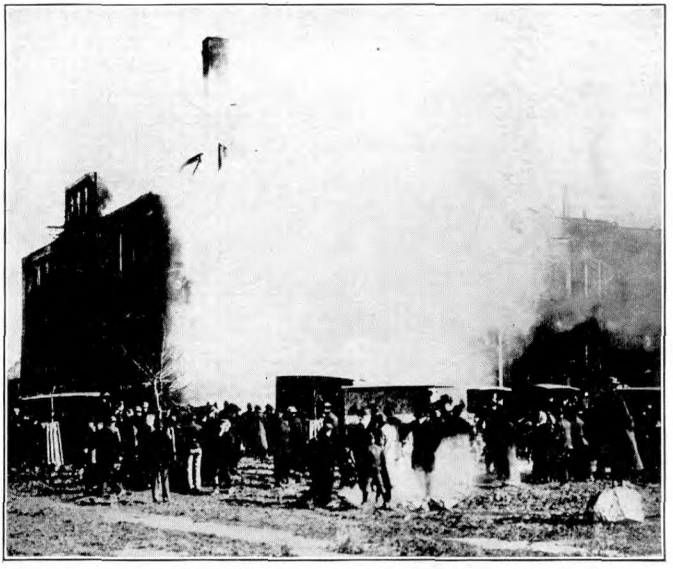
E132

FIRE PROTECTION IN PUBLIC SCHOOLS



Collinwood, Ohio, Where 173 Children Lost Their Lives

DIVISION OF EDUCATION
RUSSELL SAGE FOUNDATION
130 EAST TWENTY-SECOND STREET, NEW YORK CITY

Price 10 Cents

8-13-25

BEAUTIFUL EXTERIORS DO NOT EXCUSE COMBUSTIBLE INTERIORS

Courtesy of Safety Engineering

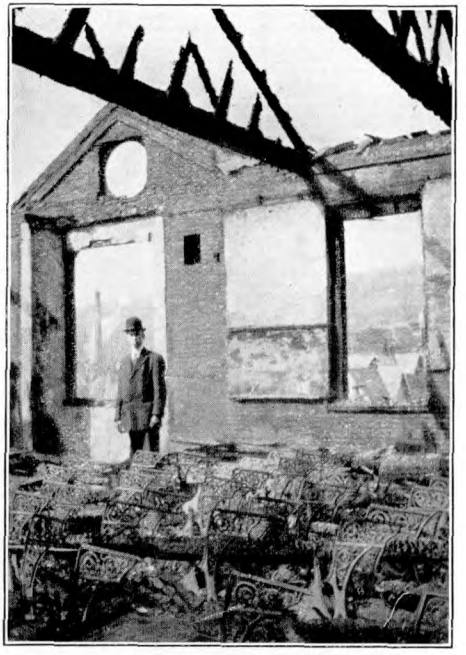
Public school, Rochester, N. Y. Exterior of brick, interior of Georgia pine. Fire started under stairway while classes were in session. The 700 children and 20 teachers escaped because of efficient fire drill. Loss, $50,000.

Make all buildings panic-proof, all new buildings fireproof, and all old buildings fire-retarding.

The use of non-combustible material for exterior walls does not insure safety from fire. Wooden walls may blaze within a concrete shell, as wooden logs blaze within an iron stove. In each case the flames are fanned by a draught. Draughts are dangerous. Isolate stair-wells and air-shafts by fireproof walls and doors. Cut the attic in half by a partition. Avoid draughts everywhere.

Don't Build Your Schoolhouse as you Build a Stove.

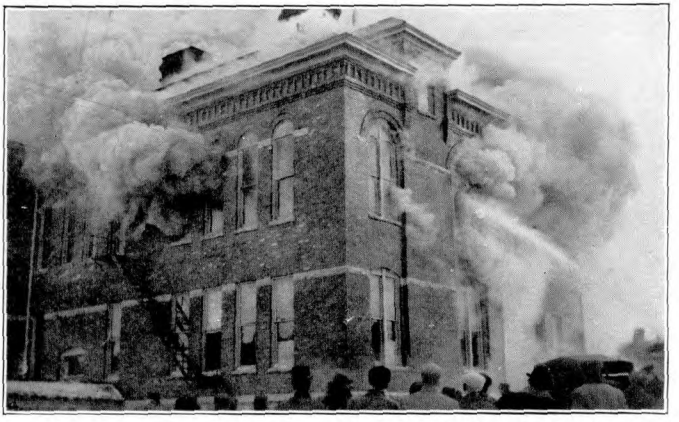
Fire caused by defective wiring, Coatesville, Pa. Three stories, brick, combustible interior. Flames spread through funnel formed by stairs and open cupola at top. Photographs show class rooms on second and third floors. Fire occurred when school was not in session.



Courtesy of Safety Engineering

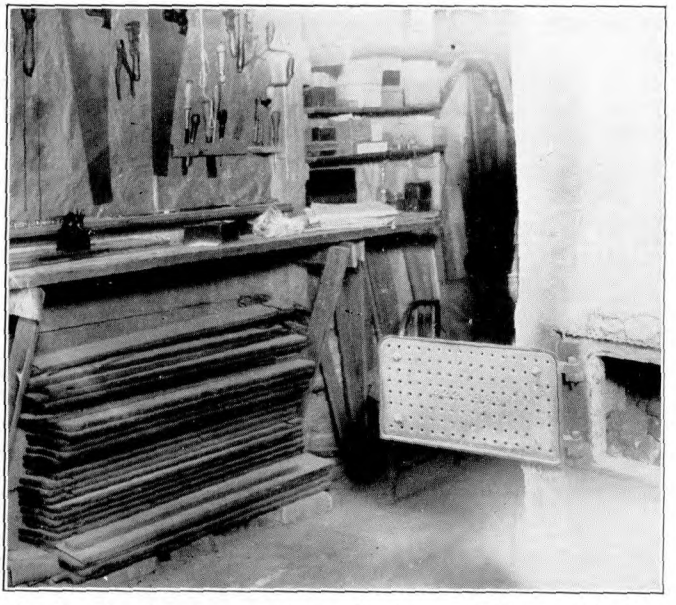
Most children escape being burned to death because most fires occur when schools are not in session.

Courtesy of Safety Engineering



Courtesy of Safety Engineering

Two story brick building, Fort Dodge, Iowa. Fire caused by overheated furnace. Good fire drill saved children. Loss, $27,000.



Wooden floor beams (not shown in photograph) are 18 inches above this furnace. School built entirely of wood, two stories and attic. No fire protection. Fire apparatus two miles away. Work bench and lumber close to furnace door.

Courtesy of Safety Engineering

High School, Old Forge, N. Y. Three stories, all wood. Fire in evening, caused by overheated furnace. Flames spread through open stairs. Building totally destroyed.

Basement fires spread through open stairways

Brick, two story school in Lebanon, Pa. Fire started in basement and spread through stairs and ventilating ducts. Fire on Sunday. Loss, $13,500.

Courtesy of Safety Engineering

Both fires started in the basement. Automatic sprinklers would have put them out. Water pipes, provided at intervals with sprinkler heads, and connected with tank or public water main, should be installed in basements, under stairways, and in supply rooms. Each sprinkler head is sealed with solder. Each head has fire alarm connection with janitor's office and local fire department. Heat from fire melts seal, releases valve, sounds alarm, and drenches flames with water.

Automatic sprinklers fireproof combustible buildings.

Safety results from two things—careful thought and thoughtful care.

Basement of a rural school in New England. Waste paper, old furniture, ashes, and coal heaped together in a low cellar, close beneath wooden floor beams.

Don't throw hot ashes into wooden bins or barrels.

Courtesy of Safety Engineering

A typical fire trap. Two story wooden building in Ripon, Wis. Fire started in basement. No lives lost because fire occurred during noon recess when building was unoccupied. It is not known what caused the fire. Perhaps the furnace was overheated. Perhaps some one threw a cigarette into the waste-basket. Perhaps a rat gnawed the match-box. In schools like this, danger is ever present. Some one should have been on guard.

People living in fire-traps cannot afford to take chances.

High school door in East Orange, New Jersey, equipped with panic lock. Pressure on any part of the horizontal bar unfastens bolts and causes the door to swing open. Every school in East Orange is supplied with similar locks.

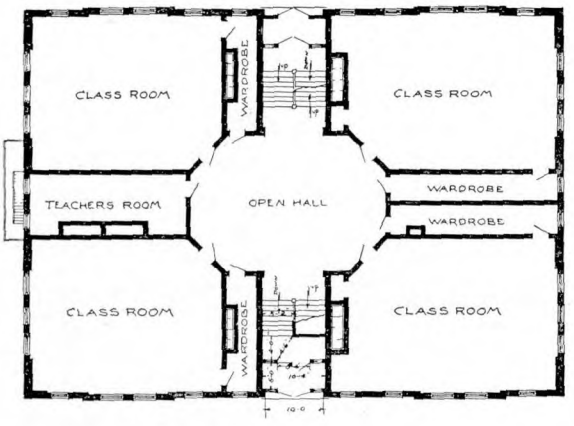
It should be impossible for a child to find himself "locked in." Self-releasing devices, such as the panic bolts used in East Orange, are desirable, but where they are not used it is essential that other door fasteners be provided which can be opened from the inside at will.

Bolts should bar entrance, not exit.

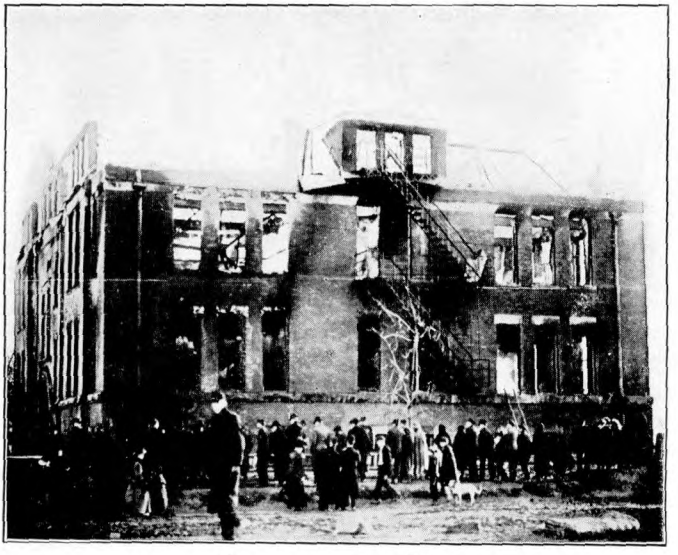
Courtesy of C. B. J. Snyder

SINGLE DOORS, OPENING OUTWARD

Main entrance of the Washington Irving High School, New York City, showing "railroad" or single doors, side by side, swinging outward. These doors are generally used in the large railroad stations because they are more efficient in handling crowds than the old style double doors.



Lakeview School, Collinwood, Ohio. Burned, March 4, 1908. Fire started in basement, by steam pipe resting on wooden joist. Teachers gave fire drill signals. Children on first floor escaped. On upper floors teachers stood at classroom doors, but children escaped through dressing-rooms, in rush for back stairway. At foot of stairs, doors were double and swung outwards. One side was bolted. Children rushed down stairway, and became wedged against vestibule partition so tightly that it was impossible to extricate them. Meanwhile, the draught carried flames up front stairs and across central hallway. Before partitions could be broken down 173 children and two teachers burned to death.



HUNTING FOR THE DEAD

The Collinwood school was of brick, with wooden floors and partitions. Doors were double and to left of stairway. They should have been single and directly opposite stairway. Storage closets stood under stairs. Heating apparatus was defective, and cellar was not fireproof. Upstairs wardrobes opened directly into hall, removed from teachers' control. At opposite sides of building were open wooden stairs.

There was no automatic fire alarm, and no signal connection with fire headquarters. Fire was discovered by a passerby, and word sent to local authorities by telephone.

The Collinwood tragedy was not the result of unusual carelessness or unusual construction. It could be repeated today in every state in the Union.

Responsibility for seeing that it is not repeated rests heavily on the members of the school board, who are charged with providing proper education for the community's children. The school board is responsible for seeing that all school buildings are panic-proof, all new buildings fireproof, and all old buildings fire-retarding. It must provide funds and supervise construction. Its members must be thoroughly acquainted with the principles of fire protection.

The superintendent is responsible for knowing the condition of all school houses; for calling needed changes to the attention of the school board; for collecting and placing at the disposal of its members such information as may help in the discharge of their duty; and for instilling the spirit of watchfulness and care in the work of his subordinates.

The principal is responsible for requiring frequent fire drills, careful janitor service, and unceasing vigilance on the part of teachers and children.

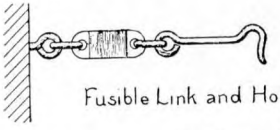
The people are responsible for demanding that the officials whom they have charged with the education of their children provide adequate fire protection in all school buildings.

Grammar school in rich suburban town near New York. Stairway in center, with long hall leading to front entrance, and narrower halls to side entrances back of stairs. Stairs are of wood, with no separation from rest of building. They are steep and too wide. A hand rail is needed in the middle. Three stairways from the upper floor join the main stairway on a narrow landing at the same point. One of these leads to assembly room on top floor at rear. Doors of assembly room open directly upon stairs, with no landing. Outside doors open inwards. Conditions in this school are no worse than in hundreds of other modern school buildings.

COSTLY, TRICKY, TREACHEROUS

Build assembly rooms on ground floor. This makes easy egress possible.

Courtesy of C. B. J. Snyder



Fusible Link and Hook.

Stairs enclosed in wire glass, New York City. Doors held open by hooks attached to fusible links which melt in heat of fire.

Stair and Exit Rule of New York City

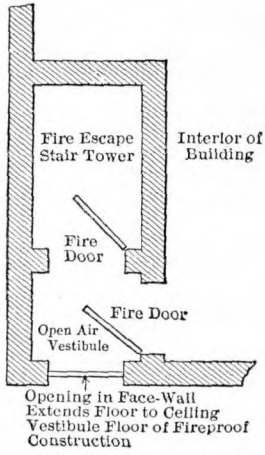
1. All school buildings of two or more stories in height shall have at least two stairways. The number and width of stairways shall be apportioned as follows: Four feet for the first 50 pupils and six inches additional width for each additional 50 pupils.

   Note: The number of stairways shall be sufficient to permit of building being vacated in orderly manner within three minutes from sounding of signal. Most fires spread rapidly. Any longer delay may result in exits being cut off.

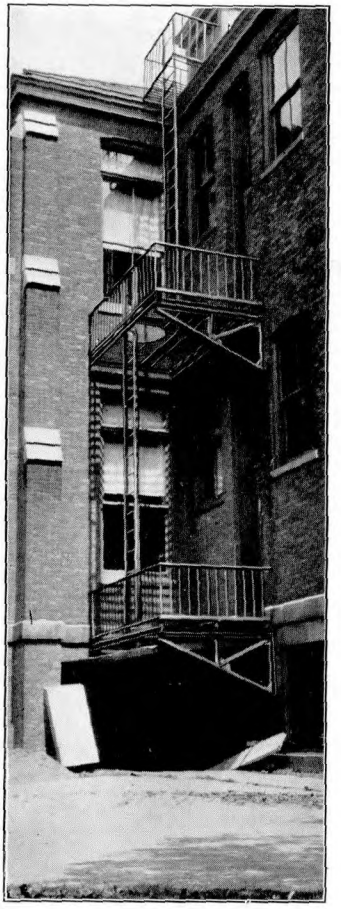
2. In estimating number of occupants for each story, an allowance shall be made of 15 square feet of floor space per person per class room.
3. Stairs shall not be less than four feet nor more than five feet in width between strings. The four-foot width for elementary schools is perferable. Width is fixed at four feet to prevent a third line of pupils without handrail support.
4. There shall be a handrail on each side.
5. No closets shall be placed under stairs. Where they exist they shall be kept empty and locked.
6. All stairs shall be enclosed in wire glass and steel or other fireproof partitions from top to bottom, access being by means of self-closing fireproof doors. These doors are held open by fusible links.
7. There shall be an allowance made of 15 lineal feet width of doorways for the first 500, and 6 inches additional width for each 100 additional persons. These widths should be increased by 50 per cent. if there be an auditorium on the first floor, or basement which has not direct exits.

SAFE, AND EASY TO DESCEND

Fire escape at left similar to that on page 13. Note high protecting sides, firm landings, hand rails, solid treads and risers. Steps lead to ground, and are closed by iron gate, unlocked and hooked back during school hours. Glass doors instead of windows give access to fire escape.



MODERN FIRE ESCAPES ARE INSIDE, NOT OUTSIDE, BUILDING



DANGEROUS AT ANY TIME, PERILOUS IN CASE OF FIRE

In panics people try to escape by the exits they commonly use. Properly built stairs make the best fire escapes.

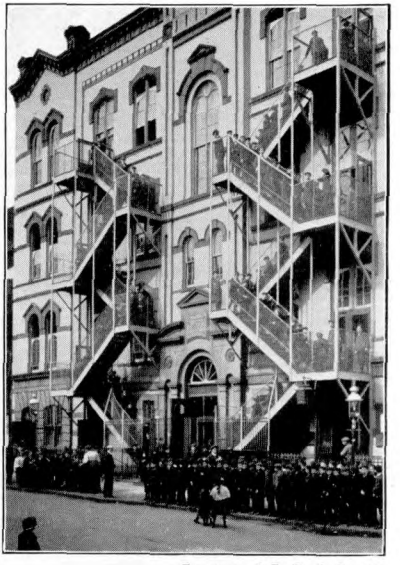
Rules for Fire Drill

Dismissal Call: Three strokes of gong, repeated three times, with pause between each repetition.

Teachers go immediately to door and open it. Girls form line at rear of room, boys at front, ready to pass out together. All classes ready in 10 seconds. Do not pause for wraps.

Janitor stands on first floor near front stairs.

Floor Signals: One stroke for first floor, 2 for second, 3 for third. At one stroke, first floor classes leave building rapidly by nearest exit. At two strokes, second floor classes leave by nearest stairway. At three strokes, third floor classes leave by nearest stairway. Classes pass down, two persons abreast, without hurry, crowding, or pushing, and out by nearest exit. Drill shall be so arranged that lines of pupils do not intersect. Teachers lead classes. Monitors march at end of line, and see that no pupils are left in class rooms. Each class starts down stairs when end of class in front reaches first landing. Pupils march directly away from building.



Courtesy of C. B. J. Snyder

Fire Drill in New York City Public School

Other Details: All doors shall be unlocked, and gates unlocked and hooked back, during school hours.

Principals shall see that fire escapes are cleared of ice and snow immediately after each storm.

Arrange signaling apparatus so that it can be sounded from every floor. Train all teachers to give signals.

Call fire drills at least once every two weeks. Have them occur without warning:

when exercises are being held in assembly room,
during any one of the recesses,
while all pupils are in class rooms,
when one or more exits may be supposed to be blocked.
where the peril may be assumed to be imminent to a particular part of the school.

Drills shall include frequent practice in descending fire escapes.

Report every drill to school superintendent, giving form of drill, and time elapsed between first signal and exit of last person.

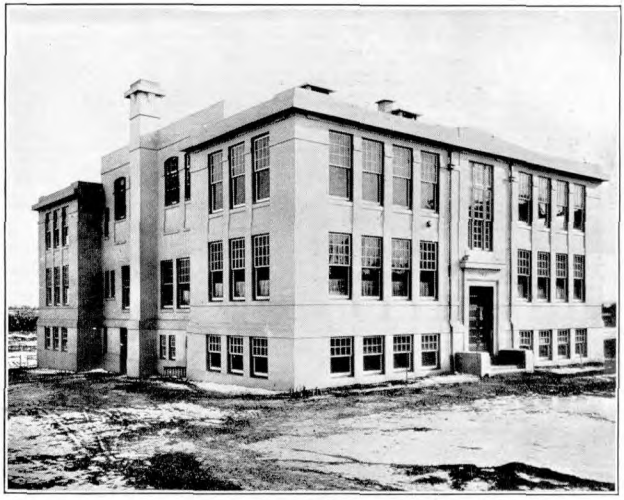
Looking down main stairway, New England rural school. Steep wooden stair, no hand-rails, dangerously congested with clothing. Building of wood. Furnace in cellar close to wooden floor beams. In case of a quick fire it would be almost impossible for children to escape by means of this stairway.

Obstructions mean delays. Delays cost lives.

If You Have An Old School Building

1. Transform stairs into fireproof exits by following "rule" on page 11. See that stairs lead directly to outer doors, even if their location has to be changed.
2. Make basement ceiling fireproof.
3. Abolish double doors. Substitute single doors, swinging outwards, side by side, and equipped with "panic bolts." Absolutely prohibit fastening of any outside door during school hours.
4. See that ashes, waste paper, and other rubbish are placed separately in metal, self-closing receivers, and removed from building at close of each day.
5. See that building is equipped with:
   a. automatic fire alarm,
   b. complete system of fire signals,
   c. signal connection with fire headquarters.
6. Require halls to be kept absolutely free from lockers, tables, chairs, and all other obstructions.
7. Insist on a fire drill every two weeks.

This concrete building, erected in Nutley, N. J., cost less than brick and wood; possesses every modern feature; and safeguards the lives of the children.



Courtesy of John T. Simpson

If You Are To Have A New School Building

1. Employ an architect who knows what it means to erect a fireproof building and then—

2. See that his plans call for:
   a. fireproof construction
   b. building of not more than three, and if possible not more than two, stories
   c. if a large school, each floor constructed with fireproof partitions, so that one section may be completely shut off from the rest
   d. heating plant separated from rest of building by fireproof walls, ceilings, and doors
   e. assembly room on ground floor
   f. attic cut by at least one partition, to prevent draughts
   g. stairs located at opposite ends of building, and leading directly to exits
   h. stairs built according to the "stair rule" on page 11
   i. halls wide, well lighted, and absolutely free from obstructions
   j. outer doors furnished with "panic bolts" which can be opened from inside by slight pressure
   k. automatic sprinklers in store room and fuel room

   and then—

3. See that the building is constructed according to the specifications.

STATES HAVING GOOD LAWS SHOWN IN WHITE. THOSE HAVING POOR LAWS SHOWN IN BLACK AND WHITE. THOSE HAVING NO LAWS SHOWN IN SOLID BLACK. DATA FOR 1912.

"We Average

3 theatres
3 public halls
12 churches
10 schools
2 hospitals
2 asylums
2 colleges
6 apartment houses
3 department stores
2 jails
26 hotels
140 flat buildings, and nearly
1600 houses

burned up or partially destroyed

EVERY WEEK IN THE YEAR."

(Cyclopedia of Fire Prevention and Insurance, Vol. I, p. 67)

In your community does daily school attendance mean daily danger of death?