UNEXPLORED BRANCH OF THE FIRE ESCAPE PROBLEM.

It would seem as if the subject of fire escapes had been thoroughly explored in all its branches when we look at the various contrivances which ornament the walls of many of the buildings in this city, when we remember the appliances placed at the disposal of tenants by the aid of which they can make their own descent, and when we see the machines for reaching, from the ground, those caught within a burning building. Permanent fire escapes, while admirably answering the purpose, cannot be placed upon every building in a great city, neither can they be located so as to be within access of all the windows; a fire in the line of the escape practically cuts off all the adjoining windows, and though such a case is extremely rare, it comes within the range of those possibilities which should be carefully eliminated when dealing with this problem. People will not, and cannot be compelled to keep private fire escapes —mainly ropes or chains and flexible ladders and tubes —within easy reach. They know the advantage of having a rope handy in case of fire, but they do not feel the necessity, since they have never been taught by actual experience—the only school that will vividly impress upon people's minds a dread of fire, and will make them take proper precautions. Machines operated from the ground—the most common kind being the several forms of extension ladders—are impracticable in this city, mainly because of the telegraph wires, the strength and great number of which in almost every street effectually prevent raising the ladders. With this obstacle removed we would still have the time necessarily consumed by them in reaching the fire.

Since the burning of the SCIENTIFIC AMERICAN offices in January, 1882, the Fire Department of this city has been looking for some device by means of which any person caught in the upper stories of a burning building could be rescued. To further this idea, about one year ago inventors of appliances for throwing a cord or small line over the roof or into any selected window of a building were invited to exhibit their machines to the authorities. Recently a second test was made at the foot of the Palisades, as shown in our frontispiece. The object of these trials is to obtain an apparatus which will, without fail, raise a small cord to the roof of the highest building in this city, and if it will carry a line into any particular window, so much the better. Of course, the cord once over the cornice of the building, it is easy for those on the ground to bring it within reach of an individual in one of the upper windows, when a heavy or life line, attached to it, may be raised.

The appliances shown in the lower view used powder to throw rockets, to throw projectiles from a cannon or rifle, and compressed air to throw a projectile. To the lower end of each missile was attached the end of a cord which played out as the missile rose in the air. No device was presented using an elastic substance, such as metallic springs, wood, or rubber.

Mr. Benj. F. Morris, of Hook and Ladder Company 15, exhibited a device for throwing a rocket, consisting of a brass barrel 3½ feet long, and having a bore large enough to easily admit the rocket, and mounted upon extension tripod legs, two pivoted a short distance back from the muzzle, and one pivoted to the rear extremity; by this means the device could be rapidly adjusted so as to discharge the rocket at any desired elevation. The rocket was fired by a cap placed at a point about in the middle of the barrel.

Mr. R. MacDonald, of 109 Liberty Street, showed a rifle having a bore about 2 inches in diameter, and rifled. The head of the missile, which somewhat resembled a winged dart, was spirally grooved, the shaft was of small size, and the tail was provided with side wings and with circular disks closely fitting the bore. A small charge of gunpowder was used. The rifle was rested against the shoulder and aimed, as shown in the second figure in the engraving.

The air gun, shown in the central figure, was designed by Mr. Otto Regl, of the Fire Department Repair Shops. The lower portion of the gun formed the air reservoir. and was provided at its upper end with a pressure gauge indicating up to 300 pounds. A channel led from the upper end to a rubber cushioned valve, the stem of which projected a short distance beyond the exterior. Screwing into the upper side of the valve was a barrel, which, when not in use, was strapped to the side of the reservoir. Pivoted by a catch pin in jaws placed just above the end of the valve stem was a curved lever. When the gun is not in use, this lever is so pivoted that the stem enters a concave part of the curve, and the handle may be pressed down close to the cylinder without opening the valve. When the gun is to be used, the position of the lever is reversed, so that a slight downward movement of the handle brings the convex part of the curve in contact with the stem, which is pushed in, thereby opening the valve and allowing the compressed air to rush into the barrel. The projectile was conical in shape at its forward end, and was hollow at the rear; across the hollow portion extended a bar, to which was pivoted a short rod which rested snugly in a groove cut in the side of the projectile. The string was secured to the end of this rod, and passed out at the muzzle. The reservoir is charged by a pump, and at 300 pounds will throw three shots. It is provided with a coupling by which, if the air should give out when the gun is needed, it could be connected with the ordinary extinguishers carried by the hook and ladder trucks, the pressure in which would be amply sufficient.

Mr. Francis J. Gray, of Engine House 18, showed a contrivance for discharging a rocket. Placed between two inverted conical-shaped cord holders was a wooden trough to hold the rocket. The frame carrying the holders and groove was pivoted between two standards projecting from the base; this arrangement permitted the elevation to be changed as desired. In all the rocket throwing devices a short length of wire was placed next the rocket, the cord being attached to the free end of the wire.

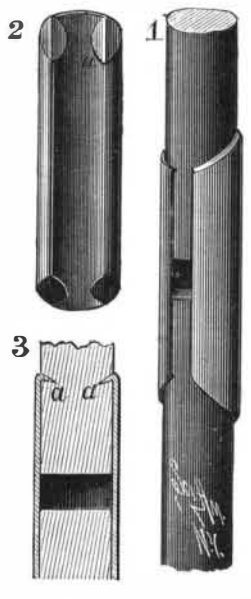
The cannon was shown by Mr. Patrick Ryan, of Engine House 25. The projectile was long, extending a little beyond the muzzle when in the gun. A longitudinal recess extended from the rear end nearly to the front of the projectile. Closely fitted within this groove was a bar, the rear end of which was pivoted, and the forward end formed with an eye, in which the cord was tied. When the projectile left the gun, the bar swung around and assumed a position parallel with the forward portion. The sighting device is shown beside the gun. One rod of the sight fitted the bore of the gun, and the sight was taken along the other rod, which by means of the connecting piece was a short distance above the gun barrel.

With these devices, which we have so briefly described, lines varying from 200 to nearly 700 feet in length were extended up the face of the cliff. None of them failed.

As near as we can ascertain, the Fire Department is in search of a device which must be of the simplest construction, must be easy to handle and control, must be unaffected by the weather, must be of comparatively light weight, and must be absolutely reliable in operation under all conditions. It must be able to easily raise a line to the roof of the highest buildings, and it ought to be capable of being aimed so as to surely reach a window at any elevation. Although New York city has taken the initiative in this branch of the fire escape problem, such a device, if acceptable here, would be quickly appreciated in every city of any size. The problem has been proposed; it now awaits solution.

BELT FASTENER.

The invention herewith illustrated, lately patented by Mr. Lewis W. Herrick, of Edmore, Mich., belongs to that class of belt fasteners formed of a piece of sheet metal having inwardly projecting teeth on its ends, which are forced into the ends of the belt by dies. The fastening clip, Fig. 2, is made in tubular form, with one side left open to allow of the insertion of the belt. The ends of the clip are inclined from the closed side toward the open side, and the edges of these portions are bent toward the center of the clip to form penetrating projections, *a*. The purpose of rounding the edges is to allow the ends of the belt while being inserted or withdrawn to slightly spring the projections apart, to allow of the easy entrance or withdrawal of the belt ends without the use of tools of any kind. When the end of the belt is being inserted, it will first bear against the outer rounded part of the projections, then ride up the incline until it strikes against the closed side of the clip. It will be seen that both ends are so secured that any strain put on the belt will only tend to force the ends of the belt further up the inclined projections. There will be no tendency of the belt ends to come out of the open side of the clip, and the strain will not tend to force the sides of the clip apart.



An Assyrian Statue of 850 B. C.

About twenty-five years ago there was shipped to a gentleman in Philadelphia, from a missionary to Syria, a life size statue of a king, taken from the ruins of Nineveh at the time of Sir Henry Layard's explorations. It had been lost by a caravan in the desert, and when received was stored and neglected, until a few days since. It represents a king clad in royal robes, bearing in one hand a basket and in the other a fir cone, a portion of the stone being covered with sharply cut hieroglyphics, which Assyrian scholars are now endeavoring to translate. The statue came from the temple of King Assur-nazir-pal, a famous conqueror who reigned from 883 to 859 B. C., and who was, therefore, sleeping in his grave when Nebuchadnezzar, King of Babylon, was yet an infant.

Correspondence.

Mr. A. R. Bennett's Improved Voltaic Cell.

To the Editor of the Scientific American:

My attention has been called to the article entitled "A Cheap Battery," in your issue of April 11, which describes the voltaic cell invented by me.

The battery is now extensively used in this country, especially for telephone transmitter work. Some telephone exchange systems use no other. The experience thus gained has led to the improvement of the battery in some respects, especially in regard to the form of the zinc plate. Such a plate as is depicted in your illustration is liable to be quickly eaten through at the water line, whether the cell works or not. Zinc rods are subject to the same destructive action when they are partly in and partly out of the solution. The zinc is now placed entirely under the surface of the solution, and a brass wire, covered with rubber tubing, brought up from it for the purpose of forming the connection. This wire is soldered into a deep hole drilled in the zinc. The tubing is then slipped down the wire until it reaches the bottom of the hole, which is then filled up with melted sulphur. When this is properly done, the zinc is eaten away only in proportion to the work performed by the battery. The zinc should always be amalgamated. The rubber should cover the wire well beyond the surface of the solution. The solution should be always caustic potash, as caustic soda creeps up and makes a very dirty cell. When the battery is intended for permanent work, the outer pot should be of cast iron. This is no better electrically, but lapped and soldered pots are not trustworthy for a long period. For long continued use the porous pot should not be less than 6x3½ inches, and the charge should be 6 ounces of caustic potash. The battery may be made to give a much stronger current—equal to 2 volts—by mixing 1 ounce of permanganate of potash with the iron borings, and filling them up with the caustic potash solution. It should be noted that unless permanganate of potash is used, no caustic potash solution is put with the borings, except what filters through the porous pot.

A. R. BENNETT.

Glasgow, April 28, 1885.

Popular Errors Concerning Health.

Professor George H. Rohe, of the College of Physicians and Surgeons, Baltimore, in a recent lecture on "Some Popular Errors Concerning Health and its Preservation," quoted the saying, "One man's meat is another's poison," and showed that, while idiosyncrasies with regard to certain articles of food or medicines do exist, they are far less frequent than is generally believed. Articles of food which ordinarily disagree may be better borne if differently cooked. A more serious error is that one should rise from the table hungry. The sensation of hunger is a cry of the tissues for food, and should always be appeased. Much of the ill-health of brain workers is due to a lack of sufficient food. It is impossible to lay down hard rules as to the quantity of food one should eat, but the remarks of the old country doctor who had lived in good health, doing hard work until fourscore and ten, might be taken as examples: "I have always eaten when I wanted to eat, as much as I wanted, and the best food I could get." Another fallacy is, that all diseases are due to disturbances of digestion. Graham bread, oatmeal, cracked wheat, etc., are more difficult of digestion than pure wheat bread.

It is a dangerous error to withhold cold drinks from persons sick with fever. It is cruel, objectless, and the dangers that are said to follow it are imaginary. The effects of alcohol upon the body were discussed at some length, and the conclusion drawn that alcohol does not supply heat to the body, but rather withdraws it. The greatest danger to the man who gets dead drunk in cold weather is that he may freeze to death. The use of alcoholic drinks in health is injurious, but its medicinal use is valuable in many instances. The notion that we should not bathe while overheated is as unreasonable as it is widespread, but persons should not remain in the bath long enough to become chilled. The traditional axiom that boils are an evidence of good health is a snare and a delusion. Prof. Rohe said: "For my own part, I should prefer to be without that sort of health. Even Job, when suffering from an abundant crop, could not gain consolation from his would-be comforters."

That vaccination does not prevent smallpox is a very dangerous error, but that it is preventive of other diseases is equally a fallacy. Statistics prove that before the introduction of vaccination deaths annually from smallpox numbered nearly 3,000 for every million inhabitants. Since the practice has become general the percentage of deaths has fallen to about one-tenth of the former number. Without vaccination the deaths from smallpox in this country would be 150,000 a year. Vaccination has not increased other diseases. That any one remedy is a cure for all diseases that afflict humanity is an absurdity. While hydropathy and electropathy are unquestionably of benefit in some diseases, they cannot be relied upon for the cure of all.