

Transformer Troubles

Locating Annoying Howls

QUITE a number of sets employing two transformer audio stages give trouble to the constructor when he comes to test them. Generally the difficulty consists of either a high or low-pitched howl, which persists in spite of the positions of the tuning controls. Sometimes it takes the form of acute distortion.

Low-frequency Oscillation.

IN both cases the cause is nearly always the same, namely, low-frequency oscillation, which is produced by audio currents being fed back to one of the audio valves. Sometimes the oscillation takes place at audible frequencies, and sometimes at inaudible, and this explains the difference between the two symptoms mentioned above.

It is not possible to give a definite cure for the troubles mentioned, and one which will always succeed, but a number of things may be tried, and generally one or more of them will

solve the trouble. The suggestions given in the following paragraphs should therefore be tried by those who either have trouble with a Det. followed by two transformers, or who are not satisfied with the quality from such a receiver.

The first point to receive attention should be the transformer connections.

Start by changing over the leads to the primary of the first L.F. transformer, and then try the receiver. If results are worse, change the connections back to their original positions. If, however, a slight improvement is noticed, or matters seem the same as before, leave them in the new position.

Should results be quite all right after changing the primary leads, there is no need to proceed further; on the other hand, if they are not, the next step is to try reversing the leads to the secondary of the first L.F. transformer. Again test the receiver, and adhere to the same instructions as given for when the primary leads have been changed.

Generally, the above suggestions will effect a cure, but if they do not there are still ideas to be carried out. The instability may be caused by radio frequency currents getting through to the audio stages of the set. To prevent this, either an H.F. choke or a resistance of about 250,000 ohms should be inserted in the grid leak

of the first L.F. valve. That is between the grid and the first L.F. transformer.

The next thing to suspect is the B battery. If this is run down or of a high resistance it can easily cause instability. It should, therefore, be tested with a voltmeter while on load, that is to say, while the set is working. If its voltage is as it should be, try shunting a 2-mfd. fixed condenser across the B positive tap and B negative.

By-Pass Condenser

THERE is one more useful thing to try, and that is to earth the cores of the L.F. transformer. If these are of the shrouded type, the core can be earthed as well as the shroud, by taking a wire to one of the clamping bolts which pass through the transformer. Sometimes a terminal is specially provided for earthing.

Where ordinary moving coil reaction is employed, it is imperative that a by-pass condenser be connected either across the primary of the first L.F. transformer, or from the side of the reaction which is not joined to the plate of the detector valve, to A negative.

In particularly troublesome cases, a useful line along which to experiment is the insertion of anti-motor-boating devices. Whilst the idea is really borrowed from elimination practice, it is sometimes very effective.

RADIO DIRECTORY

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- ALTONA & HAMMARLUND.** Johns, Ltd.
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- ROBERTS SETS.**
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- BREMER-TULLY RADIO** ... Superadio, Ltd.,
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- CROSLEY SETS** ... Lewis Eady, Ltd.,
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The Screen-grid Valve

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THE APPLICATION OF THE SCREEN-GRID VALVE TO CIRCUITS NOW USING THREE ELECTRODE VALVES."

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A RECEIVER of merit should possess sensitivity, selectivity and a really good tone, by which is meant clarity as well as rotundity. Volume is really a fourth consideration, because once a set has been turned up to give tone power, in one of the many possible ways, can be increased. Sensitivity is a factor that counts, for this means range. It can be secured by seeing that rectification is as near perfect as possible, by using judicious reaction, and, sometimes, by increasing the plate potential of the detector and H.F. valves.

Selectivity is a matter that concerns the aerial system and the tuning gear, and often exerts an influence on tone because an ultra-selective circuit is always working on a tuning "peak," to over-run which, or to almost but not quite reach which, will utterly ruin signal quality.

Rotundity is a matter determined by judicious low-frequency amplification and the use of suitable reservoir condensers across the output.

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