Old Ammunition.

The huge pyramids of spherical shot and shells deposited in various parts of the Royal Arsenal, Woolwich, are condemned to the melting furnaces for conversion into projectiles more adapted to modern requirements. One heap alone contains about 40,000 of the 13-inch shells which were supplied at the time of the Crimean war, and were the most formidable missiles used in the siege of Sebastopol. The 13 inch mortars, from which they were fired, have long ago disappeared out of use, but lie in hundreds in a distant part of the arsenal waiting orders for their demolition, and no round shot or shell of any size have been made since the introduction of rifled ordnance and elongated projectiles. They are being all gradually broken up. Another ancient description of shell of the class known as smoke balls and ground light balls has been declared obsolete, and all that are remaining in store will be destroyed. They are of various sizes, varying from 4½ inches to 13 inches in diameter.

Covering Iron and Steel with Copper.

According to the *Metallarbeiter*, iron can be coppered by dipping it into melted copper, the surface of which is protected by a melted layer of cryolite and phosphoric acid. The articles to be coppered must be heated to the same temperature as the melted copper.

Another process consists in dipping the articles into a melted mixture of one part of chloride or fluoride of copper, and five or six parts of cryolite, and a little chloride of barium. If the article when immersed is connected with the negative pole of a battery, it hastens the process.

A third method consists in dipping the article in a solution of oxalate of copper and bicarbonate of soda, dissolved in ten or fifteen parts of water, acidified with some organic acid.

A MASSIVE SCAFFOLDING.

The Manhattan Company's Bank and the Merchants' National Bank are now erecting a building at Nos. 40 and 42 Wall Street, this city, after designs by W. Wheeler Smith. The building extends through to Pine Street. It will have a front of plain and polished granites from the Hallowell, Fox Island, and Westerly quarries: the floors will be iron beams resting upon iron columns.

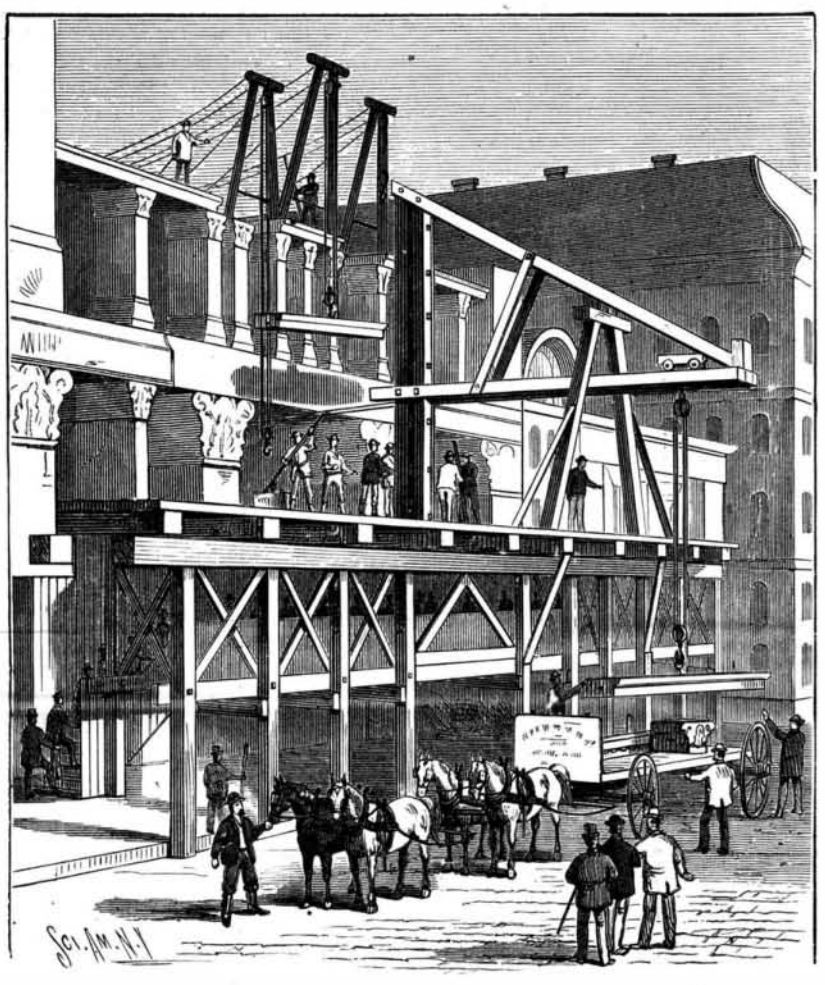
In order not to interfere with street traffic and at the same time to expedite the handling of heavy pieces, and be free from the annoyance caused by curious sightseers, a scaffolding of massive strength was erected, shown in the accompanying engraving. The posts composing this framework are 12 by 12 inch pine timbers held together by lateral braces, and between each panel are wooden diagonals. The outer line of posts is set alongside the curbstone. Transversely on top are placed floor beams, 12 by 14 inches, and 6 feet between centers, which project a short distance beyond the curb line, and on these, parallel with the street line, is a flooring of planks 3 inches thick, above which is a second system of planks the same thickness, but laid obliquely.

Raised above the sidewalk is a passageway extending the whole length of the staging. This has a width of 4 feet 6 inches, and is reached by a flight of steps at each end. By this means the foot travel of the street is not interfered with.

The center of the scaffolding is wide and high enough to admit a wagon, which is driven in and unloaded upon the first floor of the building.

The rear post of the main derrick rests just outside the front wall, and consists of two timbers 10 by 12 inches, bolted at intervals to each other and to the main posts. These are placed in a line perpendicular to the street. About 12 feet above the floor is the horizontal arm of the derrick, consisting of two timbers 10 inches square, and placed a few inches apart. The diagonal from the top of the rear post extends over an A frame, and is joined to the end of the horizontal arm. Upon the upper inner corners of the timbers forming this arm are angle irons, constituting the track upon which a little car travels. From the under side of the car hangs a block and tackle. The car is run to the outer end of the track, under which the wagon has been driven, and the hook is attached to the piece to be raised. The hoisting rope extends to the engine in the interior of the building. When the piece has been elevated above the floor, the car is run back and the piece is lowered on to a hand truck, or rollers, by the aid of which it is moved about on the floor. Distributed about parts of the building are derricks that raise the stone and leave it in its final resting place.

The various parts entering into the construction of the scaffolding are held together by nuts and bolts, plates being placed under the heads and nuts. It was designed so as to have sufficient strength to support upon the flooring all the material immediately to be used, thereby relieving the street of all unsightly heaps. Another consideration is that people are not subjected to danger from falling pieces while passing the building.

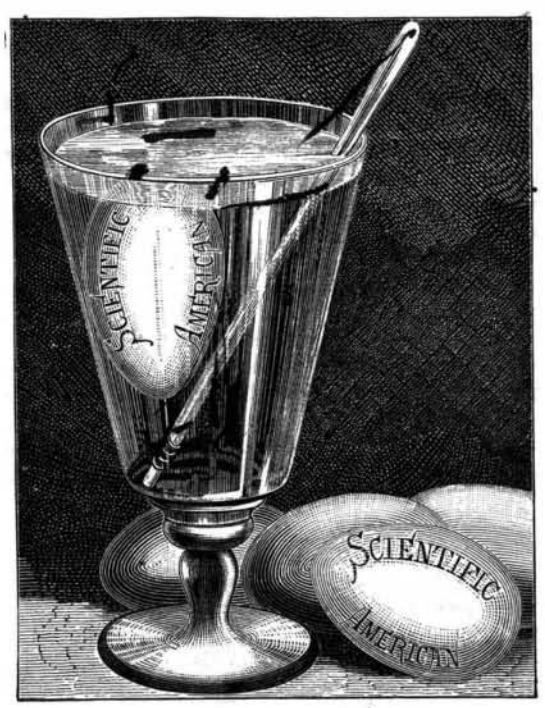


A MASSIVE SCAFFOLDING.

ENGRAVED EGGS.

Some time ago there was a man who stood upon the street corners and in the public squares selling egg shells upon which were engraved names, devices, or flowers. The art of engraving upon eggs is connected with a curious and little known historical fact.

In the month of August, 1808, at the time of the Spanish war, there was found in the patriarchal church of Lisbon an egg upon the shell of which was announced the approaching extermination of the French. This fact caused a lively fermentation in the minds of the superstitious Portuguese population, and came near causing an uprising.



ENGRAVED EGGS.

The French commander remedied the matter very ingeniously by distributing throughout the city thousands of eggs that bore engraved upon them a contradiction of the prediction The Portuguese, deeply astonished, did not know what to think of it, but thousands of eggs giving the lie to a prediction engraved upon one only, had the power of the majority. In addition, a few days afterward, posters put up on all the street corners pointed out the manner in which the miracle was performed. The mode of doing it is very simple.

It consists in writing upon the egg shell with wax or varnish or simply with tallow, and then immersing the egg in some weak acid, such, for example, as vinegar, dilute hydrochloric acid, or etching liquor. Everywhere where the varnish or wax has not protected the shell, the lime of the latter is decomposed and dissolved in the acid, and the writing or drawing remains in relief. Although the *modus operandi* presents no difficulty, a few precautions must be taken in order to be successful on a first experiment.

In the first place, as the eggs that are to be engraved are usually previously blown, so that they may be preserved without alteration, it is necessary before immersing them in the acid to plug up the apertures in the extremities with a bit of beeswax; and, moreover, as the eggs are very light, they must be held at the bottom of the vessel full of acid by means of a thread fixed to a weight or wound round the extremity of a glass rod.

If the acid is very dilute, the operation, though it takes a little longer, gives better results. Two or three minutes usually suffice to give characters that have sufficient relief. —*La Nature.*

Velocities.

An interesting table of velocities has been drawn up by Mr. James Jackson, the librarian of the Paris Geographical Society. He begins, says the *Photo. News*, with the velocity of a man walking two miles and a half an hour, and after alluding to the respective velocities of an ordinary wind, of a race horse, of an express train, of a carrier pigeon, of a hurricane, of sound in air and water, he brings us at last to the velocity of heavenly bodies, of electricity, and, finally, of light. But Mr. Jackson has left out one important velocity, which has only been recently computed, and which is of singular interest, since it represents the only earthly agent known to man with a velocity quicker than sound in water, although naturally less quick than electricity and light; we mean the detonation of the photographer's old friend, gun cotton. Abel and Noble have computed that a train of gun cotton, fired with a fulminate fuse, will transmit the detonating action at a speed of from 17,000 to 19,000 feet per second. In other words, detonation travels at the rate of 200 miles a minute, while next in order comes electricity traveling through a submarine wire at a speed of some 12,000,000 feet per second.

How Fire is Carried in Cotton.

Edward Atkinson, of Boston, says: "Fire lurks in a cotton bale for weeks. The cotton which was injured somewhat over a year ago in Biddeford, Me., was moved to South Boston for sale. The fire broke out again more than once while it was at South Boston being made ready for sale. It was then sold at auction. The fire broke out again in one parcel while it was on the cars being carried away, and in another parcel after it had been received at a factory where it was to be used. The latest outbreak was, I think, thirty days after the original fire."

Sorghum Sugar in Ohio.

A correspondent of the *Ohio Farmer*, conducting a sugar factory in that State, says:

"Not a single man that brought cane to our mill raised as much as one whole acre of it, generally from one-eighth to one-quarter of an acre, and they would have from one load to three or four good wagon loads of the cane; but over four-fifths of them simply wanted molasses for cooking purposes. And but a small portion of it were they willing should be cooked into sugar. Because we did not make more sugar was because we were not allowed to do so. Every gallon of good molasses made from matured cane, agreeable to the Stewart process, will granulate fully four pounds of sugar the first granulation. Estimates give 106 gallons per acre of sorghum molasses as the yield for Ohio. If this be true it would make fully four hundred pounds of dry sugar and seventy gallons of drainage molasses, worth from 35 to 45 cents per gallon at wholesale for cooking purposes. We have sold every particle of our drainage molasses at 35 cents per gallon, and if the sugar is left in we sell it from 69 to 75 cents per gallon. No man can get as much money from an acre of land in corn as he can from sugar cane, if he lives close by a sugar factory. The average worth per acre, if made into molasses alone, under the Stewart process, would be over sixty dollars per acre; and if made into both sugar and molasses it would come to fully seventy dollars per acre; besides this, the crop of cane seed if properly saved, cured, and thrashed, the same as wheat, is worth half as much for feeding purposes as the average acre of corn will yield in the same vicinity." And in any place and upon any circumstances whereby you are able to raise a reasonably good crop of corn, sugar cane will do equally well in the same field. It is more work to cultivate it, because you should plant more hills to the acre; but you can hoe a hill of one just as easy as you can the other, and the cutting is just the same. If you save the cane leaves for fodder it makes more work, but the fodder fully pays for that. The cane seed can be thrashed as easy and exactly the same as wheat, and will yield over fifteen bushels per acre on all cane that is good enough to make 106 gallons of molasses to the acre. The Rio Grande Sugar Company raised and worked up in 1882 about 800 acres of cane—not quite that amount as given into the State of New Jersey for the bounty money. They produced over 330,000 pounds of sugar and twice that number of pounds of drainage molasses. It is a well known fact in that vicinity that it was a very profitable business.