

ondary winding and the R.F. transformer.

In your case we should not advise interference. Look for the by-pass condensers previously referred to. Note—If you desire to improve your quality look to the following points:—The by-pass condensers, the value of the grid leak which should be fairly low 1-2 megohms, the speaker, which frequently causes most of the trouble, the state of the "C" battery, and the load imposed on the eliminator. If this latter cannot stand up to the drain imposed upon it the voltage will drop and the quality become spoiled.

Building an "A" Eliminator.

COULD you supply me with the following data relative to the construction of an "A" eliminator? asks "Eliminator" (Taranaki).

1: What capacity electrolytic condensers to buy?

A.: About 2500 mfd.

2: What capacity metal rectifier?

A.: You need a rectifier that will pass about 4 amps. Communicate with Johns, Ltd., Auckland.

3: What make of choke do you recommend?

A.: You will probably have to make your own. A set of standard stampings (Bailingers and Co., Wellington) filled with 22 DCC wire will probably suffice.

4: What secondary voltage is necessary to obtain (a) 4 volts rectified; (b) 6 volts rectified?

A.: (a) 6 volts; (b) 10 volts;

5: What size and number of turns of wire is best?

A.: Use 16 or 18 gauge DCC wire and put on about 24 turns for the 4 volt and 35 turns for the 6 volts. A slightly greater voltage drop occurs in the metal rectifier than the valve and this must be allowed for. Test the final voltage with a voltmeter before connecting up with the set.

7: If an ABC eliminator is constructed, does the number of primary turns remain constant?

A.: Yes, but slightly heavier gauge wire is necessary. See a recent article by "Cathode" on the design and construction of power transformers.

List of Stations.

WHERE can I obtain a list of New Zealand and Australian stations and their times of operation?—"F.F." (Hokitika).

A.: The New Zealand stations have been published in recent issues of the "Radio Record." The Australian stations may be obtained from a supplement in the "Australian Wireless Weekly," published on May 31, 1929. If you cannot secure a copy of this locally, write to the publishers, Elizabeth Street, Sydney.

The Use of 245's.

"A.V.S." (Khandallah) asks the following questions relative to the 245 valve:—

1. With 250 volts on the plate should the grid bias be 50 or 100 volts?

A.: 50 volts biases the curve to the mid-point of its straight portion and causes the push-pull amplifiers to act as single valves. The 100 volts causes the bias to act from the lower curve, and if the 2-valves are regarded as acting together the curve is taken right along the straight parts of both. It is considered on the whole that biasing to the mid-point is slightly superior. On our tests we have found very little difference.

2. What output transformer should be used with a 66P unit?

A.: A 1-1 transformer.

3: What is the impedance of the 66P unit at 200 cycles?

A.: The measurements for this unit have not been published by the manufacturers, and we have not had the opportunity of making these measurements ourselves.

4. What is the maximum undistorted output that the 66P used in the improved linen diaphragm speaker would be able to handle?

A.: The exact amount is not known, but it would probably be about 3 watts.

5. Would harm be done to a 280 rectifying valve by putting 350 volts on each plate, although the specified maximum is 300 volts.

A.: It is not a good practice, but in this case will probably have very little effect.

6. In circuit diagrams of "B" eliminators the high tension is sometimes taken from one of the legs of the filament and sometimes from the centre tap of the filament coil. Which is the most satisfactory?

A.: There is very little difference, and this is in favour of the centre tap.

Note.—Full justice to two 245's in push-pull cannot be done with anything less than a dynamic cone speaker. In fact, the linen diaphragm would hardly be satisfactory.

Request for a Diagram.

WOULD you supply a diagram of a one-valve receiver capable of reaching Wellington, Auckland, and other New Zealand stations on the telephones. I would also like to search for Australian stations—"H.F." (Levin).

A.: No. We do not encourage owners of small sets to search for New Zealand and Australian stations, for this constitutes the howling valve nuisance. Small sets such as these are not suitable for anything more than local station reception, and when they are employed on the other main stations they cause more annoyance to listeners than do any other type of set. A combination was described in a recent issue of the "Radio Record." This was to be used primarily as a crystal and amplifier, but could, with care, be used as a 1-valve receiver, but this is not advised, unless the operator is careful and skilful.

D.C. Eliminators.

ACCORDING to an article published in your paper, it is a difficult matter to construct an "A" eliminator to work from D.C. mains. Several firms, however, have imported some of these, and have been used successfully. It seems to be that there must be a tremendous waste of current, and I should like to use this to light the room even with a table lamp.—"W.D." (Reefton).

A.: The point of our article was that the operating cost of an "A" eliminator hardly warranted it. In your case, you will require a lamp or lamps dissipating 460 watts. This may quite conveniently be three 150 watt lamps, which may be connected in series for use in different parts of the room or in different rooms. The valves could be short-circuited when it is desired to use the lights and not the radio set. The lights, of course, would not function as well as lights properly connected, because the voltage would be lessened (roughly 100 volts each). A 30 ohm rheostat should be connected in series with the filaments.

Charging a Battery.

RATHER unique questions concerning "A" battery charging have been raised by "Fan" (Paerau).

1. Bringing direct current across padlocks 800 yards on poles, the input at a generator 12 amps. at 6 volts, charging a 6-volt battery, what would be the output at the other end?

A.: This depends upon the type of wire used. If 7/029, which we recommend, is employed, about 5 amps. can be delivered at 6 volts.

2. I have two 60 amp. batteries and one 74. If I charge these in parallel would they discharge if I left them connected in parallel?—No.

3. My set draws about 4 amps. an hour. If three batteries were connected in parallel would the set take an equal amount from each?

A.: Other things being equal, yes.

Note: We recommend your using the fairly heavy 7/029 to prevent the wire breaking by its own weight or by any slight strain that might be imposed upon it. It is necessary to run only one wire, probably the positive (depending on which is earthed at the generator) and run the other to earth. In charging the

batteries, connect the positive wire to the negative pole of the battery and the ground to the positive.

4. Could you give me a circuit of a short-wave set with two stages of radio frequency?

A.: Such sets as these are rarely used. We do not happen to have one that we could give you without going into a great deal of detail that is not covered by the scope of "Questions and Answers."

A Tip that Worked.

RE my query and your reply thereto in the "Radio Record" of December 6, 1929, relating to a second aerial for a crystal set: My second aerial has been erected, and the increased volume of reception fully justifies the addition. I have also added another earth, making five, with beneficial results. The above may be a help to others depending on a crystal set for their wireless entertainment.—A.P.G. (Silverstream).

Tips and Jottings

Adjusting Grid Bias.

THE importance of switching a set off before adjusting the grid-bias voltage of any of the valves is not usually realised. While the grid-bias plug is out the valve has absolutely a free grid and the resistance of the valve drops considerably, with the result that the emission increases, and this may, in less time than it takes for you to take the plug out and put into another hole, rise to a value far in excess of the intended maximum emission of the valve, and thereby do the valve a tremendous lot of damage. All grid-bias plugs should be adjusted with both A and B batteries switched off.

Uses for Old Files.

EVEN the worst and most dilapidated of files can often be made use of for doing jobs very different from those for which they were primarily intended. A half-round tapered file, for example, makes a useful D-bit when its filing days are over. The tongue fits quite well into the jaws

of the brace, and used in this way an ancient file will provide a ready means of enlarging holes drilled in ebonite. One often needs something of the kind. When, for example, jacks have to be mounted on an ebonite panel, 7-16 inch or 1-inch holes are needed in many cases. The biggest drill in the average home constructor's outfit is the 3-8-inch, which will not, of course, make the holes needed. Put this drill through first of all, then use an old half-round file in the way suggested, and the job is very quickly accomplished. If you possess an emery wheel you can grind old flat files into useful scrapers, whilst round ones may be turned in the same way into centre punches or nail punches.

Preparing Ebonite Panels.

WHEN it is desired to rub down ebonite panels to produce a matt surface in lieu of an existing polished surface, many home constructors find that unless extreme care is taken in the operation the result of using the usually recommended emery powder is a scratched surface. This effect is naturally not pleasing to the eye, and an improved finish to the work can be secured if resort is made to the use of "cream grit." This is the material used by monumental masons when rubbing down lead-lettered inscriptions, and is to be preferred to the usual emery powder.

A Pilot Lamp.

IN order to reduce the risk of leaving a radio set switched on all night, it is advisable to fit a warning lamp to indicate when the filaments are switched on. A flash-light bulb, having a low-current consumption and a suitable holder, should be procured and wired directly across the filament terminals of any convenient valve-holder in the receiver. If the set has provision for gramophone reproduction arranged in such a way that the radio-frequency stages are automatically switched off, precautions must be taken to ensure that the lamp is operative when the gramophone pick-up is in use.

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