

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT NO. 37 PARK ROW, NEW YORK.

A. D. MUNN.

A. E. BEACH.

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VOL. XLII, No. 16. [NEW SERIES.] Thirty-fifth Year.

NEW YORK, SATURDAY, OCTOBER 18, 1879.

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(Illustrated articles are marked with an asterisk.)

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Price 10 cents. For sale by all newsdealers.

Table listing contents of the supplement, including sections like 'I. ENGINEERING AND MECHANICS', 'II. GEOGRAPHY, GEOLOGY, ETC.', 'III. ARCHITECTURE', etc.

CONCRETE WORK AT THE SEA ENDS OF MISSISSIPPI JETTIES.

The largest blocks of concrete ever employed in works of marine engineering are those used to give stability to the sea ends of the South Pass jetties, now approaching completion, at the mouth of the Mississippi. Two causes combined to make their adoption an imperative necessity—the entire absence of available rock within a radius of five hundred miles or more, and the enormous force of the waves to be withstood.

In a paper read before the American Society of Civil Engineers, last August, Chief Assistant Engineer Max E. Schmidt gave an account of the mode of constructing and depositing these gigantic blocks, a mode which presents several novel and interesting features.

The concrete is made of broken stone, gravel, sand, and cement from the limestone region near Rose Clair, on the Ohio, 1,300 miles up the river. The stone is broken by hand, all the pieces being small enough to pass through a three-inch ring. The gravel is brought from Prophet's Island, La., two hundred and fifty miles up the river, and ranges in size from 1-30th of an inch to 2 1/2 inches in diameter.

The blocks of concrete are constructed in place on the top of the jetties, and are from 16 to 20 feet long, from 5 to 13 feet wide, and from 2 1/2 to 4 feet thick, the dimensions enlarging by offsets as the jetties approach the sea ends. The mixing is done in a 5 ft. 9 in. cubical box made of quarter inch boiler iron, well riveted and strapped with flat and T iron, and supported by a strong framework of timber resting on the jetty.

The mixer is charged and discharged through a triangular door, formed by cutting off one corner of the box, the sliding cover being strongly clasped and secured by screws. The water enters the box through hollow journals while the ingredients are being revolved for mixing.

By means of two ratchet wheels and wooden levers permanently attached to the axle on each end of the car, the dumping of nearly 9,000 pounds of concrete is done almost automatically, and the car is easily turned back to its upright position by two men. The moulds, constructed almost entirely without nails or spikes, are sawed out in parts and fitted by carpenters, and are carried on trucks over the finished blocks to the place where needed.

elasticity of the subaqueous layers of mattresses has been destroyed. The greater part of the settling seems to occur within the first ten days after the construction of the blocks.

USE OF PHOTOGRAPHY IN WOOD ENGRAVING.

In the practice of the ordinary method of wood engraving the artist whitens the surface of the block and makes his drawing thereon with India ink or pencil. The engraver then cuts upon the drawing, endeavoring to keep in mind the general effect of the original; but the latter is of course gradually obliterated as the work of cutting proceeds.

The facilities offered by photography are now, however, being used by engravers and draughtsmen to assist in the production of better engravings. Instead of drawing directly upon the wood, the artist now makes his finished picture upon paper, which is then photographed upon the wood in exact facsimile; the engraver then proceeds to cut the photograph, and during the whole time of cutting he has before him the original paper drawing, to which he may refer for assistance in his endeavor to maintain and reproduce the spirit and feeling of the picture.

THE HUDSON RIVER TUNNEL.

The Hudson Tunnel Company, which began excavations almost five years ago for a submarine passage to connect the cities of New York and Jersey City, lately resumed operations after a litigation of several years begun by railroads and private citizens to restrain the work. The courts of New Jersey decided that the company were legally entitled to build their tunnel, and Colonel DeWitt C. Haskin, the President, immediately set to work a force of about fifty masons and laborers at the original point of departure, Jersey avenue and Fifteenth street, Jersey City.

All this, of course, is contingent upon the success of Col. Haskin's method of tunneling. That it will succeed without radical modifications is highly questionable, indeed altogether impossible, since the air in the tunnel would have to be maintained at a density at least equal to that of the semifluid materials to be supported.

The object of the tunnel (which is to be circular in form, 26 feet wide and 24 feet high) is to establish direct railway connection between New York and the railways having termini at Jersey City—the Erie, Pennsylvania, Delaware, Lackawanna and Western, and New Jersey Central. It is estimated that more than 400 trains of cars could be passed through the tunnel every twenty-four hours, the time of travel from Jersey City to Broadway to be six minutes.

THE PRODUCTION OF BROMINE IN THE UNITED STATES.

The only important source of bromine in the United States is the liquid which remains after the extraction of salt, and which is known in the salt-making industry as the "mother waters." The Moniteur Scientifique gives a short description of the process employed in separating this important element from the saline liquors. The latter, when first pumped up from the pit, mark 9° Baumé. They are evaporated in long iron boilers to 15° Baumé, allowed to settle, then further evaporated to the crystallizing point in wooden tubs heated by steam.