Various Methods of Checking Local Interference

Man-made Static and Its Elimination

ALL interference of this nature has one fundamental cause; its nature is an inductive interference, the unwanted current being induced into the antenna circuit of the receiving set from a neighbouring source.

The arc lamp is virtually a gigantic spark passing across two electrodes, and being such it broadcasts electrical waves of interference. The waves, however, are not all of the same wavelength or frequency. In fact, an arc, like every other form of spark, generates interference over a very extended wavelength band, and thus it becomes almost impossible to tune the interference out by means of a wave-trap or rejector circuit. The elimination of unwanted local interference, however, is a pressing problem to many a keen radio enthusiast. Many homes, in the vicinity of tramway systems, are unable to enjoy reception during certain periods, though it must be placed to the credit of the Post and Telegraph Department that much of this type of interference has been tracked down and eliminated.

There is really a great deal of the element of luck in the elimination of "man-made static," for in very many instances the source cannot be found, and, if found, not permanently overcome. In such cases as these it is a matter of putting up with it and making whatever alterations in the receiving set that may suggest themselves or be suggested.

Reducing the Trouble.

FIRST consider the interference created by an electric generating station or of a motor or alternator working in some adjacent factory. Some alleviation of the trouble set up by this type of interference can be effected by making a series of trials with aerials in different positions. Try, for instance, to find out the exact lie of the source of the interference, and then erect the aerial as nearly at right angles to it as possible.

If the generators are situated on the ground floor or in the basement of the factory, endeavour to erect the aerial as high and as long as possible. On the other hand if the interference is situated on one of the upper floors of a building, then a lower and shorter aerial will succeed in reducing the trouble.

The same applies to interference derived from tramway wires, high-tension wires and so on. If the aerial can be erected a good height above these lines it is above the interference and a reduction of noise should result. Generally, however, the lines are the higher and the best solution is to have a short, low aerial at right angles to the interfering lines. By this arrangement the sensitivity of the system will be reduced, but this usually is to be preferred to the distracting noise.

Another method of overcoming the problem is to erect the aerial in the most favourable position as described above and then to provide some leakage path for any of the interfering currents that may still be present.

For instance, a few inches of the aerial lead-in may be wrapped round with a layer of rubber tape, on top of which may be wound several turns of wire, the free end of this wire being earthed. In this manner the interfering current impulses may be carried away to earth, the greater bulk of the currents received from the broadcasting station being passed on to the set.

Faint generator hum due to the continual presence of some electrical machine situated a little distance away from the receiving installation generally may be cured by the simple expedient of connecting a 6ft. length of bare wire to the earth terminal of the set and by allowing the free end of the wire to dangle on the floor. In this case, also, the unwanted interference is led away to earth.

Effect of a Series Condenser.

A SERIES condenser may or may not help. It should be tried. A condenser in parallel will most certainly reduce the interference, but at the same time signal strength will suffer.

A flashing sign will probably give endless trouble owing to the constant series of clicks which it will create during reception, such noises being due to the moving contacts which operate the sign. A 2 mfd. condenser should be placed across the contact leads, and all will be well. If, however, such an arrangement is not possible, the interference will have to be treated on the lines suggested above.

A great deal of local interference may be eliminated by lining the inner sides and the base of the radio set cabinet with tinfoil or silver paper, and by connecting this metallic lining to the earth terminal of the set, the relatively feeble interference currents being filtered off to earth in this manner.

If the interference is very bad and persistent it would be as well to construct a rough frame antenna.

The use of an underground antenna provides a very good method of getting rid of interference, and it is really a matter for surprise that this expedient is not more often resorted to. An underground aerial can be constructed by enclosing a length of aerial wire in a good thick rubber hosepipe and by burying this in the ground at a depth of three or four feet.

This system of antenna construction is popular in America as an interference preventer. The underground antenna should be as long as possible, certainly not shorter than 20 feet, and it is very important that the antenna wire itself should be insulated from the earth. It is, therefore, necessary to run it along the centre of a rubber tube, and, if the best results are required, the tube should also be enclosed in a leaden pipe in order to protect it against the deteriorating influence of the ground moisture.

Thus it will be seen that an effective underground antenna forms a rather expensive article, and that its construction implies the necessity of having available a good stretch of land. However, when these conditions permit, the underground type of antenna is certainly one which is worth trying out, for it will be found to eliminate interference entirely.

The use of screening methods in modern set construction has done a great deal towards the reduction of common types of local interference. At the same time, however, it must still be emphasised that the adequate dealing with annoying problems of this nature necessitates the use of a loosely-coupled aerial circuit, together with some means of very sharply tuning the remainder of the circuit. Due attention to these factors, however, combined with a similar careful scrutiny of the position and construction of the aerial will, however, produce the desired result in the way of eliminating the interference.

A Counterpoise Earth.

FINALLY, in dealing with interference troubles of the nature described above, the properties of a counterpoise earth should be tried out in actual practice. One can easily make such an earth by placing a kitchen fender across two chairs, and by connecting the earth lead of the set to it.

The counterpoise should preferably be placed directly under the aerial, but, even when this is not possible, a trial of this nature will indicate how far the use of a counterpoise will be of advantage in any particular case. In most cases a decided advantage will be found to accrue from its use, and, therefore, having made a few preliminary experiments, a permanent counterpoise earth can be constructed and erected in some convenient position.