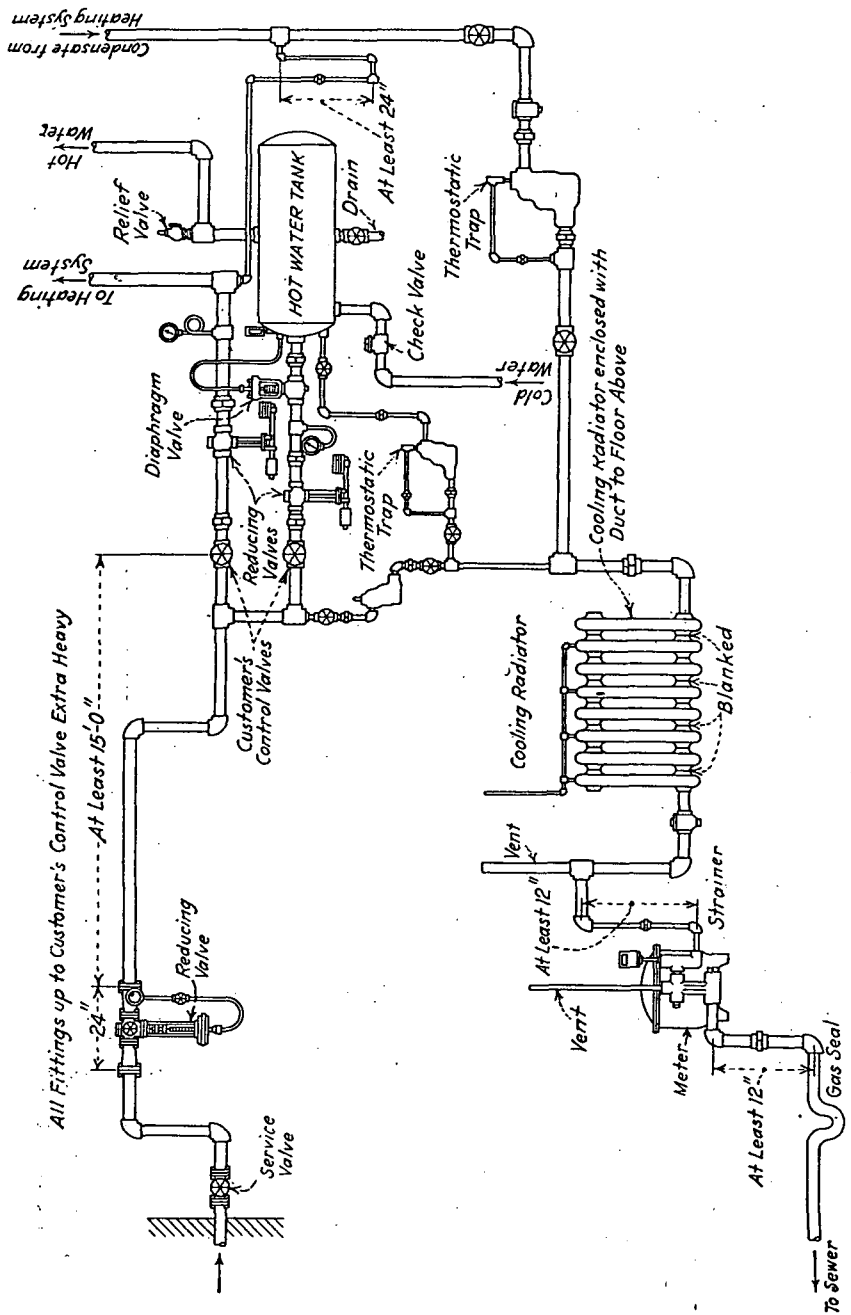

FIG. 2. STEAM SERVICE AND METER CONNECTIONS WITH COOLING RADIATOR

Steam can be entirely shut off at night in most buildings even in very cold weather without endangering plumbing. It is necessary, however, to have an ample amount of heating surface so that the building can be quickly warmed in the morning. Where the hours of occupancy differ in various parts of the building, it is good practice to install separate supply pipes to the different parts. For example, in an office building with stores or a restaurant on the first floor which are open in the evening, a separate main supplying the first floor will permit the steam to be shut off from the remainder of the building in the late afternoon. The division of the building into zones each with a separately controlled heat supply is sometimes desirable, as it permits the heat to be adjusted according to variations in sunshine, wind, etc.

2. Residual heat in the condensation should not be wasted.

This heat may be salvaged by means of a cooling radiator as illustrated in Fig. 2 or, as is more frequently done, by a heat exchanger which preheats the water used for lavatory purposes, as in Fig. 3. Figs. 2 and 3 show the practice of a Boston utility as to the service and meter connections. Fig. 4 shows a typical installation for service from the system of a New York utility.

The condensation from the heating system, after leaving the trap, passes through the preheater on its way to the meter. The supply to the hot water heater passes through the preheater, absorbing heat from the condensation. If the hot water system in the building is of the recirculating type the recirculating connection should be tied in *between* the preheater and the water heater proper, not at the preheater inlet, because the recirculated hot water is itself at a high temperature. The number of square feet of heating surface in the preheater should be approximately equal to one per cent of the equivalent square feet of heating surface in the building.

Because of the lack of coincidence between the heating system load and the hot water demand, a greater amount of heat can be extracted from the condensation if storage capacity is provided for the preheated water. Frequently a type of preheater is used in which the coils are submerged in a storage tank.

3. Heat supply should be graduated according to variations in the outside temperature.

This may be done in several ways as by the use of thermostats of various types or by orifice systems as described in Chapter 9. Another method which is very simple is the use of an ordinary vacuum return line system in which the pressure in the radiators is varied between a high vacuum and a few pounds pressure thus producing some control over the heat output. One form of control which appears to be well suited for controlling district steam service to a building is the weather compensating thermostat. It regulates the steam supply automatically according to the outdoor temperature and gives frequent short intervals of intermittent steam supply, and at the same time insures delivery of steam to all the radiators. Another form of regulation, known as the time-limit control, is sometimes employed for regulating the steam supply from the central station main to the building.

Such a control provides an intermittent supply of steam to the radiation