

NITRO-GLYCERINE MADE SAFE.

The name of "dynamite" has been given to a new preparation of nitro-glycerine which is effectively deprived of its dangerous properties. Dynamite is nothing but nitro-glycerine absorbed in highly porous silica or diatomaceous earth, 75 per cent. of nitro-glycerine and 25 per cent. of silica. The great advantage of the solid form appears to be the absolute safety attained, while for all practical purposes it is much more convenient and equally as effective with the liquid nitro-glycerine as an explosive agent.

Some experiments made lately at Stockholm and at Glasgow show this. A can containing about 8 pounds of dynamite (equal in power to 80 pounds of powder) was placed over a fire, where it slowly burned away; and another box with the same quantity was thrown from a height of 60 feet on the rock below, without an explosion or breaking it up. A weight of 300 pounds was dropped from a height of 30 feet on a box containing dynamite, breaking it up without an explosion. A Prussian military commission has recently reported that it appears to be the safest of all known explosives.

The liquid form of nitro-glycerine seems to be the cause of its being so liable to explosion. Mr. Nobel, a great manufacturer of it, in a paper recently read before the British Association, gave it as his opinion that nearly all the calamities caused by nitro-glycerine have been owing to leakage, which for practical reasons it is very difficult to prevent, and are therefore indirectly chargeable to the liquid state. When leakage takes place a liquid substance as penetrating as oil, and very sensitive to concussion, it becomes subject to the danger of direct percussion; and if nitro-glycerine in that condition becomes exposed to the sun's rays, the heat which it takes up renders it so sensitive as to become dangerous under the slightest blow. These facts account for the terrible explosions of nitro-glycerine a few years ago at San Francisco, Aspinwall and in New York.

Besides the security derived from its solid form, dynamite has other special advantages. It can be handled by miners and charged in drill holes as readily as powder. It needs no tamping, and consequently does away with one cause of a great many accidents in blasting rocks. When it explodes it gives off no noxious fumes, which is a complaint of miners against nitro-glycerine, arising from imperfect explosion; dynamite entirely explodes.

As a proof of its explosive power, it is said that a solid block of the best wrought iron, in the form of a cylinder, eleven inches in diameter and twelve inches in height, was blown into fragments at Merstham, in the presence of a large audience. A bore-hole was made through the center of the block, and a charge of six ounces of dynamite was put in it without securing either end by any sort of plug or tamping. The strain necessary for effecting the rupture must have been equal to 2,400 tons; and since there was no plug at either end of the whole, the charge was too much for the work. One-half of the block was hurled with such violence against a three-quarter inch boiler plate at some distance off as to break it.

In Sweden, Great Britain and Germany, as well as in this country, nitro-glycerine has already been extensively employed in mining and blasting rock, the economy being reckoned at twenty-five per cent. on the cost of blasting, and the progress in tunneling being eighty-seven per cent. quicker than where gunpowder is used. Dynamite is rapidly superseding nitro-glycerine in Europe. It saves labor in drilling, and is adapted to wet ground, since water has no effect on the charge. The charge in blasting is fired with a fuse. Its explosive force, as compared with gunpowder, is as ten to one; at present its cost is as eight to one, however, which will prevent its rapid introduction, except in works such as the Hocking tunnel, where the expense is not much considered, and where the amount to be used will make it good economy to employ it.

CHANGES IN NIAGARA FALLS.

From an old resident of the village I learn several facts of interest regarding the falls. Within the recollection of my informant the cataract has receded 35 to 40 feet in places, and fully 10 feet in the average. These changes are more noticeable on the Canada side; the centre of the Horse-Shoe fall having receded perceptibly within the past five years. This fact in connection with the general appearance of the walls of rock on each side of the lower level of the river, shows that the falls must have originally been much lower down. It is an Indian tradition that in former times there was but one fall, extending across the river below the point now spanned by the lower bridge, and the story is credited by the older residents of the town. The pressure of ice from Lake Erie carried down the upper rapids with terrible velocity, detaching many large rocks each winter, while others were rounded and smoothed through the spring and summer. I witnessed the fall of a large boulder on the evening of Aug. 28th, while looking at the Horse-Shoe, by moonlight, from the balcony of Terrapin Tower. It started apparently about fifty feet from the edge of the fall, and an equal distance from the foot of the tower. My attention was attracted by seeing it rise about four feet above the foam, as if lifted by the current of water running under it. It then turned partly over and disappeared. Five or six minutes later it was again visible on the edge of the fall, turning slowly as before. Here it was stopped for several seconds, as if lodged against another rock more firmly imbedded; but it leaned gradually to the left, and finally dropped.

The fall of the greater part of Table Rock, some years ago, is also an evidence of the gradual change that is going on in the topography of the Falls. The Cave of the Winds, a pronounced unsafe by those who are well acquainted with the locality; and each season they become more hazardous, as the rocks that have hung suspended so long must eventually give way to the pressure of water from above.

Liverpool has a haunted house, the windows of which are broken by continuous showers of stones. The police cannot discover the cause of the salients.

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