

Great care had to be exercised in guarding against setting fire to the yellow pine roof through the flash and the burning fuse. The gas pipe was broken several times, but the flame was extinguished before damage was done. In blasting under the shoe there was danger of injuring it, but nothing serious resulted. In fact the shoe was already so badly injured as to amount to but little. The armour-plates were bent and crushed and partly torn off by jagged points of rocks, the inner casting was cracked, and in many places the whole shoe was forced in; yet no air escaped because the clay was tight outside.

One convenient way of disposing of boulders under the shoe, was to drill a hole through them, plant the charge at the bottom, and shoot them bodily into the caisson, where they were broken up at leisure. Boulders were found fourteen feet long and five feet in diameter, containing three hundred feet and more.

The powder smoke was a decided nuisance. It would fill the chambers for half an hour or more with a thick cloud, obscuring all the lights. The use of fine rifle powder ameliorated it somewhat. A sprinkling jet of water to throw it down mechanically was of little avail.

The sulphur smell was not disagreeable, simply because the sense of smell is almost entirely lost in compressed air. This is a wise provision of nature, because foul odors certainly have their home in a caisson.

The use of powder has proved so efficient that no difficulty is expected in leveling off the irregular surface of gneiss rock upon which the New York caisson will rest.

In order to expedite the laborious task of hand drilling, a small Burleigh drill was procured, mounted on a tripod, and capable of drilling at any angle. It was operated by compressed air of sixty pounds pressure, and worked very well. The trouble, however, of placing it in position and moving it from chamber to chamber more than counterbalanced its other advantages.

As the caisson descended it left a perpendicular wall around it, the soil showing but little signs of caving in. The side moreover having an inward slope of one in ten there