

iron ore, coal, wheat, flour, and merchandise go to the steamers for low rates and quick transit.

In the mad rush of invention upon the land, marine architecture was allowed for a quarter of a century in this country to suffer somewhat.

These vessels are built both as tow barges and as steam propellers. The first boat of the fleet (there are now eleven afloat), the tow barge "101," a small craft of 437 tons registry and 1,400 tons carrying capacity,

The first steam propeller, the Colgate Hoyt (named after the president of the American Steel Barge Company), was built in the winter of 1889-90, and has been in successful commission during the season of 1890 in the ore, grain and coal carrying trade between Superior and Lake Erie ports.

The Joseph L. Colby, launched November 15, is a somewhat smaller vessel than the Colgate Hoyt, being designed for passage through the Welland Canal and St. Lawrence River to Montreal.

The tow barges 102 and 103 are of 1,132 tons registry and 3,000 tons carrying capacity; the tow barges 104, 105, 107, and 109 are each of 1,216 tons registry and 3,300 tons carrying capacity.

The Colgate Hoyt is registered at 1,008 tons, and 3,600 tons carrying capacity, with a speed of 15 knots per hour on 800 horse power.

The "whalebacks" are all built upon the same pattern. They are round decked, flat bottomed, and ended up like the pointed end of a cigar.

The ship yard at Superior has six "slips" and ten piers or ways for keel blocks, so that ten of these boats can be under construction at one and the same time.

There is at present a whaleback tow barge lying on a dry dock in New York City, that was constructed at the Erie Basin for the coast and river trade, while two McDougall propellers are expected here in a short time, one of which is to be sent across to Liverpool and one to Puget Sound, on the Pacific coast.

CONTRACT has been let for the construction of a railroad from San Diego to San Quentin, Lower California, a distance of 163 miles.

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Contents.

(Illustrated articles are marked with an asterisk.)

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TABLE OF CONTENTS OF SCIENTIFIC AMERICAN SUPPLEMENT No. 809.

For the Week Ending July 4, 1891.

Price 10 cents. For sale by all newsdealers.

Table listing contents of the supplement including 'I. ART.—How Statues are Made', 'II. ASTRONOMY.—Recent Conceptions of Arcturus', 'III. BIOGRAPHY.—Edmund Becquerel', 'IV. BOTANY.—Pyramidal Beidlower', 'V. CHEMISTRY.—Fertilizer Analysis', 'VI. CIVIL ENGINEERING.—An Enlarged Waterway', 'VII. ELECTRICITY.—On the Magnetization of Metals', 'VIII. GEOLOGY.—Iron Ore Deposits', 'IX. MECHANICAL ENGINEERING.—The Riveted Joints in Boiler Shells', 'X. MEDICINE.—New Remedies', 'XI. TECHNOLOGY.—A Two-Bottle Marking Ink'.

THE CASINO AND PIER AT THE EXHIBITION.

One of the novel buildings at the Exposition will be the Casino and pier. The Casino, which will stand out in the lake 1,000 feet from the shore, is intended to reproduce Venice on a small scale in Lake Michigan.

The Casino will be built on piles and connected with the shore by a pier 80 feet wide. The base dimensions of the Casino will be 180 by 400 feet. The building will consist of nine pavilions, two stories in height, and, with the exception of the central one, 80 feet above the surface of the water.

FAST BOATS FOR THE NAVY.

We have repeatedly urged upon Congress the importance of high speed for some of our war vessels. Some progress has been made, but our neighbors still excel us. As yet we have nothing that can compare in speed with the best English and German mail steamers regularly employed between New York and Europe.

The advantage of high speed is conspicuous in the naval warfare now going on in Chile. At the outset of the war the insurgents had a great advantage in holding possession of the principal vessels belonging to the navy. There remained, however, to the government a few boats, among them two gun boats, not very large it is true, but they are among the fastest in the world.

An eminently successful trial of a torpedo boat just completed by Messrs. Thornycroft & Co., for the government of the United States of Brazil, took place in the estuary of the Thames on the 2d of June.

Table showing results of torpedo boat trials: First run, with tide, 27'629 knots, 1,065.5 revolutions per knot; Second run, against tide, 23'529 knots, 1,280 revolutions per knot; etc.

The mean of these speeds computed by the Admiralty method being 25.858 knots, Messrs. Thornycroft's guarantee was more than fulfilled. The mean number of revolutions required to do a knot was found to be 1,165.4.