Care and Installation of Receivers

NOTE—This is the first of eight articles on the "Care, Installation and Operation of Receivers" that will appear in consecutive issues of Broadcast Weekly. The next article will be on Antennas.

GROUNDS

NEXT to a good antenna, the ground connection is the most important part of the installation of a radio receiver, and its installation should be given careful thought and attention. The customary ground connection is the water-pipe, and in a large percentage of installations, this is adequate. The cold water supply pipe should be used; never a hot water, drain or gas pipe, as they may have insulating joints which will increase the ground resistance enormously. If the receiver is located on the first floor of the home, the ground connection should be made in the cellar, near the point where the pipe enters the earth. A ground clamp should be fastened around the pipe, which should first be scraped clean with a knife, or sandpaper, and the ground lead fastened to the binding post or screw terminal of the clamp. If the ground lead first goes to the lightning arrester on the outside of the building, which is the best procedure, then the ground lead can be continued through the window to the set, and thereby avoid unsightly wires in the house. If the installation is in an apartment house, or upper floor of the dwelling, it may be impractical to run the wires outside the house, and a ground clamp will have to be placed on the piping in the bathroom or kitchen, wherever a conveniently exposed portion of water pipe is had.

If the water pipe does not provide good ground, a buried ground, or a counterpoise are the alternate arrangements. Amateurs who have transmitting sets often bury several old hot water boilers, or other large masses of metal, several feet in the earth, in well moistened soil and find that such a combination makes an excellent ground. For a simple receiving installation, there are several patented grounds which can be buried and which provide good contact with the earth if properly installed. A few feet of copper window screen, or chicken wire fencing, buried under the earth's surface will also make a good ground, and one which can easily be abandoned if there is no further use for it.

A counterpoise consists of a network of wires, somewhat like an antenna, but suspended only a few feet above the earth. For a receiving installation, a counterpoise of four or five wires, spaced two feet apart, so as to form a rectangle at least forty feet long, and as near under the antenna as is possible, will make a very satisfactory ground. The wires should be high enough to clear the heads of persons walking under it, and if the antenna is very high, the counterpoise may be as high as 25 or 30 feet above the ground, with good results. The counterpoise should be insulated thoroughly, the same as the antenna. Often, where bad interference from power lines is had, when a ground is used, the installation of a counterpoise has greatly reduced the interference, especially where the power line ground, and the radio set ground are close together.

Underground antennas are also popular, and many claims for them have been set forth in recent years. There is no doubt but that an underground antenna will reduce the static to a certain extent, but it is a question but what the signals from the station are also reduced in about the same proportion. Underground antennas usually consist of a piece of heavily insulated wire, buried in a conduit of non-metallic material, six inches or more below the surface, and at least 75 feet long. They may now be purchased completely equipped with a flexible conduit, so that a narrow trench may be dug in the backyard or alongside the house, and the wire easily buried the proper distance. Where an underground antenna is used, a ground must also be employed, preferably located away from the buried antenna. A water-pipe connection is generally employed, as it has been found satisfactory in such installations.