

THE NEW AMERICAN WAR SHIP OLYMPIA.

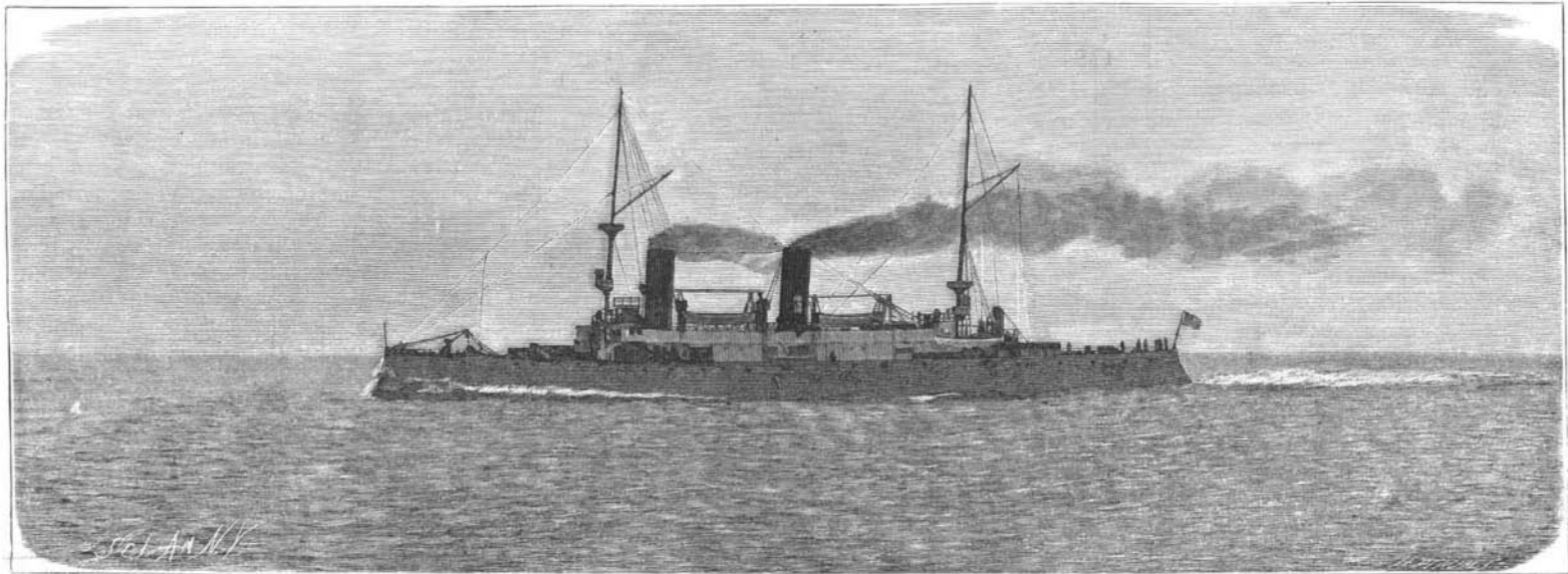
The cruiser Olympia, built at the Union Iron Works, San Francisco, Cal., has recently been completed, and in her trial trips has proved herself one of the noblest and fastest ships in the navy. The speed, as contracted for, was to be 20 knots. Her construction was authorized by the act of September 7, 1888. This act called for a cruiser of about 5,300 tons displacement. The speed of 20 knots had then been attained by the Spanish

mental shields, also 4 inches thick. Four can fire directly ahead, four astern, or five can fire abeam on either side. The secondary battery contains fourteen 6 pounder rapid-firing guns, protected by 2 inch shields, six 1 pounder rapid-firing guns, and four Gatlings. There are six torpedo tubes, one in the bow, one in the stern, and two on each side. The tubes are of the Howell type.

The ship is driven by twin screws, actuated by triple

iron are introduced between the ribs, as shown in our engraving. The lower half of the apron is first built and the space between the iron plates and masonry filled in solid with concrete cement, then the upper half is made in the same manner and the cement carried up behind the iron plates to the top.

The top of the dam is finished, as seen in Fig. 2, by laying strong girders, which are firmly anchored to the masonry coping, and upon the girders iron plates



THE NEW WAR SHIP OLYMPIA RUNNING AT 22 KNOTS.

ship Reina Regente, the fastest war ship then afloat, a vessel which will be remembered by many of our readers as having participated in the naval parade at New York last spring. Bids for the Olympia were called for on April 10, 1890, and two months later were opened and the contract awarded to the Union Iron Works, of San Francisco, which proposed to construct the vessel on its own plans for \$1,760,000, or on the department's plans for \$1,796,000. The limit set by the act of Congress was \$1,800,000. The contract called for the completion of the vessel on April 1, 1893. A speed premium was offered.

To secure more space in the fire room the contractors, at their own expense, lengthened the hull 10 feet. The ship is 340 feet long on the load line, 53 feet beam, 33½ feet deep, and draws 14½ feet of water. Her displacement is between 5,500 and 5,600 tons. She has three complete decks; one of which is a protective deck, and is virtually a substitute for side armor, none of which she carries. This protective deck joins the hull beneath the water line at an angle of 30°. It is 4¼ inches thick on the slopes amidships. On the forward and aft slopes it is 3 inches thick. Its flat central portion is 2 inches thick. Above the protective deck a belt of water-excluding material is carried up the sides, 2¾ inches thick and rising 4 feet above the water line. She has a cast steel ram in the bow. Her two masts are provided with military tops for Gatling guns and search lights.

The main battery consists of four 8 inch and ten 5

expansion engines of 13,500 horse power, calculated at 160 pounds pressure and 128 revolutions per minute. The high pressure, intermediate, and low pressure cylinders are of 42 inches, 59 inches, and 92 inches diameter respectively, and of 42 inches stroke. The main valves are of the piston type, worked by the Stevenson link motion. Bronze bed plates are used throughout. The main journals are lined with Parson's white metal put in under a hydraulic pressure of 15 tons per square inch. There are six boilers; four double-enders, 15 feet 3 inches diameter and 21 feet 3 inches long. Two are single-enders, of the same diameter and 11 feet long. All can be worked under forced draught on the air tight fire room system. The total grate surface is 824 square feet, and the heating surface is 28,300 feet. She is fitted out as a flag ship, having admiral's quarters, and is designed to carry a crew of 466 men.

Official trials were made November 25, but not completed. The trials are to be soon resumed. On the first trials a maximum speed of 22.3 knots was attained and an average of 22.15 knots, reduced by tidal corrections to 21.85 knots.

We are indebted to Mr. P. E. Law, of Santa Barbara, Cal., for the photographs from which our engravings were prepared. These were instantaneous photographs taken from the deck of the U. S. S. Patterson.

THE STATE DAM, MOHAWK RIVER, AT COHOES, N. Y.

This work is known as the "State dam," in contradistinction from the dam of the Cohoes Water Power

are attached, the interstices between the girders and covering plates being solidly filled with hydraulic cement or concrete. The whole work is of the strongest and most substantial nature.

The dam is built by Messrs. Cunningham & Morey, under contract with the State, the price to be paid being \$90,000. For the photographs from which our illustrations are made we are indebted to Mr. Chas. McGovern, of Cohoes, N. Y.

Liquid Chlorine.

Chlorine in liquid form is now being manufactured by Messrs. Pechiney & Co., of Salindres, in France, and at the Rheinania Works, at Rheinlan, near Mannheim, in Germany. The gas is liquefied by subjecting it to a pressure of 50 atmospheres (750 lb.) to the square inch and stored in strong iron vessels holding 120 lb. each. It is delivered from these vessels either in the liquid or gaseous form, and can be used in bleaching. It is said to be as economical in use as bleaching powder, while it has some advantages over that product. It is said, however, that the railway companies consider the liquid highly dangerous, and make difficulties as to carriage.

At the late meeting of the Zoological Society of London a most remarkable instance of evolution in the adaptation of animal organisms to their environments was demonstrated. Mr. Tegetmeier said that the

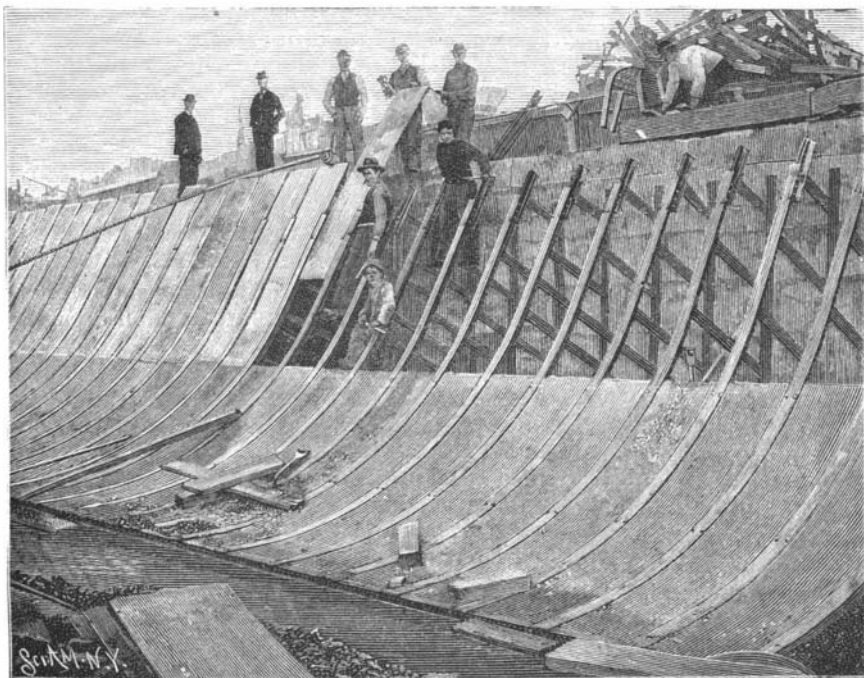


Fig. 1.—THE NEW STATE DAM, COHOES, N. Y.—THE IRON APRON.



Fig. 2.—THE NEW STATE DAM, COHOES, N. Y.—SHOWING THE TOP FRAME.

inch breech-loading rifles. The 8 inch guns are mounted on the main deck, forward and aft, in elevated steel barbets, 4 inches thick, covered with conical roofs. These are about 10 feet above the deck, giving the guns a very extended training capacity. The ammunition tube leading to the barbets is of steel and is 3 inches thick. The 5 inch guns are mounted in the central superstructure. They are protected by seg-

Company, located about a mile above the falls, and by its means and a bridge the boats on the Champlain or Northern Canal are enabled to cross the river, which at this point is 1,700 feet wide. Several previous dams built here have been carried away.

Fig. 1 shows the method of constructing the apron. Strong ribs grooved on their inner edges are secured by braces to the masonry of the dam and then sheets of

English rabbits imported into Australia were gradually changing their habits and becoming tree climbers, the available food for them there being largely the bark and leaves of trees. In evidence of his assertions he showed the feet of some Australian rabbits, which showed that they are sligher than those of their English progenitors, and their claws are longer and sharper.

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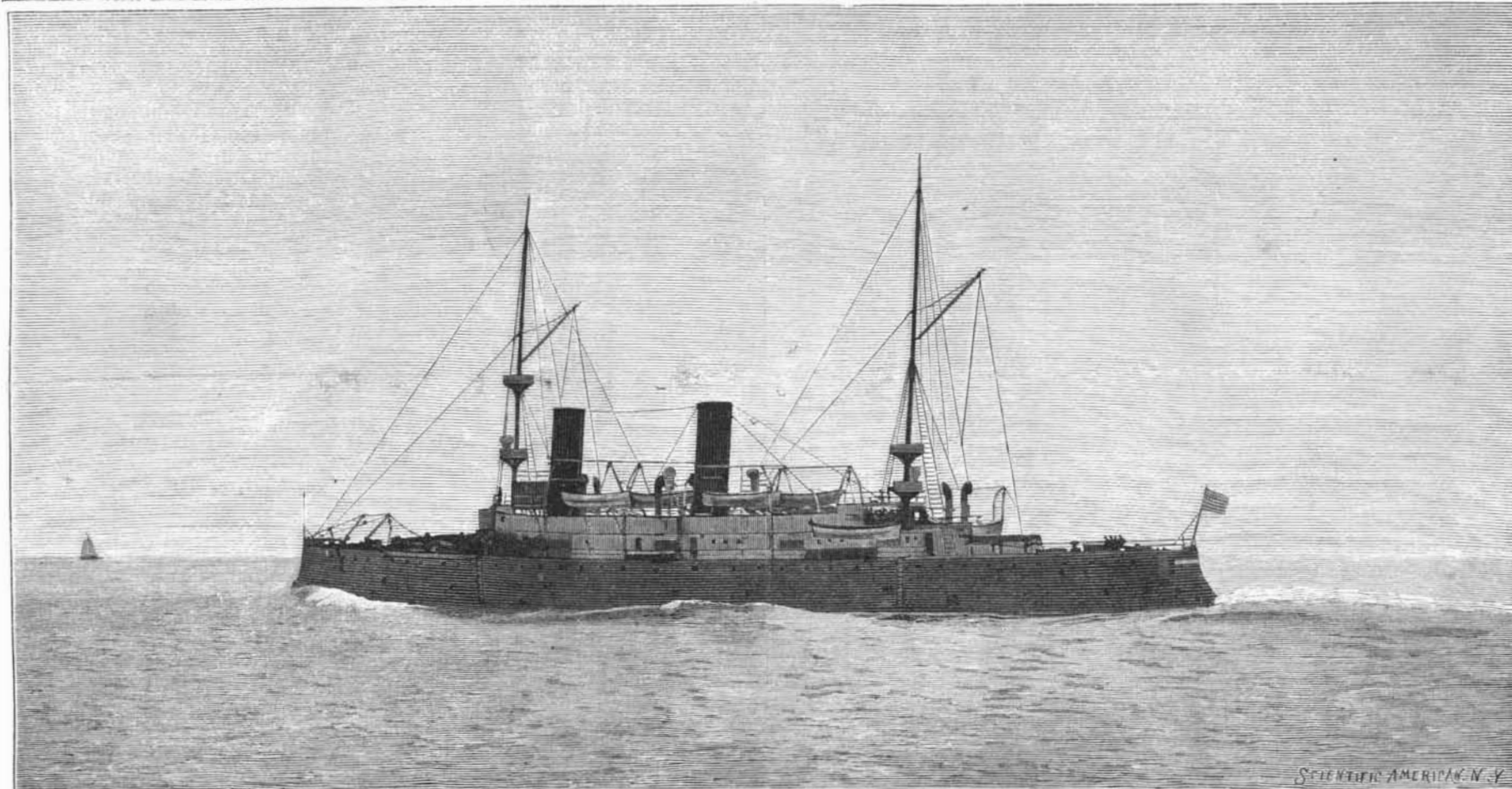
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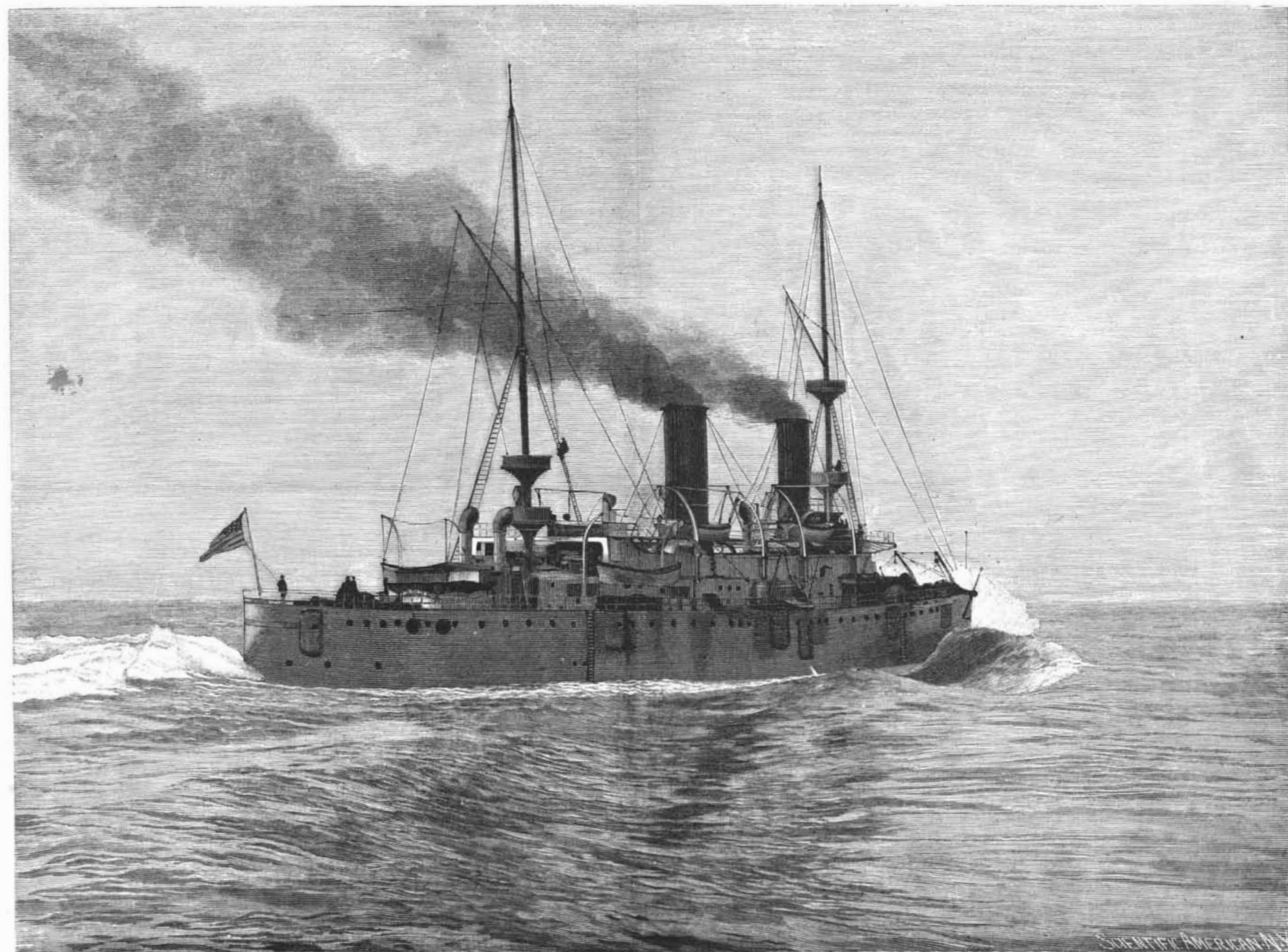
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THE NEW WAR SHIP OLYMPIA—"WARMING UP" FOR THE SPEED TRIAL.



THE OLYMPIA—MAKING 22 26 KNOTS.—[See page 405.]