

PREVENTION OF SMOKE AND WATER DAMAGE.

(F. E. Roberts, of the Norwich Union Fire, before the Insurance Institute of Toronto.)

SMOKE AND WATER DAMAGE.

This damage to buildings and machinery is not touched upon, only that to stocks in mercantile buildings and factories. The fact that while a loss on a building may be moderate, the loss on stock is liable to be heavy, leads to this proposition—"Given even an ordinary brick or concrete building, with good fire protection, a moderate loss on building may be expected, and a relatively large loss on stock. This discrepancy is due in most cases, not so much to the actual fire damage to stock, as to the effect of smoke and the water used to extinguish the blaze."

A sure way to prevent this damage is to extinguish the fire when it is of small proportions, which means a small amount of water used, and a minimum of smoke. For this purpose an equipment of first aid fire extinguishing appliances should find a place in every mercantile and manufacturing building. Such apparatus, including casks or fire bucket tanks of water with pails, chemical extinguishers, etc., are too well known to need description. The equipment to be selected depends on the size and character of the risk and above all on how far a man can be induced to go in protecting his own property. The "first aid" from the fire department is also of great value. This consists of the same chemical fire extinguishers recommended for private use, now in the hands of firemen, supplemented by the chemical engine, which is nothing but an enlarged form of the extinguisher, capable of throwing a continuous stream of water impregnated with carbon dioxide gas, for as long a period as such small streams are likely to be of use. First aid private fire protection, and first aid from the fire department, one or both, have saved millions of dollars worth of property, and are especially effective in saving smoke and water damage. Any thing that can hasten the appearance of the brigade "chemical" at a fire should be heartily encouraged.

I come now, however, to the point which is perhaps of most interest—how to lessen the smoke and water damage in the many fires where a large amount of water has to be poured on the blaze and where smoke is abundantly in evidence.

GOOD BUILDING CONSTRUCTION.

The first requisite is to follow the rules of good building construction, and to do so more closely than is generally the case. Briefly, so far as smoke and water damage goes, this means no unprotected floor openings, in fact no floor openings whatever except for stairs and elevators, no concealed spaces on walls or ceilings, absence of easily combustible partitions and finish, in fact let the wood be confined as far as possible to floors, beams and supports for same. Protection to elevator and stairs means enclosing in walls of brick or concrete with standard fire doors at openings. Two or three inch wooden enclosures may make a substitute, but it cannot be called an equivalent one. As to trapped elevators and stairs such treatment can have no place in any scheme of preventing smoke and water damage, nor indeed can

I consider the usual traps seen as anything but a very unsatisfactory way of preventing spread of fire.

The reason for advising no floor openings, except elevators and stairways, is because so often the effect of such properly protected openings is weakened by improperly protected chutes, dumb waiters, etc., and by belt holes. There is only one way of properly protecting a chute or a shaft for a dumb waiter—that is, treat it exactly as an elevator. It is practically the same thing, only smaller. It is certainly better to omit such openings altogether. Something may be accomplished in the way of protecting a belt hole, but as for making it anything but a serious defect in an otherwise whole floor, I have never seen it done—I do not believe it can be done. There is such a thing as a belt tower, with transmission of power by shaft to various floors. It is not a popular system in Canada, probably too expensive to construct, and besides, in these days of electrical power, belt holes are not necessary and should be dispensed with.

SMALL AREAS.

The division of a risk into as small areas as the needs of the business require by fire walls, with fire doors at openings, preferably each side of wall, is advised. This means something more than the confinement of a fire to the section where it originates. If a fire happens in an undivided large area, and is fortunately confined to half or less of that area, there will undoubtedly be a heavy smoke damage, probably water damage as well, to a stock on the entire floor, not damaged by fire. If a fire of equal extent happens with the area divided by a fire wall, there will probably be only a small smoke damage beyond the fire wall. Some damage may be unavoidable as fire doors will not keep out smoke entirely.

It may be thought that concealed spaces, combustible partitions, ceilings, etc., do not directly affect smoke and water damage. But a fire that gets into a concealed space on ceiling or walls is difficult to extinguish. Much ineffective water has to be used, with a corresponding unnecessary water damage to stock. Thin board partitions and like finish and fixtures especially if nicely varnished, are simply easily combustible firewood. They not only produce smoke themselves in burning, but furnish excellent kindling for stocks not so combustible, which will burn or smoulder in such circumstances and pour forth volumes of smoke.

SKYLIGHTS AND WINDOWS.

Elevator and stair shafts should have skylights at head, but not entirely of impermeable wired glass. Flat skylights should be of thin glass protected by wire netting. If of monitor type, top can be of wired glass, sides of thin glass. Smoke inevitably collects in stair and elevator shafts, fire doors or no fire doors. If fire penetrates to a shaft filled with smoke an explosion may be the result, the force of which should find an easy vent upwards, if not, the thin glass is easily broken and lets the smoke out. The sooner the smoke finds an exit the better, why try to confine it? Indeed it would be a good thing if a permanently open ventilator could be arranged, or a vent similar to the one now used over a theatre stage operated from below. One of the best safeguards in a theatre stage is a vent above, which can be opened at once by an electric device in case of fire, from either the electrician's station or from the ticket office. Such vent can be arranged instead to open by fusible link attachment as well as by hand from some convenient