For apartment houses where high-class heating service is required. (Steam off at midnight). *Factor:* 650 lb. per square foot of radiation per season.

For hotels (commercial type) where very high-class service is required; 24-hour service. *Factor:* 800 lb. per square foot of radiation per season.

By assuming 1 sq. ft. of direct low-pressure steam radiation equivalent or required for each 100 cu. ft. of space heated, which seems a fair ratio in New York City, it is possible roughly to estimate the steam required per cubic foot of space, information which is often more easily obtained than the square feet of radiation.

Considerable additional data on the heating requirements of various types of buildings in a number of cities may be found in the section on Utilization in the Handbook of the *National District Heating Association*.

CHAPTER 26

SELECTION OF FANS AND MOTIVE POWER

Fan Characteristics; Selection of Fans; Motive Power; Drives; Noise.

IN order properly to select fans, it is necessary to know the requirements of the ventilating system and the characteristics of the various types of fans available.

The items of system requirements may include:

1. Cubic feet of air to be moved per minute.
2. The static resistance of the system.
3. The type of motive power available.
4. The nature of the load such as variable air quantities or pressures.

The items of fan characteristics to be considered may comprise:

1. Efficiency.
2. Noise.
3. First cost.
4. Space required.
5. Type of fan best suited to service required.

In order to facilitate the choice of apparatus, fan tables usually show the following factors for each size fan operating against a wide range of static pressures:

1. Volume of air in cubic feet per minute (68 deg. fahr.–50 per cent relative humidity –0.07488 lb. per cubic foot).
2. Outlet velocity.
3. Revolutions per minute.
4. Brake horsepower.
5. Tip or peripheral speed.
6. Static pressure.

The most efficient operating point of the fan is usually shown by either bold or italicized figures in the capacity tables.

Fans may be grouped into two general classes:

1. Disc and propeller fans, which produce motion of the air by the thrust effect of inclined blades.
2. Centrifugal fans or blowers, which produce air movement by the centrifugal force generated in a rotating column of air.

Centrifugal fans or blowers usually are housed, though certain types operate well without housing. These fans or blowers may be classified further, according to the type of wheel as follows:

1. Paddle wheel or steel plate type with radial blades.