

Scientific American.

ESTABLISHED 1845.

MUNN & CO., Editors and Proprietors.

PUBLISHED WEEKLY AT

No. 361 BROADWAY, NEW YORK.

O. D. MUNN.

A. E. BEACH.

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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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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, \$3.00 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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NEW YORK, SATURDAY, DECEMBER 31, 1892.

Contents.

(Illustrated articles are marked with an asterisk.)

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For the Week Ending December 31, 1892.

Price 10 cents. For sale by all newsdealers

Table listing contents of the supplement by category: I. ARCHAEOLOGY, II. CHEMISTRY, III. CIVIL ENGINEERING, IV. ELECTRICITY, V. HYGIENE, VI. MECHANICAL ENGINEERING, VII. MISCELLANEOUS, VIII. NAVAL ENGINEERING, IX. TECHNOLOGY.

RENEW SUBSCRIPTIONS NOW.

The year of 1892 will be closed with this issue of the SCIENTIFIC AMERICAN and many subscriptions expire with this number. The publishers desire to call attention to this fact for the reason that, by remitting the subscription price without delay, the name of the subscriber will not be taken from the books and he will continue to receive the paper without interruption. It is the intention of the publisher to make the paper during the coming year of especial interest. An unparalleled opportunity to procure subjects of interest to the reader will be afforded by the World's Fair, and with a special correspondent and artists on the spot, this opportunity will be taken every advantage of. Every effort will be made to make a record, both editorially and pictorially, of the industrial and scientific development of the country, as manifested by the works and exhibits at the fair, and this record will be valuable to preserve for future reference. Many subjects that cannot appropriately find place in the SCIENTIFIC AMERICAN will be published in the SUPPLEMENT.

Those who send their subscriptions directly to this office will be assured of the regular receipt of the paper, by mail prepaid.

PROPOSED RAILWAY TUNNEL UNDER THE TWO RIVERS AT NEW YORK.

A large railway tunnel under the North and East Rivers, connecting Brooklyn, New York City, and Jersey City, has been projected by Mr. Austin Corbin, of the New Jersey Central Railroad and the Long Island Railroad. It is said the Pennsylvania Railroad has been considering the matter of joining in the construction. Some \$50,000 has been expended in preliminary surveys and borings, under the supervision of Mr. Charles M. Jacobs, C. E., who reports that the construction under both rivers, and under the city of New York, will all be, with the exception of a short section in the North River, through very solid gneiss, in such firm and regular position as to almost entirely prevent leakage, and so that a lining even will hardly be necessary. It is planned that the tunnel shall start at Flatbush Avenue, in Brooklyn, the present terminus of the Long Island Railroad, thence passing by easy gradients to a greatest depth of 140 feet below the two rivers and the lower end of New York City. The tunnel will be connected by elevator shafts with the surface at two or three places in Brooklyn, and there will be similar stations in New York City as may be desired, the tunnel passing under the city from the foot of Maiden Lane to the foot of Cortlandt Street, and under the present Pennsylvania depot in Jersey City. It is said that the excavation will be 29 feet high and 21 feet wide in the clear, and that work can be prosecuted at seven different points at the same time. It is estimated that the construction can be completed in three or four years.

THE TWO ENGLISH-AMERICAN STEAMERS.

The two magnificent ocean steamers of the Inman line, the City of New York and the City of Paris, heretofore sailing under English colors, though owned by American citizens, will shortly assume the flag of the United States, in accordance with the recent act of Congress authorizing such assumption. At present these are the fastest passenger vessels afloat. They are of 560 feet length, 10,500 tons, 20,000 horse power, built to carry an armament in the event of war, and may be taken by our government should hostilities make it necessary. The change of flag will take place in February and March next. At the same time there will be a change of ports in England.

Heretofore the ships have sailed between New York and Liverpool, calling at Queenstown. In March next they will change to Southampton, where passengers can be landed at the dock, and reach London in less than two hours' time, thus avoiding the delays, inconveniences and long railway rides of the Liverpool route.

The speed supremacy heretofore enjoyed by these ships will probably be overcome in the course of a few months, when the two recently launched Cunard steamers Campania and Lucania, each of 30,000 horse power, 700 feet length, 20,000 tons, are ready for sea. It is a question, however, whether the Cunard boats will be able to beat our ships more than half a day in time; and it seems probable, therefore, that passengers by the latter will be able to reach London fully as quickly as they could via Liverpool and the new Cunarders.

Under the new order of things, commencing in March, the City of Paris will deliver the United States mails at the London post office at least eight hours earlier than she has previously been able to do, and from four to five hours sooner than any other steamship, except the City of New York. By the new route the passenger will embark at the Inman line's new pier at New York, and upon arriving at the new Empress docks, Southampton, will board a special train for London, after passing a brief custom house examination. His baggage will go to London on the same train, and a ride of an hour and a half will land

him in the English metropolis, where he can enjoy a half day's sightseeing before the tourist who came by Liverpool arrives.

IMPROVEMENT OF LOCAL POSTAL FACILITIES.

Postmaster-General Wanamaker has entered into an agreement with the United States Automatic Dispatch Company, of New York, by which the company agrees to lay, at its own expense, a double line of tubes or other form of conduit, connecting the main Post Office building in New York with the main Post Office at Brooklyn for the transmission of the mails. It agrees to pay all expenses connected with the construction of the system, to maintain and operate it for a year, to remove it when required to do so by the Postmaster-General, and to pay all damages to the buildings or other property. When completed, the company agrees to turn over the tubes and their appurtenances to the Post Office Department for such practical tests as the postmasters of New York and Brooklyn or the Postmaster-General may see fit to make, the tests to be at the expense of the company.

It is further agreed that the company shall provide electric power for the operation of the system, and shall lease it to the United States year by year, or sell it to the United States at its actual cost. The transportation, it is said, will be done by a miniature trolley railway, inclosed in a 16 inch square conduit. The mail matter will be placed in carriers of steel wire, 4 feet long and 14 inches square, each carrier taking a pouch containing 3,000 letters, or an equal bulk of other classes of mail. In the end of each carrier or car is a small electric motor, taking the current from a wire running between the tracks. It is expected that the cars will develop a speed of between 70 and 100 miles an hour. The cutting off of power and all switching will be done automatically, so that the clerks at either end will merely have to load and start the cars. The author of this plan is Mr. Andrew Bryson, Jr., of this city. The conduits, if the present plans are carried out, will be suspended from the iron work of the bridge and of the elevated road on Adams Street, Brooklyn.

This scheme reads very well, and could, no doubt, be made to operate; but the cost of maintenance, interest, and attendance would render it a very expensive method of doing the simple work of carrying the mails between the New York and Brooklyn post offices—a distance of a little less than two miles. A tube system is limited to mere transportation between fixed stations. It does not embrace the far more important work of rapid letter collection and quick local delivery.

What is urgently needed for the improvement of postal facilities in New York, Brooklyn, Chicago, Philadelphia, and all our towns, is not a plan of tubes, but a systematic employment of the street railways. Our cities are ramified in every direction by numerous lines of cars, horse, steam, elevated, and cable, which are in motion day and night. There is, apparently, no reason why they might not be made available at once, as adjuncts of the post office, in the rapid collection and delivery of the mails. The expense would be far less and the operation quicker than is possible by any system of tubes. The Postmaster-General who will inaugurate a comprehensive system for street car mail delivery and collection will confer a lasting benefit upon the public and achieve a most honorable distinction.

In St. Louis a street car mail system has been commenced on a small scale, and works with much success. Now let us have it extended and employed in a thorough manner to all our towns and cities. When this is accomplished the United States will lead the world in respect to internal postal facilities and the people will enjoy therefrom rare advantages. To be able to hand mail matter to traveling postmen and to know that it will have immediate delivery is what everybody requires. The means for doing this stand ready. The Postmaster-General is clothed with the necessary authority. All that is needed to set the work in motion is an act of Congress granting a reasonable appropriation. The increased postal business would soon bring back returns greater than the expenditure.

A Large Freight Steamer.

On the 22d of October last Messrs. William Doxford & Sons, of Pallion, Sunderland, launched from their ship building yard the steamer Samoa, which has been built to the order of Messrs. Crow, Rudolf & Co., of Liverpool. This vessel is not only the largest ever built on the Wear, but is said to be the largest deadweight cargo vessel in the world. She is 465 feet in length, has a gross register of 6,400 tons, deadweight capacity of 9,250 tons on 25 feet draught, and gross displacement of 13,600 tons.

A MEDICAL CENTENARIAN.—The death of Dr. Enoch Fithian, of Bridgeton, N. J., on November 15, removes the oldest living medical graduate, as he was reported to be, of the University of Pennsylvania, from which institution he received his diploma in medicine in 1815. He was born in May, 1792.