

valves and voltages test out O.K. Why is it possible to take a spark off the aerial and earth terminals or any other part of the set with the earth wire which is attached to the usual water pipe? This is when the power plug is disconnected from the mains.

A.: Owing to condenser discharge you may get such a spark, but only once. Your best plan would be to mention this phenomenon to the agent.

C.T.D. (Feilding): Why is the plug in coil of the differential one to be wound with 30 s.w.g. wire and the fixed with 24?

A.: On this valve base there have to be more turns. Consequently the wire should be finer.

2.: Would d.c.c. wire be as efficient as d.s.c.?—Yes.

3.: Which would be the better tuning condenser, a.00035 or .0005?

A.: Possibly the .00035, though the other would be quite O.K.

4.: What diameter is the plug-in coil?

A.: The same as that of the valve base.

J. F. (Westport).—I am about a mile from a power station, and very close to high-tension lines. Interference is very bad, but immediately the power cuts off reception is clear.

A.: You should contact the engineer in charge of the powerhouse. The noise could be stopped by shunting two mfd. condensers across the brushers and to earth. We had more to say on this topic in our issue of December 13, 1929.

2. I have a counterpoise, and have connected it with the ground terminal, which does not appear to make any difference.

A.: Have you removed the earth, for the counterpoise alone must be on the ground terminal. We cannot understand how, if correctly adjusted, there is no effect whatever.

E. J. (Timaru).—How many turns of 26-gauge wire must I use on valve base coils to cover the short-wave bands with .00125 condenser?

A.: 26-gauge wire is not practicable as the coil loses efficiency through its incorrect shape factor. You should have used 30-gauge.

JAKA (Wellington).—Which would be the more efficient set, the Differential Two or "R. the W. Two"?

A.: Probably the Differential Two.

PERPLEXED (Whangarei).—I wish to break into amateur transmitting. so can I make or have made an a.c. generator to supply the current?

A.: Yes, we should advise you to write to Johns, Ltd., Auckland, who would be able to put you on to the track of a suitable generator. It would not be a practicable proposition to make one yourself.

AUSSIE (Wanganui).—How can I erect a counterpoise aerial under an umbrella aerial?

A.: Run the wires out immediately under the true aerial. A better aerial to combat interference would be an ordinary L or T one run at right angles to the source of the noise. You could then run the counterpoise underneath this in the orthodox fashion.

2. How much wire would be required for the counterpoise earth?

A.: As much as for the umbrella aerial.

W.C. (Raurue).—Thanks for sending along the coil particulars, but we regret we cannot give them any publicity. Number 2 is probably the easier to manipulate, but for short-wave work a condenser control regeneration would be the better.

W.H.S. (Wellington).—Would a half wave metal rectifier be suitable for an A eliminator, and could the output voltage be regulated by having a tapped input or a resistance in the output?

A.: The rectifier to which you refer is probably a full wave one, and will be quite suitable for your purpose. A resistance in the output would probably be the best method for breaking down the voltage.

2. Would the A eliminator described in the 1930 "Guide" be more satisfactory?

A.: There is little difference.

3. Will 16 volts be too much for an electrolytic condenser maximum voltage 12?

A.: Probably yes, although if these condensers break down they are self-healing.

4. Which would be the better plan in winding a transformer, to put half the secondary and half the primary on each leg, or put the primary on one and secondary on the other?

A.: The former is better, though the best plan is to wind the transformers, such as described in the "Guide," that is, all the windings on one leg.

5. Which is the best method of output B voltages—tapped potentiometer or separate resistances?—The latter.

6. Which is the most satisfactory of obtaining grid bias battery, voltage drop, or separate eliminator?

A.: Theoretically the separate eliminator, but the voltage drop is widely used and perfectly satisfactory.

7. Will the eliminator work with all the windings on one transformer?

A.: It depends upon the wattage. Find out the total number of watts consumed by the secondary and then allowing about 90 per cent. efficiency, calculate the number of watts to be taken by the primary. Look up the table in the "Guide" and see if the transformer will carry the load.

D.S. (Market Cross): Your idea for a motor and a generator is quite a good one. The 300 volts and 120 mamps provided will be quite satisfactory for the amplifier we mention, with the exception that P625 valves should be used in the last stage. We will send you along a diagram of the amplifier within the next two or three days.

E.W.P. (Invercargill): Are valves drawing more filament current when the rheostats are down or up?

A.: The more resistance there is in the circuit the less current the valves are drawing.

2. Why is there more noise in the speaker when using a B eliminator than when using batteries?

A.: Noise should not be noticeable in a properly designed eliminator, though they are rarely quite as silent as batteries.

3. Is a 409 a better valve for the first audio than 415?—Yes.

4. I put a screen grid valve in the first stage, but results were not as good as using a .201A.

A.: Did you design the circuit especially for the screen-grid valve? If you just put it in an ordinary socket you would not get the pick-up you should do.

## Useful Tips

If you think that an anti-motor boat-ing device would improve your set, do not be discouraged if there does not appear to be room inside the set for it, as the wiring can in nearly all cases be done externally just as well as internally.

COVERED wire which is made to pass through small holes in a screening box should not be relied upon to give sufficient insulation itself, but should be provided with a wrapping of insulated tape.

It is a good plan to include a flash-lamp bulb in series with the condenser and loudspeaker of an output filter circuit, so that in the event of a condenser breakdown the small lamp will act as a fuse.

If one of your telephone earpieces breaks down remember that a wire across its two terminals will probably "restore" the phones temporarily, and enable you to listen to the conclusion of the programme on the one earpiece.

5. What is the average life of a power valve?

A.: 1000-1500 hours.

6. Do "B" batteries make circuit when the filament current is switched off?—No.

WHEN readjusting a semi-permanent crystal detector, remember that the contact consists of two separate crystals, and these should not be ground together, but should be separated, and turned only when the two faces are not in contact.

AS it is difficult to make perfectly clean cuts through brass rods without spoiling the thread, a useful method is to affix one or two nuts to the rod before cutting it, so that when these are unscrewed the thread displacement is restored.

If your cone loudspeaker is enclosed in a box and reception is a trifle "boomy," try the effect of removing the back of the case, when, if results are improved, an open-work back is indicated.

WHEN an aerial must of necessity be supported against a wall, it should not be stapled to this, but should be fixed on "stand-off" insulators, so that there is plenty of air spacing between the wire and the wall.

If you use a 6-volt accumulator consisting of three separate 2-volt sections, keep the cells properly connected in place before handing it in at the charging station, as if the connecting bars are removed they may be replaced wrongly.

# RADIO DIRECTORY

## What to Buy and Where

### CITIES

ACE and HAMMARLUND SETS,	Johns, Ltd.
WESTINGHOUSE Rectifiers	Chancery Street, Auckland.
BROWNING DRAKE SPECIAL-ISTS	F. J. W. Fear & Co. 63 Willis Street, Wellington.
BURGESS RADIO BATTERIES,	All Radio Dealers.
KING RADIO RECEIVERS	F. J. W. Fear & Co., 63 Willis Street, Wellington.
LOFTIN-WHITE AMPLIFIERS	Stewart Hardware Ltd., Courtenay Place, Wellington.
MAJESTIC RADIO RECEIVERS	Kirkcaldie & Stains, Wellington Agents, Lambton Quay.
MULLARD VALVES	All Radio Dealers.
PILOT 1930 PARTS—PILOT SUPER WASP KITS, GILFILLAN, KELLOGG and AT-WATER KENT SETS	Harrington's, N.Z., Ltd., 138-140 Queen St., Auckland. 40-42 Willis St., Wellington.
RADIOLA RECEIVERS and Expert Radiola Service.	Farmers' Trading Co., Ltd., Hobson Street, Auckland.
STEINITE RADIO	G. G. Macquarrie, Ltd., 120 Willis St., Wellington.

### COUNTRY TOWNS

MAJESTIC	Radio House, Hamilton. G. S. Anchor, Manager.
PHILIPS VALVES AND APPARATUS	All Good Radio Dealers.