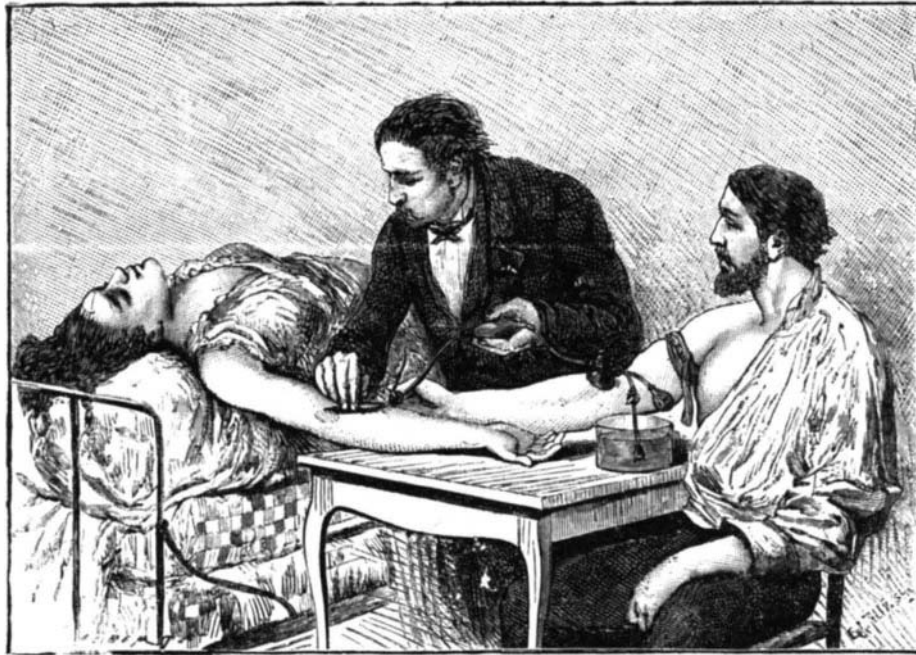


THE STEAMSHIP AUSTRAL.

The latest addition to the Orient Line of steamers, the *Austral*, is a distinct advance on the *Orient*, the first of her type, not only in respect of speed, but in the structure of the hull, the ventilation of the state rooms, the arrangements made for the importation of frozen meat from Australia, and the effectiveness of the vessel as an auxiliary to our naval force. She has been built by Messrs John Elder & Co., of Govan, on the Clyde, under the superintendence of Mr. J. W. Shepherd, a member of the Institute of Naval Architects. Her length over all is 474 feet, her breadth 48 feet 3 inches, and her depth moulded is 37 feet. Her displacement on the load line is about 9,500 tons. She is thus 10 feet longer, 2 feet broader, and 2 inches deeper than the *Orient*, but, as her lines are finer, her tonnage will not much exceed that of the *Orient*. She is built throughout of mild steel, and has three steel decks. She is divided below the inner skin and the double bottom into nineteen separate water-tight compartments, and in the hull proper within the interior skin she is divided by thirteen water-tight bulkheads, ten of which run up to the level of the main deck. If the whole of the lower compartments were filled with water, the effect would be an additional draught to the extent of 18 inches, and if the sea got into two of them, the stability and the surplus buoyancy of the vessel would prevent her from being endangered.

Above the main deck the ship is divided into seven fireproof compartments, all in communication with the main deck; and, as the pumping power provided is equal to 2,928 tons per hour, there is ample arrangement made for flooding any of the compartments in case of fire, or extracting the water in case of their becoming waterlogged. In the event of the engines being disabled, the vessel is provided with four masts, the fore and main being square-rigged, and the mizzen and jigger having fore and aft sails, which, combined, will give about 28,000 superficial feet of canvas: thus the vessel is well under command independently of steam power. These provisions for the general safety of the vessel are supplemented by unusual care for the comfort of the passengers. The cabins are all placed within the area of the ship, with a gangway, four feet wide, running right along the vessel, outside the state rooms, and at frequent intervals across the ship. This permits each state room to be constructed like an ordinary compartment, with windows instead of portholes; and the porthole in the side of the ship may be opened even in rough weather without any fear of water entering the cabin. If a sea should strike the vessel when the porthole is open, the water will fall on to the gangway. Upon the upper deck, the gangway running round the whole of the vessel is perfectly open to the air, while it is covered above; and the passengers may promenade there with the full advantage of an open sea before them. The passage round the ship leads fore and aft on each side of the saloon, so that persons can go to either end of the ship without passing through the saloon. Besides this, there are

numerous cross passages, three feet wide, between the several quadrangles of state rooms, an arrangement that offers unusual facilities for moving about the ship. The saloon is a handsome apartment, paneled with walnut and embellished with carved shields representing the arms of various nationalities. Arrangements are made for the usual long tables, but they can be also divided into sets of a dozen or even four seats. The most striking characteristic of the saloon, however, is the row of dome-shaped painted-glass windows down each side. These can be lowered at will in all weathers, because, instead of opening on to the sea, as usual, they merely admit air from the long corridors. Effective ventilation is provided for the saloon by a centrifugal fan, worked by a small steam-engine. The fan forces a continuous current of pure air into the apartment, and the foul air finds its way out through an ornamental opening above each window. The public rooms, the engine-room, pantries, and passage ways are lighted by the electric light,

**THE OPERATION OF TRANSFUSING BLOOD.**

fitted up by Messrs. Siemens with nine arc lamps and 170 Swan lamps. Five of the arc lights are placed in the engine-room and four on the deck. The current is provided by two of Siemens' alternating current machines, each driven by a separate engine.—*The Illustrated London News.*

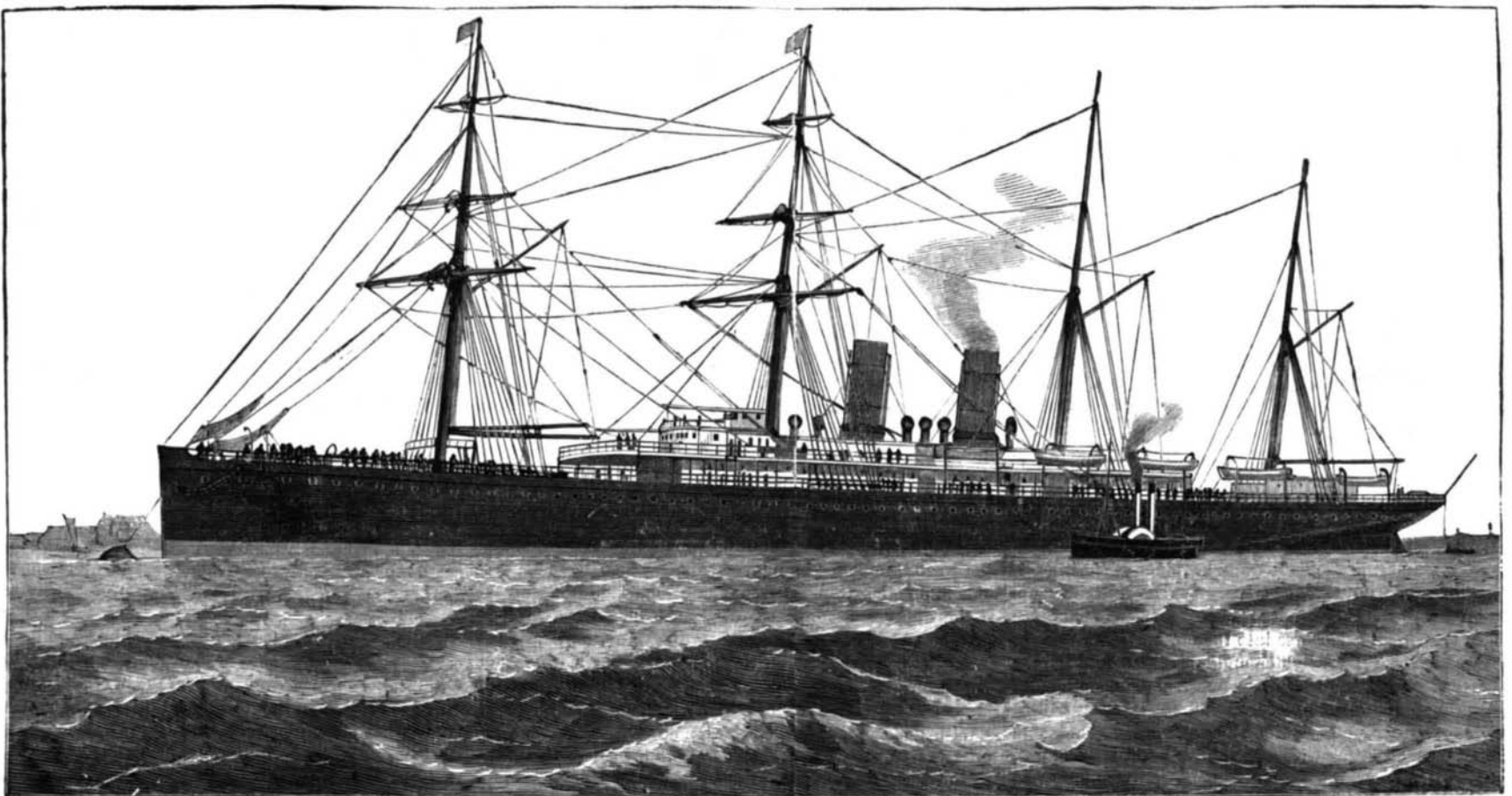
A Government Fish Steamer.

The Government is now building in Delaware a fine new iron steamship for the special use of the Fish Commission. It is to cost \$200,000, to be named the *Albatross*, and to be ready in about four months. Its dimensions will be: Length, 200 feet; beam, 27 feet 6 inches; depth of hold, 16 feet 9 inches; burden, 800 tons. Among the special appliances fitting the vessel for its purpose will be a deep-sea dredge and eight miles of wire rope. One of the first important services of the *Albatross* will be the transportation to London of the collection which will represent this country in the great Fish Exposition next May.

THE DIRECT TRANSFUSION OF BLOOD.

Among the various methods of transfusing blood that have been employed, the most commendable appear to be those of Dr. Oré, of Bordeaux, and Dr. Roussel, of Geneva. The process of the latter has recently occasioned a remarkable cure which has attracted much attention from the medical world, and we are therefore glad to make it known to our readers. Facts, as we know, speak for themselves, so we will give these in a succinct manner. Mrs. M., aged 31 years, had had five living children and two miscarriages. In December, 1881, after six months of gestation, she gave birth to two children—one of them was stillborn and the other lived for a few hours only. The patient in spite of all cares gradually became feeble from week to week. She was attended by her physician, Dr. Chauvin, and by Drs. Brochin and Pean. On the 31st of January she went from bad to worse; and, on the 1st of February, there was little hope for her. Anorexia, vomitings, insomnia, inertia, diarrhoea, anemic hectic fever, cadaverous face, and approaching dissolution; such were her symptoms. Drs. Pean and Brochin then suggested transfusion as a last resource. This was performed by Dr. Roussel, who describes the remarkable operation as follows: On the 5th of February Dr. Brochin came to the Grand Hotel to ask my concurrence. I found the patient inert, scarcely conscious, without heat, without respiration, as pale as a corpse, veins invisible, and pulse filiform at 140.

The heart and lungs appeared to me to be healthy, and I consented to operate, February 7th, 4 o'clock P.M. The patient is in the state above described; to-day she has had diarrhoea nineteen times; her pulse is filiform, tremulous, and 150. The sister and husband of the patient offer me their arms; but, after an examination, I prefer to make a choice elsewhere. There is made known to me a business man of the street who employs many strong workmen. Mr. Z. at once comprehends the importance of my request and causes his men to call, and to them I explain that it is a question of saving a mother of a family by giving her a little blood taken from the arm of one of them by a single puncture which I affirm will be harmless. Several consent. I select a young man of about thirty years of age, healthy and robust, named Adrien Renaud. We go up to the patient's room, where are present Drs. Brochin and Chauvin and the husband, sister, and other relatives. The transfuser is washed in warm water to which has been added a little soda. I uncover the breast of the patient, and stretch her arm along the edge of the bed. I seat R., and place his arm parallel with that of the patient, and surround it with a bandage so as to cause his veins to swell. After having carefully sought and noted with ink the course of the humeral artery at the bend of the elbow, I mark a point of ink at two centimeters beyond the course of the artery, on the median vein, which appears to be prominent and well swollen with blood. Resting the initial cylinder of the transfuser in such a way that it figures the circumference of this central point,

**THE NEW STEAMSHIP AUSTRAL, OF THE ORIENT LINE.**