

10TH MAY, 1888.

DISCUSSION ON MR. HENRY SELFE'S PAPER—"OUR HARBOUR STEAMERS."

Mr. A. D. NELSON stated that in moving the adjournment of the discussion at the previous meeting, he had not done so with any intention of taking part in it, as his knowledge of matters pertaining to naval architecture was limited, and he would leave the subject in the hands of those who were more competent to deal with it than he was.

DISCUSSION.

Mr. G. A. KEY said that all naval architects were aware that vessels of V section possessed a considerable amount of stability at great angles; but this did not hold good for small angles. With regard to the speed, as calculated by Mr. Selfe, he (Mr. Key) maintained that Kirk's rule did not apply to such small vessels, but to ordinary merchant steamers within certain limits, and even then it was only approximate.

Mr. A. CHRISTIE considered the power of the engines, proposed by Mr. Selfe, too small to attain the speed stated.

Mr. J. WILDRIDGE said that the V section boat was not a new idea. With regard to the statement of the author of the paper that the screw propeller was more efficient than the paddle wheel for shallow draft vessels, he contended that in designing a boat for a special service, it was necessary to consider the exigencies of the trade, and if the avoidance of collisions was one of them, then the vessel that gathered sternway in shortest time should be the one to adopt as tending to the greater safety of the passengers, and on this point there was no doubt that the latter was superior to the former. The example given of the s.s. "Port Jackson" being stopped from full speed ahead in less than twice her own length was a remarkable one, and equal to the best torpedo boat tests.

In the event of a collision, he saw no mechanical difficulties in the way of the life-saving rafts floating off, providing they were not damaged; but if the weight of the passengers was not equally distributed over them, which under such circumstances was very questionable, he considered it extremely probable that they would capsize and be far more disastrous to life than under ordinary circumstances.

The PRESIDENT said the paper was one of considerable interest and importance, and more especially so to those who were connected with the harbour traffic. The steam ferry service of Port Jackson had assumed such proportions within the last few years in the number, size and speed of its vessels, that it would be difficult to find its equal in any other part of the world, and it might be considered as an exceptional one; but he must agree with Mr. Selve in the statement that their security and safety had certainly not increased in the same ratio, in fact this consideration had been entirely neglected. Knowing as much about the Harbour ferry boats as any one in Sydney, he must confess he had an instinctive dread of hearing some day of a collision resulting in a great loss of life, then everyone would want to know why proper precautions had not been taken to prevent it. The authorities had done all they possibly could; but as their powers were limited, it was to be hoped that the absolute necessity for realising that this service was exceptional, and demanded special regulations, might not be delayed until it was too late. When new vessels were designed it would add but a very small amount to the cost if it were specified that they must be divided into water-tight compartments, and if this were properly carried out it would render them, except under extraordinary circumstances, practically unsinkable. Regarding the model of the proposed vessel it must be admitted by all, that although they differed with Mr. Selve on some of the remarks contained in his paper, they fully appreciated and accorded him that large amount of credit to which his mechanical skill and extreme patience were justly entitled, as it must be remembered that the model was to scale both in actual dimensions and weights of the different parts.

There were many features in the design for the proposed vessel that were highly commendable, and which might be adopted with advantage; among others he wished to direct attention to the division into water-tight compartments, the advantages of which had been ocularly demonstrated to them by the experiments with the model, for with two of her compartments full of water and loaded with a weight equal to her full complement of passengers she still floated.

The proposed introduction of portable seats was another improvement of almost equal moment, and one which should be enforced by regulation, the number fitted to each vessel being in proportion to her carrying capacity; each seat should also have a cork, or air-tight cylinder attached to its underside, to increase its buoyancy.

The improvement proposed in the steering gear, which might by some be considered a matter of no consequence, was, beyond doubt, of importance. The present method answered every purpose, provided it was properly attended to; but it was often neglected, with the result that a vessel got into midstream with forward rudder athwart her bow, and was thus rendered unmanageable.

The proposed sanitary arrangements were very good and would be fully appreciated by the public, more especially in connection with the many picnics and excursions during the summer months.

The practical description given by Mr. Selfe of the various technical terms was well worthy of notice, as it was a subject on which shipping people and even many engineers had but a confused and hazy idea. The illustration of a child on a rocking horse to define the term meta-centre was the best that had come under his (the President's) notice and might well be used as a standard explanation. There were some further points that deserved favourable notice, and others, as well as some of the statements contained in the paper, that he differed on. Regarding Mr. Selfe's remarks that his design was thrown out by the Balmain Ferry Co. without enquiry into its peculiar and novel features, he

wished to state that the Ferry Co. had nothing to do with the judging of the designs submitted; on the contrary, the directors after mature consideration came to the conclusion that it would be more satisfactory to submit the whole of the designs to three men who had no connection with the company and in whose judgment they had every confidence. This was done, and the names selected were Mr. C. Jeannerette, the owner of the Parramatta steamers, Captain Summerbell, Manager of the North Shore Ferry Co., and himself, the office was purely honorary and the only object was to select the best design. The number of competitors were about a dozen whose respective propositions were duly considered, and after spending a considerable amount of time and trouble it was unanimously decided that the design by Mr. G. A. Key was entitled to the prize for the following reasons:—1st. She was practically unsinkable. 2nd. She had more stability than the V section. 3rd. She could carry and seat more passengers. 4th. She had finer lines than the V boat and consequently more speed; and lastly, she was the best looking vessel. That was a plain statement of the actual facts. Mr. Selfe had stated that the design being sent in by his brother should have received more consideration, being from the same source as the greater part of the previous improvements in our ferry steamers. That Mr. Norman Selfe had made many improvements in this branch was correct and he was justly entitled to great credit for the services he had rendered. The first pair of compound screw engines and also the first pair of compound paddle engines built in the colony were designed by him, they proved very successful and were still working in a most satisfactory manner, but at the same time it must not be forgotten that of late years other persons had entered the field who, with all due respect to Mr. Norman Selfe, were quite as capable in marine design as he was and who as competitors deserved as much consideration. The floating roofs he did not consider necessary, for if the vessel were properly divided into watertight compartments and supplied with a sufficient number of portable seats as suggested it would be all that was needed to render them reasonably secure.

With regard to the V section it was a well known fact that vessels built on those lines possessed a considerable amount of stability, but it could not be claimed as an original idea, for local builders had for years past worked to lines very closely resembling those of the proposed vessel, and in support of this statement he might mention the "Pearl," built by Mr. Joubert, in 1884, also the "Genesta" and "Centennial," built by Mr. Dunn of North Shore, the only difference being that their lines were slightly curved instead of straight, and he felt no hesitation in stating they were equal in stability and certainly superior in strength, capacity, speed and appearance to Mr. Selfe's proposed boat.

The author, in comparing his vessel with the present ferry boats, stated that the hull would cost 30 per cent. less, the weight would be 30 per cent. less, cost of machinery 20 per cent. less, an increase of 25 per cent. in speed, and at the same time a very considerable saving of fuel. These statements were only assertions, and taken singly could be successfully combatted; but he (the President) would only refer to the one regarding speed. In 1881 a very fine lined double ended screw boat was built, called the "Alathea," and on her trial trip the maximum speed attained was $6\frac{1}{2}$ knots, proving to all intents and purposes a failure. She was sold, and it was suggested to her new owner that better results would be obtained if the forward propeller were dispensed with and the whole of the engine power put on to the after-screw in the usual manner. The proposal was adopted, and after the alteration her speed, with the same machinery, was increased to 9 knots, or equal to 29 per cent. above her speed as a double-ended screw.

It was well known that in adopting the double screw a considerable percentage of the power was sacrificed as compared with the result obtained by putting the same power on to one propeller.

It was misleading to apply Seaton's rule for obtaining the probable speed, as it was never intended for craft of this class, and the result could not be other than erroneous. The only method by which this could be arrived at was by actual experiment with some similar vessel, say, for example, the "Wallaby," whose

average speed was $9\frac{1}{2}$ knots, and knowing the power developed to attain this speed, it was a very simple calculation to decide what increase in power would be necessary to drive her $11\frac{1}{2}$ knots. It would be found that in such small double-screw vessels the power required varied at least as the cube of the speed.

Mr. R. MORSE remarked that he considered the most important feature in the proposed vessel was the floating upper deck or raft, as it certainly would give passengers a greater opportunity of saving their lives in the event of her foundering.

Mr. R. POLLOCK said that V section boats possessed a considerable amount of stability if properly ballasted, and that this section had been adopted by English yacht builders to a great extent for over 30 years. Sydney builders had also followed these lines for about 10 years, and in support of this statement he would mention the s.s. "Wallaby," and the more modern examples as found in the s.s.'s "Genesta" and "Centennial" all of which were practically V section boats, the only difference between them and the proposed vessel being that their frames were slightly curved instead of being straight, which feature he considered an element of weakness in Mr. Selfe's boat, and requiring heavier timber for the frames than those usually used. Regarding the water-tight bulkheads his opinion was that they should be fitted to every ferry boat.

The idea of constructing the promenade decks in such a manner that they would float off and be available as rafts in the event of the vessel foundering was certainly original and ingenious, but, as was well known, vessels in sinking rarely went down on an even keel, and for this reason he doubted its practical value.

He maintained that the particular design of the machinery that should be adopted depended very much on circumstances, for one of the fastest ocean-going steamers built in 1885 was fitted with paddle wheels and jet condensing oscillating engines working at a pressure of 30 lbs., a fact at variance with Mr. Selfe's statement that the screw propeller had superseded the paddle wheel. A paper on this subject was read before the Institute of Mechanical Engineers in 1885, which was worthy of perusal; the concluding words used were:—"It may be safely predicted that there still

remains for the paddle wheel a prolonged career of useful service," a statement that he (Mr. Pollock) fully endorsed. Mr. Selfe said that America was a "country where invention and improvement made the greatest strides." Although this remark was to a considerable extent true, it certainly did not apply to their ferry steamers, for the majority of them were not fitted with compound, but with the old-fashioned walking-beam, diagonal or horizontal high pressure engines.

The estimate of speed given for the proposed vessel was overrated, it would be found on trial to be nearer to $10\frac{1}{2}$ than $11\frac{1}{2}$ knots.

There was no doubt that there was room for improvement in their ferry boats; but this was also the case in other countries, for in a paper read a short time back before the Institute of Naval Architects, on the "Thames Ferry Boats," it was stated that "they could not be worse." In his opinion the Sydney Harbour steamers compared favourably with those in other parts of the world.

Mr. HENRY SELFE, in reply to the statement that his vessel would be more expensive to build than one of the ordinary type, quoted from letters he had received as follows:—

J. LYNCH, Shipbuilder, Balmain.—"She can be constructed very cheaply. I should be glad to build one at two-thirds the cost of an ordinary vessel."

W. FORD, Shipbuilder, North Shore.—"All sawn timber; built like a punt; setting up her frames would be like putting rafters on a roof. She could be run up at a very small cost."

G. ELLIS, Yachtbuilder, Balmain.—"It makes a wonderfully cheap and stiff vessel. I have been working towards a V for some years, but you have made too big a stride for people to understand."

In conclusion he stated that he had devoted the whole of his spare time during the past year to the construction of the model and experiments with it, and trusted that his efforts would bring about some improvement in our ferry steamers.
