

II FIRE DANGERS AND FIRE PROTECTION

The Problem

The danger from fires to the life and limb of workers is the most important problem of factory sanitation. This problem is also the most difficult to solve. It is a problem that is not peculiar to the cloak and suit industry alone, nor can it be solved by this industry without the help of others.

Where a large number of persons are massed together in one industrial establishment, in a building from six to twelve stories high, with a vast accumulation of inflammable materials within the building, with no means or inadequate means of escape during fires, the dangers to the lives of the thousands of workers are very great indeed.

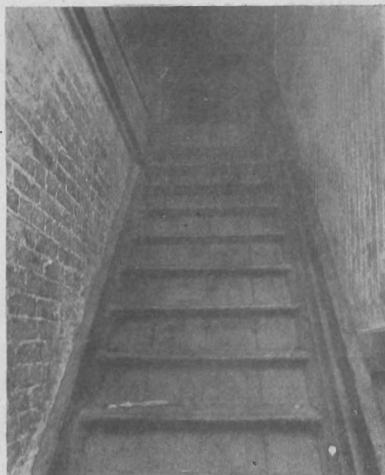
The progress in "factory safety" does not go hand in hand with the progress in "factory sanitation." The largest part of the shops in the industry are no longer located on the unsanitary East Side; but the so-called "Fifth Avenue shop," while it represents a great gain in light, ventilation, and cleanliness, means also a great loss in safety. The menace to the lives of the workers in the high loft buildings is perhaps much greater than the dangers of the unsanitary workshops of the tenements of the East Side.

The bulk of the cloak shops are located in the small congested region between Houston and Thirty-fourth Streets, there being in this district from nine hundred and fifty to one thousand shops, ninety-nine per cent of them in loft buildings.

Of the 950 cloak shops in this district there are 661 shops located above the sixth floor, with a total of 23,832 employees (found in August, 1911). During the height of the season the number is probably 30,000. Thus fifty per cent of all employees in the trade are working at the height of the sixth floor and above.

Sixth floors.....	183 shops....	5,316 employees
Seventh floors.....	121 "	4,304 "
Eighth floors.....	114 "	3,397 "
Ninth floors.....	111 "	3,285 "
Tenth floors.....	52 "	2,531 "
Eleventh floors.....	48 "	3,015 "
Twelfth floors.....	32 "	1,984 "

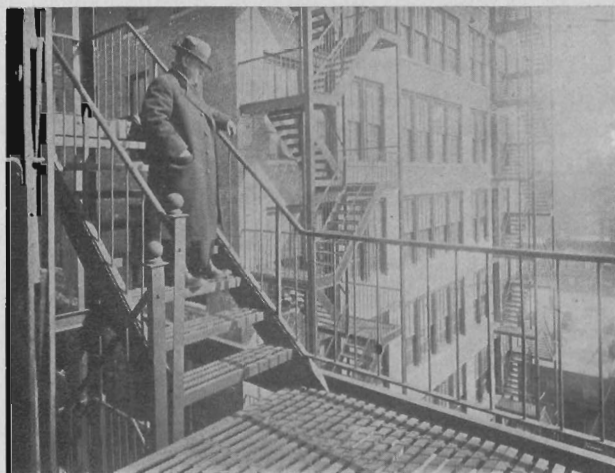
The obvious duty of the State is to promulgate laws preventing the danger to workers from fire, and safeguarding the lives and



Dangerous Interior Stairway. It Leads to the Top Floor of a Rear Building and Has Wooden Treads

limbs of workers in industrial establishments. These laws should be definite and exact, and the responsibility for their enforcement so fixed that there should be no doubt as to the duties and rights of departments in this respect.

As a matter of history and fact, the fire danger in industrial establishments is a subject woefully neglected by the State and the



A Broad Outside Fire-Escape.

Municipality. It is only when the world is shocked by an holocaust like the Newark and the Triangle Building disasters, that the attention of the people is forcibly drawn to the fearful danger to which nearly a million of men and women workers are daily exposed.

The problem of fire danger in factories may be discussed in the following order:

- 1) Height of buildings and character of construction.
- 2) Internal construction and arrangement.
- 3) Lack of, and defective means of egress.
- 4) Inadequate means of extinguishing fires and preventing panics and loss of life.

Congestion of Factories, Height and Construction

According to the data furnished by the State Department of Labor in 1909, 56 per cent of the total number of workers in the State were located in New York City, and about two-fifths of the total number were on the island of Manhattan. The island of Manhattan is probably the site of the greatest concentration of factories in the world.

Loft construction and occupation by manufacturing establishments is a comparatively recent development in the industrial life of the city. This is the result of the congestion of an immense working population on the island and the necessity of finding place for work for the hosts of workers near their homes. Between 1901 and 1910 there were constructed 790 loft buildings from eight to eighteen stories in height, and into these loft buildings were transferred the thousands and tens of thousands of the workers. The shops in which they were working were slowly abandoned by the action of the law forbidding work in the tenement houses. The law never intended to permit occupation of the loft building for factory purposes by the many various industrial establishments, especially in the garment trade. The bulk of the cloak trade moved over from the East Side tenements and shops into these loft buildings, so that now we have 1,414 out of 1,738 shops in loft buildings, containing about ninety per cent of the workers in the trade.

The construction of a loft building upon the costly sites would not pay, except for their great height. It is unfortunate that over fifty per cent of the cloak workers are employed in factories located between the sixth and twelfth floors. There are over three thousand persons working in eleventh and nearly two thousand in twelfth floor factories.

Most of the loft buildings are of so-called "fire-proof" construc-

tion. This term, however, is a misnomer. There is not, and cannot be, an absolutely "fire-proof" building. What is commonly understood by this term is a building constructed from materials and in a manner which makes the structure more or less difficult of combustion. But even in the most fire-proof building a large part of the walls consist of glass, which is as yet not known to be fire-proof. The contents of the building have never been, and cannot be fire-proof. The occurrence of a fire on any floor of the most approved fire-proof building cannot, of course, be prevented, because of the immense amount of inflammable material stored and worked on in the various floors. In such a case, the danger to the workers of the particular floor, even if the whole building is uninjured, is great indeed. When the fire occurs above the seventh or eighth floor, then the danger is of course still greater, because of the inability of the Fire Department effectively to fight fires above that height.

Internal Construction and Arrangements

The builder of a loft structure never knows the purposes for which the whole or part of the building will be used. He is simply building a structure of from eight to eighteen four-wall enclosed spaces. The occupier of a single loft, or of several loft floors, begins by dividing the space according to his own needs. He turns the empty four-walled space into compartments, varying from five to ten to a floor. The division and separation is not done by the original builder, nor under the supervision of the Building Department, but is accomplished by the occupier of the loft, according to his needs and whim. The partitions are of wood, of the most flimsy construction and most inflammable material. The so-called "fire-proof" loft is thus changed into a very un-fire-proof partitioned factory. The floors are all of wood, very often oil-soaked from the machine drippings, or from the various working processes carried on in the loft floor. The incoming and outgoing goods are packed and unpacked in huge pine boxes. The goods are stored in wooden shelves, and paper boxes are strewn on the floor and all over the shop.

However fire-proof the building may be, the contents of each floor are far from being fire-proof, and the chances of fires and spread of fires in these floors are very great and ever present.

Inadequate and Defective Means of Egress

The doors and fire-escapes are the only means of exit from each floor of a loft building, and the halls, stairs, and elevators the only exits from the building itself.

Elevators and hoistways are a very bad means of escape during fires. In most of the loft buildings the elevators have a very small capacity, and even if they should run all the time during a fire, they could only empty the building, in which a large number of employees are at work, in an hour or two, as some of the buildings contain over three thousand persons, while the individual capacity of an individual elevator is but from five to twenty persons, and a trip takes several minutes. Moreover, elevators are good in case of fire only *below* the floor in which there is a fire, and if there is a fire on the sixth floor, the elevators are useless for all the floors above the sixth. In one fire-proof building on Fifth Avenue, I have found only two elevators with a combined capacity of fourteen persons, while there were two thousand persons working in the eleven stories of that building. The heroism of the elevator or hoistway operator during a fire is an uncertain quantity. In the recent Asch Building fire, the elevators were made useless by the jam of the bodies of the workers who threw themselves down the elevator shaft.

Many of the *halls* in loft buildings are narrow, 63 of them were found by our inspectors to be less than three feet in width. The light and illumination of the halls also leave much to be desired. During the February, 1911, inspection, in 310 buildings the light was insufficient in the halls.

The *stairway* of a building should be and is the best means of egress. Our inspectors found 1,951 stairways in the 1,738 buildings, showing that but very few buildings had more than one stairway, 742 stairways were made of wood, and 710 of stone. Both wood and stone are bad and dangerous materials for stairways. Wood burns quickly, stone gets heated quickly, and the flow of water is then likely to crumble it to pieces.

The *doors* of a shop loft are the only ways the worker may reach the hall, stairway, and elevators. In spite of the fact that the law calls for all doors to be constructed outward, builders seldom comply with this provision. In our February, 1911, inspection we found but 18 doors built outward, and in the August, 1911, inspection, after the activity of the Labor and Fire Departments, the doors in only 359 shops were built according to law. That the opening of doors inward is dangerous in cases of fire, has been repeatedly proved. Moreover, not only are doors not properly constructed, but there are still places where they are absolutely *LOCKED*, in spite of the terrible lesson of the Triangle fire. Our inspectors found twenty-five shops with doors locked during working hours.



A Garret Shop



Shop on Top Floor of a Rear Building

The numerous partitions and the various enclosures within the shop have already been mentioned. That they seriously interfere with the ready escape of the workers in case of fires is self-evident. Some of these "departments" where from twenty to fifty operatives are corralled like so many sheep, have but one small and narrow door near one end of the department. To this door some of the employees must run at least thirty to forty feet through an aisle of eighteen inches, between machines and tables with boxes and goods piled up in the way. In one shop a fourteen-inch passageway was found through which forty employees have to pass in case of fire.

With the many compartments, departments, partitions, and various enclosures, it is absolutely impossible for the employees to know where the exits to halls, stairways, and fire-escapes are, and there are of course no signs to indicate such exits.

Fire-Escapes

There is the same difficulty in reaching the fire-escapes as there is in reaching the various doors of the shops. The difficulty is increased by the high window sill over which one is compelled to climb before reaching the balcony of the fire-escape, as well as by the very narrow and inadequate opening in the window leading to the balcony. Many of the windows are provided with iron bars for the attachment of the shutters; these bars seriously interfere with a free exit. In the inspection of August, 1911, obstructions to the openings to fire-escapes were found in 153 shops.

As a matter of fact, fire-escapes are a very ineffective, inadequate, unreliable, insecure, and dangerous means of escape during fires. The ordinary fire-escape, even of good construction, is at best but a snare and delusion in large high loft buildings. With the large number of workers on each floor, it would take hours in some loft buildings before all of the workers could go down by means of the fire-escapes.

The fire-escapes as at present constructed are worse than if there were none. They simply give a false sense of security.

In the 1,738 shops inspected in August, there were found 1,886 fire-escapes, showing that in very few buildings was there more than one fire-escape. In 63 buildings there were no fire-escapes at all! As a matter of law, there need not be any fire-escape on high "fire-proof buildings," and it is only the great benevolence of the builders that makes them provide these un-ornamental structures on their buildings.

In 83.75 per cent of all our shops there was found but one fire-escape to a building. It is obviously absurd to provide but one fire-escape for a loft building irrespective of its height, width, and length of the area it occupies, and of the number of persons the building harbors. It is right and reasonable that in regard to the number of fire-escapes, there should be some ratio between height, size of building, and the number of persons working therein.

The neglect of the Municipality in this respect and the slight attention which is paid to loft buildings as compared with other structures, may easily be illustrated by a concrete example of two corner buildings in the same neighborhood. One building is a hotel, harboring from five hundred to seven hundred persons at times. This building, which is 197 x 75 feet, is provided with two fire-escapes on the front side, and with four fire-escapes on the others. On the corner opposite the hotel stands a huge five-story loft building, somewhat larger in dimensions than the hotel. The three upper floors are occupied by a cloak and suit factory, in which there are working about nine hundred persons, and at times a great many more. *This* building is provided with but *two* fire-escapes, one in the rear, which leads to a cul-de-sac, from which there is no escape, while the fire escape on the other side is a small insignificant affair with a drop ladder nine to ten feet short from the sidewalk!

The stairways of the fire-escapes were of the vertical kind in 65 shops, and the climbing down of these vertical ladders is fraught with extreme danger. In all other fire-escapes, where the stairway is inclined, it is very narrow and admits but one person at a time.

The drop ladders, by means of which persons reaching the second floor balcony are supposed to go down to the ground, are, as a rule, defective in construction, faulty in position and often lead to nowhere.

Drop ladders weigh from one hundred fifty to two hundred pounds, and are commonly hung on the balcony of the third floor, from which they are supposed to be lifted out by the first person reaching the second floor balcony, and then lowered into position. At best it is a most difficult operation even for a robust person, and certainly a dangerous procedure for women or girls in case of fire and panic.

Even this defective and dangerous means of escape is often

absent or made useless. In 236 buildings our inspectors found the drop ladders either missing or hung on the fourth floor, out of reach.

Mention has already been made of the fact that many drop ladders are too short and are short of reaching the ground six to ten feet, thus necessitating a jump of that many feet.

When the fire-escape is located on the front of a building, the drop ladder usually leads to the sidewalk, or near enough for a more or less high jump, although a number of such drop ladders often lead into closed and spike-guarded, locked and enclosed areas. Worse conditions prevail when fire-escapes are located on rear or side walls. These commonly lead into courts, yards, and areas, very often entirely closed up, shut off, places which form a cul-de-sac from which there is no escape, and which practically constitute a sort of a roasting pen during fires. Very often the only means of escape from these areas, courts, and yards, is by means of cellars, the doors and windows of which are locked and iron barred. In a large number of cases the rear fire-escapes terminate upon glass roofs of first or second floor extensions, the fall upon which is bound to be dangerous.

Inadequate Means of Extinguishing Fire and of Preventing Panics

With a large accumulation of highly inflammable waste and other materials on each floor of the loft shops, the practice of cigarette smoking so prevalent among employees, increases the dangers of starting fires. To make matters worse, there is an inadequate provision for speedy extinguishing of small fires.

Automatic sprinklers were found in but 128 out of the 1,738 shops; chemical extinguishers in but 135 shops, and in 375 shops there were not even any fire buckets! A very small percentage of the buildings were provided with standpipes and hose, and the condition of this hose is, as a rule, such as to make it entirely useless.

In but 14 shops was there any sort of a fire drill to prevent panics, leaving the employees in all the rest of the 1,724 shops entirely unprotected and subject to all the dangers and terrors of a panic and stampede in case of fire.