

milliamps. The exact number can only be obtained from the valve curves, but they are not easily obtained for your type of valve. Connect the screen voltage as shown on the valve maker's specifications.

8. What would be the total plate consumption of the Tongariro Portable using two volt valves? Would the efficiency and plate consumption be increased greatly by using four or six volt valves?

A.: Neither efficiency nor plate consumption would be greatly increased by using higher voltage valves. The total plate consumption is about 10 m/as., but you could check this up for yourself quite easily.

9. Which superhet. short-wave converter is the best to construct, your own, "Radio News," July, or Q.S.T., July?

A.: We do not know anything about those described in the overseas magazine, but their circuits are, of course, quite sound and there is no doubt that they will work well. We have tried the "Radio Record" one and there are no complaints to make, so we presume you would be safer to follow our directions.

A.J.J. (Ongarue): When I was buying the components for my set I was told that amperites were not necessary.

A.: If the voltage of your "A" supply is equal to that of the valve you are using, an amperite is not necessary; otherwise it is. Sometimes it is used to provide bias for a s.g. valve.

2. On some evenings there is a gurgle

in the speaker like a man with a bad cold. Can this be put right?

A.: It is difficult to explain why it should be present some nights and absent others. We suggest that you test your battery, your valves, or it may possibly be due to a defective grid-leak.

3. I connected two coils of my crystal set in parallel. One had 40 turns and the other 80. This quite doubled the volume.

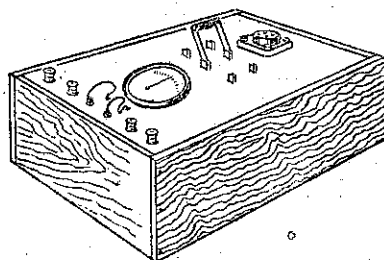
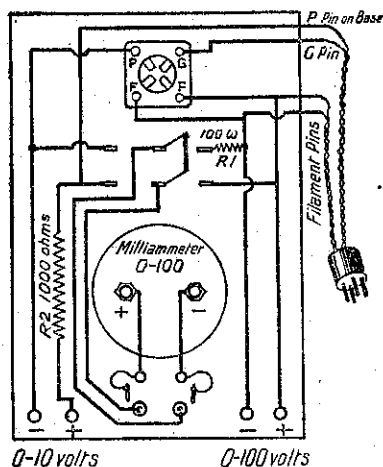
A.: It is not that you have come across a new circuit, but your first coil did not have the right number of turns, and the addition of the other one brought the total inductance to what it should be, or thereabouts. You would get the same result if you removed the 40-turn coil and varied the tapping to the crystal until you got good results.

4. Could I turn my all-wave set into a screen-grid one or would it be better to rebuild it?

A.: It would be better to rebuild it along the lines suggested in last week's "Radio Record," or to the design of the "Kestrel Three" which will appear shortly.

P.T.W. (Dunedin): I have a 0 to 100 milliammeter and wish to make a valve tester.

A.: This was fully described in the "Radio Record" of February 1, 1929. We reproduced a sketch of the hook-up to



Valve Tester—1.

the milliammeter showing how this is accomplished. The second sketch shows a suitable connection when not using the set supply. Test the valve by switching in and out the grid-bias and check up the difference by the valve maker's curve.

2. Would a six-volt accumulator be of any use?—A.: Yes.

3. In what leads should I place the milliammeter?

A.: As shown in the second sketch. 0-100 is a little too big, however, for this test, and you cannot get a true indication of a valve's efficiency with so small a scale. The valve is tested by duplicating the conditions set out in the makers' list or in tables and comparing the milliamperage with the anode current shown for the particular voltages used.

T.F.P. (Lower Hutt): Where can I obtain particulars for valve base coils for my Cossor Melody Maker?

A.: You can make up the coils described for the "Differential One," but omit the primary coil and wind the sec-

ondary and tickler upon an English base, watching that you bring the wires out to the correct pins. You will have to check up on your circuit for this.

2. The aerial has 50 turns and the secondary 60.

A.: In the case of the screen-grid valve you will need a primary and secondary as described in the "Radio Record" without tickler. Use a .0001 mfd. condenser in series with the tuning condenser to reduce the capacity to a suitable value.

"TWENTY-FIVE" (Wellington): Does a wave-trap decrease signal strength?

A.: Not if it is well designed. An up-to-date one appears in the "Radio Guide" to be published shortly.

2. What valve should I use for my five-valve neutrodyne?

A.: Four 201A type or 22's and a 605 type power valve.

3. How long should the earth wire be for efficiency?

A.: It should be as short as possible and in any case not longer than 6ft.

WIRELESS (Dunedin):—Is the one-valve set in the "Guide" superior to the differential one?

A.: No; the differential one is the best we have yet brought out.

2. Is it possible to make it into a two-valver?

A.: Yes, by using a transformer and another valve.

3. When I have the tuning condenser full out and the reaction condenser in, the set howls. Why?—A.: It is oscillating.

4. Would a fixed condenser across the phones make any difference to reception? Yes. If the condenser is large enough, it will cut off some of the higher frequency and give a lower, weaker tone.

5. Is it possible to incorporate a filter condenser in the set?

A.: Is it not worth while, when running a two-valve set.

SNEDDO (Whangarei):—Where can I procure the necessary transformers for a Bremmer Telly set?

A.: You could use good 3½ to 1 transformers, as you will probably have considerable difficulty in obtaining the ones you mention. You would need to use good transformers with an AF5 in the 1st stage. You are, however, taking a big risk in using three transformers, as it is very difficult to get them working correctly. Are you quite certain your transformers are not impedance-capacity units?

2. Is it possible to design a stage of r.f. to give a constant gain over 200 to 500. metreband?

A.: A relatively constant gain has been achieved by some of the better commercial receivers, though it is almost impossible for a home constructor to do this.

3. Which gives a better coupling over the whole musical scale—a choke condenser output filter, or an output transformer of a 1-1 ratio?

A.: The transformer is generally considered to be the best, but it should be matched to the speaker in use and not chosen haphazardly. Look out for our article on matching in the 1931 "Guide."

IMPROVEMENTS (Pahiatua): Is it worth while to convert my factory-built set into the Outspan Five?

A.: The Outspan Five would give a far greater pickup than your own set. You would probably have to purchase a large number of extra parts. Take stock of your own set before you pull it to pieces, and then you can decide if it is worth while making the alteration.

2. What is the method of neutralisation employed in the accompanying circuit? Has it any advantages?

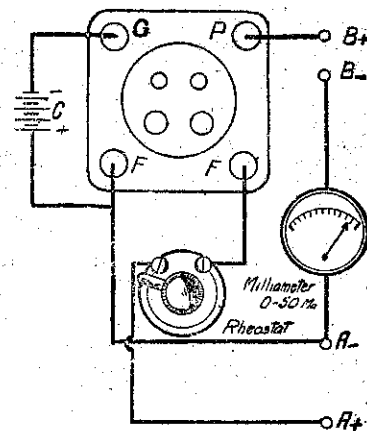
A.: It is not a standard measure, and we have not encountered it before.

3. What is the capacity of a variable condenser with 21 plates?

A.: If the plates are large it is a .0005, if they are smaller, it is a .00035. Probably it will be a .0005.

4. Could I employ differential reaction on the set as it is?

A.: In all probability, yes. Wind the 25 turns on a 2½in. former, using 30-gauge d.s.c. wire, and slip it inside the 3in. former of your detector coil so that the turns are under those at the grid end. Then make the connections shown in our diagrams.



A Simple Valve Tester.

Valve Tester—2.

5. What value rheostat must I use to control the volume by dimming the filaments of the first two r.f. valves, which are 221's?—30 ohms.

6. Is there a better method of controlling volume?

A.: For your set, no.

7. What is the output of B605?—37 watts.

8. What is a suitable screen grid valve for use with the Outspan Five?

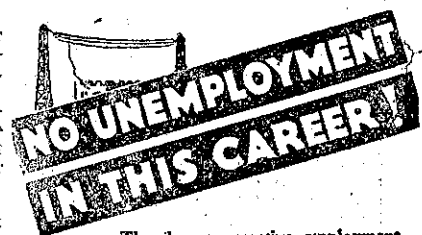
A.: There are several which will do quite well. We noticed that those firms who advertised with the article quoted several valves which are quite to be recommended.

A.B. (Petone): Can I use .0005 variable condensers for the Night Hawk?

A.: Yes. Wind about 10 turns less on the broadcast secondary coil, five turns less on the primary, and leave the tickler the same. The short-wave coils need not be altered.

NOLLITE (Pio Pio): I intend to build a foundation set, but I do not wish to spend too much at the present time.

A.: Try the Differential Two or Three laying it out as described by "Cathode" in the recent series so that a fourth stage



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