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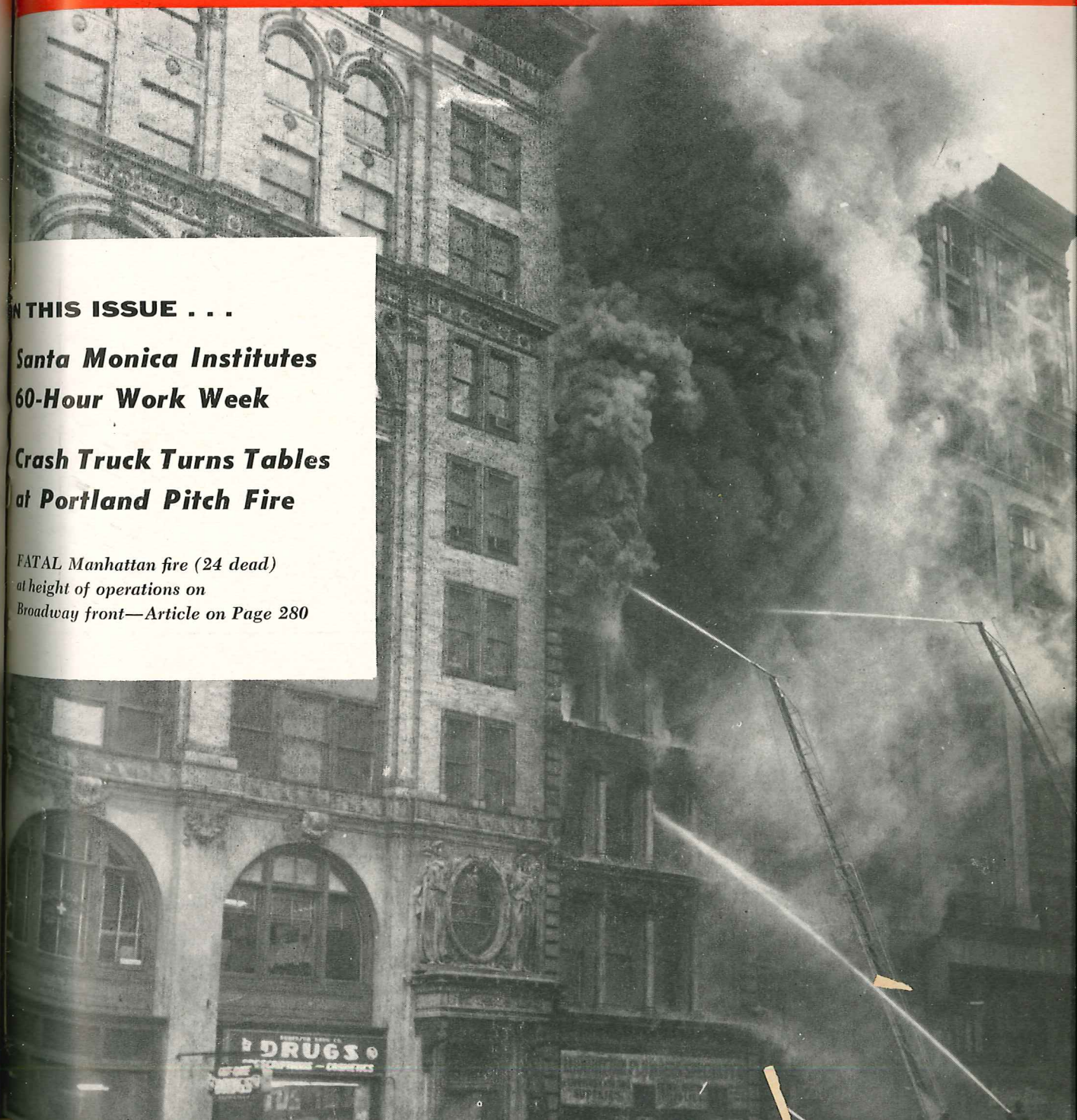
FIRE ENGINEERING

The Journal of the Fire Protection Profession Since 1877

APRIL, 1958



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FIRE
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Lessons From a Second "Triangle"

"This area stinks. It is a fourth-rate, shabby, deplorable neighborhood. There is no good housekeeping here. What they need is cleanliness to make working atmospheres safe!"

So thundered New York's Fire Commissioner, Edward F. Cavanagh, Jr., as he gazed upon the blackened ruins of the old five-story loft building in lower Manhattan which spawned the fire on March 19 that brought death to 24 persons, 18 of them women—a tragedy which followed hard on the heels of another fatal incident only a few blocks away in which two firemen and four fire patrolmen were killed (FIRE ENGINEERING, March 1958).

In the main there was nothing particularly new or unusual in this latest holocaust. It followed closely the pattern of the Triangle Shirtwaist nightmare of 1911 in which 145 garment workers perished: Careless housekeeping; delayed notification of the fire department; large unpartitioned area involved; rapidly spreading blaze; panic induced by smoke and flames, and inability to locate exits; also, both occupancies were distinguished by lack of sprinklers and automatic fire detection and notification systems which have been recommended for such risks for years.

The Triangle fire victims did not die in vain. The catastrophe resulted in the adoption of the (then) most stringent set of factory laws for New York State which the country had ever seen—statutes which with all their loopholes, have served well until the present, as safeguards against similar disasters in the garment and allied manufacturing trades.

Property owners and tenants of many of the old structures—there aren't many new manufacturing buildings in the trea—differ with the Commissioner's caustic condemnation. But the latter, backed by the Mayor, has intensified inspection efforts, concentrating more units in the district, and turning up more violations, more risks. Even as the proposed new fire prevention bills went to the City Council, the Commissioner announced that the department's stepped-up inspection of the area (between Chambers Street and Washington Square) had resulted in the serving of 784 violation orders.

The end is not yet. Although this latest debacle is no longer headline news it has set in motion still more incentive, more machinery for ferreting out fire hazards and curbing or eliminating them. In this respect, the sacrifice of these latest victims may not have been in vain.

What about other municipalities? They may not have the same type or volume of fire risks posed by New York's vast garment industry, but they do have ancient buildings occupied by businesses for which the structures were never intended. Commercial buildings have become industrial occupancies. One fire chief of an Eastern city discovered, upon inspection, that a concern executing defense goods had installed a high-pressure boiler upon the unreinforced floor of what was originally a light commercial structure. Worse, several hundred persons, mostly women, had been engaged to work in the occupancy. The head of this firm pleaded "defense contracts" as a reason why he could flout safety measures.

Look over "Main Street" of almost any municipality. Note the transition that has occurred in occupancies: the empty and delapidated in some districts, the rehabilitated and "streamlined" in others. As one chief expressed it, "As fast as we try to remove old hazards over the years, we encounter new ones. When times are hard, companies seek out low rentals and expect us to put up with their violations of all sorts of safety regulations. When times are flush, manufacturing or commercial space is at a premium, and what were vacancies overnight are occupied by all kinds of enterprises. And, too, we're expected to condone violations under the excuse that 'we haven't got time to make the improvements.'" Expediency—how many crimes are committed in thy name!

What happened in New York City may well be duplicated—perhaps under different conditions, in other cities. The number and degree of these tragedies may well depend upon the extent and degree to which an enterprising fire service, backed by an enlightened public and judiciary seek out, locate and eradicate these "high hazard risks."

Roi B. Woolley

Heavy streams are directed into burning loft building from every vantage point in the rear (Mercer Street). Extreme depth of structure limited penetration. Men of Ladder 20 are shown

Panic Piles Up the Dead in New York Loft Fire

24 garment workers victims of fire and explosion in Manhattan's high hazard district . . . nets save several

AN EXPLODING OVEN in the premises of the SGS Textile Printing Company on the third floor of the five-story loft building at 632 Broadway, Manhattan, on Wednesday, March 19, started a fire in which 24 persons lost their lives. Fifteen others were injured.

In many ways the tragedy was reminiscent of the Triangle Shirt Waist holocaust of March 25, 1911, which claimed 145 dead. Both involved garment workers; both occurred at about the same time of day; both were due to gross carelessness, and in both, panic played its villainous role in the swift, stark drama.

The old building which saw this latest disaster was five stories in height, measured 35 feet front on Broadway and extended nearly 200 feet through to Mercer Street on the rear. Like so many venerable structures of the area, it was "built to burn."

The first floor, basement and subbasement were occupied by the Manhattan Plumbing Supply Company; the second floor by the Markoff Hatt Company; the third floor by the SGS Textile Printing Company; the fourth floor by the Monarch Underwear Company and the [illegible] floor by the Davan Textile Company.

The walls of the building were b[illegible] 24 inches thick in the lower portions [illegible] 16 inches thick in the upper. Joi[illegible] floors on wood girders were supported [illegible] iron columns. The roof was of built[illegible] tar and gravel construction.

Adjoining on both sides were ei[illegible] story structures of a slightly later ar[illegible] tectural period. Windows of these bu[illegible] ings overlooking the fire building w[illegible] protected by iron and tin-clad shutters.

Within the ill-fated building a s[illegible] way at either end led from the first fl[illegible] to the roof. Both were enclosed in sh[illegible] constructed of metal lath and plas[illegible] Elevators were located at front and r[illegible] the one in front enclosed in a brick sh[illegible] the other by wood and glass.

An important contributing factor to t[illegible] rapid spread of the flames were la[illegible] thick glass skylights measuring appro[illegible] mately 10 by 20 feet. These were loca[illegible] about the center of the long narrow flo[illegible] originally to provide light from abo[illegible] Later they were covered over with m[illegible] sheathing and lath and plaster to prov[illegible] more floor space. Once the fire h[illegible] gained sufficient heat, the glass fell ap[illegible] and the flames spread unchecked upw[illegible] from the third floor through the roof. T[illegible] fact that this heavy glass practically i[illegible] integrated attests the high heat gener[illegible] by the fire (ordinary glass melts at abo[illegible] 1500 degrees F.).

At the time of the fire there were [illegible] ported to be 66 persons in the build[illegible] 39 of these being employees of the und[illegible] wear firm. All of the dead were fo[illegible] among this personnel. Occupants of [illegible] third and lower floors had little diffic[illegible] in reaching the street; four men on [illegible] top floor used the staircase to the r[illegible] from which they were removed by l[illegible] ders.

Started in curing oven

It is established that the fire started [illegible] a curing oven used to dry material t[illegible] had been newly printed with desig[illegible] The oven measured 10 feet high, 8 [illegible] wide and 10 feet deep, and was hea[illegible] by gas. It was disclosed at post-fire he[illegible] ings held before Fire Commissioner E[illegible] ward F. Cavanagh, Jr., that there [illegible] been a previous fire in this fixture on[illegible] short time previously. This fire was s[illegible] to have been extinguished by employ[illegible] using portable extinguishers and pail[illegible] water. However, no report was ever m[illegible] to the fire department.

From the evidence it would appear t[illegible] employees (there were said to be th[illegible] officials of the textile printing com[illegible] on the floor) attempted to extinguish [illegible] second fire when it flashed, but this t[illegible] they were not so fortunate. Following [illegible] burst of fire in the oven, an explo[illegible] ensued, which was felt through the e[illegible] building and caused severe burns to [illegible] hands of one of the men. As the [illegible] spread, feeding on the combustible m[illegible] rial and along the dust-covered ce[illegible] the men fled. The shock coming on [illegible] of the smoke which filtered into the [illegible] per floors, added to the fears of [illegible] ployees and helped precipitate the p[illegible]

The oven blast is believed to have blown open an exit door leading from the stairwell on the third floor, providing additional draft for the fire. Flames roared through the long, narrow, undivided third floor "like in a wind tunnel," as one witness expressed it.

Delayed alarm costly

There is confusing evidence about the time lag between discovery of the fire, the explosion and the sounding of the alarm. The building lacked automatic fire alarm notification and extinguishment systems. The only alarm system was comprised of gongs, actuated by pull boxes located on each floor of the building. Some witnesses reported hearing gongs, others claim there was no such warning.

The fire department's Manhattan Central Communications Office received the first notification at 3:51 p.m. from Box 342. Almost at the same time a neighboring box (362) was received and within a minute more, six telephone alarms flashed on the phone board.

Engine Company 13 and Ladder Company 20 from their quarters at 155 Mercer Street less than a block distance, arrived within moments; the chief of the Fifth Battalion (Theil) came in one minute later, closely followed by the chief of Division 1 (Mackey).

The speed with which the fire spread before arrival of fire companies is indicated by the fact that notwithstanding this prompt response, people were at windows and on ledges preparing to jump from the fourth floor; and the third floor appeared fully involved in flames, with very heavy smoke conditions above.

The terse, laconic "preliminary" report by the Fifth Battalion received at headquarters said, "Fire at 623 Broadway; five-story brick; 25 x 90 vacant (this was revised later); fire third floor . . . using all hands . . . doubtful if will hold . . . exposures (1) street; (2) eight-story brick 50 x 100; (3) rear, street; (4) eight-story brick 50 x 100."

It is said firemen of Engine 13 could hear the screams of the frightened women on the fourth floor as they left their station. The first-arriving firemen saw several women all screaming in panic on the fourth-floor window ledge. They implored them to wait until they could set up a life net. Disregarding the pleadings, three women jumped to the sidewalk. Miraculously, none of these was killed but all were critically injured.

Two caught in net

At least two other jumpers were caught safely in the net. Another woman who lost her grip as she was attempting to get on a ladder, fell and landed on the rim of the net. Her fall was partially broken by Edward Wine, a volunteer truck driver, who was severely injured himself. The net was put out of action.

Firemen took lines into the building and endeavored to fight their way up the stairways to reach victims. Some occupants of the smoke-filled structure were located and removed by these men; others were taken down ladders quickly thrown against the building, front and rear. According to fire officials, had those who jumped only waited a moment they could have been saved.

Search for bodies goes on. Deputy Chief Joseph Mackey, 1st Division, points out to Fire Commissioner Edward F. Cavanagh, Jr. where victims piled up on fourth floor of fire-gutted loft. Firemen in photo are unidentified

Great confusion and panic raged among occupants of the fourth floor. The smoke grew so heavy that it was impossible for victims to see the exits. Twenty-two died on the floor from suffocation and flames; two succumbed later in Bellevue Hospital.

Ten bodies were found on the fourth floor beneath work benches of the underwear company, by fire fighters who were able to enter the floor about an hour later. Five bodies were huddled together at a rear window on the Mercer Street side; and four bodies were piled on top of each other at the head of an unburned staircase on the same floor. The other dead were scattered about the premises. By 9:00 p.m., 23 bodies had been recovered. Ambulances which responded in numbers sped the injured to various hospitals.

By a freak of fate, two persons, a man and a woman, survived the fire. The woman hid most of herself in a large metal storage box where water from hose lines kept the container sufficiently cool to save her. She suffered severe burns about the extremities. The man buried himself beneath fallen debris and crawled out when the fire was quenched. He lived.

Even before the wreckage had cooled, an investigation was instituted by the fire department to determine the cause of the disaster and whether or not any of the city codes had been violated. At the insistence of fire officials headed by Commissioner Cavanagh, Mayor Robert Wagner has introduced into the city council a slate of eight new fire prevention laws designed to require added safety precautions and to bring factories under the

What firemen are up against! Violation uncovered almost across the street from fatal loft fire site as firemen intensified inspection efforts to clean up what Commissioner Cavanagh termed a "Fourth-rate, shabby, deplorable neighborhood"

same fire regulations as apply to other types of commercial structures. These call for:

1. Sprinklers in all factory buildings four stories high or more in which more than 50 persons are employed above the street floor

2. Fireproof partitions on all floors used for manufacturing where the floor is 150 feet long or wide, or more; the partition would have to be able to resist fire for at least an hour, and would have fireproof doors

3. Red exit signs lighted by bulbs of at least 75 watts, and an auxiliary power supply for these signs in case of failure of the regular power

4. Removal of glass sections of floors, to be replaced with the same material as is in the rest of the floors

5. Roof skylights over stairwells. In the event of fire, firemen would break these skylights and permit heat and gases to escape, keeping the stairways usable for evacuation

6. Technical changes in the labor law by tightening entrance and exit requirements in all city factory buildings

7. Inspection at least every three months by an approved fire protection agency of any pumps used in building to provide water for sprinkler systems

8. Stoves, ranges, ovens or other heating devices in new installations to be placed only on the top floor.

(The published recommendations made no reference to drilling or training personnel, use of warning signs in different languages or of automatic fire detection and notification systems; some of these essentials are understood to be presently covered by existing regulations—Editor)

Chronology of Response

Wednesday, March 19

3:51 p.m.—Box 342, Broadway and Houston Street: Engines 13, 30, 33, 55; Ladders 20, 9; Rescue 1; Chief of Division 1, Battalions 2 and 5.

3:56 p.m.—Second alarm (via radio) Box 342: Engines 7, 17, 24, 31; Ladder 3. Relocating: Engines 213 to 33, 26 to 30, 256 to 31, 203 to 7, 221 to 17; Ladders 18 to 9, 7 to 3.

At the same time Chief Division 1 requested at least three public ambulances and notification of police and disaster unit, Bellevue Hospital.

4:08 p.m.—Third alarm (via radio): Engines 5, 12, 18, 27; Ladder 8; Chief Battalion 4; also Ambulance 1 and Field Communications 1. Relocating: Engines 21 to 5, 34 to 18; Ladder 15 to 8.

4:22 p.m.—Fourth alarm (via radio): Engines 9, 14, 15, 28, 32; Ladder 5. Relocating: Engines 205 to 15, 209 to 9; Ladder 12 to 5.

4:35 p.m.—Fifth alarm (via radio): Engines 1, 3, 16, 207, 216; Ladder 1. Relocating: Engines 44 to 16, 40 to 3, 54 to 1, 219 to 207, 237 to 216.

6:15 p.m.—Special call Fuel Wagon 12.

6:39 p.m. — Special call Searchlight Unit 24 (Queens).

The staff which handled communications at the Manhattan Central Station included: First crew—Supervising Dispatcher Finneran; Dispatchers Gallagher and Krasnopolski; Firemen (acting dispatchers) Matthews and Greenidge; Telephone Operator McLaughlin. Second crew—Supervising Dispatcher Cruses; Dispatchers Ansorge, Garcia and Pearlman; Firemen (acting dispatchers) [illegible]ler, Raney, Umlauf and Cruse; Teleph[illegible] Operator Roethlein. □□

Acknowledgement: Thanks are tended Fire Commissioner Edward Cavanagh, Jr., and fire department cers and men including the photo (Hellriegel, Heffernan, Johnstone Lind), for their aid in the preparation this report. The assistance also of the N York Fire Insurance Rating Organiza was especially helpful.

Shallow Draft Fire Boat

Information reaching FIRE ENGINEERING has indicated a growing interest in the high speed, shallow-draft type of fire boat for use in fire departments having substantial harbor and coastal areas, as well as inland rivers.

The latest craft to come within this category is shown here. Termed by its designers, the *Fire Fighter*, the boat measures 70 feet overall, with a water line length of 66½ feet; 17½-foot beam; and a 3-foot draft. It is powered by two General Motors 6-71 twin diesels driving twin screws and developing a working speed of 24 to 25 mph.

Monitors located on the bow and aft of the pilot house are supplied by two fire pumps rated at 1,000 gpm each. In addition, manifolds provide four hose connections on each side of the bu after deck house and a hose reel mounted on the stern. Foam generat are provided for fighting oil fires.

The hull is constructed of all-welde steel metalized inside and out w sprayed-on zinc. All deck superstructu are of aluminum. Emphasis has be placed on strength with lightness, eco my of original cost and maintenance.

The craft is a development of a ty designed by Philip L. Rhodes, Na Architects and Marine Engineers, Broadway, New York 4, N. Y., and wil ly used as a fast personnel boat. It is s to be very seaworthy and capable of o erating in far rougher water than is n mally encountered in navigating inla and coastal areas.