

reading focused on the Polish Navy and general Polish military history. The book cites neither academic journal articles nor Polish source materials, which the author no doubt used in his research. *The Polish Navy 1918-45* provides a good general overview for English readers interested in the Polish Navy up to the end of the Second World War as well as ship enthusiasts and scale modelers. In the modelling community, Poland is known for some diverse ship kits, multi-lingual information publications, and detailed ship plans. Making a model of a Polish warship from the period relies on such sources or modifying French and British variation ship kits similar in design type and function.

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**Ian Buxton and Ian Johnston. *Battleship Duke of York. An Anatomy from Building to Breaking*. Barnsley, S. Yorks: Seaforth Publishing, [www.pen-and-sword.co.uk](http://www.pen-and-sword.co.uk), 2021. 264 pp., illustrations, appendices, sources, index. UK £45.00, cloth; ISBN: ISBN 978-1-5267-7729-4. (E-book available.)**

Naval history over the centuries is replete with strategic and operational analyses. In recent decades the impressive output of David Brown and Norman Friedman (among others) has documented the parallel and symbiotic evolution of both naval architecture as a science, and the design development of various warship classes as driven by operational imperatives. Rarely, however, has the actual building and breaking of a particular warship been as completely and as uniquely illustrated as in this volume.

That this was possible stems from two happy circumstances: first, the remarkable foresight of John Brown Shipyard's management in very early establishing an in-house photographic department to record the progress of construction; and second, the preservation of this exceptional and unique consolidated record of Clydebank shipbuilding during the later decimation of the British shipbuilding industry. Ian Johnston's previous two books (*Clydebank Battlecruisers*, Seaforth, 2011; and *A Shipyard at War*, Naval Institute, 2014) provide additional details and examples of the photographic effort during and shortly after the First World War. This photographic record ultimately extended from 1887 until the collapse of Upper Clyde Shipbuilders in 1972 and encompassed 23,000 glass plate negative and another 20,000 celluloid negatives. Of this treasure trove, over 600 photographs were of the present vessel. This record was augmented by pictures of the scrapping at Faslane, February 1958-March 1960, photographs taken by the first author while serving a naval architect apprenticeship at the Dumbarton shipyard of William Denny & Co., and by warship enthusiast Tom Ferrers-Walker,

who travelled regularly from Birmingham to record the progress. The result is a book which provides a remarkably visual (almost visceral) sense of the complexity of the shipbuilding and ship-breaking process of the era.

The book does not dwell on the operational history of the ship. *Duke of York* was the third vessel of the five-ship *King George V* class (the others being *King George V (KGV)*, *Prince of Wales*, *Howe*, and *Anson*) and had a lifespan of only 16 years, being caught in the post-war modernization funding crunch. Brief chapters on the shipyard's history, its labour/employment practices, costs, and procurement/contracts/ specifications set the scene for the meat of the book, the chapters on armament, armour, construction, plans, and breaking.

The chapters on labour/trades, costs, procurement, and specifications/contract provide fascinating insight into the business of ship procurement and production. That this ship was procured with official documents that numbered only "over 600 pages" is a testament to the latitude and expectations embodied in phrases like "to use only the best materials and workmanship of British manufacture" (31), as well as the caveat "no new contrivances unusual in Admiralty work to be introduced without Admiralty sanction" (30). This latter calls to mind Freeman Dyson's dictum that "a good scientist is a person with original ideas – a good engineer is a person who makes design that works with as few original ideas as possible..."

The chapter on armament is lavishly illustrated with excerpts from the coloured plan and section drawings in the armament handbooks. Each quadruple 14" MK III mounting (of which there were 2) cost £700,000 (almost 10% of the whole ship), weighed 1200 tons (excluding the guns) and employed a crew of 107. Each gun was 54 feet long and lobbed a 1,590 lb shell. The heaviest single component of the mounting was the 200-ton rotating turntable, requiring the ship to be repositioned in the fitting-out berth under the single crane capable of lifting such a weight. The complexity of the mounts was such that they took longer to build than the ship and so armament orders for the last three ships of the class were placed in January 1937, even though *Duke of York* was not laid down until 5 May 1937. She was launched and named on 28 February 1940. The mountings were not shipped until June 1941 (a one-year delay), and the ship was reported complete ready for trials 31 October 1941.

The main chapter of photographs covers the construction and is accompanied by excerpts from daily progress reports recorded by (variously) the Shipyard, Engine works, Shipyard Drawing Office (SDO), Committee (senior Clydebank management) and Board (John Brown Board of Directors in London). Together these paint a fascinating picture of incremental progress, but also of varying perspectives on issues, in-progress design changes, and impact of local and global wartime events. Thus, the loss of *Hood* gave rise to questions of acceleration of *Duke of York's* programme, including

exploration of the possibility of transferring workers from other yards (126); 19 December 1941 brought news of the loss of *Prince of Wales* (156) leading to further considerations of workforce shifting, this time from Clydebank to assist Fairfield with hastening *Howe*; 29 January 1941 noted design change proposals based on *KGV* sea trials; and 13/14 March 1941 noted the impacts of the Clydeside blitz, including the need to accommodate and feed (inside the yard) those workers who could not get home through the damage.

Of particular interest to this reviewer was to note the numerous design changes during the build progress: extra berthing for an additional 90 officers and men; switching of degaussing cable runs from external to internal; additional splinter protection around magazines (installed after launch); rudder modifications and support strengthening installed during a docking immediately after sea trials); and breakwater alterations based on weather damage to *KGV*.

There is also a chapter of plans, featuring double-page-spread general arrangements in full colour, a four-page fold-out inboard profile, as-fitted drawings, plate expansions of fore and aft sections, and a large scale body plan/docking drawing showing side blocking locations and placement of breast shores to prevent hull distortion due to the exceptional loads of gun mountings and armour.

The final chapter covers the scrapping or ship-breaking process at Faslane, illustrating how Shipbreaking Industries (SI) progressively dismantled the ship while afloat, gradually edging her into the shallows where the final cutting-up could be done at low tide. The record of weights of various materials accounts for some 37,048 tons of material, equipment, and fuel recovered, recycled or disposed of over a 27+ month process, using 353,000 manhours, or about 2% of the effort to construct the ship.

Overall, this book contains a wealth of visual and factual detail which will fascinate anyone interested in the technical details of large warship construction in the era of the Second World War. The more one dwells on the magnitude and complexity of the process, the more one is moved to retrospective admiration and wonder, not only at the engineering and fabrication feat, but also at the sheer managerial and logistical challenge of orchestrating such an endeavour in the pre-computer era. This volume will be a unique and most valuable addition to any library concerned with the history of warship construction.

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