

ed at the bottom. In this case, the correspondent may be able to effect a remedy himself. The battery should be emptied of all liquid and washed out with distilled water. Pure rain water collected in an earthenware vessel is a good substitute. Once the battery is quite clean inside sulphuric acid and water, the density of which is 1.25, should be added. (This can be readily obtained from a chemist.) The liquid should just cover the plates.

If the battery is found to hold its charge, then it is evident that there is a short circuit within the set. To conclusively prove this, withdraw the valves, remove the "A" battery, and connect "A" plus to a "B" plus of about 22½ volts. Connect "A" minus to one terminal of the speaker or a pair of 'phones, and the other to the "B" minus of the battery. A distinct click should be heard, and this will indicate that there is a short circuit. The set should then be overhauled by the owner if he is competent to do this, or by a radio dealer. Great care must be exercised that the "B" battery is not connected to the "A" battery terminals while the valves are in. If no click is heard, and a dummy valve is available, try inserting it in each of the sockets moving it about and listening for a click. This will point to an error in the sockets. If a battery eliminator is used, substitute a low tapping for the "B" battery.

Valve Consumption.

"PUZZLED" (Nelson) writes: (1) Will you explain why it is necessary to use six dry "A" batteries in series parallel with valves, using a total filament current of more than .2 amperes?

A.: When filament consumption exceeds 2 or .25 a heavy drain is placed upon the dry cells. These are adapted Leclanche cells, and not built to stand a heavy drain. When this is placed upon them they rapidly polarize, the internal resistance rises, and the E.M.F. drops—in other words, they soon become useless. If, on the other hand, they are used but slowly, polarisation does not take place readily and greater service is extracted from the cell. By using six cells, in series parallel instead of three in series, the E.M.F. remains the same, but the resistance of the battery is halved, and current is taken out of each cell at just half the rate it would be taken out of each of the three cells used in series.

This means that the "A" battery will last probably three times as long as the "A" battery, comprising three cells only.

2. Does one get as good results from a .06 valve as from a .1?

A.: It all depends on what is meant by "as good results." The performance of both valves is very much alike, and opinion is divided as to quality, etc. The statement is sometimes made that the .06 valves are harsh, but there is no theoretical justification for this, and our observations have shown us that except in a very few cases, .06 valves are by no means harsh—and these exceptions are very dubious.

4. As a .06 valve uses much more "B" battery current than a .1 valve, is there much difference in the annual running cost?

A.: If two sets of batteries are used with the "A" battery readily rechargeable, there is little difference in the running cost.

5. Is there a standard size copper wire used for connecting dry "A" batteries?

A.: No, but use the thickest copper wire obtainable.

6. My receiver is a factory-built four-valve regenerative. I am using English valves with a consumption of .1 ampere each. Either these or lower filament consumption valves were advised by the maker last year for use with dry "A" batteries which I am obliged to use. Which would be the more economical?

A.: It is difficult to say. Probably the .1 valves, unless liberal grid bias were applied to each valve of the set, will be the most economical.

7. When I have to change my valves what type shall I replace by?

A.: The wisest plan is to use the same make of valves now employed.

Set Will Not Oscillate.

EVERYTHING is in order in my set, writes "C.D. McG." (Wellington), but the set will not oscillate.

A.: Try a few more turns on the tickler, and if the set will not oscillate under these conditions try reversing the connections to the detector valve. If another valve is handy, it should be tried, for the one now used as detector may have lost its emission.

Parallel Feed Browning-Drake.

"J.S.C." (Nelson) asks concerning this receiver:—

1. What difference, if any, would it make by fitting a 1 mfd. condenser in the plate leads instead of the .5 condensers as specified?—None.

2. Which is the most efficient method of controlling volume without spoiling tone?

A.: Place a high value variable condenser between the aerial and the earth. This resistance should be at least 10,000 ohms.

3. Would it be of any advantage to replace 201A valves in the R.F. stages with valves of higher impedance? If so, with what impedance?

A.: Providing the set will neutralise without difficulty, the 201A type of valve gives the best results in the radio frequency stages of the Browning-Drake.

4. Would it be advisable to replace the detector which has a resistance of about 9000 ohms by one of higher impedance?

A.: The tendency now is to manufacture special detectors with impedances of slightly under 10,000 ohms, e.g., PM4D and A415.

Unusual Troubles.

"J.P.B." has experienced an unusual trouble, in that he has to turn his rheostat in different positions on different occasions to get the best results. He notices that when he has a wavetrap the rheostat when turned to a certain point will allow of signals from the local station being received.

A.: If a battery eliminator is used this may be accounted for in surge in the main current, otherwise it is rather difficult to explain, providing everything in the set, including the valve, is in perfect order. The fact that the local station is received when the set is brought to a certain degree of sensitivity indicates that the wavetrap is inefficient, or if this is beyond doubt, that the receiver is situated in such a position that it is impossible to get past the local station when the set is fully sensitive.

2. Sometimes I go to the set and I can hardly touch it without a growl and a howl. Another night I can handle it without any trouble.

A.: It appears from this that the set is not properly neutralised, and that the signals being received have an unstabling effect and cause the variations noticed.

3. Some nights the wavetrap will cut out the local station, but on odd occasions, irrespective of the wavetrap, it will come in all over the dial.

A.: It appears that the wavetrap is inefficient under certain conditions. One would suspect that this is a matter of chance rather than being the result of the conditions existing from night to night. Examine the wavetrap carefully and see that it is not possible for a short circuit to take place. The condenser vanes, for example, may have worked a little loose and be touching one another.

Uncontrollable Oscillation.

MY trouble is fierce oscillation of the detector, writes "A.J.C." (Te Aroha). I have reduced the "B" battery and tried reversing the tickler connections; also, unless the set is right up to the oscillation point there is no volume and consequently poor tone. The R.F. stages seem to be wrong. There is now howling from this no matter how the neutralising condenser is altered. When it is turned low it sets the detector howling. The audio filaments on being turned high cause a howl also. I thought of reducing the number of turns on the tickler, but being a factory-made set I thought this would be correct.

A.: The major trouble appears to be in the layout, and results from interaction between the rails or grid and plate wires. Next week we shall publish a few hints on layout. The best results could accrue only when the primary had been increased by two or three turns.

KING IN RADIO

"King" all Electric Six and Seven-Valve Neutrodyne Receivers.

Just switch on to the home electric supply and this wonderful Electric Set, full of power and beauty of performance, will bring to every listener a new conception of what radio service and satisfaction mean.

Model H £41/7/6

Model J £47/5/6

Demonstration at any time.

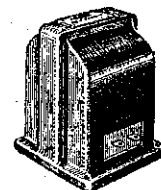
CALL AND INSPECT.

F.J.W. FEAR & CO. THE RADIO PEOPLE

63 WILLIS STREET, WELLINGTON.

'Phone 41-446.

PEP PUNCH TRANSFORMER



Will put Pep into your Reception.

Realising the demand for a Transformer of quality at a moderate price Emmco now introduce the Pep Punch, a Transformer which gives wonderful results, volume and smoothness. Made up in a one-piece Hand Drawn Metal Case. 3 Ratios 5-1, 3½-1 and 2-1.

PRICE 10/6

A FULLY GUARANTEED EMMCO PRODUCT.

MADE BY ELECTRICITY METER MANUFACTURING CO., LTD.

Distributors for New Zealand:

JOHNS, LTD., Chancery Street, AUCKLAND.

THOS. BALLINGER & CO., LTD., Victoria St., WELLINGTON.

L. B. SCOTT, LTD., Worcester Street, CHRISTCHURCH.