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from R. B. Forbes

THE  
AUXILIARY SCREW PACKET SHIP  
MASSACHUSETTS.

FORBES'S NEW RIG.

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DEAR SIR,

Having introduced into the mercantile marine of the United States a peculiar rig for ships, which combines economy, safety, and convenience, and which has been approved by all who have tried it, I beg leave to submit to your readers a brief description of it, in the hope that it may come into more general use and materially lessen the labour as well as the risk of navigating the ocean with such crews as we are compelled to take. The principle of this rig has long been adopted in schooners having yards on the foremast, and is, therefore, only so far new as to have been carried out for the first time in the auxiliary screw packet ship *Massachusetts* and the auxiliary screw barque *Edith* in 1844-45.

The lower yards and the topgallant yard are in the same position as in the ordinary rig; but the topsail and topgallant sail are so divided as to make three sails instead of two. The topsail being exactly of the size of an ordinary double reefed topsail, the yard being parrelled to the heel of the topmast, where the topmasts are fidded forward of the lower mast-head; and to the head of the lower mast where the topmasts are (as they ought to be) fidded abaft the mast-head; this renders it necessary to have the lower mast-heads longer, by several feet, than in the old rig. The next sail above the topsail, representing the upper half of the topsail of the old rig and a fraction of the old

topgallant sail, is called the topgallant sail, and the old rig topgallant sail is in the new rig called the royal, while the royal of the old rig becomes the skysail of the new rig. As I consider it important to have the sail as much in the body of the ship as possible, and at the same time so dispose of the canvas and spars that the sails can be used in different places, I make the foreyard of the same length (excepting a slight difference in the yardarms) as the main topsail yard; the fore topsail yard the same as the main topgallant yard, the fore topgallant yard the same as the main royal yard, and so on with the mizen, so that the yards and sails on the fore fit on the main one stage higher up, those on the mizen fit on the fore one stage higher and on the main two higher.

There must of course be a difference in the diameter between lower yards and topsail or topgallant yards although they may be of the same length. The principal advantages of this rig over the old are that by cluing down topgallant sails in a squall the ship is practically reduced to double reefed topsails by the watch in a moment, the sails are more easily managed, set better on a wind, can be furled snugger in a gale, and are much less subject to wear out; in short the ship can be taken care of in bad weather by the watch as well or better than the ship rigged after the ordinary fashion by all hands. It is well known to all who have been at sea that much of the anxiety to Captain and officers, and much of the labour of the crew, and the wear and tear of the ship, occur on first leaving port, before matters are organized, and especially on leaving ports in the East Indies and China during the contrary monsoons. It often happens that the strength of the men is impaired by diseases, as fever, ague, dysentery, &c., in these ports, at such times the new rig is particularly valuable; indeed, sailors have become so scarce and so inefficient that the *rule* is for ships to sail only half manned, because they cannot get good sailors at any price. It is, therefore, becoming more and more important to adopt some means of taking in and making sail, and I think I have accomplished this without in any way impairing the good qualities of the ship in other respects.

I advocate fidding the masts abaft for the following reasons, both in steamers and sailing vessels:—The topgallant masts and royal masts can be housed without interfering with the sails next below; so that topgallant sails can be carried with the royal masts housed and topsails can be carried when the topgallant masts are housed. The strain on the trussle trees is also divided between the topmast (say topgallant of new rig) and the lower yard, which, in merchant ships, generally hangs to the chock formed of the lower mast-head.

It is true that the necessity for housing topmasts does not often occur in sailing ships; but it is equally true that when it does occur it is very important to house them speedily, as when a tay-foong is coming on in China, or a hurricane at Mauritius, while at anchor, which operation has to be performed at the latter port whether you wish to or not by order of the harbour-master.

In steamers, and particularly that class of auxiliary steamers now

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coming into use, and in vessels of war the operation of housing masts ought to be often performed; and no one will hesitate to admit that there is a certain amount of convenience and safety in being able to make sail, equal to double reefed topsails and courses, while the topsails are housed. The steamers *Massachusetts* and *Edith*, and lately the U.S. steamer *John Hancock*, belonging to the surveying expedition lately sailed under the command of Captain Ringold, have their masts fidded abaft, and they are so contrived that with the aid of screw fids their masts can be housed without starting a lanyard. The ship *Flying Childers*, of 1,200 tons, which lately sailed from Boston for California, also has her masts fidded abaft.

The *Samoset*, *Reindeer*, *Mermaid*, *Lantao*, *Scargo*, *Hypographe*, and several others, have theirs fidded before the mast-heads, the only reason for which is that it *looks better*; and I am ready to admit that the new rig does not look so well in port as the old rig, but this ought not to be taken into the account when the advantages are so great. Many people, when they first see a plan of the rig, think that the weight aloft is greater, and that this is a disadvantage, and that the sails, being in smaller pieces, are not so efficient. As to the weight, I would remark, that if the whole apparatus of the new rig were put into the scales and weighed it would no doubt weigh a little more, but as the heavy topsail yards do not go above the cap, and as the yards and the canvas above these sails are lighter, the effect to heel the ship under canvas is no greater in the new rig than in the old. It is no doubt true that the larger the sheets of canvas the better for propulsion, provided they can be as well spread; but I contend that in the new rig the topsails and topgallant sails can be set flatter on a wind, and the larger the sails are the greater the necessity for the new rig, for it is well known that it is next to impossible to sway up a large ship's topsail without a very considerable bend in the topsail yard, and next to impossible to reef it snug in a dark night with the usual crew.

Each topsail and topgallant sail has only one reef in it, and the points are fitted so that the sail reefs to a jack stay on the yard above the bending jack stay or batten, both legs of the points being before the sail, as in a man-of-war's courses. There is another advantage in the new rig, which is, that in case of carrying away a topgallant mast (topmast of old rig) you can still set double reefed topsails, and you can get up another topmast in any weather, and often when it would not be safe to attempt it in the old rig.

The first cost of the new rig is greater, particularly where mechanics are not accustomed to it, for there are more blocks, more iron work, more ropes, &c., but the economy of the new rig in the long run is vastly greater, both in the wear and tear of the ship and the crew.

As a striking instance of the value of the rig, I may mention that one house near Boston has put it on three ships, and that without consultation with or argument from me!

The owner of one of the lines of Liverpool and New York packets rigged the *Great Western* something after the fashion of my rig, the

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difference being that the lower topsail yard was a standing yard and of the size of a close reefed topsail; this modification did not prove to be an improvement as the ship was altered to the old rig after making two voyages, or more, to Liverpool.

There is one packet ship from Philadelphia to Liverpool rigged in a similar manner, and the Captain likes it. I cannot doubt that if the rig is adopted in England it will soon become *the rig* for all ships, and will be found to combine economy, safety, and convenience.

I am very truly your servant,

R. B. FORBES,

*To the Editor of the Nautical Magazine.*

February 16th, 1853.