

to 40 ga. D.S.C. jumble wound. The r.f. and det. coils are the same. Bring the aerial to the top of the secondary through a .00015 condenser. The coils are figured for celluloid extensions to the valve bases, and for .00015 mfd. maximum condensers.

2. I have separated the coil windings. That is, the aerial and grid and the T. Anode and Reaction, about 1/6 of an inch instead of 1/16 as they recommend. Would this increased spacing affect the tuning in any way?

A.: Yes, slightly; and the set will not be so sensitive. Why not follow instructions?

**"BEAT" (Masterton):** I have a six-valve set with the following combination—three radio DEL 610, detector L610, first audio P610, pushpull two P625. I am having trouble with a continuous whistle in the pushpull stage. With a resistance in the grid leads it still whistles. When I take out one valve the volume increases slightly, but tone is inferior. If I replace it and take out the other the set motor-boats. When I cross the wires the opposite happens. I suspect the transformer.

A.: There are two or three interesting points which suggest trouble. In the first case have you realised that your set is drawing about 70 m.amps., and at 250 volts, unless you have a super eliminator you will meet trouble here for very few commercial eliminators will deliver this. If you have 250 volts on the plate as 625 requires, you will need a bias of 80 volts. Do you have that? Failure in either one or both of these directions will cause the symptoms spoken of, although the fact of crossing the wires over seems to point to trouble in one side of the split secondary. This could be tested by a cell and phones or voltmeter test. You should not be using DEP in the first audio stage as this requires nearly 10 m.amps. L610, requiring 3.5 m.amps., will handle the output sufficiently well. If DEP is not biased

by 9 volts you are getting a far greater drain than 10 m.amps. and of course causing more trouble.

**"J. B." (Otago):** Can I use a B eliminator with my four-valve set?

A.: In all probability yes, though there may be a slight background no stronger than barely audible.

2. In making the two-stage crystal amplifier described in the "Listeners' Guide," where does the grid return go?

A.: To the C1 terminal.

**ELECTRON (Wellington):** I cannot receive American stations. When should I look for them and when do they close down?

A.: Follow the DX notes and you will see when they are received. The usual time is in the afternoons and up till about 7.30 p.m., when they close down, that is, about midnight on the Pacific Coast.

2. Would Day's Bay be a good place for receiving the Americans?

A.: Owing to power leakages and the screening of the hills there are far better places than Day's Bay.

3. If I erected a larger aerial would the static increase in the same relation as signal strength?

A.: Providing your aerial is 40 feet high and 60 feet long any further increase would increase the noise level disproportionately to signal.

**S. D. (Hikurangi):** I have a Bluespot 66 K. How can I make this into a four volt dynamic?

A.: It cannot be accomplished.

2. In my four-valve set I am using two PM4's, RCA112, and an American 112 last stage. Is this a good combination?

A.: You would have had a difficulty had you tried to get a worse one. You are using four power valves. The combination should be detector A415, PM 4DX, L410, or 221 in the American series. For the first and second audio you should use two PM3's, 409's, L410's or 221's. You can use your 112 for the last stage.

3. When I increase the battery from the last valve the set squeals. Why?

A.: Probably because you are using so many audio stages and are reaching saturation point.

4. In this week's "Radio Record" I notice several correspondents ask questions in connection with a third audio stage. You discountenance same, but I have had success.

A.: You are really very lucky, but we would like to hear your set in operation, especially with the valve combination specified.

**I. A. L. (Taumarunui):** Where is the neutralising condenser on my set?

A.: For information write C. and A. Odlin, Wellington.

2. I am troubled with distortion. Are the valves wrong? I am using P625 in the last stage, with 9 volts bias.

A.: The grid bias on the power valve is altogether wrong. P625 requires about 15 volts when worked with 140 volts anode, although to obtain anything like maximum efficiency from this valve it requires 200 volts, with 20 or 25 volts bias. You should use P625A., with 15 volt bias.

3. Are wet batteries better than dry?

A.: They are more economical, but require a little care.

**"A. B. C." (Auckland):** I have a five-valve set. What are the best valves to use?

A.: Four 221's American type, and one medium power valve, such as 112. PM256, 605, P610.

**"CONTROL" (Invercargill):** Occasionally on switching on our set a moaning whistle comes through, which disappears when the speaker is lifted from the table.

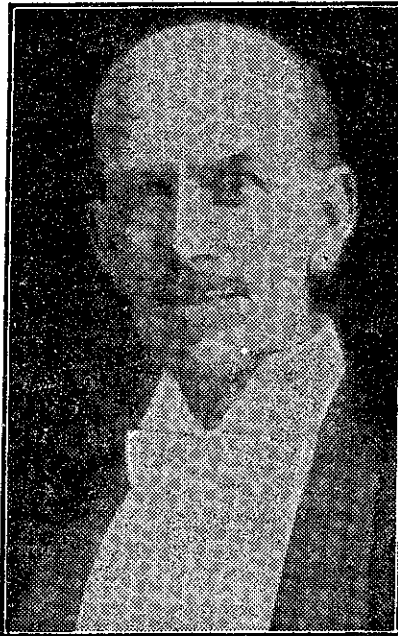
A.: This is due to a microphonic detector. If it is an a.c. set see if there are any other five-pronged valves other than those with a connection to the top

and interchange them with the detector. If the set is not a.c. change the detector with another one of the same type.

**"L. M." (Motueka):** Can the parts enumerated in my letter be used in R. the W. Two?

A.: Yes, the variable condenser with nine moving plates and eight fixed has a capacity of approximately .00035, and can be used in R. the W. for reaction.

2. I have a fair amount of wire, of the sample I enclose. Can it be used?



MR. A. MACPHERSON,  
An Auckland tenor, and well-known  
member of the Broadcasting Choir.  
—S. P. Andrew, photo

A.: It is about 17 gauge, and can be used for the coils and the wiring of the set.

**BEN ADHEM (Oamaru):** My 1930 Guide short-wave set works well on long waves and brings in the American stations. Short-wave telephony stations are very weak. Would 30 feet of inside antenna be better than an aerial with a steel mast 30 feet high?—No.

2. I use an English s.g. valve. Might it improve matters to mount it horizontally and shorten the plate lead?

A.: Quite possibly it would be better.

3. The maximum detector plate voltage is about 45 and it will oscillate between 24. The same valve used in a Cossor set will work with 135 volts on the plate.

A.: This is due to the difference in the circuits. It is difficult to explain why you are not getting the short-wave stations, particularly as your set oscillates well. Many correspondents have written us telling us of their success with this very popular receiver. Short-wave tuning requires a good deal of practice and skill. If you could raise your aerial to 40 feet, yet keeping it short, it might perhaps be better.

**"COLUMBIA" (Picton):** We have been using a five-valve battery set for nearly three years and lately the stations have been coming in with very little volume, although the batteries are kept well charged. The rheostat makes very little difference.

A.: Have you changed the valves since you purchased your set? If not that is the cause of your weakening reception. When you change them use 221 in place of 201A's and a power valve of the 171A type in the last stage.

**W. E. A. (Dunedin):** Can you tell me the most suitable valve combina-

tion for my six-valve receiver, (a) for distance, (b) for quality?

A.: Use (a) five 221's or their equivalents, and a 112 type power valve; and (b) 171A type power valve.

2. Is my present combination a good one?

A.: Yes. If you want to get distant stations try improving your aerial and earth equipment.

**TICKLER (Invercargill):** Is an aerial 110 feet too long for short-wave reception?

A.: Yes, use a series condenser or .00025.

2. When I connect the "B" supply a spark can be seen for the first time. What does this signify?

A.: That the condensers are charging.

3. I have obtained plug-in coils made specially for the set. Is it possible that one set will cover the whole short-wave band?

A.: Three or four coils will be necessary to tune between 25 metres and 120. You will have a difficulty in getting lower than 25 metres with a .0005 condenser.

4. Sometimes I get 4ZP, Invercargill, on top of Wellington, but nowhere else except on its proper setting. Why?

A.: It is probably a reflected frequency.

**AERIAL (Christchurch):** Is an aerial 35 feet high at one end and 30 feet at the other, 30 feet long, two wires separated by six feet spreaders, with a 25ft. lead-in, a good one?

A.: It would be better if you could get it higher and slightly longer, but if you are cramped for room you have probably erected the best aerial you can.

**A. B. K. Z. Y. (Auckland):** I wish to build a very sensitive receiver to get the Australian stations in broad daylight. I am thinking of using a circuit using four stages of screen grid followed by a regenerative detector. Would the fourth stage of the s.g.r.f. tend to make it unstable?

A.: You are certainly aiming to get a super-sensitive receiver, though you will probably be troubled with instability, as four stages or even three take a great deal of managing.

2. Would it be too sensitive and pick up too much noise?

A.: It would probably pick up its fair share of that and no doubt you would be able to hear more static than stations.

3. If it were working satisfactorily could I pick up two New York stations?

A.: You are very ambitious, but we are sorry we cannot help you in this respect. We have no idea what the set would be capable of doing. It should be very powerful.

4. Would five tuned circuits give sufficient selectivity for New Zealand conditions?—Yes.

6. Have you any suggestions to make?

A.: Yes, two stages of screen grid should be ample. You will probably have a great deal of trouble with four stages. Try the two first and if they work you can add the others.

**"S. D." (Auckland):** I am enclosing a cutting from your paper giving the specification of coils for the Cossor Melody Maker. This is in response to a request from a correspondent who asked you for them recently.

A.: Thanks, "S. D." We could have located them, but our correspondent particularly wanted valve base coils so we referred him to suitable ones. We appreciate your action.

**"A. T. C." (Wellington):** Can I eliminate Wellington using R. the W. Three with a wave trap?

A.: You should be able to.

2. Are any particular transformers required?

A.: Any good quality ones can be used

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