THE AUSTRALASIAN

Radio World

PRICE, 1/-

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VOL. 5 . . . . . NO. 4 SEPTEMBER 1940

AMPLIFIER CONTEST—FULL RESULTS

DIRECT-COUPLED CIRCUIT WINS

AN ENGINEERED BATTERY SET

LONG-RANGE CRYSTAL RECEIVER

OUT-OF-DOORS WITH THE NEW STROMBERG-CARLSON PORTABLE

(See air test review on page 28)

The quality of service a radio technician may render to the public is determined largely by the accuracy and reliability of the equipment he uses. Palec's policy has always been "Service for the Serviceman," and in furtherance of this policy, an unsurpassed range of precision testing equipment is available.

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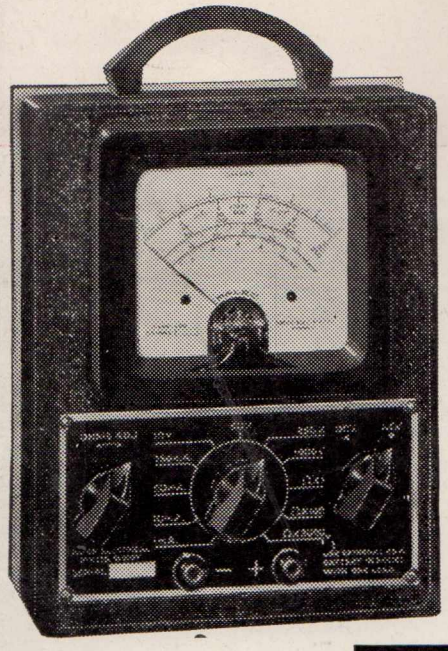
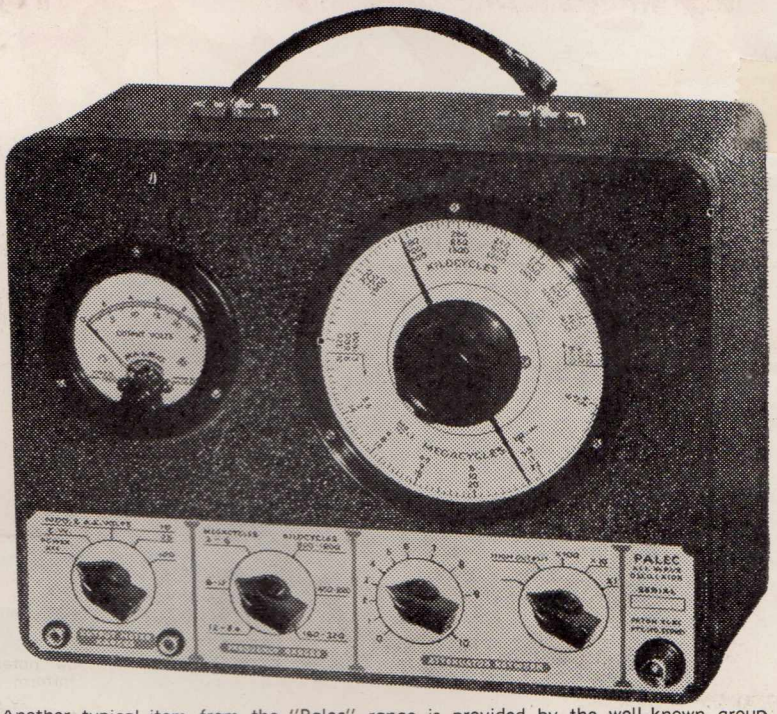
A typical item from the range of "Palec" service equipment is shown below — the "M" series multimeter. This is a compact and durable volt-ohm-milliammeter designed especially for workshop and field service. Housed in a cast aluminium case measuring only 8" x 6" x 2½," this instrument is provided with a robust, rectangular-case, "K" type meter which has a scale length of 3⅛ inches. Four voltage and current ranges (10-50-250-1,000 v., and 1-10-50-250 mA.) and three resistance ranges, giving readings from 0.25 ohm to 1.5 megohms, are provided. Two sensitivities are available and prices are as follow:—

Model MCD (1,000 o/v), D.C. only	**£4**	**19**	**6**
Model MCA (1,000 o/v), A.C. and D.C. volts	**£7**	**3**	**6**
Model MXD (10,000 o/v), D.C. only	**£7**	**1**	**6**
Model MXA (10,000 o/v), A.C. and D.C. volts	**£9**	**5**	**6**
Leatherette-covered case available at	**15/-**		**extra**





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

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

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

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The Australasian

RADIO WORLD

Incorporating the

ALL-WAVE ALL-WORLD DX NEWS

Vol. 5 SEPTEMBER, 1940 No. 4

CONTENTS:

The "Australasian Radio World" is published monthly by A. G. Hull. Editorial Offices: 117 Reservoir Street, Sydney, N.S.W. Telephone FL 2842.

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

. PERSONAL .

The Grand Final of the Amplifier Championship was a great success.

We had a night of splendid reproduction, which will long be remembered by the one hundred and fourteen enthusiasts who were present.

It is also unlikely to be forgotten by the ten competitors and their assistants who carried the heavy amplifiers up the stairs to the second floor.

The whole contest was a wonderful success in every way, notwithstanding the number of entrants who were unable to compete on account of German Measles. A number of entrants, also, had to withdraw as they had "joined up".

Let us hope that by the time the Amplifier Championship for 1941 is being held we will all be able to give the contest undivided attention.

In the meantime, however, everything possible has to be done to assist the National Effort.

The big problem is to keep the production up to standard and yet comply with the Regulations governing the amount of paper which can be used.

Incidentally, a number of readers have written to suggest that we should use cheaper paper, and more of it. As it happens, the Regulations do not deal with the quality of paper used, and even if we used the cheapest paper procurable we would still have to limit the number of papers to our present standard.

Fortunately, the scheme for cutting down the amount of paper in each issue, by column rules and narrow margins, has been a great success. Without exception, reports indicate that readers prefer the new size and layout. Apparently the remarks I made last month were far too pessimistic.

The paper regulations take into account increases in circulation, which is most fortunate, as we have enjoyed a vast demand in the past three months. Stories get around that the shortage of issues has been due to paper shortage, but this is not strictly the truth.

Every month for several months past we have increased the actual number printed, but we have not been able to accurately judge the demand.

For this issue, however, we have made quite sure by putting through a record number of copies and there should be ample to fill the demand.

A. G. HULL.

Thrilling Finish To . . .

AMPLIFIER CHAMPIONSHIP

Direct-coupled Circuit Proves Outright Winner

Full details of the Grand Final of the Australasian Radio World Amplifier Championship are contained in this article.

BEFORE an audience of a hundred and two keen experimenters and a team of ten technical judges, the Amplifier Championship was decided at the Australian Radio College on Sunday night, August 18.

Ten competitors were there, having earned the right to appear by winning preliminary auditions.

Each competitor played a minute and a half of an official record, and then six minutes of recordings of his own choice.

Voting

Each vote from an official technical judge counted ten points and each vote from the audience counted one point.

Each and every one of the ten finalists put up a brilliant performance, but a count of the points proved that first place had been won by **Mr. L. G. Hirst, of 43 Mitchell Street, Enfield,** who entered a push-pull direct-coupled amplifier built to his own design.

Mr. Hirst secured 55 points.

Second place went to Mr. E. Bevan, with 51 points awarded to an R.C.A.-Photophone amplifier.

Third place went to a keen amateur,

(Continued on page 6)

★

Right: The winner, Mr. L. G. Hirst, with the Australasian Radio World Cup.

★

Below: A section of the audience at the grand final. The official judges can be seen in the left-hand bottom corner.

PRIZE WINNERS

The I.R.C. Prize (an order for goods to the value of three guineas, presented by W. J. McLellan and Co.) was won by Mr. J. A. Crawford, who got the public vote at the first audition.

The Ducon Prize (an order for goods to the value of four guineas, awarded by Ducon Condenser Pty. Ltd.) was won by Mr. L. G. Hirst, who received the technical judges' verdict at the first audition.

The Mullard Prize (an order for valves to the value of five guineas, presented by Mullard-Australia Pty. Ltd.) was won by Mr. Weelands, who gained the public vote at the third audition.

The Philips Prize, (consisting of Philips valves to the value of five guineas, awarded by Philips Lamps (A/sia) Ltd.) was won by Mr. Barron, who got the judges' verdict at the third audition.

The Paton Prize (of a meter, awarded by the Paton Electrical Pty. Ltd.) went to Mr. E. Bevan, who won the public verdict at the seventh audition.

The Packard Lectro-shaver (awarded by John Martin Pty. Ltd.) was won by Mr. J. A. Lindsay, who won both public and judges' decision at the fifth audition.

The Test Meter (awarded by Radio Equipment Pty. Ltd.) was won by Mr. A. E. Hughes, who was awarded both decisions at the second heat.

The Special Amplion Prize (of a set of di-phonic speakers) which was awarded for the best performance by any competitor using Amplion speaker equipment, was won by Mr. L. G. Hirst.

The Amplion Prize (of a 12P64 speaker) was won by Mr. L. Dobson, who secured the technicians' verdict at the seventh audition.

The Amplion 12E22 speaker was won by Mr. H. J. Lilley, who secured the judges' verdict at the sixth audition.

The Brimar Prize for the best performance by a low-powered amplifier (awarded by Standard Telephones and Cables Pty. Ltd.) was won by Mr. T. Peters.

The R.C.S. Prize (consisting of a five-band tuning unit, presented by R.C.S. Radio Pty. Ltd.) was won by Mr. L. G. Hirst, who won both verdicts at the fourth heat.

The Rola Prize (a G12 Rola speaker, awarded by the Rola Company (Aust.) Pty. Ltd.) was won by Mr. J. A. Hodgson when he secured the public verdict at the sixth audition.

The Australasian Radio World Cup and the cheque for ten guineas, awarded by the proprietor, was won by Mr. L. G. Hirst, the champion.

AMPLIFIER CHAMPIONSHIP

(continued)

Mr. J. A. Lindsay, who used the modulator from his now silent "ham" transmitter.

The Competitors

The following were the ten finalists in the order in which they played, which was decided by drawing numbers out of a hat.

No. 1, Mr. L. G. Hirst, of 43 Mitchell Street, Enfield, using a pair of 2A3 valves in a push-pull direct-coupled circuit, with Webster crystal pick-up and Amplion di-phonic speakers.

No. 2, Mr. J. A. Crawford, of 21 Noble Avenue, Mount Lewis, Punchbowl, using a pair of 6B5 in push-pull with resistance-coupled phase changer, Shure Zephyr crystal pick-up and Rola G12 speaker in an infinite baffle.

No. 3, Mr. J. A. Hodgson, of 8 Court Road, Double Bay, using a pair of 2A3 in push-pull with resistance-coupled phase changer, Astatic "Trutan" pick-up, and Rola G12 and T5 speakers.

No. 4, Mr. H. J. Lilley, of 12 Holdsworth Avenue, Wollstonecraft, using a dual-channel amplifier, with transformer-coupled 2A3 output valves for the low and middle register and a resistance-coupled 6V6G for the highs, with Telefunken pick-up and two Rola speakers with a large loading horn for the main unit.

No. 5, Mr. J. A. Lindsay, of 18A,

Above — The ten finalists. From left to right, back row: Messrs. L G Hirst, R. C. Weelands, L. S. Dobson, J. A. Lindsay and A. E. Hughes. Front row: Messrs. J. A. Hodgson, H. J. Lilley, E. Bevan, J. A. Crawford and F. C. Barron.

Piper Street, Annandale, using the modulator from his amateur transmitter, consisting of a pair of 6L6G output valves in push-pull with a step-down ratio audio transformer, Astatic crystal pick-up, and a Jensen A12 speaker.

No. 6, Mr. L. S. Dobson, of 41 William Street, Hornsby, using a pair of 50 type output valves in a condenser phase-changer circuit, with Rothermel De Luxe crystal pick-up and a pair of Rola speakers with the main speaker fitted to a P.M.G.-type folded horn.

No. 7, Mr. A. E. Hughes, of 18 Gordon Street, Marrickville, using a pair of 6A3 in push-pull resistance-coupled from a 6A6 driver, with Astatic crystal pick-up and a Rola K12 speaker.

No. 8, Mr. R. C. Weelands, of 1 Tawa Street, Ashfield, using a pair of 50 type output valves with a resistance-coupled phase changer, Shure Zephyr crystal pick-up and a Jensen D8 speaker with a home-made suspension system.

No. 9, Mr. E. Bevan, of 221 Elizabeth Street, Sydney, using a pair of 2A3 in push-pull with transformer coupling, an R.C.A.-Photophone pick-up and R.C.A.-Photophone speaker in an enclosed box baffle.

No. 10, Mr. F. C. Barron, of 7 Henderson Street, Granville West, using a pair of 6L6G in push-pull with resistance-coupled phase changer, Astatic crystal pick-up and a high-fidelity Saxon speaker.

Latest Ideas

As will be seen from the above list, the designs of amplifiers at the final represented all the latest ideas in high-fidelity technique and most of the equipment and associated components available on the open market.

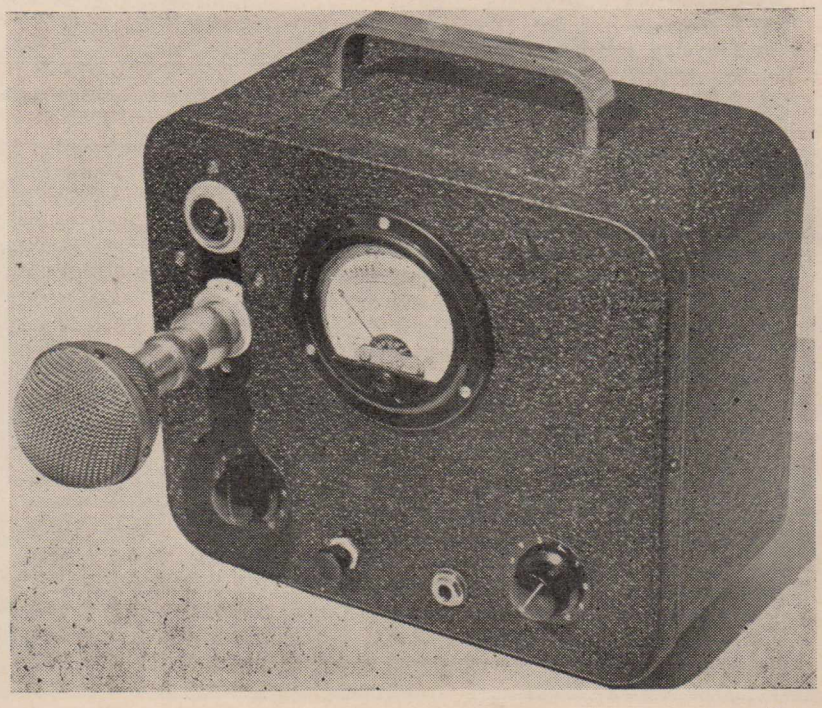
The Official Judges

The official judges, whose votes counted as ten points each, were:—

Mr. George Allen, of the Rola Company, who favoured No. 4.

Mr. A. J. Barnes, who conducts our Junior Technical Section, and who voted for No. 5.

(Continued on page 8)



Left: The audiometer, which was used to monitor the output of the amplifiers. Sound was picked up by a crystal "mike" shown on extreme left.

AMPLIFIER CHAMPIONSHIP

(continued)

Mr. R. Erman, of the Recorded Music Society, who voted for No. 1.

Mr. L. B. Graham, of the Australian Radio College, who voted for No. 9.

Mr. F. S. Hartridge, of R.C.A.-Photophone, who voted for No. 9.

Mr. Norman Head, of Amplion, who voted for No. 1.

Mr. A. G. Hull, of Australasian Radio World, who voted for No. 6.

Mr. R. Lamplough, of Lamplough Radio, who voted for No. 1.

Mr. Ken Page, of E.T.C. Industries, who voted for No. 9, and

Mr. Tom Parramore, President of the Recorded Music Society, who voted for No. 1.

SPECIAL PRIZE

The special prize of Brimar valves to the value of five guineas, which was awarded by Standard Telephones and Cables Pty. Ltd. for the best performance by a low-powered amplifier, was won by Mr. Tom Peters, of 3 Lamrock Avenue, Bondi, who competed with an amplifier consisting of a single 6V6G valve, driven straight from an Astatic crystal pick-up without any other audio amplification.

Although this amplifier was beaten in its heat by a push-pull job, it put up a splendid showing, and won this special award.

The Public Vote

The audience consisted of 102 enthusiasts who reserved seats in order to be present. Although the men were in the majority, there were about a dozen of the fair sex in the crowd.

It could well be said that the gathering was fairly representative of the keen radio and amplifier element of our readers.

Their voting was as follows:—

No. 1—15
No. 2— 6
No. 3—13
No. 4—15
No. 5—23
No. 6— 1
No. 7— 1
No. 8— 2
No. 9—21
No. 10—5

By adding the technical judges' points to the public vote the final results were:—

No. 1—55 points
No. 2— 6 points
No. 3—13 points
No. 4—25 points
No. 5—33 points
No. 6—11 points
No. 7— 1 point
No. 8— 2 points
No. 9—51 points
No. 10—5 points

Or to put the competitors in the order of the result:—

1st—No. 1
2nd—No. 9
3rd—No. 5
4th—No. 4
5th—No. 3
6th—No. 6
7th—No. 2
8th—No. 10
9th—No. 8
10th—No. 7

Keen initiative was shown by two of the judges, Messrs. Page and Hartridge, who built up an instrument to measure the sound level of the amplifiers, so that the official record could be monitored by the judges in order to bring all of the amplifiers to the same level.

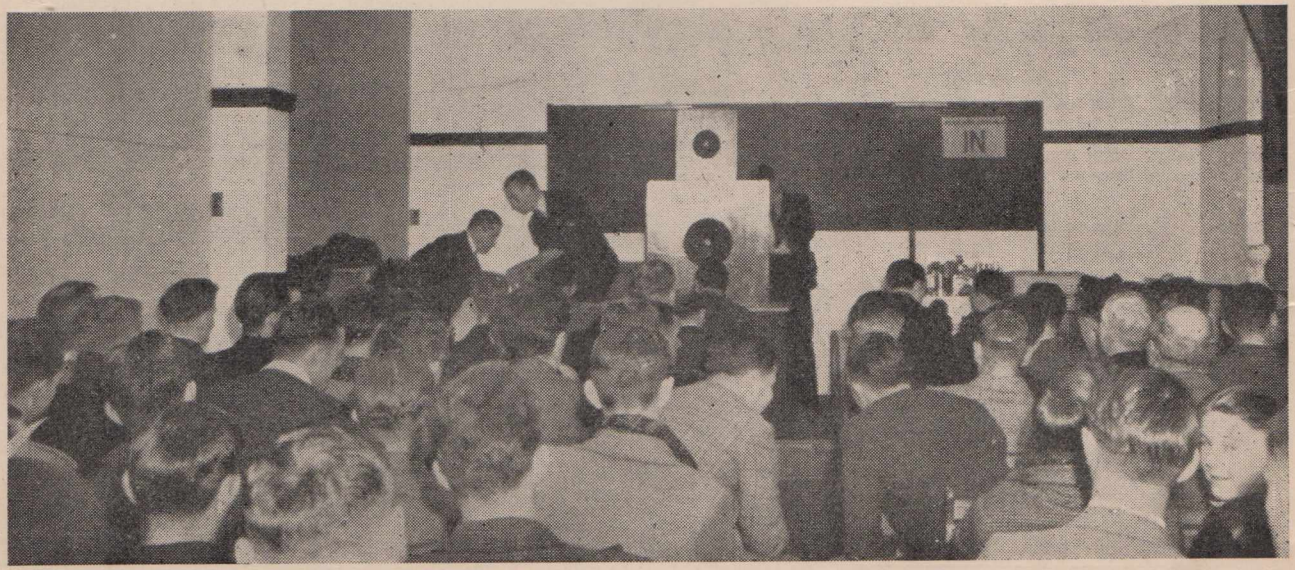
FURTHER CIRCUITS OF PRIZE-WINNING AMPLIFIERS WILL BE DESCRIBED IN NEXT MONTH'S ISSUE

While playing the recordings of their own choice, however, the competitors were allowed to also choose their own volume control setting.

Designed by Mr. Page

The instrument designed and built by Mr. Page for measuring the sound level consisted of a crystal microphone feeding into a four-stage audio amplifier, with a decibel meter in the final stage.

Each competitor played a portion of a frequency test record, adjusting the volume control according to in-



Below: One of the competitors putting his amplifier through its paces.

Another view of the audience, showing the keen interest taken in the contest.

structions from Mr. Page, who was handling the equipment.

This setting was then used for the official recording.

Keeping the sound level of the official recording constant gave everybody a better chance of judging the performance of the amplifiers.

Not Disgraced

With ten splendid amplifiers operating one after the other, the judging was a most difficult task, and we feel that it should be pointed out that, although not successful in winning, the other nine amplifiers put up creditable performances and were by no means disgraced.

Next Year

The whole organisation was a grand success in every way, and both audience and competitors were heard to remark that they look forward to another similar contest next year.

A selection of the recordings played by the winner are listed below.

(1) "Concerto Symphonique No. 4" ..... (Litolff) Scherzo
Irene Scharrer (piano) and London Symphony Orchestra. (Columbia DO1154)

(2) "A Beautiful Lady in Blue" ..... Waltz
Mario Lorenzi and His Rhythmics. (Columbia DO1500)

(3) "The Canary" ..... (Poliakin)
Serge Krish Septet. (Regal G22505)

(4) "Nuns' Chorus,' from "Casinova" ..... (Strauss)
Anni Frind, with Orchestra and Chorus. (H.M.V. G2435)

(5) "Valsette," from "The Wood Nymphs" ..... (Coates)
Light Symphony Orchestra, conducted by the Composer. (H.M.V. G2723)

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(Plus Sales Tax)	(Plus Sales Tax)

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223A MULTITESTER

- Combines the multiple functions of a Valve Tester and Multitester.
- A new type meter with a high-grade aluminium face, which will not crack or warp in any climate. . . . It is large, and all ranges can be read with the greatest possible speed and accuracy. It is a really high-grade movement housed in an expensive moulded Bakelite case. Requires only a small mounting space . . . no mounting screws are visible and all threaded portions are brass inserts, firmly moulded into the case during the process of its manufacture.
- New style, permanently etched, finger-proof panel.
- Can be operated from either 6 Volt accumulator or A.C. mains.
- Available with internal or external vibrator as required.
- Tests every valve on the Australian market, including the new 1.4-volt Series.
- Tests Electrolytic Condensers, and Paper and Mica Condensers.
- Measures A/C Volts up to 1,250, Output Volts up to 1,250, D/C Volts up to 1,250, D/C Milliamps up to 250, Ohms from ½ Ohm to 10 Megohms.
- Set in good quality, leatherette Carrying Case.
- Unconditionally guaranteed for twelve months.

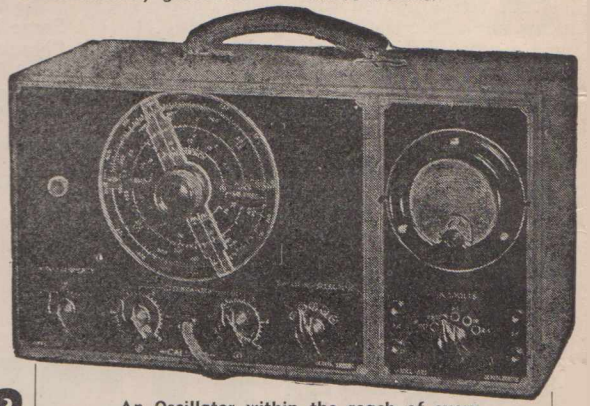
THE CALSTAN OSCILLATOR

The CALSTAN OSCILLATOR is also an instrument of outstanding quality; all wording etched on non-ferrous metal; leather carrying handle, rubber feet. Pilot light and black instrument knobs on each model. Five-inch dial reads direct in Kc/s, Mc/s (top half) and corresponding metres (bottom half); smooth planetary movement — adjustable for slip. Two attenuators on both models.

SPECIFICATIONS: Model 306, Battery-operated, with minimised battery drain ("B" battery-drain approximately 5 m.a., at 67.5 V.; "A" Battery 4.5 V., drain approximately 120 m.a., including Pilot).

Band-spread 150 Kc/s to 16 Mc/s on fundamentals without breaks; above 16 Mc/s by using 2nd harmonics. R.F. signal modulated at will. High degree of stability and accuracy particularly over 175 and 465 Kc/s channels. Model 307 A.C. Mains operated. Feed-back prevented by line filters, thus maintaining good attenuation. Band-spread 150 Kc/s to 25 Mc/s on fundamentals without breaks.

Both models available with or without built-in output meter.



An Oscillator within the reach of every experimenter, set-builder or serviceman.

306 Battery Operated	£10 10 0
306a (illus.) ditto, with output meter	15 15 0
307 Mains Operated	10 17 6
307a ditto with output meter	16 2 6
Output Meter as used on both models	5 10 0

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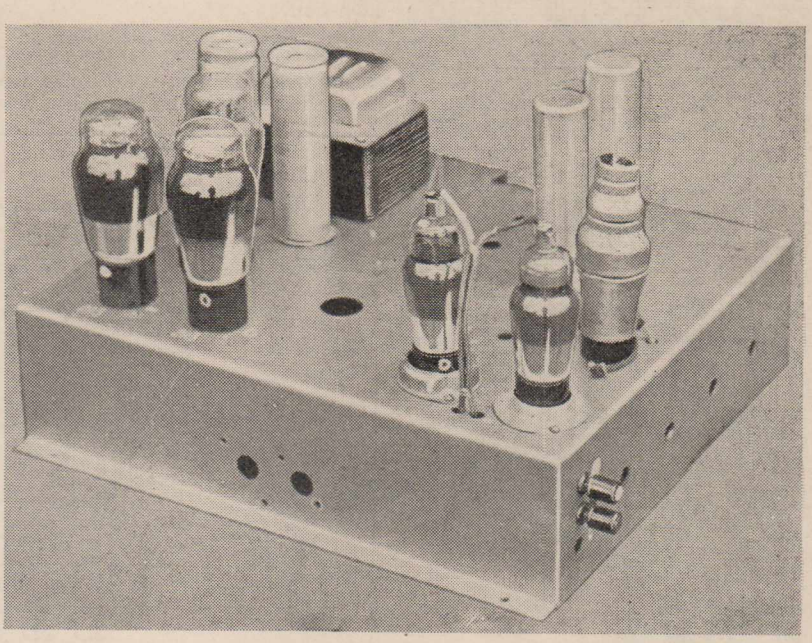
The WINNING AMPLIFIER

Full Constructional Details Given Here

★

You can build it yourself from the data given here. Circuit and picture diagrams make construction easy.

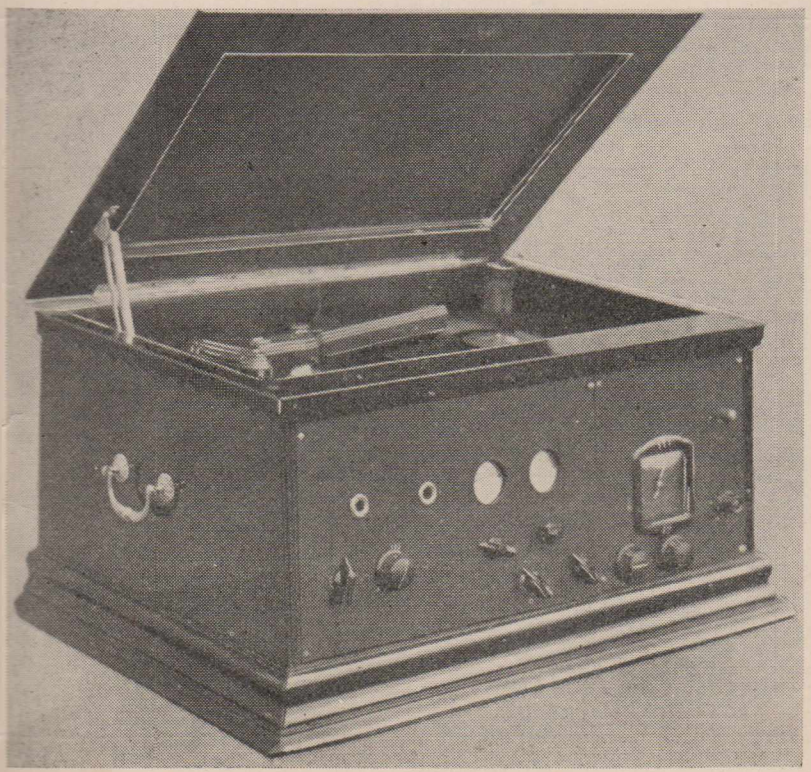
★



The circuit used by Mr. Hirst in the winning amplifier was a combination of the resistance-coupled phase-changer which has been so popular since its introduction to Australia in the original "1933 Standard," and direct-coupling, which was detailed at such length in last month's issue.

First Stage Phase Changer

The first stage was the phase changer, with resistance coupling to two valves in push-pull. These were then each direct coupled to the two output valves. Each of the two halves of this output section could be considered as separate direct-coupled units, and each had its own adjusting resistor and plate current meter to allow perfect balancing.



How It Came About

The way in which Mr. Hirst came to design this circuit is interesting.

Mr. Hirst does not profess to be a theorist, but he is a smart, practical man who has had years of experience in the building up of amplifiers.

Above: A chassis view of the amplifier. The 2A3's can be seen on the left and the 57's on the right.

Left: The amplifier complete with cabinet. A tuner is provided for radio reception.

In the past his specialty has always been a simple single stage direct-coupled amplifier, of which he has built dozens. They have all been highly successful, giving a quality of reproduction which has appealed to all who have heard them.

They have also been quite trouble-free in operation.

And so, when he saw about the Amplifier Championship, Mr. Hirst

(Continued on page 12)

WINNING AMPLIFIER

(continued)

entered one of his small jobs and was successful in getting the judges' verdict at the first audition.

Taking advantage of his privilege, however, he re-entered and proceeded to experiment with two of the small amplifiers working together to get push-pull.

Triodes Were Desirable

After trying a pair of screen-grid valves with the pick-up feeding direct on to their two grids, Mr. Hirst decided that triodes were desirable and also a more effective phase-changer.

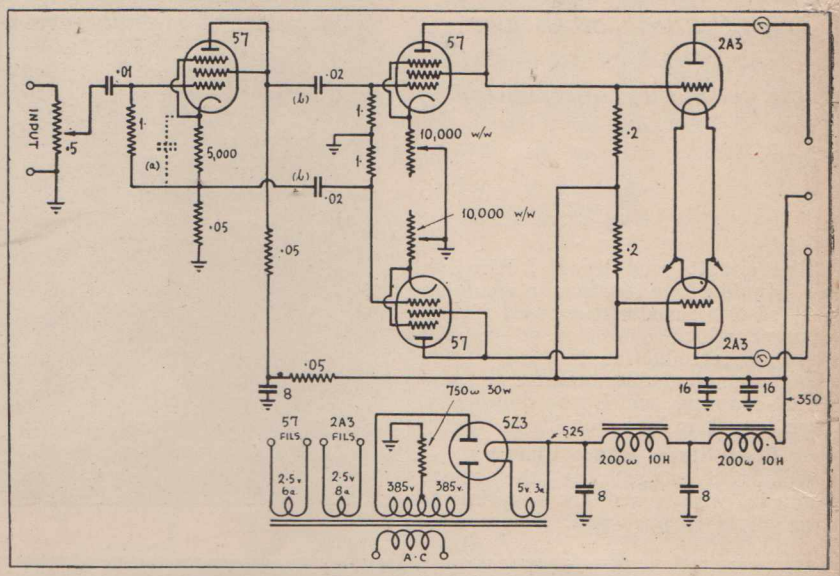
As soon as he put this together he realised how good it was and, sure enough, when he came up for re-hearing he was again successful.

Doubly Qualified for Final

It was not surprising therefore that, having doubly qualified for the final, the amplifier ran out the winner.

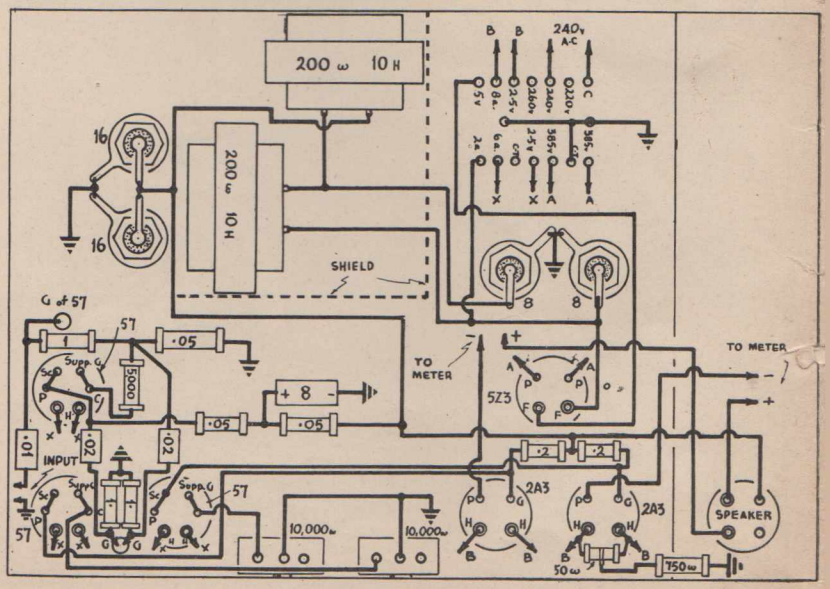
Mr. Hirst appears to think that he could have won the final with his original single-stage amplifier, as his big job was not running more than about half volume at the final.

The single-stage job has the ad-



Above: The circuit of the amplifier used by Mr. Hirst in the Grand Final. Note: (a) 25 mfd. 40 volts pk.; (b) tubular condensers of value shown above MUST be used with this hook-up.

Below: Picture diagram of the winning amplifier. The meters are housed on the front panel of the cabinet. See photo on page 11.



vantage of being cheaper and simpler and can be operated without the meters which are desirable with the big one.

Detailed Specifications

It was our original intention to describe the winning amplifier in detail and to give a full list of all the actual brands of components used. As it turns out, however, little good can be done by so doing. The materials used by Mr. Hirst were just what he happened to have on hand.

For example, the valve equipment was not of any particular brand, in fact a glance at the amplifier revealed that one of the output valves was a Ken-Rad, the other a Radiotron, and so on. Obviously the amplifier could be expected to give normal operation with any serviceable valves, irrespective of brand.

THE CHAMPION AMPLIFIER
PARTS LIST

1—Chassis, 14" x 12" x 3."
2—10,000 ohm wire-wound pots. (R.C.S., Radiokes).
1—.5 Potentiometer (I.R.C., E.T.C.).
3—8 mfd. 525-volt Electrolytics (T.C.C., Solar).
2—16 mfd. 525-volt Electrolytics (T.C.C., Solar).
1—.01 mfd. Tubular Condenser (T.C.C., Solar).
2—.02 mfd. Tubular Condensers (T.C.C., Solar).
3—1 meg. resistors (I.R.C., Bradley).
3—.05 meg. resistors (I.R.C., Bradley).
2—.2 meg. resistors (I.R.C., Bradley).
1—750 ohm 30-watt resistor (I.R.C., Bradley).
3—4-pin sockets.
3—6-pin sockets.
VALVES:
3—57, 2—2A3, 1—5Z3 (Ken-Rad, Radiotron, Brimar, Philips, Mullard).
SPEAKER:
1—Suitable speaker kit (Amplion, Rola).
2—M.A. Meters (max. 150 mills. essential).
POWER SUPPLY:
2—200 ohm, 10h, 150 m.a. chokes.
1—150 m.a. power pack, 385v., C.T., 385v., 25v., 6 amp., 2.5v., 8 amp.
1—Length of 3-core power flex.
2—Terminals.
1—Valve can.
PICK-UP:
1—Crystal pick-up (Webster, Astatic).

The matter of the pick-up is also difficult, for the equipment actually used at the final by Mr. Hirst was a crystal cartridge from a "Webster" high-fidelity pick-up, but fitted in a "Tru-tan" arm.

Speaker Baffle

The two speakers of the Amplion di-phonic system were mounted on a sheet of seven-ply timber, three-quarters of an inch thick. This sheet was originally six feet wide and three feet high, but was cut and fitted with hinges so that it folded up to a size about three by two for carrying.

The speakers were mounted more or less in the centre of this baffle, as shown in our diagram.

The recordings used by Mr. Hirst

(Continued on page 14)

WINNING AMPLIFIER

(continued)

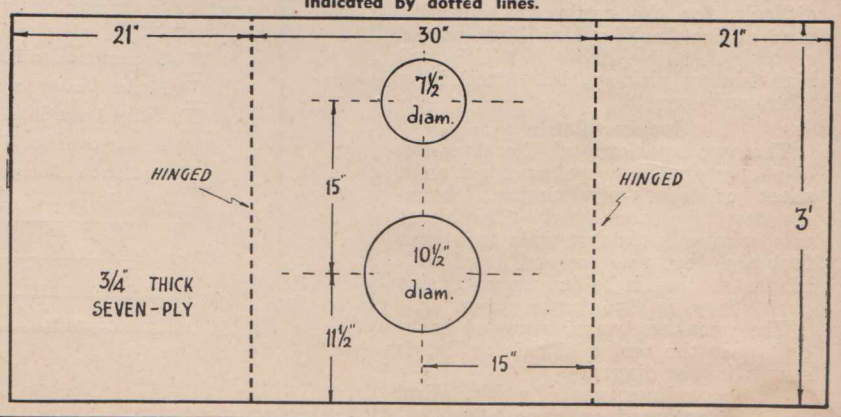
have been listed for the information of those enthusiasts who want to know the titles of discs which are suitable for demonstrating the brilliance of an amplifier.

Meters

It will be noticed that two cheap meters are used in the plate circuits of the output valves, so that these can be balanced up by the bias control potentiometers.

With the single-ended amplifier, the bias can be sent by ear by the tone, but with the push-pull version this scheme would not be sufficiently sensitive, and so meters are used. In the original job a pair of pocket voltmeters were used.

Details of Mr. Hirst's baffle are shown in the diagram below. Hinged sections are indicated by dotted lines.



American Style
COMMUNICATIONS NINE

How to add the finishing touches to this receiver is explained in the following article.

In last month's issue we described the initial stages of the building of a super-powered communications receiver, detailing the construction of the main chassis. This job is just as simple as building any ordinary dual-wave receiver. Now comes the more difficult job of finishing off the minor details which go to make this job a truly outstanding one.

Several Inquiries

Strange it may seem, but we have had countless enquiries from readers who want to know whether this set can be built up on a standard layout, in order to make it suitable for use in a normal type of console cabinet. Of course it can, but doing so gets away from the original plan, to make up a set which is something quite beyond the usual run of commercial and home-built receivers.

The details consist mainly of the following steps: (1) Fitting band-spread tuning condensers to make the dial control less sensitive on the higher frequencies; (2) fitting a magic eye tuning indicator, to assist in correct tuning with the extreme selectivity, which will otherwise spoil the tonal quality; (3) fitting a signal strength meter, so that a comparison of signal strengths can be made; (4) fitting a beat frequency oscillator for the reception of morse code signals from c.w. stations, and (5) fitting the whole job into the metal screening cabinet.

The Band Spreaders

Fitting the band-spread condensers is just a matter of ganging three low capacity condensers and wiring them in parallel with the sections of the main gang condenser, using the spare yellow leads which are provided on the special coil unit.

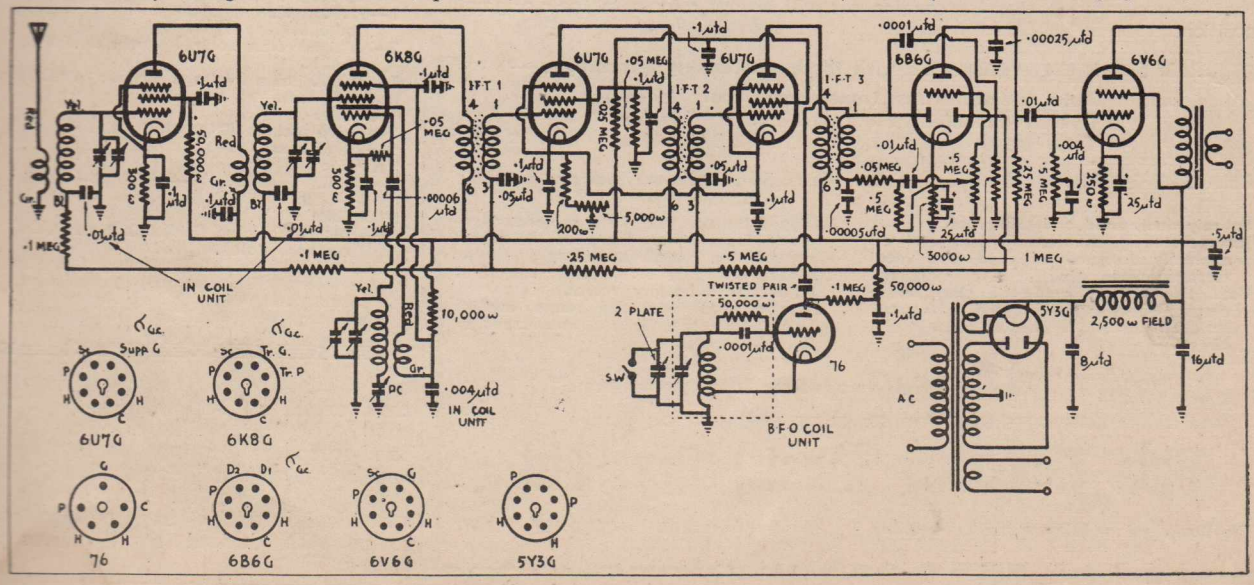
This sounds a simple matter, but actually it calls for some rather ticklish mechanical work. Special brackets have to be made up from angles of aluminium or from meccano brackets, and then the shafts of the condensers have to be brought into line and coupled up with flexible couplers, so that the whole three of them can be driven from a geared knob. If the condensers are stiff in action or out of alignment they will be stiff to turn and the geared knob may slip. To the type of handyman who spends a week-end at building a model train outfit, this little job of mechanics would be child's play, but some radio men may use bad language to assist them to get the gang working smoothly, which is highly desirable.

Operation

In operation, the main dial is tuned to the desired short-wave band, say, for example, 30 metres. Setting the pointer about half-way between 30 and 31 metres, it will then be found that the band spread control will be spread over about half a metre either side of the main dial's setting. This makes it much simpler to pick up weak stations and those which are just on the edge of a more powerful one.

Although it is quite possible to

(Continued on page 16)



Below: Circuit of American-style Communications Nine, showing all valves.

COMMUNICATIONS
(continued)

operate the band-spread gang from an ordinary knob, it is much nicer to use one of the special geared knobs which are available for the purpose. When we say available, however, we may be overstating the position. So far as we are aware, they are only available in limited numbers and only in one brand —Raymart —and at a fairly stiff price.

An alternative, though, would be to use one of the small dials as used in portable receivers, mounting the knob up near the tuning meter somewhere,

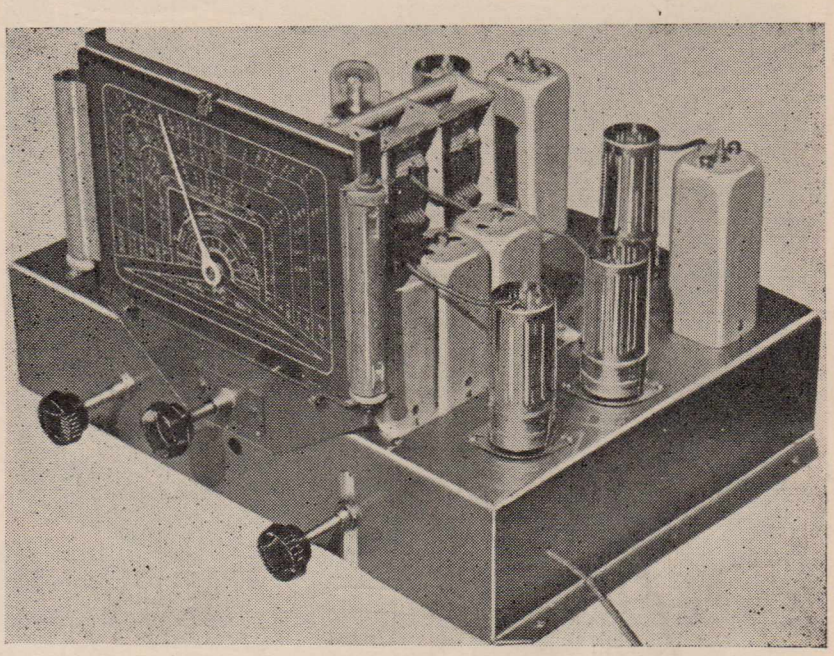
COMMUNICATIONS NINE PARTS LIST

Basic Chassis for Communications Receiver.
1—Steel chassis, 15" x 10¾" x 3."
1—5-band coil unit (R.C.S., Radiokes).
3—Intermediate transformers (R.C.S., Radiokes).
1—"H" Type 3-gang Condenser (Stromberg-Carlson).
1—Dial to suit (R.C.S., Radiokes).
1—Power transformer (385v., 100m.a., 6.3v., etc.).
CONDENSERS:
2—8 mfd. 500v. electrolytic condensers (Solar).
1—25 mfd. 25v. electrolytic by-pass condenser (Solar).
7—.1 mfd. 400v. tubular by-pass condensers (Solar).
1—.01 mfd. mica condenser (T.C.C., Solar).
1—.004 mfd. mica condenser (T.C.C. Solar).
1—.0005 mfd. mica condenser (T.C.C., Solar).
1—.00005 mfd. mica condenser (T.C.C., Solar).
RESISTORS:
1—250 ohm 3-watt resistor (E.T.C., I.R.C.).
2—400 ohm 3-watt resistors (E.T.C., I.R.C.).
1—1 megohm 1-watt resistor (E.T.C., I.R.C.).
1—.5 meg. 1-watt resistor (E.T.C., I.R.C.).
1—.25 meg. 1-watt resistor (E.T.C., I.R.C.).
1—.1 meg. 1-watt resistor (E.T.C., I.R.C.).
1—.05 meg. 1-watt resistor (E.T.C., I.R.C.).
1—5,000 ohm potentiometer (R.C.S., Radiokes).
2—500,000 ohm volume controls (E.T.C., I.R.C.).
1—15,000 ohm voltage divider (R.C.S., Radiokes).
SOCKETS:
8—Valve sockets (7 octal, 1 UX).
5—Valve cans.
VALVES:
3—6U7G, 1—6K8G, 1—6B6G, 1—6V6G, 1—5Y3.
SPEAKER:
1—2,000-2,500 ohm field, 5,000 ohm load (Amplion, Rola).
SUNDRY HARDWARE, including four 2" 1/8 screws, 3 terminals, power flex, screws and nuts, solder, solder lugs, earthing wire, hook-up wire, etc.

and driving down to a drum on the shaft of the band-spreading gang. It would also be possible to mount the band-spreaders on top of the base, and drive up from down below. In fact, there are endless ways in which individual initiative may be applied to get the desired result of easy tuning.

STAR BATTERY D.W. FIVE

A new set based on a circuit which has been throughly engineered.



Above: The Star Battery Five. Midget GT series valves are used throughout.

Undoubtedly there are some grounds for the many complaints we receive from those of our readers who reside in country districts. Radio technicians, as a whole, do not appreciate the problems of the country man, and battery-operated receivers do not appear to have received the amount of development which has gone into the production of the modern all-electric set.

Few Factory-built Sets

Even some of the best brands of factory-built sets do not appear to have battery-operated receivers in their range which can give comparable results to those achieved by the a.c. models in the same range.

Getting closer to home, we must bow our heads in shame and admit that it is months since a decent battery dual-waver was described in these columns.

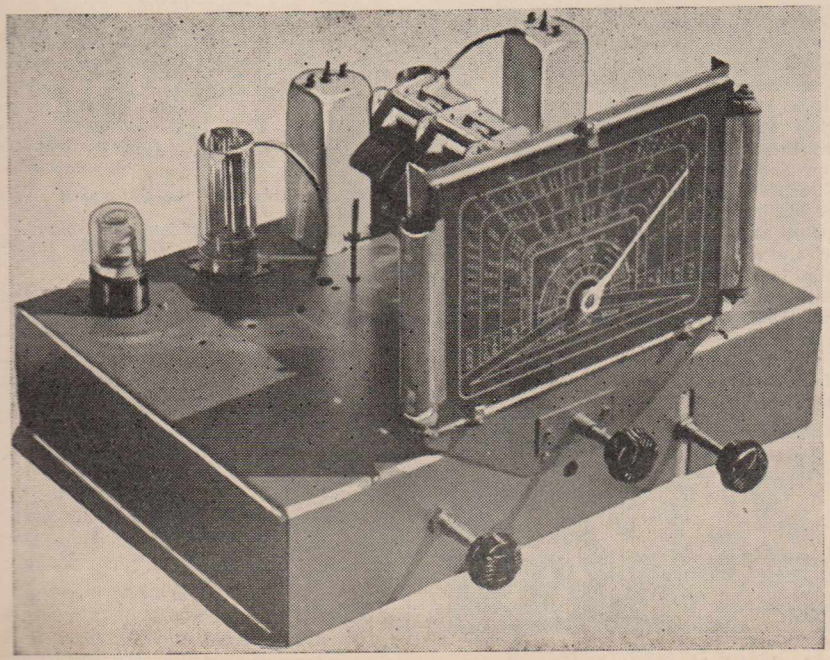
To Remedy Position

But here is the first step to remedy the position — the full details of a battery dual-wave receiver which is right up to the minute, uses the latest types of valves and other modern components and gives performance which is truly effective on both broadcast and short-wave bands.

The Circuit

The actual circuit was engineered in the laboratory of the Amalgamated Wireless Valve Company, where the Radiotron valves are manufactured, and, as you can imagine, the people who make the valves know how they should be used. These circuits are engineered primarily for the trade, and are published in the Radiotronics bulletins.

No constructional details are given, however, no parts specified, and no diagrams or photographs given. Such details are unnecessary for factory technicians and advanced experimenters. But we know that there are hundreds of our readers who are quite capable of building a completely satisfactory receiver only if they have picture diagrams to follow and photographs to show the layouts.



Another view of the completed receiver. The 1Q5-GT can be seen on the extreme left.

New Radiotron Circuit

Accordingly we have taken this new Radiotron circuit, built it up with components which are available on the open market, and here are the full de-

(Continued on page 18)

STAR BATTERY *(continued)*

tails, so that you can duplicate the job without difficulty.

For the benefit of those who can understand the full technical features of the design, these are also given, reprinted intact from the latest Radiotron bulletin.

The Coils

It will be noticed that the Radiotronics bulletin gives the full details of coils to be wound on three-quarter inch trolitul formers. So far as we are aware, these formers are not available on the open market, nor are coils wound to these specifications.

Suitable coils for the job, however, are provided in the latest R.C.S. dual-wave tuning unit, which covers the short-wave band from 13 to 40 metres, using the highly efficient Stromberg-Carlson "H" type gang condenser.

The Base

A suitable base has been designed to accommodate the tuning unit and

PARTS LIST

Star Battery Five

1—Base 14" x 10" x 3" (Arcadian).
1—Dual-wave coil unit (Radiokes, R.C.S.).
2—465 k.c. I.F.'s (Radiokes, R.C.S.).
1—3-gang condenser (Stromberg-Carlson).
5—Octal, 2—4-pin wafer valve sockets.
4—Knobs.
1—Dial (Radiokes, R.C.S.).
3—Terminals, 1 black, 2 red.
1—Length 4-wire battery cable.
1—4-pin speaker plug, 1—4-pin battery plug.
1—.5 megohm potentiometer with switch (I.R.C.).
1—fuse.

FIXED RESISTORS:

1—.005 megohm carbon 1-watt (I.R.C., E.T.C.).
1—.025 megohm carbon 1-watt (I.R.C., E.T.C.).
1—.035 megohm carbon 1-watt (I.R.C., E.T.C.).
1—.1 megohm carbon 1-watt (I.R.C., E.T.C.).
1—.2 megohm carbon 1-watt (I.R.C., E.T.C.).
1—.5 megohm carbon 1-watt (I.R.C., E.T.C.).
1—1 megohm carbon 1-watt (I.R.C., E.T.C.).
1—1.75 megohm carbon 1-watt (I.R.C., E.T.C.).
1—10 megohm carbon 1-watt (I.R.C., E.T.C.).
1—.25 ohm wirewound.
1—510 ohm wirewound.

FIXED CONDENSERS:

4—.0001 mfd. fixed (E.T.C., T.C.C.).
1—.004 mfd. fixed (E.T.C., T.C.C.).
1—.002 mfd. fixed (E.T.C., T.C.C.).
2—.05 mfd. fixed (E.T.C., T.C.C.).
2—.02 mfd. fixed (E.T.C., T.C.C.).
1—.1 mfd. fixed (E.T.C., T.C.C.).
1—.5 mfd. fixed (E.T.C., T.C.C.).
1—25 mfd. dry electrolytic (E.T.C., T.C.C.).

VALVES:

2—1P5GT, 1—1A7GT, 1—1H5GT, 1—1Q5GT (Ken-Rad, Radiotron, Mullard, Philips, Brimar).

SPEAKER:

1—Permag. speaker (Rola, Amplion).

BATTERIES:

1—X250 1.5-volt "A" unit (Eveready).
2—45-volt "B" units (Eveready superdyne).

MISCELLANEOUS:

4—Midget grid clips, solder lugs, nuts and bolts, hook-up wire, etc.

allow shortest possible leads to the wiring associated with the oscillator circuit, which tends to be critical. This layout has been supplied to the base manufacturers, and ready-cut bases exactly as used by us in the original set are readily available from all radio dealers.

Assembly

First step in the construction of the job is to get the five octal sockets and mark the connections in pencil at the terminals. It will be noticed that there are eight terminals on each socket, but quite a few of them are left blank.

To make the wiring easier we suggest that the pins to be used are clearly marked, then bent down, scraped and tinned with solder, before they are even mounted in the base.

After they have then been mounted, with the key of the centre hole pointing in the direction indicated on the picture diagram, it is easy to make sure of getting the wiring correct, a vital necessity.

As the sockets are mounted, the clips for the valve cans should be fitted with the same screws, and it is not a bad plan to put a soldering lug under each nut as well, it being desirable to have the shields efficiently earthed.

Earthing

Speaking of efficient earthing, we cannot stress too strongly that it is most desirable to run lengths of bare wire around the base, connecting up all "earth" connections and lugs. Relying on the metal of the base, and hoping that soldering lugs will make contact through a coating of paint is absolutely fatal to efficiency with a dual-wave set, and usually results in the job turning out to be hopelessly unstable in operation.

The Star Battery Five on the "bench" all ready for testing.

A glance at the photograph of the wiring of the original chassis should show how these earthing wires have been fitted. Even if not pretty, they mean results.

Mounting Components

From the photographs it will also be evident that we have soldered all components as directly as possible to their associated terminals. Although this is not nearly as neat as using a terminal strip and mounting all the minor components upon it, it does give a more effective set in the long run.

Our Motto Is

Our motto is — use as little hook-up wire as you can. In one or two cases, however, it is desirable to have the component mounted more rigidly than can be obtained by allowing it to hang on its own pigtails. To overcome this difficulty it will be noticed that we have made use of the blank terminals on the tuning unit, and also used a .001 mica condenser, which can mount directly to the base with a screw.

Fortunately the wiring is not extensive, most of it having been already completed when the complete tuning unit is obtained. A handy man with a good method of heating his soldering iron should be able to finish the whole of the wiring-up job in half a day.

Testing

Once finished, the next step is the initial testing, and here is a task which needs some care. Even the best of set-builders seem to find it simple enough to burn out a set of valves while messing around. It takes only a fraction of a second to burn out a set of filaments and it makes you poorer by pounds!

The circuit specifies a fuse, but these do not appear to be readily available in these modern days. The wholesaler who supplied our kit of parts looked positively dismayed when we asked him for a fuse.

Alignment

Once the batteries have been correctly connected up, and this should be simple enough, as only four battery leads are used, the aerial and speaker can be attached, and then the power switched on, this switch being incorporated in the volume control.

Swinging to the low wavelength end of the dial, it should be possible to pick up a strong station and then proceed to adjust the tuning unit trimmers to get best results. Start by working on the aerial and r.f. coils, but don't touch the setting of the oscillator coil.

When these have been peaked, by which we mean that a fraction of a turn one way or the other cuts down volume, the dial can be swung to the top end of the band and the padder adjusted to get best results from 2FC or some other station up at that end. During the process the dial will be rocked to and fro. It should be found that the proper setting will bring the station into its proper position on the calibrated dial, provided of course that the dial is correctly matched to the gang condenser and tuning coils used.

The Intermediate Transformers

We are assuming that the intermediate transformers do not need any adjustment, as is usually the case if they are used with our layouts, which ensure that the lengths of wires are normal.

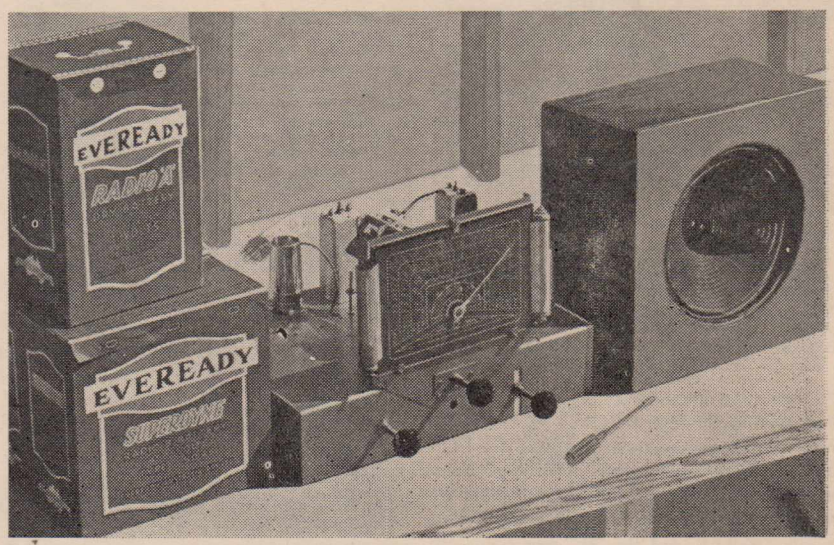
Even if the intermediates do need attention, it should be only a matter of a very small adjustment, which should be carried out with the volume control cutting the power output down to a whisper. At low volume levels

(Continued on page 21)

LABORATORY SERVICE

This receiver is covered by our Special Laboratory Service, and any receivers built to the instructions contained in this article can be brought in to us if there is any doubt about performance being up to expectations.

We will run an eye over the chassis and express an opinion as to any alterations or adjustments which should be made in order to get maximum efficiency.



Insist on RCS TROLITUL COILS and DIALS —for PERFECT TRACKING—

For the De Luxe Communications, R.C.S. are the first in Australia to produce commercially a communications unit, and IT IS A SUCCESS! The results you will obtain will thrill you. Order the complete matched Foundation Kit, Code K124.

9.8 TO 550 METRES FOUNDATION KIT COMPRISES:
1—DA-2 5-band dial, 22/6; 2—IF131 Permeability I.F.'s, 27/6; 1—IF132 Permeability I.F., 13/9; 1—DW30 5-band coil unit, £10/10/-. Complete matched kit, Type K124, £13/13/9.
Other R.C.S. components for this set are — R.C.S. Trolitul Beat Frequency Osc. Coil, Code, F96, price, 11/9. R.C.S. 2-plate Midget Condenser, Code CV34, 3/9; R.C.S. 25 mfd. Double-spaced Midget Condensers, to gang for band-spread, Code CV49, 10/3.

FOR THE STAR BATTERY FIVE

The new R.C.S. Trolitul D.W. Coil Unit, with R.F. Stage, 13 to 40 metres on S.W., is correctly shielded, has very short leads and provides maximum efficiency. If you want the best set possible, specify the R.C.S. components listed below:—

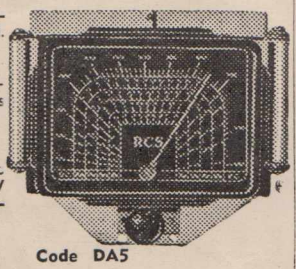
Star Battery Five Coil Unit, Code K155. Price £3 7 6
2 Permeability I.F.'s, Code IF130 and 132. Price ..... 13/9 each
R.C.S. Dial, B.C. and 13 to 40 metres. Code DA5. Price £1 2 6

NEW R.C.S. DIALS

DA-1. Standard D/W Dial. Price, 22/6.

DA-2. Communications Dial. Price, 22/6.

DA-3. 13.7 to 50 metre D/W Dial "H" Condenser. Price, 22/6.



Code DA5

JUST RELEASED!

The new R.C.S. Code DA-5 Dial (illustrated above), dual-wave 13 to 40 metres and Broadcast. For "H" Gang. Code DA-5, 22/6.

•

For some time we have felt that we should provide dials for use with coils of our manufacture, thus assuring perfect tracking. Types DA-1 and DA-2 are single glass Dual Wave, the type DA-2 having been designed especially for use with our Five Band Communications Receiver coil kit, and the "H" type condenser. Code DA-1 is a standard Dual Wave dial for use with R.C.S. Coils and the "F" type condenser.

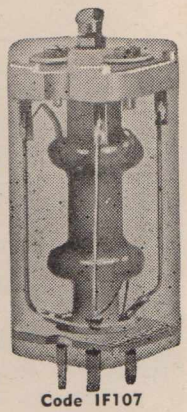
•

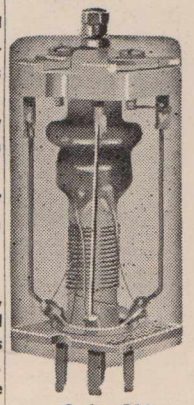
New Circular Dual-wave Dial for Portables, etc. Face 3 in. diam., finished in green and gold, stations clearly marked, metal parts plated. Moulded Trolitul drum, no friction. Range: B.C. and 13.7 to 50 metres. Code DA-4. Price 8/-

R.C.S. TROLITUL INTERMEDIATE TRANSFORMERS

The new R.C.S. Trolitul I.F.'s are extremely stable, due to new methods of construction made possible by the use of Trolitul formers and base. No loose wires to shift and alter frequency. Positively the best I.F.'s yet produced.

Code	Price
Air Core, 465 k.c.	
IF107. 1st I.F.	7/6
IF108. 2nd I.F.	7/6
Iron Core, 465 k.c.	
IF109. 1st I.F.	11/-
IF110. 2nd I.F.	11/-
Air Core, 175 k.c.	
IE68. 1st I.F.	7/6
IE69. 2nd I.F.	7/6


Code IF107


Code G19

R.C.S. TROLITUL DUAL WAVE COILS

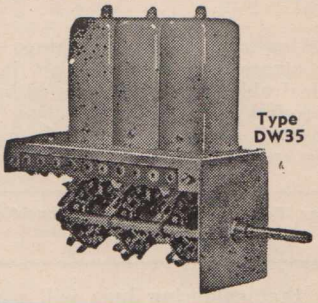
These coils have the B/C and S/W Trimmers incorporated. The Oscillator coil also contains the S/W Padder. S/W 16 to 50 metres, B/C 1500 to 550 k.c.

Code	Price
G19. Aerial Air Core	14/-
G20. R.F. Air Core	14/-
G21. Osc. Air Core	14/-

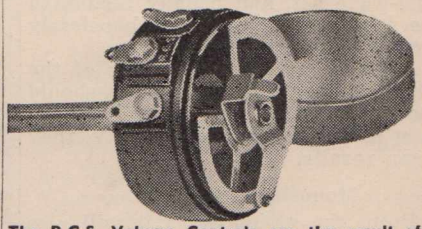
R.C.S. DUAL WAVE UNITS

Type DW35, as illustrated, consists of Aerial, R.F. and Oscillator Coils, Wave Change Switch, the necessary B/C and S/W Trimmers and Padder mounted on a rigid steel base, wired up ready to assemble in a set utilising 465 k.c. and an R.F. stage. The bands are S/W 13 to 40 metres, and B/C 1500 to 550 k.c.

Code		Price
DW34	For A.C. operation	£3 7 6
DW35	For battery operation	£3 7 6


Type DW35

R.C.S. POTENTIOMETERS AND RHEOSTATS



The R.C.S. Volume Controls are the result of improved and new methods of manufacture, together with alterations in design and final testing. Noiseless, they are constructed so as to cut off all volume.

				Code	Price
6 ohm	Rheostat	.25	Amp.	PT40	5/-
10 "	"	.25	Amp.	PT38	5/-
20 "	"	.25	Amp.	PT39	5/-
30 "	"	.25	Amp.	PT34	5/-
400 "	Potentiom.	50	M/A	PT46	5/-
1000 "	"	35	M/A	PT47	5/-
2500 "	"	30	M/A	PT49	5/-
5000 "	"	30	M/A	PT51	5/-
10000 "	"	20	M/A	PT52	5/-
15000 "	"	20	M/A	PT53	6/6
20000 "	"	15	M/A	PT54	6/9

RCS RADIO PTY. LTD.

Obtainable from your local dealer

50 GLEBE ST., GLEBE. 'Phone MW 2405

R.C.S. "H" TYPE COILS WILL TRACK ONLY WITH R.C.S. "H" TYPE DIALS — NO OTHER MAKE

STAR BATTERY *(continued)*

it is easier to hear small changes in strength.

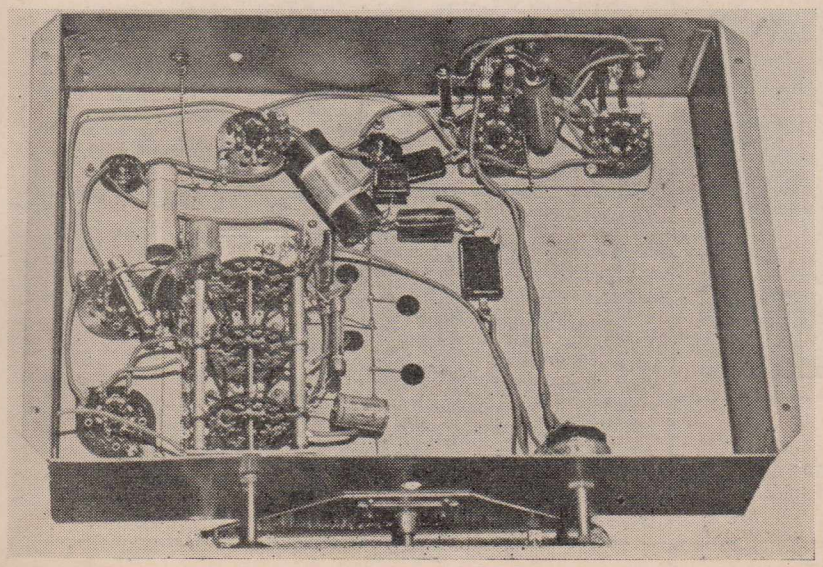
Reprinted from Radiotronics No. 105

The economy in battery consumption which may be obtained by the use of Radiotron 1.4-volt valves has led to a demand for their application in dual-wave receivers. The performance of the receiver to be described should be regarded as typical of what may be obtained with good circuit and coil design.

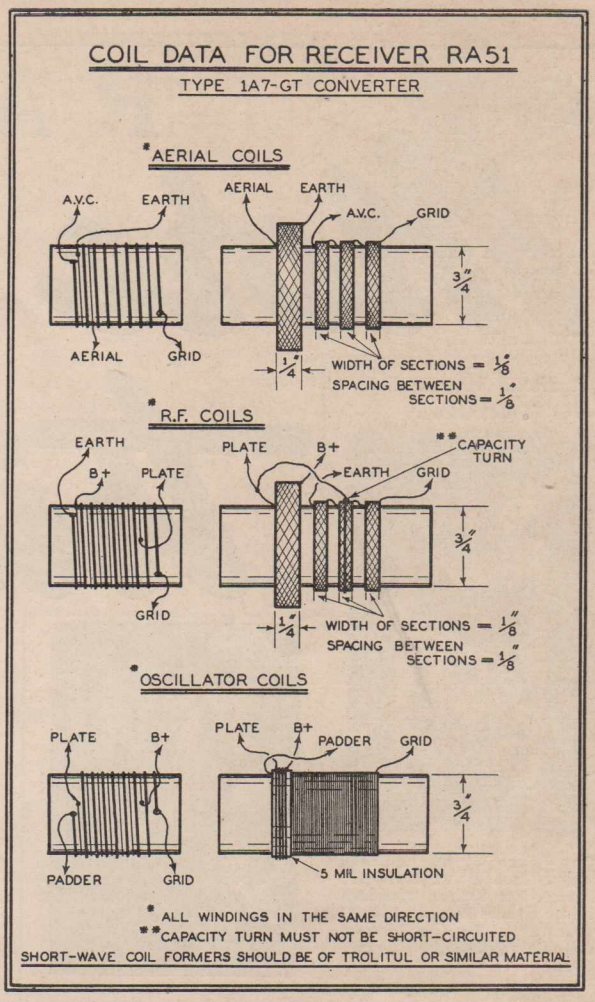
Lower Emission

As a result of the inevitably lower available emission of the 1.4-volt valves, as compared with that of the A.C. types, the chief problem encountered in the design of a receiver incorporating a short-wave band and employing a pentagrid converter valve having similar characteristics to the 1A7-GT, is usually the difficulty in obtaining satisfactory and consistent oscillator performance over the wide tuning ranges demanded in present-day receivers.

This is primarily due to the unsatisfactory values of L and C which must be used in the oscillator circuit of the converter valve to cover such wide ranges, particularly on the highest frequency range. This difficulty may be overcome in the case of the 1A7-GT (when used with the usual tuned grid-plate feed-back oscillator circuit) by reducing the frequency coverage to a lower value, depending on the obtainable Q of the oscillator tuned circuit. Where this is not desirable, however, wider coverage may **only** be obtained by paying particular attention to circuit losses and the design of the oscillator coil. In this way, entirely satisfactory operation has been obtained in the receiver to be described, for a short-wave frequency coverage of 3.4 : 1.



Here is the full coil winding data as supplied by the engineers of the Valve Company. It should be noted that these coils have been designed for use only with the padder feedback arrangement shown in the circuit diagram.



Circuit Features

The circuit arrangement of the 5-Valve Dual-Wave Receiver (RA51) is essentially the same as that of the receiver (RB52), published previously in Radiotronics 104, except for the inclusion of the dual-wave feature and modifications to the converter circuits.

The tuning ranges covered are:—

Broadcast ..	550—1600 Kc/s 545—187.2 Metres
Short-wave ..	6.5—22.05 Mc/s 46.2—13.6 Metres

Left: The simple layout and wiring of this set can easily be seen in this photograph.

The same valve types are used throughout and are as follow:—

R.F. Amplifier	1P5-GT Super Control Pentode
Frequency Converter	1A7-GT Pentagrid Converter
I.F. Amplifier	1P5-GT Super-Control Pentode
Detector and A.F. Amplifier	1H5-GT Diode, High-Mu Triode
Power Amplifier	1Q5-GT Beam Power Amplifier

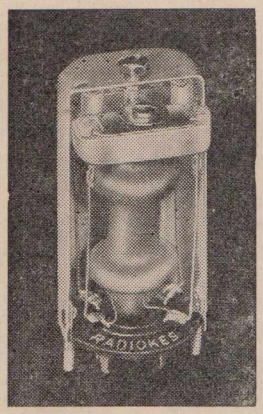
(Continued on page 23)

RADIOKES

"The name to know in radio"

More triumphs

Radiokes Intermediate Transformer



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

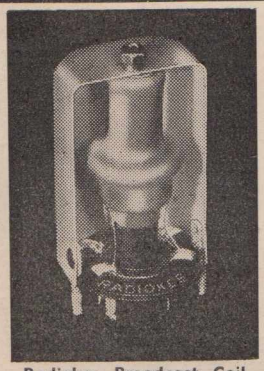
Type	List Price
A.I.F. (Air Core)	7/6
I.I.F. (Iron Core)	11/-
P.I.F. (Perm.)	13/9

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

Radiokes Dual-Wave Coil (at right)

Litz-wound windings, lugs already tinned, short-wave range 16 to 50 metres, B.C. range 1500 to 550 k.c.

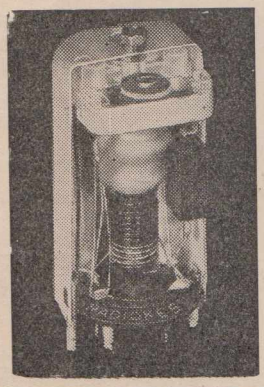
Type D.W.C. List price, 14/-



Radiokes Broadcast Coil Trolitul rigid construction, available in air core and permeability types.
Type B.A.C. Aer., R.F. or Osc. ..... List Price 6/6

★

Radiokes Dual-Wave Coil



"DE LUXE COMMUNICATIONS"

Once again Radiokes steps to the fore with a perfectly-matched Kit for the "De Luxe Communications"— featuring specially-designed and constructed Radiokes coils and I.F.'s. You can't do better than specify RADIOKES Foundation Kit for the "De Luxe Communications."

FOUNDATION KIT COMPRISES —

1 DWD-2 5-band dial	22/6
2 IFP Permeability I.F.'s	27/6
1 IFP Permeability I.F.	13/9
1 5-band coil unit	£10/10/-

Radiokes Foundation Kit, 9.8 to 550 metres, CK1010 .... **£13/13/9**

SPECIFY ALSO THESE RADIOKES COMPONENTS —

Radiokes Trolitul Beat Frequency Oscill. Coil, Type BFO	11/9
Radiokes 25 mfd. Double-spaced Midget Condensers, for ganging. Type MCTD-25	10/3
Radiokes two-plate Midget Condenser. Type MCT-10	3/9

"STAR BATTERY FIVE"

Another Radiokes success is the Coil Unit for this set — Dual-wave with R.F. stage, 40 metres — Type DAU -3. Ensuring the highest possible standard of results, the Radiokes Coil Unit for the Star Battery Five will delight you with its efficiency.

Radiokes Coil Unit. Type CK1012	£3 7 6
2 Radiokes Permeability I.F.'s. Type P.I.F., @ 13/9 each	£1 7 6
Radiokes Dial, 13.7 to 40 metres, and broadcast. Type DWD-5	£1 2 6

Radiokes 13.7 to 40 Metres Dual-wave Unit

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

Type DWU-1 — List Price, 27/6

First with the New Release

The newly-developed coil unit for the "Star Battery Five" is another Radiokes triumph of design and construction. Broadcast 1500 to 550 k.c., Short-wave 13.7 to 40 metres. Aerial, R.F. and Oscillator Coils, 460 k.c. For A.C. or Battery-operation.
Type DAU-3 .... £3/7/6

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

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

NAME .....

ADDRESS .....

STAR BATTERY *(continued)*

It should be noted that all of these valve types are now manufactured in Australia and are available from stock.

In order to obtain satisfactory and consistent oscillator performance over as wide a short-wave frequency coverage as that stated, padder feedback is used in the oscillator circuit of the converter on both ranges, while the oscillator grid circuit losses are reduced to a minimum by the use of a trolitul former for the short-wave oscillator coil. With the constants given, the padder feedback circuit limits the variation of oscillator grid current over the short-wave band to a value (20-49 mA.), which maintains the total cathode current within the recommended limit of 3 mA. maximum and enables a satisfactory value of conversion conductance to be obtained over the entire range.

Feedback Excessive

On the broadcast band, however, the feedback obtained is excessive and results in a sharp rise of oscillator grid current as the high frequency end of the band is approached. This undesirable feature is considerably reduced and a relatively flat characteristic obtained by connecting a resistor of 25,000 ohms in parallel with the oscillator grid coil, as shown in the circuit diagram.

The coils for the broadcast band are mounted in coil cans and are similar to those specified for circuit RB52, with the exception of the oscillator primary, which now has 40 instead of 4 turns. The additional turns are necessary, owing to the alterations to the oscillator circuit constants to permit optimum short-wave operation. **The short-wave coils** are of the interwound type and are designed to have minimum high-frequency loss. Leads are kept short by mounting the coils close to the wave change switch. The design of the short-wave oscillator coil to cover a wide range of fre-

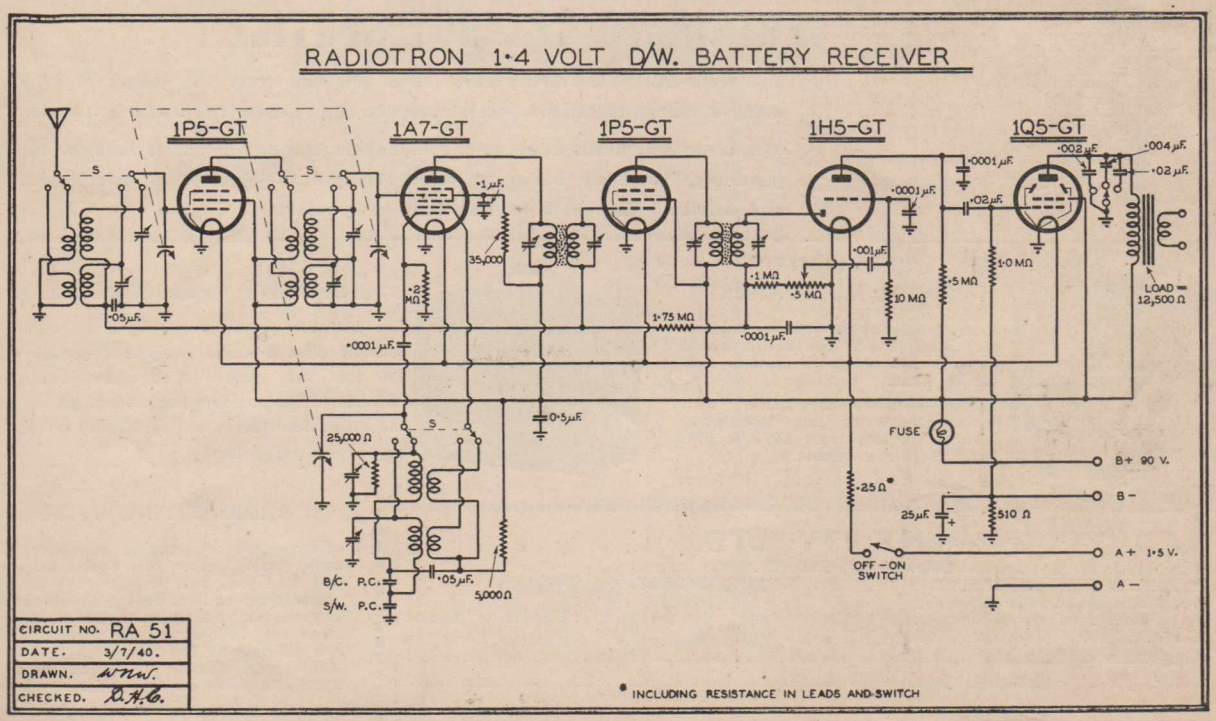
(Continued on page 24)

COIL DETAILS
Suitable for Radiotron Converter Type 1A7-GT

COIL	PRIMARY	SECONDARY
AERIAL 550-1600 Kc/s.	375 turns 40 S.W.G. S.S.E.	120 turns 5/44 B. & S. Litz, in three equal sections.
R.F. 550-1600 Kc/s.	950 turns 40 S.W.G. S.S.E. with one turn over second section of secondary.	120 turns 5/44 B. & S. Litz, in three equal sections.
OSCILLATOR 550-1600 Kc/s.	40 turns 34 B. & S.E. wound* over bottom end of secondary.	105 turns 31 B. & S.E.
AERIAL 13.6-46.2 Metres	1.5 turns 34 B. & S.E. interwound from A.V.C. end of secondary.	8.37 turns 22 B. & S.E. wound in screw cuts 16 T.P.I.
R.F. 13.6-46.2 Metres	6.25 turns 34 B. & S.E. interwound from earth end of secondary.	8.37 turns 22 B & S.E. wound in screw cuts 16 T.P.I.
OSCILLATOR 13.6-46.2 Metres	6.0 turns 34 B & S.E. interwound from padder end of secondary.	8.0 turns 22 B. & S.E. wound in screw cuts 16 T.P.I.

*The first turn of the primary is wound immediately over the first turn of the secondary.

Below is the original Radiotron circuit. It should be noted that the padder feedback arrangement shown is to be used only if coils are wound according to the data given. When factory-wound coils are used, the padder arrangements fitted by the maker should be used.



STAR BATTERY *(continued)*

quencies presents the main problem of this type of receiver. If due regard is given to selecting the optimum wire gauge for the secondary, maintaining a length/diameter ratio approaching unity and using low loss construction (i.e., short leads, optimum winding turns per inch and a former of low high-frequency loss), a satisfactory short-wave oscillator coil should be obtained. The short-wave oscillator coil described in the coil data provides an oscillator grid current having the following values:—

Frequency (Mc/s.)	Wavelength (Metres)	Oscillator Grid Current (mA.)
22.05	13.6	49
12.5	24.0	45
6.5	46.2	20

These values of oscillator grid current are above the recommended minimum value of 20 mA. so that the recommended maximum cathode current of 3 mA. is not exceeded at any point in the tuning range. Also, oscillation of the 1A7-GT is maintained on both ranges when the filament and plate supply voltages are reduced to 1.1 volts and 45 volts, respectively ("B" battery internal resistance = 1,000 ohms).

The **coil switching** arrangement for band-changing is simple, while providing for the separate switching of both primary and secondary of each coil on both bands.

The **diode load filter** arrangement is similar to that of circuit RB52, in that the second filter condenser is connected directly to the grid of the 1H5-GT. In this way improved filtering is provided at low volume control settings, together with a slight tone control effect when the volume control is advanced for receiving weak signals. Operation of the 1H5-GT with high resistance grid leak bias is used in order to permit the reduction of A.C. loading and distortion in the diode circuit.

The filtering of stray R.F. interference from the audio section of the receiver is achieved by the use of a pi-type filter in the diode circuit, together with a 0.0001 mF. bypass condenser connected from the plate of the 1H5-GT to ground.

Tone Control

The three-position **tone control** circuit is shown in the circuit diagram connected across the primary of the speaker output transformer. In this simple system, the values of capacitance were selected by means of an aural test, so that some adjustment of these values may be required to suit different cabinets, loud speakers and individual taste.

The simple **A.V.C. system** employs the full D.C. voltage available from the diode circuit. After the usual resistive capacitive filter network, this voltage is used to control the grids of the 1P5-GT valves in the R.F. and I.F. amplifier stages. A.V.C. is not applied to the signal grid of the 1A7-GT owing to the sharp cut-off characteristics of this converter valve. The effectiveness of the A.V.C. system on the broadcast band is shown by the A.V.C. characteristic in Fig. 3.

Alternative System

A more desirable A.V.C. characteristic may be obtained, but on the broadcast band only, by applying a fifth of the available A.V.C. voltage to the signal grid of the 1A7-GT. This requires, however, a more expensive and elaborate A.V.C. voltage-dividing-network. It is not recommended that A.V.C. be applied to the 1A7-GT at frequencies above 1600 Kc/s.

The **power output** of the 1Q5-GT in this receiver is limited to 168 mW.* (10% Total Harmonic Distortion). Self-Bias (–6 volts) is employed and thus avoids the necessity for a separ-

* See Radiotronics 102 page 1-2, and Radiotronics 103 page 21.

ate "C" bias battery since the remaining valves in the receiver are all operated at zero bias. In addition, a decrease in bias is assured as the "B" battery terminal voltage falls with use.

The total "B" battery drain on either wave band, under zero-signal conditions, is 12.35 mA. This is reduced to 107 mA. when the receiver is tuned to a modulated signal of 100,000 mV. at the aerial terminal and the power output is adjusted to 168 mW.

Power Output

The power output may be increased to 270 mW., if desired, but only at the expense of increased "B" battery drain and a separate "C" bias battery. In this case, 90 volts, instead of 84 volts, are available as plate and screen supply voltage for all the valves in the receiver, resulting in an increase in the total current drain. It is desirable, when the high tension voltage is so increased, that the 1A7-GT cathode current be checked and adjustments made to the oscillator plate and screen resistors, in order to prevent operation with a cathode current in excess of the maximum value recommended (3.0 mA.). Under this condition, the zero-signal "B" battery drain was found on actual test to be 20 mA., falling to 16 mA. under the signal input conditions previously defined, and with the output adjusted to 270 mW. (7% Total Harmonic Distortion).

The **filament supply** voltage is obtained from a 1.5-volt dry-cell, preferably of the block type specially designed for this class of service. It is strongly recommended that a series dropping resistor of 0.25 ohm resistance (inclusive of lead and switch resistance) be inserted between the 1.5-volt cell and the filament circuit, as shown in the circuit diagram. Further information concerning this precaution is given in Radiotronics 96, page 22.

The **plate and screen supply** voltages are obtained from the usual 90-volt "B" battery block, of which, however, only 84 volts are available, owing to the loss of 6 volts in self-bias for the 1Q5-GT.

Performance

Test results indicating the performance of this receiver are given in tabular form at the end of this article. The **absolute sensitivity** at the aerial terminal is better than 3 mV. over the broadcast band and 15 mV. over the short-wave band, for 50 mW. power output. The **noise level** under these conditions and with the volume control set at maximum, varies on the broadcast band, from 7 mW. at 1500 Kc/s. to 12 mW. at 600 Kc/s. On the short-wave band, under the same conditions, the noise level varies from 1.0 mW. at 20 Mc/s. to 0.5 mW. at 7.5 Mc/s. The noise level when expressed in terms of ENSI becomes 0.38 mV. at 1500 Kc/s., and 0.43 mV. at 600 Kc/s. on the broadcast band, and 0.42 mV. at 20 Mc/s. and 0.53 mV. at 7.5 mc/s. on the short-wave band.

The **image ratio** at 20 Mc/s. is 30, increasing to 640 at 7.5 Mc/s. These values are higher than those which have been obtained in other receivers of similar design tested in this laboratory, and are due principally to the use of lower loss and higher Q aerial and R.F. coils. In this connection, it may be of interest to note that the Q of the short-wave secondary coils is of the order of 200 at 10 Mc/s. The bandwidth of the receiver was measured at 1000 Kc/s. on the broadcast band and the **selectivity curve** obtained is shown in Fig. 2. From the latter, the bandwidth of the receiver is seen to be 10 Kc/s. at 10 times down, 27.5 Kc/s. at 1,000 times down and 42.5 Kc/s. at 10,000 times down.

(Continued on page 26)

STAR BATTERY *(continued)*

The A.V.C. characteristic is representative of the receiver performance at 1,000 Kc/s. and has been drawn according to Scroggie's method.†

It is seen that the 50 mW. output level is reached, on the broadcast band, at a point slightly above 2 mV. input and the full power output (168 mW.) at 8 mV. Although not shown on the diagram, at 12.5 Mc/s. on the short-wave range 50 mW. output is obtained with 7 mV. input and full power output at 27 mV. The mean slope of the A.V.C. characteristic from 20 to 200,000 mV. is 4.4 db for a 10 : 1 ratio of input voltage.

Overload Point

The overload point occurs at an input voltage of 400,000 mV. and is probably due to the limited grid base of the controlled valves; at this point the developed bias is –15 volts.

Distortion due to **modulation rise** is also apparent and is seen to increase rapidly at inputs above 100,000 mV., with the 30% modulated signal with which the measurements were taken. The signal voltage, at which the receiver overloads, may be slightly increased by applying a fractional part only of the available A.V.C. voltage to the grids of the controlled valves. This results, however, in a less desirable A.V.C. characteristic being obtained, while appearing to be unnecessary under almost all listening conditions likely to be experienced.

It is interesting to note that the receiver operates without instability when the input voltage applied to the aerial terminals is as high as 2 volts, on either band, although the distortion, of course, is correspondingly high. The "apparent" harmonic distortion, which is shown at low input levels, is largely noise combined with diode distortion. With an input exceeding 400,000 mV. there is some tendency towards feedback when the internal resistance of the "B" battery rises. This may be substantially eliminated by connecting a 4.0 mF. condenser directly across the "B" battery terminals, but in most cases this precaution is unnecessary. Without this capacitance the receiver is completely free from feedback at input voltages up to 400,000 mV. even when the condition of the "B" battery is very poor.

DISTORTION

At 25,000 mV. input to aerial at 1,000 Kc/s., 30% modulated at 400 c/s., and with 12,500 ohm resistive load in place of loudspeaker.

Output (mW.)	Harmonic Distortion (total)
50	2.7%
100	3.5%
168	10.0%

BATTERY CURRENT DRAIN AND BIAS VOLTAGE

	Current Drain	1Q5-GT Bias Volt.
"A" Battery	0.3 A.	
"B" Battery—No signal	12.4 mA.	6.3
0.1V. signal unmodulated	10.7 mA.	5.45
0.1V. signal 168 mW. output	10.8 mA.	5.50

OSCILLATOR GRID CURRENT

Oscillator Grid Current in 0.2 megohm grid resistor for an average sample 1A7-GT having an oscillator gm = 600 mmhos., over both bands, using the coils specified.

Frequency (Kc/s.)	Grid Current (mA.)	Frequency (Mc/s.)	Grid Current (mA.)
550	29	6.5	20
1000	53	12.5	45
1600	50	22.05	49

† See — The Radiotron Designer's Handbook, Third Edition, pp 177-178, 236-238.

Band Coverage—

Broadcast Band { 550-1600 Kc/s. / 545-187.3 Metres

Short-wave { 6.5-22.05 Mc/s. / 46.2-13.6 Metres

Tuning Condenser: 12-440 mmf. Other types of condensers may be used provided that suitable adjustment is made to the inductance of the coils

Maximum Effective Stray Capacitances: 45 mmF., including valve input, trimmer, wiring and coil capacitances.

Padder Capacitance—

Broadcast band: 500 mmF.

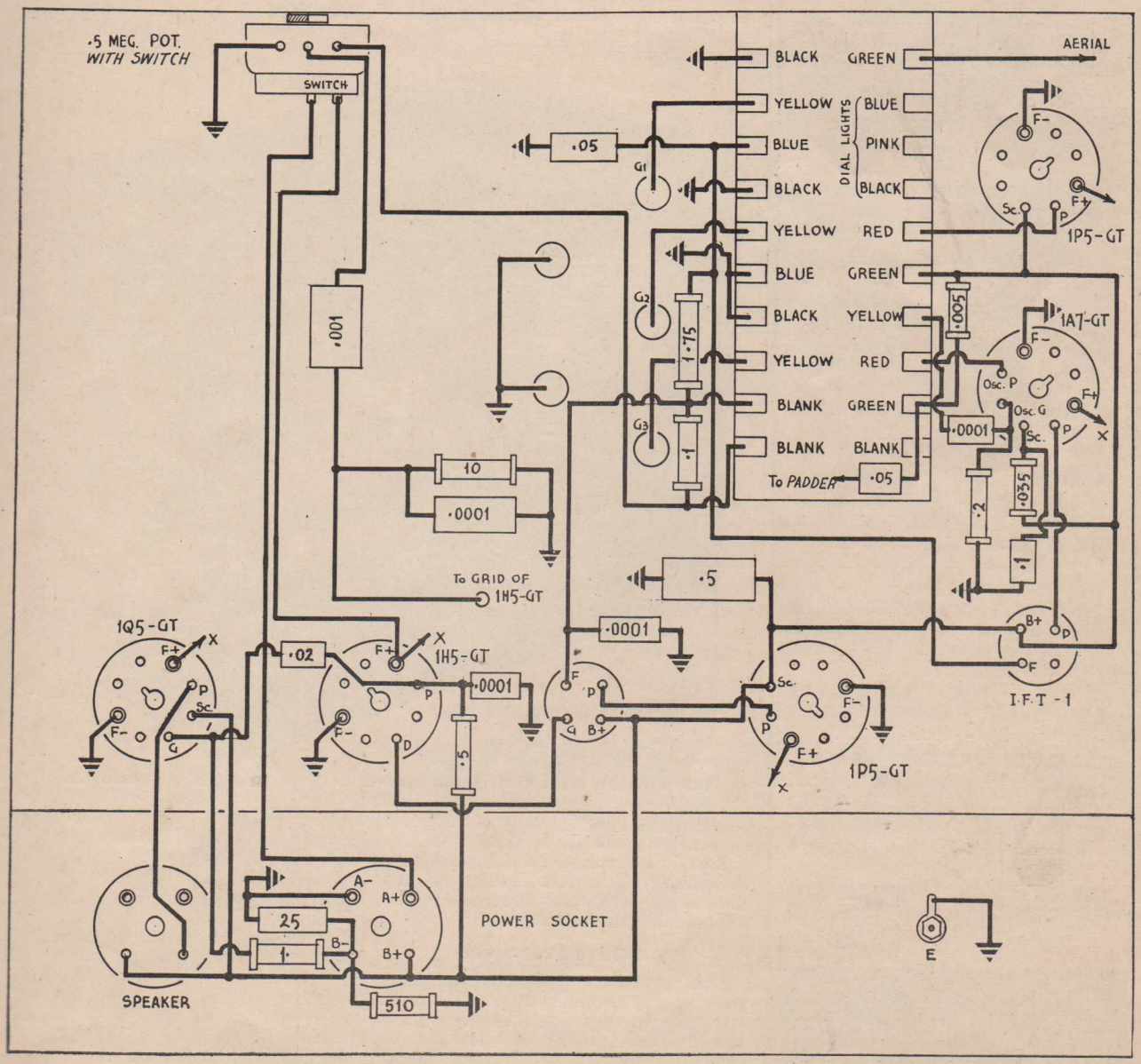
Short-wave Band: 3800 mmF.

Shield Can: Internal Diameter 2⅛ in.

Note that these coil data apply only to particular conditions, and adjustment will normally be required in differing layouts. The effective inductance of the coils is affected by the lengths of leads, the shield can, and proximity to other components in the case of unshielded coils. The band coverage is affected by the total stray capacitances as well as by the minimum capacitance of the gang condenser. Any minor adjustments in the coils should be made in the same proportion to both primary and secondary. In the accompanying illustration the primary and secondary of each coil is wound in the same direction. The single capacity turn wound over the second section of the secondary of the R.F. coil is joined to the inner end of the high impedance primary winding which is connected to the plate of the R.F. Amplifier.

HANDY RESISTOR COLOUR CODE

Colour	Body	End	Dot
Black	—	0	—
Brown	1	1	0
Red	2	2	00
Orange	3	3	000
Yellow	4	4	0,000
Green	5	5	00,000
Blue	6	6	000,000
Violet	7	7	—
Grey	8	8	—
White	9	9	—



Star battery picture diagram. Note how blank lugs on coil unit are used to hold resistors.

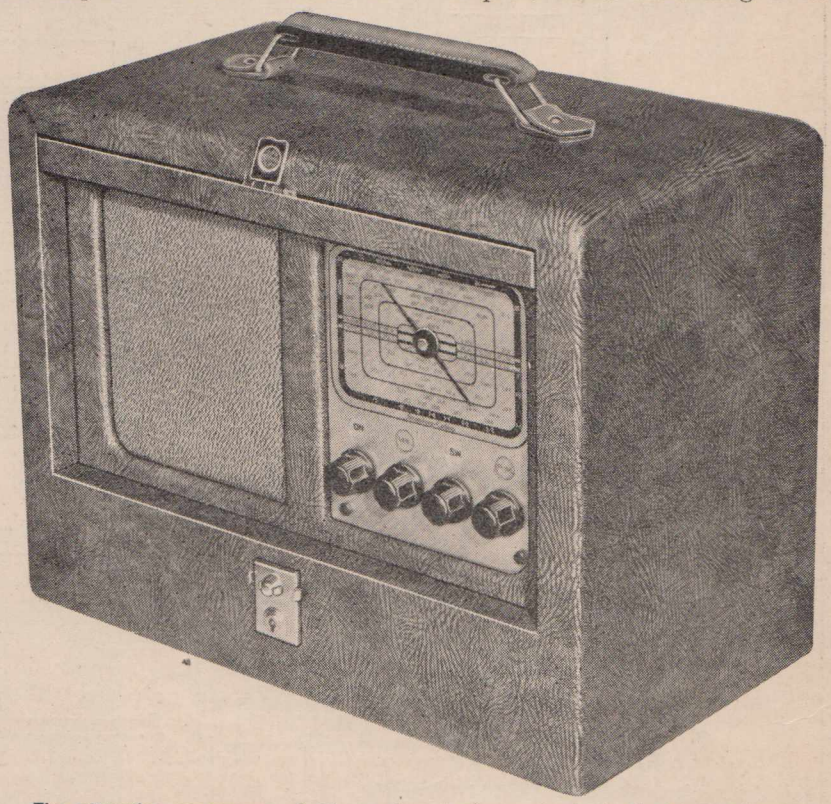
NEW

STROMBERG - CARLSON PORTABLE

Air test of new Stromberg-Carlson dual-wave portable known as PD51. An excellent performer on short-waves.

A self-contained radio receiver, small and compact enough to make it easy to carry around, suitable for operation from either batteries or the power supply, yet capable of powerful reception on both broadcast and short-waves, must surely sound like an idealist's dream of the future.

Yet, it all comes true in the new Stromberg-Carlson portable, one of the most advanced designs to be released in Australia.



The attractive appearance of this receiver is shown clearly in the photo above.

Attractive Proposition

This new Stromberg-Carlson portable, known as model PD51, is a most attractive proposition in every way. The leatherette-covered case is of handy dimensions, and has an ingenious lid, which comes down to completely cover the dial and knobs, yet slides up into the top portion of the case when the set is in use.

The idea is a vast improvement over the ordinary hinged lid.

A point worth mentioning is the way in which the lid can be locked in position, so that the set cannot be used without the key.

On Short-Waves

On the short-wave band the tuning covers from 13 to 38 metres. This takes in all the principal bands for short-wave broadcasting, yet avoids the critical tuning and unreliable operation sometimes found with earlier designs of dual-wave battery receivers.

Although an external aerial is desirabe for best reception of overseas

short-wave stations, it is surprising how some of the stronger stations are received quite well on the loop aerial, which is built into the cabinet. Of course, on the broadcast band it is unlikely that there should ever be any need for anything more in the way of an aerial than the in-built loop.

An Air Test

Actually tested on the air by us at the office one evening, we found no difficulty in tuning in dozens of interstate stations one after the other. We would think that at least seventy different stations were brought in without any external aerial.

The big New Zealand broadcaster, 2YA, just romped in at full loud-speaker strength.

External Aerial

For short-wave reception we found a small external aerial desirable, and so we attached a ten-foot length of hook-up wire to the special terminal provided. With this little aerial, the short-wave reception was surprisingly effective and we found that the European short-wave stations came through with plenty of punch.

Meets Every Requirement

In every way the new Stromberg-Carlson portable appeals to us as a job which fulfills the most exacting demands for a receiver which can be used at home or in the open and which will give splendid reception on both the broadcast and short-wave bands.

SPECIFICATIONS

Brand: Stromberg-Carlson.
Model: PD51.
Type: Portable.
Operation: Self-contained batteries and/or a.c. power.
Tuning: Broadcast and short-waves.
Coverage: Short-wave band, 13 to 38 metres.
Valves: Five 1.4-volt valves in receiver, plus rectifier in the power supply unit.
Aerial: In-built loop for broadcast. External aerial recommended for short-wave reception.
Battery Equipment: 2 PR45 "B" batteries, 1 PR8 "A" cell.
Price: Equipped with batteries — 24 guineas. Extra charge for a.c. power pack fitted — 4 guineas.
Made by: Stromberg - Carlson (A/asia) Pty. Ltd., 118 Bourke Road. Alexandria.
Sold by: Authorised Stromberg-Carlson dealers only.

Shortwave Review

CONDUCTED BY
L. J. KEAST

Night Reception Improving ★ Novel Sound Effects ★ Buck Harris Again ★ New Radio Station at Singapore ★ Help Wanted

NOTES FROM MY DIARY

As suggested in August issue, night reception is rapidly improving, so much so that one can safely rely on London direct for B.B.C. news from 9.30.

At 11 p.m. **WNBI**, on 16.87 metres, can be heard at very good strength, while, of course, long before that Berlin offers programmes on the same band.

Definite Improvement

Yes, definitely, night reception is improving and will still further improve. Just for fun, compare the 31-metre band at 9.30 a.m. and at the same hour at night. Whereas the former was quite good a week or so ago, to-day it's "gone west."

Novel Sound Effects

We have read where certain sound effects are taboo, but what could be more realistic than this? When listening to **WLWO**, Cincinnati, on 25.27 metres, on Friday, August 10, I heard the announcer say at the conclusion of Earl Goodman's talk from Washington, "The siren you heard when listening to our London representative a little while ago was the 'all clear.' London has just had another air raid — we have no particulars yet."

Canadian Transmitters

I am pleased to see that we are at last hearing a number of Canadian short-wave transmitters. Considering our relationship, this is as it should be, and I am surprised that, long ago, the powers that be did not arrange for either more satisfactory hours or power or both.

TAP, Ankara (9465 k.c., 31.70 m.): New schedule: 12.30 to 6.30 a.m. News 4.15 a.m. Talks on Sundays 5.50 a.m.

TAQ, Ankara (15,195 k.c., 19.74 m.): Heard in musical programme from 2.35 p.m. Whistle is on from 2.25, then at 2.28 bugle calls — six times — then announcement in Turkish, but Ankara is plainly heard.

THAI (Siam) have now moved to 11,715 k.c., 25.61 m., and, under the old call-sign of **HSP6**, are on the air from 10.30 p.m. to [illegible] a.m. News at 11.45.

HBH, Geneva (18,480 k.c., 16.23 m.): Terrific signal from 11.45 p.m. on Fridays only.

LKQ, Oslo (11,735 k.c., 25.57 m.): Heard at very good strength from 3.40 p.m.

FFZ, Shanghai (12,090 k.c., 24.80 m.): Appeared to be missing for a week or so, but I heard their announcement quite plainly at 11 p.m. on August 22.

Radio Saigon, Saigon (11,780 k.c., 25.46 m.): In addition to English programme from 8.30 to 9.15 p.m., they put over another English session for U.S.A. at 1.30 a.m. till closing at 2.05.

VLQ-8, Sydney (17,800 k.c., 16.85 m.): The morning broadcast to North America on this wave-length proving unsatisfactory, the A.B.C. moved to **VLQ-3**, 15,315 k.c., 19.59 m., from August 23.

Buck Harris Again

KGEI, 'Frisco (9670 k.c., 31.02 m.): My friend, Buck Harris, gave me another call on Sunday, August 11, at 11.25 p.m., and when the information he has posted arrives it will doubtless be useful to our readers.

GSI, London (15,260 k.c., 19.66 m.): This transmitter replaced **GSF** on August 4. The explanation of the proposed change was given in Transmission 2 on August 3. London had been advised that reception in Australia on **GSF** was very poor, and the B.B.C. thought the change would improve matters. It certainly did. Would not be surprised if many more changes are made before this issue is on sale. London generally figure on making alterations about the first week in September.

PCJ-2, Holland (15,220 k.c., 19.71 m.): Heard opening at 11 p.m.; very loud and overshadowed **WPIT**.

2RO4, Rome (11,810 k.c., 25.40 m.): At 8.30 a.m., when news in English is given, I found this easily the best of the five transmitters being used. The others were: 16.83, 19.7, 31.15 and 41.55 m. Incidentally, when closing at 8.45 our lady announcer said it was also broadcast on 260 and 271 metres.

FZEB, French Somaliland

FZEB, Djibouti (17,280 k.c., 17.36 m.): Interest in Somaliland encourages one to try for this chap, who is supposed to test on the first Wednesday in the month between 11 and 11.30 p.m., but maybe other things are occupying their attention at present.

New Radio Station at Singapore: Doubtless readers noted with profound satisfaction that the B.B.C. intend almost immediately to erect a powerful station at Singapore.

"HAMS"

Mr. J. C. Linehan (South Australia) writes: 20 metres has mainly been W's, K's, K6's and a few OA occasionally, but the band at present is hardly worth listening to.

Dr. Keith B. Gaden (Queensland) writes: Got three 11-metre calls between 10.30 and 11 a.m. Did not

(Continued on opposite page)

HELP WANTED . . .

Under this heading I intend each month to list stations whose identity has not been definitely established. Readers will show a grateful consideration to listeners if they will send us any clue that may enable us to ascertain the whereabouts of these "strangers in our midst." Several inquiries have been sent in this month. Here they are:—

Submitted by Mr. Nelson, Cairns:

Approximate wave-length 33.85 m., around 7.30 a.m. Sounds like a European.

Approximate wave-length 19.4 m., around 9 p.m. Sounds like European, although latest American cowboy songs and dance tunes are heard. (This may be **RW-96,** Moscow, but music mentioned makes it unlikely.—Ed.)

Submitted by Dr. Gaden, Tharmogindah:

Approximate wave-length 50 m., 3 to 3.15 p.m. Sounds like South American. (This is most likely **XEBT,** 6 mc., whose slogan is, "El Buen Tono S.A." They sign on with "Las Manitas," and off with piano solo, "Lieberstraum." **Interval signal** is cuckoo call twice. Owners: El Buen Tono S.A., Apartado 7944.—Ed.)

Approximate wave-length 41.83 m., around 3 p.m. D.E.I. or Asiatic.

Submitted by Wm. Chapman, Kensington, Sydney.

Approximate wave-length 24.85 m., around 7 a.m. Spanish station. (Don't know any Spanish chap on this wavelength, but it may be **TPZ,** 12.12 m.c., 24.75 m., Algiers, who are on the air from 6.30 to 7.30 a.m.—Ed.)

Approximate wave-length 48.30 m., 7 and 7.30 a.m., Sundays. Using French.

Submitted by Mr. Cushen, Invercargill, N.Z.

Approximate wave-length 62.63 m., at 2 p.m. Think this is Spanish and may be **HJDX,** Medellin, Colombia. They close at 2 p.m. with "Over the Waves." Uses a xylophone note chime during calls every fifteen minutes.

Approximate wave-length 50.34 m., 3 to 5 p.m. Usually signs at 3 p.m., but on July 28 closed at 5. Think this **OAX4P.** (Doubt if this wavelength would be heard at this hour in Sydney, but consider station is probably **HI1J,** San Pedro de Macoris, which is exactly on 50.34 m., while **OAX4P** is nearer 50.25 m.) Uses 250 watts. Interval signal is three xylophone notes, and announce as La Voz de Centro del Peru. Only particulars I have of **HI1J** are: Power 400 watts and signs on with Nacional Hymn. Apartado 204.

Submitted by R. C. Schooth, Brisbane:

Approximate wave-length between 31.15 and 31.22 m., from 3.45 to 4.10 p.m. Announcements in Spanish, and some crazy musicians played. Very loud and stopped abruptly.

Approximate wave-length 31.32 m between 3.30 and 4 p.m. Like Arabic or Persian. (Most likely **GSC** in Far Eastern session, although time does not correspond with B.B.C. programme sheets.—Ed.)

"HAMS" (continued)

hear call-signs, but believe them to be **W4XA, W5XAU** and **W8XNO.** At 10.10 a.m., July 19, on 10 metres, a real beauty — clear as crystal — **NY4AD.** This is in the Canal Zone. Also heard Canton Island Airport talking to the Clipper, using 35-metre channel, at 6 p.m.

Mr. Cushen (Invercargill) writes: Picked up Oklohama Police Patrol on 1620 k.c., R-7 at 9 p.m.

ALTERATIONS TO SHORT-WAVE BROADCASTING STATIONS OF THE WORLD

(See August issue, A.R.W.)

Please ADD to List:

VLQ-8, 17,800, 16.85, Sydney.
VLQ-3, 15,215, 19.59, Sydney.
WNBI, 11,820, 25.38, New York.
LRA-3, 11,730, 25.58, Buenos Aires.
HHEW, 9890, 30.33, Haiti.
RADIO MARTINIQUE, 9705, 30.92, Forte-de-France, F.W.I.
VOICE OF SHANGHAI, 9300, 32.25, Shanghai.
HC1GQ, 9170, 32.72, Guayaquil.
VOICE OF SHANGHAI, 8565, 35.00, Shanghai.
HC2JSB, 7854, 38.2, Guayaquil.
RADIO ESPANA, 7210, 41.6, San Sebastian.
CXA-21, 6170, 48.62, Montevideo.

Please ALTER List:

LKQ, 11,730, 25.58, from Buenos Aires to Oslo.
HSP6, 7970, 37.65, Bangkok, to 11,715, 25.61.
OAX4G, 6190, 48.47, Lima, Peru, to 6180, 48.54.

RETURN OF RECEIVING LICENCES FOR THE MONTH OF JULY, 1940

1	2 Broadcast Listeners	3 Experimental	4 Total, Columns 2 and 3	5 Free Issues into Blind Persons	6 Grand Total	7 Net Increase	8 Ratio to 100 of Population
			NEW SOUTH WALES				
New Issues	17,113	—	17,113	12	17,125		
Renewals	48,690	—	48,690	55	48,745		
Total Issues ..	65,803	—	65,803	67	65,870		
Cancellations ..	1,049	47	1,096	3	1,099		
In force at 31/7/1940 ..	473,445	54	473,499	783	474,282	16,026	17.01
			VICTORIA				
New Issues	4,950	—	4,950	4	4,954		
Renewals	35,075	—	35,075	54	35,129		
Total Issues ..	40,025	—	40,025	58	40,083		
Cancellations ..	2,511	44	2,555	8	2,563		
In force at 31/7/1940 ..	349,849	62	349,911	744	350,655	2,391	18.49
			QUEENSLAND				
New Issues	3,928	—	3,928	3	3,931		
Renewals	15,502	—	15,502	23	15,525		
Total Issues ..	19,430	—	19,430	26	19,456		
Cancellations ..	168	29	197	3	200		
In force at 31/7/1940 ..	154,587	13	154,600	283	154,883	3,731	15.21
			SOUTH AUSTRALIA				
New Issues	2,020	—	2,020	3	2,023		
Renewals	12,987	—	12,987	29	13,016		
Total Issues ..	15,007	—	15,007	32	15,039		
Cancellations ..	592	22	614	—	614		
In force at 31/7/1940 ..	126,011	15	126,026	311	126,337	1,409	20.89
			WESTERN AUSTRALIA				
New Issues	1,220	—	1,220	—	1,220		
Renewals	9,132	—	9,132	22	9,154		
Total Issues ..	10,352	—	10,352	22	10,374		
Cancellations ..	811	10	821	2	823		
In force at 31/7/1940 ..	87,935	16	87,951	236	88,187	397	18.89
			TASMANIA				
New Issues	735	—	735	4	739		
Renewals	4,555	—	4,555	10	4,565		
Total Issues ..	5,290	—	5,290	14	5,304		
Cancellations ..	145	4	149	—	149		
In force at 31/7/1940 ..	42,656	5	42,661	120	42,781	590	17.94
			COMMONWEALTH				
New Issues	29,966	—	29,966	26	29,992		
Renewals	125,941	—	125,941	193	126,134		
Total Issues ..	155,907	—	155,907	219	156,126		
Cancellations ..	5,276	156	5,432	16	5,448		
In force at 31/7/1940 ..	1,234,483	165	1,234,648	2,477	1,237,125	24,544	17.63

The MONTH'S LOGGINGS

ALL TIMES ARE AUSTRALIAN EASTERN STANDARD

AUSTRALIA AND OCEANIA

National Programmes:

VLR-3, Lyndhurst (11,850 k.c., 25.32 m.): Daily 6.30 a.m. to 5.15 p.m. Sundays from 6.45 a.m. Very fine daytime (Gaden, also Gandy, N.Z.).

VLW-3, Wanneroo (11,830 k.c., 25.36 m.): Daily 8.30 a.m. to 8 p.m. (Sundays from 9 a.m.). Usually good (Dr. Gaden).

VLW-2. Wanneroo (9650 k.c., 31.09 m.): Daily 8.15 p.m. to 1.30 a.m. Sundays till 12.30 a.m. Good (Dr. Gaden).

VLR, Lyndhurst (9580 k.c., 31.32 m.): Daily 5.30 p.m. to 11.55 p.m. (Sundays till 11.30). Patchy night station (Dr. Gaden). Good at present (Gandy, N.Z.).

Overseas Broadcasts:

VLQ-8, Sydney (17,800 k.c., 16.85 m.): To North America, 3.55 p.m. to 4.45 p.m.

VLQ-3, Sydney (15,315 k.c., 19.59 m.): To North America, 9.10 a.m. to 10 a.m. (as from August 23).

VLQ-7, Sydney (11,830 k.c., 25.25 m.): To Northern Europe, 5.30 a.m. to 7 a.m. Strong at 7 a.m. (Dr. Gaden). To A.I.F. in Palestine from 5 to 5.30 a.m.

VLQ-2, 11,870 k.c., 25.27 m., Sydney: To Southern Europe. 3.55 to 4.55 a.m.

VLQ-5, Sydney (9680 k.c., 30.99 m.): To North America, 10.25 to 11 p.m.; 1.25 to 2 a.m. To South-East Africa, 11.10 p.m. to 12.45 a.m. Being heard well in N.Z. (Gandy).

VLW-4, Wanneroo (9655 k.c., 31.04 m.): To South Africa, 2.55 a.m. to 3.30 a.m.

VLQ, Sydney (9615 k.c., 31.2 m.): Testing to A.I.F. in England between 5 and 5.30 p.m. To A.I.F. in Palestine, 5 to 5.30 a.m., in addition to **VLQ-7.** To New Caledonia and French Oceania, 8.55 to 9.30 p.m. To North and East Africa, 9.40 to 10.15 p.m.

Fiji:

VPD-2, Suva (9535 k.c., 31.46 m.): Was being heard between 3 and 3.30 every afternoon, but appears to be missing lately. Quite good from 7 to 8 p.m.

VPD-4, Suva (14,425 k.c., 20.80 m.): Can be heard sometimes calling Noumea just after 2 p.m.

New Caledonia:

FK8AA, Noumea (6120 k.c., 49.00 m.): 5.30 to 6.30 p.m. daily and often on Sundays. Heard well in N.S.W. and N.Z., but only R4 with rough note in S.A. (Linehan). Closes with "Marseillaise" and "God Save the King." —Ed.

AFRICA

Egypt:

SUX, Cairo (7860 k.c., 38.15 m.): Not as loud as last month. Very poor at 6 a.m. (Linehan).

Portuguese West Africa:

CR6AA, Lobita, Angola (7177 k.c., 41.75 m.): Heard at 7 a.m. (interval signal is three piano notes.—Dr. Gaden.)

Madagascar:

Radio Tananarive, Antananarivo (9870 k.c., 30.4 m.): Excellent at 6 a.m. (Linehan).

Morocco:

Radio Maroc, Rabat (11,940 k.c., 25.13 m.): Still being heard in early a.m. (Chapman).

AMERICA (Central)

TIPG, San Jose (9620 k.c., 31.19 m.): Excellent from 10 p.m. (Nelson, Chapman, Rodgers).

TIEP, San Jose (6690 k.c., 44.82 m.): Very patchy at night (Dr. Gaden).

TILS, San Jose (6165 k.c., 48.66 m.): Fair (Nelson, Rodgers).

TIX, San Jose (5830 k.c., 51.46 m.): Fair on closing with "Good-night Melody" (Cushen, N.Z.).

Guatemala:

TGWA, Guatemala (9650 k.c., 30.98 m.): Weak (Nelson, Gandy). Very good each Monday till they close at 8.15 a.m. (Linehan).

TGQA, Quezaltenango (6400 k.c., 46.88 m.): Good at 3.30 p.m. (Cushen, N.Z.) "La Voz de Quezaltenango."

TGWB, Guatemala (6460 k.c., 46.45 m.): Now said to be on 6480 k.c. Is anyone hearing them?—Ed.

USE OF REACTION

Owners of small receivers using reaction, or regeneration, as it is sometimes known, should be careful not to allow the receivers to re-radiate.

Recently the authorities introduced a regulation to prohibit the use of regenerative receivers on board ships unless provided with an r.f. stage or other effective way of preventing them from re-radiating.

So far the regulation does not apply to household receivers on land, but owners of these sets should be careful to handle them properly, to make quite sure that there will be no need for the regulation to be extended to cover all regenerative receivers.

Panama:

HP5A, Panama City (11,700 k.c., 25.64 m.): Fair when closing at 2 p.m., but good from 10 p.m. Plenty of English announcements (Nelson, Dr. Gaden, Rodgers, Bowser, Chapman, Cushen). Radio Teatro.

HP5J, Panama City (9610 k.c., 31.32 m.): "La Voz de Panama." Fair at night (Nelson, Chapman, Dr. Gaden).

El Salvador:

YSP, San Salvador (10,400 k.c., 28.85 m.): Heard fairly well on Sunday afternoons (Linehan, Cushen). This station, whose slogan is: "La Voz de Cuscatlan," appears to be jumping away from printed schedule. Reports from listeners hearing them in forenoon and after 11 p.m. would be welcome.—Ed.).

AMERICA (South)

Argentine:

LRA-1, Buenos Aires (9688 k.c., 30.96 m.): Heard at 8 a.m. (Dr. Gaden). Mr. Gandy, Wellington, N.Z., says: "Most nights announces in English and from 9 to 10 p.m. dance hour." (Can be heard some Sundays between 2.30 and 3 p.m.—Ed.).

LRX, Buenos Aires (9660 k.c., 31.06 m.): Heard up till 10 a.m. (Dr. Gaden).

Brazil:

PRF-5, Rio de Janiero (11,855 k.c., 25.3 m.): Same programme as **PSH,** but much weaker at 9 a.m. (Cushen, Gaden, Chapman).

PSH, Rio de Janero (10,220 k.c., 29.35 m.): Usually closes at 10 a.m. Not so good of late (Dr. Gaden). Excellent signals in N.Z. at 8.55 a.m. Opens at 2.30 p.m. in English announcements (Cushen).

PYA-2, Rio de Janiero (9205 k.c., 32.59 m.): Very weak at 8 a.m. (Nelson). Not heard lately (Dr. Gaden).

PRA-8, Pernambuco (6010 k.c., 49.92 m.): Quite clear at 7 a.m. (Dr. Gaden).

British Guiana:

VP3BG, Georgetown (6130 k.c., 48.94 m.): Heard well in South Australia. Mr. Linehan classes it as one of the best on the 49 m. band at 7 a.m. (Comes in very weakly at my listening post, and I would class **Radio Suisse** as the loudest of this band at that hour.—Ed.).

Chile:

CB970, Valparaiso (9730 k.c., 30.83 m.): At 9.50 p.m. is sometimes the best "31." (Dr. Gaden).

CB1180, Santiago (11,945 k.c., 25.12 m.): Have not heard for a long time (Dr. Gaden).

CB1190, Santiago (11,910 k.c., 25.19 m.): Same remarks apply here.

CB960, Santiago (9602 k.c., 31.25 m.): Good at 10 p.m. Heard giving physical exercises (Chapman).

Colombia:

HJAG, Barranquilla (9810 k.c., 30.58 m.): Probably helps to cause the din sometimes heard at 8 a.m. (Dr. Gaden).

HJFH, Armenia (9750 k.c., 30.77 m.): Fair, but fades by 11.30 p.m. (Nelson).

HJFK, Pereria (9730 k.c., 30.83 m.): Good signal, but interfered with by C.W. (Nelson). Good when opening at 10 p.m. (Cushen, N.Z.). Good at 10 p.m. (Dr. Gaden). (Known as "La Vox Amiga," this is the most powerful station in Colombia. They can easily be identifed, as they announce in English every hour on the hour, and when closing. Listeners logging this station should send a report and at the same time mention our appreciation of them announcing in English.—Ed.).

HJFC, Bogota (9710 k.c., 30.9 m.): Good signals till closing with march, sometimes at 2 p.m., but often carry on till 2.30 p.m. (Cushen).

HJCT, Bogota (9630 k.c., 31.15 m.): Weak, closes at 2.30 p.m. with "Ave Maria" (Nelson).

NEW RADIO BUOY

A combination sound-and-radio buoy which will enable ships to fix their distance accurately from the point marked by the buoy has been developed by the United States Coast and Geodetic Survey for use in ocean surveys.

The buoy will respond to signals from 100 miles away. It has a sound pick-up device, a radio amplifier and a radio transmitter. Most of the mechanism is contained in a sealed fifty-gallon steel drum. Suspended from the drum is a sound pick-up, which sends a small current to an amplifier filtered to accentuate low-pitch sounds. When the sound signal is received, the radio transmitter sends out a sharp signal.

In operation, a ship explodes a small TNT bomb. The current that explodes the bomb makes a mark on a rapidly moving tape. The sound of the explosion is picked up by the distant buoy, which instantly sends out its signal. This is received by the ship and causes a second mark to be made on the moving tape. The distance between the two marks permits the distance between the ship and the buoy to be calculated.

Ecuador:

HCJB, Quito (12,460 k.c., 24.08 m.): Still coming in, but weak at night (Chapman). Excellent at noon, with mailbag at 12.45 p.m. (Cushen).

HCODA, Guayaquil (9445 k.c., 31.77 m.): Sometimes very good in afternoon (Dr. Gaden).

HC2ET, Guayaquil (9195 k.c., 32.63 m.): Heard 8 to 9 a.m., also afternoons (Dr. Gaden).

HCIGQ, Guayaquil (9170 k.c., 32.72 m.): Poor station.

HC2CW, Guayaquil (9130 k.c., 32.86 m.): Sometimes the best HC station (Dr. Gaden).

Paraguay:

ZP14, Villa Rica (11,725 k.c., 25.60 m.): Fair signal at 9 a.m. on Sundays (Cushen).

Peru:

OAX4R, Lima (15,150 k.c., 19.81 m.): Easily found and separated from **GSF** (Dr. Gaden).

OAX4T, Lima (9560 k.c., 31.38 m.): Think heard this one afternoon (Rodgers). (Quite likely; they do not appear to have been heard of a night for some time.—Ed.).

OAX4-, Lima (9545 k.c., 31.43 m.): Not strong, but clear at 2.45 p.m. Just clear of **VPD-2** when the Fijian is on the air at 3 p.m.

(Continued on page 34)

LOGGINGS *(continued)*

OAX5C, Ica (9405 k.c., 31.95 m.): Excellent at 2.30 p.m. (Cushen). I concur.—Ed.

OAX4J, Lima (9340 k.c., 32.12 m.): Excellent at 2 p.m. (Gaden, Cushen, Rodgers). Heard well at Randwick. "La Voz de Lima." Signs on with "Broadway Rhythm," and off with "Whistler and His Dog." Interval signal is three chimes.

OAX4G, Lima (6190 k.c., 48.47 m.): Heard one Sunday signing off at 5 p.m. with "Goodnight Melody" (Cushen). (Well, here is another frequency jumper. Latest advices from U.S.A. say: **"OAX4G** just changed frequency from 6297 k.c., 47.65 m., to 6180 k.c., 48.54 m." State that identification is possible by "peet-peet-peet" of high pitched auto horn, and reference to Remington quite ofen.—Ed.).

OAX4Z, Lima (6080 k.c., 49.34 m.): Mr. Gandy, Wellington, N.Z., advises hearing this station in a special English hour from 7 to 8 p.m. on Wednesdays only. It would be too hard to hear at this hour at my location, but, according to station details I have in front of me, they may be heard by other listeners more favourably situated. Details are: Slogan, "Estacion Radio Nacional Del Peru." Signs off with "To a Wild Rose." Studios at Av. Petit Thouars 447.

Uruguay:

CXA-19, Montevideo (11,705 k.c., 25.63 m.): Good signal at 8 a.m. (Cushen, Gaden). This is a comparatively new station, and known as "El Espectador" (The Spectator); relays **CX18** Radio Sport. Is sometimes heard on 11,690 k.c.—Ed.

AMERICA (North)

WNBI, New York (17,780 k.c., 16.87 m.): Excellent at 10.30 p.m. (Cushen).

WGEA, Schenectady (15,330 k.c., 19.57 m.): Fair a.m. (Chapman, Gandy, N.Z., Hastings).

KGEI, 'Frisco (15,330 k.c., 19.57 m.): Fair 2 p.m. (Chapman, Rodgers, Gandy, Hastings).

WLWO, Cincinnati (15,270 k.c., 19,64 m.): Good around 2 p.m. (Chapman).

WPIT, Pittsburg (15,210 k.c., 19.72 m.): Can be heard most nights opening at 11 p.m. (Nelson). Overpowered by **PCJ-2** when Dutch station is on.—Ed.

For those who wish to communicate with Alan Graham his address is:—

VX18821,
Pte. A. GRAHAM,
2nd Reinf. 2/5th Btn.,
A.I.F. ARMY POST OFFICE,
ENGLAND.

WRUW, Boston (15,130 k.c., 19.83 m.): Fair a.m. (Chapman).

KKZ, Bolinas, Calif. (13,690 k.c., 21.91 m.): Heard nearly every Sunday afternoon (Dr. Gaden). (This is a point-to-point broadcast, and consequently will not verify.—Ed.).

WPIT, Pittsburg (11,870 k.c., 25.27 m.): Good a.m. and sometimes forenoon (Dr. Gaden, Hastings).

WLWO, Cincinnati (11,870 k.c., 25.27 m.): News at 10 p.m., very good (Chapman, Hastings). Heard well in N.Z. at this hour (Gandy). (Good at Randwick also when on this frequency. See separate paragraph re **WLWO.**—Ed.).

WCBX, New York (11,830 k.c., 25.36 m.): Good a.m. (Gaden).

WNBI, New York (11,820 k.c., 25.38 m.): Good at 2 p.m. (Hastings).

WRUL, Boston (11,790 k.c., 25.45 m.): Weak a.m. (Chapman). However in Brisbane between 8.30 and 9 a.m. it is quite good at times (Nelson).

WRUW, Boston (11,730 k.c., 25.58 m.): Good a.m., sometimes forenoon (Dr. Gaden).

KGEI, 'Frisco (9670 k.c., 31.02 m.): 3 to 6 p.m., very good, as also 10 p.m. till midnight (Hastings, Chapman, Rodgers, Bowser, Gaden, Cushen, Gandy). Certainly putting over a very fine news service at 10.30 p.m.—Ed.

WRCA, New York (9670 k.c., 31.02 m.): Excellent from noon on (Cushen, Gandy, Hastings). (Have heard in mornings till 7.30, but only at fair strength.—Ed.).

WCAB, Philadelphia (9590 k.c., 31.28 m.): Excellent at 4 p.m. (Cushen, Gandy, N.Z., Hastings). (Heard on Tues., Fri. and Sun.—Ed.).

WLWO, Cincinnati (9590 k.c., 31.28 m.): Safe to say always good whenever on the air. The 50,000 watts transmitter certainly gets through. Reported at 8.30 a.m., 10.30 a.m., 12.30 p.m., 8.45 p.m. Excellent until slightly interfered with by **VUD-3** at 9.30 p.m. (Chapman, Gaden, Rodgers, Kneestubb, Hastings, Bantow).

WBOS, Boston (9570 k.c., 31.35 m.): Not quite so good as **WCAB** but usually same programme (Cushen). Fair between 3 and 4 p.m. (Hastings).

WITH THE REPORTERS

We acknowledge with sincere thanks notes from the following:—

Official Observers —

Arthur T. Cushen, Invercargill, N.Z.
D. J. Hastings, Ashgrove, Brisbane.
J. C. Linehan, Leabrook, South Australia.
W. M. Chapman, Kensington, Sydney.
Wm. Bantow, Edithvale, Victoria.
and
Dr. Keith B. Gaden, Tharmogindah, Q'ld.
S. I. Nelson (AW577DX). Cairns, Q'ld.
Geo. W. Edwards, Mortlake, Vic.
R. C. Schooth, Brisbane, Q'ld.
M. Bowser, Chullora.
E. Kneestubb, Junr., Lyttleton, N.Z.
M. Rodgers, Hunter's Hill.
N. E. Gandy, Wellington, N.Z.

There is increasing evidence of the changeover in the seasons, at any rate as far as radio is concerned, so consequently we will appreciate further reports for the coming issue. Would like to hear from Tasmania and the West.

WGEA, Schenectady (9650 k.c., 31.41 m.): Fair signal at 8 a.m. (Chapman).

WGEO, Schenectady (9530 k.c., 31.48 m.): Fair a.m. (Chapman, Hastings). In Queensland heard till 10 a.m. at good strength by Dr. Gaden.

WPIT, Pittsburg (6140 k.c., 48.86 m.): Good till closing at 10 a.m. (Rodgers).

WCBX, New York (6120 k.c., 49.02 m.): Good till closing at 4 p.m. (Gaden).

WLWO, Cincinnati (6060 k.c., 49.50 m.): Good at 11 a.m.; excellent in afternoon (Cushen, Gandy, N.Z.).

WDJM, Miami (6040 k.c., 49.65 m.): This Florida station is heard quite often by Dr. Gaden at 7.30 a.m., but very very weakly. It is not likely it would be heard here at that hour because of the regrettable noise level.

ALL-WAVE ALL-WORLD DX CLUB

Application for Membership

The Secretary,
All-Wave All-World DX Club,
117 Reservoir Street,
Sydney, N.S.W.
Dear Sir,

I am very interested in dxing, and am keen to join your Club. The details you require are given below:

Name.....

Address.....

[Please print both plainly.].....

.....

My set is a.....

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

.....

.....

I enclose herewith the Life Membership fee of 3/6 [Postal Notes or Money Order], for which I will receive, post free, a Club badge and a Membership Certificate showing my Official Club Number.

(Signed).....

(Note: Readers who do not want to mutilate their copies of the "Radio World" by cutting out this form can write out the details required).

Mexico:

XEWW, Mexico City (9503 k.c., 31.57 m.): Good signal in afternoon (Chapman). Excellent at 3 p.m. (Cushen).

XEQQ, Mexico City (9680 k.c., 30.98 m.): Good from 2 p.m. onwards (Dr. Gaden).

XEBT, Mexico City (6005 k.c., 49.96 m.): Good signal at 3.45 p.m. (Cushen). Can be heard in Sydney sometimes till 5 p.m., but is noisy.—Ed.).

THE EAST

Burma:

XYZ, Rangoon (6007 k.c., 49.94 m.): Fairly strong 12.30 a.m. (Bantow, Cushen, Rodgers). Very good at 10 p.m. (Hastings).

China:

FFZ, Shanghai (12,090 k.c., 24.83 m.): General opinion is: Splendid when not marred by C.W. Reported by Bantow, Chapman, Rodgers, Cushen, Gandy, Linehan, Bowser, Hastings.

XMHA, Shanghai (11,835 k.c., 25.55 m.): Only fair at 10 p.m. (Hastings).

XGOK, Canton (11,650 k.c., 25.75 m.): Now nearly as good as Saigon (Dr. Gaden). Certainly very good down here, too.

XGOY, Chungking (11,900 k.c., 25.21 m.): On air every morning. News in English at 7.30 a.m. (Nelson, Bantow, Chapman). Very strong 9 to 10 p.m.; have also heard giving news in English at 6.30 a.m. (Hastings).

"Voice of Shanghai," Shanghai (9300 k.c., 32.25 m.): Fair (Gaden). Heard fairly well here.—Ed.

"Voice of Shanghai," Shanghai (8565 k.c., 35.00 m.): Very good strong station from 11 p.m. (Gaden).

XPSA, Kweiyang (6980 k.c., 42.98 m.): Strong at 10 p.m. (Hastings).

Dutch East Indies:

YDC, Bandoeng (15,150 k.c., 19.80 m.): Fairly strong at 10.45 a.m. (Bantow). Fair at 8.15 p.m. (Rodgers, Chapman, Gandy). Strong at 6.30 p.m. (Hastings).

PLP, Bandoeng (11,000 k.c., 27.27 m.): Good after breakfast, but not heard in afternoon. Strong at night (Bantow, Dr. Gaden, Chapman, Rodgers).

PMN, Bandoeng (10,200 k.c., 29.24 m.): Same remarks and reporters as **PLP.**

YDB, Soerabaya (15,310 k.c., 19.61 m.): Very weak lately (Nelson). (Now said to be on the air continuously, but heard best at 9 a.m. and about 6 p.m.—Ed.).

YDA, Tandjongpriok (7250 k.c., 41.38 m.): Heard mid-day and often till after 5 p.m. **(Dr. Gaden).**

STATION PARTICULARS

Under this heading, commencing with October issue, I propose to list countries in alphabetical order and give particulars that will enable identification to be a ' ed and thus assist listeners in preparing reports for verification.

* * *

Bureau of Standards

Two listeners have written regarding **WWV,** which they have heard on different wave-lengths at various times.

This is the National Bureau of Standards, situated in Washington, D.C., the capital of the United States of America. This station broadcasts at regular intervals a standard musical test for the purpose of enabling stations to check frequencies.

YDX. Medan, Sumatra (7220 k.c., 41.55 m.): Good musical programme at 7 a.m. (Linehan).

PMH, Bandoeng (6720 k.c., 44.64 m.): Heard some mornings and some afternoons (Dr. Gaden). Strong nightly (Bantow, Hastings). Not so strong now (Chapman).

YDD, Bandoeng (6045 k.c., 49.63 m.): Fair at 10.30 p.m. (Bantow, Rodgers).

YDE-2, Solo (4810 k.c., 62.37 m.): Very strong at 10 p.m. (Hastings).

French Indo-China:

Radio Saigon, Saigon (11,780 k.c., 25.47 m.): Best station on the band at 9.30 p.m. (Linehan, Chapman, Gandy, Bantow, Rodgers, Hastings).

Hong Kong:

ZBW-3, Hong Kong (9525 k.c., 31.49 m.): Fairly strong at 10.30 p.m. (Bantow, Chapman, Rodgers, Hastings).

India:

VUD-2 (15,290 k.c., 19.62 m.): Heard at lunch time and from 5.30 p.m., but not strong (Gaden). Heard in N.Z. between 1.30 p.m. and 3 p.m. (Gandy). (I have heard them on several occasions from 6 till closing at 6.30 p.m., but signal is very very weak.—Ed.).

VUD-4, Delhi (11.830 k.c., 25.36 m.): Fairly strong (Bantow, Gandy, Chapman). This station has been getting pretty close to Saigon strength the last few nights.—Ed.

VUD-2, Delhi (9590 k.c., 31.28 m.): Strong at 12.30 a.m. (Bantow). 10 to 11.30 p.m. Fair (Gandy). Very good at Randwick, but prefer it when they are not sharing this frequency with **WLWO.**

VUB-2, Bombay (4880 k.c., 61.48 m.): Fair at 10 p.m. (Hastings).

VUC-2, Calcutta (4840 k.c., 61.98 m.): Stronger than **VUB-2** (Hastings).

Japan:

JLS-2, Tokyo (17,840 k.c., 16.81 m.): Fair at 11 a.m. (Cushen).

JZK, Tokyo (15,160 k.c., 19.79 m.): Strong 10.30 p.m. (News). (Bantow). Good a.m. fair p.m. (Chapman, Gandy). Very strong between 5 and 6 p.m. (Hastings).

JLU-3, Tokyo (15,135 k.c., 19.82 m.): From 11 p.m. to 12.30 a.m. I have been hearing a fairly good signal.—Ed.

JZJ, Tokyo (11,800 k.c., 25.42 m.): Strong some nights in news (Bantow). Very good a.m. and p.m. (Chapman, Gandy, Hastings).

MTCY, Hsinking (11,775 k.c., 25.48 m.): R8 at 7 a.m. to 7.30 a.m., when they change the beam to Europe (Linehan).

(Continued on page 36)

LOGGINGS *(continued)*

JVW-3, Tokyo (11,720 k.c., 25.6 m.): Heard by Mr. Nelson, of Cairns, at 5 p.m. Fair p.m. (Chapman). Strong nightly (Bantow, Gandy, Hastings).

JIE-2, Formosa (9690 k.c., 30.95 m.): Very good at 11.35 p.m.—L.J.K.

MTCY, Hsinking (6125 k.c., 48.98 m.): Good p.m. (Chapman).

Malaya:

ZHP, Singapore (9700 k.c., 30.94 m.): R6-7 every evening at 9.30 p.m. (Linehan). Strong 10.15 p.m. (Chapman, Bantow, Hastings). Very erratic at Randwick lately and plays up usually when B.B.C. news commences at 9.30 p.m., but looks as though **GSG,** 16.86 m., will provide the news from now on.

Philippines:

KZRH, Manila (9640 k.c., 31.12 m.): Heard as early as 5.30 p.m. on Sundays (Nelson). Good nightly (Bantow, Chapman, Gandy, Rodgers, Hastings). R9 at 7.30 a.m. in Adelaide (Linehan). Good in N.Z. (Kneestubb).

KZIB, Manila (9500 k.c., 31.58 m.): Mr. Nelson also hears this station as early as 5.30 p.m. on Sundays.

KZRM, Manila (9570 k.c., 31.35 m.): Fair at 7.45 a.m.; strong at night (Bantow, Gandy, Kneestubb, Rodgers). Only classed as fair in Brisbane (Hastings).

KZIB, Manila (9500 k.c.. 31.58 m.): Weakest of the KZ stations (Hastings).

KZRF, Manila (6140 k.c., 48.86 m.): Good at 8 p.m. in N.Z. (Kneestubb), also Brisbane (Hastings).

KZRC, Cebu (6100 k.c., 49.18 m.): News at 8 p.m. on Saturdays (Kneestubb). Best of the 49 KZ's (Hastings).

KZIB, Manila 6040 k.c., 49.67 m.): Noisy between 8.30 p.m. and 10 p.m. (Gandy). Weak (Hastings).

Thai:

HSP6, Bangkok (11,705 k.c., 25.63 m.): Heard at night well (Chapman).

EUROPE

Russia:

RW96, Moscow (15,410 k.c., 19.47m.): 12.45 to 2.30 p.m. Very loud (Dr. Gaden, Hastings). 7. to 11.45 p.m. Weak on opening (Dr. Gaden, Hastings).

RW96, Moscow (15,180 k.c., 19.76 m.: 2.45 to 6.45 p.m. Good till 5, then weakens (Hastings). Midnight till 9 a.m. Very good between 7 and 9. 10 a.m. to 11 a.m. Good right through (Hastings, Dr. Gaden, Gandy).

RKI, Moscow (15,040 k.c., 19.95 m.): Good at 10 a.m. (Dr. Gaden).

RKI, Moscow (14,720 k.c., 20.38 m.): Heard occasionally.

RNE, Moscow (12,000 k.c., 25.00 m.): Attempts to record a schedule appear futile, but when on the air invariably put in a great signal.

RNE, Moscow (11,900 k.c., 25.21 m.): Heard on Sundays only between 9 and 10 p.m. (Gandy).

RNE, Moscow (11,766 k.c., 25.51 m.): R-7 at 5.30 a.m. (Kneestubb, Junr., N.Z.).

RVG, Moscow (11,645 k.c., 25.77 m.): "International" at 11 a.m. (Dr. Gaden).

RVG, Moscow (9690 k.c., 30.97 m.): Strong at 9 a.m. (Bantow).

RAN, Moscow (9600 k.c., 31.25 m.): Improving at 10 a.m. (Dr. Gaden). R-6 at 5.30 a.m. in N.Z. (Kneestubb).

RW96, Moscow (9520 k.c., 31.51 m.): 4 a.m. to 9 a.m. Good at 7.30 (Rodgers, Dr. Gaden).

RW96, Moscow (9290 k.c., 32.3 m.): International at 2.35 p.m., then foreign talks (Dr. Gaden).

RWG, Moscow (7360 k.c., 40.76 m.): Heard on Sunday mornings, generally good.—Ed.

RV59, Moscow (6030 k.c., 49.75 m.): Strong at 7.30 a.m. (Bantow, Rodgers, Gandy, Dr. Gaden).

Spain:

Radio Malaga, Malaga (14,440 k.c., 20.78 m.): This station relays Salamanca. Heard by Dr. Gaden round about 10 a.m., when it closes with an anthem.

EAQ, Madrid (9860 k.c., 30.43 m.): Heard well some mornings (Nelson). In S.A. poor at 8 a.m. (Linehan).

Radio Espana. San Sebastian (7210 k.c., 41.6 m.): Heard this quite well one morning (Chapman).

EAJ-9, Malaga (7220 k.c., 41.55 m.): Fair in morning (Chapman).

Switzerland:

HBF, Geneva (18,480 k.c., 16.23 m.): Fridays only from 11.45 p.m. to 1.10 a.m. One of the loudest and clearest signals on the air. This is a special broadcast for the East, and the languages used are Swiss, French and Italian.—Ed.

HBJ, Geneva (14,538 k.c., 20.64 m.): Very good signal, first Sunday in the month

HBO, Geneva (11,420 k.c., 26.31 m.): Schedule: 3.45 p.m. to 5.30 p.m. (Nelson, Hastings).

Radio Suisse. Schwarzenburg (6170 k.c., 48.62 m.): Heard from 7 to 7.25 a.m. at very good strength (Cushen, Hastings. Chapman). Excellent every morning at Randwick. at 10 p.m. (Nelson). Excellent at 10 p.m. (Cushen). "El Progresso Cubano."

COCX, Havana (9200 k.c., 32.61 m.): Good from 10 p.m. (Nelson). Fair at 2 p.m., good from 10 p.m. (Cushen). Announces as Radio Westinghouse.

COCQ, Havana (8830 k.c., 33.98 m.): Good at night, opens at 8.45. Good (Nelson, Dr. Gaden, Cushen).

COCO, Havana (8700 k.c., 34.48 m.): Very good nightly (Bantow, Nelson, Chapman, Rodgers).

COHI, Santa Clara (6455 k.c., 46.50 m.): Good signal at night (Nelson, Cushen, Dr. Gaden). Opens at 8.45.

COX7/4, Havana (6396 k.c., 46.96 m.): Heard closing at 10 a.m. (Dr. Gaden). This station is referred to in some American magazines as **COX4,** and various schedules are given, such as: Between 5 and 6 a.m., 9 to 10 a.m. (which seems O.K.) and 10 a.m. to 1.30 p.m. Anyhow, Dr. Gaden has an advantage over we city dwellers, as I doubt if it would be heard in Sydney after 6.30.—Ed.

COCQ, Havana (6365 k.c., 47.14 m.): Very good at 3.30 p.m., and excellent at night (Nelson, Gaden, Cushen, Gandy).

St. Kitts

ZIZ, Basseterre (6384 k.c., 47.02 m.): Dr. Gaden reports hearing a station at 7 a.m. that he thinks may be **ZIZ.** There is little doubt his surmise is correct. Despite terrific oscillation and noise, I heard same at 7.24 a.m. on August 15. This station, referring to "The Mother Colony of the West Indies," opens with "Rule Britannia," and signs off with "God Save the King." Schedule is 7 to 7.45 a.m.

Martinique:

Radio Martinique, Forte de France (9705 k.c., 30.92 m.): Opens well at 8.30 a.m. (Linehan). Fair around noon (Cushen). Listen for "Marseillaise" on opening.

GREAT BRITAIN

As most transmitters intended for reception in Australia are coming through pretty well (and even Transmission 2 is improving every week), only foreign signals are noted.

GSN, London (11,820 k.c., 25.38 m.): Very loud at 11 a.m. (Hastings, Rodgers, Gaden, Chapman).

GRX, London (9690 k.c., 30.96 m.): Best station on the air in South Australia at 7.30 a.m., when they give the news (Linehan). Fair 3.30 till 6 p.m., then weakens (Hastings, Gandy).

GSW, London (7230 k.c., 41.49 m.): Fair 9 till 10 a.m. Weak in afternoon (Hastings).

GSA, London (6050 k.c., 49.59 m.): Better than **GSW** between 2.52 p.m. and 6.5 p.m. (Hastings).

France:

Call signs are not shown, as stations heard simply begin with "Ici Paris."

French Station (9250 k.c., 31.51 m.): Heard at great strength some afternoons, closing at 4 p.m. (Nelson). Being heard in N.Z. also (Kneestubb, Junr.).

French Station (11,720 k.c., 25.6 m.): Very faint (Dr. Gaden). I heard same one morning at 7.15, but very weak.—Ed.

Germany:

DJL, Berlin (15,110 k.c., 19.85 m.): Very weak at 11.15 p.m. (Rodgers). Very good 1.40 to 7.30 a.m., 7.50 a.m. to 2 p.m., 3 to 5 p.m. (Hastings, Rodgers, Chapman).

DXH, Berlin (14,460 k.c., 20.75 m.): Very good a.m. (Chapman, Schooth, Gandy, Rodgers, Dr. Gaden). One of the loudest Germans (Hastings).

DZD, Berlin (10,530 k.c., 28.50 m.): Heard closing down at 10 a.m. (Dr. Gaden, Hastings).

DZC, Berlin (10,290 k.c., 29.25 m.): 7a.m. to 1.50 p.m. Weak around noon (Gandy, Hastings, Dr. Gaden).

DXB, Berlin (9610 k.c., 29.86 m.): Fair between 8 and 9 a.m. (Hastings).

DJW, Berlin (9650 k.c., 31.09 m.): Good right through from 3 till 6 p.m. (Chapman, Rodgers, Hastings, Bantow).

DXJ, Berlin (7240 k.c., 41.44 m.): Only fair at 10 a.m. (Hastings).

DJC, Berlin (6020 k.c., 49.83 m.): Very strong 3 a.m. to 7.30 a.m. (Chapman, Hastings, Gandy, Cushen.

Holland:

PCJ-2, Holland (15,220 k.c., 19.71 m.): I heard this station at very good strength at 11 p.m. on August 16. The announcer sounded very much like our old Dutch friend just before the invasion, but, although I have shown station as PCJ-2, I did not hear the call sign.—Ed.

Italy:

2RO16, Rome (21,510 k.c., 13.94 m.): Heard weakly in experimental broadcast to Japan around 3 p.m.

2RO-8, Rome (17,820 k.c., 19.61 m.): Good around mid-day (Schooth).

2RO6, Rome (15,300 k.c., 19.61 m.): 1.30 to 2.30 p.m., 4 p.m. to 5.30 p.m. Very strong (Schooth, Hastings, Chapman).

2RO14, Rome (15,230 k.c., 19.70 m.): Good on closing at 1.15 p.m., but not as good as **2RO6** (Hastings).

2RO4, Rome (11,810 k.c., 25.40 m.): Good a.m. and afternoon (Chapman, Schooth, Nelson, Gandy).

2RO15, Rome (11,760 k.c., 25.51 m.): Heard well during experimental broadcast from 1.30 to 2.30 p.m. (Hastings).

2RO3, Rome (9630 k.c., 31.15 m.): Strong at 8.30 a.m. (Chapman, Gandy, Rodgers).

2RO11, Rome (7220 k.c., 41.55 m.): Weak at 8.30 a.m. (Bantow, Rodgers).

HVJ, Vatican City (15,120 k.c., 19.84 m.): Fair on Tuesdays at 11.30 p.m. (Hastings).

HVJ, Vatican City (6190 k.c., 48.47 m.): 5 to 6 a.m. Wednesdays. Good (Hastings).

Portugal:

CSW-5, Lisbon (11,040 k.c., 27.17 m.): 3 a.m. to 5.45 a.m. Fair in this transmission, but not as good as **CSW-7.**

CSW-7, Lisbon (9740 k.c., 30.8 m.): Good at 7.30 a.m. with classical music (Linehan). Very good at 7 a.m., then rapidly weakens (Hastings).

Yugoslavia:

YUF, Belgrade (15,240 k.c., 19.68 m.): Heard fairly well in Queensland at 12.30 p.m. (Schooth).

YUB, Belgrade (6100 k.c., 49.18 m.): English at 7.45 a.m., but getting weak (Hastings, Cushen).

SCANDINAVIA

Finland:

OIE, Lahti (15,190 k.c., 19.75 m.): Weak at 8 a.m. (Linehan).

Norway:

LKQ, Oslo (11,720 k.c., 25.60 m.): Opens at 4 p.m. and announces at 4.15 p.m. (Gaden). (I heard this station at 3.40, and man announced at 4 p.m. "Hullo! Hullo! Oslo."—Ed.). Can be heard with good signals for America at 7.30 a.m. (Cushen). By the way, Mr. Cushen had his report, posted in January, returned from the Dead Letter Office.

Sweden:

SBT, Motala (15,155 k.c., 19.8 m.): English announcements at 11.50 a.m. (Cushen). Only weak at 7 a.m. (Hastings).

SBP, Motala (11,705 k.c., 25.63 m.): Much better than **SBT** at 7 a.m. (Hastings, Bantow). English announcements at 11.50 a.m. (Cushen).

WEST INDIES

Cuba:

COGF, Matanzas (11,940 k.c., 25.13 m.): Mr. Gandy, N.Z., says: "Have heard this one for three Sundays from 2.30 until 4 p.m. Announces in English." (Here is another case where Cuban may have changed frequency, as my records show: **COGF,** 11,800 k.c., 25.42 m. They seldom give call sign as **COGF,** using **CMK.**—Ed.).

COCQ, Havana (11,570 k.c., 25.93 m.): Closes at 3.15 p.m. and getting better daily (Dr. Gaden). Weak at 9.30 p.m. (Bantow).

COCM, Havana (9835 k.c.. 30.51m.): R6 at 2 p.m. (Cushen).

COCH. Havana (9440 k.c., 31.78 m.): Good at 3 p.m., fair at night (Cushen, Dr. Gaden).

COBC, Havana (9380 k.c., 31.99 m.): Fair

STOP PRESS

XGRO, Shanghai (11.91 m.c., 25.15 metres): Heard first on August 30 at 9 p.m., but believed open at 7 p.m. Judging from comments on international situation, it would appear to be under Japanese control. Very loud signal, but right on edge of morse band. Gives address as: Racecourse Road, Shanghai.

MISCELLANEOUS

Canada:

CJRX, Winnipeg (11,720 k.c., 25.6 m.): Excellent on Sunday till closing at 5 p.m. (Hastings, Nelson. Gaden, Chapman, Cushen).

CRCX, Toronto (6090 k.c., 49.26 m.): Heard from 5.35 p.m. till closing at 6 p.m. with "God Save the King."—Ed.

CFKX, Vancouver (6080 k.c., 49.34 m.): Heard weakly around 3 p.m., but improves till 5.30. Signal is strong, but noise level high (Gaden).

CFRX, Toronto (6070 k.c., 49.42 m.): Good signals at 2.30 p.m. Veri. just to hand (Cushen). (Would advise listeners to try for this station in early evening, as, unless I am very much mistaken, I heard them on August 21 at 7.30 p.m.—Ed.).

CJRO, Winnipeg (6150 k.c., 48.78 m.): Heard closing at 6 p.m. (Hastings).

Eire:

Radio Eire, Dublin (6190 k.c., 48.47 m.): Can be heard most mornings when the 49-metre band is behaving. Opens at 7 and gives news at 7.15. Announcements at 7.25 and then follows music, but station rapidly fades out.

Greece:

SVJ, Athens (9825 k.c., 30.54 m.): Now that this country is in the news, look for this one. I think I have heard it round about 11.35, but as it was very weak, I could not be sure.—Ed.).

Iraq:

HNF, Baghdad (9775 k.c.. 30.69 m.): Opens at 11 p.m., and between each announcement a peal of bells in descending scale can be heard. Oriental music at midnight (Linehan).

Iran:

EQC, Teheran (9680 k.c., 30.99 m.): Opens at great strength at 11.45 p.m. (Linehan). (Being received here well at that hour also.—Ed.). Fair at 1 a.m. in N.Z. (Cushen).

EQB, Teheran (6155 k.c., 48.74 m.): Heard fairly well mornings from 5.45 (Chapman, Gaden, Cushen).

Turkey:

TAQ, Ankara (15,195 k.c., 19.74 m.): Heard putting over a musical programme the last few weeks from 2.30 p.m. (Schooth).

TAP, Ankara (9465 k.c., 31.70 m.): This station now closes at 6.30 a.m., and is the reason so many reporters have listed it as "Missing." Can still be classed as excellent.

Somaliland:

FZEB, Djibouti (17,280 k.c., 17.36 m.): Said to put over a test transmission first Wednesday in the month from 11 to 11.30 p.m.

Radiola Model 282

Providing easier tuning on the short-wave band, together with superlative performance, the latest Radiola leaves nothing to be desired.

With the keen interest being taken in overseas news broadcasts, it is only natural to find that the public wants better and still better performance on the short-wave bands.

A few years ago a dual-wave receiver was considered good enough so long as the short-wave band worked at all. In those days it took an expert to handle the short-wave tuning, as it was extremely critical.

Band-spread

Half a dozen stations, covering a wave-band a metre wide, were all together under a movement of the dial needle of about a sixteenth of an inch.

But that was before the introduction of the new Radiola.

Known as Model 282, this receiver, a sample of which is at present on test in our laboratory, represents the last word in short-wave reception.

Instead of critical tuning, the short-wave band has been divided into three sections, each covered with a special set of band-spread coils.

What this means in practice is, simply, that tuning on the short-wave band is just as easy as on the broadcast band. On the high-frequency end of the band the scale is so open that a metre covers over an inch on the dial.

With the dual-speed control knob, the tuning is further simplified, and to make it absolutely child's play, a magic eye tuning indicator is fitted and is sufficiently sensitive to give a clear indication, even on weak short-wave stations.

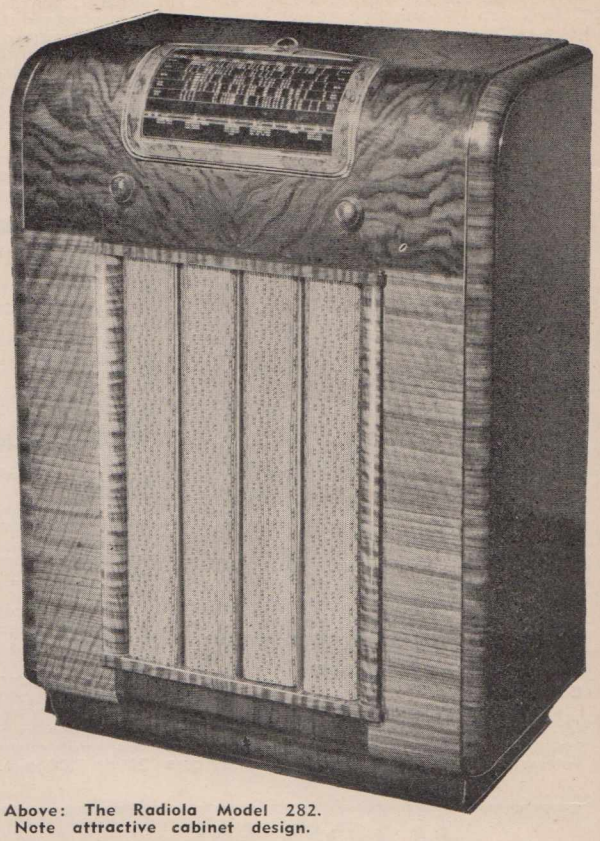
As a really practical example of what all this means, we might mention that we found our eight-year-old daughter, quite at ease, tuning in the news session direct from the B.B.C.

The Band Coverage

For those technically interested we may mention that the first short-wave band covered — and it spreads over a full width tuning scale — is from 13.5 to 18 metres — **just four and a half metres spread over about ten inches of dial scale!**

The next band covers from 18 to 27 metres, and the third band from 27 to 52 metres.

Of course, the broadcast band is covered in a single sweep of a brilliant dial, clearly marked with all the station call signs.



Above: The Radiola Model 282. Note attractive cabinet design.

General Performance

The general performance of the receiver is also of a high order, with just that type of silent sensitivity on the short-wave bands which is so effective when it comes to bringing through the far-away stations and putting them out through the speaker without any undue background of noise or valve hiss.

On the broadcast band the performance is also splendid, with exceptionally fine tonal quality from the local stations. This is made possible by the use of push-pull output valves of the beam power type, with a twelve-inch loudspeaker.

The cabinet design and finish is right up to the usual Radiola standard.

SPECIFICATIONS

Radiola Model 282

The Radiola 282 is a multi-band receiver, for a.c. power operation, using eight valves and a "magic eye."

Tuning ranges:—(1) Broadcast band; (2) 27 to 52 metres; (3) 18 to 27 metres; (4) 13.5 to 18 metres.

Valves used:—

- 6U7G—Radio frequency amplifier.
- 6J8G—Frequency converter.
- 6U7G—Intermediate amplifier.
- 6B8G—Second detector.
- 6B8G—Phase inverter, etc.
- 2—6V6G—Output valves in push-pull.
- 5V4G—Rectifier.
- 6U5 —Magic eye tuning indicator.

Power consumption:—90 watts.

Price:—£47/16/-.

tettre

Makers:—Amalgamated Wireless (Australasia) Limited.

Available from authorised Radiola dealers only.

Summary

In short, we find it impossible to imagine any way in which this receiver can be improved.

It does everything that any radio set can do.

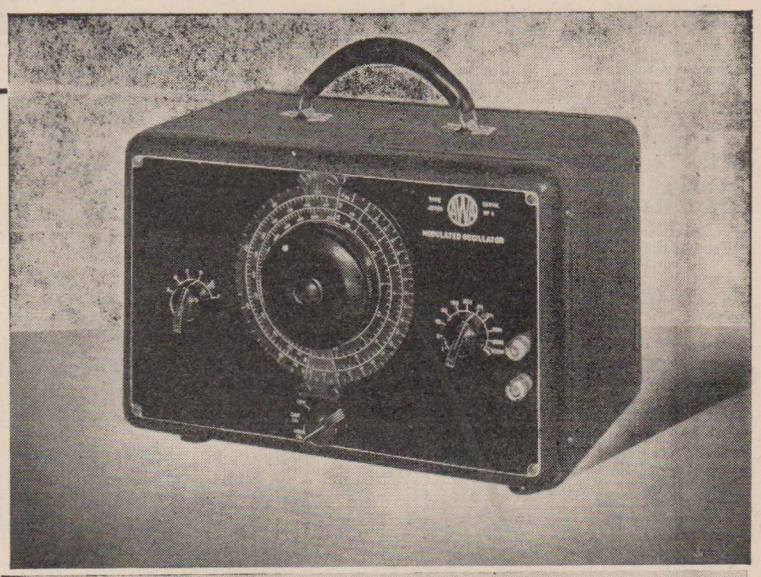
We doubt if any receiver, on any market in the world, can offer better performance or better construction.

To those who want a better receiver than the one they use at present, we can strongly recommend this new Radiola 282.

Anyone interested in hearing this new Radiola and trying the easy short-wave tuning can arrange a trial by contacting the nearest Radiola distributor. The price is £47/16/-.

ESSENTIAL EQUIPMENT

☛ for the service bench



NEW AWA ☛ MODULATED OSCILLATOR

A high-grade instrument for servicing all types of radio receivers. . . . . .

FEATURES: Simple to operate—Signals up to 30 megacycles are fundamentals (not harmonics)—Accurate calibrations—Negligible leakage at high frequencies—Robust construction — Economical in operation — Full instructions supplied. PRICE: £17/17/-, less batteries, plus sales tax.

NEW AWA ☛ CATHODE RAY OSCILLOGRAPH

Provides at low cost facilities previously procurable only with larger and more expensive instruments.

FEATURES: Covers frequency range from 35 to 40,000 cycles — Separate amplifiers for horizontal and vertical plates—Amplifiers flat within 0.5db. and with gain of more than 30db. over audio range—Robust construction. PRICE: £29/15/-, plus sales tax.

TECHNICAL SECTION

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TRADE PARADE . . .

ADDITION TO ROLA RANGE

Rola Company (Aust.) Pty. Ltd. has announced the release of a new permanent magnet speaker known as 5-9. Designed for small battery sets, including portables, the 5-9 is the ideal speaker for the most compact receivers in this class.

It is extremely light, weighing only 16 oz., less transformer, but nothing is lost in sturdiness of general design, which follows K5 and 5-4.

The 5-9 incorporates "Permaflex" spider and a cone expressly designed to give ideal response when used in small or portable cabinets. The magnet, which is cast from the highest grade alloy steel used for magnets, was expressly designed by the Rola laboratory for this particular speaker and incorporates new design features in order to concentrate the maximum amount of flux in the airgap.

This unit will easily take the power output of all standard battery valves used singly or in push-pull, and is designed to operate with a small "Isocore" transformer, which will be supplied detached and is included in the total retail price of 31/-.

The release of this speaker is intended to replace 5-8 and 5-11. In efficiency it is approximately the equal of 5-11, but is more compact and lower in price. The release of 5-9 will not in any way affect the 6" models — 6-8, 6-11 and 6-15 — which are available to all manufacturers who can accommodate 6-inch speakers in their cabinets.

Ted Soames, who for several years has been chief engineer at R.C.S. Radio, has now opened a laboratory at 50a Glebe Street, Glebe, adjacent to R.C.S. Mr. Soames will specialise in giving assistance to readers of "Radio World."

With his valuable experience he should find it a simple matter to get maximum performance from any home-built set, or to find elusive faults which may be encountered.

FREE CATALOGUE

Upon receipt of the official letterhead of any reseller, Messrs. United Radio Distributors will send you "free and post free" a copy of their elaborate 1940 U.R.D. catalogue. The complete radio and electrical range is fully covered, from a solder lug to a complete receiver, all prices being clearly shown so as to leave no doubt in the mind of any intending purchaser.

The general appearance of the catalogue leaves little to be desired. The cover is printed in four colours on a good quality paper, and the interior is lavishly illustrated with various radio components.

A code letter system next to the price of each article gives the dealer easy access as to the amount of discount he is to receive. A key to the discount code is also supplied.

One of the best catalogues released by the radio trade in Sydney for some time, the U.R.D. production is well worth having, as it is literally "a guide to everything in radio." Secure your copy now. Simply write to United Radio Distributors Pty. Ltd., 234 Clarence St., Sydney, mentioning "Radio World," and you will receive your copy without delay.

★ ★

MORSE SETS FROM JOHN MARTIN

Any morse operator, whether he be professional or purely amateur, will feel quite at home using one of the John Martin morse sets. A sturdy type key and a high tone Australian-made buzzer are mounted on a lacquered chassis, forming a unit that is not only attractive but remarkably efficient. When desired, a bulb incorporated in the unit may be used in place of the buzzer. Not a toy, this assembly is indeed an excellent example of Australian workmanship. A switch mounted on the chassis for changing from buzzer to bulb may be added to the outfit at a slightly extra cost.

Large Range

Apart from combination sets, John Martin Pty. Ltd. also stock a complete range of keys from first quality P.M.G. pattern to Standard Boy Scout types. Best quality high note buzzers housed in handsome bakelite cases are also available in the range. They are of good manufacture and are easily adjustable.

* * *

REMEMBER . . . the John Martin kit-set staff is waiting for your order of parts for your next "Radio World" circuit. Drilling and cutting is entirely eliminated when building from a John Martin kit-set as all the components fit snugly on to the chassis ready to be screwed down. This takes the hazard from set-building that is usually dreaded by amateurs.

Radio Book Review

Newnes Shortwave Manual

Covering the whole subject of short waves, "Newnes Shortwave Manual," by F. J. Camm, is a book that will be of keen interest to shortwave fans.

It deals with the special problems underlying the design of shortwave apparatus, with circuits yielding best results, and designs for receivers based on those circuits.

Subjects dealt with include shortwave aerial systems, interference elimination, band-spread tuning, r.f. amplification, morse code, aerial couplings, coil design. Many useful tables are also included.

("Newnes Shortwave Manual," by F. J. Camm. Published by George Newnes Ltd., London. Our copy from Angus & Robertson, Castlereagh Street, Sydney; price 6/6, postage 6d.)

Cathode Ray Oscillographs

Literature published to date on the cathode ray oscillograph has dealt mainly with the theory of operation rather than with practical applications.

For this reason, servicemen will welcome "Cathode Ray Oscillographs," by the well-known English technical radio author, J. H. Reyner. The book is a simple guide to the use of the oscillograph for the examination of various types of waveforms, the data given being based on practical experience extending over many years.

("Cathode Ray Oscillographs," by J. H. Reyner, B.Sc. Published by Sir Isaac Pitman & Sons Ltd., London. Our copy from Angus & Robertson Ltd., Castlereagh Street, Sydney. Price 13/9; postage 6d.)

Photo-Electric And Selenium Cells

Up-to-the-minute practical data on photo-electricity is contained in the 1940 edition of "Photo-Electric and Selenium Cells," by T. J. Fielding.

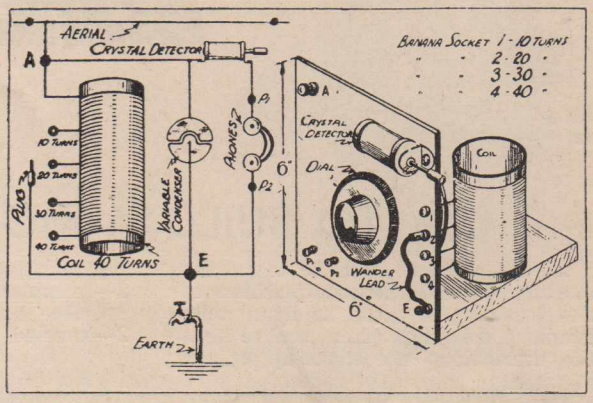
The book deals with the theory and use of light-sensitive cells, details being given of simple experiments that illustrate typical applications. In particular, the chapters dealing with television, talking pictures, advertising, and general industry give the basic principles of the photo cells' applications in these fields.

("Photo-Electric and Selenium Cells," by T. J. Fielding. Published by Chapman & Hall, London. Our copy from Angus & Robertson, Castlereagh Street, Sydney. Price, 13/9; postage 6d.)

The Velco

COUNTRY CRYSTAL SET

Here is a crystal set designed for use in the country, where maximum sensitivity is essential.



Above: The circuit and layout diagram for the Velco Country Crystal Set.

Of late, we have received so many enquiries about crystal sets that we are sure this article will be of great interest to all our readers. Crystal set circuits are generally designed for the city regions where selectivity is essential.

Designed for Country

This circuit, however, is designed for use in the country where selectivity is not necessary, but maximum sensitivity is essential.

Commence with the coil, which is wound on a 3-inch former. With a small bradawl or nail make two holes

THE VELCO COUNTRY CRYSTAL SET

1—Front panel, 6" x 6."
6—Banana sockets.
3—Banana plugs.
2—Phone tip jacks.
1—Crystal and cat's-whisker.
1—Plain dial.
1—4 oz. reel D.C.C.
6—inches S.R. flex.
6—1/8 in. bolts and nuts.
7—½ in. x 4 in. wood screws, R.C.
1—Base board, 7" x 6."
1—Crystal detector.
1—Variable condenser.
1—3 in. length 3 in. diameter Bakelite tube.
1—100 ft.-coil Aerial wire.
4—Egg insulators.
1—Pair of headphones.

¾-inch from one end and ½-inch apart and thread the end of the wire through these holes, leaving 12 inches for connections. Wind on 10 turns and form a loop 6 inches long, taking care that the winding does not become loosened. Now continue winding for another 10 turns and form the second loop. Ten more turns and the third loop. Then 10 more turns and finish the coil by threading the end through two holes as at the start of the coil —again leaving 12 inches for the connections.

Mounting Components

Drill the panel and fix the detector mounting and condenser in position. Fix the coil to the baseboard by means of two small brackets that may be cut from any piece of scrap tin or brass.

The ends of the coil tappings must now be scraped bare of insulation and firmly screwed beneath the banana plug sockets. The end of the winding is now scraped bare and connected to one side of the crystal detector, then to the fixed plates of the condenser, and then to the banana socket that forms the aerial terminal.

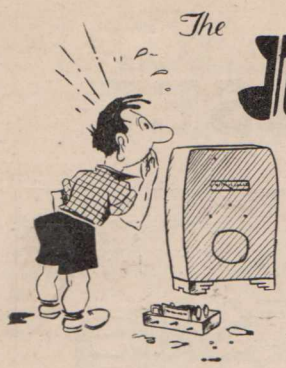
The other terminal on the crystal detector is connected to one phone terminal. A wire is now taken from the remaining phone terminal to the moving plates of the condenser, and thence to the earth terminal under the front of which is fixed one end of the flexible wire that forms the wander lead, thus providing a variable connection to the various banana sockets, thereby increasing or decreasing selectivity.

Simple to Operate

The Velco Country Crystal Set is simple to operate, and once the correct socket is found for the wander plug, all tuning can be carried out on the dial. Should there be only one station within a radius of 25 miles, experiment will quickly determine the setting of the dial and the correct position for the wander plug. No further adjustment will be necessary other than to find the most sensitive spot on the crystal.

Price Moderate

The Velco Country Crystal set described here is taken from an article appearing in the Veall's radio and electrical catalogue for 1940. All components are easily obtainable, and when cost is considered it presents a moderate price for a quality article which is bound to give years of service. Those who have not yet secured a copy of the Veall's radio and electrical catalogue should do so without delay, as stocks are sure to be getting low after the great reception it received at its first release. Write to A. J. Veall Pty. Ltd., Box 2135 T, G.P.O., Melbourne, and secure your copy.

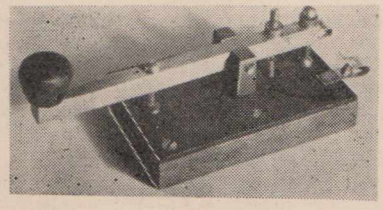


The Junior Technical Section

HOW TO BUILD A MORSE KEY

In the present rush to learn the morse code and the manipulation of a telegraph key, the aspiring telegraphist does not often realise that the dimensions and make-up of the key are an important factor.

Musical instruments of all kinds, typewriters and other office machines,



Photograph of original morse key.

have standard keyboards, with keys and controls, so placed that they allow of the best manipulation. Because of this standardisation, instruments of widely varying makes are immediately familiar.

So it is with morse keys. There is a correct standard which has been evolved for the best efficiency of operating. Rough and ready keys, of incorrect design, may spoil one's "fist," and make unfamiliar the use of a proper pattern.

Simplified Version

The making to sample of a professional morse key calls for the skill and equipment of an expert fitter. The job we are describing closely follows the professional pattern, but it has been simplified, so that it may be constructed by the amateur with tools and materials that are instantly available.

This key is rugged and reliable, will give long service and develops the correct mode of operation.

Materials required:—

10—inches of ⅜" square brass rod.
5—1" x 3/16" whit. brass screws and nuts.
1—tension spring ½" long by 20 gauge.
1—knob (see text).
2—terminals.
1—piece bakelite 2½" x 4½."
2—knurled brass nuts (ex dry cell).
1—No. 10 steel knitting needle.
Sundry woodscrews and wood strip.

Construction

Start off by making the pivot bracket. Fig. 2 shows the essentials. The length of square brass rod is marked off, and two 90° notches are cut nearly through. Next, the notched section is held over a gas flame, until it has reached a black heat. It

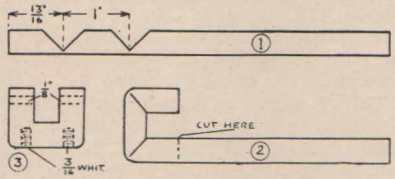


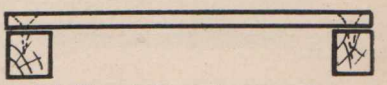
Fig. 2: The three stages in making the pivot bracket.

is then bent round, dipped in acid, soldering flux and the joins are well rubbed over with a stick of solder. After cutting the long leg off, we have remaining a solid U-shaped bracket, which is cleaned up with a file and emery cloth and then drilled and tapped as shown.

From the remaining length of brass rod the tapper bar is made. Accuracy of marking out and drilling is essential — the local garageman may make a better job of it than you can, and he should not charge more than a shilling, perhaps a few pence extra if you get him to do the tapping as well.

Contact Points

The upper contact point, which consists of a 3/16" brass bolt with end



The bakelite platform is screwed to two wooden strips.

bevelled, is screwed tightly into the tapper bar; the lower contact is a similar bolt with head filed flat. Adjustment of the gap between these points is effected by the screw and locknut, situated in the opposite end of the tapper bar. The locknuts are made from the dry cell nuts, by running a 3/16" whit. tap (24 threads per inch) through them.

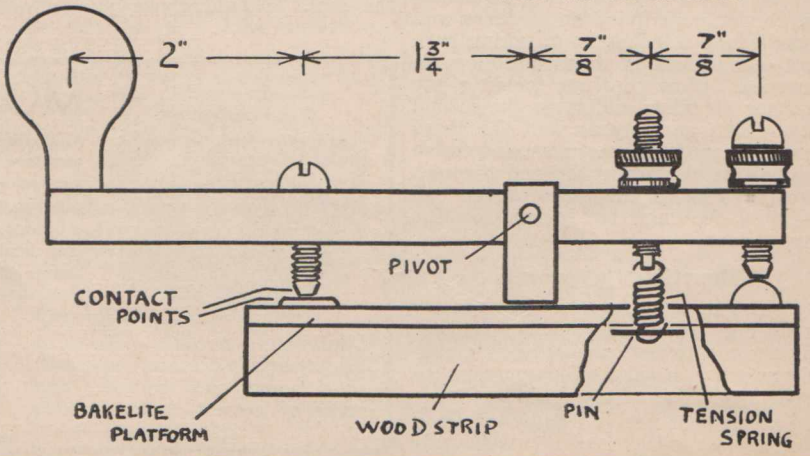
Spring Tension Screw

To make the spring tension screw, we cut the head off a 3/16" bolt and file a flat on one end. This flat is drilled to take the hook on the end of the tension spring. A tension spring has closed coils and is the opposite to a compression spring, which has open coils.

Pivot Pin

The pivot pin consists of a short piece of the steel knitting needle.

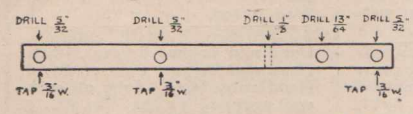
A simplified side view of the key. Note that the contact points are fixed; adjustment is made with the end screw.



This pin is a "push-in" fit with no slackness. Usually the centre of a No. 10 steel knitting needle is a thou. or two more than ⅛" in diameter, thus we may rub it down with emery cloth until the required fit is obtained.

Base

The base may now be marked out and drilled, using the tapper bar as a template. Sheet bakelite is used, because the tightening of screws does not cause the parts to sink in and



Drilling and tapping the "tapper" bar.

otherwise get out of position. This base in turn is fastened with countersunk woodscrews to two strips of wood, thus leaving room underneath for nuts and connections.

The connections are a wire from one pivot bracket bolt to one terminal and another wire from the bottom contact stud to the other terminal.

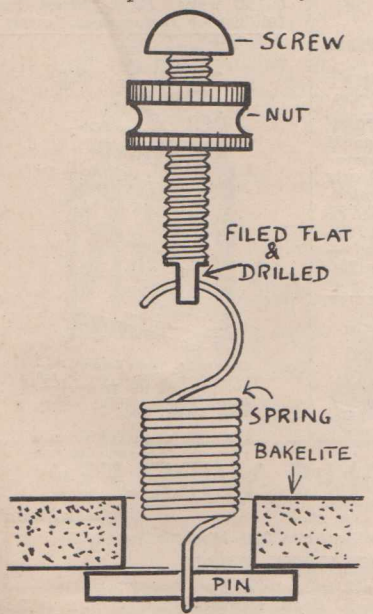
The Knob

We can "get by" by using an ordinary radio knob, of which there are many patterns. The proper knob, however, consists of a 1" sphere of ebonite or hardwood, with a neck formed for attachment to the tapper bar. This, however, calls for the use of a lathe, unless a diligent search through the hardware stores rewards us with a drawer knob of the required dimensions.

The brass parts of the key should be polished with metal polish, and then coated with clear lacquer — by so doing we not only improve the appearance of the completed job, but we gain confidence in it as well.

Lastly the parts are assembled and adjusted.

The gap between the contact points (for a beginner) should be adjusted to about 1/32," and the spring tension rather tight. As we progress in confidence and therefore speed, we may close the gap and decrease the tension.



Details of the tension mechanism and adjustment.

J. T. QUERIES

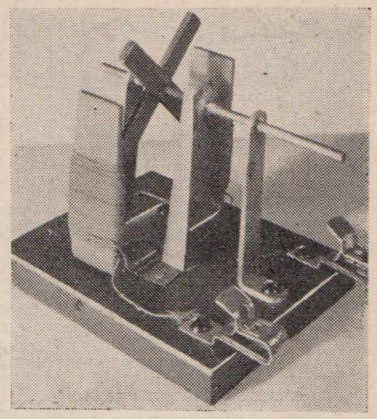
A.P., Mudgee.

A photograph of the motor was inadvertently omitted. It should appear in this issue. Suggest you experiment with the contact timing.

* * *

A.W., Sydney.

A connection from the grid coil to earth will not affect the sensitivity of the set. It may, however, minimise hand-capacity effects.



Right: This photo was accidentally omitted from last month's issue. General view of electric motor.

RANDOM JOTTINGS

Cleaning the crystal of a crystal receiving set is not a very successful business. For renewed sensitivity it is a better plan to break the crystal, and rest the cat's-whisker on one of the newly-exposed surfaces.

Hard-to-trace sizzling and crackling noises in a radio set are often caused by faulty valves. Cathode to heater leakage is the most common cause of valve noise.

LABORATORY SERVICE FOR READERS

For the assistance of bona-fide amateur set builders, we have installed laboratory equipment at our head office, 117 Reservoir Street, Sydney.

At this laboratory we will inspect and test receivers built up according to constructional articles published in this or any future issues of Australasian Radio World.

We will not carry out repair work, or make adjustments or alignments, but we will be prepared to inspect and test the receiver and report on its performance.

If not up to standard, we will indicate what we think should be done to obtain normal results.

A nominal fee of 2/6 will be charged for the service.

THE TESTS.

Briefly, the receivers will be tested as follows:—First, the valves will be checked for emission and mutual conductance, the electrolytic condensers tested for capacity and leakage, wiring tested for high-resistance joints, and the main resistors and condensers will be checked to make sure that they are according to their ratings.

Then the receiver will be tested for comparative performance with an oscillator and output meter and finally the receiver will be tested on the air under normal running conditions.

CONDITIONS.

Normally the service will take about 24 hours to perform, and receivers left for inspection on one day should be ready to be picked up by 5 p.m. on the day following.

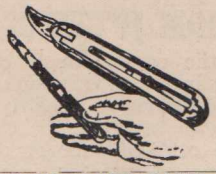
In the event of the service proving even more popular than we anticipate, a slightly longer period of time may be required for the inspection.

Receivers forwarded from distant readers will be unpacked and repacked without extra charge, but no freights or carrying charges will be paid.

MORSE CODE PRACTICE OUTFITS. Complete with Buzzer and Lamp, with switch to changeover. 25/-. With heavier type Morse key, 30/-.
Book, "How to Learn Morse Code," 1/-. Professional buzzer, 15/-. Complete De Luxe Morse Key and Light Sets, 35/-. With P.M.G. Key, 39/6. Buzzers, 4/9, 15/-.

Collapsible Frame AERIALS. Cost £9/9/-. Now, 42/-.
Costly imported articles, slight defects, easily adjusted.

The World's Best POCKET KNIFE. Cobalt Stainless Steel Blade, all metal. Opens one finger control. Three positions. 6/6. Everlasting Sheffield make.



RADIOKES BACK PANEL ILLUMINATED DIALS. Straight Vision, back Panel, 22/6 value. NOW 5/-. Circular Travel Spotlight, 4/-.

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

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

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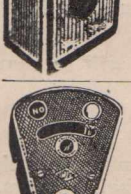
RADIO ACCUMULATORS.



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

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

3-in. Illuminated Back Panel Slow Motion DIAL. Smallest made. Circular escutcheons. 7/6.

4in. BLACK FRONT-OF-PANEL BAKELITE, 1 to 100 DIALS, ¼-in. shaft, with lock-nut fixing for Condenser Spindle, 3/6.

Lessen English 4000-ohm HEADPHONES, 19/6.
EKICSSON'S 4,000 ohm Professional Head Phones, 32/6. S.T.C. or B.T.H., British, 30/-. "Like-A-Flash" 4,000 ohms, 17/6, 21/-. Other types, 9/6, 11/6, 12/6. Acme De-Luxe Flyweight Headphones, 4,000 ohms, U.S.A., 15/9. Acme Special, 12/11. British 'phone cords, 3/9.

ELECTRIC GRAMOPHONES, British built, 240 A.C., 39/6.
COLLARO GRAMOPHONE MOTORS AND TURN-TABLES. Complete. 52/6. Sturdy built 240-volt Electric Motor, with all fittings; were listed to sell at 75/- from overtime Customs Sale; now 40/-.

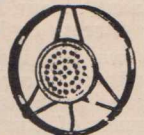
Newnes ELECTRICAL POCKETBOOK. Covers a University course, 8/-.

ENGLISH POCKET VOLTMETERS. 2 Reading, reads "A" and "B" batts., 8/6. 3 Reading, as above, also reads 0-30 M/A, 10/6. 4 Reading, reads 0-6, 0-15, 0-180 volts, 0-30 M/A, 14/-.

ONE ONLY
Bell and Howell 3.5 lens 16 m.m. movie camera, £35. Tripod available. Complete with carrying case.

GRAMOPHONE PICK-UPS. All have Vol. Control built in. British made.
"Cosmocord" Special, 30/-. "Cosmocord" Extra Special, 35/-. "Cosmocord" High Definition, 38/6. "Cosmocord" Studio Model, 48/6. Goldring, 30/-.

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



The METER ENGINEER'S POCKET BOOK. A splendid volume. 8/-.

CRYSTAL SETS AND CRYSTALS Famous All-Station Model. Charts 6d. All Parts 25/-. Built 35/-, in Cabinet 45/-. Phones 12/6. Aerial—Earth 2/6.
CRYSTALS A.1. Semi Fixed, 2/6. "Tec" Fixed Crystal 2/6. Liontron 5/6. Lion Micro 5/6. Refills 2/6. Red Diamond 4/6.

Pilot Single Drum Dials, 2/6. Solder Sets, iron and solder, 2/-. 1-Valve Reinartz set, complete in portable carrying case, 95/-. Radiokes circular Spotlight Dials, 4/-. Inclined vision, 5/-. Straight vision, 5/-. Less than one-quarter original prices.

VALVES. We have always on hand part-used Valves which are near or 100%. We guarantee these or replace them. Let's know what types interest you. Used 57, 58, 6/6. New 4XP, 5/-. New MH4, 2/6. 445u Rectifier, new, 5/-. New 41MRc, ML4, 2/6. Used 1C6, 6A6, 6A7, 6A8, 6B7, 6F6, 6F7, 6L7, 6/6. Used 6F7, 6J8, Ek2, 2B7, 2A3, 5/6. 2-Volt, 4-Volt, 6-Volt Batt. Valves, used, 5/-. 42, used, 6/6. 201a Types, 2/6. Let us know your wants.
Packing Case for Valves up to 3 Valves, 9d.; 6 Valves, 1/-. Postage extra. Inquiries welcomed.

MAKE YOUR OWN RECORDINGS. Cutting head and overhead cutting unit complete, 99/6. Plain Records, 2/11, 3/11, 4/11, 5/11. Cutting Needles, 2/-.

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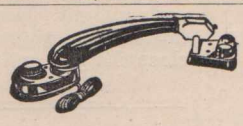
32	11/3	6A7	11/9
2A5	10/6	6B1	12/-
2B7	14/-	42	12/-
27	11/9	80	9/6
6E5	9/-	71A	11/9
1D8-GT	24/3	19	13/6
5Y3	8/9	75	11/-
6J7	11/3	24A	11/3
2A7	13/-	30	11/-
6H6	12/9	247	13/3



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

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

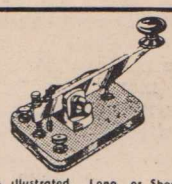
PANEL MOUNT AMPERES METER. 0-20. 12/6.

½IN. RED, GREEN, OPAL, BLUE SIGNAL LIGHTS. Complete, 2/6.

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

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

BRAND NEW AND TESTED.
280 VALVES.
Made in U.S.A.
9/6 each.



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

"VICO" highest-grade Electric Dry Shavers, with County Council O.K. 240 volts A.C. £5/5/- value; now 40/-. Guaranteed perfect. In original cartons. Well tested.

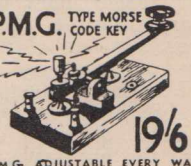
GOLDRING PICKUP HEADS. Head and Volume Control, 18/6. Head and Volume Control, 21/-. Head only, 16/-. Suits all sets.

SET TESTING LEADS. Wire and prods complete, 2/6.

Professional Type Bell Model Bakelite **LIGHTNING ARRESTOR.** Practically indestructible. British. 6/-. For indoor or outdoor use. Shield type, 5/-.

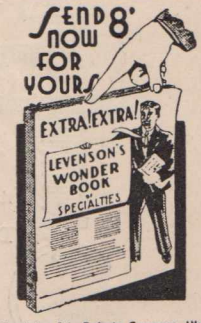
MICROPHONES, as illustrated, Hand Holding Type, 22/6.

Transposition Bakelite AERIAL Blocks, 8 for 2/6.



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

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



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SPEEDY QUERY SERVICE

Conducted under the personal supervision of A. G. HULL

C.P. (Quorn, S.A.) writes at some length on various subjects.

A.—Glad to have your interesting letter and to note your remarks. You must have been quite surprised to find that the August issue contained one of the articles which you suggested. You can rest assured that our policy will remain "100% Technical Radio."

* * *

C.F. (Harvey, W.A.) wants more articles on battery-operated equipment, sets, etc.

A.—Yes, we must agree that we tend to miss out when it comes to treating the needs of the country listener adequately. Even the biggest set manufacturers seem to be a bit that way, too. We have made a new resolution to pay more attention to battery sets in future. You will notice that the first step in this direction is the five-valve dual-waver in this issue.

* * *

C.S. (Annandale) suggests that we should use an inferior quality of paper, but more of it.

A.—Sorry, but your scheme is not covered by the new regulations. It isn't the value or the type of paper which governs the amount we are allowed to use. We have to cut down the number of pages by 25%, or the bulk by a similar amount, based on the size of the issues published last year. Later the cut may be increased to 30% or even more, but you can rest assured that we will watch readers' interests and do everything possible to maintain our style and editorial content.

* * *

J.F.G. (Chatswood) wants a section devoted to model aeroplanes.

A.—No, it is not our intention to introduce any new subjects to our paper. It is 100% technical, and it is our intention to keep it so for as long as it receives the support of the buying public and the advertisers. We had in mind the production of a model aeroplane magazine, but the recent regulations make it quite impossible to consider the introduction of any new magazines.

* * *

R.W. (Gilberton) wants the design for a talkie amplifier.

A.—Sorry, but the job is beyond the scope of our Query Service. It would be necessary to go into the type of photoelectric cells to be used and so on. Not having any recorded sound to experiment with or anything of the kind, we just can't see any way of covering the subject adequately. What is perhaps more to the point, if we did cover talkie amplifiers to the full, it couldn't be of service to more than about one per cent. of our readers.

No name (no address) sends a circuit and letter dealing with an idea for preventing filament burn-outs by keeping the filament wiring entirely insulated from "B" negative.

A.—It is a grand idea, but has one complete failing, as it would mean that the high tension circuit would never be completed and so the set could never work. The high tension current in the valve has to complete a circuit, which makes it essential to have the filament connected to the "B" negative. To put it very crudely, what is the good of applying high tension to the plate of a valve if it hasn't anywhere to go? Some people prefer to assume that the current flows from negative to positive, others the reverse way round. Either way the main point is that you have to have a complete circuit for current to flow from the battery through the set and back to the battery.

* * *

H.A. (Brisbane) wants to carry out experiments with radio-controlled model planes.

We doubt if there is the slightest possibility of obtaining the necessary transmitting licence for such work, although you could ask the local Radio Inspector. So far as we know little has been done in this direction in Australia. You will be interested in the fine article on the subject in the latest (August) issue of Q.S.T.

* * *

G.H. (Maroubra) seems to assume that there is some connection between "Radio World" and another popular radio paper.

A.—No, you are quite wrong about this. "The Australasian Radio World" is entirely independent in every way, solely owned, operated and controlled by A. G. Hull. Naturally, there is likely to be a similarity in the choice of articles, especially when it comes to such things as reviews of circuits published in overseas magazines.

* * *

C.C. (Burwood) has a son of seventeen who has been injured in a motor cycle accident and will be kept on his back for some months, and asks whether he could take up a correspondence course in radio.

A.—We don't think your boy would have any great difficulty in studying one of the correspondence courses in radio, and it should give him something to take an interest in and also prove of great benefit when he is completely well again.

* * *

W.P. (Hunter's Hill) wants to operate a three-stage crystal set.

A.—There is a time in the life of every radio enthusiast when he gets this brainwave. Of course it can't work. The whole idea of a crystal set is simply to change the form of the signal to make it capable of being heard by the human ear. Having once changed it, you can't do anything more, except mess it up so that nothing can be heard at all. In itself a crystal set is not capable of amplifying in the same way as a valve.

* * *

C.H.H. (Pennant Hills) wants further details about the Dandy Three described in the March issue.

A.—Before you go any further we suggest you make quite sure that you can obtain the special valves listed for this job. At the time it was written we were assured that ample stocks of these special valves were available. From what we have heard lately, however, it appears that they are now out of stock and there is little chance of any more being landed. Until you have made sure on this point, we don't think it is worth while going into it further.

* * *

L.D. (Leichhardt) is interested in joining a live radio club, for preference one which has its own club rooms and workshop-laboratory.

A.—Aren't we all! Such an idea sounds something like a radioman's Utopia, but unfortunately we haven't heard of any such Club, and so we can't help you. Frankly, we can't see any reason why such a Club should not be a great success and quite practical in every way and doubtless, when things get settled again, we can hope for a realisation of the idea.

SPEEDY QUERY SERVICE

(continued)

P.A.B. (Redcliffe, Q.) wants to know if there is an equivalent to the 6F7 in the 2.5-volt range.

A.—No, so far as we know it is not possible to obtain supplies of the 2F7, which was available many years ago in the National Union brand. This is not a big problem, however, as you can get a small filament transformer to give you 6.3 volts for the 6F7. This transformer should you only a few shillings, and it can be tucked away under the panel amongst the wiring.

* * *

"S.O.S." (Dubbo) is worried about the rumour that regenerative receivers have been banned.

A.—We can assure you quite definitely that at the time of writing the banning of regenerative receivers applies only to their use on board ship. For ordinary household purposes on land, they are quite O.K. We repeat, however, our special advice to users of these sets to be most careful in the use of the reaction control, to be quite sure that they do not cause interference.

* * *

E.McN. (Carwarp) asks if the five-band tuning unit can be used in a battery set with a 6K8G in the converter socket, but otherwise battery-type valves.

A.—Yes, this is quite a sound scheme and it should be a fairly simple matter for a man of your experience to work out a circuit along these lines, with a series, parallel and compensated filament network which would keep the total filament current within limits. With regard to the matter of tracking, the unit would not be expected to track with a dial marked for the "F" gang.

* * *

A.M. (Moonee Ponds) wants details for an inter-office communications system.

A.—We regret that we do not have any back numbers covering this subject. It seems to be one on which we have missed out. Will take steps to see what can be done in the way of an outfit of this kind for the October issue.

* * *

"Oboe" (Coogee) wants to use a magnetic pick-up with an amplifier circuit which was specially designed for a crystal pick-up.

A.—A lot depends on the particular type of magnetic pick-up you have in mind, but, generally speaking, the crystal will deliver a signal voltage about three times as great as that from the magnetic. On this account, the gain of the amplifier may be too low for the magnetic pick-up, meaning that you won't be able to get the same power output.

* * *

G.J. (Rockhampton) writes: "Why not describe some circuits using roll-top style of dial, and straight-line dials? Also is the Dandy Three suitable for my location?

A.—A set with roll-top dial was described in the June issue, but we didn't find the idea popular, as it calls for a special type of cabinet to fit. Another problem is that the dial is only suitable for the "H" type gang, whereas our most popular type of tuning unit is suitable only for the "F" gang. The big trouble with the Dandy Three is that stocks of the types of valves used are now exhausted and it looks as though they will be hard to get on account of import restrictions.

* * *

N.G. (Brisbane) asks whether .0006 is the correct value for the grid condenser of the 6K8G in the "World Cruiser", in the February issue.

A.—Yes, this is the correct value, but in practice we would expect anything between .00005 and .0001 to give you satisfactory performance. Best check on performance is to measure the grid current of the oscillator, which should vary between 80 and 500 micro-amperes, according to the frequency.

* * *

K.K. (Auckland, N.Z.) fears that his issue is out of date, as he does not get it until the 22nd day of the month.

A.—It is rather a funny situation with regard to dates. What we really ought to do is to date our issues a month or two ahead, as they do in America. We notice that over there it is customary to mention that the September issue is on sale about the third week of July, thus giving them five weeks of selling before the issue starts to go out of date! On the other hand, our practice is to release our September issue about the tenth day of that month. Boiled down, it doesn't mean a thing, as we get the latest ideas together, rush out the issue and it catches the first New Zealand boat after it comes off the press. We could, of course, call it the Christmas issue. Then we'd be up to the minute instead of out of date. The big difference, however, would be that the advertisers and our distributors wouldn't start to think about paying us until March, and we'd starve to death in the meantime!

* * *

B.T. (Enfield) wants names and addresses of a dozen Yank "ham" stations he has logged.

A.—Sorry, but we can't find space for the full list of these names and addresses in these columns. We suggest you make out the list leaving room for us to fill in the addresses, forwarding with a stamped envelope, and we'll get the office boy to attend to it for you. Glad to know that you are so keen about the DX club badge.

* * *

F.L.T. (Cabramatta) is worried about intermediate transformer frequencies.

A.—The actual frequency should not make much difference to the performance of the set so long as both transformers are properly peaked at some frequency, say, between 445 and 475, and the aerial and oscillator tuning adjusted to suit. Normally the correct frequency is 465 k.c., but there are several other suitable frequencies in this band. Quite a few transformers go out peaked at about 450 and others at 455.5 k.c.

* * *

"Economy" (Mosman) wants to know how much a set costs to run.

A.—A safe basis on which to compute the running costs of a medium-powered set is about ten hours per unit of electricity. The actual price of a unit can be seen from your last light and power bill, and varies from about three-quarters of a penny up to about a shilling, according to locality, electrical equipment used, and so on. Most sets use less than this amount, but to be on the safe side we suggest the "ten hours per unit" basis.

* * *

W.A.T. (Double Bay) built a set but it failed to operate, and a check of the valves has revealed that one is faulty, with an open circuited heater.

A.—It would be wise to make a thorough check of the heater wiring to make sure that the heater cannot possibly get more than its rated voltage, but, if everything is in order, we think you will simply have to accept the fact that, although new, the valve was faulty. It is always possible for a valve to become damaged in handling. They are all tested before leaving the factory, but that doesn't cover damage in transit.

* * *

F.T.S. (Chatswood) enquires about the two earth terminals fitted to the "Radiola" chassis.

A.—Yes, there are two earth terminals provided, apparently to comply with the rules of the Standards Association of Australia, which read: "Where the receiving equipment is operated by electricity from the supply mains, and is used in situations where accidental contact with earth is possible, metal containing cases and exposed metal frames shall be effectively earthed. Where used in situations where accidental contact with earth is not possible, such metal cases shall not be earthed." The earth terminal marked "R.E." is the radio earth, and should be earthed for best results.

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