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NEW YORK, SATURDAY, MAY 28, 1892.

Contents.

(Illustrated articles are marked with an asterisk.)

Table listing various articles such as 'Annealing oven, for tin plates', 'Measles bacillus', 'Artesian wells, facts about', 'Mineral and geological specimens, preserving', etc.

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Table listing contents of the supplement, including sections like 'I. ASTRONOMY', 'II. CHEMISTRY', 'III. CIVIL ENGINEERING', 'IV. ELECTRICITY', 'V. GEOGRAPHY AND EXPLORATION', etc.

NEW INVENTIONS NEEDED FOR WORKING STEAM-SHIPS.

In our last number we gave an account of the recent act of Congress passed for the special registration of the two great British-built steamers, the City of New York and the City of Paris. The proposed transfer of these ships, which are in fact semi-war vessels, to the American flag has excited considerable feeling in England.

But according to the views of our London contemporary, Engineering, there is not much likelihood, after all, of the realization of the transfer. The authorizing act, it is true, has been passed, but our confrere avers that it will be so much more expensive for the owners to run the ships under the American flag that any actual change is improbable.

There are several companies of American citizens who would like to build steamers here with a view to foreign trade, but they are deterred by the greater running expenses required. Among them is the Corbin company, which aims to establish a line of steamers between Montauk, at the east end of Long Island, and Milford Haven, in Wales, which latter place, by the completion of the Severn tunnel, is now only six hours distant from London, the same as Liverpool.

At present it looks as if recourse must be had to the genius of our inventors for the solution of the problem of ocean steam navigation in American-built steamers. We can build the ships and supply them with fuel nearly as cheaply as anybody; but we cannot run them so economically after they are built, by reason of the lower wage rates that elsewhere prevail.

THE NEW STEEL STEAMERS OF THE PROVIDENCE LINE.

The second of the new screw steamers, the New Hampshire, built for the Providence and Stonington line by the Harlan & Hollingsworth Co., of Wilmington, Del., has just been finished, and has had a trial speed test on the Delaware River. Taking on 600 tons ballast to bring the wheel to immersion line, she made time over the measured mile in 2 minutes 59 seconds, 2 minutes 58 1/2 seconds, 2 minutes 57 1/2 seconds, or a speed of over 20 miles per hour.

Length over all, 310 ft.; length on water line, 302 ft. 7 in.; beam moulded on load water line, 44 ft.; width over guards, 60 ft.; draught, 12 1/2 ft.; gross tonnage, 2,400; net tonnage, 1,500; hull of steel, with seven steel bulkheads, dividing the vessel into water-tight compartments; propeller screw left-handed, four blades 13 1/2 ft. diameter, 18 1/2 ft. pitch; 13 in. shaft, 130 ft. long, in sections of about 25 ft., with eight thrust bearings of Magnolia metal; maximum revolutions, 100 per minute.

The engine is of the inverted direct-acting triple expansion type, with four cylinders: One high pressure cylinder, 28 in. in diameter; one intermediate, 45 in. in diameter; and two terminal cylinders, each 51 in. diameter, with 42 in. stroke. A surface condenser, of Light-hall type, with a centrifugal circulating pump, and a steam reversing gear. The high pressure cylinder has a single piston valve; the other cylinders each have double piston valves; cranks quartering. The high pressure cylinder takes steam at 160 lb.; 1st receiver, 40 lb. pressure; 2d receiver, 12 lb. pressure; terminal pressure in 3d and 4th cylinders, 0—thus utilizing steam to its utmost expansion. The engine, at 100

revolutions, develops 2,947 indicated horse power, or 1,227 I. H. P. per gross ton.

The action of the quadruple engine tends to a freedom from jar or vibration, usual with our large propellers of this class, making the after part of the vessel an exceptionally quiet part. The roughness and impact of water at the bow make the usual vibration, so that if you want a quiet berth, take an after one.

The boilers, two in number, are of the Scotch type with Purves corrugated furnaces, each 46 x 78 in., aggregating 270 sq. ft. of grate surface. Boilers 13 1/2 ft. diameter, 11 ft. long. A blower service for the fire room and boilers when necessary. The engine room is arranged with all the modern facilities for utility and convenience for every needed service. A powerful fire pump and fire apparatus throughout the vessel. Five bilge pumps constantly working on the crosshead of the air pump. A supply pump for salt water for sanitary purposes. A fresh water supply pump for pressure service. A steam jack for turning over the shaft.

An incandescent lighting system, consisting of two Thomson-Houston dynamos of 350 light power each, driven by separate engines of 20 horse power each. Steam is reduced to 80 lb. pressure for these engines by a reducing valve. An annunciator service throughout the boat. A steam heating service in connection with both main and donkey boilers.

The fitting up of saloons and staterooms is in the most elegant style, and there seems nothing wanting to make the new boats favorites with the traveling public.

THE LARGEST MASONRY DAM IN THE WORLD.

The largest masonry dam in the world has lately been completed in India, in connection with the new water works for the city of Bombay. It is situated 65 miles north from Bombay, and stretches across the Tansa Valley. The dam is about two miles in length; 118 feet high; 100 feet thick at its greatest depth; 15 1/2 feet at the top. The lake which will be formed when the valley is full covers an area of eight square miles, and it is expected will furnish a supply of 100,000,000 gallons per day throughout the year. The dam has been 5 1/2 years in process of construction and from 9,000 to 12,000 men and 800 carts and animals have been employed upon it during each working season from October to May.

Kalsomining.

Kalsomining, or wall coloring in distemper, is best done about this time of the year, when the walls are not too cold or too hot. It may be done, says the Paint and Varnish Journal, any time during the winter, so that the walls do not freeze. There are a good many preparations put up for this purpose and called by various names. However, if you are where you cannot procure this, it may be prepared in following manner: White—To 10 pounds best whiting use 1 1/2 pounds white glue, 1/2 pound alum and a little ultramarine blue. Put the glue in cold water, set it on the fire and stir until dissolved. Put about half a gallon of hot water over the whiting, and when dissolved add the glue, the blue and the alum, which must also be dissolved in hot water. Stir this mixture well and run through a sieve. For first coating this may be used while hot, but the other coats must be cold. If your color works too stiff, a little soap will help. All colors and shades are made by adding the dry colors. Before kalsomining, the crack and nail holes should be filled with plaster of Paris. Mix this with paste, and it will not dry so quickly. If you have a good brush and work as quickly as possible to avoid laps, you will have a good job of kalsomining. A nice stencil border run around the top of wall makes a nice finish.

Natural Gas at Salt Lake.

Natural gas has been discovered on the shore of the Great Salt Lake, within ten miles of Salt Lake City, and a large company has been organized to utilize and develop the fuel. Several wells have already been put down to the depth of 650 feet, and it is said that 50,000,000 cubic feet of gas are now flowing daily. A new town, to be named Woodman, has been laid out on the site of the wells, and a new railway is to be extended to Salt Lake City. A smelting establishment, to cost from between \$1,000,000 and \$2,000,000, is shortly to be erected, and a large glass factory is also projected.