

point. While wired glass windows are installed almost wholly as a safeguard against exposure from some other building or section, I would point out the fact that fire very often spreads from one floor to those above, via the windows. In the well known Triangle Waist Company fire in New York, which started on the eighth floor, that is exactly the way it spread to the ninth and tenth floors above. In a recent fire here in Toronto it also followed the same course.

WATERPROOF FLOORS.

What I have said applies to smoke and water damage both, but there is a second requisite which applies especially to water damage. That is waterproof and drained floors. If a man puts up a new building with single floors, or in an old building will not make the floor double, the question might as well be dropped. Mill construction floors, or even ordinary double floors, can be so treated. Asbestos paper, weighing 14 pounds to the square or 100 superficial feet, is often laid between the 3 inch thick, or more, mill floor and wearing, hard wood, $\frac{3}{4}$ to $\frac{7}{8}$ floor above, or between the two $\frac{7}{8}$ inch boards forming the ordinary double floor. Possibly the fire retardant qualities of this sheet of asbestos might do some good after eating through three inches of solid wood, but the only advantage I can see is that if the 3 inch floor was poorly seasoned timber, with resultant wide cracks, it might impede the progress of flame to some extent. Planking, where there is an exposed corner, will ignite quicker, and burn more freely, than when the fire can attack only the flat surface. I have more faith in its virtues in the case of an ordinary double floor, but it is somewhat limited. I am reminded of a closet for workmen's oily clothing I saw once. It was a fair closet for a wooden one (which are not desirable), but unfortunately it was turned wrong side out, covered with metal on outside, instead of lined inside, where fire was likely to occur. Whatever may be thought of the fire retarding qualities of this thin sheet of asbestos paper, it is not waterproof. Leave the sheet of asbestos there if need be, but do something toward providing a waterproof coating as well. With the asbestos, or without, the ordinary double floor, or even the mill floor, cannot be called waterproof. I think the man who banks on a mill floor being waterproof, because it consists of four inches or more of wood, and possibly a sheet of asbestos paper, is likely to find his confidence misplaced, when a fire occurs requiring considerable water to extinguish.

SOME RECOMMENDATIONS.

The recommendations for a waterproof coating, between the top layer of wood flooring and that underneath, are about as follows, according to views advanced by N. F. P. A. and others:

Two layers of waterproof paper (resin sized generally mentioned), joints swabbed with tar, pitch or an equivalent, over-lapped at least two inches. If paper is not waterproof, the entire surface of lower layer to be swabbed with tar, pitch or an equivalent and upper layer placed on lower while hot. Waterproofing to be flashed up three inches above floor level at walls, columns, pipes, conduits, or any other points where floor is pierced. Waterproofing to be completed after plumbers, electricians, etc., have done their work. Especial attention must be paid to waterproofing at walls, columns, etc., mentioned, which are points of weakness. No single layer of even a good

waterproof paper is likely to give efficient water protection. It is recommended that floors where feasible be built with a pitch of about one inch in 20 feet, draining to scuppers in outer walls, or to stair and elevator shafts. In the former case, where the scuppers are simply laid flush with the floor, form recommended has a square opening 12 by 4 inches at floor, running in a downward direction through wall, and narrowing near the outer surface to 4 inches square. A flap cover outside the wall remains closed by gravity until rush of water opens it. A shallow metal gutter is sometimes inserted at outer walls, plain straight scuppers 3 or 4 inches square or in diameter, being used.

There is one objection to draining to outer walls, at least in Canada. In our cold winters, with penetrating winds, in spite of the flap covers more cold air finds its way in than is comfortable for workmen employed near the walls. They get cold feet, both literally and in a slang sense, a convenient rag stuffed in the orifice keeps out the draught and incidentally puts the scuppers out of business. This is taken from observed facts, not from theory. In warehouses, or in places where little or no work is done, this objection would not apply and indeed in such situations a scheme of pitching the floor seems most feasible. Where there is much machinery, pitching the floors may impose difficulties in the proper alignment of machinery. The natural outlet for the water appears to me to be the stair, and elevator shafts. When the firemen sweep the water off of a floor after a fire, there is where it goes. It may be impracticable to pitch the floor to such opening in many cases—for instance when there is but one elevator and stairway at the end of a long building. Where the elevator and stair shafts are located near the centre of a long side, or when there are more than one of each, it can be done. Drains could be installed in the centre of floors connected by piping underneath to the down pipes from the roof that often run through the building, or to elevator and stair shafts. The number of such drains needed would be small, not more than two in some cases to a floor. I have omitted to mention that in any case there should be a pit at bottom of all elevator and stair shafts, basement floor pitched to same, with drain of ample size connected to sewer.

(To be continued.)

Mr. Beaudry Leman, superintendent of branches and agencies, has been appointed general manager of La Banque d'Hochelega, in succession to the late Mr. M. J. A. Prendergast.

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Sir George Paish, referring in the London *Statist* to his recent Canadian visit, says:—"How much capital will come into Canada in the next few years cannot be calculated. It is very desirable that an abundance of capital should now be provided for farming and mining, in order, for one thing, that the great sum of capital spent in Canada in recent years may become productive, and for another that the world's supplies of food may be largely increased and that the cost of living everywhere may be reduced. If capital were provided freely for the construction of farm buildings, for the purchase of agricultural machinery and generally for increasing quickly the productive power of the country, the transition from the constructive to the productive period would be greatly facilitated."