THE CONSTRUCTION OF STEAMSHIPS.

MESSRS. EDITORS:—As your paper is devoted to the advance of science and art, in their adaptation to the wants of society, permit the writer to occupy a portion of your columns in calling attention to ships and ship-building, more particularly steamers.

The columns of most of our papers have been filled, *ad nauseum*, with the *Great Eastern*, her performances, speed, &c., &c., and the result seems to be that, after all that has been said and sung in praise of her projectors, architects, engine-builders and managers, she is, if not a failure, far from a success. The writer could set forth many reasons, conclusive to him, that the *Great Eastern* must, of a necessity, prove a commercial failure; and the conclusions of "Tubal Cain," the correspondent of the New York *Times* (who is a practical engineer), would seem to be as conclusive as regards her speed. With her present engines and boilers, she can never be a fast ship, except at an expenditure of fuel that will make her an unprofitable one; and even at the estimate of 300 tuns per day consumption of fuel, the entire capacity of the ship will be required to coal her for the outward and homeward trips on an East India voyage. Until it can be proved that, from some peculiarity in her lines of displacement, she requires less power to drive her than ordinary vessels, all expectations of decreased expense in her performance, as compared with other ocean steamers, will prove utterly baseless. But enough of the *Great Eastern*. No proof, as yet, has been adduced to show that, tun for tun of carrying capacity, she can be navigated at the same speed as the Collins or Cunard line, at less expenditure of fuel; and hence, basing opinions on the best information we have, the ship has, in no particular, equaled the expectations or hopes of her projectors.

But, Messrs. Editors, are these any reasons why all attempts to arrive at more satisfactory results than any yet attained, in speed, economy of fuel, safety, and general adaptation of means to certain ends, should be abandoned? Perfection in steam navigation on the ocean has not, as yet, been reached. May we not adopt the language of Sir Walter Raleigh? "Whoever was the inventor of ships, every age has added somewhat to them; and, in my time, they have been greatly bettered." It is scarce half a century since steam was first successfully applied to navigation, and less than half that time since the dawn of ocean steam-navigation. Let prejudice be laid aside, let models and plans receive the attention they merit, let us cease to pin our faith on the sleeve of English or European projects or experience; and then Yankee ingenuity will very soon, under suitable encouragement, solve the great problem, and produce a vessel combining all the requisites of safety, strength, speed, and economy in fuel.

The chief obstacle (in the opinion of the writer) in the way of attaining increased speed in ocean steamers, arises from faults in model and mode of construction, quite as much as in the means of propulsion. Steamers must be built so as to secure great buoyancy, in order that they may not load too deep, or light up too fast by the consumption of fuel and stores. Model a steamer so that the quantity of coal she is to consume in any ordinary voyage will not sink her down over one foot, and the consequence will be that, from the commencement to the termination of a passage, she will be in trim to attain all the speed of which she is capable or her engines can give. This most important feature in the construction of a steamship has been thus far overlooked. Build a ship of say 450 feet in length, 56 feet breadth of beam inside the paddle-boxes, with not more than 22 feet depth of hold, with a long flat floor, and small dead rise; a vessel thus constructed will not sink at her load-lines (14 feet) more that one inch for every 100 tuns of coal placed on board; and as her consumption of fuel, in ordinary passages across the Atlantic, will not exceed 1,000 tuns, at the utmost, it follows that she will not be sunk so as to load her wheels at the commencement, nor lighted up at the termination of a voyage so as to prevent her engines acting with full power and efficiency.

A vessel constructed of the dimensions above stated would have a tunnage (carpenter's measurement) of over 7,000 tuns, and would have a carrying capacity fully equal to the coal she would consume in a passage across the Atlantic (stores and water included), and stowage room for over 2,000 tuns of weight and measurement goods; and, with engines of properly graduated power, could be driven with safety at a speed of 17 knots per hour in an ordinary sea-way, making the passage from here to Southampton, in all ordinary weather, inside of eight days, on a consumption of coal not exceeding 800 tuns.

Place the engines of the *Persia* or the *Adriatic* on board a vessel built on the proposed model, and she will make the distance between New York and Liverpool in less than eight days, because she will always be in trim for acquiring all the speed her engines are capable of imparting; no portion of their power being lost by too deep or too light submergence. Such a vessel would be a light, buoyant, easy sea-boat, not shipping seas constantly, like the *Persia*; nor rolling channels under, like some other ocean steamers not necessary to mention.

The success of such a vessel is not a mere matter of conjecture. A large steamer built on the same lines, now running on Lake Erie, with a single engine 12 foot stroke and 76-inch cylinder, makes regularly 18 to 20 miles per hour on a consumption of 40 tuns of coal for each 24 hours. The short, chopping seas of Lake Erie will deaden and impede the headway of a steamer more than the ordinary swell of the Atlantic; and if the universally conceded opinion of nautical experts may be deemed any proof of the feasibility of what is claimed in the above statement, all that is wanting to give the United States the commercial supremacy of the ocean is the means to construct and equip a vessel on the plan and model of the projector.

The merchants and capitalists of Great Britain expended over $7,000,000 in the experiment of the *Great Eastern*; can there be found, in the city of New York, enough of local or national spirit to vest $500,000 (less than one-fourteenth part of the above sum) in the construction of a steamer that will place America foremost in the strife, distance all competition, and restore the lost *prestige* of the stars and stripes?

NAUTICUS.

New York, Nov. 28, 1859.

AMERICAN STEAMBOATS IN RUSSIA.

MESSRS. EDITORS:—During my three years' stay in Russia I have constructed a great number of steamers, mostly for the Caucasus & Mercury Steam Navigation Company, one of the most flourishing companies in Russia; their steamers are commanded by officers in uniform. It is indeed a great pleasure to take a trip with them from Nishny Novgorod to Astracan. I have built three large passenger steamers constructed similar to the American river boats, with cabins on deck, and wide guards. These steamers have created a great deal of excitement on the Volga, both in favor and against them. They are considered to be the most comfortable and finest-looking steamers on the Volga; but from inexperience in managing them, they are considered by the Caucasus & Mercury Company to be not steady enough for passengers, which erroneous objection has given me some trouble, but it is now partly and shall be fully proved that the steamers are perfectly safe.

On the first trip with one of the steamers, from Nishny Novgorod to Astracan, it was in the beginning considered satisfactory, but when the passengers moved to one side of the steamer, it leaned over a little; the captain, not knowing how to trim it, got frightened, thought the steamer would capsize; and said he would not be captain any more on that boat! The passengers, hearing this, of course got frightened also; but there were some passengers on board who had been to sea, who encouraged others and said "There is no danger." In such a state of confusion and excitement the steamer arrived in Tsaritzen, where I met her for the first time in her finished state; this was in the middle of July, last summer. As the contractor of the steamer everybody complained to me; I soon found out the mischief, and promised "It shall be steady hereafter," for which purpose I went with her to Astracan. I had provided for each steamer a chain box or carriage by which to trim it to an even keel on the water, similar to those generally used in America. When I asked the captain for the chain box, he did not know *what* or *where* it was, although it had been described in the specification of the steamers to the company. I found the chain box among the firewood and rubbish, in the fore part of the boat, and requested one of the directors of the company to put the chain box in operation, when I received the odd answer that "The captain on board is a very nice gentleman; he knows very well what to do," &c. I repeated my request, but received only feeble excuses in return. The passengers locating themselves on one side of the boat in order to get into the shade, the steamer leaned over a great deal, and I felt very uncomfortable indeed, meeting steamers, passing cities and villages with our floating palace in a position like the tower of Pisa, having the proper means on board to trim it but not being able to do so in consequence of the obstinacy of a director. On our return from Astracan I succeeded in putting the chain box in operation, after which the steamer was kept perfectly level on the water. It was, however, reported that American steamers are very dangerous; that they will capsize in a high wind; and that it would be well if the government (Russian) would prohibit their employment on the Volga! Although I am Consulting Engineer to the Caucasus & Mercury Company, and although I constructed the steamers, my opinion is not taken, and they have no Chief Engineer in their service, but the report is entrusted to a non-professional man, and from his ignorance the steamers were rejected. Fortunately, here are people of better sense and judgment, who got hold of the steamers, and they are now running with perfect success between Nishny Novgorod and Astracan. There will be no more complaints of the steamers being crank; and I am engaged to build more of them this winter, of precisely the same pattern.

The steamers in question were built in the government of Kaluga, at his Excellency General Maltsoff's establishment, Ludinoff, where I shall build some more steamers this winter, of which two will be propeller steamers for the Black Sea, and perhaps one for the Caspian Sea. The government of Kaluga is about the highest part of European Russia; many rivers commence about here and run in different directions to the seas. Steamers can be built here and sent by the rivers Desna and Dnaper to the Black Sea; by the rivers Oka and Volga to the Caspian Sea; and by the Canal and Lake Ladoga to St. Petersburgh and the Baltic. On his Excellency General Maltsoff's estates there is plenty of iron ore, wood, and even stone coal. In traveling through the *steppes* and wilderness of Russia it is quite surprising to arrive on General Maltsoff's land. From the number of manufactories and smoking chimnies in every direction, one might think himself in England or America. It would, indeed, be a fortunate thing for Russia, if there were more such landholders in the empire. Most of the landholders in Russia live and amuse themselves in St. Petersburgh, Moscow, or some other large city; perhaps many have never seen their estates, while his Excellency General Maltsoff lives on his estates and takes care of them in person. The general is more like a go-ahead Yankee than like a Russian. He makes a great many experiments and spares no expense in accomplishing a good thing. General Maltsoff has twelve blast furnaces, one mechanical establishment with plenty of the best English tools and machinery, sufficient for 1,000 workmen; one large glass manufactory; a great number of sugar works; a linen manufactory; one establishment for galvano-plating bronze and Britannia-metal ware; enameling works; brick works; a great number of flour mills and sawmills driven by water, wind and steam; agricultural implements of the best and latest improvements; four large rolling mills; a China-ware manufactory; a distillery; Champagne and other wines made from Crimean grapes of the general's estate, at Semis, &c. Most of the manufactures are sent to Moscow and St. Petersburgh, though large quantities are sent in barges to the Black Sea, to Nishny Novgorod, and to the Caspian Sea. General Maltsoff takes upon himself the chief direction of the whole, to the minute details of every department.

Will you have the kindness to state in the SCIENTIFIC AMERICAN, that my address will be to the care of the American minister, St. Petersburgh, until next summer, when I shall return to my adopted country, and reside in Philadelphia, which will of course thenceforth be my place of address.

JOHN W. NYSTROM.

St. Petersburgh, Oct. 18, 1859.

THE NASMYTH HAMMER.—We are informed by Messrs. Merrick & Sons, of Philadelphia, who are manufacturing this famous hammer, that the English fee for its use is now entirely abolished. Their advertisement in relation to it will be found in another column.