

SCIENTIFIC AMERICAN

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A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. LXVIII.—No. 23.
ESTABLISHED 1845.

NEW YORK, JUNE 10, 1893.

\$3.00 A YEAR.
WEEKLY.

TRAVELING CRANES AT THE BROOKLYN NAVY YARD.

Among the improvements recently adopted by the Navy department for handling the heavy armor plates and guns for our new navy are the new traveling cranes illustrated in this issue, being the greatest advance in navy yard appliances made since the building of the present dry docks, each of the Brooklyn dry docks now having one of the largest traveling power cranes in the world.

They are of the capacity of 40 tons at a distance of 56 feet from their centers. At the old stone dock, this

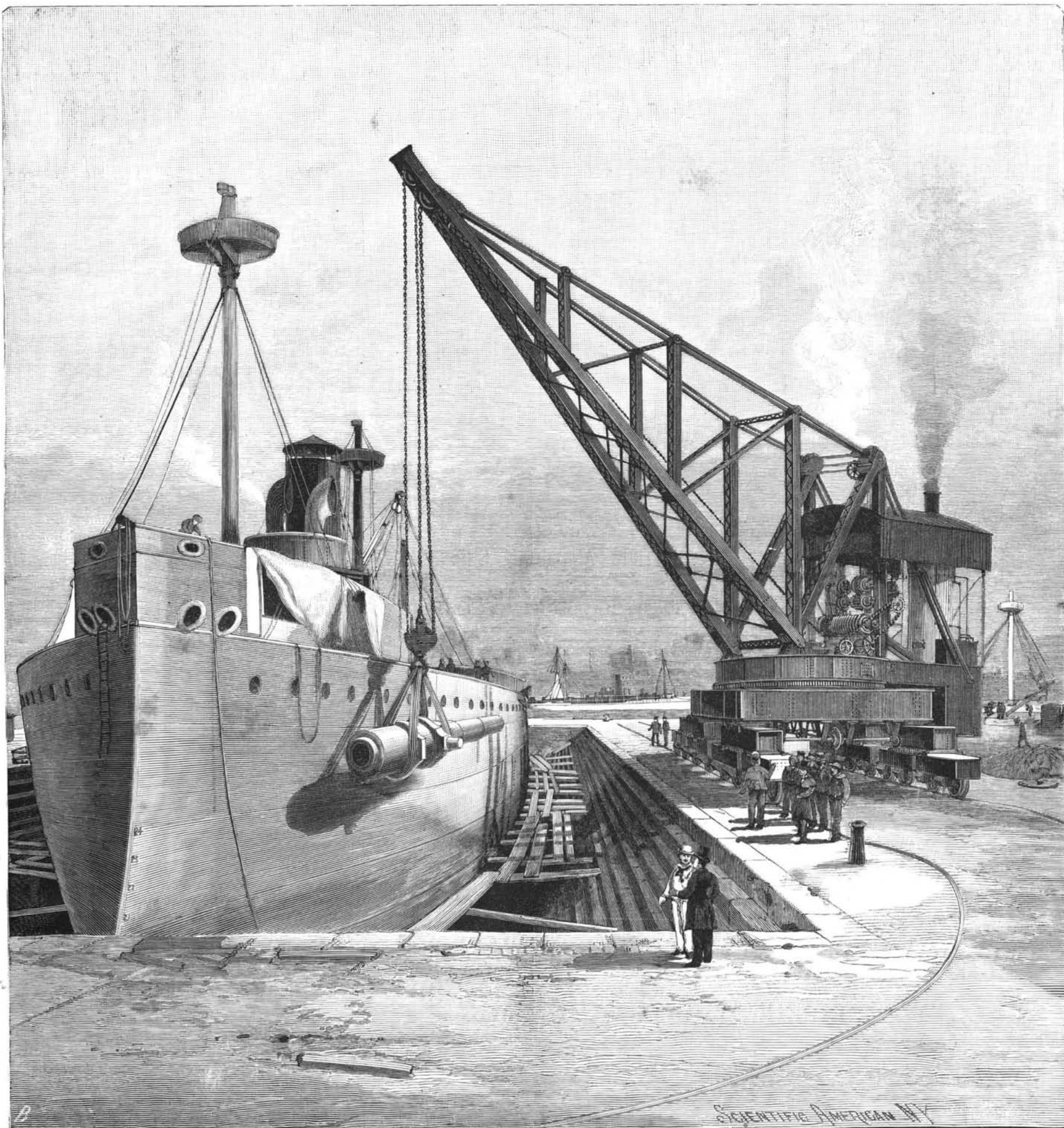
distance nearly covers the entire vessel. At the new dock, it covers the sides and gun carriages.

Our illustration represents the new armored cruiser Maine in the dock, and the crane handling a 10 inch gun. The placing of the protective armor will be done while the vessel is in the dry dock, the plates of which, weighing from 25 to 30 tons each, will be handled by the new crane.

It is of the balanced type, running on an 18 feet gauge track on the sides and around the head of the dock. It is a massive structure resting upon 16 wheels, double flanged, in 8 track trucks of 2 wheels

each, swiveled; each pair of track trucks is connected by a swiveling beam under the main frame. Two of the wheels in each combination truck, or 8 in all, are driving wheels geared through a compensating gear train with the main engine, to enable the crane to be moved on the short curve around the head of the dock without strain or undue friction.

The power for all work is derived from a pair of engines with cylinders 10 inches by 12 inches, geared to an iron grooved drum 30 inches diameter, 8 feet long. Shifting clutches operated by levers on the floor of the frame are the devices for transferring the



THE NEW TRAVELING CRANES AT THE BROOKLYN NAVY YARD

power between hoisting, swinging and truck motion with a lever and link to control the speed in the engine. These are placed at a commanding position on the floor of the frame.

The lift is three part, using a 1 1/2 inch chain.

The boiler is vertical, of 75 h. p., carrying 100 lb. steam pressure, placed over the counterweight, which is ballasted with 75 tons of iron. The total weight of each crane is 192 tons.

They were built by Wm. Sellers & Co., Philadelphia.

Improvements in the Manufacture of Dyestuffs. BLACKISH BLUE AZO DYE.

This new dyestuff is derived from equal molecular proportions of diazotized dianisidin, the sodium salt of mono-sulpho-dioxy-naphthoic acid, and (1/4) alpha-naphthol alphanono-sulphonic acid of Nevile & Wither, and which is a grayish black glittering powder of a metallic luster, easily soluble in water with a blackish blue, in concentrated sulphuric acid with a green-blue coloration; difficultly soluble in alcohol and insoluble in ether and benzene.

IMPROVED DYE FROM ALPHA OXYUVITIC ACID.

The improvement consists in the new process of manufacturing of meta-azo compounds serving as coloring matters, said process consisting in combining alpha oxyuvitic acid with diazo compounds.

GRAY BLACK TETRAZO DYE.

This dyestuff is produced in combining one molecular proportion of tetrazo-diphenyl or ditolyl with two molecular proportions of the sodium salt of mono-sulpho-dioxy-naphthoic acid, and which is a dark glittering crystalline powder of metallic luster, which dissolves easily in water with a red-violet, in concentrated sulphuric acid with a pure blue coloration, and is insoluble in alcohol, ether, and benzene.

NEW PINK DYE.

This is a new article of coloring matter, manufactured from the alkali salt of a sulphonic acid derived from fluorescein chloride and mesidine, and having the formula C12H10O3N2S2 alk.; a light red powder easily soluble in hot and cold water, difficultly soluble in alcohol, giving vivid red color, mineral acids precipitating from its aqueous solution, the sulphonic acid in the form of red flakes.

A NEW RED DYESTUFF.

This new red azo dye coloring matter is derived from diazotized mono-nitro-benzidine, salicylic, and alpha-naphthol-alpha-mono-sulpho-acid (Nevile & Wither), and which is a red brown powder difficultly soluble in cold water and alcohol, insoluble in benzene, but readily soluble in warm water, with a yellow-red color.—Textile Record.

Silver Mining.

The president of the Huanchaca Mining Company, of Bolivia, was recently reported as saying that he expected that silver would still further decrease in value, but that such decrease would have no effect on the Huanchaca Company, because it could produce silver at a profit even if the price dropped to 270 francs per kilo, or say 42 cents per ounce. This is by no means an idle boast. During 1891, this company mined 5,497,963 ounces of silver at a total cost of \$2,414,360, or 44 cents per ounce. This cost in detail as follows: Mining, 16 cents; new works, 6 cents; reduction and smelting, 9 cents; taxes and export dues, 5 cents; general expenses, 8 cents. Notwithstanding the low price of silver during the past year, the output of this mine increased nearly 15 per cent, amounting to 6,667,703 ounces, and the ore reserves are larger than before. For the 15 years ending with 1891, this company produced bullion valued at \$43,033,899, paid \$14,168,038 in dividends, and has set aside a reserve fund of \$1,776,765.

This mine by no means stands alone as regards cheapness of working, although it stands second among the silver mines of the world in point of output. Thus the Broken Hill Proprietary Company, of Australia, the greatest silver mine in the world, produced in six years and a half ending May 30, 1892, a total of 36,512,445 ounces of silver and 152,000 tons of lead, at a total cost of \$21,356,235. The cost per ounce of silver varied from 66 cents in 1887 to 41 cents in 1890, the average being 47 cents; the cost per pound of lead varied from 23 cents in 1887 to 14 in 1892, the average being 165 cents. This company has paid dividends amounting to \$19,480,000.

In the United States the Ontario Mining Company has, since 1880, produced 26,261,076 ounces of silver at a total cost of \$14,771,862, an average of 55 cents per ounce. The Granite Mountain Mining Company has, since 1883, produced 21,430,000 ounces, at a total cost of \$8,376,620, an average of 39 cents per ounce. Some of these mines are becoming exhausted, notably the Granite Mountain, but new ones are constantly being discovered, and in all probability will continue to be discovered for many years to come. Thus the recently discovered Creede district produced 5,000,000 ounces in 1892, of which it is said that the greater part was produced at an average cost of less than 40 cents per ounce.—Eng. and Min. Jour.

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, NEW YORK.

O. D. MUNN.

A. E. BEACH.

TERMS FOR THE SCIENTIFIC AMERICAN.

One copy, one year, for the U. S., Canada or Mexico, \$3 00
One copy, six months, for the U. S., Canada or Mexico, 1 50
One copy, one year, to any foreign country belonging to Postal Union, 4 00
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MUNN & CO., 361 Broadway, corner of Franklin Street, New York.

The Scientific American Supplement

is a distinct paper from the SCIENTIFIC AMERICAN. THE SUPPLEMENT is issued weekly. Every number contains 16 octavo pages, uniform in size with SCIENTIFIC AMERICAN. Terms of subscription for SUPPLEMENT, \$5.00 a year, for the U. S., Canada or Mexico, \$6.00 a year to foreign countries belonging to the Postal Union. Single copies, 10 cents. Sold by all newsdealers throughout the country. See prospectus, last page.
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MUNN & CO., Publishers,

361 Broadway, New York.

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Readers are especially requested to notify the publishers in case of any failure, delay, or irregularity in receipt of papers.

NEW YORK, SATURDAY, JUNE 10, 1893.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as Agricultural inventions, Arctic regions, Books and publications, Commercial National Bank, Cornell University, Cranes, Diamonds, Drowning, Earthware, Electricity, Electric railway, Electric tramway, Exhibits, Exploration, Exposition, Feathers, Fire jets, Flour mill, Heat concentration, Inventions, Japan, Jupiter, Manganese, Patents, Perfumes, Photography, Pocket, Railway appliances, Silver mining, Stars, Steam hammer, Submarine blasting, Telegraph decision, Thermometer systems, Wood, insect-infested, Wrench, Wells.

TABLE OF CONTENTS OF SCIENTIFIC AMERICAN SUPPLEMENT No. 910.

For the Week Ending June 10, 1893.

Price 10 cents. For sale by all newsdealers.

Table listing sections I through X: I. AGRICULTURE, II. ANTHROPOLOGY, III. ASTRONOMY, IV. COLUMBIAN EXPOSITION, V. ELECTRICITY, VI. MECHANICAL ENGINEERING, VII. MINING ENGINEERING, VIII. ORNITHOLOGY, IX. TECHNOLOGY, X. VITICULTURE.

THE COMMERCIAL NATIONAL BANK OF CHICAGO.

In our issue of May 27, 1893, alluding to the reported failure of the bank established in the Administration building, our correspondent in Chicago inadvertently gave the name as the Commercial National Bank of Chicago, whereas the real delinquent was the Chemical National Bank of that city. Those who are at all acquainted with the monetary affairs of Chicago must have observed the error at once. The Commercial National Bank is well known as one of the safest and most reliable banking institutions in the country, while its officers and directors are distinguished for their sterling integrity and business ability. Such a calamity as the failure of the institution, at the present time, in the height of its prosperity, is out of the question. We greatly regret that the error should have crept into our columns.

PHOTOGRAPHY AT THE WORLD'S COLUMBIAN EXPOSITION.

It is an easy matter for people inclined in this direction to find fault, and in such an enormous undertaking as the World's Columbian Exposition there are naturally many things to which exceptions can be taken. But the Exposition is such a grand success, as a whole, and it has been carried out on such a broad plan that fault finding in most instances can only be of a dyspeptic sort. There is one matter, however, that has been allowed to drag which should have been taken up long ago, and which should, even now at this late day, be discussed in such a manner as to bring the attention of the Exposition management to it and lead to reform. We refer to photography in connection with the Exposition.

At the time of the Centennial Exposition dry plates were just coming into use and amateur photography was beginning to be popular. During these intervening years there have been no startling or radical changes in photography, but amateurs have become so skilled, and in many instances have produced such perfect specimens of work, that public taste has been educated up to a point where it accepts only good photographs—pictures in which the subject is well chosen and which also are well developed and printed with care and judgment. So much progress has been made in this direction since the Centennial that people naturally expect to find on sale at the Columbian Exposition photographs that the photographic fraternities would feel proud of. There never has been opportunity for such a harvest of fine pictures as this exposition affords. It has a large amount of ornamental statuary that is acknowledged to be thoroughly artistic and beautiful. Its buildings are infinitely finer in design than anything ever seen in the new world. The grounds in which the Exposition is located are a masterpiece in landscape gardening. Many people of this country as well as many Europeans who have traveled extensively are astonished at the conception of the Exposition and at the beauty to be found in Jackson Park.

Yet, in spite of all these things, it is not possible to procure thoroughly good official photographs at the World's Columbian Exposition. The workmanship is in no respect better than was to be found at the Centennial. In fact, it is not as good, considering the fact that so many years have intervened and that so many improved processes have since been introduced. The subjects are selected with a lack of judgment and taste, and the developing is of ordinary quality. An exhibition by amateur photographers in any part of the country, judging by the samples that have been seen by members of photographic societies, could show specimens of work superior to the pictures offered for sale at the World's Columbian Exposition. The photographic department is such an appalling failure from the standpoint of the photographer, whether he be amateur or professional, that some public protest should be made against this condition of things before it is too late to have the necessary photographs taken to preserve some of the beauties of the Exposition.

Brass Coloring.

A fine black color, which can be varied to a light brown, can be produced on brass by treatment with an ammoniacal copper solution made by dissolving one part of copper nitrate in two parts of ammonia of specific gravity 0.96 while keeping the solution cool. The brass articles, which must be carefully cleaned, acquire a light tone on first being immersed, but on exposure for some hours become deep black. The treatment can be interrupted when the desired tint is reached. A luster can be put on the articles by rubbing with a little wax or vaseline. The process can be varied and other color effects obtained by treatment of the article after the development of the black color with very dilute hydrochloric acid, which dissolves the coating gradually and thus modifies the tint. The composition of the brass also has an influence on the result, and the coloring produced recalls that seen on Japanese bronze, which has possibly been obtained by a similar method.