SCIENTIFIC AMERICAN

A WEEKLY JOURNAL OF PRACTICAL INFORMATION, ART, SCIENCE, MECHANICS, CHEMISTRY, AND MANUFACTURES.

Vol. XXXIX.—No. 4. [NEW SERIES.] NEW YORK, JULY 27, 1878. [$3.20 per Annum. [POSTAGE PREPAID.]

THE NEW TWIN STEAMER "CALAIS-DOUVRES."

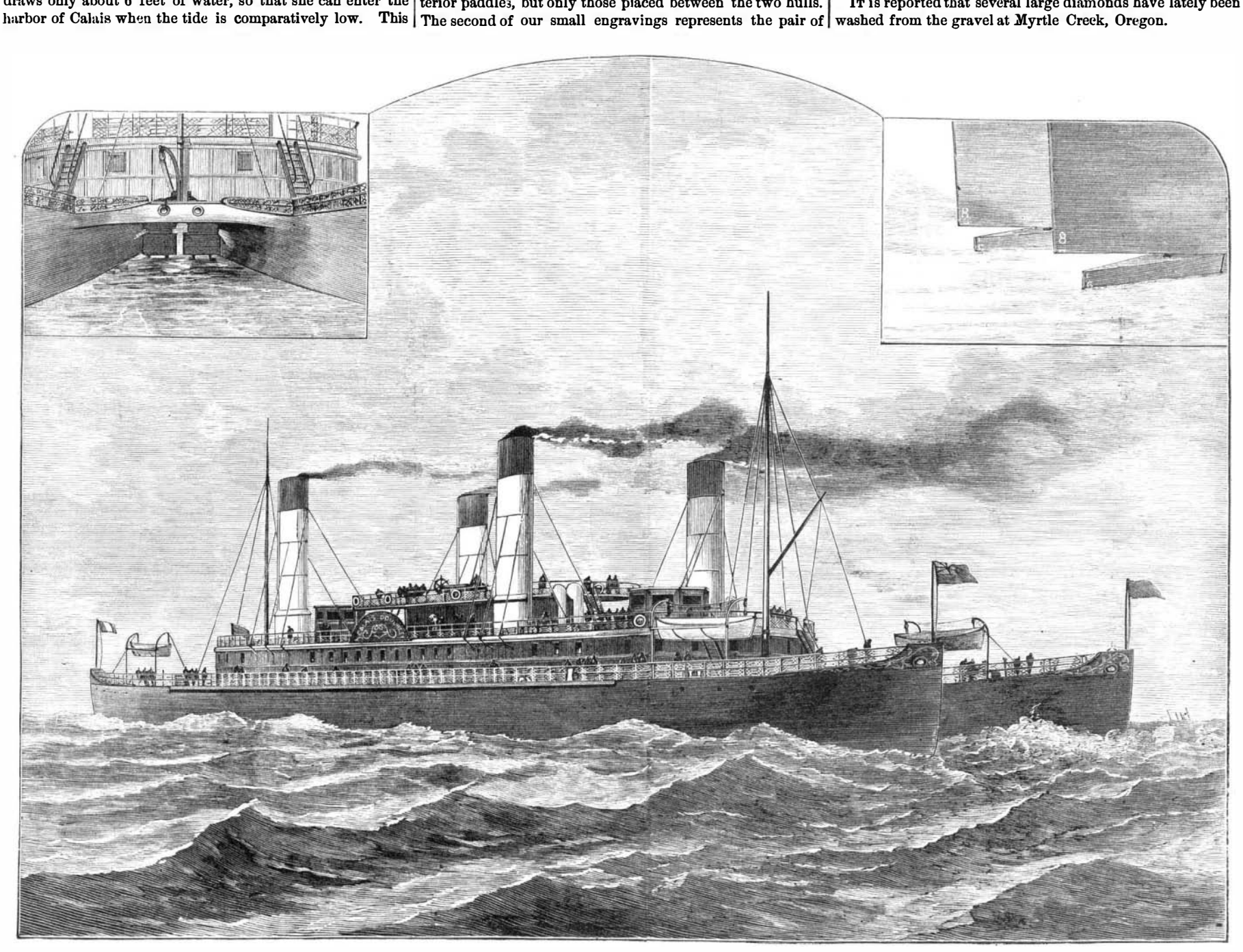
Our engraving, which we take from the London *Illustrated News*, represents the new channel steamer, the Calais-Douvres, a double boat contrived somewhat differently from the Castalia, to prevent sea sickness in the passage between Dover and Calais. The designer and builder of the Calais-Douvres, Mr. Andrew Leslie, of Hebburn-on-Tyne, instead of joining together two half ships, as in the Castalia, has given to each twin part the form of a perfect ship. Through the wider space thus left between the stems of the sister vessels the water rushes with the velocity of a mill race, giving the paddle wheels, which are placed amidships and between the twin ships, a "bite" that never fails while the vessel is in motion, and as the water escapes through the widening space at the stern it tends to propel her by the expansive force of the pent-in current. As the ship has to carry the French mails, speed is an important matter so far as the company owning her are concerned, and in this respect she has answered the expectations that had been formed of her capabilities, making the trip across from pier head to pier head, a distance of twenty-five miles, in an hour and a half. With a high rate of speed and the minimum amount of rolling and pitching and tossing yet attained, the new ship further offers a maximum of comfort.

The spacious saloons, handsomely fitted up, are all above deck, so that free ventilation is secured, and there are also comfortable compartments or smaller cabins, which will be let either in separate numbered seats or to be used as private rooms by families. A few figures will show the superiority of the new vessel to the old channel boats in point of size. She is 300 feet in length and has a breadth of 60 feet, or half as much again as many of the Atlantic steamers; and, what is of not less importance to the regularity of the passage, she draws only about 6 feet of water, so that she can enter the harbor of Calais when the tide is comparatively low. This vessel, indeed, though of 2,000 tons burden, draws one foot of water less than did the Castalia, while her length is 10 feet and her breadth 1 foot greater. The two hulls are each about 1 foot wider than were the Castalia's half hulls, while the channel between them, in which the paddles work, is 2 feet narrower.

The effect of these and other details of construction, as contrasted with the arrangements of the Castalia, is to give a plentiful supply of water to the wheels, thus enabling them to utilize a much larger proportion of power than can be the case with a parallel channel. The two hulls are fixed together by means of four transverse iron girder bulkheads, entirely spanning the channel between the two minor vessels on which the boat proper rests; and it is noteworthy that the vibration resulting from this arrangement is scarcely observable.

The steering apparatus employed is known as Brotherhood's patent. It is said to be so easily workable that one man, by means of a small wheel, can practically do what he pleases with the ship. This vessel is intended to accommodate as many as 1,000 passengers. Her engines, four in number, of 400 horse power, nominally, have the enormous effective force of 4,000 horse power. They were built by Messrs. Black, Hawthorn & Co., of Gateshead-on-Tyne. The ship was originally begun for the English Channel Steamship Company, but when that company was wound up she was purchased by her present owners—the London, Chatham, and Dover Railway Company.

The two smaller illustrations, which accompany our engraving on this subject, need a word of explanation. The first is an end view, looking between the two hulls, showing the position of the paddles, which are placed amidships in the interior space. It will be perceived that there are no exterior paddles, but only those placed between the two hulls. The second of our small engravings represents the pair of rudders at one end of the double ship. The ends, with their respective pairs of rudders, are precisely similar fore and aft, the ship being designed, like some of the Thames steamboats, to move in either direction at pleasure without turning round. For this purpose the two ends are so constructed and so furnished with rudders that either can be made to answer for bows or stern. There is an arrangement by which either pair of rudders can be put out of gear. When the end in question is to be made the forward end of the ship the rudder is closed up to that part of the hull in the line of the keel, and is locked by letting down a pin into the rudder, so as to form a solid end forward. When this end becomes the aft or steering end of the ship, the pin is raised to unlock the rudder, which can then be shifted by the helm to port or starboard, as shown in the illustration.



THE NEW DOUBLE STEAMSHIP CALAIS-DOUVRES.

Industrial Drawing and Art Studies.

The annual exhibition of works from the free industrial classes and public schools of Massachusetts, lately held in Boston, gave evidence not only of increasing popular interest in practical art studies, but also of careful teaching and considerable talent on the part of the pupils of the schools that contributed. The exhibit was principally from the Boston city schools and the Normal Art School. In the former, models in plaster, of architectural details, of original design as well as copies, were present for the first time—a decided and meritorious addition to the range of studies. The exhibit of the Starr King School, both in mechanical and free-hand subjects, displayed the same practical character; and so did that of the newly established class at Roxbury, and the ship draughting classes at East Boston and Charlestown. The Normal Art School exhibit was of unusual interest.

IT is reported that several large diamonds have lately been washed from the gravel at Myrtle Creek, Oregon.