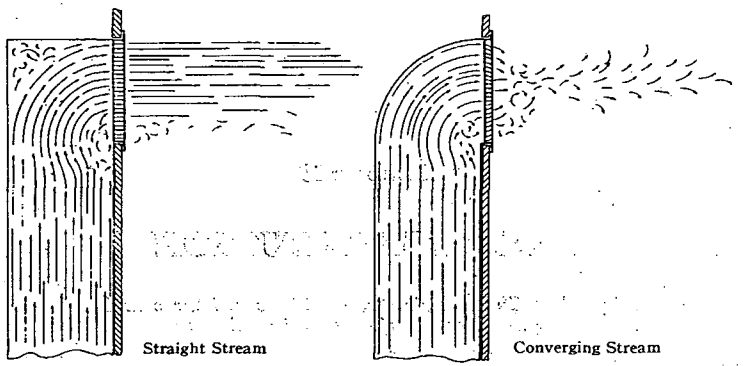

FIG. 1. HIGH VELOCITY LONG THROW INLET OPENINGS

For a short air throw, and when the opposing wall is a short distance from the inlet opening, the average velocity should be high, with the periphery of the air stream increased as much as possible to increase the scrubbing action between the incoming air stream and the stationary air. This causes turbulence or air mixing and readily reduces the vertical rise or fall of the air by equalizing the temperature differential. This method of air introduction may be accomplished by several satisfactory methods. It allows the use of a grille larger than the duct, even though the grille has a large open or free area, providing the dimensional ratio (Fig. 3) is high enough to increase the periphery of the air stream. With the same general type of grille this same result is obtained by expanding the air stream (Fig. 3) as it leaves the opening. The oldest method for reducing the projection of the air stream is by the use of stream turbulence. Introducing heated air with a simple inlet opening located in or near the floor is satisfactory for low air velocities and volumes, but for high air velocities and volumes larger openings are desirable. Cooled air should be introduced as far above the floor line as possible, allowing 12 in. or more between the top of grille and the ceiling for air diffusion at this point so that the incoming air will become tempered before dropping into the occupied zone. The supply air should not be directed against the ceiling or wall except as the restrictions of the problem limit the proper application, because even though the striking of the air breaks the stream and assists in reducing the effect of temperature differential, it eventually spots and discolors the ceiling or wall area.

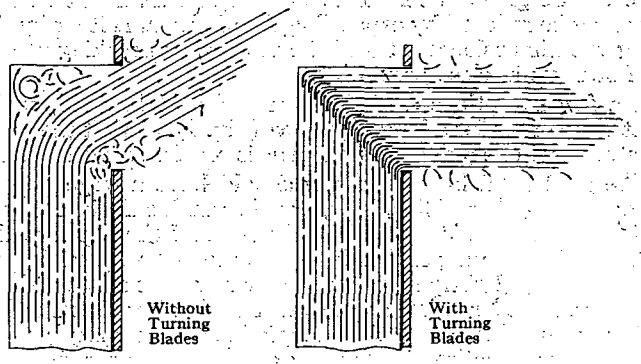

FIG. 2. EFFECT OF TURNING BLADES

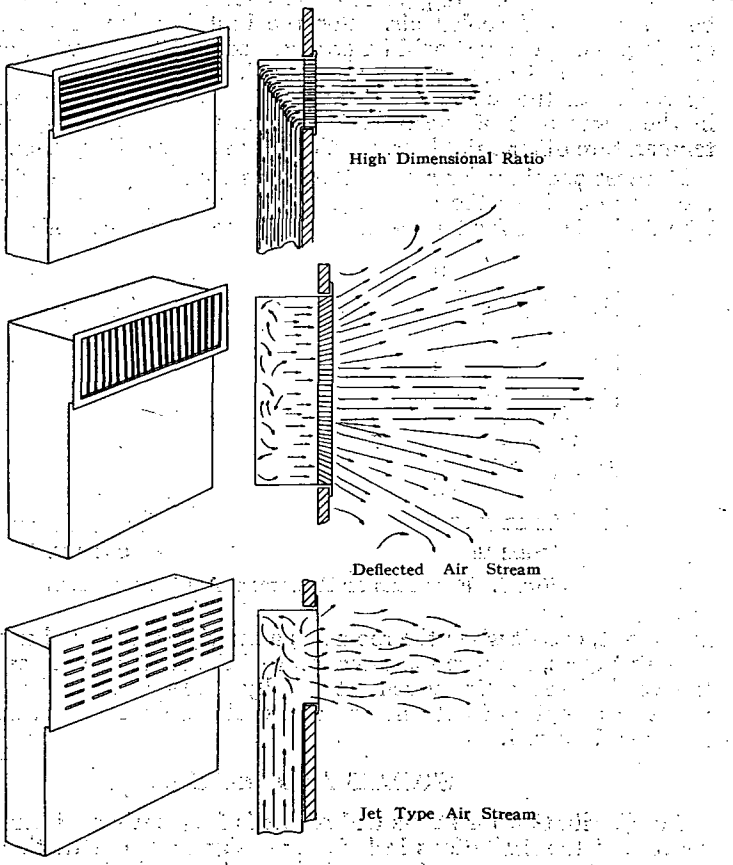

FIG. 3. PERSPECTIVES AND CROSS SECTIONS OF HIGH VELOCITY SHORT THROW INLET OPENINGS

RESIDENCES

With gravity warm air systems the inlet openings are usually located in the floor or base board of each room and the exhaust openings in the floor near the exposed walls. (See Chapter 24).