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OF AGRICULTURE AND MECHANIC ARTS
OFFICIAL PUBLICATION

Vol. XXIV
24

March 24, 1926

No. 43

TRAINING FOR FIREMEN

By RAY TILLER

Presented at the First Short Course for Fire Fighters
at Ames, Iowa, October 13 to 16, 1925



Bulletin 81
WITHDRAWN

ENGINEERING EXTENSION DEPARTMENT
IOWA STATE COLLEGE
AMES, IOWA

Published weekly by Iowa State College of Agriculture and Mechanic Arts, Ames, Iowa.
Entered as second-class matter, and accepted for mailing at the special rate of postage pro-
vided for in Section 429, P. L. & R., Act of August 24, 1912, authorized April 12, 1920.

THIS publication contains one of the papers presented at the first Short Course for Fire Fighters, held at Iowa State College on October 13 to 16, 1925, under the auspices of the Engineering Extension Department. While it will not be possible to issue all the valuable material presented at this meeting, certain of the other papers will probably be published.

It is planned to hold short courses on fire fighting annually. The names of those who apply will be placed on a mailing list to receive full information concerning future courses.

TRAINING FOR FIREMEN

By RAY TILLER
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Even though a municipality may purchase the best of apparatus and equipment for its fire department, in the hands of untrained men it will be of little value. Firemen should be given careful and thorough instruction and training. The training work should be given under conditions as similar as possible to those the firemen will be apt to encounter while doing real fire duty.

The Training School

The training school should be located on a large open space provided with fire hydrants connected to a city water main. It should have a building at least four stories in height, and provided with both ladder and stairway fire-escapes. Both an outside stand-pipe and an inside stand-pipe should be provided; and these should be of the type required by the local building ordinance. This building should contain a smoke-room with glass partitions for use in training men in the use of smoke masks. It should also have a room equipped with a sprinkler system, so that the water can be released in order to show the system in operation. Duplicates of all the tools used in the fire department should be kept at the school, so that the firemen may receive instructions in their use and care.

The fire department should also have a drill tower at least four stories high, provided with a double row of windows on each floor and a net about six feet from the ground and twenty feet square. The tower is used for scaling-ladder work. This is great work for firemen. New men that can hardly get off of the ground, after a week of training with scaling ladders, will be able to go any place on any ladder. The use of scaling ladders gives them a great deal of confidence in their ability to climb.

Of course, there are a great many cities that cannot afford such a drill tower or the equipment necessary to train their men properly. That is the condition that the Waterloo Fire Department was in, but a three-story building on a dead-end street was found and permission to use it obtained. A platform was built on the roof and for several years it has been used for about two months each year. The instructions that follow describe the various evolutions used in this training.

Ladder Evolutions

(1) **Raise a 25-foot Beam Ladder with Two Men.** The ladder is laid on the ground parallel with the building, with one beam on the ground and with the butt of the ladder opposite the point to which

the ladder is to be raised. The distance from the ladder to the building is seven feet. (The following rule is used for placing the butt of ladder at the proper distance from the building: Divide the length of the ladder by five and add two. Example: The ladder length, twenty-five feet, when divided by five gives five feet, which is increased by the addition of two feet to make seven feet.)

One man, in order to butt the ladder, places his foot on the bottom end of the beam next to the ground, and grasps the upper beam about three rungs from the bottom of the ladder. The second man grasps the upper beam about eight feet from the top of the ladder, raises the ladder above his head so that he can place his hands on the lower beam, and walks toward the man who is butting the ladder. When the ladder reaches an upright position, each man places a foot on the lowest rung of the ladder on the side of the ladder away from the building and grasps a beam. Then the ladder is lowered against the building.

(2) **Raise a 35-foot Extension Ladder with Four Men.** The ladder is laid on the ground parallel with the building and at the proper distance from it, with the working side up and the butt opposite the point on the building to which the ladder is to be raised. Two men, in order to butt the ladder, each place a foot on the bottom rung and grasp a beam of the ladder at about the third rung from the bottom. The other two men each grasp a beam of the ladder, one on either side about six feet from the top end, and raise the ladder above their heads, placing their hands on the beams and walking toward the butt-men. When the ladder reaches an upright position, the men each place one foot on the lowest rung and grasp a beam, pivoting the ladder on the left beam and turning it a quarter of the way around, so that the ladder faces the building. One man raises the fly to the required height, and the ladder is lowered against the building. The ladder is then taken down, reversing the operations just described.

(3) **Raise a 50-foot Extension Ladder with Six Men.** The ladder is laid on the ground as in the case of the 35-foot extension ladder. Two butt-men take their positions at the butt of the ladder. Two beam-men take their positions about twenty-four feet from the butt of the ladder. Two pole-men take their positions about twelve feet beyond the top end of the ladder. The butt-men release the poles and turn them over to the pole-men. The pole-men catch the ends of poles. The butt-men each place a foot on the lowest rung, grasping the beams of the ladder at about the third rung. The beam-men then raise the ladder above their heads, placing their hands on the beams and then walking toward the butt-men. When the ladder makes an angle with the ground of about 35 degrees, the pole-men push up on their poles and run toward the butt-men, keeping directly under the ladder. When the ladder reaches an upright position, the beam-men and the butt-men each place one foot on the

lowest rung and grasp a beam. The beam-men should face the butt-men. The inside pole-man walks a quarter of the way around toward the building, while the outside pole-man pulls the ladder over slightly, pivoting ladder on one beam. The beam-men and the butt-men turn the ladder a quarter of the way around, and the outside pole-man takes his position between the ladder and the building, beside the first pole-man. The beam-men then grasp the rope and raise the fly to the required height. The pole-men back away from each other, lowering the ladder against the building. The ladder is left against the building for the evolution described in the next paragraph.

In taking down the 50-foot ladder, six men hold it in an upright position, keeping their usual positions. Then a second company of six men climb the first section of the ladder, still unsupported by the building, and come down on the opposite side of the ladder.

(4) **Scale the Building, using a Roof Ladder.** The building is sealed to the roof and back to the ground, using a 12-foot roof ladder with roof hooks, hooking the ladder from a window onto the roof platform.

(5) **Lay Hose, and Take It up the Ladder to the Roof.** At the starting signal, one company of six men removes the 50-foot ladder from the truck and raises it in the proper manner to the roof, while a second company lays two hundred feet of 2½-inch hose from a hydrant in the street (using a hose-truck), and carries the hose up the ladder to the roof, using hose-straps. The first man places the hose on his left side, with the nozzle passed over his right shoulder and hanging on his back. The second man places a hose-strap around the hose and then over his left shoulder, at a point twenty-five feet behind the first man. The other men use hose-straps on the hose at intervals of twenty-five feet in the same manner as the second man. The hose is then carried up the ladder to the roof, fifty feet of the hose being taken on top of the building. The hose is secured to the ladder in the proper manner, and water is called for.

Hose Evolutions

(6) **Take Hose to the Roof, using a Pike Pole.** The pike pole is equipped with a hose-strap on one end. The company lines up and at the signal, all the men start at once. A man takes his position at each window, with two men on roof. The pole is attached to the hose just back of the nozzle and then passed up from man to man until the men on the roof secure it. Each window-man, after passing up the pole, helps to lighten up on the hose. When fifty feet of the hose reaches the roof, word is passed down to secure the hose. When properly secured at the roof and at the windows, water is called for.

(7) **Take Hose to the Roof, using a Rope and Hose-Hoist.** The company lines up. At the signal to go, three men go to the roof, one

carrying the hose-hoist and one the coiled rope. One end of the rope is dropped from the roof and secured to the hose just back of the nozzle. The hose-hoist is placed in position and the hose pulled up to the roof, using the rope over the hose-hoist roller. When fifty feet of hose has been pulled up onto the roof, the hose is secured and water is called for.

(8) **Take Hose up the Ladder to the Second Floor, and up the Inside Stairway to the Third Floor.** At the signal to go, each man attaches a hose-strap to the hose on the ground. The hose is then carried up the ladder to the second floor of the building, and about one hundred feet of hose pulled onto the floor. The hose line is then charged, and the charged line taken up the inside stairway to the third floor, where water is thrown out of a third-floor window. The water is then shut off and the hose broken on the ground, allowing the water to drain out of the hose before it is removed from the building.

(9) **Carry a Rolled Length of Hose to the Roof, Connect to the Stand-Pipe, and Throw Water.** The length of hose should be rolled double from its middle point, using a strap to secure the roll. This rolled length of hose is called a "doughnut." Three men are used in this evolution. At the signal, the ring on an ordinary hose-strap is pulled through the rolled length of hose, and the strap passed up the left side and over the right shoulder of the hose-man. The hose is then raised from the ground onto his back, and the hook in the hose-strap is attached to the ring, thus securing the hose to his back. One man goes to the roof with the nozzle and helps the hose-man to make connections on the roof. The third man connects the length of hose on the ground to the lower end of the stand-pipe, and then calls for the water. Not having a stand-pipe on its building, the Waterloo Fire Department now uses a length of hose secured to the roof as a stand-pipe.

(10) **Use a Hose-Clamp to Shut Off Water.** A section of hose is removed and replaced with another section. The first section is supposed to be a bursted length of hose.

(11) **Setting Up a Cellar-Nozzle.** The cellar-nozzle is set up on a platform about six feet above ground. The water is shut off with a hose-clamp, the hose connected to the cellar-pipe, and water thrown. The revolving cellar-nozzle is also used in the same manner.

Pumper Evolutions

(12) **Cut in the Pumper at a Hydrant, using the Soft Suction-Hose, and Throw Water through Two Lines of Hose.** Two lines of 2½-inch hose, each two hundred feet long, are laid on the ground, connected to a hydrant, and the water turned on. At the signal, the engine company puts their pumper in the proper position at the hydrant, shutting down the hydrant, taking the lines off of the hy-

drant, connecting the suction-hose to the hydrant, turning the water on, and raising the pressure with the pumper to 100 pounds.

(13) **Replace the Soft Suction with the Solid Suction, using a 2½-inch Hydrant Nozzle in place of the Steamer Connection.** At the starting signal, the water is shut off, the soft suction removed and replaced with the solid suction (using a 2½-inch reducer on the suction-hose), the water turned on, and the pump pressure raised to 100 pounds.

(14) **Remove the 2½-inch Reducer on the Suction-Hose and Attach the Suction-Hose to the Steamer Connection on the Hydrant.** At the starting signal, the hydrant is shut down and the necessary changes made. The hydrant is then turned on, and the pump pressure raised to 100 pounds.

(15) **Set up a Deluge Set, Connect it to the Large Pumper, and Throw Water.** The deluge set is set up, using the hose-clamp. The nozzle is removed from one line, and the line connected to the deluge set. The hose-clamp is placed on the second line, and the nozzle is removed and connected to the deluge set. In this way only one line is shut off at a time, thus maintaining the 100-pound pressure.

(16) **Shut Off Water and Remove Pumper.** One line of hose is picked up, one line connected to the hydrant (using the ordinary nozzle), and water turned on.

(17) **Cut in the Small Pumper 100 feet from the Hydrant, using a Hose-Clamp to Shut Off the Water in One Line.** The pump pressure is raised to 100 pounds. About one hundred feet of chemical hose is run off and water pumped through the 2½-inch hose, using a 1½-inch nozzle, and through the one hundred feet of chemical hose, using the ordinary nozzle. The water is shut off (using the hose-clamp), the pumper removed from the line, and water thrown from the hydrant.

(18) **Replace the Cellar-Nozzle with the Ordinary Nozzle.** The water is first shut off with the hose-clamp. The cellar nozzle is then replaced with an ordinary nozzle. An ordinary twenty-foot beam ladder is then brought up and the hose line attached to the ladder with a hand line or rope, so that it may be used as a cellar-nozzle controlled from outside of the building with a rope.

Each season, after these evolutions have been carried out a number of times, the various companies are timed with a stop watch, water being used on each evolution. Considerable rivalry between the different companies and the company officers results.

The men should be given instructions in hoisting ladders to the roof, in holding life nets and in jumping into them, as well as in sliding down a rope from the roof and from different windows, using a life-belt. They should, of course, be carefully instructed as to the correct name for each tool and piece of equipment in the department, together with its proper care and use.



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