

pective builder of the absolute necessity of using every possible precaution against fire, known to modern building science. It proves that a steel frame and brick shell does not constitute fireproof construction and that there is a vast difference between the so-called cheap attempt at fireproofing a building and making it absolutely fireproof.

We also have in this fire another warning that the mere use of certain materials, incombustible in themselves, does not constitute fireproof construction. These materials must be assembled in an intelligent manner, otherwise their effectiveness is not only impaired but a false sense of security is created and a step backward is made each time that such unscientific construction fails and inspires in the minds of the unthinking the idea that there is no such thing as fireproof construction.

The Parker building was a twelve-storey structure, 165 feet high, an average of 14 feet per floor, its ground dimensions being 150 x 121 feet. Its structural parts were of cast-iron columns, girders 15-inch, 60-pound I beams 15 feet long, and the cross beams were 12-inch, 40-pound I beams 20 feet long, and 4 ft. 6 inch and 4 ft. centres. The floor arches were of 8-inch semi-porous, side construction hollow tile, set 1 1/2 inches below the flanges of the beams, but those flanges were not covered with tile nor was there any tile protection to the girders. Neither was there any tile wall furring. The floors were of wood laid on wood sleepers, filled in with a clean cinder concrete. The circular cast iron columns were incased in a 2-inch porous terra cotta covering. Some of the partitions were of 3-inch tile blocks while some were of wood.

The floor openings comprised two sets of stairs and elevators, which were unenclosed and open to the floors except for hall partitions, which were partly terra cotta blocks and partly wood doors and plain glass. Some of the windows were protected with iron shutters. The fire appliances consisted of fire pails, a 2 1/2 inch standpipe with hose connections and a watchman.

The fact that the lower flanges of the I beams were unprotected was in itself sufficient to doom the structure. A quarter century ago, when arches

**PARKER BUILDING FAR FROM FIREPROOF.** of ordinary bricks between steel beams represented the best that could be done in fireproof construction, floor-beam flanges were left bare because no way was known of protecting them. It is disgraceful

that the precedent of that day should be made an excuse at the present time for the erection of structures which pretend to be proof against the attack of fire and are not.

Every engineer knows that the strength of a beam depends solely on the ability of its lower side to resist tension and knows also that steel heated above a temperature of some 600 degrees rapidly loses its strength. Even below 600 degrees there is a reduction in elastic limit of about 4 per cent. for each 100 degrees rise in temperature.

It is a misnomer, therefore, to call a building "fireproof" which has a steel frame with the tension side of its floor members exposed to the attack of heat. Such a building has, of course, an advantage in that the structure itself is not combustible. If the contents of the building offer little for the flames to feed upon, such a building might possibly come through a moderate fire without serious injury, since the metal of the beam will for a time conduct heat

away from the lower flange. However, the additional cost of suitably protecting the beam flanges is so small that no valid excuse for omitting it can be imagined.

The building was originally intended for an office structure, but later was turned into a manufacturing and wholesale building. It is this shifting in class of occupancy of a building which is a source of one of the bad features of both present and proposed building codes and is the cause of many of our most disastrous fires. The occupants were a billiard-table concern, an upholstering company, embroideries, rugs, book publishing, furniture, printing establishments, engravers, etc. Bales of moss and of excelsior and of hair, gas stoves, aniline dyes, and alcohol, gas blow pipes, annealing furnaces, ether, gun-cotton, acids, and such combustibles constituted some of the materials stored and used on the premises. The building was nearly ten years old and its wooden floors and wooden sub-partitions were bountifully soaked with oil.

The fire started, it is supposed, about 6 o'clock in the evening, near the rear elevator shaft on the fifth floor but was not discovered until 8 o'clock, when it had spread to the sixth floor. It continued to extend unhindered to the upper floors, partly by way of the windows but principally through the elevator and stair shafts. At 9.30 o'clock a collapse occurred, caused by a cylinder press falling from the eleventh floor to the basement, unfortunately causing the death of three men, injuring a dozen more, and imperiling nearly fifty. In the collapse, burning debris was carried down to the basement from the fifth floor and thus completed the gutting of the entire building, the firemen being unable to get water above the fifth floor, and the fire had to virtually burn itself out.

We say it is simply a reiteration of the lessons that have been given in many of the more disastrous recent conflagrations, that

**LESSON FOR CANADIAN ARCHITECTS, ENGINEERS.** should be heeded by Canadian engineers and architects upon whose shoulders rests the responsibility for the stability of the buildings of the Canada a hundred years hence. We must learn to profit by the mistakes of our neighbor to the south if we ever expect to build a nation that will become commercially great or politically strong.

These recent fires have demonstrated that the mere use of incombustible materials may prevent total destruction of a building itself but if those materials, however good they may be, are not put together properly the contents of the building are doomed and the structure itself can be damaged all the way from 5 to 90 per cent. of its cost value. This building was but one step in advance of its still older brother, the steel frame and wood-joisted affair. The builders of this latest victim to a foolish economy thought to save money by leaving the steel work unprotected and not doing the other things that at that time as well as now were known to be essential in the proper construction of a really fireproof building. They succeeded in "saving" perhaps four or five thousand dollars and the insurance adjusters are at work upon a loss that will climb up to probably over \$1,500,000. Wise economy, surely.

The Parker building was of one class of construction and the thoroughly fireproof building is of another but as bad as it is and partially destructible as