

SOME MODERN APPLIANCES FOR LIFE SAVING AT FIRES.

The most progressive American fire departments have of late given great attention to the subject of saving human life at fires. The size and height of modern buildings and the inadequacy of many systems of stationary fire escapes, despite the notable improvements of the past few years, have rendered well nigh imperative the provision of better facilities for the rescue of persons who in the event of a fire find their escape from the upper stories of buildings cut off by smoke and flames; but it is no exaggeration to say that the accomplishments in this direction have far exceeded anything that might be expected in the rather brief interval which has sufficed for the evolution.

The proverbial courage, energy, and agility of the typical American fireman have assuredly proven an important factor in the development of the present degree of efficiency in life saving at fires; but a very large share of the credit must also be accorded to the ingenious devices, most of them of recent invention, which constitute the working equipment of the present-day life-saving fireman. Of what marvelous celerity of action the firemen life-savers of the United States are now capable was strikingly attested at the Paris Fire Congress of 1900, when a life-saving crew of American firemen were conveyed a distance of a quarter of a mile, scaled a temporary seven-story building by means of ladders, made fast life-lines, and rescued one person from the seventh story and two persons from the sixth story in the total elapsed time of three minutes and forty-two seconds. The speediest foreign crew that essayed to compete with them required over ten minutes to perform the same task.

Of the means and methods of saving life at fires, perhaps the most interesting are those upon which reliance must of necessity be placed when prompt action is necessary and the character of the apparatus at hand is limited. Prominent among the appliances in use in this branch of the field is the life-net. The approved type of net is circular in form and about thirty feet in diameter. It is suspended from a rim of steel, the net being attached by springs which take up the force of impact of a falling body. At a recent apartment house fire in New York city, twenty-five persons jumped without injury into one of these nets, which was supported by eighteen men. Of the number rescued, fifteen jumped from the third story, while the others leaped from the fourth, fifth, and sixth stories of the burning building.

A utensil upon which the scientific fire-fighter places great reliance when called upon to save human life at fires is the scaling ladder, or "pompiers" as it is called. This consists

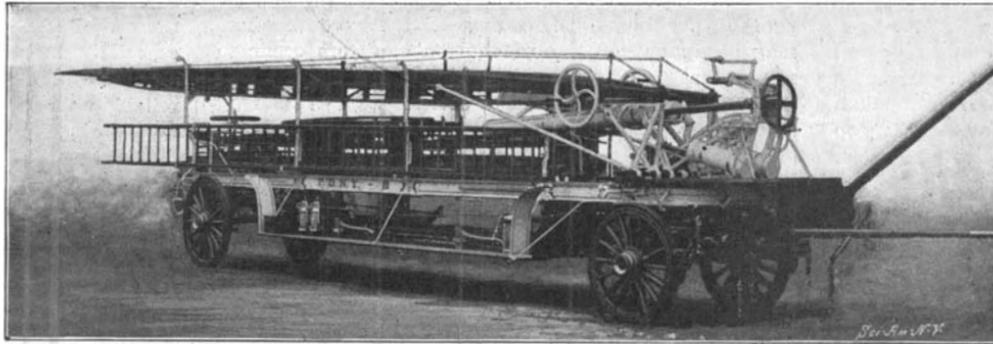
of a 15-foot length of narrow and very tough hickory, with a two-foot steel hook on one end and stout hickory crossbars at intervals of a foot throughout the length of the ladder. The hook, it may be explained, is armed with sharp teeth.

dow-sash of the story above. This operation is repeated until the roof or any desired floor is reached.

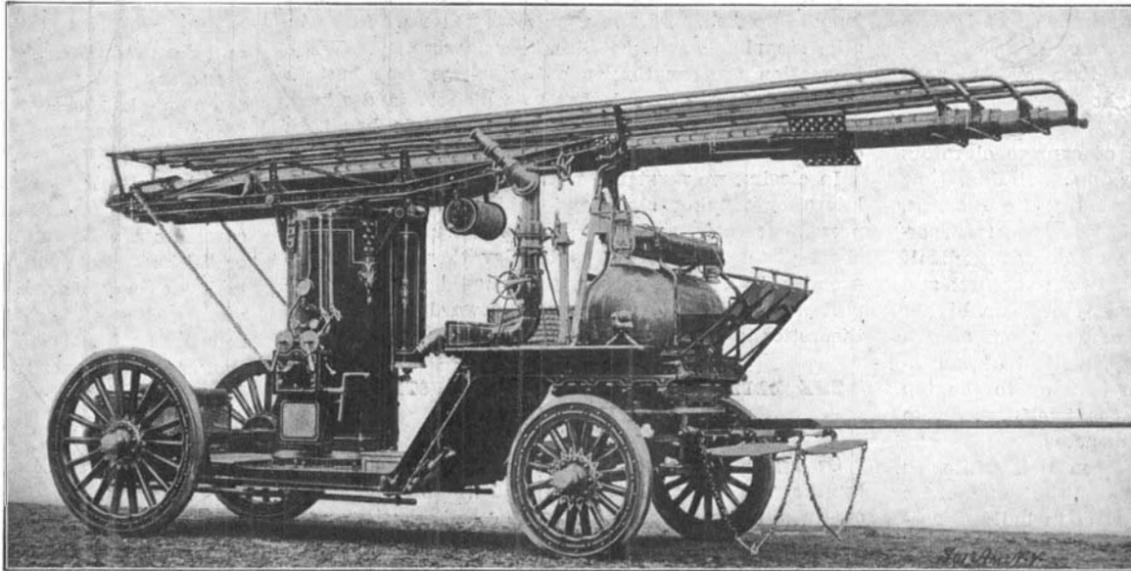
To the uninitiated the mode of operation of the pompiers might appear to constitute a rather slow process, but in reality marvelous speed may be attained by men experienced in the use of these scaling ladders. Indeed, it is accounted only an ordinary accomplishment for a fireman to climb to the top of a five or six story building in less than three minutes by the use of these ladders. Under stress of circumstances an athletic fireman can carry to the ground an unconscious or injured person, using but a single scaling ladder, and descending story by story, but the work is greatly facilitated where several firemen work in conjunction and are provided with a supply of pompiers sufficient to form a sort of chain of ladders from ground to roof.

The life-line constitutes one of the most valuable features of the equipment for saving persons imprisoned in a burning building. One end is usually carried to the roof by a fireman using a pompiers, but if ladders are burned or other exigencies are presented, a life-line gun is sometimes employed to hurl the rope, in the same manner that life-saving crews on the coasts convey a line to a stranded vessel when the sea running will not permit the launching of a boat. The gun employed in fire-fighting work is of a design similar to an ordinary cavalry carbine, but of much heavier construction, the stock being of solid steel. Over the muzzle is fitted a steel cap, to which is attached the strong light line. The main portion of the line is kept carefully coiled in a tin dish with a center core, and when the gun is discharged the cap flies over the top of the burning building, and the line is paid out as rapidly as needed. By means of the light line the heavier life-line is drawn into place on the roof, and attached to a chimney or otherwise securely fastened.

When descending by means of a life-line, a fireman wears a broad webbed belt attached to which is a large steel hook or snap, and around which two or three hitches of the rope are taken. The fireman may, by grasping the rope with his right hand and the hook with his left, descend at any speed desired, and if desired he can carry down a rescued person. However, where the person rescued is unconscious and unable to render the slightest assistance to the fire-fighter, it is customary to follow a somewhat different plan. In such cases the fireman remains on the roof and places the rope about the form of the unconscious man, so that it constitutes a cradle from which it is impossible for him to slip. The man, who has perhaps been overcome by smoke, is thus lowered in safety to the ground, and the operation is repeated until all the imperiled occupants of the building are



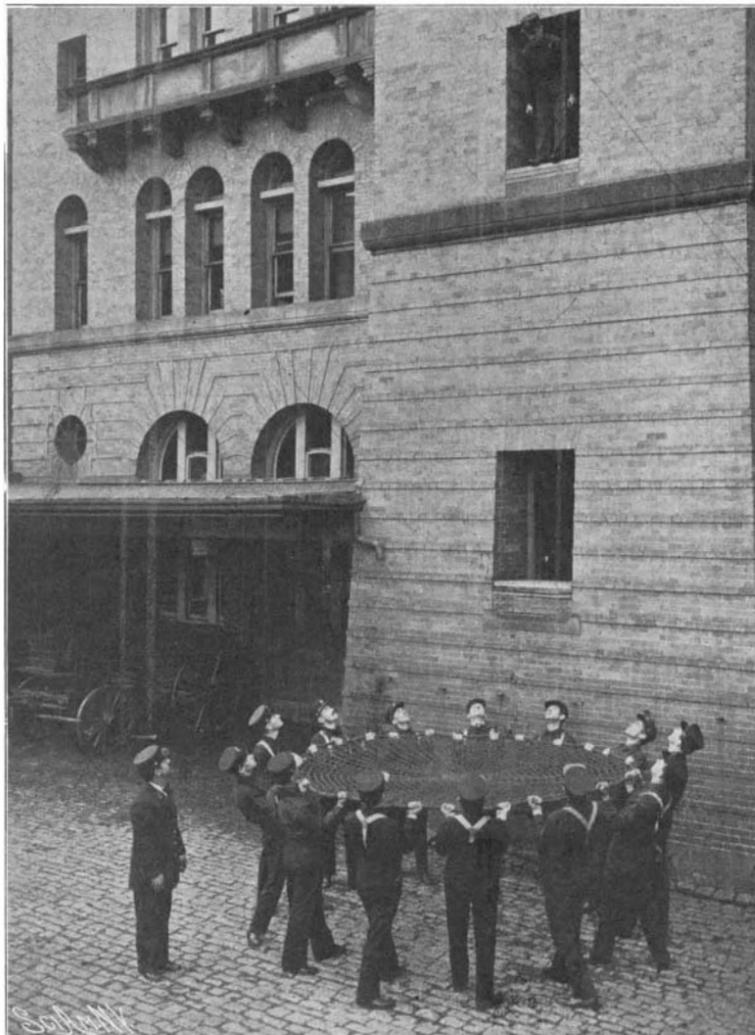
An Aerial Truck.



A Pneumatic Extension Ladder.

By the use of a pompiers, a fireman may rapidly scale the face of any building, without regard to height, ascending story by story. The spike-like projection at the end of the ladder is thrust through a window-sash, and the hook gives it a firm grip on the window ledge. When the ladder has been secured in this position, the fireman rapidly ascends the cross-pieces or rungs, and taking a position on the window ledge occupied by the hook, is ready to draw the ladder up after him, and in turn hook it upon a win-

ning device similar to an ordinary cavalry carbine, but of much heavier construction, the stock being of solid steel. Over the muzzle is fitted a steel cap, to which is attached the strong light line. The main portion of the line is kept carefully coiled in a tin dish with a center core, and when the gun is discharged the cap flies over the top of the burning building, and the line is paid out as rapidly as needed. By means of the light line the heavier life-line is drawn into place on the roof, and attached to a chimney or otherwise securely fastened.



A Jump Into the Life Net.



Rescuing by Means of the Pompiers Ladder.

APPLIANCES FOR SAVING LIFE AT FIRES.

rescued, after which the firemen descend in the manner above outlined.

No other class of fire-fighting apparatus has during recent years undergone such marked improvement as the aerial ladders, which are designed, of course, primarily for use in rescuing the occupants of burning buildings. The ordinary trucks, which formerly carried only plain ladders up to 40 feet in length, are now, as a rule, equipped in addition with 50-foot and 65-foot extension ladders; and the extension ladders, operated by means of cranks, are now made in all sizes up to 90 feet, which renders them capable of reaching to the sixth story of an ordinary building. By means of 85-foot aerial trucks of this pattern, men have reached the seventh story of a building in a space of forty-two seconds. Many minor improvements have lately been made in these ladders, including the introduction of the new shoe irons, which prevent the slipping of the ladder, and permanent dowels on the inside of the shoe irons, which add to the stability of the ladder.

For life-saving purposes, however, there is nothing to compare with the new telescopic

aerial ladders which are operated by means of compressed air. When it is desired to effect a rescue of a person on the roof or on one of the upper floors of a blazing building, the pneumatic ladder is shot into the air to a point just opposite where the imperiled person is standing, the endangered individual steps on to the top round, and the ladder as suddenly collapses, the tubes telescoping gradually but rapidly, and conveying the rescued person to a point near the ground.

The average telescopic aerial ladder is operated under an air pressure of 300 pounds to the square inch, the air tank being located in the center of the truck carrying the ladder. On many ladders there is provided an auxiliary tank with air under 100 pounds pressure, which is used to supply power for swinging the ladder from one side of the street to the other, so

that buildings on both sides of a thoroughfare may be served without serious delay. The truck carrying the ladder weighs about two tons, the heavy construction having been introduced in order to obviate any possibility of overbalancing. Ladders of this pattern of 85 feet extension have been raised to their full height in 25 seconds. Inasmuch as the apparatus is strong enough to carry a dozen men, it is possible to conduct rescuing operations with great rapidity.

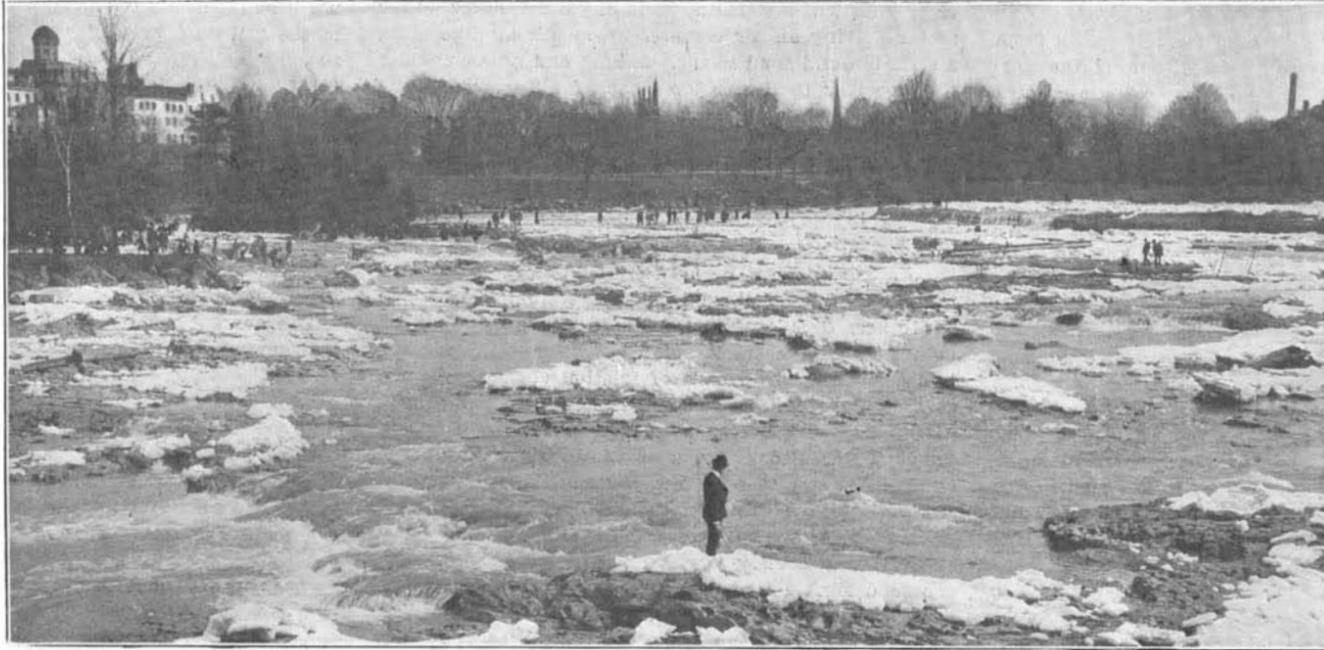
REMARKABLE DIVERSION OF NIAGARA'S WATERS.

BY ORRIN E. DUNLAP.

Despite any fancied or real danger that threatens the

passed all their days at Niagara were amazed that such a thing was possible. Under normal conditions the channel between the mainland and Goat Island is a scene of furiously tossing water that leaps and bounds, tumbles and rolls, over reef after reef in its impetuous rush toward the awful precipice. In this channel the water speeds on at a rate of from fifteen to twenty miles an hour, and in places is twelve feet deep. But on the Sunday referred to, the rocks of the riverbed formed a glorious searching place for the relic and souvenir hunters, who marveled at the wonderful condition wrought by the gathered ice a short distance up stream. It is recorded in the historical annals of Ni-

agara that a similar incident occurred on March 29, 1848, but people who have lived at the Falls ever since then have no recollection of such a diversion of the waters as that of March 22 last. Situated between the mainland and Goat Island nestles pretty Green Island, and it was from this island that the dry rocks were most easily reached by the crowd of pedestrians. Under normal conditions of the river, Green Island is situated in the midst of the turbulent flow, and on each side of it



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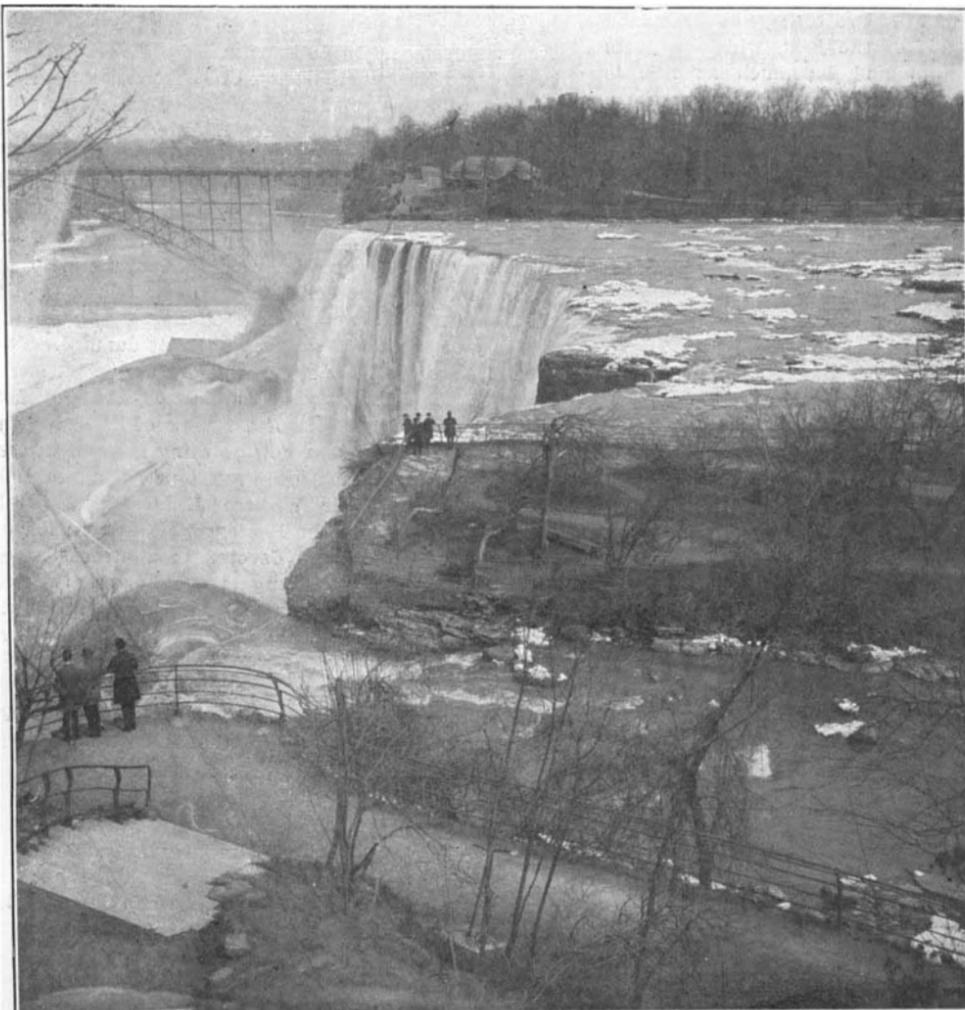
The American Channel Looking Toward the Mainland from Goat Island. The People in the Distance are Walking up the Riverbed at Midstream, where the Rapids Usually Toss with Great Fury.

cataract of Niagara, it is certain that it will take many long years of earnest activity to bring the spectacle to the ignoble condition in which the people of Niagara Falls found it on the morning of Sunday, March 22. Late Saturday afternoon or evening the ice came down the upper river from Lake Erie in marvelous quantities. The floe was so heavy that immense fields of it lodged on the rocks and reefs above Goat Island, the result being that practically all of the water that would find its way to the lower river over the American Fall and precipice was diverted to the outer or Canadian channel. This left the riverbed of the American channel, between the mainland and Goat Island, high and dry, and on Sunday great numbers of people visited the scene and walked about the river-bed.

The condition was surprising. Those who have

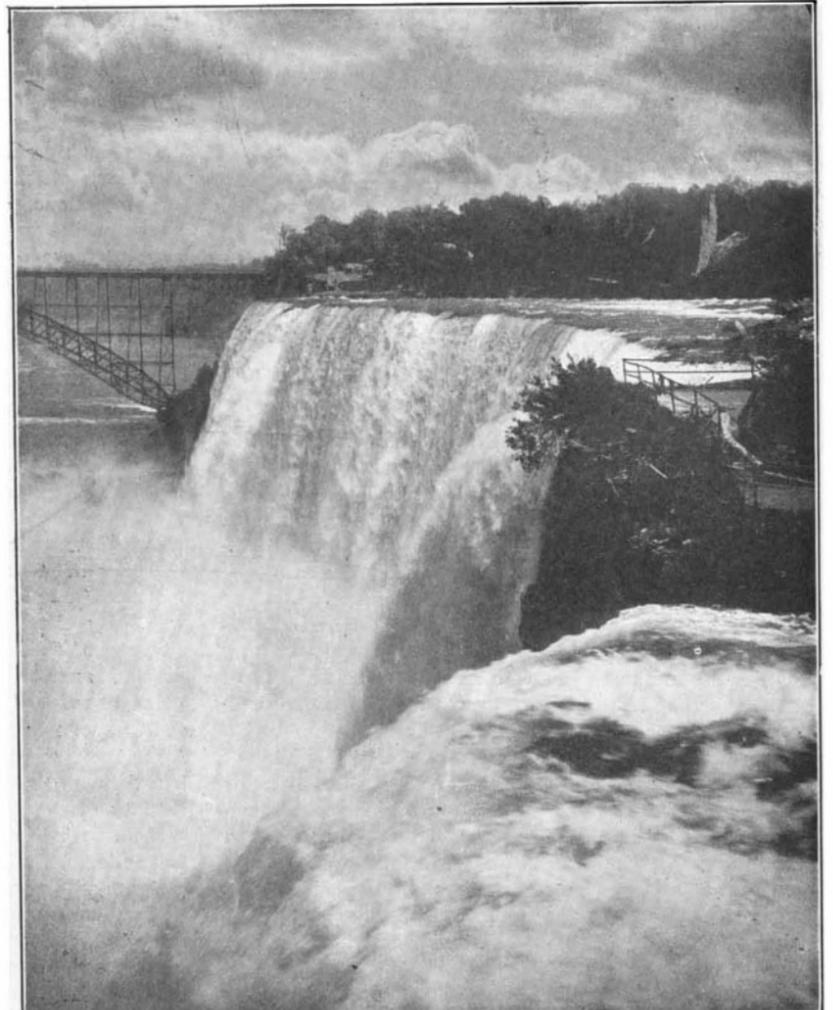
the water rushes in good volume at rapid speed. When the waters were diverted, however, it was possible to walk from Green Island right up the river-bed to the head of Goat Island, but in order to do this, reef after reef had to be climbed. The temporary diversion of the torrent gave fine opportunity for an inspection of the river-bed and the rock formation that causes the beautiful rapids so much admired by visitors, who stand a long time on the island bridges and watch the flood come down from the sky, as it were.

With the water diverted, the fall of the riverbed seemed more pronounced than ever before. To stand down close by the bridges built from the mainland to Goat Island and look up stream was a remarkable sight. It was like looking up a hill of rocky shelves of stairs, and it was almost impossible to con-



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The American Falls on March 22, 1903, when the Waters of the River were Diverted.



The American Falls at the Normal Flow of the River.

THE REMARKABLE DIVERSION OF THE WATERS OF NIAGARA.