THE STILETTO'S GREAT SPEED.

THE PRINCIPLES UPON WHICH THE NEW YACHT IS BUILT.

No event in the last 20 years has created so profound and widespread an interest among shipping merchants, steamboatmen, and yachtsmen as the performance on Wednesday last of the little steam yacht Stiletto in beating the fast steamer Mary Powell. Since that event, wherever the little boat has appeared she has been greeted with a chorus of steam whistles, and has excited the most eager curiosity. On Thursday last she took out a party to witnees the regatta of the New-York Yacht Club, and was quite as much an object of attention to the thousands of spectators as the racing yachts themselves. On Friday she carried ex-Gov. Tilden and his family on a flying sail up and down the waters of the Hudson. Mr. Tilden, it is said, greatly enjoyed his trip on the little vessel, insisted on having her run at full speed, inquired of Mr. Herreshoff if an ocean steamship built after her model and furnished with adequate engines of the same character would be capable of making the same speed, and asked many other puzzling and scientific questions. The ladies of his party were delighted. On Saturday the Stiletto took out one party of ladies and gentlemen down the Bay in the forenoon to see the start of the Seawanhaka regatta and in the afternoon carried another party to Larchmont and finally proceeded on her way back to Bristol, R. I.

The Stiletto was built by the Herreshoff Manufacturing Company, of Bristol, of which John B. Herreshoff is President and N. G. Herreshoff Superintedent and designer. She was launched in April. John B. Herreshoff says that the hull of the Stiletto is the product of a series of experiments made with models in the same manner as was followed by Froude, the English shipbuilder, and of the improvements suggested by tests of the numerous steamers previously built by the Herreshoff Company. Her length over all is 94 feet; beam, 11 feet; depth of hold in the centre, 7¾ feet. Below the water line both ends of the craft are very nearly alike, being modeled so as to present the smallest possible surface exposed to the water with a given flotation, as in the attainment of very high speed "skin" or water surface friction is the factor of major resistance. The lines of the bows are very nearly straight, and the bottom is made in round sections. The slight slope of the deck forward and more pronounced slope aft from the centre, which gives the peculiar appearance so noticeable in the boat, as well as the inclination inward are given merely for the purpose of getting rid of unnecessary weight in the hull, consequent loss of deck room being a matter of no moment in a boat of this kind.

"Our aim," said Mr. Herreshoff, "is not only to build a yacht capable of conveying business men quickly to and from their country residences and the city, but also to produce a craft which would be serviceable to the Government in case of necessity as a torpedo boat. The problem of the naval warfare of the future, it seems to me, is to be solved by speed and dynamite—or, to be more specific, that one of the great ironclads of the present time would be absolutely at the mercy of a number of small boats of great speed armed with dynamite guns. The proportion of beam to length, which in this boat is 8 6-11, is about that which experience has demonstrated to be the best for obtaining high speed and that to which we are tending in the construction of ocean steamships. Some years ago the tendency was to make them much narrower, and the proportion was worked down to about 11, but lately it has been carried up again to about 9, and the results have proved more satisfactory.

"The engine is designed to produce the greatest amount of power with the least possible amount of vibration. It is an annular valve inverted compound engine. It has two cylinders, one of 12 inches the other of 21 inches diameter, with 12 inches stroke of piston. With the maximum steam pressure of 150 pounds it will make 450 revolutions per minute, and is capable of working with that high pressure and high number of revolutions with very little wear and very little liability to break down. The space required for it is very much smaller than that occupied by any other engine in use of the same power. The ordinary yacht engines are capable of making only from 175 to 225 revolutions per minute. The essential feature of the engine is in the construction of the cylinder, which consists of one cylinder within the other, with an annular space between in which the valve works. The steam ports, or openings through which the steam enters the inner cylinder, are ranged all around it at the top and bottom, so that the steam pressure is exerted on the piston head from all sides at once, and not as in the engines in use now from only one side.

"We have made as much as 25 miles an hour with the Stiletto, and she can probably make as much as 27 miles. We did not urge her to the utmost when we passed the Powell, because there was no necessity. For a very brief space we ran her under 140 pounds pressure, but, as we then went away from the Powell with ease, we reduced the pressure down to 125 pounds. By the way, it is remarkable what an impression that race has made on steamboat men. We have not met a single craft since that carries a steam whistle without being saluted. Gov. Tilden asked me if it would be possible to build an ocean steamship on the same model as the Stiletto, with adequate engines of the same character, that would be capable of attaining the same speed? It certainly would, and such a boat would probably attain even greater speed because of her superior size and power."

"Would she have an equal carrying capacity with the existing ocean steamships?"

"Oh, yes! She would have an equal, if not a greater, carrying capacity."

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