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SCIENTIFIC AMERICAN SUPPLEMENT

No. 912.

For the Week Ending June 24, 1893.

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THE OLD AND THE NEW SHIPS.

On another page we publish an illustration of the recently arrived Viking ship, as she would appear in mid-ocean, speaking a modern steamer. The picturesque little craft, of model which has been pronounced almost perfect, with her gayly striped sail, decorated stem and stern posts, and her rows of shields on either side, is seen driving before the wind toward her port. Back of her looms up the giant form of a modern steamer, bringing together the naval architecture of to-day and that of ten centuries ago. The crossing of the ocean by this little craft adds to the probability that the Norwegians did make their way across the Atlantic Ocean in olden times, and that Columbus crossed a sea which had been traversed some five centuries before by the hardy Norsemen. The trip is one of peculiar interest. As a model for the ship the famous Gokstad ship was at hand; this was followed as closely as possible in the construction. Thus a great advantage obtained over the Spanish caravels. They had to be made up from early pictures and descriptions only, there being in existence no remains of a genuine caravel. Before leaving Norway, the Viking ship cruised about the coasts a little, and was found to be an unexceptionable model, and a trip across the ocean with a picked crew was confidently undertaken. It is in this achievement that the interest of the voyage is found. While the caravels had only been experimented with under sail, and were prosaically towed across the Atlantic from Spain, the Viking ship started at once on her long voyage without the assistance of a steam vessel to tow her and without escort or convoy of any kind. Taking advantage of favoring winds, tacking as well as possible when the winds opposed her, lying to in gales or scudding before them, she comfortably made her way across the ocean in a little over one month.

Our illustration shows vividly the difference in size between the old and the new ship. A modern vessel may be nearly as wide as the Viking ship is long; the Viking ship could be dropped end-first into one of the funnels of the Campania and be completely ensconced therein with 40 or 50 feet to spare. The modern ship driven by from 10,000 to 30,000 horse power covers every day from 400 to 530 marine miles. The Viking ship with her single sail of 200 square yards area, supplemented by a small jib, was thought to do remarkably well when she covered a little over 200 miles in a day's sailing.

In the absence of a sail the Viking ship was to be propelled by oars; the aggregate horse power which this method of propulsion would represent could not well exceed a sustained average of 3 or 4. This brings out in still more startling relief the difference between the old sea dragons, about which their poets and historians grew enthusiastic, and a modern businesslike liner, which under the impulse of thousands of horse power completes her voyage with the expenditure of a ton of coal for every four or five minutes of her progress.

Many stories are related of the ancient Viking ships which were, in many instances, little better than piratical craft. Of one of their commanders it is told that he could walk upon the shafts of the oars projecting from the sides; one ship is said to have been so large that a warrior standing on her bottom could hardly touch her beams with uplifted battle ax, yet the single chimney of a modern ship is a far greater structure than were these old themes of admiration of the northern bards. The greatest of the Viking ships would be consumed in an hour in the furnaces of an ocean steamer. The old ships were buried with their warrior commanders as a fitting coffin or sarcophagus. The modern iron ship finds her grave only in the sea if she is wrecked, our unpoetical age not thinking well of so expensive a sepulture as that which the steel ship of the day would provide.

LAUNCH OF THE BATTLE SHIP MASSACHUSETTS.

On June 10, at 10 A. M., there was launched at Cramp's shipyard, at Philadelphia, the battle ship Massachusetts. This ship is a sister to the Indiana launched last March, and to the Oregon, which is not yet afloat. In every respect the launch was a great success. Before the men had cut through her upper ways she broke loose, and two minutes before the start was anticipated she slid down the ways into the water. She was christened by Miss Herbert, the daughter of United States Secretary of the Navy Herbert. A national salute of 21 guns was fired in her honor, followed by a 17 gun salute for the Secretary of the Navy; and after speeches and inspection of the ship a quartermaster was detailed to strike the ship's bell, presented by the 7th Regiment of New York City. It is said that it was the most ceremonious launch that ever occurred at the yard.

This ship is the second of three ships of 10,200 tons burden, commenced during Secretary Tracy's *regime*. She is very heavily armored, the water line belt being 18 inches thick and extending along three-fourths of the ship's length. Turning in forward and aft around the base of the redoubts, it extends 3 feet above and 4½ feet below the water line. The turrets and redoubts are 17 inches thick. Above the belt of armor the side is protected by 5 inches of steel; one deflecting steel protective deck is provided in addition to steel decks above it, also of sufficient thickness to afford a measure of protection. Her conning tower is armed with 10 inch plates. A military mast is provided, carrying two tops for rapid-fire and machine guns. The hull is cut up by water-tight bulkheads, has protective coal bunkers, and is protected by cellulose or cofferdam from leakage if perforated.

In her armament she is of the most powerful class; at a single discharge she will be able to throw 6,800 pounds of projectiles. Her battery is to include four 13 inch rifles, eight 8 inch rifles, and four 6 inch rifles as the main armament in addition to her secondary battery of light rapid-fire pieces. She is to carry six torpedo tubes, one at the bow, one on the stern and two on each side, for 18 inch Whitehead torpedoes. She is to develop a horse power of 9,000 and a speed of 15 knots. She is the second of the three ships built by the Cramps. The third ship, the Oregon, was assigned to the Union Iron Works, of San Francisco. The contract price for the Massachusetts and the Indiana was $3,020,000 apiece; for the Oregon the bid was $3,180,000.

The Relation of Photography to Art.

M. Robert de la Sizeranon has an excellent article on the subject, "Relation of Photography to Art" in the mid-February number of the *Revue des Deux Mondes*, translated into *The Review of Reviews*. He dwells, first, on the service photography has rendered to painters in enabling them to study correctness of detail. The conventional landscapes, the complicated architectural backgrounds, the "ideal" and impossible forms of men and horses, have all disappeared. The whole art of "historic landscape" has been relegated to the Valley of Lost Lumber. In perspective, photography has made it possible for us to appreciate more accurately the size of figures in different planes. Most painters before the rise of photography will be found to have given too much importance to the figures of their background or middle distances, relatively to those of the foreground—a mistake frequently made by amateurs in landscapes. Photography has also simplfied, to an astonishing degree, the production of panoramas. After noting the influence of photographs of distant countries in interfering with the production of fancy tropical landscapes and imaginary Eastern scenes, and the revolution it has brought about in the art of portraiture, M. de la Sizeranon goes on to discuss what may be expected of photography in the future. He devotes several pages to the discussion of Mr. Muybridge's instantaneous photographs of horses and other animals in rapid motion, and inquires whether we are to accept the often extremely ugly and awkward poses shown in them as nearer reality than what the ordinary eye supposes itself to see. He thinks not—rather that the modern picture is a violent exaggeration; for it presents to us, immovably fixed, a position in which the animal only remained for so incalculably minute a fraction of a second that to the eye it blended with the position immediately following it, and so formed part of a harmonious motion. Every movement consists of a succession of poses, each lasting so infinitesimally short a time that we see none of them separately. What we do see (when the motion is not too quick to let us see anything distinctly) is a generalized representation of the whole, a kind of composite photograph, so to speak; and an approximate picture of this is nearer the truth than any number of instantaneous photographs of separate poses. It is, however, a distinct gain that the classic charger at full gallop, with all four legs extended in the air at once, who never existed on earth save in battle pictures, should finally have been hunted and driven from the field, as Mr. Muybridge has had some share in doing.

Photography is growing more perfect every day; even the great color problem seems to be as good as solved at last. M. Lippman has succeeded in producing several very successful photographs in colors, by availing himself of the laws of interference of light. Last spring, at the International Exhibition of Photography at Paris, he exhibited a picture of an Ara parrot (blue and yellow), and a branch of holly; at a later date he succeeded in producing a stained glass window in four colors, a group of flags, a plate of oranges with a red poppy, thus almost completing the chromatic scale. He uses a mirror, a film of gelatino-bromure, and a little mercury.

It may be said that, since this last step has been taken, photography leaves nothing for the painter to do. If it were true that the only object of art is the mathematically accurate reproduction of the world around us, this argument would be unanswerable, and the "realist" school, who maintain this position, are beginning to find that they have no *raison d'être* whatever. There remains, then, nothing for artists to do but turn their attention to those (of late somewhat neglected) regions which the camera cannot reach; and we may consequently expect a new development of imagination and idealistic art.