

of water of this ship will show the real difficulty in the way of the designer. The vessel, according to the table given above, must draw eight feet less when light than when she is loaded, and the great lift of water at the deepest immersion of the wheel is, in itself, an important consideration. Mr. Brunel reports on this branch of the subject in these terms:—

The position of the paddle shaft and the diameter of the paddles have been questions of some difficulty. It being necessary to provide for a considerable variation in the draft of water, though not proportionably so great as with many existing large steamers, and to balance well the relative advantages of securing the highest average speed, at all the various drafts, or the highest speed at a light draft, and to combine as far as possible the two, so that the vessel may be as well adapted to perform comparatively short and very quick passages to ports not affording a great draft of water as long voyages heavily laden, at a moderate maximum, but still a large average rate of speed. Although the full advantage of the great capacity of the vessel for carrying coal for long voyages would not be felt in a voyage, for instance, to New York, or in any other short voyage, yet, unquestionably, she would exceed all other vessels in speed and in accommodation; and if it should be found desirable to make such voyages, your vessels ought to be able to command almost a monopoly by their superior capabilities, and I have therefore endeavoured so to place the paddle-shaft, and so to construct the paddle-wheels, that they can be adapted to the convenient application of the full power of the engines at a light draft of water at a very high speed.

The screw propeller is to be 23 feet in diameter.

The ship will be steered by two rudders, which, from their power, ought to bring her quickly round. The upper rudder, as we may call it, is made like a ship's rudder. The screw works at the foot of this rudder, but quite clear of it, and below the screw is a second rudder, in form something like an ordinary rudder, placed lengthwise.

It will thus appear that, in case of accident, this ship has many unusual chances. She has her sails, her paddle-wheels, separately or in conjunction; her screw, and two rudders. We should add that each engine-room is forty feet long.

We come now to describe the principle of construction. The ancients have given us the gender of a ship. They called a ship "she," and "her," intimating thereby that one ship was the mother of others. Perhaps these remarks may explain the character of the ship of which we speak, for she is literally a ship—a ship within a ship—a double ship. If the reader will imagine a ship built of any size, and then a smaller ship built and placed in the larger one, he will form some idea (though not a full one) of the "Great Eastern."