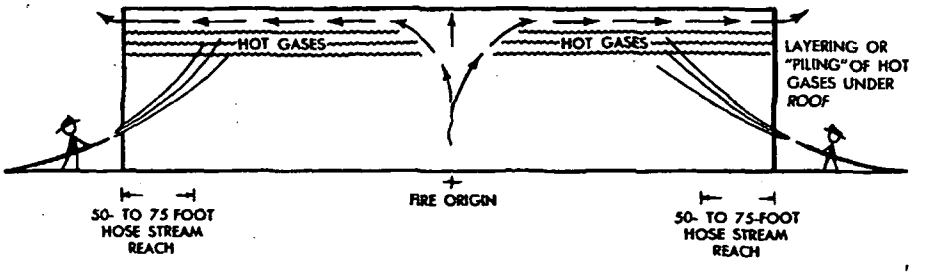
total vent area

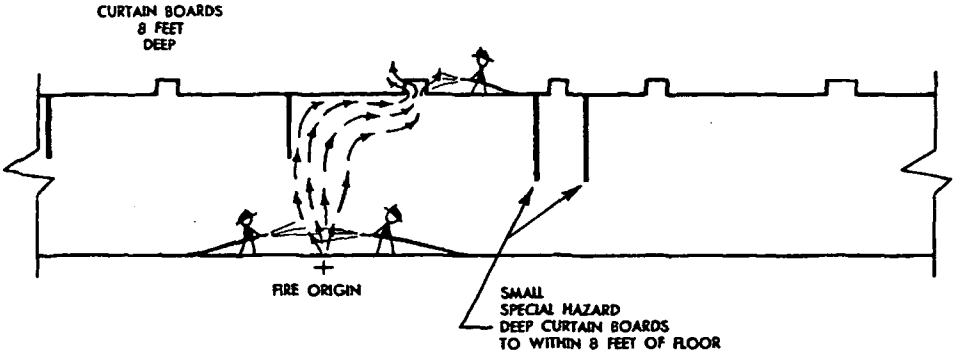
3 Draft curtains increase vent effectiveness because they increase stack height and confine heated gases
4 Several small vents rather than a single vent of equal area are more effective, because gas temperatures decrease rapidly as the gas travels away from the fire
5 Roof height will not affect vent effectiveness within the normal ranges of height

Smoke does not necessarily have a very high temperature High temperatures are only created in fairly free-burning fires Venting installed for life safety may not be too effective, therefore, as temperatures high enough to produce the necessary stack effect may not be present Smoke could also flow under draft curtains and other obstructions until an adequate draft is created

So many variables affect the burning of combustible material that no exact mathematical formula can be used for computing the amount of heat venting required Vent sizes and ratios have therefore been developed from tests and experience, using theory only for guidance The National Fire Protection Association, however, has developed a guide for smoke and venting from which venting requirements may be estimated (NFPA Standard No 204, *Smoke and Heat Venting Guide*) Also, there are a variety of prefabricated vents available on the market They can be designed to open automatically at predeter-



BEHAVIOR OF HOT GASES UNDER FLAT ROOF



BEHAVIOR OF HOT GASES UNDER MONITORED AND CURTAINED ROOF

FIG 35-6 — Drawings (not to scale) show how a monitored and curtained roof permits hot gases to be vented locally, allowing firemen to reach seat of fire inside a building and from its roof Monitors on top of roof allow hot gases and smoke to escape Curtain boards (extending down from the roof) prevent the lateral spread of smoke and heat

Illustration adapted from one of National Fire Protection Association