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Warrior to Dreadnought: Warship Development 1860-1905

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warfare in the coming twentieth century. Is our vision penetrating enough for the twenty-first?

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Captain, Royal Navy

Brown, David K. *Warrior to Dreadnought: Warship Development 1860-1905*. Annapolis, Md: NIP, 1997. 224pp. \$35

This large-format volume comprises a detailed textual and pictorial history of Royal Navy ship design and construction in the latter half of the nineteenth century. A number of dominant themes convey the author's purpose. First is the influence of innovative technology on hull design, armor, propulsion, guns, and projectiles. Second is the manner in which the ship design process evolved from experience-based, single-person artistry to a standards-based, scientific team effort. Third is the noteworthy progress made in the understanding and application of ship stability factors. Finally, each chapter offers fascinating insights concerning why and how design and construction decisions were made (dispelling certain historical myths in the process) and the forceful personalities involved.

Although the Royal Navy did not participate in a major conflict during the period addressed by this book, the author weaves his themes into a nonetheless dynamic, fast-paced story of warship development. The transformation begins with HMS *Warrior*, whose "ultimate technology of 1860" was represented by iron hull and soft armor,

broadside batteries of short-range guns, and dual propulsion of sail and box boilers to achieve a speed of fourteen knots. It concludes with HMS *Dreadnought*, whose all-steel construction, armored rotating turrets with guns that could "reach the horizon," and a steam turbine plant (twenty-one knots top speed) defined big-warship character and capabilities in advance of World War I.

The author documents meticulously the many influences that contributed to this transformation. Categories and examples (not exhaustive) of such influences are: science (the quest for stability principles, the introduction of modeling), technology (wood/iron/steel, engine design, guns, and projectiles), combat lessons (the U.S. Civil War and the Sino-Japanese, Spanish-American, and Russo-Japanese Wars), maritime commerce (availability of coaling stations, the telegraph's impact on trade routes), culture (the relationship between strategy, ship design, tactics, and armaments), national politics (defining the Royal Navy's role, budgets and funding, its search for "cheap wonder ships"), and geopolitical considerations (the two-power standard).

Trite as it may sound, this is truly an instance where an author brings significant experience and expertise to his subject. David K. Brown retired in 1988 as the Deputy Chief Naval Architect of the Royal Corps of Naval Constructors, and he currently serves as vice president of the Royal Institution of Naval Architects and the World Ship Society. He is widely published, with more than 130 books, articles, and papers to his credit. *Warrior to Dreadnought* is the chronological companion to his

earlier work, *Before the Ironclad* (1990). Brown's affection for his profession, its history, and players is evident in the research (much of it from primary sources) and in the sense of humor he applies to the task. He explains ship design complexities in layman's terms and provides useful appendices on the basics of ship stability and related subjects. The text is liberally supplied with diagrams, drawings, charts, and photographs, many from the author's personal collection. A detailed index, a glossary and abbreviations page, and the author's commentary on principal sources round out the comprehensive attributes of the book.

Warrior to Dreadnought should appeal to many tastes. Those who enjoy the narrative style and personality descriptions of Daniel Boorstin's histories will be delighted with this effort. Those attracted to the lore of ships, whether to their physical beauty, technological intricacies, or battles with the elements, will be equally satisfied, especially given the book's visual strengths. On a third level, readers familiar with the U.S. Navy's contemporary effort to redefine itself in the post-Cold War era will be quite interested in the many parallels to the Royal Navy experience a century ago. Chief among these are the struggle to identify the capital-ship role ("Strategy should govern the types of ships to be designed; ship design should govern tactics; tactics should govern armaments") and specify needs. (There had never been a full study of the naval requirements of the Empire; the procedure had been for the First Lord to get as much money as he could from the cabinet and for the Board to do the best they could with those funds.) Others

are resource debates ("Few were disposed to pay for a large navy to defend against a distant and ill-defined threat"), and the timeless battle concerning change ("Many did not understand new technologies and sought for wonder-weapons, which would give them victory at low cost").

On a concluding, lighter note, young U.S. Navy officers currently serving in that most dreaded of division officer assignments, "damage control assistant," may find a concise, coherent "bootstrap" on ship stability in the appendices of this book. The measure of effectiveness is that if this reviewer could understand the author's explanation, anyone can.

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Greene, Jack, and Alessandro Massignani. *Ironclads at War: The Origin and Development of the Armored Warship, 1854-1891*. Conshohocken, Penna.: Combined Publishing, 1998. 423pp. \$34.95

If asked for the first image that comes to mind upon seeing the title of this book, most knowledgeable readers would probably respond with something from the American Civil War or the battle of Lissa. However, as Jack Greene and Alessandro Massignani make abundantly clear, ironclads consistently saw service in one form or another worldwide during the latter half of the nineteenth century. The authors, better known for their work in twentieth-century