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FIRE PROTECTION HISTORY-PART 238: 1916 (SCHOOL FIRE PROTECTION)

By Richard Schulte

The twentieth Annual Meeting of the National Fire Protection Association was held in Chicago, Illinois in May 1916. One of the topics of discussion at this meeting was the subject of fire safety/fire protection for elementary and high schools. The following is an excerpt of a portion of the discussion at the meeting:

> "***The Chair:*** *Gentlemen, you have heard these two admirable papers on the different problems connected with school planning and school designing, the one approaching the question from the standpoint where land is available, for lower buildings; the other, dealing with the problems of a big city where land is of such value that we necessarily must go up in the air. Dr. J. George Becht's paper on Exit drills and Fire Escapes will not be presented. Mr. Becht has telegraphed that he could not come; I will therefore throw open to discussion the principal subjects brought up by Mr. Ittner and Mr. Snyder. We will be very glad to hear from any member or anyone else who is present and interested in the topics that have been presented.*
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> ***Secretary Wentworth:*** *As we are not to have Dr. Becht's paper, Mr. Chairman, may we not before proceeding with the general discussion, have a word from Mr. Snyder, on the conduct of exit drills in New York City? New York has special conditions to meet I fancy, in the congested districts.*
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> ***The Chair:*** *That will be very agreeable. We shall not then have to omit that important item altogether. Mr. Snyder?*
>
> ***Exit Drills and Fire Escapes.***

Mr. Snyder: *As already explained we have fixed the limit of time for the vacating of a building by the principal, teachers and pupils at three minutes for non-fireproof and three and one-half for fireproof buildings. A long study of the rules for fire drills and rapid dismissal has led me to the conclusion that very often the tendency of those in charge is to require speed without due regard to safety. In numerous instances I have noted that the principal seemed to feel that the proper thing was to place monitors at various points who would act as accelerators in the carrying out of a hurry-up schedule. Especially is there a tendency with women principals to devise drill signals which are in themselves complicated. This should be avoided.*

We in New York are endeavoring to overcome both these defects, first, through the control of each class organization by its teacher in "close-up formation" which shall be maintained down the stairway, out through the exit and clear of the building.

This requires not a little generalship and executive ability on the part of the principal of a school where there may be upwards of 3,000 pupils in attendance, as the location of such a building is almost invariably in the thickly settled parts of the city, where the streets are narrow and filled with traffic which must give way to the marching lines of pupils

It will be quite readily recognized that the essential thing is to not only have all the occupants of a school building march out in order, but to a sufficient distance away from the structure so as to afford a clear opportunity for the approach and operation of the fire fighting apparatus.

Marching in the roadways or stopping short of 250 or 300 feet of the building is, therefore, to be carefully avoided. It were far better to continue the marching entirely away from the premises. Every drill should be held with the sole idea that there is a fire on the premises.

That the particular method of class control and close-up formation under immediate charge of the teacher with the end of the line protected by one of the older and more reliable children of the class, works well is indicated by the test which has been conducted in a building eight stories in height, in which there are 5,000 pupils.

Again, I wish to emphasize the fact that the width of stairways for elementary schools should be fixed not to exceed four feet for two lines and for high schools not to exceed five feet. It is the third child who is without the support of a hand-rail who invariably causes the blocking of the lines.

Frequent tests with a stop watch have shown that the capacity of a properly designed and built four foot stairway can be readily counted upon at the rate of 100 pupils in 25 seconds, or 240 pupils per minute. In practice this is taken at 100 pupils in 50 seconds, or 120 pupils per minute for each stair of four feet in width.

The Chair: *Thank you, Mr. Snyder. We are glad to have that information for our records. The general discussion may now proceed.*

Mr. Robertson: *I would like to ask Mr. Ittner how in the plan for ventilation he has outlined he forces the current of air to hug the wall in that way. Is there a forced draft which keeps that column of air in the duct?*

Mr. Ittner: *It is the fan system.*

Mr. Robertson: *You find as a matter of fact that the air circulates as indicated?*

Mr. Ittner: *Yes. It will only work with the doors and windows closed.*

Mr. Robertson: *I suppose a particular velocity must be given the air to get it to go around?*

Mr. Ittner: *Yes.*

Mr. F. J. T. Stewart: *(New York Board of Fire Underwriters.) I would like to ask if the introduction of light from one side of the room only, is considered entirely satisfactory and definitely planned for, or is that method incidental to some other consideration.*

Mr. Ittner: *The question of the proper lighting of a class room is perhaps still an open one. I should say for northern climates a unilaterally lighted room is the thing. In southern climates, where the school is occupied a greater number of warm days, it is necessary to introduce natural ventilation by windows on a second side of the room. This has the disadvantage, however, of introducing cross lights, and this cross lighting is not best for the pupils' eyes. I think medical men agree that unilateral lighting is the thing for best vision, although probably, from other viewpoints, there might be an argument made for the bilateral lighting of a room. It is generally conceded by school authorities that a unilaterally lighted room is the proper thing.*

Prof. I. H. Woolson: *(National Board of Fire Underwriters.) I would like to ask Mr. Ittner on what he bases the requirement that the stairways for the larger pupils should exceed five feet in width. I ask this because the investigations of the Industrial Board of the State of New York upon exits from factories found that a width of twenty-two inches for a stairway for a single file, or forty-four inches for a double line, was sufficient for adults. It has so advised, and the Building Code of New York City so recommends. I was wondering if, for pupils, a wider stairway is necessary.*

Mr. Ittner: *I think the gentleman misunderstood me. I said that in no case ought the stairway be wider than five feet. Perhaps the New York practice of forty-four inches would be somewhat better than five feet. What we aim to prevent is a third pupil crowding into the center without a handrail, and perhaps stumbling with the probable result of the piling up of pupils on the stairway. We have not felt, in our practice, that it was quite necessary to reduce the width to less than five feet as a maximum.*

Mr. Sydney J. Williams*, Madison, Wis., (Wisconsin Industrial Commission): I would like the opinion of the speakers upon special protection for manual training rooms, which seem to introduce a special hazard, much like the regular woodworking plants with a heating plant and boiler room.*

The Chair: *Mr. Snyder, will you answer that?*

Mr. Snyder: *We believe that all such hazards should be safeguarded by automatic sprinklers, and we are endeavoring to meet that situation as rapidly as possible. I might say that in New York practice we are unable to afford as much room space as is shown by Mr. Ittner's illustration. Undoubtedly the Continental practice of a wide, open corridor is good but with us our heating apparatus must be below grade where the first story, for lack of space or otherwise, must be covered over almost exclusively by a large area in which the pupils may gather in the morning. We have no interior brick walls. Our construction is strictly on the column and girder principle. All partitions are of terra cotta blocks. As I stated before, we approach this problem from an entirely different standpoint.*

The Chair: *I have been wondering whether you would not be willing to describe some of the special solutions you have had to find for the staircase problem where there was not room enough for any of the double line staircases. I think you have worked it out admirably. Some of our members would be interested in that, I am sure.*

Mr. Snyder: *I am unable to say why the height of fifteen feet seven and one-half inches from top to top was ever fixed upon as the story height for school buildings in the City of New York. Who ever did it and whenever it occurred, was responsible, perhaps, for the introduction later of what is known as the double-run stairs. That is where we have two stairways in one well hole of eight feet. That doesn't sound good, and I don't know how in the world I am going to explain it to you, but starting at the top or starting at the bottom we are in one run continuously and never encounter those in the other run. Where such an exit can be placed parallel with the corridor, we have an admirable and very efficient means of dismissing large numbers of pupils. The fifteen feet seven and one-half inches head room we have permits this double-run construction. To dismiss 3,000 pupils from a building 200 feet long, or 3,800 to 4,200 from buildings five stories high in three minutes, you must have some stairway system! There is a member sitting over there very quietly, Mr. Rudolph P. Miller, who is largely responsible for our insisting on enclosure. Some of the members here remember John Stephenson, car builder. He once built surface cars for many of the larger cities. He built also those that run on Fifth Avenue and down Broadway, New York. John Stephenson was ward trustee on the eastern side of New York, on 27th Street and over in that section, and he built the first fireproof school building that I know of in this country. It was built immediately after the war, and consisted, as near as we can ascertain, of cast iron I-sections filled in with brick arches. But even before that time, and since, and up to some years ago, all stairways except "run" stairways were fireproof and enclosed with doors. I am speaking now of the old City of New York. All wardrobes were within the room. Then came the demand from "uplift" people that all wardrobes should be removed from the room, and that in the interest of control the stairways should be left non-enclosed. That peculiar condition obtained, I think, for five years; and then, largely through the instrumentality of Mr. Miller, we went back to the enclosure again, and now one of our tasks is to correct the errors of those five years. Our wardrobes are now within the room; not at the place indicated by Mr. Ittner's sketch, but rather on an interior wall.*

As many of the members know, our city blocks are 200 feet. That fixed dimension is what we all have to deal with, except in some very few instances. Therefore, we cannot but economize. We cannot afford to use street frontage for wardrobes; we must put them on inside walls.

Our method of ventilation takes the air in from over the corridor, bringing it in about ten feet and circulating it much as described in the paper of Mr. Ittner; –except in the other direction. We believe we get better results by projecting the air from a wider surface, from the outside windows, where it drops, passes along to the line of exit and through the wardrobes, and then out.

Mr. Forster: *Before speaking directly on certain points I would like to express the hope that the N. F. P. A. will put these admirable addresses into pamphlet form with the illustrations prepared by Mr. Ittner. Such valuable data should be widely circulated.*

Both speakers referred to the one story school as being desirable, but both indicated that it is not possible except in sparsely settled districts. In Rochester, of whose school situation I know something, they have recently been building a line of one-story schools. They have built them in residence districts where the value of real estate is rather high, but they found that even with the additional ground space necessary for a one-story school building, it was economy to have larger class rooms. From the standpoint of safety to life, the one-story school building is a blessed thing. If a city like Rochester, with a quarter million population–and there are not many larger than that in any section–can do what it has, I think we might safely go on record as saying, and saying very forcibly, that it is possible financially, and even where there is a slight additional burden financially, most desirable to build one story school buildings of that kind.

One point has occurred to me as perhaps in the domain of controversy. Exposure of school buildings is very undesirable from the standpoint of sanitation and possible property damage, but it does not, I think, make much difference as to safety to life. I can imagine a sprinklered planing mill closely adjoining a school building catching fire and nobody in the school being more than mildly frightened. I do not think life is jeopardized seriously in such a case.

I wish to mention one more point upon sprinklers in schools; while we believe the sprinkler generally is desirable, I think that for the school we have adequate protection to life where the sprinklers are on all floors below the top floor. Pupils are burned to death, not by fires on their floors in school buildings or by fires above their heads, but by fires below them.

A Member: *The unit room in Mr. Ittner's sketch shows that the lighting comes from the left side of the pupils' desks, which I believe is proper. Is that plan uniformly carried out in all rooms?*

Mr. Ittner: *Yes, the light is from the left.*

The Chair: *Perhaps Mr. Ittner might care to make some suggestions on the one-story school from the point of view of administration, heating, lighting, etc.?*

Mr. Ittner: *I am not altogether prepared to agree with Mr. Forster on the one-story school. Mr. Donovan of Oakland, California, who has perhaps built more one-story school buildings than any other architect in the country, says himself that he is not prepared to say at this time that the one story school building is the thing. While a one-story school building is not a bad plan in a climate such as California, there might be in my opinion certain good reasons against that type of building in climates such as are encountered in Rochester and in Minneapolis where they are now trying the Rochester experiment. I feel that it is not necessary to limit school buildings to one-story to have them entirely safe. If the one-story building becomes popular it is going to mean a cheapening of construction. I think a two-story building is quite as safe, and I am certain it will be better from the schoolmaster's standpoint and from the standpoint of maintenance. For instance, in the case of the one-story school, there is the floor, without basement, exposed to the ground. There is the outer wall, and there is the roof; so that in northern climates at least, the heating and ventilation of such a school is quite a problem. Then from the administration standpoint there is the greater traveled distance; from and to the outside, and to and from the toilets, etc. There are many things to be considered before we adopt the proposition of the one story school house as a finality.*

Mr. H. C. Henley*, (St. Louis Fire Prevention Bureau): I notice in your plan the furnace room communicates with the interior of the building. Wouldn't it be better to have the entrance to the furnace room from the exterior?*

Mr. Ittner: *That is desirable, I take it, but of course it is quite inconvenient to the janitor to go outside every time he wants to get into the school house. The communication can be established and safeguarded in such a way as to make it, in my opinion, absolutely safe. For instance, if the entrance from the school proper into the boiler room is not direct, but through the janitor's room or a vestibule, safeguarded with two fire doors automatically acting, I think such construction would be accounted safe.*

Mr. Henley: *If we might place reliance on the fire doors possibly that would be all right. But I have examined quite a number of schools in St. Louis and found the doors out of order, and so do not feel that we can rely on them. There is frequently something wrong with the doors, and I have found them blocked open. I do not believe there is any place on earth where rubbish accumulates as it does in the basements of schools, and I think no entrance to the furnace room should be permitted from within the building.*

The Chair: *I imagine both Mr. Ittner and Mr. Snyder would agree with that, wherever it is possible to plan for it.*

Mr. Ittner: *Mr. Snyder touched upon that. But a very important thing about a school building is the housekeeping. Unless the house is kept in order you may have hazards everywhere. I remember, when I took hold of the St. Louis public school system, I gathered up in different attics and basements of St. Louis schools enough furniture that had been poked away and forgotten to equip I dare say, a dozen buildings. Much of this material constituted great hazards in the schools. No matter how safe your building is, it must be properly administered, and I know that Mr. Challman will emphasize that in the address which he is to make to us. We must have a well organized janitor service, and must maintain at all times a rigid inspection. For a number of years St. Louis called upon the St. Louis Fire Prevention Bureau to make an inspection of school buildings every summer, and those inspections revealed all sorts of little hazards which were generally taken care of. If such inspection had never been made the attention of the Board perhaps would never have been drawn to these conditions.*

Mr. Lew. R. Palmer*, Harrisburg, Pa. (Pennsylvania Department of Labor and Industry): I am sorry Dr. Becht was not able to be here, because I am sure he would have gathered great inspiration from this meeting. Our Pennsylvania Board of Education has issued a pamphlet on school management. I do not know whether it will be entirely in accord with the practice laid down by the N. F. P.A. There are some things I do not quite agree with in relation to exits, etc., speaking from the inspection standpoint. The Department of Labor and Industry joins hands with the Board of Education in making inspections and correcting undesirable conditions. We recently had two fires the same day in Harrisburg from preventable causes, and it was very comforting to know that we had made a survey of the Harrisburg schools and had called attention to these violations of good housekeeping. Our department is now co-operating with the Board of Education in making an investigation throughout the State of Pennsylvania. If any member would like to have a copy of the Pennsylvania pamphlet, I am sure it will be sent on application to the Board of Education at Harrisburg.*

The Chair: *Mr. Richards, of Boston.*

Mr. Benjamin Richards. *(Underwriters Bureau of New England): I consider we have a model school in our town (Canton, Mass.) and I mean shortly to prepare for the Quarterly a description of it. This school solves in a peculiar way certain problems which have been mentioned about the one-story school building. It is in the form of a Maltese cross. It is a large four room school, each room being separate and having its own toilet room and wardrobes. It is a primary school with ninety pupils to each of the four rooms, and we empty the whole school in twelve to fifteen seconds. There is no basement at all. There is no attic. There are no fans or dusty flues to impair the health of the pupils. The air circulation is entirely through natural draft. It was designed by Dr. John A. Fish of the Massachusetts School for Crippled Children, and is considered a model in regard to the health of the pupils.*

The Chair: *We should have a description of it in any special pamphlet that may be issued as a result of this conference today.*

Prof. Woolson: *I would like to ask where the heating plant is located if there is no basement in the building?*

Mr. Richards: *There is no basement under the class rooms. I think there is a place about eight feet square with a heater, and there is a fireproof tunnel leading outside through doors. The heater has no connection at all with the class rooms.*

Mr. Dana: *I should like to refer to a fire in Peabody, Mass., last fall, in a parochial school in which twenty-one little girl pupils lost their lives. There was a good deal of public agitation at that time, which resulted in a meeting in Faneuil Hall, Boston, in which this matter was discussed and at which a committee was appointed to take further action. The matter was pushed by the Fire Commissioner of the Metropolitan District, who has been very active in good work. This committee had a number of sessions and drew up a list of suggestions for the protection of all old school buildings. These were published in pamphlet form and distributed widely throughout the state. It was then decided to present a bill to the Massachusetts legislature to compel by law certain improvements and after a good deal of work a bill was drawn which met the approval of the committee as going as far as it deemed reasonable in such legislation. The principal point aimed at in this bill was to cut off the basement. A large number of fires in school buildings start in the basement, and if they can be confined to the basement and the smoke prevented from reaching the floors above, the danger to life will be very much reduced. The bill called for such fire prevention measures as protecting combustible ceilings with metal lath and plaster or the equivalent, cutting off the boiler room with fire doors and partitions, cutting off all basement stairs with fireproof partitions and fire doors, and equipping all hazardous sections with automatic sprinklers, including boiler rooms, Sloyd rooms, manual training rooms and laboratories. Unfortunately, that bill did not pass the legislature; there was a great deal of opposition from school authorities in different towns in the state, who feared the expense. In fact, the only objection was the fear of expense.*

The Chair: *How about stairs that are wider than the maximum width which Mr. Ittner and Mr. Snyder both mentioned? Secretary Wentworth mentions old school buildings having main center stairways as wide as six or eight feet. Would it be an advantage to insist that those stairs be divided by intermediate rails? What is your opinion, Mr. Snyder?*

Mr. Snyder: *I do not think I would allow the building to be occupied unless they were so sub-divided. I do not believe in stairways more than four feet in width for children. They might possibly be five feet, but I do not like it.*

While I am on my feet, the members might be interested in a classification of the fire losses in our public schools for six years? There is a good deal of talk about fires in basements, basement boilers and boiler rooms. Our records are very carefully gathered, covering about 700 buildings, and do not agree with that at all. In six years the incendiary fires were forty-three. That means fires caused by boys of about sixteen. There were four fires set by one boy, who, displeased with his teacher, set fire to the waste paper basket and put it under his teacher's desk at noontime. Fires from adjoining premises, 12; from workmen, 10; in wardrobes and closets, 26; from boilers, stoves, etc., 6; from lighting, gas, etc., 42, (that number happened to be due very largely to the unsettling of old lines of gas pipes along the line of the subway through rock blasting); fires from lightning, 20. Our total loss in six years (don't believe that I am bragging about it, for I do not like to brag; I would not mention it only I think it important in this discussion), was only about $26,000. Our largest loss came from fire communicating from a burning piano factory alongside a school.

Another point; I do not believe the sprinkler should be installed for safety to life. I believe in adequate stairway protection. Another point–I do not know if I am out of order? If I am, I will stop.

***The Chair:** Go ahead. You may be stopped by somebody else presently. (Laughter.)*

***Mr. Snyder:** All right. As to the lighting problem, we have experimented with overhead lighting, but, upon the advice of a number of architects, abandoned it. For two or three days the pupils would like it, and then they would get tired of it.*

***The Chair:** Will someone now please get up and tell Mr. Snyder, who has given us so much information, what the sprinkler can do as a lifesaving device? Mr. Forster?*

***Mr. Forster:** I think it undesirable, with the amount of business before us, to go into that just now. When fires occur no matter where they may break out, if we have sprinklers to extinguish them we will have better protection to life; although it is perfectly true, as Mr. Snyder says, that we should have good exits. That is fundamental.*

***Mr. Snyder:** I agree with that.*

***The Chair:** Is there any further discussion on this phase of the subject,– the question of exits and construction–before we take up the question of housekeeping?*

***Mr. Richard L. Humphrey**, Philadelphia: Has the question of ramps been considered for the inside of school buildings?*

Mr. Snyder: *It would cost too much for floor space to introduce ramps. I once planned a building ten stories high with ramps in mind, but found it could not be done with any economy at all.*

The Chair: *On account of the question of space.*

Mr. Humphrey: *I understand that we are discussing school houses up to four stories or thereabouts, so that a ten-story building would not necessarily apply. I would like to say a word in defense of ramps. The stairway requires some thought or volition to use, and in some cases necessitates a landing. A ramp can be constructed in such a way as to make it the ideal construction for schools. The question of space ought to be secondary to the question of safety to life.*

Mr. A. C. Hutson: *I am lucky enough to have a few children. It has been my experience that when we take a trip over to New York through the Hudson Terminal where there is a beautiful ramp, the children generally start running down and frequently fall in a heap at the end of it. They are always tempted to run down hill, and I think they would run down the ramp in a school house. That is merely my opinion, however.*

Mr. Snyder: *There is another point there; it may be physiological and it may be psychological. A child, immediately it begins to walk, uses a stairway, and the child six or seven years old uses the same riser that the adult does. It uses the same height of steps, and by preference the same height of handrail. We equip the stairways with two handrails, the lower one for small children and the higher one for adults. You will remember, we retain some of the habits of the monkey; we can hang on from overhead better than we can support ourselves underneath. The change in direction in stepping from a level to the ramp gives too little time to permit the children to readjust themselves to the descent, while the pause before the first step is taken makes for methodical descent of the regular stairway. I think Mr. Hutson is correct in his explanation of the movements of the child.*

Mr. Humphrey: *I never saw a child that did not run downstairs!*

The Chair: *Mr. Snyder has discussed the enclosure of the staircase and given a contribution from his experience with all sorts of buildings in New York. I wonder if Mr. Miller would care to say a word about that question?*

Mr. Rudolph P. Miller: *It seems to me the most important thing about a building–at least, a school building or any building occupied by a number of people or where people congregate –is that the stairways should be ample, and so far as possible enclosed. There seems to be a difference of opinion between the speakers respecting fireproof school buildings but perhaps there is not, and it only seems so. Mr. Ittner seemed to think that it is not quite so important. Mr. Snyder made a remark that all school buildings should be fireproof. They seem to approach the subject from different standpoints, and I think that perhaps their difference is accounted for in that way. In a congested place in a city, especially a city like New York, I think it desirable that schoolhouses should be of fireproof construction; but I think it is most important to provide ample exits, well built and properly designed and enclosed. Both gentlemen agree that the first essential is to get the children out of the school. If we are going to get them out of the school building in three minutes, then the construction of the building is not of such importance. I mention this because it is not so long ago that there was considerable newspaper discussion over an old school building in New York City that happened to be of frame construction, and the Board of Education came in at the time for a good deal of criticism; unjust criticism, it seemed to me, because in all the discussion I did not find at any time the contention that the exits were not ample to get the children out of the school. They always speak of the buildings as fire traps. Everybody knows a frame building will burn if it once gets started; nobody denies that. But it seemed to me they failed in their criticism, because nobody made the point that the exits were not ample. I believe they were ample, and for that reason I felt all through that discussion that the criticism against the Department of Education at that time was unjust. The enclosure of staircases has always seemed so important to me that when I was in an official position where I could control such matters somewhat it was my policy to make concessions in other directions if possible for the sake of getting enclosed staircases. It was not until recently that the New York Building Code required this except in some few instances, and then the only way to get it was by making concessions in other directions.*

Prof. Woolson: *May I ask just one more question? I noticed in the diagram of the schoolroom on Mr. Ittner's drawing that the doors leading from the schoolroom open outward. I therefore assume that is the method recommended by Mr. Ittner. On the other hand, I have been informed that in Mr. Snyder's practice, in some cases at least, the Board of Education of New York has recommended that the doors from the classroom open inward. I would like to ask Mr. Snyder if that is still the practice and if he still recommends it?*

Mr. Snyder: *That is the practice in all the buildings that have been altered. All doors were ordered to open into the room. In many buildings the doors still open out into corridors. This matter has been argued very frequently. But our experience (and we watch these things very closely), indicates that a classroom of boys, twelve or fourteen years of age, is under the absolute control of a ninety pound teacher when the door opens in, and she has no control when the door opens out. (Laughter.)*

Mr. H. O. Lacount, Boston, (Associated Factory Mutual Fire Insurance Companies): *Mr. President, the discussion would seem to indicate that if a fire starts it will make considerable headway before the firemen arrive. The speakers have not emphasized very emphatically the value of the automatic sprinkler. I would like to call attention to a bit of experience. There are about 3,000 industrial plants, the largest plants in this country, protected by automatic sprinklers, in which there are working every day about one and a half million people. A good proportion of these plants are textile factories in which fire, if it should start, would naturally spread rapidly. These buildings are not well provided with exits, and yet in thirty-five years the loss of life due to fires reaches the large total of five!*

Mr. John F. Ancona, Rochester (Eastman Kodak Company): *I have not the exact figures, and will have to depend on my recollection but I would like briefly to state a few facts in regard to sprinkler protection in some schools. The city of Buffalo has installed sprinklers in forty or fifty schools, and as I remember it the local Board of Education stated that this was done to prevent loss of life by fire. Jamestown has about twelve schools that are sprinklered; Binghamton has either twelve or sixteen, and Amsterdam has nine. These sprinklers were installed throughout the basements only. The buildings were of wooden construction, each having a basement, and in three cases out of four, as I recollect it, the installation was demanded by ordinances enacted by the municipal authorities. Three out of the four Boards of Education stated in a communication on the subject that the sprinklers were not installed to reduce the insurance rate or for any financial purpose, but were put in purely under the impression that they would greatly reduce the hazard to the children in the building. I would like to ask if Mr. Ittner has done anything in St. Louis to protect his wooden buildings with the automatic sprinkler?*

Mr. Ittner: *We have installed no sprinkler systems in the St. Louis schools as yet. We depend rather upon the safety of our buildings; in erecting low buildings having large hallways; providing ample stairways and exits, and, above all, irreproachable housekeeping.*

Mr. W. O. Teague, Boston (Factory Mutual Laboratories): *The value of the automatic sprinkler as a life saver is so well known and admitted that further emphasis is scarcely necessary; but it is interesting to know that sprinklers are installed on some ocean liners, Sound steamers and river boats for protection to life. It seems to me that special application of the sprinkler might be considered a valuable testimonial.*

Mr. Derrick Hubert, Architect (Non-member): *I would like to ask Mr. Ittner or Mr. Snyder if there has been any comparison made of the virtues of fire department alarms and fire drill compared with the automatic sprinkler? Another question also: in unilateral lighting how far back should the windows start from the teacher's side of the room to prevent a glare from the other side of the room, and also on the blackboards?*

The Chair: *The first question refers to the fire alarm system and fire drills as preventive means, in comparison with the automatic sprinkler. The other question is really not pertinent to the discussion, Mr. Hubert, because it does not relate to fire prevention and would lead us from our subject. Mr. Snyder, what system of fire alarms have you adopted in your schools?*

Mr. Snyder: *After long and careful consideration we finally agreed on definite signals given at situations distributed at various points throughout the building, so that when we push the button it automatically dismisses the school. The administrative side of the department, that is, the teaching force and principals, wanted when they went out, to know where the signal was given, but we finally brought most of them to realize that this is not important. The thing they should know is that it is their duty to get out, and to go without stopping, because our rules are that there is not anybody, principal, teacher, pupils or janitor, who has any business stopping to fight fire. Their business is to get out and let the fire department take care of the building.*

Mr. J. E. Lyons: *May I ask where the buttons are located?*

Mr. Snyder: *In a building say 200 feet long, there are two or three distributed at various points in the corridor, and in the basement, in the boiler room and various other points, but none in the rooms.*

The Chair: *They are in the corridor?*

Mr. Snyder: *Yes, sir, and are visible and painted red, so that everybody will recognize them, like the "break the glass" type.*

The Chair: *Unless there is someone else who desires to make a point in connection with the addresses, I will call the next topic, "Care of School Buildings," which is intimately related to the subject that we have been discussing. Mr. S. A. Challman. (Applause.)*"

There are two particular points of note in the discussion above. First, the reference to 22 inches as being the width of a single file of occupants utilizing a stair. Second, the reference to the statistics regarding the number of fire fatalities which occurred in buildings protected by a sprinkler system.

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