

THE TIMBER DRY DOCK NO. 3 AT THE NEW YORK NAVY YARD.

Much difficulty is encountered by the United States Navy Department in the matter of placing ships in dry dock, owing to the scarcity of docks long enough and deep enough to receive modern ships. While the typical war ship is not long enough to give any trouble in securing dockage, the question of sufficiency of depth of water over the sill at the entrance to the dock often arises. The ships of the American line may be required in time of war, and they represent a length of over 500 feet. There is need, therefore, for length and depth in our government dry docks, and we illustrate in our present issue work in progress on what is termed Dry Dock No. 3 of the New York Navy Yard. This structure is a timber dry dock, and in length and depth will be able to accommodate any ship afloat, while it will be able to receive two or three ordinary vessels at once.

The principal dimensions of the dock are as follows: Length at surface level from outer abutment to coping, 670 feet; length at bottom from outer abutment to lowest altar, 628 feet 8 inches. Width at surface level, 151 feet; width at bottom, 64 feet 4 inches.

The plan of the dock suggests the section of a wide mouth bottle. The entrance is closed by a floating caisson, which is a deep narrow steel boat, which when the dock is to be closed is placed directly across the opening, and bears against a projection or abutment placed in a vertical plane around the opening. There are two of these abutments, twenty feet apart, so that the dock compartment may vary to that extent in length. An India rubber packing is used between the caisson and abutment. The latter consists of heavy timbers which project twelve inches from the sides and bottom.

The sides of the dock slope evenly from top to bottom, and are lined with yellow pine timber laid as altars or steps. These timbers are 8 inches x 13 inches in section, and are laid so as to form steps of 8 inches rise and 10 inches tread. The slope is determined and they are supported by diagonal timbers or altar supports which are directly back of them and which lie in the vertical plane. These supports, which run from top to bottom of the slope, are carried by 12 inch piles, with seven piles for each length of slope. Each row of piles carries two altar supports which rest on shoulders on the piles, the reduced end of the pile forming a tenon and rising between the supports. Bolts are driven through the two timbers and the intermediate tenon.

From foot to foot of the sloping altar supports sill timbers run across the bottom of the dock, carried on the tops of piles, so that the three elements, right and left hand altar supports and sill timbers, give the cross section of the work. After these are in place the next operations are the flooring and putting on of the altars. The latter rest in notches, cut out of the altar supports with ax and adz. The notches are cut out of the diagonal forward edge of the timber, as each altar is ready for laying in position.

The graving dock represents a watertight basin from which water can be pumped. In the timber construction followed in the dock under consideration the dock is made watertight by sheet piling. On each side of the dock there are two rows of eight inch sheet piling, tongued and grooved and tied back by iron tie rods. One row of piling is driven along the foot of the slope of the sides, the other row is 62 feet back of it, this distance bringing it 26 feet back of the curb line of the dock. There are also several transverse courses of sheet piling of 8 inches and 6 inches thickness, to act as stop-waters and hold back any leakage from the bay.

Taking the middle cross section, there are in it 52 piles. These are variously spaced; 6 feet 6 inches from center to center is the spacing of the piles under the surface back of the dock. The piles under the altar supports are 3 feet from center to center, and the piles to carry the floor timbers are spaced 3 feet 8 inches from center to center, except along the axis, where eight piles are driven close together. Over this axial group come the keel blocks. For the complete section there are 52 piles, mostly of 12 inch spruce.

Two diagonal braces are used on each side to brace together the side piling.

The total figures of quantities are impressive in the case of this dock. The timber is calculated at over 3,000,000 of board timber and the iron fastenings aggregate about 637,871 lb. There are upward of ten thousand piles, including 280 oak piles, in the structure irrespective of those employed temporarily. The excavation is calculated at 163,566 cubic yards.

The work has been started from the inner end, the excavation being carried out toward the old stone bulkhead which comes between it and the waters of the bay. The dock for a portion of its length is completed. Ultimately, a section of the bulkhead will

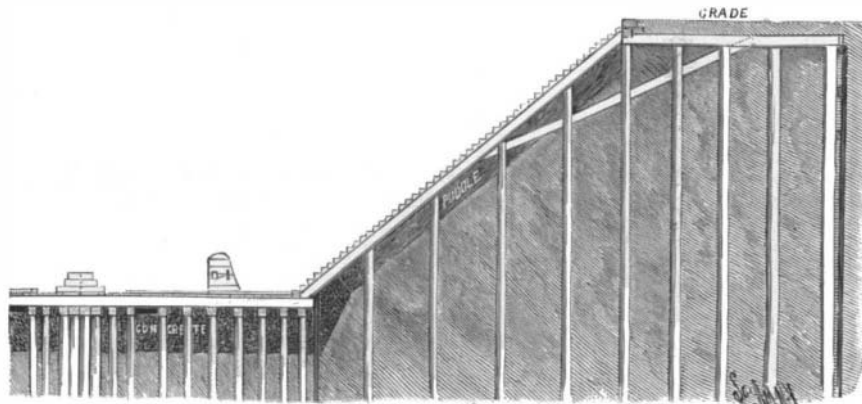
have to come down to give space for the entrance. To further illustrate the construction of this dock we reproduce from a former issue the cross section of the other timber dock in the same navy yard, Dry Dock No. 2. While varying in details, the construction is so much alike that this section will be of use in explaining our description. The large cuts show the operations of construction in active progress. In the upper one are seen the floor timbers and to the left the altars and further back the altar supports. The lower cut shows in the background the long series of sloping altar supports with the lower altars in position. The piling for the altar supports is seen in the foreground also.

Underneath the floor of the dock is a bed of concrete three feet thick, while a two foot layer of puddle is worked in back of the altars as they are put in position.

The Early Rising Precept.

Whatever may be your fad, it is certain sooner or later to receive the approval and support of the medical journals. From time to time they have discovered death in the milk jug, death in the teapot, death in wine, beer, tobacco, cycling, cricket, football, bathing and what not. The condemnation of the oyster was a heavy blow, and now we are asked to repudiate the principle of early rising. Speaking as one having authority and not as the scribes, the British Medical Journal makes bold to say that the early rising theory is a mistake, that the vital forces do not come fully into play until midday, and that the desire to get up with the lark, so far from being a sign of strength of character and vigor of body, denotes advancing age.

Such a doctrine is nothing short of revolutionary. It not only throws cold water upon the claims of the early risers, but by a parity of reasoning it extols that numerous class, the lazy lie-abed, who, we are now given to understand, are the salt of the earth. Frankly speaking, while inclined to rejoice at the snub administered to the early risers, I am unable to agree with the British Medical Journal. I wish I could, but all



CROSS SECTION OF A TIMBER DRY DOCK.

the scientific evidence seems to point to the early riser, or, let me say, the short sleeper, as the coming man.

Primitive man, like monkeys and birds, having no artificial light, must have gone to bed at nightfall, to sleep until sunrise; there was nothing else for him to do. Down to the last century civilization exhibited little change in this respect, all modes of artificial lighting being so poor that there was no inducement for anybody to turn night into day. The electric light, however, may conceivably enough make many independent of the light of day for the carrying on of business. In such an event the fittest type of man will surely be he who can keep awake longest, and get through the most work in twenty-four hours. I believe that the philosophy of "early to bed and early to rise" is a survival of the old conditions. "Work while yet it is day," says another authority, "for the night cometh when no man can work." That was a rash assertion. It could not have been enunciated at the end of the nineteenth century. A very great deal of the labor is done by night and the practice is sure to extend. This being so, all the twenty-four hours, in fact, being now available for work, the man who wants a long sleep rather than a short one will assuredly be at a disadvantage in the struggle for life. If the Darwinian theory is true, therefore, he will tend to die out—i. e., to be replaced by a more active organization adapted to the new conditions.—Pall Mall Budget.

Mexican International Exposition.

Under an act of the Federal Congress of Mexico, granted on January 9, 1895, the Mexican government has authorized an International Exposition to be opened in the city of Mexico on September 15, 1896, which it is hoped will embrace a representation of manufactured products from all parts of the world. For the convenience of manufacturers the Mexican International Exposition has opened an office in New York at No. 45 Broadway, Aldrich Court, the managers of which will be prepared to answer all inquiries which may be sent them as to space, terms and conditions.

Blenheim Palace and Estates.

Interest is attached to this palace and the Marlborough estates from the fact that they have been provided over by two American women, Mrs. Hamersley marrying the late duke and father of the present incumbent, whose marriage in this city attracted so much attention a few weeks ago.

So many misstatements have appeared in the public press with reference to Blenheim Palace, its condition and the outlay made upon it during the ten years from 1883 to 1893, and the sources from which such outlay has been provided, that the Duke of Marlborough has caused an investigation to be made into the accounts by a chartered public accountant, who reports to his grace that the sale of the Sutherland library, and such of the Blenheim pictures, enamels and china as were sold, produced the sum of £316,746 19s.

In the events which happened, says the Architect and Contract Reporter (London), the late Duke of Marlborough was entitled to the income of this sum as tenant for life under the Blenheim settlement, but the present Duke of Marlborough became absolutely entitled to the whole of the capital upon attaining the age of twenty-one. This sum was expended by the trustees, under the authority of orders of the Land Commissioners and the Court of Chancery, in the following manner:

There was laid out upon the erection and improvement of existing farm buildings and other houses and land passing under the settlement the sum of £78,978 19s. 4d. Freehold and other properties were purchased in the City of London—and now form part of the Duke of Marlborough's estate—at a cost of £152,312 15s. 2d. The portions of the late duke's sisters which were charged on the estates, and had to be raised and paid, absorbed £22,666 13s. 4d. There was laid out upon Blenheim Palace itself and upon the gardens, under the provisions of the Limited Owners' Residence Acts, the sum of £35,440 15s. 9d. Such outlay included the construction of new oak windows

throughout the building, the renewing of the lead to the roof of the palace, the laying of parquet in the different rooms of the palace, the construction of fire mains and appliances, the improvement of many of the rooms within the palace, the alterations and improvements in the porters' lodges and gateways, the erection of a new house for the gardener, the provision of new hot water apparatus and boilers in the palace, the provision of the whole of the greenhouses and forcing houses in the gardens, the entire reconstruction of the estate offices, the reconstruction of the whole of the locks within the palace and park, the reconstruction of the stables, of the palace gas

works, of the roads round the palace itself, of the supply of entirely new grates and chimney pieces in the reception rooms of the palace, the reconstruction of the engine house and the engineer's cottage, the provision of new elevators within the palace, the entire renewal of all the fittings in the chapel, the provision of new fences round all the lodges and the reconstruction of the clock tower.

The entire installation of the electric light for the palace was, by an order of the Court of Chancery, dated October 31, 1888, handed over by the late duke to the trustees in exchange for certain heirloom furniture which the late duke acquired for his own private property under the provisions of the order. Thus the whole of the improvements, both to the palace and the gardens and to all the buildings and other portions of the settled estate, were, as a fact, paid for out of moneys the property of the present Duke of Marlborough, and from no other source whatever.

A California Exposition in New York.

Soon after the bicycle show closes in Madison Square Garden, New York, an exhibition will be held in character somewhat like the Crystal Palace Exhibition of 1853. It is to be controlled by a stock company composed of some of the largest shippers and producers of California and the East. The exhibition will include specimens of the best known products of California, as well as models of the '49 mining camp, a hydraulic mine, an electric gold mine, a quicksilver mine, a lumber camp, sawmills, sections of mammoth trees, a mountain road, the Lick telescope, etc., with models of Los Angeles, San Jose, Golden Gate Park, Oakland, Monterey, the Leland Stanford University, Spanish missions, ranches, adobe houses, and to crown all, there will be a wine cascade of California claret falling over crystal rocks. This cascade will be 25 feet high and 25 feet wide. This wine cascade will be lighted by electric lights, both above and behind the falls, in such a manner to be visible from the entrance of the garden. The mineral, fruit and flower display will be most effective and various stage performances will also be given.

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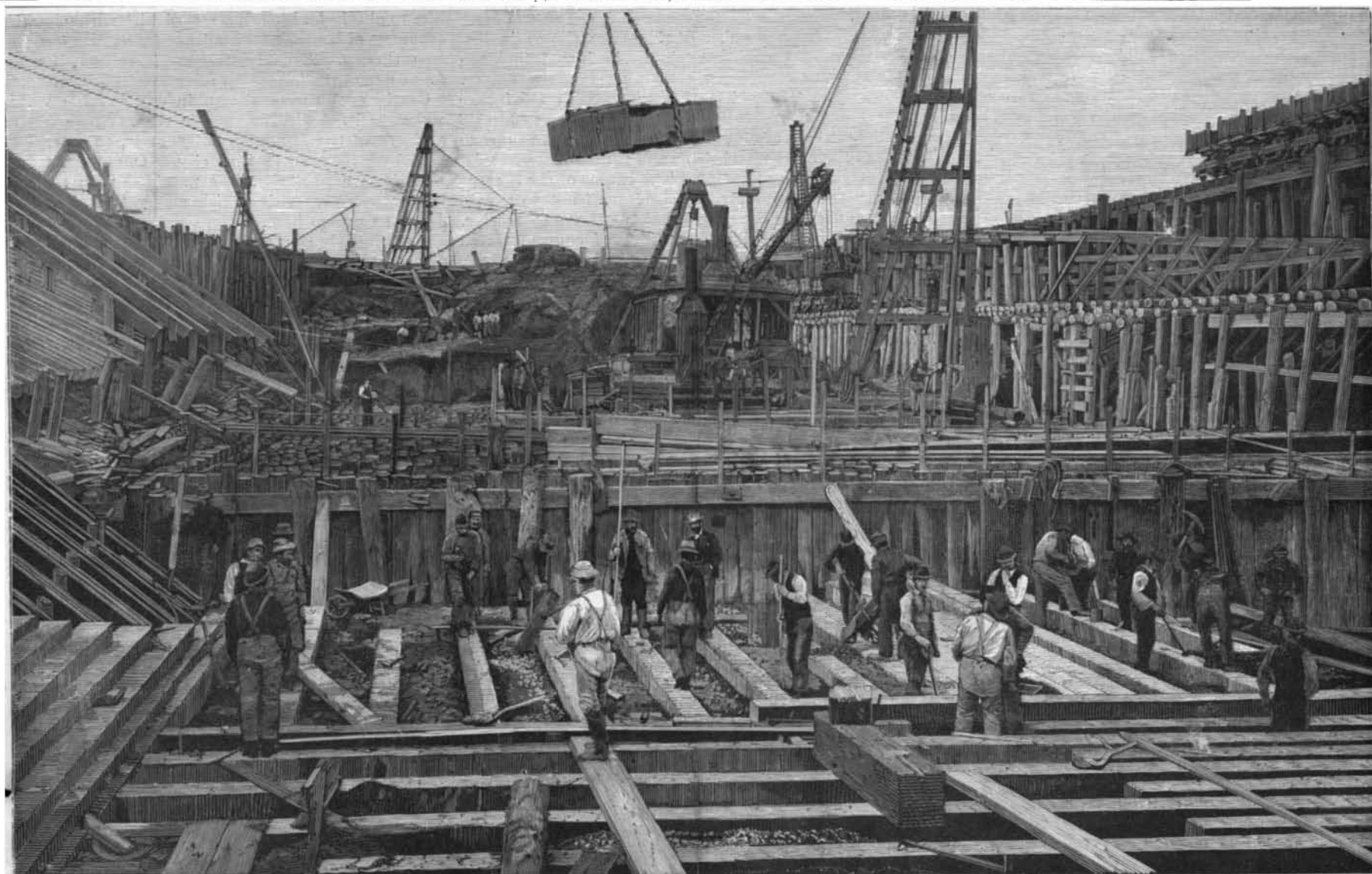
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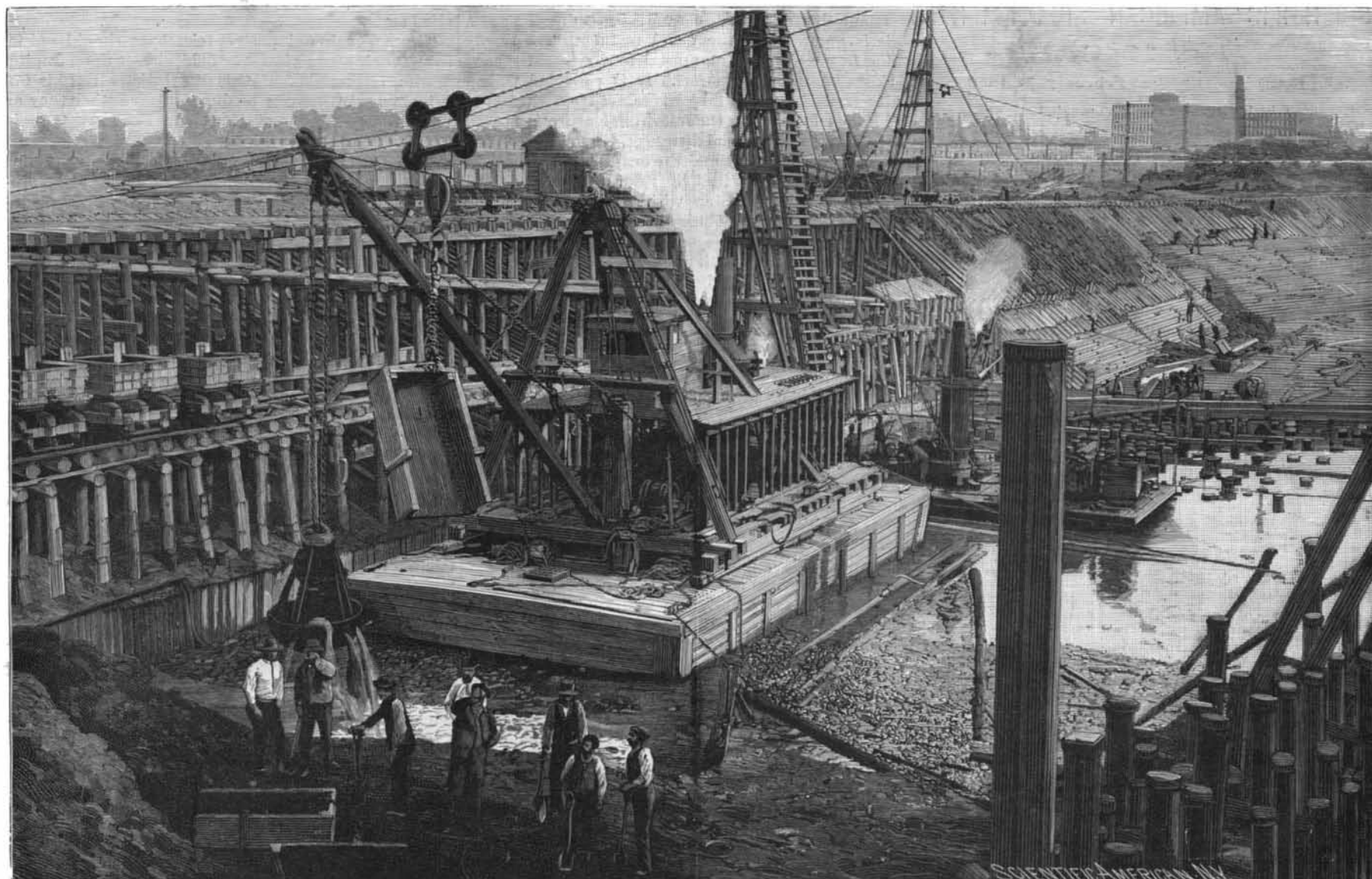
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VIEW SHOWING FLOOR AND ALTAR TIMBERING.



TIMBER DRY DOCK No. 3 AT UNITED STATES NAVY YARD, NEW YORK—VIEW OF OPERATIONS IN PROGRESS.—[See page 71.]