

STEAM YACHT MAGNOLIA.

The steam yacht *Magnolia* was built in 1883 by the Herreshoff Manufacturing Company, of Bristol, Rhode Island, U.S.A., for her present owner, Mr. Fairman Rogers, of Philadelphia and Newport. She was expressly designed for cruising along the Atlantic coast and about Florida, and is interesting as being quite a different type of steam yacht from that usually built. From Newport, Rhode Island, to the mouth of the St. John's River, Florida, there is an almost uninterrupted inland passage along the coast of about 1,200 miles, suitable for steamers of draught not exceeding 4 ft. or 5 ft., which for variety of scenery and climate is unequalled in the United States. Through Long Island Sound, with its varied and numerous harbours, to New York, thence through the Delaware River, again by canal and Raritan Canal to the Chesapeake Bay, which in itself with its many interesting rivers, is a cruising ground of months, then through Carriuck, Albemarle, Pamlico, and Core Sounds to Beaufort, N.C., is all through smooth water with numerous harbours, which a vessel of light draught can make at short intervals. From Beaufort to Charleston, S.C., is outside 240 miles, with the two or three intermediate harbours. From Charleston to the St. John's River is all inside through narrow passages behind the sea islands and across the estuaries of the rivers flowing into the Atlantic. The route can be varied by running out of any of these estuaries, and into another, if the weather outside is sufficiently tempting. This kind of cruising called for a boat which should have light draught, seaworthy qualities, and the maximum accommodation for a long residence on board.

The yacht here described has fulfilled the conditions so well that the owner, who was familiar with these waters, and, therefore, knew exactly what was required, would not, in designing another vessel for the same purpose, make any essential changes.

As the Great Lakes and the St. Lawrence River also form a delightful summer cruising ground, and the locks of the Erie Canal, through which this region is reached, measure 100 feet by 18 feet, the length of the yacht was fixed at 99 feet, and her breadth at 17½ feet. A draft of 4 ft., a flat floor, and 6½ ft. clear head-room in the cabin, with a flush deck fore and aft, settled her other dimensions.

The light draught made twin screws necessary, and in long cruises in out-of-the-way regions there is a great advantage in having two entirely separate boilers, engines, and screws, as in case of an accident to one of them the other is available to produce at least one-half the speed that both would give.

The drawings show the arrangement of the interior. As the owner's part of the boat is forward, the crew space aft, both fore and aft, giving large room clear up into the bow, and the power being small, very little room is occupied by the engines and boilers, and being light they can be placed aft of the centre of the boat without affecting her trim.

The frames of the yacht are 3 in. by 3 in. white oak, steamed and bent. The planking is yellow pine 2½ in. to the turn of the bilge, diminishing to 1½ in. at the top. The deck is 2 in. white pine. The deck beams and frames are connected by oak hanging knees.

There are three water-tight iron bulkheads, one 10½ ft. from the bow, one fore and one aft of the engine-room.

Commencing at the bow, the fore peak gives ample room for anchor chains, extra coal, paints, and stores of various kinds. Aft of that is a space with a water-closet, wash-basin, closet for candles and lamps, place for trunks and for the head sails. This is accessible from the deck by a scuttle and ladder leading into the forward end of the fore and aft passage. Next is a bath-room and water-closet on the port, and a cabin-steward's room on the starboard side. The door in the passage is so placed that it throws the bath-room into the state-room part, separating it from the steward's room, which communicates directly with the deck. Next come two sleeping cabins, 7½ ft. by 7½ ft.; then the owner's room, 16½ ft. by 12 ft. This has two double beds and washstands, and can be divided at pleasure by a movable bulkhead into two rooms, each 8½ feet by 12 ft. by 16 ft., and has buffet, piano.

The dining cabin is 16½ ft. by 16 ft., and has buffet, piano and stove at its after end. The companion way from the deck opens into the dining cabin. The engine-room occupies the next 12 ft., the coal bunkers being on each side of it. Next to this is the galley, 16½ ft. by 7 ft., then the rooms of sailing-master and engineer, next the ice-box on one side and water-

closet and signal-lamp room on the other, and the remainder of the space is devoted to the crew and contains six pipe-iron bunks which turn up if required.

The hull has very little dead rise amidships, principally for the purpose of giving wide floors inside, and also because an enterprising navigator in these shallow waters may sometimes get aground with a falling tide, an accident which would be very dangerous with a sharp-floored vessel, but of no great importance with a flat one.

The boilers are of the latest Herreshoff type, a coil made of strong iron pipe in straight pieces connected by return bends just like steam-heating radiators. There are six flats of this pipe over the fire, the water entering at the top and passing through in a continuous flow to the bottom of the boiler. This kind of boiler can be made of any form to suit the space at disposal, and is therefore very economical of space. There are two separate boilers inclosed in one case, with one smoke stack. The boilers are so low that nothing projects above the deck but the stack.

The engines are of the well-known Herreshoff type, compound condensing, 6 in. and 10½ in. by 10 in., exhausting into copper condensers laid outside on the garboard strake close to the keel.

The ordinary speed of the yacht is ten statute miles per hour with 50 lb. of steam and 250 turns per minute. Screws 3 ft. diameter, 50 in. pitch. With a forced draught she has done 11.4 statute miles with 80 lb. of steam and 320 turns. Her full bow is of course prejudicial to her speed, but it makes her very dry forward, as she rises over the seas instead of plunging into them, an important quality in a boat in which the owner's end is forward.

The consumption of coal is between 175 lb. and 205 lb. per hour, about 2 lb. per indicated horse-power, and she can carry from ten to sixteen tons, depending upon how it is stowed. Six tons can be put in each bunker and the rest forward in reserve.

Anthracite coal is used, 2000 lb. to the ton. Upon one occasion a practical test showed the consumption of coal to be as follows: Ten tons lasted 17 days, during which the yacht steamed 482 miles in 60½ hours, and laid with banked fires for 347½ hours. The steaming was, at a number of times, and mostly on a narrow and crooked river, not at the best speed. The two coal bunkers are of the same size, although the drawing does not make them look so owing to its showing a small tunnel, through which a car runs from the galley to the cabin, avoiding the necessity which exists in most small steam yachts of having to carry dishes over the deck.

The yacht is schooner rigged, with a staysail, and sails very fairly, making about six knots with a fresh beam wind, and lying within five points of her course when beating to windward. Her foot of keel, through the whole of her length, enables her to lie up closer to the wind than was anticipated.

The flush deck is surrounded by a mahogany rail and rope netting. The pilot-house is of mahogany and plate-glass, and serves as a deck-house. It can be taken down to pass under the bridges of the Erie Canal, for which purpose her masts would of course be unshipped. Communication between the pilot-house and the engine-room is by means of a telegraph, so arranged that pushing the handles of the levers ahead means "Go ahead," slow or full speed according to the notch, and pushing them astern means "Go astern," the indicators in the engine-room following them. The two handles can be moved together for both engines, or singly for either engine to be worked by itself. Rigid brass rods connect the parts, and pointers in the cabin show what signal is made.—*Eng.*

A DISTILLERY has lately been put in operation in Charleston, S. C., for manufacturing oil from pine wood. The material is subjected to intense heat in sealed retorts, and one cord of it is said to yield fifteen gallons of turpentine, eighty gallons of pine wood oil, fifty bushels of charcoal, 150 gallons of wood vinegar, and a quantity of inflammable gas and vegetable asphaltum. The oil alone is worth about twenty-five cents a gallon, and is used by painters and shipbuilders. Apart from its commercial value, the process is interesting as showing how modern chemistry is able to supplant those old destructive chemical processes by which a single article was produced from a given material and all the rest wasted or ruined.