



Questions and Answers



Home-Built Condensers.

"CONDENSER" (Temuka), who has constructed several fixed condensers, using celluloid between the tinfoil sheets, states that with 100 volts potential, he can pass a very small current through the condensers. He asks:—

1. Is celluloid sufficient insulation for this purpose?—Yes.

2. Can mica be bought for the purpose, and if so, where?

A.: Mica can be purchased from any big radio dealer, or it may be obtained from an old household iron, the element of which has burnt out.

Difficulty With Tetrode.

I HAVE recently constructed the improved Tetrode from your issue of August 9, writes "Double Grid" (Christchurch), but although I have checked all the wiring, I find that signal strength is greatest with the vanes out. It decreases with them in.

A.: Try reversing the connections to the reaction condenser. Introduce a choke between the junction of the reaction lead and plate lead, and the speaker negative terminal.

Constructing a "B" Battery.

I HAVE commenced to build the lead accumulator "B" battery, and would like your assistance on the following questions:—

1. I have departed slightly from the specifications, in that in place of $\frac{3}{4}$ -inch tubes I am using 1-inch. Will this make any difference?

A.: It will increase slightly the capacity.

2. I have slightly thicker lead than advised. Is this detrimental?—No.

3. I can get lead peroxide for the positive plate, but what do I have to do for the negative?

A.: Leave the lead untreated.

4. Can it be charged from D.C. current?

A.: Yes, a resistance will be used if the current supplied is greater in voltage than that of the battery. Subtract battery voltage from line voltage and multiply the remainder by 10. This is the value of the resistance. It must pass 100 mills.

Power Amplifier Design.

"H.B." (Wellington) asks the following questions relative to the design of a power amplifier:—

1. Would an amplifier using two 625 valves with 250 on the plate preceded by E415, transformer coupled, supply enough volume from a pick-up for a small hall, 60 x 30?

A.: For most purposes, yes. But if for dancing, a test would be necessary. It would probably be O.K.

2. What transformer secondary voltage would be required to energise the field winding of a moving-coil speaker used as a choke, a second choke of the usual specifications and this amplifier?

A.: The voltage drop across the speaker would be rather large. To be

on the safe side, design the transformer to deliver 400 volts.

3. What output in milliamperes would be required from the rectifier, obtaining grid bias from a separate source, and cutting waste to a minimum? The three valves consume 50 milliamperes.

A.: About 70 milliamperes.

4. What gauge of wire do you recommend for primary and secondary?

A.: Primary and secondary both 32. Would "Megohm's" silk diaphragm speaker be capable of handling the volume from the above outfit?

A.: It is very doubtful. Be on the safe side, and use a dynamic cone.

Evidently a Super-hetrodyne.

IS the accompanying circuit allowed in New Zealand? asks "J.F.K." (Palmerston North).

A.: The sketch is one of two radio frequency valves with a note stating that six more R.F. stages, a detector, and five audio are to follow. This appears to be a modified super-hetrodyne. In any case, the set is far too ambitious. Great losses will occur between the stages. Far better to build a smaller set, say, five or six valves with regeneration and push-pull, and have satisfaction. Apparently the set is not prohibited, though superheterodynes are.

An Omission.

IN your special issue, there is an article, "The Choice of Power Valves," and on page 10 there appears to be a portion omitted, writes "A.W." (Reefton). Could you supply the missing part?

A.: Three lines were dropped in the carry-over from page 10 to page 11. The amended portion reads: "An example will serve to make perfectly clear the usefulness of the table. As an example, suppose that you, the reader, desired to construct a power amplifier capable of supplying up to 3 watts of power."

2. You make reference to table 2 and table 3. Where are they?

A.: Table 2 appeared on page 11, unfortunately numbered table 1. Table 3 was deleted and the text unfortunately not amended. This useful table

will appear in our hand-book, "All About the All-Electric."

Concerning A.C.

"D.C.D." (Auckland) asks the following questions relative to power and A.C. supply:—

1. Will a copper or aluminium cover be as effective as an iron cover for an eliminator transformer as far as stopping magnetic fields is concerned?

A.: No, the magnetic permeability of aluminium and copper is much greater than iron. Consequently, iron is the better shield. The formula given in the A.C. number of the "Record" does not seem to be correct. Will you please give an example of a calculation of power output, taking the 171 as an example?

A.: There was more than one formula given in this issue. Please restate your question.

3. Do you anticipate 4-volt A.C. valves will have the same life as the D.C. prototypes?

A.: Yes, there is no reason other than the fluctuation of the mains current why they should be outlived. Unless a reasonable precaution is taken to protect the filaments from mains surges, they will not last as long. Adequate protection means either the use of an automatic line voltage control or supplying the filaments with current a little below their rated requirements.

4. How can I slightly broaden the tuning of my A.C. 3/33?

A.: Tighten the coupling between the aerial and the secondary coil. This amounts to swinging one nearer the other.

Valve Designations.

IN Laboratory Jottings in the special issue P625 is referred to as a 171A valve, and P625A is represented as being type 245. According to the manufacturer's handbook these should read P625A (171A) and P625 (245).

A.: Yes, this latter is the correct statement.

A Transformer Problem.

I AM not clear about the secondary winding for a given output voltage, writes "C.E." (Nelson). The table in the Guide states that 1070 turns are necessary on each side of a centre tap to deliver 200 volts. In another column, it is stated that this will be

75 per cent efficient. As my valves requires a full 200 volts, shall I add another 200 turns on each side of the centre tap to make up for the deficiency?

A.: Yes, this will be the safest plan, and will supply adequate voltage.

2. Which is correct? 4000 turns of S.W.G. enamelled wire or 1½lb. of the same wire to be used in construction of the choke.

A.: 1½lb. wound on regardless of the number of turns.

Short-wave Problems.

MY short-wave set oscillates very roughly, complains "E.W.A." (Nelson). How can I make it oscillate more smoothly?

A.: Place a resistance of a value ranging between 100,000 and 500,000 ohms across the secondary of the first audio transformer. If this is unsuccessful try a condenser capacity .00025 mfd.

2. Would a pentode in the last stage be of any advantage?

A.: It is doubtful; it would probably cause instability, and feed-back.

3. The set refuses to oscillate on certain short-wave bands.

A.: Add more turns to the tickler for this particular band. Full details for an efficient set of coils was described in our issue dated April 26, 1929. This was in connection with an article by "Pentode" describing the construction of a very efficient short-wave set, "Round the World Two."

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