

**LECTURES ON NAVAL  
ARCHITECTURE: BEING THE  
SUBSTANCE  
OF THOSE DELIVERED AT THE  
UNITED SERVICE INSTITUTION**

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Lectures on Naval Architecture: Being the Substance of Those Delivered at the United Service Institution by E. Gardiner Fishbourne

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**E. GARDINER FISHBOURNE**

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UNITED SERVICE INSTITUTION**



LECTURES  
ON  
NAVAL ARCHITECTURE,

BEING  
THE SUBSTANCE OF THOSE DELIVERED  
AT THE UNITED SERVICE INSTITUTION,

BY  
E. GARDINER FISHBOURNE,  
COMMANDER, R.N.

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LONDON:  
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W. WOODWARD, PORTSEA; AND W. COLMAN, DEVONPORT.

MDCCLXVI.

TO THE COUNCIL  
OF THE  
UNITED SERVICE INSTITUTION,  
UNDER WHOSE AUSPICES THEY WERE  
ORIGINALLY DELIVERED,  
*These Lectures*  
ON THE CONSTRUCTION AND STOWAGE OF VESSELS OF WAR,  
ARE RESPECTFULLY DEDICATED  
BY  
THEIR HUMBLE SERVANT,  
E. GARDINER FISHBOURNE.



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## INTRODUCTION.

THE reader of this little work, who shall open it with the hope of finding a complete treatise on the science and practice of Naval Construction, will be disappointed. Such an expectation would also be as unjust to the author as disappointing to himself, and the work must be judged by the circumstances under which it was written, the parties to whom it is addressed, and the views with which it is published, rather than by the pretensions which are implied in a professed treatise on Naval Construction.

The author begs the reader to consider the little book merely as the remarks of a practical sailor, written for the benefit of those of his brethren of the Naval profession who have not had time or opportunities of making them for themselves. They are some of the results of a sailor's experience concerning the practical qualities of ships, acquired during some service, and put forth after no little observation, thought, research, and experiment.

He believes that the study of the principles of construction and of the qualities of peculiar forms of ships, and of the peculiar modes of stowage, would be of great value to the practical sailor. Without due consideration to the peculiarities of a vessel's form in various parts, it is impossible justly to measure the effects to be expected from any particular trim or mode of stowage, and without a due consideration of the effect of any given disposition of weights it is impossible justly to measure the effects to be expected from any particular form—and though it may not be any part of a sailor's business to be able to

construct his own ship ; yet, since different ships require the most various trim and stowage, it is indispensable, to entire success, that the commander of a ship should thoroughly understand what are the qualities due to each peculiarity of her form, and how these qualities may be modified by the arrangement of weights, in order that he may correct as far as possible the defects of form.

It was the experience of the value of such knowledge to himself as a sailor, which first led the author to the study of this subject. He began by noticing the forms of different ships, and soon remarked that each peculiarity of structure gave to each ship peculiar qualities, good and bad. A full bow gave one property ; a lean run, another ; a bow full at one place, gave a different quality from a bow full at another place ; with an after-body comparatively full a ship steered well, and with an after-body comparatively fine, but in the wrong place, she would hardly obey her helm.

The observations thus made were practically confirmed by observing the effect of alteration of trim, which, in fact, by taking one part of the ship out of the water and putting another part in, may amount to a practical variation of the shape of the ship. When to these experiments the author was enabled to add observations on the working qualities of his ship, on her stiffness under canvass, on her stability in smooth water, or her instability in a sea way, he very soon found, that for the efficiency of our Naval service, it was quite as desirable that the sailor should know how to bring out the useful qualities of a ship, as that the Naval architect should understand how to confer them. Further, it is difficult to conceive, that the sailor will know how or what to observe, unless he have some knowledge of the principles which guided the construction of the vessel whose qualities are to be