

from the outside and steam or hot water direct from the boiler plant is used for heating.

PROCEDURE FOR MAKING ANALYSIS

In making an analysis of any particular operation it is necessary to develop charts similar to Figs. 1, 2 and 3. The total steam required

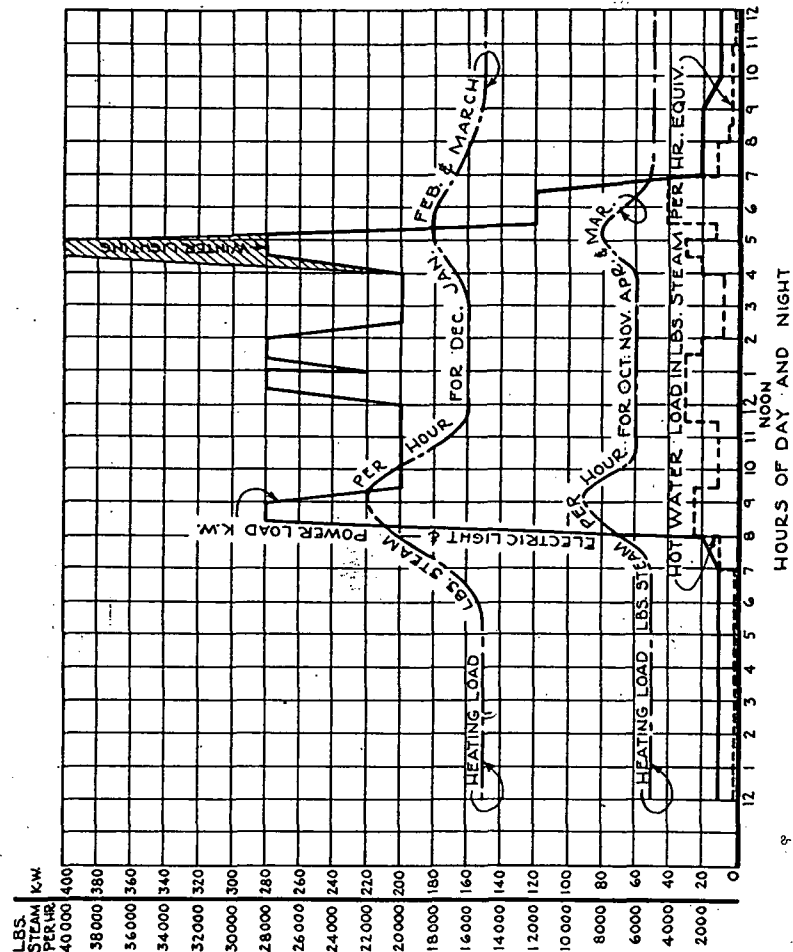


FIG. 2. OFFICE BUILDING LOAD CURVES

for heating per square foot of direct radiation, or its equivalent, per season, for different classes of buildings will be found on p. 325, Chapter 22, District Heating. Of the total steam required for any particular service, the following percentages of the whole may be apportioned to the various months of the heating season in the colder climates: January,

20 per cent; February, 20 per cent; March, 15 per cent; April, 10 per cent; May, 5 per cent; October, 6 per cent; November, 8 per cent; December, 16 per cent.

To determine the amount of exhaust steam available, it is necessary first to develop electric current or power load curves and from these to estimate the amounts of steam used during various periods. Fig. 4 gives the ideal water rate for engines or turbines working under different initial pressure and back pressure or vacuum conditions, with corrections for superheat in the initial steam. Table 1 gives the factors by which ideal water rates may be multiplied to obtain average expected water rates

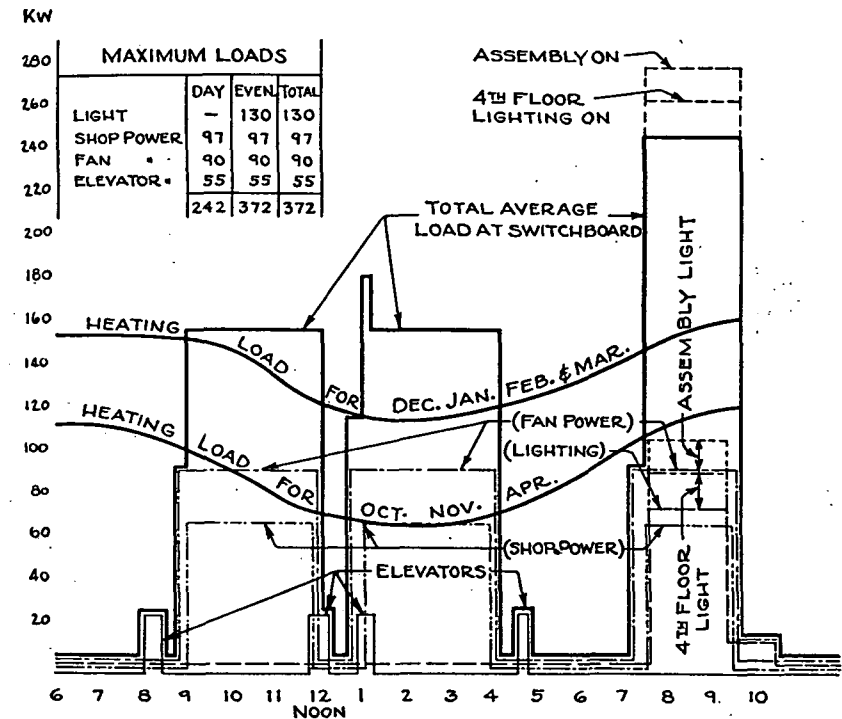


FIG. 3. HIGH SCHOOL LOAD CURVES

for engines and turbines of various capacities when operating under full load conditions. Table 2 gives the factors by which the actual water rates under full load operating conditions should be multiplied to obtain expected water rates under various load conditions. From the load curves and these tables it is a simple matter to develop curves showing the steam required by the electric generating or power units.

The next step is to determine the amount of heat available in this steam for heating, etc., after it has passed through the generating units. This can be done by deducting the heat transferred into work, plus that lost by radiation from the heat in the steam entering the generating units.