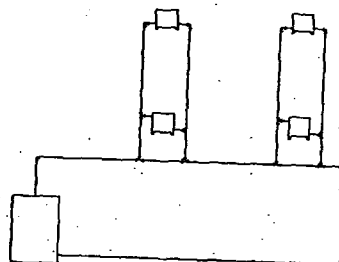
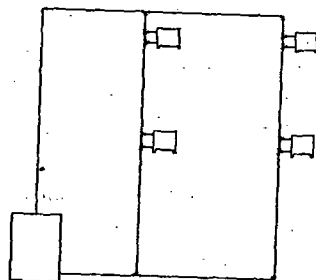


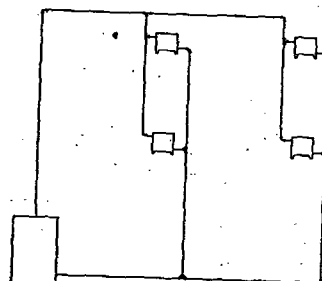
System 1



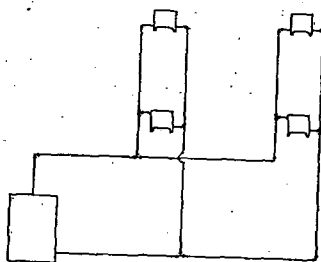
System 2



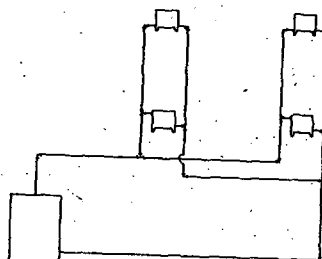
System 3



System 4



System 5



System 6

FIG. 1. SIX DIFFERENT METHODS OF PIPING A HEATING SYSTEM OF FOUR RADIATORS

Maximum Water Temperature

It is the custom to select 180 deg. as the maximum temperature of the water leaving the heater. With this maximum temperature and a temperature drop of 20 deg. through the radiator, the average water temperature in the radiator will be 170 deg. If the temperature of the room is to be 70 deg., the temperature difference, water to air will be 100 deg. The corresponding value of U (see Fig. 2) for a 38-in., 3-col. radiator, is 1.34 and the heat dissipated by the radiator per square foot per hour is 134 B.t.u. A steam radiator of similar size and design and supplied with low-pressure steam will dissipate about 240 B.t.u. per square foot per hour. Under these conditions a hot water heating system would require about 240 sq. ft. of radiation for every 134 sq. ft. required by the steam heating system. The first cost of the hot water system would, consequently, be considerably greater than that of the corresponding steam

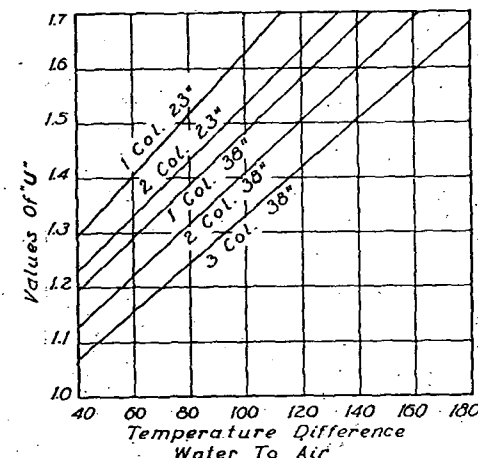


FIG. 2. SUGGESTED VALUES FOR THE HEAT DISSIPATION COEFFICIENTS U OF VARIOUS TYPES OF HOT WATER RADIATORS

system. This higher first cost of a hot water system is frequently the cause of the installation of a steam system.

If, on the other hand, 220 deg. is selected as the temperature of the water leaving the heater, the average temperature of the water in the radiator will be about 210 deg., practically the same as that in low-pressure steam radiation, and the total radiation required for the hot water system will be about the same as that required for the corresponding steam system. The cost of the pipe system for hot water is probably a little higher than the cost of the pipe system for steam, but the cost of valves and traps for a steam system is greater than the cost of the valves for a hot water system, so that, finally, the cost of a hot water heating system will equal, or it may be lower, than the cost of a corresponding steam heating system, if the water temperature selected is sufficiently high.

The selection of 220 deg. as the maximum water temperature is entirely