usually sensitive hearing, but why it should respond to the rapid vibration of a transmitting station is more than we can explain. Can you recognise the items when you have the phones on? As to why you should hear the music in the backblocks we can offer no solution. It wasn't on the air, so far as radio is concerned, at that time. Sounds travel in the air for a considerable distance, and with special instruments they can be interpreted, but to our knowledge it has not been done by the unaided ear.

J.W.F. (Dunedin): What are the number of turns the size of wire, formers, etc., for the 5-valve Browning Drake to be used with .000375 ganged condensers?

A.: Use 2in. formers, and wind for the secondaries about 80 turns of 24 gauge d.s.c. wire. Primaries will depend upon the valves used.

2. Would a rotating tickler be better than a condenser controlled one?

A.: A rotating tickler would be easier to incorporate, but a condenser controlled would give better results.

3. Would 180 volts damage a 609?

A.: Yes, reduce it to at the most 150, and if the valves are to be used in the radio position the voltage should be reduced to 90.

F.W. (Petone): Why can I receive 4YA and 3YA each Wednesday evening on a home-made crystal set of the variometer type, with a one-valve amplifier?

A.: It may be due to reradiation, but it has been proved fairly conclusively that long-distance reception with a crystal set is not an impossibility. Your variometer may be tuning too high to receive as low as 3YA.

A.S. (Wanganui): Can you supply a diagram showing how to place an amplifier on a crystal set, and what stations would I be liable to receive with it? Could I receive 2ZF in Wanganui on the set without the amplifier?

A.: Full descriptions of crystal set amplifiers have been described in the 1929 "Guide" in "All About the All-Electric," and several kinds in the "R.R." You would not be able to receive 2ZF on a crystal set and an amplifier in Wanganui.

TE Atutu (Henderson): Is 80 turns on a 2in. former with 24 gauge wire and .00035 condensers correct for the B.D.?—Yes.

2. What is the correct number of turns and what tap for the aerial coil?

A.: The same number of turns tapped at the 20th turn.

3. I am not clear on how a separate coil is used.

A.: When we refer to the aerial coil of the B.D., we really mean a tapped secondary coil of the same dimensions as the other secondary coils (if tuned with the same sized condenser), and tapped a short way from the low potential end. If a separate primary is used it may consist of 20 turns wound over the secondary or a variable swinging coil like a tickler suspended inside the secondary. In this latter case the selectivity could be varied at will, though it would at no time be as sensitive as the tapped secondary coil.

4. I cannot get on to high frequencies, although when I bring the aerial in to the neutralising condenser results from 3YA are wonderful.

A.: It seems as though your aerial coil is not of the proper dimension.

G.C. (D.-N.E. Valley).—I am using a three-stage r.f. B.-D., but the reaction condenser appears not to act, and sometimes I get a clicking noise.

A.: This appears to be a defective grid-leak.

3. I tried another .0003 by-pass condenser without result, so I cut out the .001 condensers, and now the reaction condenser works quite satisfactorily.

A.: The .001 was probably too large for your conditions. Try a smaller one.

4. I am using 615 for first audio.

A.: 609 would be better.

5. How can I hook up an anode bend detector?

A.: A diagram shows the idea. Take out the gridleak, short circuit the grid condenser, and connect the grid return to 3 volts negative C battery. Connect the + to A—, and apply 90 volts to the detector valve.

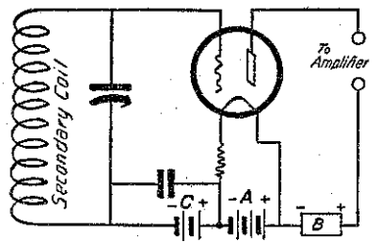
6. Has the tickler coil to be spaced?—No.

7. Is 11 turns correct for the 609 valve?—Yes.

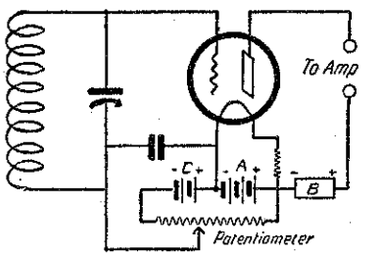
8. For the tickler will the wire wound on a former like the secondary coil be satisfactory?—Yes.

9. Where do you suggest the leakage is if not through the by-pass condenser?

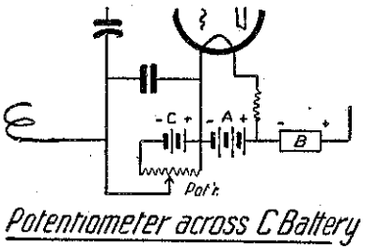
A.: There is no leakage, but blocking.



Bias Variable by Tappings



Potentiometer across A & C



Potentiometer across C Battery

You do not mention what C battery you are using, and what voltage beside 135. If this is on all valves, it is too much for easy control. No more than 90 should be used on radio and audio, and the detector if leaky grid, 45.

CAMERON (Canterbury): Wellington seems to distort on my three-valve set, and neither of the rheostats seems to have any effect on volume.

A.: Have the valves tested, increase the bias on the last valve to 9 volts, and have the transformer tested. We could have discussed your circuit had you sent a theoretical version, but it is impossible to do anything like this when a sketch plan is sent. It would take considerable time to unravel.

G.H.D. (Gisborne): Could you give particulars of a heterodyne wavemeter?

A.: See "Radio Amateur's Handbook," obtainable at least from Te Aro Book Depot, Wellington.

RESISTANCE (Christchurch): What are the numbers of turns for primary and secondary of r.f. coils to suit the valve base coils described for the P.C.J.4 a short time back?

A.: The secondaries are the same, and the primaries 60 and 120 respectively. The fact that you are using a .0001 condenser will slightly alter the tuning ranges.

I.G.A. (Wanganui): Reception on my set is not as good as it might be, for I pick up a noise and only a factory is near.

A.: This is probably coming from some of the apparatus in the factory. Remove your aerial and see if it persists. If it does communicate with the agent.

2. I find it difficult to bring in Auckland and Australian stations during the day.

A.: You are expecting too much—you may be in a bad locality for Auckland, and there are not many sets that can pick up the Australian stations in daylight.

W.G.R. (Ohakune): Which is the better set, "R. the W. 2" or "R. the W. 3"?

A.: "Three" is more sensitive, would cost another £2 or so to build, and would require more battery. The two-valve set was described in our issue of February 28, and the three-valve a week later.

R.W. (Bay of Islands).—What is wrong when a five-valve set produces no sound, when all the valves are used? All the best stations can be had on the loudspeaker from the four-valve set.

A.: Probably the power valve has been burnt out or has lost its emission. Try another valve in the socket. The inter-valve transformer may be gone. Shift the last valve out and try it in the second last socket, and if the set will not go it is the last valve for certain.

RADOX (Blenheim).—I have a six-valve set, but cannot get the Japanese at speaker strength. What stations could I expect to get?

A.: Your situation may be bad for the Japanese, and it is impossible to say if your receiver is at fault from the very meagre particulars given. Your aerial and earth should be in order, and the former should be 40ft. high, and 70 or 80ft. long, if you want first-class results. The batteries may be a little flat, or there may not be enough of them.

MACH (Opunake).—How can the resistance of an earth connection be measured?

A.: Apply to your electricity supply authorities, who have the necessary measuring instruments, and would probably charge only the price of a fuse replacement.

PUZZLED (Westland).—How can I test a lightening condenser?

A.: Remove it from between your aerial and earth, and if the set goes better it is at fault. If it does not make any difference your earth wire is probably corroded.

A.B.C. (Timaru).—When I connect the short inside antenna to my receiver I find that it goes much better if the