

2YA, and when 3YA is tuned in to its peak the set is unstable.

A.: It may be necessary to use a wave trap on Wellington if you are not very close to 3YA. One stage of r.f. is not particularly selective, nor, for that matter, sensitive. The fact that your set is unstable when tuned to 3YA suggests that there are still too many turns on the radio frequency transformers. Reduce the turns to about 70.

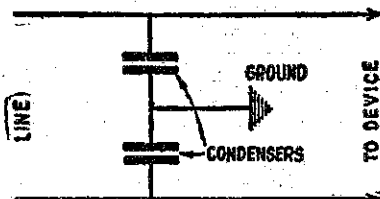
3. Would you advise two stages to remedy these defects?

A.: Two stages would certainly give you greater sensitivity and selectivity, but it might be as well to get your amplifier working perfectly before attempting the extra stage.

Note.—The other points mentioned in your letter are quite in order. The correspondent points out that he had a break-down between the 280 filament winding and the secondary. There is a very high voltage between these two windings and it is wise to put two layers of Empire cloth between them.

"AMBITIOUS" (Gisborne): What gauge wire and how many turns could I use on (a) the field coils (b) the voice coil of a dynamic speaker?

A.: The voice coil will depend upon the impedance of your last valve or valves. Had you told us what they are we might have helped you. The specifications for the field coil are:—37,000 turns of 38 gauge enamelled wire. 3lbs will be needed.



ed and they will occupy 92 layers. The current pass will be 32 amps.

2. Why does my set distort on everything except gramophone record broadcast?

A.: We can think of no adequate reason why this should be. You may be getting microphone blast, but that is most unlikely.

3. Where can I obtain details for making a small generator, of say 500 volts?

A.: Write to Johns Ltd., Auckland, who seem to have a great deal to do with this type of apparatus.

4. My motor sometimes causes disturbance to listeners. How can I remedy this?

A.: That subject was fairly fully dealt with in an article which appeared some months ago. We reproduce a diagram which should help you.

R. T. (Shannon): How many turns will I need upon the primary of a r.f. transformer which has an inside diameter of 1½?

A.: Wind about 26 turns on a 1in. former and take out the centre tap. Place this inside the low potential end of the grid coil. The tickler on the same sized former should be about 20 or 25 turns placed under the grid end; 30 gauge d.s.c. would be quite in order and for the r.f. valve a 221 would be preferable to a 201A.

"TUBE" (Invercargill): Which aerial would give me the best results for direction, one due east and west, or one north and south?

A.: For short aerials direction effect

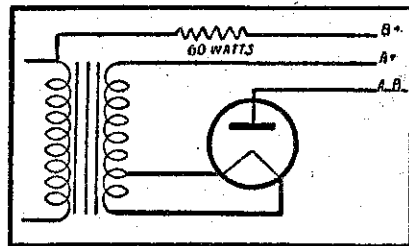
can be ignored. If there is any gain it would be on the one going east and west.

2. If I use a "T" aerial is it absolutely necessary that the lead-in wire should be taken from the middle of the aerial?—Yes.

3. Are glass insulators the best for the aerial?—Yes.

"TUNGAR" (Wanganui): What are the number of turns on the valve base coils for the PCJ Four?

A.: Last week we gave a fairly comprehensive table. You should be able to get what you require from this.



2. In the gravity type Daniell's cell how are the copper sulphate and distilled water kept from mixing?—They are not.

3. Using a transformer without any centre tap what would be the connections to a tungar bulb to charge my "B" battery?

A.: See the accompanying circuit.

4. Does the gravity type Daniell cell work as well as the porous pot, and would it give ½ an amp?

A.: The porous pot is the better and would deliver ½ amp.

5. How many amps. would my set take using the enumerated valves?

A.: You have not stated the "B" voltage nor the bias, but we should estimate it at about 12–15 mamps., using a maximum of 135 volts.

Could I use a .00025 instead of a .0001 grid condenser in the P.C.J. Four without making a great deal of difference?

A.: Yes, you would need to make the alterations in the coils as were given last week.

2. Would the P.C.J. Four work satisfactorily on shortwave and broadcast?—Yes.

"MOI Where" (Feilding): My valves are becoming weak and I want to replace them. Would PM5 be better than my existing detector?

A.: If you want to use Mullard, PM6D would be the best.

2. Would 221's be better than the valve I use now?

A.: In all probability, yes.

3. There is a remote chance of my getting near a power line. Would an eliminator supplying 180 volts and 30 mills. supply the above-mentioned valves and a 603 with enough current?—Yes.

4. What does impedance, amplification factor, slope, and undistorted output mean in everyday language?

A.: Impedance is the resistance of the valve. Generally speaking the lower it is the easier the valve will work in your circuit. The aim of valve-makers is to reduce impedance. Amplification factor implies the number of times the valve will multiply the signal. The higher this is the better. Generally, however, the higher the amplification factor the higher the impedance, so that for valves in different parts of the set one has to be sacrificed. In the r.f. portion it is impedance, in the a.f. part it is amplification factor. Slope is the real measure of the efficiency of the valve. The steeper the slope measured in amps per volt the bet-

Don'ts for the S.W. Listener

THE following advice to shortwave listeners is taken from the December issue of the International Shortwave Club's magazine, forwarded us by "ZLIX" (Palmerston North):—

Don't expect to find stations on all parts of the dials. Shortwave stations are widely separated, except in a very few places.

Don't expect stations to tune broadly. Most distant stations tune very sharply.

Don't expect to hear the world the first day you tune. It requires some knowledge of tuning to get excellent results.

Don't be disappointed after your first efforts. There are many distant stations to be heard when you learn to tune.

Don't expect to hear a station simply because it is on the air. Many things govern shortwave reception.

Don't get discouraged. If reception is poor one day, it may be fine the next.

Don't skim over the dials. Tune slowly.

Don't ignore any weak signals. Often a weak programme can be brought out plainly by a careful tuning.

Don't tune for stations when they are not on the air. Use a station list.

Don't tune haphazardly. Learn where stations should be found on the dials of your particular receiver.

Don't expect wonderful results with a poor receiver. A good receiver is necessary for good results.

Don't tune above 33 metres for distant stations in daylight.

Don't tune below 25 metres for distant stations after dark.

Don't expect to hear many distant stations above 50 metres.

Don't expect the best reception at night. Short waves offer twenty-four hours of entertainment each day.

Don't say, "I heard your station" when writing for verification. Tell what you hear and how you hear it.

Radio in Japan

Free Servicing Scheme

BROADCASTING in Japan is run by a corporation constituted on non-profit lines under the strict supervision of the Government. An excellent service scheme, comprising over 1500 service stations operating under the control of the B.C.J. engineers, is maintained to help listeners in every possible way.

Those who are experiencing trouble with their sets may take them along for expert diagnosis, and small repairs are made free of charge.

An analysis of about half a million cases concerning defective receiving equipment was made recently, with interesting results. Fifty-five per cent. were battery-operated receivers, thirty-four per cent. all-electric, and only eleven per cent. were crystal sets.

These figures certainly indicate that Japanese listeners are quite as up-to-date as those in this country.

ter the valve. Undistorted output is the amount of current that can be supplied without distorting.

Some Excellent Receivers

OUR constructional article next week should appeal to all constructors. We have been asked many times for the 1931 Browning Drake and have consequently built a model incorporating all the new ideas of design. This will be published next week under the name of "The Outspan Five." There are two stages of screen grid, differential condenser controlled reaction, and two audio stages. The present set used three dials because it is not an easy matter to perfectly match three coils when regeneration is used. We are at present experimenting with the coils in order to get them perfectly matched, and when this is done we shall describe the set for single dial control.

Instructions will be given for changing over the old Browning Drakes to this type of receiver, for it is quite possible to use the three-coil regenerator former of the B.D.

Our next constructional feature will be the three-valve differential receiver. This is the next in the series being described by "Cathode." As before, it will be followed by our own description of a complete three-valve, "The Kestrel Three."

This receiver will be followed by a complete four-valve differential receiver.

Sporting Relays

SPORTING events have taken a prominent place in the 1YA programme lately. Descriptions of the play in the Plunket Shield cricket match with Wellington were relayed from Eden Park; the Leckie-Johns boxing contest was relayed from the Town Hall on Monday evening; the Takapuna races were relayed on Thursday and Saturday, and also the tennis championships from the Stanley Street courts. Altogether the local sports announcers have been kept busy and sporting listeners have had ample fare to interest them.

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