

Dial Reading Variation.

A CORRESPONDENT from Denniston, who has omitted to sign his name, writes: "I am using a two-valve short-wave set, and am getting good results, but the dial readings have altered about 10 degrees on the 25 to 50 metres and on 50 to 100 metre coils. The 15 to 25 and the 100 to 200 metre coils are all right. Could you tell me what has happened? How can I stop dead spots?"

This question no doubt worries many beginners. Not only on short-wave but on the ordinary broadcast receiver readings for the same station changes and no explanation can be advanced.

There are several likely causes, but reference will be made only to the more obvious.

(1) The most likely cause is that the dial has slipped in relation to the condenser vanes. The screw holding the dial to the rod of the moving plates may have loosened and allowed the dial to shift its position. To rectify such an error, tune in to a station of which the wavelength is known. If the dial does not read directly into metres, ascertain from the log the correct reading and make the adjustment by loosening the screw and moving the dial until the reading is corrected.

(2) If the detector valve has been changed the chance is that the characteristics are not the same as before. This will give a different reading. To correct, tune into a known station and make the alteration as above suggested.

These are two general causes which may effect any receiver. In addition to these there are peculiarities particular to the sets or locality which must be considered.

Dead Spots.

THESE are quite common occurrences, and are the result of many and varied causes, but the following are the most common and easiest to rectify:—(1) H.F. choke: A choke coil is a coil of great reactance or resistance whose purpose is to limit the flow of alternating or pulsating currents of certain frequencies through part of a circuit in which the choke is placed. By means of various combinations of chokes and condensers current may be divided to finally pass to the speaker or phones.

Before signals can be received the set must oscillate. Chokes and condensers cause the set to oscillate at the same frequency as incoming signals. Tuning is the action of causing the receiver to oscillate the same as the carrier wave desired.

From this it may be seen that a defect in any part of the tuning condenser or high frequency (undetected) choke will cause the set to go out of oscillation at that particular point, and a dead spot results. Dead spots are not likely to occur when once the set is in going order, but when the constructor encounters this phenomenon the chokes should be carefully examined for defects.

(2) The condenser vanes may have had a slight knock and be touching the fixed plates in one particular position.

(3) The antenna coupling may be wrongly connected, or may be at fault in some way. It may pay to try a different coupling. Placing a midget condenser in series with coupling is worth trying.

The foregoing remarks, although of a rather technical nature for the average listener who does not worry about

his set so long as it works, should be worth noting by amateur constructors who are liable to come across dead spots.

Reception of High Frequencies.

AN amateur shortwave constructor has presented a difficulty that may cause a little trouble. It concerns the position of the grid leak and the small fixed condenser usually connected in the grid circuit. This particular amateur could receive nothing lower than twenty-five meters, no matter what care he took in adjusting his set.

On investigation it proved that the grid-leak and its condenser were screwed to the baseboard instead of being attached to the grid terminal of the valve socket. On tuning the set to the high frequencies the resistance of the wooden base broke down. Consequently signals were lost. A lug is provided—screw it to the grid terminal.

Testing Valves.

VALVES do not cause much trouble if properly treated, but endless trouble if the set is carelessly operated. It is difficult to estimate the life of a valve—that depends on its use, but about eighteen months seems to be a "fair thing." Of course, this is not to say that valves are "dud" because they refuse to function after nine months or that because they have been used for two years they need replacing. Modern valves do not burn out, they become dull, and signal strength gradually fades off till imperceptible.

If with a carefully cared-for receiver the signal strength appears to be growing weaker the valves should be tested. This can only be done by a dealer. Dealers express their willingness to test valves, and country owners would do well to carefully pack and mail their valves to the city agent. To do this is far better than running the battery down by the indiscriminate turning of the "volume" dial.

Defective Valves.

OCCASIONALLY a valve becomes damaged or perhaps burnt-out by the indiscriminate use of high voltage or by accidentally connecting the "B" battery to the "A" terminals.

A rough-and-ready test may be made to ascertain the condition of the valves.

A slight knock on each valve should produce a clear ring in the speaker or 'phones. Dullness or absence of this ring would indicate that the valve was imperfect and should be replaced.

by placing the finger on the grid leak a healthy squall should be heard in the speaker. (Don't try it with 'phones, the sensation may be unpleasant.) This indicates that the audio side is O.K.

The grid leak is a small cylindrical piece of apparatus, close to or at-

tached to the socket of the detector valve.

Batteries.

NOTHING causes more trouble than batteries—in fact, the sum of all other causes together are outweighed by this factor. Yet with care there is nothing easier to keep in good order. One might almost say "Batteries are good slaves but bad masters." In nine cases out of ten, dealers say, on being called to attend to a set refusing to function, they find the batteries are at fault.

Misapprehension seems to exist with respect to their life. A battery may last six weeks or twelve months. To say that batteries are in order because they have been in use only a short time is a big mistake. To say that because a 50-volt block registers 33 volts the set is defective because reception is poor, is equally fallacious.

Modern power valves, the last valve in the circuit, consume a great amount of current. This is necessary to reproduce faithfully, especially when bass notes are concerned. For multivalve sets using these valves there is no better investment than the eliminator that will register up to about 200 volts.

Replacing Valves.

A LITTLE while back, it was possible to replace a valve without stopping to consider its characteristics. All valves were "general purpose" valves, which would fit anywhere in the set and give equally good results.

Now it is necessary to consider the lay out of the set before putting in any valve. Whether high frequency, detector or low frequency, each stage has its correct valve and the best results can be obtained only by having the proper valve in the assigned place.

Distortion will surely result in a valve wrongly placed. If the voice of the person before the microphone is unnatural, then the set is distorting and the chances are it is in the valve; or through the valve and the transformer being out of step. If a valve becomes dull and useless, then before replacing it consult the agents or an expert as to what valve to replace it by.

For the amateur who is keen to obtain the maximum from his set no better advice can be given than that he acquire a working knowledge of the valves and having such he can choose his valves from the various catalogues now obtainable.

In this respect, Mr. Dawson, of Phillips' Lamps Company, is giving excellent lectures from 2YA on alternate Saturdays. The next will be on October 13.

In these days a knowledge of the set is essential to anyone who wants to do his own maintenance. Many sets are ruined through interference by the inexperienced.

Charging Accumulators.

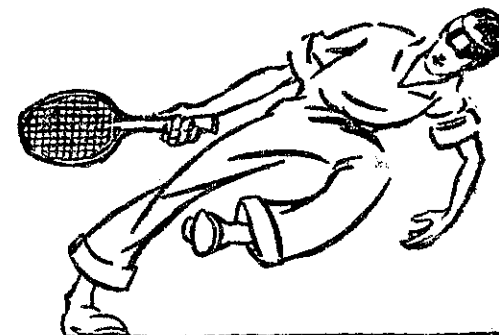
TO keep an accumulator in use until it refuses to function is simply asking for trouble. According to the type, it may have an amp capacity of from 20 to 80 amp hours. That is to say, that if there were six valves in the set each using .25 amps the total consumption would be 1.5 amps per hour. At this rate a 60 amp-hour accumulator should supply current for 40 hours. To allow an accumulator to do this would cause sulphation and the consequent ruination of the set. Actually not more than two-thirds should be used before recharging. In this specific case 26 hours should be the limit.

Under these circumstances it is imperative that the battery be charged regularly. If, from information supplied with valves, that on the accumulator, and what has been said, difficulty is experienced, it is advisable to find out from an expert how long the set will run without having the accumulator recharged.

The best proposition, especially in the case of large sets, is the trickle charger. These are not expensive, and give faithful service for the merest fraction of cost. A charger using a 30-watt lamp can be used for 33 hours for the price of a unit of electricity. As under some conditions a unit costs as little as 1½d., this is surely a paying proposition.

To obtain the optimum service an accumulator should be recharged after each time it is used. If used for three hours it should be charged for four hours. An hydrometer should be used for testing, but if one is not at hand it is safe to assume that it is fully charged when the liquid gasses.

It is particularly inflammable at this time, and under no circumstances should a naked light be brought near to it.



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