

A.: Your charger can be operated approximately 500 hours for one unit, while the eliminator will use slightly more electricity running 400 hours on one unit.

**BERG PATE** (Morrinsville): Do you consider four 221, and one 171 a good combination for a five-valve American set?

A.: Yes; instead of the 171 you could use one of the high gain power valves of the B605 type.

2. What are the optimum grid-bias voltages to work on the power valve with 180 volts on the plate?

A.: The 171 requires 42 volts grid-bias, B605 18 volts.

3. Which is the more suitable valve for the last stage, the 171A or the 112?

A.: In your case the 112. We certainly recommend the use of the 221 instead of the 201A's.

**J. G.** (Invercargill): I propose building the "Sparrow Hawk" one described in the 1931 "Guide." Would Browning Drake coils be suitable with a .0005 condenser?

A.: Yes. You could use the Browning Drake coil, but it would not altogether be the Sparrow Hawk One, would it?

**WIRELESS** (Wanganui): Could you tell me the number of turns for coils for a one-valve broadcast set? The wire used is 26 d.s.c. for all coils tuned with a .0005 condenser.

A.: Questions such as this have been answered repeatedly in the "R.R." Information was given in the "Radio Guide" for the secondaries of all coils, and you could look this up. You will find that you need 85 turns on the secondary, 20-25 on the primary, and 25 on the tickler.

**N. Z. D. X.** (Auckland): What is the simplest means of tone control?

A.: A variable resistance of 50,000 ohms in series with a .002 fixed condenser between the grid of the second audio and earth.

2. What is the right value of a variable resistance acting between the aerial and the earth in the volume control?

A.: 100,000 ohms will be quite satisfactory.

**MOI WHARE** (Feilding): Could I obtain the parts for the "Outspan Five" cheaply by buying up an old set and using the parts from that?

A.: There is no reason why you should not do this, though there would be a big

waste. Just check it over and see how many parts you can use. You will find that the tuning condensers will be all right, so should the valve sockets and transformers, and you may be able to find an efficient r.f. choke.

2. Would the "Outspan" using push-pull in the last stage give me better results than a certain commercial set?

A.: We are inclined to think the "Outspan" would be the better set, as not only is it a more modern circuit, but it uses screen-grid valves.

**H. E. I.** (Rotorua): My speaker is excellent, but should I derive any advantage by using one of the newer types?

A.: One of the newer types will give good results, especially as you have a modern set. We think one of the 66R type speaker would be much better than the one you are using. However, if you like your speaker, do not change. An inductor dynamic speaker would be even better than the 66R.

2. My set calls for 40 volts bias and it uses two 171 valves. I use their equivalent in other makes, but found this combination quite unsatisfactory. Two 201A valves with 9 volts bias were much better.

A.: You will get greater strength by using two 201A in pushpull than two 71's, and it is possible that the improvement of tone by using the 71's will not be apparent when you are using a speaker such as yours. For this type use a P605 valve. These should be biased by from 12 to 15 volts, depending upon your "B" voltage. This, by the way, may be at the base of your trouble with the 71's. If you are not using 6 "B" batteries the 40 volts bias is far too much. With three batteries it should be reduced to about 20 volts. For ordinary operation of course, you could use 45 volts by the double biasing. A really quite satisfactory scheme.

3. With the set came two pairs of coils for short-wave, but I have had no success with either the power valve or the 201A.

A.: The last valve could have no effect upon the operation of the short-wave coils. Try varying the detector voltage and the grid leak and if these do not bring about any improvement, communicate with the agents who sold you the set.

4. The set seems extravagant on current, both "A" and "B." Would an alteration to other than 9 volts improve this? The set uses 140 v. "B."

A.: We do not quite get the strength of "the alteration to other than 9 v." The best valve to use in the set would be the 221 type of valve instead of the 201A. They are very much lighter on current, and we recommend your double biasing the last stage valve, that is use say two B 605's and 40 volts grid bias. This should make your set much more economical.

5. With regard to interference from electric noises, machinery, etc., I understand that owners can be compelled to install some inexpensive gadgets to neutralise this. What steps can be taken?

A.: It can certainly be neutralised quite easily by the use of h.f. chokes and by-pass condensers. The District Radio Inspector if called upon by you, will endeavour to assist in locating the specific cause of interference, and when this has been discovered will communicate with the owner of such apparatus, intimating that the general laws governing the use of electric power necessitate the installation of such apparatus as will neutralise the trouble. It is really a moral rather than a settled law.

**"PIAKO."** (Hauriki Plains): Your questions in respect of the "Diagnosis Series" are very interesting and raise some fundamental points. We think the better plan would be to discuss them in the "Diagnosis" column. However, we can answer your number 3 question here, that is concerning the text-book that goes into theory in an elementary manner and is not expensive. This book undoubtedly, is "Wireless, the Modern Magic Carpet," and if you are at all interested

in the whys and wherefores, you should not be without a copy.

**V. A. T.** (Kaponga): I have constructed the Beverage aerial with very poor results. I would like to get into touch with anyone who has constructed such an aerial. Will they please communicate with V. A. Tait, Kaponga, Taranaki.

**"DIGGER"** (Hamilton): We are very pleased to note the good results you are getting now that you refer to our radio time-table. We hope you continue to get good results. Now, about the selectivity problem, we think a wave-trap would not have the desired result. A wave-trap will cut out one station, but cannot be made to improve all stations. The best plan is to use a .0003 condenser in the aerial. That would slightly weaken the stations, but will certainly sharpen selectivity. Thanks for your concluding remark, but forget about it; but we do appreciate your sentiment very much.

**"PENTODE"** (Opunake): I have constructed with success, the "Night Hawk" receiver. Could a pentode be used to increase volume?

A.: Yes, you could use a pentode, but it would be preferable to make an output transformer or an output choke, such as that described by Mr. Dawson in his series of articles a few months back. Only by so doing would you get really improved results.

**"CONCRETE"** (Auckland): Recently my a.c. set has developed an intermittent distortion on both music and speech. It is particularly noticeable on the upper notes.

A.: Your trouble should really be located by a serviceman, as with an a.c. set it is very difficult to tell you what to do. We suspect a bias resistance, or a punctured condenser on the audio side. When you had your valves tested, was the rectifier O.K.?

**"PADDY"** (Christchurch): Is it possible to have a stage of s.g.r.f. followed by a three electrode stage of r.f.? Could I obtain a circuit?

A.: We cannot call to mind a circuit except the "Outspan Five." For the ordinary r.f. stage you could refer to the four valve Browning Drake.

2. Could you give me the connections for an eight-point switch to be used for a gramophone pick-up?

A.: If you send us a more complete description of your set, we will sketch out the connections for you. We could not, however, undertake to do it through the "R.R." It would have to be done through the post, subject of course, to the conditions imposed upon replies by post.

3. Would a 112A in the first audio stage and a 171A in the last stage be suitable for amplifying a gramophone pick-up?

A.: No. You do not need a 112A in the first audio stage. Use a 221.

**CURIOS** (Te Aroha): Is there any way of cutting out overlapping of stations? Would the wave-trap described in the "Radio Guide" be suitable? (Concluded on page 30.)

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