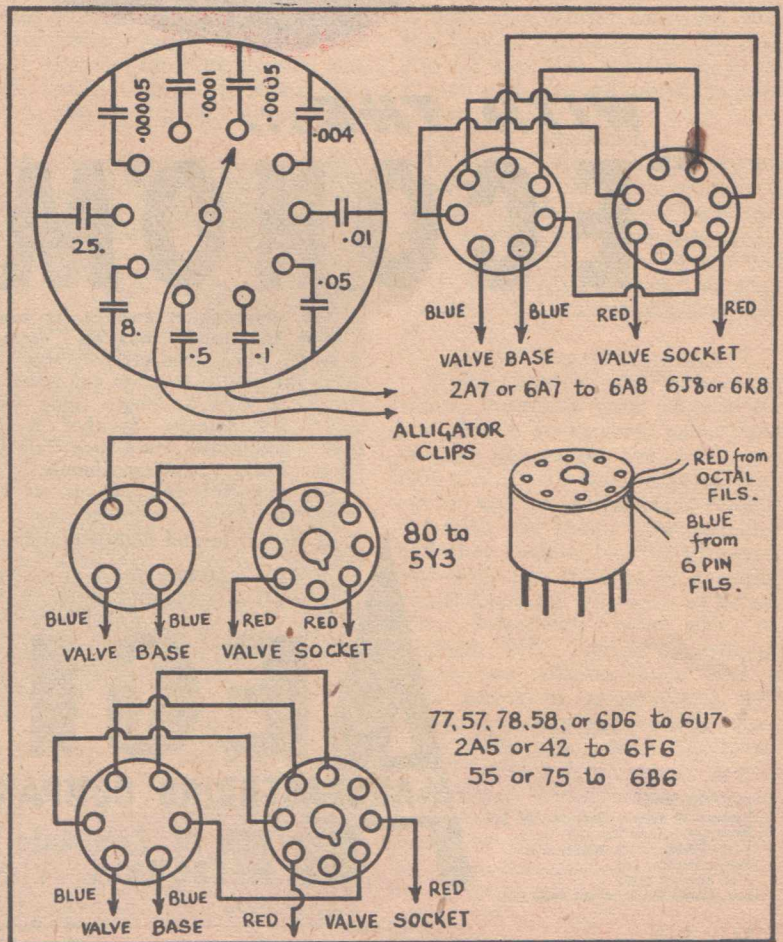
of the filament transformer and the two blues to the 2.5 volt winding.

If you have a set with a line up of 6J8, 6U7, 6B6, 6F6, and SY3 then with these five valves, three adaptors and a filament transformer you have a means of substitution for more than twenty different valves as in addition to those listed, at a pinch a 6F6 can substitute for a 6V6, a 6U7 for a 6J7 etc. Of course if you have other valve types on hand there are many others that can be substituted using the same adaptors, such as 1H6 for 1B5, 1K6 for 1K7, 6N6 for 6BS, 19 for 1J6, 41 for 6K6, 43 for 25A6 in the 6pin series and 5U4 for 5Z3, 6B4 for 6A3, 1H4 for 30, 1DS9 for 34, and 5V4 for 83 in the 4 pin series.

Additional adaptors could be made up to take the "P" type bases up to their octal equivalents and another set made to convert the new single ended types to their older equivalents of the grid cap variety.

The adaptors can easily be constructed with amphenol valve sockets of the clip on type and bases from discarded valves. First solder hookup wire on to each lug of the valve socket, leaving just enough insulation to come down to the top of the valve pin and enough bared wire to extend a fair way through the valve pins, this enables all the leads to be pushed through the pins without the base getting in the way. When all the wires have been drawn through the

(Continued on page 34)





## AMATEUR STATION LICENCES ALTERATIONS

- VK4AN**, E. Heckenberg, Woodstock Avenue, Taringa, Q'ld.  
**VK2VM**, G. W. Morris, 134 Falcon St., Westmead, N.S.W.  
**VK2AFR**, R. J. Reynolds, 12 Cotswold St., Westmead, N.S.W.  
**VK3ALW**, O. L. Wirsu, 31 McArthur St., Moorabbin, Vic.  
**VK2AKW**, G. H. Humphrey, now 42 Carlingford Road, Epping.  
**VK2DS**, W. St. Clair, now Kempsey Road, Port Macquarie.  
**VK2LU**, R. Collett, now 50 Sharpe St., Belmore.  
**VK2FN**, T. G. Noble, C/- 62 James St., Murwillumbah.  
**VK2VQ**, J. W. Paton, now 78 Fairlight St., Manly.  
**VK3ACS**, K. C. Seddon, now 7 Wilson St. Brighton.  
**VK3FQ**, A. C. Yeomans, now 25 Duke St., Kew.  
**VK3AHJ**, H. Jupp, now Glenroy R.d., Glenroy.  
**VK3QE**, E. L. Einsedel, now corner Draper and Blackshaw Streets, Ormond.  
**VK4UX**, C. P. Singleton, now Tyrell St., Stanthorpe.  
**VK4DC** (formerly VK4QA), K. Khan, 22 Sheridan St., Cairns.  
**VK5VC**, J. G. Mason, now 10 Buxton St., Alberton.

## NEW ISSUES

- VK2MX**, J. W. Jennison, "Walla-roo," Mathoura, N.S.W.  
**VK3PB**, G. J. Griffiths, 59 Flemington Road, North Melbourne, Vic.  
**VK3AAJ**, R. A. Fookes, 41 Oxford St., Burwood, Vic.  
**VK3AMR**, M. J. Rieper, Bent Street, Bairnsdale, Vic.  
**VK3AKB**, A. K. Ballantyne, 66 Coch-rane St., Brighton, Vic.  
**VK7OL**, O. L. Brown, 314 Davey St., Hobart, Tas.  
**VK2SR**, G. E. Switzer, 177 Bacon St., Grafton.  
**VK2WZ**, J. H. Lean, 57 Brook St., Naremburn.  
**VK2YK**, C. A. Coyle, 84 Carlton Crescent, Kogarah Bay.  
**VK2YS**, N. B. Littlejohn, 23 Victoria St., Strathfield.  
**VK3MI**, W. A. McLeod, 6 Palmer-ston Grove, Oakleigh.

**VK3ASS**, Army School of Signals Radio Club, Balcombe.

- VK3ABO**, M. Nichols, 3 Alfred St., Mornington.  
**VK3AGF**, G. T. Bartlett, 132 Mad-den Ave., Mildura.  
**VK3AFG**, T. A. Glover, 26 Mac-arthur St., Sale.  
**VK3AGX**, R. G. Rivett, Springs Rd., Clayton.  
**VK3AGO**, E. C. Sloss, 43 Roslyn St., Burwood.  
**VK5TD**, T. J. Davies, 53 Cator St., Glenside.  
**VK7CA**, M. A. Chaplin, 33 D'Arcy St., South Hobart.  
**VK7AN**, W. C. Gee, 5 Winscombe Crescent, Sandy Bay.  
**VK6BM**, C. Medbury, Carroll Street, Applecross.

## PRACTICAL AMATEUR'S CORNER

The new edition of "Radio Hand-book" (U.S.A.), in dealing with AM systems, diagrams on page 117 a "new arrangement for grid bias modulation." Old hands will recognise it immediately as the once very popular "Telefunken" scheme, which was in use in British amateur gear, to the writer's knowledge, in 1921. G2OM used it, and, I believe, took out a patent on the method about that time. In the 1930's it was very much in vogue with VK's. One Sydney B/C station of that era, 2CH, was equipped with a German-made transmitter incorporating "Telefunken Modulation."

## THE RIBBON BEAM

(Continued from page 18)

section. This method uses a large variable condenser (25-500 Pf) in parallel with the delay section, and some remarkable results are obtainable. The tuning condenser is then adjusted until the receiver "S" meter reads a minimum. This is the state of maximum front to back ratio and is really high when correctly adjusted. The condenser actually raises the vertical angle of radiation as well as the back to front ratio. In consequence, one can get some interesting effects on signals coming in at high angles, also on signals arriving at the ends of the array.

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# HOW TO BIND YOUR ISSUES

I HAVE filed some of the first issues of Radio World. Oh, what a difference in todays in size, but although small, the technical set-up is much better. I lost interest in the early issues as some of the articles were not complete in each issue as should be.

By

## A CONTRIBUTOR

whose name and address have been mislaid.

I have most of the copies to 1944. The 1944 to 1947 issues are bound up in a yearly binding, that is January to December, being compact and therefore separate copies do not get lost.

The main item is that your paper being all technical, not padded up with other reading and advertising matter which has no appeal to a radio constructor.

## OUR READERS

(Continued from page 15)

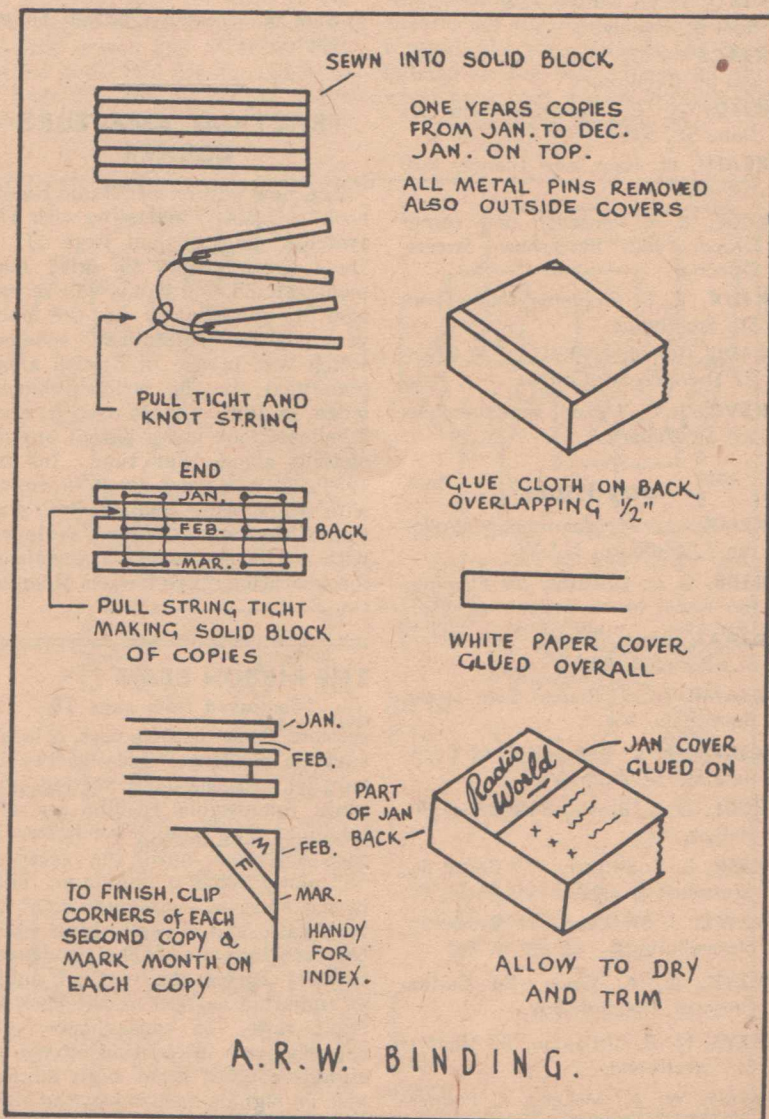
"Having been on the convalescent list for three years following a series of chest operations I have quite a large amount of spare time on my hands and have derived an immense amount of satisfaction from radio. I have just completed a Serviceman's Course with the Australian Radio College and am waiting anxiously for the results. As soon as I can master the code I intend applying for an amateur licence. It was Don Knock's articles on amateur doings that interested me in ham radio. I personally favour the V.H.F. and U.H.F. bands as I believe that they offer more scope for experimentation." —John W. Down, 3 Stewart Street, Parramatta, N.S.W.

To bind the copies:

1. I first remove the metal clips.
2. Take off all the covers.
3. Put aside the cover marked January.
4. Stack the 12 copies in order, January on top to December at bottom.
5. Then sew the copies together across each end, taking the thread through the centre of each monthly copy **knottng** each issue to the other. keeping the pile of copies square.

6. Glue piece of coarse cloth on the back overlapping the sides by  $\frac{1}{2}$  inch.
7. Glue piece of white paper on like a cover.
8. Glue on January cover on top and down back.
9. Turn over and glue back of another cover to form complete cover as full January cover.

The above takes very little time, under 30 minutes and is well worth while.





## CALLING CQ!

By Don B. Knock, VK2NO

THERE should be plenty of activity on the newly-acquired 144 mC/s band if the wave of "522-itis" sweeping VHF ranks is any indication. In working order, the SCR 522 is all set to perk on that band without much ado, which is, of course, a handy way to get a start on 144. There is something, however, about the rush to acquire these equipments that doesn't savour too much of amateur radio as we once knew it. I'm not suggesting that we should be retrograde, or retard progress in any way . . . but where is the real thrill of the game . . . in the making up of your own gear . . . or in the usage of commercially-acquired gear? It all depends upon the way you look at it. My own reaction to ex-Service gear is to make use of "bits and pieces" in the building up of gear of my own devising. By that I don't mean that a process of deliberate "butchery" on workable

ex-Service gear, but the fun that comes from a prowling around such places as Royal Arcade or Angel Place in Sydney. Five bob for this and two bob for that . . . and you may be very surprised at the things you are likely to acquire. Also you may, in time to come, be equally annoyed with yourself at the good things you may have passed by unwittingly. Sufficient to say here that with the preponderance of VHF stuff knocking around, the boys who are interested have had little or no difficulty in "breaking out in a 144 mC/s rash." Witness the almost desert-like silence on 50 mC/s these days . . . mainly because of the new toy that attracts so many a few mC/s higher. After all, the main object of any VHF band occupancy is communication with stations in a workable area. It won't be done any more efficiently by migrating from 50 mC/s; possibly much less so, but the attrac-

tion lies in compactness of equipment. We have had 166 mC/s for three years or so, and it has been made reasonably good use of at intervals . . . replacement by 144 mC/s is not likely to be revolutionary. On the score of compactness, I am more attracted by 420 mC/s if and when that channel is granted, but I can't help feeling that it is a pity we VK's are not to get 230 mC/s, as decided at Atlantic City. 420 mC/s will call for semi-UHF, rather than VHF technique, and standard valves simply won't be of much use there. But think of antenna arrays with half-waves 12 inches in length! Amateurs with a yen for point-to-point work over a mile or two surely will have an attractive channel for such work in 420 mC/s.

Reported that a few stations in the Sydney area made a start on 144 mC/s on May 1, and these included VK's 2AGH, 2WJ, 2PF, 2NP, etc. In Wyong, VK2OC is on the band, and in Newcastle the indefatigable VK2BZ is well on the job. These two stations are likely to tie-up easily on 144 mC/s and VK2RU in Gosford won't be far behind in the picture. Being busy with HF affairs, VK2NO is comparatively inactive on 50 mC/s these days, and can see no prospect for the immediate future of having the necessary spare time to even convert the old 166 mC/s gear to 144. No DX has been reported lately on 50 mC/s and that phase of activity on the band seems to have passed. There will undoubtedly be Sporadic E occasions in the summer months yearly, but for the overseas working that the Northern Hemisphere enjoyed and which has been completely non-existent on this side of the Southern Pacific, it looks as if 1958 will be the next issue. By which time

(Continued on next page)

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

Eighteen years have passed since the inauguration of the Lakemba Radio Club, and May 6, 1948, was the occasion of the annual get-together under the aegis of the post-war successor body, the ERS (N.S.W.). Attendance totalled more than 50, including members and guests, the chair being taken by President Ron Blades (VK-2VP). Following the Loyal Toast, the Wireless Branch was toasted by Chas. Luckman (VK2JT), with response by Mr. Holt, the RI now handling amateur affairs in this State. VK2LS, Lionel Todd, was also on hand and referred to some correspondence from amateurs of those days, saying that "it would be easier to work between city and country districts if the Dept. would

permit the use of 400 instead of 150 metres." Bill Picknell, foundation member, toasted the E.R.S. and reminisced on early days. Vice-President Warren (VK2QX) proposed Kindred Societies, and responses were made by members of the W.I.A., Gladesville, Waverley, Kingsford, Hurstville and St. George organisations. One minute silence was observed in honour of radio amateurs who lost their lives during the recent war.

Membership of E.R.S. is growing and Sydney amateurs within easy transport reach of Burwood who like good fellowship at meetings should contact the secretary, W. Hayes, 34 Nicholson Street, Chatswood, N.S.W., who will be pleased to welcome them.



## HAM NOTES

(Continued)

we shall be interested in other things no doubt.

\* \* \*  
VHF men in particular should be interested in a new type of feeder spacer now available in quantity in this country. The type is something new in both amateur and commercial fields and is designed especially for use with 300 ohm spaced lines. Moulded in polythene, these extremely lightweight oval-shaped spacers are an excellent answer for those who prefer open wire lines to the "ribbon" kind. Polythene is the most efficient RF insulation material known to radio-chemistry. Source of supply for these spacers is C. S. C. Sweetman, 31 Chesser St., Adelaide, S.A. One obvious application for them is in the construction of open-wire folded-dipole radiators as well as feedlines constructed in the same way.

\* \* \*  
No listener is better known in this world than BERS195, otherwise, Eric Trebilcock, of Wynyard, Tasmania. Eric prefers listening to transmitting; ample proof of which liking is the fact that he

got his ham licence just prior to September '39 and hasn't bothered to renew it. Maybe a surfeit of daily operating in Civil Air work is more than enough, but for relaxation BERS195 turns to 28 mC/s CW listening. For this work he has always preferred a TRF receiver, and the one made for him previously fell into Japanese hands when Eric found it necessary to leave Rabaul in a hurry. Now a new TRF Rx is on the job, using VR65 RF stage, 954 regen., detector, and 6U7G headphone audio stage. Butterfly condensers tune RF and detector stages with coverage of the 50 and 28 mC/s bands by miniature plug-in coils. Such a receiver is a joy to handle and Eric says if it—relative to 28 mC/s—"it is the goods. I scored in the recent BERU contest with ZL, VK4, VK5, VK6, VE6, VE7, ZS5, ZS6, ZS1, ZS2, ZE, MI3, VQ4, G, AP, and VU. Many of the G's, etc., were RST 599. Last Sunday (25/4/48) I heard G, I, ON, F, PA and VK-2EO, as well as many VK6 phones at S9 plus." There isn't a thing wrong with using a smoothly operating TRF receiver for CW work. If sufficient readers are interested, a description of the receiver in use at BERS195 may be forthcoming.

## VALVE RATINGS FOR VHF'S

The tube department of R.C.A. (U.S.A.) recently published a list of preferred types, showing maximum input power v. frequency. The list is of interest to VHF men as indicative of what may or may not be done with various familiar types. The 802 pentode, for example, is good for 20 watts input at 50 mC/s and 16 watts at 75 mC/s. The popular 807 will take 40 watts at as high as 110 mC/s. Other types and ratings are: 832A, 36 watts at 150 mC/s and 32 watts up to 250 mC/s. 815 is 40 watts at 200 mC/s and 829B 105 watts at 250 mC/s. 812 and 811 go only to 75 mC/s at 125 watts and the 813 is usable at 50 mC/s with 300 watts input. (This should dispel the idea that 813 is not a usable valve on Six.) It is suggested that a series-tuned output circuit be applied because of the relatively high output capacity of the valve itself.

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## CONTESTS FOR RADIO CONTROL

A WIDE field of experimenting by hobbyists is covered in the remote control of models by radio. This type of work is also likely to prove useful in case of any more wars, as radio-controlled projectiles are sure to be used extensively.

From Philips we recently received a copy of the rules under which a most successful contest for radio-controlled models was held in Paris. The contest was divided into two sections, one for radio-controlled model aeroplanes and gliders and the other for radio-controlled boats including model submarines.

So far as we know little has been done in this direction in Australia, and when we approached an official of the P.M.G.'s Department on the subject some years ago the reaction was not cordial, it being

pointed out that amateur wave bands were allocated for communications purposes, and could not be used for such things as radio control. However, it is understood that the Department is now more favourably inclined and any licensed amateurs who wish to experiment with radio control can make application for special permits.

The rules governing the Philips contest in Paris provided for a most thorough test of the ability to control the evolutions of the models.

A copy of these rules is being held on file at this office in case any officials of the Australian model aeroplane, model boat or amateur radio clubs would like to look them over with a view to conducting a similar contest here.

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According to "QST" amateur radiophone communication of the future seems likely to be along the lines of S.S.S.C., meaning "Single Sideband Suppressed Carrier" transmission, a practice which would permit more than double the number of stations to operate without interference in any given frequency band. Other advantages are duplex working; elimination of heterodynes; and the reduction of unwanted signals to undetectable background noise. The circuits are somewhat unfamiliar but there is nothing particularly complicated about them. Main catch might be the fact that it is necessary to restore the missing carrier, and this may be done with the receiver BFO, provided the latter has stability of a high order. A variation of 10 to 20 cycles is enough to cause hopeless distortion and make speech unintelligible. In any case, speech couldn't be any more unintelligible than it is on the 14 mC/s band late in the afternoon of a holiday weekend.



**D**EAR Don,  
As a constant reader of your articles in A.R.W. I think it's time I said a few words thereon.

I'm afraid I can't agree on every

A Letter from

VK2EA

L. MARTIN

Lower Kangaroo Creek

Via South Grafton,

May 9, 1948.

count with you, but heartily endorse the majority of your remarks. If I may make a suggestion, what about instead of everyone just wingeing, why not send in constructive suggestions to solve the offending problem? As one should always be prepared to practise what one preaches, here goes.

I have before me A.R.W. for April, and note your remarks on pirates, etc.

Well, I've worked quite a few, I suspect, anyway they didn't QSL, and I agree with what you say. Now, wouldn't it be much easier if an authentic list of all new call-signs were published each month? This, in conjunction with the exist-

**I**N Britain, the Mullard people have adopted a system of valve identification in relation to the base whereby, after familiarisation with the key, much information is at once apparent. For example, the well-known EF50 valve is a voltage amplifying pentode with a 6.3 volt heater, with a type B9G base. The key is as follows:

The first letter indicates Filament (f) or Heater (h).

A—4v. f or h.

C—0.2 A h.

D—1.4v. h.

E—6.3v. h.

G—5v. f or h.

K—2v. f.

P—0.3 A h.

U—0.1 A h.

The second letter (and third if necessary) indicates electrode structure.

A—Single diode.

B—Double diode.

C—Triode.

D—Output triode.

E—Tetrode.

F—Voltage amplifying pentode.

H—Hexode.

K—Heptode or Octode.

L—Output pentode.

M—Electron beam indicator.

N—Gas triode.

P—Secondary emission valve (as third letter only).

W—Half wave gas rectifier.

X—Full wave gas rectifier.

Y—Half wave vacuum rectifier.

Z—Full wave vacuum rectifier.

The first figure (base) indicates:

2—B8G (loctal).

3—Octal.

4—B8A.

5—B9G (or special).

7—Sub-miniature.

9—B7G.

The second figure (and third, if necessary) are developmental numbers.

Experimenter - constructors should keep this list handy on the wall of the workshop.

—D.B.K.

## A LETTER FROM G3CUA

Extracts from a letter from G3CUA (ex-VK3NW) to VK2NO:

"I don't know what the disposals position is in VK, but over here there are some very cheap things. Here in Liverpool I got a U.S. Army Sig. Corps BC653 receiver, brand new, in sealed package for £2/5/-. It is a 6-valve superhet with 12-volt valves, covering 190-550 kC/s, and I'm sure it will make me a nice car radio. When I think of bringing things home though, I stop to contemplate the Customs people. They informed me from Australia that all radio parts or sets are prohibited imports and that no permits would be given (from U.S.A., of course). If I spend my allowance from the Government on whisky and night clubs, that's O.K.; but if I save it and buy a communications receiver,

ing list of calls, would give us some chance of sorting out the "goodies" from the "baddies."

Now, why do these blokes do these things? Laziness, cussedness, lack of brains (mostly the latter) and age. I can't excuse the

they won't allow me to bring it in. My radio activity is at a low ebb . . . I hope that in one sense it is at a low ebb, as I've been working with radio-active substances and don't want any fingers to drop off. I have spoken to my people in VK via G2XV, and it was quite a thrill. G2XV certainly has a nice outfit, being in the California kW class with a 250TH final that glows a bright red. You may have noticed that I had an interesting go in the 59 mC/s, contest. Unfortunately, I could only get on the air on some of the days and missed the second week-end completely. Conditions were not the best but since then I have boosted my country tally to 16 (on 5 metres). Looks as if I shall be too late for the Sporadic E stuff to U.S.A. . . . 73."—Ken Mc-Taggart.

former, but I'd like to say something on the latter. You know the regulations on age for examination, etc. If one is to believe the papers, the youth of today is more brainy than ever, and is capable of building and operating just about anything necessary. If a person is capable of passing the necessary exams., why on earth prevent them? They'll eventually get fed up and go on anyway, so why not put them on 420 mC/s or something where they can't do any damage?

As to your other remarks, some chaps deserve all the jamming, etc., they get. "Snobs" is too mild a word to use, but fortunately they can be counted on one hand. I'm not a C.W. man myself at the moment, and I detest being asked by the C.W. hounds to go on to C.W. because of a little Q.R.M., etc., and then come back on phone again as soon as they find out you can do C.W. after all. Too lazy to try and pull you through.

Although I've had a ticket for 12 months I haven't been on the air much, mainly due to the fact that I'm a cow cockey and an ex-serviceman getting back on to a

(Continued on next page)



## HAM NOTES

(Continued)

place of my own, both of which doesn't leave much to be spent on a rig.

Don't say the days of "roll your own" have passed, Don. My rig is acquired and reconditioned and rebuilt to suit the old rig. Most of the coils are wound on the cardboard covers of torch batteries and all stand off's and feed throughs are old spark plugs.

The rig is: 6V6GT E.C.O., 6V6 buffer/doubler, and 807 final. The modulator was 6SJ7—6SN7—ARP-33's in parallel, cathode modulating with a 385v. trannie. Power unit is a No. 19 genemotor, and input of 18w. However, I've just rebuilt the modulator with PP6L6's in class AB1½ or thereabouts, and wound my coupling trannie. The mic. is an army dynamic.

The receiver is my masterpiece, a 7-tube double conversion super and it's the goods. I.F.'s are 1600

and 465 kC/s respectively, with selectivity so good that no vernier is used on the osc. bandspread. Tuning is comfortable on 80, 40 and 20, but a bit ticklish on 10, and almost impossible on 6, where a vernier would be a help. The circuit is a compound of the 2NO-V6 and Paul Stevens' continental B/C design. It hasn't any B.F.O. as yet, but the 2nd I.F. becomes unstable when the I.F. gain is full on and serves quite well. The present antenna is a ¼ wave 80 MX rhombic, but I haven't tested it fully as yet.

As you see, I am one of those terrible V.F.O. men, main reason being that crystals at a fiver each are a bit hot for blokes like me, and it's nice to slide from under when you only have 18w.

Speaking of V.F.O.'s, mine's not calibrated. I just select a clear spot on the receiver dial and beat in the V.F.O. and then forget it until I get swamped. I have a class C wavemeter which is a menace rather than a help. It will generate harmonics from 1500 kC/s up to 50 mC/s at least. What about some articles on reasonably simple frequency measuring equipment?

I have a 144 mC/s tranceiver here, using a CV6 parallel rod oscillator and a Jones' squegger receiver. Now I'm waiting patiently for someone close enough to work to. Closest hams are in Grafton, 20 miles away, where a couple of new chaps are going on shortly, and VK2WQ is once more on the air.

There are plenty of enthusiasts here, but mostly too young to sit for tickets.

A chap in Rockhampton reckons they are going to put on an exhibit at the next "Rockey" Show. Can't you boys outdo the P.M.G. exhibit at the Royal Easter? Now a suggestion about these umpteen mC/s bands that are available. Perhaps we can use crystal mixers, etc., on receive, but what firm in Australia makes magnetrons?

What is that peculiar QRM which takes the form of car ignition, and which sails serenely up the dial every ten minutes or so? I've chased it on a No. 11 from 4.2 right up the dial to 7.5 and it was still going at the same steady rate and amplitude. Perhaps it is peculiar to this locality, but I think not.

Well, Don, all the batteries have been flat for two months due to a breakdown in my charger, so I'm able to go to bed early for a while. So I'll say 73's and I'm looking forward to hooking up with you very soon.

Cheerio,

LEITH.

\* \* \*

(Thanks for the letter, Leith. It behoves every licensed amateur to discourage piracy for the good of all. The regulating authorities would not look kindly on any condonement amounting virtually to co-operation. The matter of lists of latest licencees, etc., is noted and will be acted upon. The age limit for licensing is a bone of contention, and now a matter entirely for the P.M.G. Use of 420 mC/s or any other frequency by non-licensed people would obviously lead to abuse in widespread directions. This writer is very far from being of the opinion that the days of "roll your own" have passed; in fact, the other viewpoint is supported. A new dual IF receiver is under test at VK-2NO, and is proving to be an excellent answer to a lot of problems. Present IF channels are 1900 and 175 kC/s, but a comparison is to be made with 110 kC/s in the 2nd. Also the 2nd oscillator is to be crystal-locked. This receiver is turret-tuned and covers exclusively the 28/27, 21, 14, 7 and 3.5 mC/s bands. It will be described in full in the future. Like many other people, you appear to think that the writer is "agin the Veefo," an entirely erroneous impression. VFO's are a very excellent accessory to QRM-free amateur operation, but just the opposite in the hands of selfish-minded individuals. Magnetrons and other specialised forms of UHF valves were made in Australia during the war, and a few have found their way to amateurs through Disposals. They are an expensive proposition to produce. The idea of an Amateur Radio Show is a matter for an organisation such as the W.I.A., but amateur radio in this country is not wealthy enough to emulate the Radio Industry as at Sydney's recent R.A.S. The "peculiar QRM" you quote is probably from an inonosphere-sounding transmitter operated by the Radio Research Labs. in the A.C.T.—D.B.K.)

### NEW LINES FROM ENGLAND

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# Shortwave Review

CONDUCTED BY

L. J. KEAST

## NOTES FROM MY DIARY

### WINTER LISTENING

I always expect more reports during the winter than at any other time of the year as, with a nice radiator pulled up close to the shortwave set, one can settle down to some good DXing but ironically enough, daylight reception during the cold winter months is far ahead of the evening. After midnight, things begin to improve but around 1400 hours GMT it seems time to pull the big switch.

However, for those who can tune in to the overseas stations during our daylight hours will find many channels working and the strength and clarity, particularly of the BBC and U.S.A. really surprising. Try GRF, 12.095mc, or GRV, 12.04mc, and hear the programme for Latin America. Yes, they operate on Sunday mornings, too.

### DENMARK TO HAVE NEW ONE

Copenhagen's new powerful shortwave outlet with transmitter at Herstedvester was to have been dedicated in April by King Frederiks and Prime Minister Hedtoft but so far it does not appear to have taken the air. Should any of our readers log same, I would be pleased to have a report.

It is said to have cost approximately £200,000 to erect and it is estimated will take about £30,000 per year to operate and maintain. It will beam to North America and Greenland; South America; China, Japan and Australia as well as to Danish sailors on high seas. Will use Danish, English, French and Spanish. It was constructed primarily of Danish materials but some parts were imported from Italy. Power is presumed at 100 kw. Four wave-lengths will be used between 13.8 and 50 mc, and it will be on the air 24 hours per day. (The foregoing information reached me by air-mail from "Radio News.")

### NEARING THE CENTURY

Living in the State that Bradman has adopted, it is little wonder that Rex Gillett is striving for the century as regards "countries verified." He has long ago heard over 100 countries but it takes a little time to get those verifications. As a matter of fact it sometimes takes several reports before the long-looked-for verie comes along. One can imagine how pleased he was to get a folder type acknowledgement from CQM-4, Bissau, Portuguese Guinea, which brought his verified countries up to 96. CQM-4 operates on 7.948mc, with 1000 watts power from 7.30-9 a.m. He has reports out to several "new" countries, viz., Monaco, Greece, Korea, French Cameroons, Roumania, Newfoundland and U.S.S.R.

## New Stations

YC6RD, Ciudad Bolivar, Venezuela, 6.20mc, 48.39m: This is a new one and heard opening at 8.45 p.m. with news. Reported by Arthur Cushen.

HOFA, Colon, Panama: This is also reported by Arthur Cushen but he has omitted to give frequency. He was very amused to hear just after they had opened at 9.30 p.m. with the march, "On the Quarter Deck," and an announcement they played "Invercargill" march. (To use Arthur's own words, "Nice of them, wasn't it?") News was then given in Spanish to 9.45 p.m.

HJEX, Cali, Colombia, is a new station with slogan "Radio Pacifico." It is very fine from opening at 9 p.m. At 9.17 gives call sign and slogan.

RADIO NACIONAL, Lisbon, Portugal, 11.845mc, 25.33m: According to Ken Board of "Radio News," this new outlet for Portugal is heard at 7 a.m.

RADIO MONTE CARLO, 6.035mc, 49.71m: Here is another

mentioned from the same source. They are asking for reception reports, so try for them at 4.30-9 p.m.; 9-11 p.m. or, better still, from 4-8.15 a.m.

RADIO NOUMEA, New Caledonia, 6.00mc, 50m: "The Voice of France in the Pacific," which must not be confused with the old station heard for years from Noumea, seems to have settled at last on the abovementioned frequency and can be heard nightly from 8 o'clock.

## SAYS WHO?

As usual, Artsur Cushen sends along a fine list of loggings:

XEUZ, Mexico City, must have a new transmitter as signal is very fine daily till 4 p.m., and they completely blot out COCD. XEUZ announces as "XEFO ondas larga, XEUZ, ondas cortas, Radio Nacional, Mexico City."

HJCD, Bogota, Colombia, heard daily till sign off at 2.20 p.m. with a march; frequency is 6.16mc.

Radio International, Tangier, is much better now, has news in English at 6 a.m. but side interference is severe from HVJ and Warsaw.

Radio Anthens, Greece, is very fine till sign off at 7.30 a.m. on 7.295mc, peaking in New Zealand at 6 o'clock. Has flute identification at that time when news in Greek follows.

LRS-2, Buenos Aires, with slogan "Radio Splendid," is very good as early as 10 a.m. Signs at 2 p.m. on 11.84mc.

Radio France, Hanoi, Indo-China, 6.045mc, verified by letter and acknowledging mine as first report from New Zealand said they would welcome further ones.

HJCT, Bogota, Colombia, 6.20 mc, has fair signal at 2.15 p.m. on Sundays. "Radio Nacional" has news in Spanish at 2 p.m. and signs with a march.

OTC-3, "Radio Congo Belge,"



Leopoldville, 9.38mc, verified by letter from Director J. Van Overloop, who said, "Reception is for Belgian Congo only and he was surprised at reception in New Zealand, as power is 7 kw. Schedule is 3-4 p.m. and 2-4 a.m. daily."

LLM, Oslo, Norway, 15.175mc, gives fair signal but interference from GSO is severe. Can be heard from 4.30 p.m. with programme carried by LKQ.

Miss Dorothy Sanderson sends along another fine list of loggings:

#### *South and Central America*

LRM, 48.54m, 6.18mc, 8 p.m.: Very good signal in Spanish progs.

HI2T, 30.80, 9.74, 8 a.m., 9.45 p.m., 2.30 p.m.: Excellent programmes in Spanish news and music. Heard before closing at 2.30 p.m. Closes at 3 p.m.

TWGA, 30.78, 9.76, 2.30 p.m.: Heard at 2 p.m. with good signal in Spanish programmes.

HN3W, 29.62, 10.13, 10 p.m.: News in French and good musical programme.

XEQQ, 30.99, 9.68, 8 a.m., 2.45 p.m.: Good signal in Spanish musical programme and news.

HCJB, 19.85, 15.110, 3 p.m.: Usual programme of music and talks.

XEWV, 31.58, 9.50, 3.15 p.m.: Excellent signal in news and music.

PRLB, 25.60, 11.72, 6.30 p.m.: Good signal in Spanish news and music.

LRY, 31.42, 9.545, 8 p.m.: Good signal in news and music.

CE1180, 25.00, 11.998, 9.45 p.m.: News and music, announced as Santiago, Chile.

XEBT, 31.17, 9.625, 3.30 p.m.: Chimes on announcement, news and music, Spanish programme.

LRR, 25.23, 11.88, 10 p.m., 11 a.m.: Spanish news and music. Good signal.

COKG, 33.50, 8.955, 9.35 p.m.: Good signal in musical programme.

XERQ, 31.21, 9.615, 3.45 p.m.: Musical programme and Spanish news.

ZYB8, 25.51, 11.76, 8.30 p.m.: Musical programme and Spanish news.

COBC, 32.00, 9.37, 7.30 a.m.:

Spanish news and musical programme.

XEHH, 25.23, 11.88, 3.30 p.m.:

News and music in Spanish, R8.

HP5K, 49.96, 6.005, 9 p.m.:

CBS relay and news.

#### *Japan*

JVW2, 31.57, 9.505, 7.30 p.m.: Announces as NHK. Western music.

JVW4, 31.37, 9.560, 6.45 p.m.: Western music and Japanese news.

JKG2, 60.56, 4.930, 7.45 p.m.:

Western music and Japanese news.

JOBK, 50.00, 6.00, 8.30 p.m.:

Western music and Japanese news.

#### *Canada*

CFRX, 49.42, 6.07, 8 p.m.:

News and weather reports, music.

CHOL, 25.60, 11.72, 9.15 a.m.:

Programme details and news.

CBLX, 19.88, 15.09, 11 p.m.:

Weather reports, news and music.

#### *Europe and Africa*

Denmark, 25.57, 11.75, 4 p.m.:

Musical programme, church service and news which mentioned Jutland and Hegioland. Approx. freq.

Monte Carlo, 49.70, 6.038, 7.30

a.m.: French news and American recordings of music. Has a dance tune signal.

Leipzig, 30.83, 9.73, 3.15 p.m.:

Very good signal in German news and music. Heard at 2.45 p.m.

EPB, 19.86, 15.10, 9.45 p.m.:

French news and English at 10.15 p.m.

FXE, 37.40, 8.017, 7.15 a.m.:

French news and musical programme. R9.

CQM4, 37.75, 7.948, 7 a.m.:

March from Aida as signal. Port. news and musical programme.

C7RBU, 60.91, 4.92, 7.30 a.m.:

Musical programme, request numbers.

CNR3, 33.04, 9.08, 7.15 a.m.:

French news and musical programme.

OTC2, 30.70, 9.775, 8 a.m.:

French news and music.

FZI, 31.80, 9.44, 8.15 a.m.:

English news and music.

TAP, 31.70, 9.465, 7 a.m.:

Dance programme and news.

Munich, 31.54, 9.54, 7.45 a.m.:

American news letter and music.

CWS7, 27.15, 11.04, 8.15 a.m.:

Musical programme.

SBP, 25.63, 11.705, 5.30 a.m.: Musical programme, English lesson.

Paris, 31.37, 9.56, 3.15 a.m.: French news and music.

HER5, 25.28, 11.865, 12.45 p.m.: Swiss music and news on the news.

RNE, 32.00, 9.38, 7.15 a.m.: Spanish news and music.

FZI, 30.10, 9.98, 8 a.m.: English news.

SBT, 19.80, 15.15, 5.45 p.m.: English lesson.

PCJ, 31.28, 9.59, 7 a.m.: English news and music.

SDB2, 27.83, 10.28, 7.15 a.m.: News and music for local listeners.

Warsaw, 31.48, 9.53, 3.15 p.m.: Polish news and good musical programme.

Rex Gillett supplies some very interesting notes of his latest loggings:

Syria: Beirut has an English transmission from 1 a.m. but reception is marred by QRM. Approximate frequency is 8036kc.

Brazil: ZYB-8, Sao Paulo, on 6095kc, has been heard strongly at 7.15 a.m. with a variety programme in Portuguese.

South Africa: Noticed Pietermaritzburg on its old channel of 4855kc on Sunday last to sign off at 7.45 a.m. Normal sign off is 7.05 a.m. Next day was on 4878 again.

Italy: Radio Italiana broadcasts a special service in English for listeners in South Africa from 7.10-7.20 a.m. when it closes on 6085kc and 11810.

France: Paris has been logged on separate occasions on 6200kc and 6170kc until sign off at 8 a.m. Transmissions do not appear to be regular. The latter was very fine level. The 10230 channel was also logged but at a later hour.

Celebes: Macassar has been heard opening on 9550kc at 8 a.m. with good signals.

Sumatra: "Here is Radio Sumatra, Medan" was announced in Dutch on 7210kc at 11.03 p.m. following recorded music. Pre-war call was YDX.

Java: An Indonesian on about 3260kc, heard at 11.20 p.m., is



probably Sourabaya. Bandoeng nearby, 3015kc, is also heard at same time.

Greece: Athens leaves the air at 7.30 a.m. following a foreign language feature on 7295kc.

Mozambique: Lourenco Marques announced that from May 1 they would operate from 7 p.m.-1 a.m. on 31 metres (presumably 9650kc) and from 1 a.m.-7 a.m. on 60 and 85 metres (4925kc and presumably 3490kc).

U.S.S.R.: At 7.30 a.m. the following Moscow channels have been heard on the 30-metre band: 9810kc, with music; 9760, 9745, 9720 and 9710, in German; 9750 kc, with music.

I am hopeful that it was VONH I logged last Sunday morning for the first time in 8 years. Time, frequency and Canadian type speech seemed to check O.K. Local QRN denied me positive identification. Time of hearing was 8 a.m. Speech, possibly news, was read between 8.15 and 8.30 a.m. Male and female announcers used.

Have heard Noumea on 6000kc tonight at good level but inclined to be mushy. Am not sure what time it closed but sigs were good just before 8.30 p.m. but about 8.50 it had either closed or faded.

HVJ, Vatican City, on 5970kc, has been heard on Saturday with a French broadcast at 7.30 a.m., a break follows until 8 o'clock when Italian is used.

Berne concludes on English

broadcast to South Africa at 6.45 on 15305.

Prague is using 9550kc again for its broadcast concluding at 8 a.m. English is used from 7.45.

Local B.C.B. station 5KA's 5th harmonic is being heard on 6000kc about 7.30 a.m.

\* \* \*

#### HELP WANTED!

Believe it or not, a station on about 7.09mc, leaving the air at 7 a.m. with the playing of a march, has stumped Rex Gillett. He is wondering if, from the Arabic type music, it could be Baghdad with an extended schedule. The same one or similar is noted before 12.30 a.m.

If you have or do hear it, please drop me a line so we can advise Rex and our many listeners. Rex and our many readers.

\* \* \*

#### SHORTS

LRU, Buenos Aires, 15.28mc, 19.62m, is reported back on the air after an absence of several years.—"Radio News." (On favourable occasions should be heard here around 4 a.m.—L.J.K.)

HLKA, Seoul, Korea, 7.95mc, advise this call was adopted from Oct. 1, 1947. It will be remembered it was thought to be XLKA.—URDXC.

Helsinki advises its projected 100kw shortwave transmitter now under construction at Pori will be

completed and perhaps go on the air about July.

RADIO MONTE CARLO confirms use of new 25kw station on 6.035mc, 49.71m, at 4.30-6 p.m.; 9-11 p.m., 4-8.15 a.m. Reception reports are desired. In July a second 25kw outlet will be put in use in either 25 or 31 metre band.

XGOY, Chungking, 15.177mc, 19.76m, is heard with news in English at 9 p.m.

#### THE CROSSLEY STATIONS, CINCINNATI

Shortwave frequency schedule, Australian Eastern Standard Time, May, 1948:

WLWK: 3-8 a.m., 15250kc, 19.7m, Europe. 11 a.m.-1 p.m., 17800kc, 16.8m, W. South America.

WLWO: 3-8 a.m., 17800kc, 16.8m, Europe. 11 a.m.-1 p.m., 11790kc, 25.4m, E. South America.

WLWL: 1.45-9.05 a.m., 21690 kc, 13.8m, Europe.

WLWR: 4-8 a.m., 15350kc, 19.5m, Europe; 15350kc, 19.5m, North America. \*9 a.m.-3 p.m., 11710kc, 25.6m, W. South America; 15330kc, 19.6m, W. South America.

WLWS: 3-8 a.m., 21650kc, 13.2m, Europe; 21650kc, 13.2m, North Africa. 10 a.m.-3 p.m., 21650kc, 13.2m, W. South America; 9700kc, 30.9m, W. South America.

\* (10 a.m.-3 p.m., Monday only.)

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# Speedy Query Service

**A.A.N. (Creswick) complains of late delivery of his issues.**

A.—Circumstances beyond our control seem to frustrate every effort to get our issues out on time, but the latest we have yet been with subscribers' copies is to get them into the bulk postage on the 28th day of the month. Issues going out through retail distribution may run even weeks later than that but since you are a subscriber you should have yours within a day or two of the date mentioned above. We hope this issue won't be as late as the last, but of course we always have this hope at this time of the month, only to come up against unexpected obstacles later on.

\* \* \*

**S.A.B. (Kogarch) has built a communications set but finds that it is very noisy. He suspects that the 6J8G is not working properly.**

A.—With two i.f. stages working flat out there is sure to be a fair bit of noise, but if the r.f. end is efficient it should never be necessary to work the set flat out. The best check on the performance of the converter is to put an 0 to 1 milliammeter in

series with the oscillator grid resistor to measure the grid current. Lift the earthed end of the grid resistor and insert the meter. With the set in operation the grid current should read somewhere about .4 of a milliamp. The grid current will vary considerably according to the dial setting and the wave-length being tuned, but the closer you can maintain the grid current to this figure the better the converter will be, giving maximum gain for lowest noise level. In practice, you will be doing well if you can keep the grid current within a range of from .2 to .4 of a milliamp. Main factor controlling grid current is coil design, but distributed capacity from long leads to the coils and incorrect operating voltages also have considerable effect.

**FOR SALE. Palec VCT-V, as new, has original ohms batteries, £21. Apply M. Elliott, 123 View Street, Bendigo, Vic.**

## BARGAIN CORNER

**FOR SALE. Palec test equipment, Signal Generator. £40. Latest valve tester, £15. Electronic multimeter, £25. All as new. Write No. 1001, care Radio World.**

**FOR SALE. 2JU 5-valve Communications receiver, 20 and 40 metre coils, crackle finish chassis and panel. Apply, R. V. Francis, Nar-racoorte, S.A.**

**FOR SALE. FFR amplifier, complete with Kelman pick-up and imported RCA speaker, laboratory tested, no turntable. Price, £40, delivered Melbourne suburb or f.o.r. Write No. 2002, C/- Radio World.**

**FOR SALE. Kingsley "Walkie-Talkie" personal portable, new, complete with batteries. £13/10/-. J. Carmichael, Main Street, San Remo, Vic.**

**FOR SALE. Model aero motors, including a new American Atom, several secondhand Ohlssons, and others. English diesels, and the latest local motors available for immediate delivery, post free. Write for lists to "Aero," C/- Radio World, Mornington, Vic.**

## INTER-COM.

(Continued from page 24)

stations and private line conversations are not possible.

Transmission lines of 150 yds. do not seem to have any ill-effect on results and effective range of even 5-inch permag. speakers of modern type is approx. 30 feet in noisy locations such as garages, machine-shops, etc.


## SERVICING

(Continued from page 12)

pins, pull them through tightly with a pair of pliers and bend them over, a spot of solder is then added to each pin, the waste wire cut off and any surplus solder filed off the pins.

I might add that I have a valve and circuit tester and a signal tracer at my disposal but usually resort to the substitution method described here, but perhaps it is because I am lazy, at any rate it gets results.

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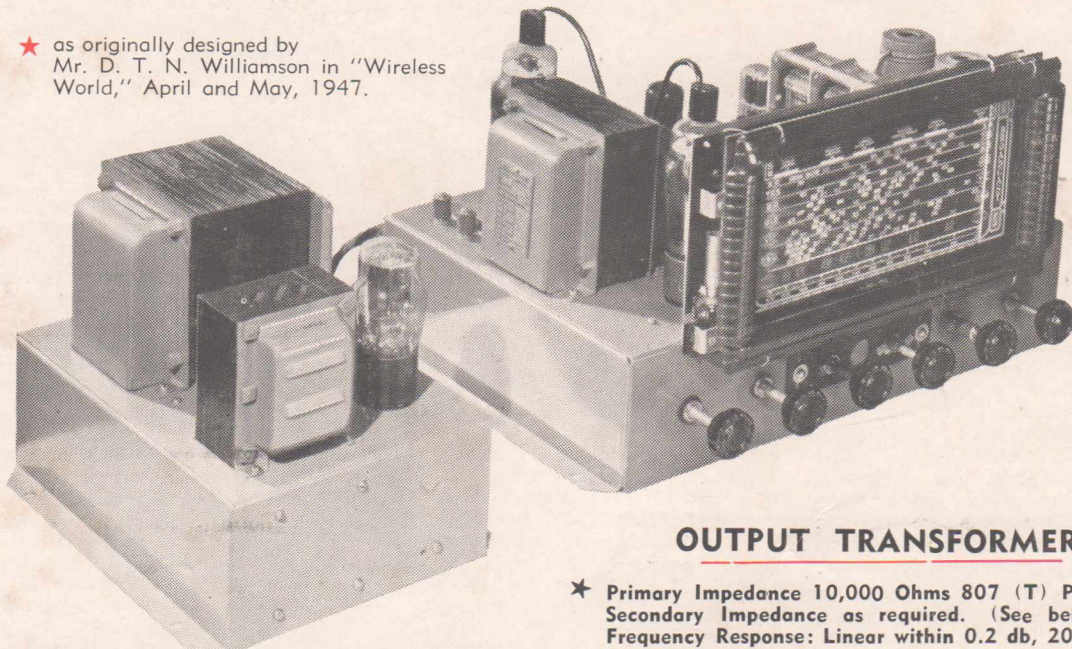


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1 Choke .....	50825 .....	£1 7 7

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1 Choke .....	102512 .....	£1 16 1
1 Choke .....	201515 .....	£1 11 10
1 Choke .....	50825 .....	£1 7 7

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The internal construction is such that adequate comprehensive shielding is provided. A meter is fitted which indicates the grid current of the oscillator and hence indicates the strength of oscillation. The radio frequency output is taken through a carefully constructed capacity piston attenuator to the control grid of the modulated R.F. amplifier which is operated as a cathode follower. A Hartley type 400 cycle A.F. Oscillator with harmonic filter provides internal modulation at any desired percentage up to 100% by means of grid modulation of the R.F. amplifier. Also, the 400 cycle signal is available at an A.F. output socket—

**FREQUENCY COVERAGE:**

Band "A"—	155	500 K.C.
Band "B"—	420	670 K.C.
Band "C"—	550	1500 K.C.
Band "D"—	1250	3600 K.C.
Band "E"—	3.5	10.6 M.C.
Band "F"—	10	30 M.C.
Band "G"—	35	110 M.C.

**R.F. OUTPUT VOLTAGE:**

Approximately 1 microvolt to 0.1 volt. Variable by capacity piston attenuator with approximately logarithmic scale—calibrated in microvolts and millivolts. Input voltage to attenuator indicated by meter showing grid current of oscillator tube.

**R.F. LEAKAGE:**

Less than 1 microvolt at frequencies below 3.5 megacycles.

**OUTPUT IMPEDANCE:**

Approximately 200 ohms.

**MODULATION:**

Variable amplitude modulation from zero to 100% by means of calibrated control with 30% clearly marked, is provided from internal oscillator at 400 cycles plus or minus 5%. External modulation is possible at any audio frequency.

its strength being adjustable by means of the modulation percentage control.

A special feature of this remarkable instrument is the provision for very rapid selection of commonly used frequencies by setting the tuning dial to a special mark on the scale, and selecting the "spot frequency" listed by means of a band selector switch. These "Spots" have been designed to occur with the tuning condenser plates almost fully in mesh so that stability is good. Special care is paid to the calibration adjustment of these points. Thus you can line a receiver easily and quickly and also check production receivers without complicated re-tuning of the signal generator. A flick of the switch selects the "spot frequencies" thus cutting down work time which is valuable. This instrument goes with the times—it has a very wide frequency range covering from 110 megacycles to 155 Kilocycles. The accuracy of calibration is plus or minus 1%. Truly an instrument to be proud of. Here are the main specifications set out below.

**SPOT TUNING:**

When the tuning dial is set to the line on the dial scale, the following commonly used frequencies can be obtained merely by setting the "Band" Selector switch to the appropriate frequency range.

Band "A"—	175 K.C.
Band "B"—	455 K.C.
Band "C"—	600 K.C.
Band "D"—	1400 K.C.
Band "F"—	10.7 M.C.

Accuracy of spot frequencies plus or minus 0.5%.

**DUMMY AERIAL:**

A standard I.R.E. dummy aerial, effectively shielded, is provided.

**POWER SUPPLY:**

190 to 260 volts A.C. at 50 cycles per second.

**VALVES:**

- 1 type 6V6GT R.F. oscillator.
- 1 type 6J7G A.F. oscillator.
- 1 type 6U7G R.F. cathode follower amplifier.
- 1 type 6X5GT rectifier.

**CASE SIZE:** 14½" x 8¾" x 8½" over controls.

**FINISH:** Case—Black brocade.

Panel—Dark red enamel with raised nickel-plated markings.

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