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FIRE PROTECTION HISTORY-PART 35: 8TH ANNUAL NFPA MEETING-1904 (THEATER FIRE SAFETY)

By Richard Schulte

The Iroquois Theater fire occurred in Chicago on the afternoon of December 30, 1903. This fire claimed the lives of over 600 people.

The 8th Annual Meeting of the National Fire Protection Association (NFPA) was held in New York in late May 1904. This was the first meeting of the NFPA held after the fire at the Iroquois Theater and, as would be expected, theater fire safety was a topic of discussion at the meeting. The following is an excerpt of the meeting addressing the issue of theater fire safety:

"***THEATER CONSTRUCTION AND EQUIPMENT.***

C. A. Hexamer, Chairman

W. A. Anderson,	*H. C. Henley,*	*F. H. Porter,*
F. E. Cabot,	*H. E. Hess,*	*W. C. Robinson,*
W. J. Fredrick,	*J. B. Laidlaw,*	*F. J. T. Stewart*

Mr. Hexamer. For the Committee of Theater Construction and Equipment, I should like to report progress and stop right there. But I think I may be able to say a few words, which will be entirely extemporaneous, on the subject, and then some points may be brought out in discussion which will be of value to the committee.

The committee has had no meetings, and the chairman has been so busy with new work that it has prevented him from giving this subject very careful thought. In taking up the question of theater construction, it has occurred to the chairman – and I may say that all of these points are of his own thinking, and have not been submitted at all to the committee – that the location of the theater should first be considered. In European countries it has been the rule to surround theaters by streets or parks, and the theaters are located in such a way that there is free access – and of course free exit – it [in] *all directions. In this country theaters are most frequently located in built-up blocks, rarely even at corners of streets, and it has been the object of various building laws throughout the country to prescribe for this location so as to have them front on a principal street, with a rear exit to another street or alley; and, wherever possible, a free alley or corridor, or whatever you may call it, at each side of the auditorium end of the building. Our law in the State of Pennsylvania, applying to buildings of the first class, which, unfortunately, so far only applies to Philadelphia, has restrictions to that effect.*

Now, as to construction of theaters: Modern building laws generally provide for fire-proof or fire-resisting construction of the auditorium, of the stage above the stage floor, scene decks, dressing rooms, carpenter shop, and in fact of everything excepting the stage floor itself. We find in most theaters of fire-proof construction a wooden floor with open wooden joist covered with single flooring boards for the stage. Now, whether that is a necessity for the occupancy of the building, I am unable to say. It appears to me, however, that a light, fire-resisting construction of a stage floor, with a wooden board covering, would be quite as acceptable to the performers as ordinary wooden covering on joist.

The theater, to be a safe place of amusement, should be panic-proof. Unfortunately, I am afraid that is a matter, while very much desired, that it is impossible to contemplate in the construction. A theater may have all the exits necessary to empty it in the shortest space of time, but if the entire side of the theater could be opened out in case of a panic there would be injury to persons.

I think you will agree with me that in considering theater construction, one of the very first things to be considered is the saving of life. The construction of the building so as to resist fire comes second, and of course is a necessary part of the consideration; but the saving of life is paramount. I just want to bring out these points as they occur to me, and open the subject for discussion later.

The arrangement of the occupancy of the building is another point to be considered. There should be no dressing rooms under or over the stage, or underneath or under the auditorium. The carpenter shop, if there is one, should be cut off in a separate building, and perhaps the scenery should be stored in a separate building.

The question of ventilation is an important one. All standards of building laws for theater construction provide for ample and free ventilation in the roof over the stage. I think the Pennsylvania law requires one-eighth of the entire stage opening, and I think it has to be removable either automatically or by the breaking of the glass. Then I am inclined to think the law requires automatic ventilation. Then the ventilation of the house itself must be considered. Undoubtedly a faulty system of ventilation in the case of the Iroquois theater had a great deal to do with the terrible loss of live which occurred at the time of the fire there. The suction fans, taking the air from the top of the building and blowing it out through the roof, in that particular case undoubtedly drew the flames over into the auditorium, and the hot air and gases caused a great loss of life.

Then there is the matter of lighting. There should be separated systems for the front of the house and for the stage. If gas lighting is still used, the gas jets should be lighted by an electric spark.

The overcrowding of the theater, the permitting of persons in the aisles, which is now prohibited in all the laws, I think, must be considered. And in this connection it occurs to me that while the building laws are usually legislative enactments, in many states, as in Pennsylvania, they apply only to cities of the first class. Even cities like Pittsburgh, to my recollection, are merely under local ordinances, while smaller towns have practically no ordinance and are under no restrictions. It is very important, to my mind, that theaters in small towns, which probably in some cases have no fire pretection [protection]*, should be as carefully watched and as carefully constructed as theaters in large cities.*

Before I close these rather rambling remarks I must, of course, refer particularly to the Iroquois theater fire. The Secretary's Bulletin No. 54, which has been in your hands for some time, has undoubtedly given you a clear insight into the causes which led to that terrible disaster. I had an opportunity to go through the theater in March, when I was in Chicago, and from personal observation I think the main causes, irrespective of the fire happenings, which led to the great loss of life were the fans which sucked the hot air and gases forward, the very steep arrangement of the seats in the gallery, and the proximity of the front of the gallery to the stage. I think the distance was about 16 feet from the stage curtain to the front of the gallery. At any rate, it was not much more than that.

Mr. Robinson. I should say it was in the neighborhood of 50 feet.

Mr. Hexamer. According to my recollection it was less than 20 feet.

Mr. S. H. Lockett. It was about 25, I think.

Mr. Hexamer. And then the benches ran up at an angle certainly over 45 degrees, so that the feet of the people on one row were nearly on a level with the heads of the people in the row below. As to the matter of construction, I should like to go back to that point again and insist on separating the stage end from the auditorium. That, of course, is something which has been carefully considered. I regard it as absolutely necessary that a brick proscenium wall should be provided, extending above the roof 48 inches, I think it is in our law, a well-coped fire wall, and no openings in the wall above the stage openings, and preferably no openings excepting, perhaps, in the basement and on the first floor, which, of course, must be protected by ordinary standard fire doors.

The matter of the theater curtain is one that will need very careful consideration of the committee; I mean by that, the asbestos fire curtain. Whether asbestos is to be considered as a suitable material for this purpose in the future is something which we will have to take up. I had an opportunity to visit the McVicker theater in Chicago, and I saw there a new curtain which I think is constructed in accordance with the revised ordinances of the city of Chicago, it being a corrugated steel curtain, the steel portion facing the audience, and backed, I think, was a half-inch of asbestos board. The curtain rises without bending, of course, and is lifted by hydraulic machinery, so that in about a quarter of a minute the curtain can be drawn out of place, and it can be lowered in the same time, it being so arranged that it can be lowered from different points of the stage, or even from the house. It seemed to me that that particular curtain was a very fair example of what a fire curtain in a theater should be. There have been some tests made at the Laboratories on material for curtains. I believe Mr. Robinson, together with Mr. Freeman, or for Mr. Freeman, has made some extensive tests on asbestos material – asbestos material wire lined – asbestos material, I think, in the back of metal plates – and those tests will be available for the committee.

I do not know that I have anything further to add in the way of a preliminary report, but I would like now to have the subject thrown open for discussion.

Prof. Woolson. I suppose the committee will make an investigation of the matter of proper material for a theater curtain, and I would make the suggestion that they make a carful trial of the material known as Uralite, both American and foreign. I have made some experiments myself along that line since the Chicago fire, and, I find I get much better results from that than I can from asbestos, because asbestos under a high degree of heat soon becomes pliable, and very easily broken. My opinion is that the kind of a curtain which Mr. Hexamer has just mentioned is by all odds the best, and that a theater curtain should be a sliding board and not something that is flexible and rolls up, backed by some material which has a high fire resistance.

[Additional Discussion]"

Source: *NFPA Proceedings*, Volume 1904-1907

It almost seems rather amazing that what is considered to be standard fire protection for theaters today was actually being discussed in 1904. The only element of theater fire protection which is standard today, but which was not discussed above was sprinkler protection for the stage and spaces ancillary to the stage.

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