

to bring pipes to be laid in the trench. In Fig. 2 of the engraving the relations of trench, pipe-laying plant, and portable railroad are clearly shown.

The pipes, as fast as required, are run up to the scene of operations upon the portable railroad. The hoisting apparatus consists in general terms of a rectangular platform carried on four wheels and extending over and across the trench.

Slings are then placed round the pipe now lying on the skids over the aperture. Tackle is hooked on, and it is lifted a little by the steam windlass, and the skids are withdrawn.

The joint has next to be calked with oakum. This is driven by hand with a calking iron. It extends all around the pipe within the hub, and is of as even thickness as possible.

To complete the joint melted lead has to be introduced into the space in front of the oakum and the lead in turn has to be calked. As the apparatus just described is moved forward, the lead-melting plant seen in its rear is moved into its place.

The lead is lowered, as shown, into the trench, where it is received by the pipemen and poured into the joint, as shown in Fig. 4. Before doing this a band of iron hinged at the bottom is placed around the pipe and bolted at the top, so as to inclose the annular space in front of the oakum.

The lead at once solidifies. The band is removed, and the calkers attack the lead with large-faced calking irons and hammers and drive it home.

The metal being somewhat yielding does not form too rigid a connection, and allows for changes of temperature. In spite of numerous attempts, lead-calked joints have never been displaced.

The object of the line is to carry water from the new reservoir between Rockville Center and Baldwins, on the south side of Long Island, to the Ridgewood reservoir and new pumping station at East New York.

The work is being executed by Mapes, Crawford & Valentine, of Brooklyn, N. Y. They are the designers of the ingenious and efficient apparatus whose results have taken the direction of greatly accelerating the work we have described.

PROFESSOR ORTON, State Geologist of Ohio, says that the natural gas supply is rapidly and surely being exhausted. The way in which the gas is wasted makes the average stranger sick at heart.

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., Publishers, 361 Broadway, New York.

The safest way to remit is by postal order, express money order, draft or bank check. Make all remittances payable to order of MUNN & CO.

NEW YORK, SATURDAY, JANUARY 3, 1891.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as 'Aquaduct, Brooklyn, work on*', 'Metallo-chromes*', 'Newark, new cruiser', 'Notes and queries', 'Patents granted, weekly record', etc.

TABLE OF CONTENTS OF SCIENTIFIC AMERICAN SUPPLEMENT

No. 783.

For the Week Ending January 3, 1891.

Price 10 cents. For sale by all newdealers.

Table listing contents of the supplement such as 'I. ARMS OF WAR.—The Lebel and Mannlicher Guns', 'II. CHEMISTRY.—Method for Rendering Aniline Colors Soluble in Benzene', 'III. CIVIL ENGINEERING.—The Metropolitan Railway of Paris', etc.

THE NEW CRUISER NEWARK.

On the 22d of December the new U. S. steel cruiser Newark had her official trial trip, and proved a great success, the contract requirements being exceeded by about five hundred horse power.

The Newark's hull is the same as that of the San Francisco, whose fine lines have commanded much admiration, and which was illustrated and described in the SCIENTIFIC AMERICAN of October 18, 1890.

The armament of the Newark will be twelve six inch breech loading rifles; four rapid fire guns, two three-pounders and two one-pounders; four revolving cannon and four Gatling guns.

OFFICIAL PROCLAMATION OF THE GREAT FAIR.

The last act necessary to start into booming activity the gigantic works pertaining to the great fair has been performed. The presidential proclamation has been issued, and soon we shall see holes in the ground and structures in the air.

"By the President of the United States of America: A proclamation: Whereas, satisfactory proof has been presented to me that provision has been made for adequate grounds and buildings for the uses of the World's Columbian Exposition, and that a sum not less than \$10,000,000 to be used and expended for the purposes of said exposition has been provided in accordance with the conditions and requirements of section 10 of an act entitled 'An act to provide for celebrating the 400th anniversary of the discovery of America by Christopher Columbus by holding an international exhibition of arts, industries, manufactures and the products of the soil, mine and sea, in the city of Chicago, in the State of Illinois,' approved April 25, 1890.

"Now therefore I, Benjamin Harrison, President of the United States, by virtue of the authority vested in me by said act, do hereby declare and proclaim that such international exhibition will be opened on the first day of May, in the year 1893, in the city of Chicago, in the State of Illinois, and will not be closed before the last Thursday in October of the same year.

"In testimony whereof I have hereunto set my hand and caused the seal of the United States to be affixed. Done at the City of Washington, this twenty-fourth