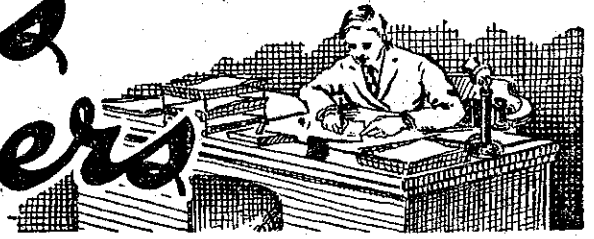


Questions and Answers



Short-wave Adapter.

I HAVE a Browning Drake with three stage of R.C. audio amplification. I have tried to fit a short-wave adapter, but it will not work from the detector socket. It works O.K. from the first audio. G.H.C. (Fisher-ton).

A.: It appears that there is some fault causing an open in the detector circuit. There is no apparent reason why the adapter should not work from the detector socket. Take a connection from each of the short-wave adapter leads and place one on the plate and one on the filament return of the detector socket. If this will not work, then it is difficult to conceive of the set working when the short-wave adapter is not used. There is probably a faulty connection.

Short Wave Troubles.

WHY is there a slight whistle when the shield of the first audio transformer is touched? writes H.W.Y. (Herekino).

A.: It appears as if there is audio frequency feed-back through the body. Earth the core and shield of the transformer.

2. What is a safe distance for the secondary coil from the variable condenser?

A.: There is no minimum distance so long as regeneration is used. If a little damping occurs it can be made up for by regeneration.

3. I cannot open the detector rheostat than a very short distance unless I get a squeal.

A.: Try the following remedies:—(1) A quarter of a megohm grid leak in series with the grid leak from the first audio frequency transformer.

(2) A half-megohm grid leak across the secondary of the first A.S. transformer. (3) A .0001 mfs. condenser across the second audio frequency transformer secondary.

Measuring Inductance and Capacity.

"Q"—FORMER (Auckland) asks the following questions:—

1. How many turns primary, secondary and tickler and gauge of wire will I require on a 2in. former for the following wavelength? 100 to 250 metres, 250-400 metres, 400-550 metres, using a .00025 condenser to control the tickler and a .0001 to tune the secondary.

A.: It will be necessary in order to get reasonably sized coils to use 24 gauge D.S.C. wire. For the first coil which will tune between 100 and 200 metres wind 100 turns unspaced, for the second, tuning between 200 and 375 metres, 140 turns, tuning between 350 and 500, 200 turns. The tickler in each case will have to be experimented with; try the following numbers: First band, 20 turns; second band, 25 turns; third band, 30 turns. The primary may in each case be about the same as the tickler and if anything a little less.

2. In the formula for calculating the capacity of variable condensers (a) does distance between them mean the distance when the plates are full in or when they are out?

A.: The distance between the plates when full in, if the maximum capacity is to be calculated.

(b) How could I find the area of one plate when the two are of different sizes?

A.: Take the size of the smaller, in your case the moving plate.

Set Goes Dead.

I HAVE a five-valve set the valves of which lost their emission. I replaced them by Continental valves, and the set went dead. What valves should I use?—New Chum (French Pass).

A.: It is a mistake to replace American valves by any other make. American sets have resistances designed to suit only American valves, and when others are introduced not only is the neutralisation interfered with but quite frequently the set, as in your case, goes dead, due usually to the valves not receiving their quota of battery current.

Voltage Divider Problem.

"FAN" (Oamaru) asks the following questions regarding a voltage divider for an eliminator:—

1. What value resistors will be required?

A.: You may work these out yourself as follows:—Decide what voltage taps you require and how many milliamperes will be drawn from each. Allow 10-20 mas. waste current. The value of the intervening resistances may be calculated by Ohm's law as follows:—Find the voltage drop and the number of milliamperes passing through each resistance. For example, suppose your eliminator will deliver 325 volts maximum, and you want to break your first tap down to 150 and pass, say, 18 mills. at this tap, 4 at the next, 2 at the next and 4 at the next. The 80 mills. will not pass through the voltage divider, but all the rest will. Add this together, and divide it into the voltage drop (175), multiply it by 1000. Subtract the output of each tap from the total and then treat in the same manner. Between the B plus detector and earth or B minus put a high resistance between 5000 and 10,000 ohms. In parallel with this put a variable resistance ranging up to a megohm. Take the B detector tapping from the movable arm.

2. Is it practicable to use a high voltage separately on the power valve while the other voltages are not in use or vice versa to use the lower voltages when the high voltages are not in use?

A.: If the eliminator is properly designed, yes. There may be a slight alteration in the voltage.

3. What will be the total voltage out-

put from the 280 rectifier with 375 volt on the plate?

A.: As you suggest, from 315 to 325 volts. Note.—The values you have denoted in ohms are very nearly correct, but you have not been allowing sufficient waste current. This is necessary in order to keep the voltage on the others more steady. Do not use B405 except in last stage. We shall devote an article on this subject as soon as possible.

Renewal of "B" Batteries.

MY "B" batteries have fallen below half strength. Could I install one new battery and by coupling the three together bring the batteries up to strength?—J.A.C. (Ngapara).

A.: Under no circumstances is it advisable to couple a new "B" battery with those already in use, if they have fallen to 2-3rds of their original voltage. The reason is that the resistance of the old batteries has increased to such an extent that unwanted noises would be created in the receiver.

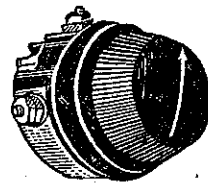
2. Could I increase my plate voltage above 90 to get better results without any serious effect?

A.: The leaflets enclosed in the valve carton should be studied and the voltage adjusted to the maximum permissible amount. If for a power valve you will be well advised to increase the voltage above that already used. High voltage should not be applied to detector, medium voltage is required by the radio and the detector valves, but the power or last stage valve requires fairly high voltage if anything like reasonable results are to be anticipated.

Use of Chokes

For Short-Wave Work

IN a set intended particularly for short-wave reception, it is advisable to use high-frequency chokes which are specially wound for this purpose. The average constructor might find it a little difficult to wind a choke which would perform efficiently on both broadcast bands, but the construction of a short-wave choke should present no difficulties. The materials required are a piece of ebonite tube 7-8in. in diameter and 2 1/2 in. long and an ounce of 36's single silk-covered wire. Drill a small hole half an inch from the end of the tube and fasten the wire by threading it through. Another method of fastening is to place a small terminal in the hole with the wire, scraped clean, under it. Wind on a hundred turns close together and fasten the other end in the same way as the first. Ordinary plug-in coils of about 25 to 35 turns can be used to serve the purpose of a short-wave choke, but they are not so compact as those outlined above, while owing to the larger "field" they need careful placing in the set to obviate interaction.



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