

### A REVOLUTION IN WOOD SHIP-BUILDING.

As outlined by H. H. Dunn in the "Pacific Marine Review," the recently commissioned War Mystery, built at Orange, Tex., by the National Shipbuilding Company — the first of several ships to be built there on the same plans — is quite as revolutionary of wooden ship construction as are the new types of ship built of concrete and of welded steel.

Shipbuilders who are familiar with the limitations of wooden construction — and marine experts long since claimed that it was impracticable to think of fabricating wood into a hull of more than 3,000 tons — claim that if the Mystery and her sisters prove all that is claimed for them (they are of 4,700 tons carrying capacity) they will establish new ideals in wooden shipbuilding.

The War Mystery is the largest wooden steamship ever built. She is the first of two vessels contracted for with the Texas firm by the Cunard Steamship Company. The second is practically complete and will be christened the War Marvel. On the ways in the yards of the National Company are six other vessels of the same type, which are being rushed to completion under the Government contract, calling for a total of twelve ships.

There is a radical difference between the War Mystery and the Ferris type of wooden ship adopted by the Emergency Fleet Corporation as the type of vessel best adapted to conquer the submarine menace. One of these differences — in fact, the great difference — is that the War Mystery has a dead-weight carrying capacity of 4,700 tons, as against the 3,500 tons of the Ferris model. In spite of this larger carrying ability the War Mystery requires less than 1,500,000 feet of lumber in construction, while the Ferris model uses 1,750,000 feet.

Another feature which greatly facilitates construction and rapid production of ships of the War Mystery type is that they require no timbers of extraordinary size or length, leaving the demand such that the Southern lumber mills are able to supply easily and quickly any quantity of material desired.

Among the original features embodied in her construction are: Frames of built-up timbers, scarfed and tied together with machine-driven hardwood treenails. Directly upon the outside of the frames and continuing uninterruptedly beneath the hull on top of the keel is nailed a double layer of diagonal strapping of material 1 1/4 inches thick and 9 inches wide. These diagonal courses are laid at right angles to each other and are designed to aid in giving the vessel extraordinary rigidity and strength, offering resistance to tension, compression and strain from every angle. The outer planking proper, varies in thickness from the garboards, where it is 8 inches, to 5 1/2 inches on the vessel's bottom, and 4 3/4 inches on the sides. The sheer strake is 7 inches in thickness. Inside the vessel is ceiled throughout with 7-inch planking.

The vessel has a comparatively light keel — 9 inches. The bottom of the ship has a floor of solid timbers, laid three deep and totaling 36 inches in thickness. The keelson is a steel plate 5ft. wide running the entire length of the vessel, and on which is mounted a fore-and-aft wood girder 18 inches deep. The bottom of the ship is further reinforced with additional keelsons of wood, 15 inches square, one at the turn of the bilge and the other midway between the bilge timber and the metal keelson. The heavy timbers in the vessel are fastened with screw bolts, instead of clinch bolts. The largest single sticks required in the construction of this vessel are the deck beams extending from side to side. These are 48 feet long and 15 inches square.

The vessel will be driven by a 1,450 horse-power triple-expansion reciprocating engine, with water tube boilers. Another variation from the Ferris ship type is the location of the machinery, which is well toward the stern rather than amidships. This arrangement leaves the cargo hold as one unit.

The vessel is not intended to carry sail, and the spars are derrick masts forty-five feet high, built to fold down upon the deck, so as to lessen the visibility of the ship. The War Mystery and her sister vessels have been given an A1 rating by Lloyds. The officers of the National Company say they can produce a ship within thirty days after construction begins, and since the company has ways for eight vessels, the future production will be at the rate of thirty-two ships annually. On May 1 last year the site of the shipyards was the boggy, reed-grown shore of a river. To-day it is fully equipped with

### "FABRICATED" SHIPS.

#### Parts of New Type Built at Inland Works.

one of the most interesting but least known developments of the present shipbuilding effort in which Great Britain has led the way is that of "fabricated" ships. A "fabricated" ship is a vessel the component parts of which are manufactured in other than shipbuilding yards. These component parts are transported to shipbuilding yards, assembled there, and put together as complete ships.

It is pointed out that when the State undertook the reorganization of the United Kingdom's mercantile shipbuilding industry, the principle of standardization was naturally adopted because in mass production of a specific object the highest possible speed of output is obtainable. A series of standard ships were designed, and contracts to build them were given out to the private yards of the country. As supplies of steel and labor increased and promised a margin over and above the requirements of the existing controlled shipyards, the idea was carried a stage further. The fabrication of ships was decided on and the necessary provision made. The aim of the Admiralty Deputy-Controller's Department was still further to increase speed of production. As matters stood, all the shipbuilding yards, engine factories, and boiler shops were largely occupied with standard ship work. There were, however, many other industrial establishments in the country doing work closely resembling shipbuilding and marine engineering. Among them were bridge-building yards and land engine factories. The majority of them were in inland centres and remote from launching water; but, taken altogether, their resources were so great that it was felt that they ought to be used.

"Fabrication" solved the problem, and a ship was designed the material of which could be satisfactorily fabricated in the bridge yards. It is a bigger vessel than most of the standard ships, and there is not a curved frame in it. Size and weight of unit of construction are limited, so that transport is easy and powerful gear for placing it in position is unnecessary. To avoid the same difficulties as regards machinery supply, geared turbines have been adopted instead of reciprocating engines. Every part of the complete ship can, in fact, be fabricated in inland establishments selected near the steel mills which have never done ship or marine engine work, and can be transported by ordinary means to the seaboard. With all the slips in private yards filled, it was necessary to look elsewhere for sites for assembling yards. The national shipyards on the British Channel was laid out for the purpose, and private undertakings of the same character exist or are projected with the concurrence of the Admiralty elsewhere. The objection has been urged that State-owned establishments ought not to have been set up until it was definitely known that the contract industry could not provide the required additional facilities. But it should not be overlooked that in carrying out its plans the State has a call on labor which is not available to contractors. The bulk of it is unskilled. Labor is, however, being trained in the use of pneumatic riveters and caulking tools, and will be (already it is in a large number of instances) sufficiently expert to put the assembled fabricated ships together.

The fabrication of the material of ship and engines has now been organized over a considerable area, local committees being responsible in certain districts for definite deliveries of a ship, or a number of ships, in specified periods. Moreover, fabricated ships are taking shape in several assembling yards. Before long, vessels of the type should represent a very considerable addition to the tonnage output. In the strictest possible sense of the term they will be additional, for their production will have involved no interference either with the contract industry or its supplies of labor and material. The State's fabricated ship enterprise increases the tonnage output by tapping new sources which are inaccessible or impossible to the private shipbuilder. — London Times.

everything needed in the way of machinery for modern shipbuilding.

The company is already well on its way to the production of eight ships complete and has a trained working organization of more than 900 men exclusive of master mechanics and directing supervisors.

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#### A CAREFUL WITNESS.

The farmer alleged that a freight train of the defendant company had hit one of his mules. "Now, Mr. Jones," said the attorney for the corporation to the farmer, "Will you kindly tell the court whether or not your mule was on the track when hit by the train?"

"Well," replied the farmer. "This was a bright mule, and I reckon if that train had took out after him in the woods which fringe the track there where he was killed, he would have got behind a tree!" — Farm and Home.

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