

NEW TYPE OF OCEAN STEAMSHIPS.

The present style of ocean steamship building has long been criticized by those who hold that many of the vessels now afloat are unseaworthy, and faulty in model and construction. Commander Cheyne of the English navy, recently said that the vessels of the present day look like long narrow planks. "It is no wonder that so frequently comes the report that a ship is missing. They weather no genuine storms at sea without great chances against them of disaster or utter loss. Vessels to-day are built for speed and for little else. The consequence is that we have a grand collection of long, narrow vessels, almost without beam at all, vessels which are liable to break in two in a high sea. To ensure safety there must be a change. Beams must be broadened; otherwise there will be no security." Two or three new and novel steamships are now in course of construction on the Hudson. One of these was described on page 224 of Vol. 2 in the *Industrial News*. The keel of a new steamship has been laid at Nyack-on-the-Hudson, which Capt. Mersland, of the Cunard steamship "Batavia," and Mr. A. P. Bliven, of New York, the inventors, claim will cause a revolution in ocean steamship construction. This ship has been ordered by the American Quick Transit Steamship Company, of Boston. The attempt is being made to produce a boat that shall be self-righting, that shall be very fast, and that cannot sink unless entirely torn to pieces. The boat is comparatively small, as it is intended only for an experimental or model boat.

Her dimensions will be:—length over all 151½ feet; on the water-line, 135½ feet; extreme breadth of beam 22 feet; depth of hold from crown deck to keelson, 16½ feet; draught forward, 5½ feet; draught aft, 10½ feet; capacity measurement, 512½ tons. The engines, boiler and machinery of this new vessel, the Meteor, are of entirely new designs, and are said to be capable of developing an enormous power. She will have three screws, the main one being four bladed and of such a pitch as to develop a speed of twenty knots an hour, allowing thirty per cent. for loss of power. The other screws are two bladed, of smaller diameter than the main one, and are auxiliary, to be used only in case of accident. They are fitted in the stern, forward of the main screw, and are locked in an upright position, with a plate over them flush with the hull. In case the rudder and the main screw should be carried away the auxiliary screws can be unlocked, and the plates covering them may be used to steer with.

After a successful trial trip of the model, ocean steamers upon the same principle will be constructed. The sides of this new ship will be carried over the deck in the form of a dome, making what is called a "turtle back." Says a writer in *The Century*:

"The side frames are made continuous and meet over the centre of the hull, or, in other words, the frames begin at one side of the keel, rise directly at an angle of about forty-five degrees in the water-line, and then curve inward over the deck and back on the same lines to the keel. A section of the hull taken in the centre is thus of a wedge shape, with a sharp edge below and rounded top above. This wedge form is preserved through the entire length of the hull. There are no hollow lines in the boat, and the sharp, overhanging bow is intended to part the water near the surface and to form a long, tapering wedge. The widest part of the hull is exactly at the middle, both ends being precisely alike. This is quite different from the flat bottom and straight sides, with comparatively bluff or rounded bows, of the ordinary ocean steamship. The boat is intended to be much deeper aft than forward, and the deck will be much lighter above water at the bows than at the stern.

There will be no houses or raised constructions of any kind on the deck, except the dome-shaped pilothouse, the ventilators, and the smoke-stacks. There will be an open railing around the centre of the deck, so that it can be used as a promenade in pleasant weather or whenever the seas do not break over the boat. The object of this unbroken dome-shaped deck is to enable the boat to throw off all waves that break over the bows or sides in rough weather. It is thought that, instead of shipping tons of water and retaining it on deck till it can be drained off, the boat will shed or throw off the water from the long, sharp bows and open deck, and will at once relieve herself of the weight of the water. Waves striking the rounded deck will have no hold on the boat, and their force will thus be spent harmlessly. The sharp wedge shape and rounded top of the hull, and the fact that even when fully loaded the centre of gravity will be below the water-line, makes the model self-righting.

From experiments with a small model, this claim of the inventor seems to be clearly proved. In laying out the boat, only the spar deck will be used for passengers. The main deck and all below being intended for cargo, coal and engines. The staterooms will be arranged along the outside, each room having a port in the side of the boat, while the ceiling will be formed of the curved deck above. The saloons will be the whole width of the ship, and on the spar deck. For lighting the saloons there will be sky-lights in the centre, and as these in rough weather may be covered by the seas that sweep over the deck, they will be very strong, and will be air-tight. To secure ventilation there will be steam-fans, kept in motion at all times, and maintaining a good circulation of air through every part of the boat. For this purpose the fresh air will be taken through wind-sails on the deck, and the exhaust air from the rooms will be turned into the blast used in forcing the fires. No boats are to be carried on deck; the life rafts and boats will be kept in an apartment under the domed deck at the stern, and when they are to be launched, doors will be opened in the deck and the boats launched in the usual way from davits through these doors. The pilot-house will be at the bows, and will be entirely inclosed. It will not rise much above the deck, and will be entered from below.

There will be no masts or sails, as it is intended to depend wholly on the engines for propulsion. In constructing the hull, to secure great strength, three heavy trusses, or "hog frames" are to be placed on the keel, each one rising to the spar deck and securely fastened to the side frames of the boat. The ceiling will be double, and placed diagonally on the frames. In the larger steamships, the absence of sailing power will be compensated for by two extra engines and two supplementary screws, that can be employed in case the larger screw is lost or the main engines break down."

IMPROVED STEAM ENGINE.

The Innis Manufacturing Company, of Oil City, Pa., has, for several years, been making a specialty of building a 9 x 12 engine for oil well drilling, the design of which is represented in the accompanying engraving. This engine is fully secured by patents, and is made only by this company, who now have about 1,500 in use in the oil region. These engines having given universal satisfaction, the Innis Manufacturing Company have determined to introduce them for other uses. The demand in the oil regions for this particular size has been such as to enable this concern to arrange tools to build them on the duplicate plan, using templates and gauges for all the parts, thereby reducing the cost, while unnecessary finish is dispensed with to meet the wants of a cheap steam power. All of the working parts are strictly first class. The cylinder, valve bore or chamber, exhaust chamber (which also acts as a portion of the heater), and the supports or leg of the cylinder, are all cast in one piece, to which the bed is firmly bolted. The valve, which is of the piston kind, is placed directly below the cylinder, and the exhaust chamber directly below that. By this arrangement the cylinder readily frees itself of condensed water, as the ports are open from the bottom of the cylinder downward to the heater when exhausting. There is a steam passage around the outside of the cylinder and under the jacket that conducts the steam into the central port of the valve, from which it passes up into the cylinder from the ports near the end alternately as the valve travels back and forth, and exhausts down past the end into the exhaust chamber or heater.

The valve (which is seen lying on the engine block) is claimed by the inventor to be a great improvement over the ordinary piston valve. It really acts as its own steam chest, being always full of steam up to as nearly boiling pressure as practical. It is a long hollow shell, very thin and light, having a large amount of bearing surface in proportion to its weight, and consequently subject to but very slight wear. We are informed that one in the manufacturer's shop, after five years' constant use, appears as good as new. It being a balanced valve, the wear of eccentric and all the valve gear is very slight. The bed is of a very rigid form, being trough-shape, the top edge of which forms the lower slide for the cross-head, and is on a line of the centre of the cylinder and main shaft, and takes the strain in a direct line of the power applied. The pump is worked in the usual way from the cross-head. The heater is composed of four one-inch pipes, the entire length of cylinder and bed, and delivers the water to the boiler very hot. Pump and heater are dispensed with when not required. All parts are easily accessible.