

## BOOK REVIEWS

BROWN D.K, RCNC (Editor) *The design and construction of British warships 1939–1945. Vol I—Major Surface Warships*. Conway Maritime Press, London 1995. 154 pages, 58 photos, 21 illustrations. ISBN 0 85177 673 6. Price £25. (reviewed by J.P.F. EDDISON, RCNC)

At the end of the Second World War, the Director of Naval Construction set his design teams to recording their wartime activities. They prepared short summaries, with sketches, of all the warship types that had seen service, from carriers to tugs, describing their principal achievements and distilling the lessons learned in combat.

These essays were never published. They have now been edited by David BROWN into three volumes, and are being published as a set, complete with a wide selection of illustrations and contemporary photographs. With his customary erudition and clarity, the editor has added a very helpful introduction, describing the political, industrial and technological scene leading up to 1939, and has provided a summary at the start of each chapter. He has, as well, included copious footnotes and explanations and discussions of the sometimes obscure technical terms.

This first volume covers surface warships, from fleet destroyers of around 2,000 tons to battleships of 50,000 tons, via cruisers and various types of carrier. The much smaller HUNT and TOWN Class destroyers (the size of today's OPV or corvette) have also been included, although classifying them as 'major' seems a little generous. To follow are *Submarines, Escorts and Coastal Forces* in Vol II, and then *Amphibious Warfare Vessels and Auxiliaries*.

The essays are written from the ship designer's viewpoint and cover those aspects of the designs which were considered important to him at the time. This is perhaps not always conveyed to the reader, and at times there is a feeling that information has been included simply because it is there. So each chapter concentrates on matters of layout, naval architecture and main armament, though cost and production aspects are also described. Main machinery and electrical systems, though included, are less thoroughly discussed.

A wealth of information is provided for each type of ship, and will provide fascinating reading for the specialist. At the same time, the sections within each chapter are short and clearly written, so that others can dip into them and pick out the whys and wherefores of a particular design or design feature. Each chapter is illustrated by General Arrangement drawings, and sometimes by Midships sections; the side protection system and structural arrangements of HMS *Vanguard* are particularly interesting. The value of these is unfortunately somewhat diminished, as the printer was not able to reproduce the details legibly from the original typescript, the original drawings not being available.

The book is almost worth reading for the Introduction alone, where the Editor has drawn lessons from the inter-War years for the shape of the fleet in 1939. Thus we learn that financial stringency is nothing new, and that designing to meet International Treaty requirements imposes some curious limitations and leads to unwelcome compromises. The UK, it seems, was more punctilious in observing these limits than other countries . . .

Several examples are presented to characterize the struggle to introduce new technology, often opposed by a cautious and risk averse industry, which had been running down after the First War and was more concerned with survival. Even so, capability and capacity were seriously limited when rearmament became necessary. It is perhaps some comfort to be told by the Editor that the UK was not alone in making some major miscalculations.

However, it is the technical content that earns this book its place in the library. Although the sheer volume of detail can be somewhat overwhelming, the book provides a unique view of the development of the RN's surface warship design practice, in response to technical advances, operational needs and lessons learnt in action. It shows how the volume of business allowed a high level of feedback, as problems were identified and designed out, and solutions were brought into service, all in a comparatively short space of time, so that expertise was maintained and used. Throughout, the Editor's dedication, enthusiasm and technical mastery are evident, in the clear and concise marshalling and presentation of the data, and in the pertinent commentary on design rationale.

The designs may be outdated, but there are still lessons for modern designers to be found here. Familiar points will be recognized in all the chapters: capability creep during design development, design changes during build, the need to compromise between cost, capability and technical standards, and the provision of inadequate margins for later growth. Naval architects will particularly appreciate the frequency with which GM as built was significantly less than the design estimate.

If one part of this book deserves special mention, it is the one covering the development of the aircraft carrier, from its inception to a form (in *Ark Royal*) very similar to carriers of today. Here are laid out the requirements, the design solutions and the compromises, as this new concept evolved into the modern capital ship. If the further volumes in this series maintain the standard of this one, they will be essential reading for all those concerned with the development of warships.

DEANE, Anthony. *Nelson's Favourite—HMS Agamemnon At War, 1781–1809*. Chatham Publishing, London, 1996. ISBN 1 86176 002 7. Price £25. (reviewed by D. MANLEY)

This is the first book from the newly formed Chatham Publishing. Written by a descendant of the famous 17th century naval architect and advisor to King Charles II, Sir Anthony DEANE, it tells the story of the *Agamemnon* from her construction to her accidental loss in Maldonado Bay off the coast of Uruguay in 1809.

This book will appeal to all levels of reader, from hardened Napoleonic naval buffs to those with no previous knowledge of the subject. As well as describing the *Agamemnon's* combat career DEANE uses the ship's story to illustrate aspects of warship design and construction, armament, recruiting and life at sea. These sections are just long enough to give the lay reader an insight into the main features involved; references are made to more advanced texts for those wishing to delve deeper. Those with a deeper level of knowledge will still find these sections interesting, as they hold much information which is specific to the *Agamemnon*.

Having discussed the construction of the ship, DEANE then tells the story of this famous vessel. In so doing he also effectively recounts the major

naval events of the Napoleonic Wars. The *Agamemnon's* active service saw her at the Battle of the Saintes in 1792. Later, under the captaincy of NELSON she served at the occupation of Toulon, was involved in the sieges of Bastia and Calvi (where NELSON lost the sight of his right eye), and carried him on diplomatic missions to Naples (where he met Emma HAMILTON for the first time). NELSON left *Agamemnon* in 1796, whereupon the ship returned to England for refit, after which she joined the Nore Squadron. There she was involved in the mutiny of 1797 and the first attack on Copenhagen in 1801. In 1805, under the command of Sir Edward BERRY she formed part of the Weather Column at Trafalgar, despite twice having avoided capture by superior French forces in the preceding days. Service at the second battle of Copenhagen in 1807 followed Trafalgar, after which she was deployed to the coast of South America as part of the British squadron supporting the exiled Portuguese royal family. It was on this coast that, on 16th June 1809, she ran aground and was lost.

The style of writing is free flowing and easy to read. DEANE switches between general history and events specific to the ship in a seamless manner which sets this book apart from similar ship histories. The description of historical events (both major and minor) are well handled and are likely to inspire the reader to further research through the references quoted. The period during which NELSON commanded the ship (both as Captain in the 1790s and as Admiral in 1805) provide an insight into the man himself, and guide the reader towards Carola OMAN's famous work<sup>1</sup> for a definitive biography.

The text is scattered with many footnotes expanding on items touched on in the text. These are fascinating reading in themselves and often reveal engrossing snippets of information. For example, many readers will be unaware that until December 15th 1805 ships' logs in the Royal Navy ran from noon until noon on the following day. This is but one example from dozens. Also included are extracts from ship's logs and transcripts from the official inquiry into the loss of the ship.

One of the worries with any book describing naval activity in the Napoleonic wars is that events following Trafalgar and the death of NELSON are hurried through, included almost as an afterthought. This is not the case with this book. On the contrary, the events in South America between 1806 and 1809, which form the backdrop to the *Agamemnon's* swansong, are richly described and reveal a political intrigue as deep as any in history.

In summary, Mr DEANE's book serves as both an excellent introduction for the novice to naval life and events during the Napoleonic wars, and as a valuable reference book to the more experienced amateur naval historian. Highly recommended.

<sup>1</sup> Carola Oman. *Nelson*. Hodder and Stoughton Ltd, London, 1947.

ELKIN, P. *Images of Maritime Bristol*. Breedon Books, Derby, 1995. 197 pages, 345 photos. ISBN 1 85983 004 8. Price £14.99.  
(reviewed by David K. BROWN, RCNC)

Many readers will find themselves working in the Bath-Bristol area and they will find that this book provides an interesting and most enjoyable introduction to the maritime history of the ancient port. At first sight the format is that of yet another collection of old photos but it is very much more than that. The author is a Senior Curator of Bristol City Museum and was responsible for establishing the Industrial Museum. His knowledge and the museum's splendid collection of photos provide the basis for the book but the meat is in the captions, typically some 250–300 words for each and very informative too.

The book really deals with the age of photography from 1840 onwards and shows how the port has changed and moved down stream and the ships have changed, too. There are sections on local shipbuilding and cargo handling methods are also shown. Many pictures show the dangers of the passage from sea to town centre with the lucky ones refloating on the next tide—but some broke in half. The well known picture of the *Gipsy* which broke in 1878 is particularly interesting. She was built of wrought iron and the fracture has spread down the side, in a straight line, across the riveted seams. Wrought iron was very brittle and a riveted joint could not be relied on to stop a crack. The book takes us up to date with a photo of the *Matthew* replica under construction.

GARDINER, R. (Editor). *All the World's Fighting Ships 1947–1995*. Conway Maritime Press, London, 1995. 783 pages, very many illustrations. ISBN 0 85177 605 1. Price £75.

(reviewed by David K. BROWN, RCNC)

This single volume updates a two volume work published in 1983 providing a complete review of those ships of the cold war era. The Soviet section has been completely re-written by Dr Norman FRIEDMAN and is the best short account of that navy and hence this review will concentrate on that section.

The sections opens with an 11 page survey of the rise and fall of the Soviet Navy starting with STALIN's wish for sea power, though it is not clear what he wanted it for, and changed at the whim of successive leaders. These pages provide an excellent study of Soviet sea power and lead into 19 pages of detail descriptions of Soviet weapon systems and sensors which are invaluable in assessing the capability of the individual ship classes. There could, perhaps, have been a little more on background problems such as alcoholism in the shipyards.

The ship section of 58 pages is particularly good in describing the designs which were never built, often as a result of policy changes at the top. Ship design within a bit navy is much more evolutionary than it seems from the outside; apparently revolutionary jumps are often seen as evolutionary change when the missing links are found. At last, one can be reasonably certain how many ships were completed in each class and the usual data of builder, launch date etc is given. At its height, the Soviet Navy was a truly formidable force, only slightly less so than some of the more alarmist estimates.

The other navies have been revised in detail, usually by the original authors. Dr FRIEDMAN is, again, the guide to the might of the US Navy which also experienced several switches in role. There is nothing to match the power of the big carrier force though it is slightly surprising that a 12 carrier force can only muster two at the sharp end. Ninety pages for the USN compares with a generous 64 for the RN by Anthony PRESTON. Both sections have comprehensive guides to weapons and sensors. Accuracy in a book of this sort is all important and there do not seem to be any obvious errors.

A personal concern is the number of ships which have required very visible strengthening e.g.:

- British Type 21 (commercial design) and 42 (MoD design)
- French TOURVILLES
- Soviet *Sovremennyy*
- US FFG7 etc.

Politicians have tended to equate weight with cost forcing undue attention to cutting scantlings. The design of a lightweight, flexible structure supported

in most irregular fashion by the sea is not easy and requires both skill and experience, not helped by excessive staff cuts.

The numerous illustrations (typically two per page) are well chosen and well reproduced. The editor has wisely limited the contents to real fighting ships, omitting the service craft, customs launches etc which inflate the size and cost of annuals such as *Jane's Fighting Ships*. If you do not have the earlier two volume edition or need a complete record of the Soviet navy you will find this book good value.

HAINES, Steven; CLARKE, Richard. *The Royal Naval Engineering College—Manadon: A Commemoration*. The Institute of Marine Engineers 1996. 80 pages, 61 photos (28 coloured), 8 Illustration (including 4 coloured TUGG cartoons). ISBN 0 907206 719. Price £15 (IMARE members £12) from

The Publications Sales Department  
The Institute of Marine Engineers  
76 Mark Lane  
London  
EC3R 7JN

(reviewed by LIEUTENANT COMMANDER J.S. SHEARS Ret'd)

For all those who went through the portals of Manadon this book is a must, even if it is a means to convince the grandchildren on how things have gone downhill since you were trained! The book is divided into five sections, the first being a transcript of the talk given by VICE ADMIRAL Sir Robert HILL, KBE FENG in the Plymouth Council Chamber at the invitation of the Lord Mayor. If you are feeling depressed then this section must be read, because at the end of it you realize what a good chap you were to have passed out! Sir Robert deals with all aspects of life at Keyham and Manadon. He covers the war years and relates the story of how a Keyham Officer under instruction who, during the German bombing raids, spotted a wall about to collapse beneath which some civilians were sheltering. They refused to believe him, preferring to remain in the false security of their shelter. He drew his revolver and succeeded in forcing them out seconds before the wall collapsed. Now was it really safe issuing revolvers to the young men under instruction? In another part he deals with the Instructor Branch and says some very complimentary things about them. I must have got it all wrong, as I remember the great sport was baiting young lieutenants straight from university in their first job! One Eric RYDER is singled out for not completing his PhD, but inspiring a generation of MSc students. What I remember is him taking part in the quiet runs around the Barbican, but with this book everyone will have their own version of events and memories.

The second section is a history of engineering training and the college by Dr Philip PAYTON. He describes the uphill struggle the early engineers had to establish themselves as professionals in the social climate of the time. In 1840 the dockyard schools had opened, but it wasn't until 1880 that the purpose built training school for engineering students was opened at Keyham. The 1920s and 1930s was the golden age of Keyham. Due to the inadequacy of the building, in 1936–37 a search for a new site was commenced and shortly afterwards the 100 acre site at Manadon was selected for purchase. In 1939 approval was given for a building programme at the new site. On 7 May 1940 Manadon was formally opened as an extension to Keyham. After the war, building began in earnest in 1948. The foundation stone for the new wardroom was laid on 13 July 1956 by ADMIRAL MOUNTBATTEN and opened by the DUKE of EDINBURGH on 29 July 1958. 1958 also saw the final closure of Keyham as part of the RNEC. The rest is as they say history. One of the last buildings to be commissioned was the Keyham block in 1988 and then came 'Options for Change'.

LIEUTENANT COMMANDER R. NICHOL, RNR then tells the history of all the ships, crests and badges that have carried the name HMS *Thunderer*. He explains that this is not a straight forward task as although it has been long stated that there are six *Thunderers*, official naval records list no fewer than nine uses of the name. This goes some way to explain the apparent inconsistencies in the *Thunderer* Battle Honours. What is certain is that the *Thunderer* name was awarded to the RNEC in 1947 and as for the shape of the badge, that was another minefield which is fully explained by the author.

Section 4 lists all the officers obtaining degrees at the college, but records only go back to 1968. The final section is a list of all the Commanding Officers.

An excellent well presented publication. One criticism is the photographs, everyone looks so young, but is it just like the policemen who each year look that much younger as time passes by?

ROHWER, Jürgen. *War at Sea, 1939–1945*. Chatham Publishing, London, 1996. 192 pages, 250 photographs. ISBN 1 86176-002-7. Price £25.  
(reviewed by D. MANLEY)

This book is a superbly illustrated overview of naval operations in the Second World War. The 250 photographs, drawn from various naval archives around the world, are the *raison d'être* of the book as many of them are rarely seen in print. German readers may already be familiar with this work, originally published in 1992 as *Der Krieg zur See, 1939–1945*.

It is unlikely that anyone with more than a passing knowledge of naval operations will learn anything new from the text. Many significant actions and events are given only one or two lines of description, but historical narrative is not the reason for writing this book. The text forms a framework within which the illustrations are presented and it achieves its purpose well, leading the reader through naval events not only in the Atlantic and Pacific, but also the less well covered theatres of operation such as the Baltic and Black Seas.

The choice of photographs is excellent. The prelude to war includes shots of the *Deutschland* and *Vittorio Veneto* under construction. Since the majority of the book deals with combat operations there are a great many photos taken in action. Of particular note is the photo of the USS *Savannah* at the moment she was hit by a German glide-bomb, and that of the *Roma* shortly after being hit by a similar weapon. The human aspect of the war is not forgotten—there are many pictures of shell-shocked and weary survivors being brought aboard rescue ships. Some photographs stand out from the crowd. Particularly poignant is the aerial shot of the wreck of the *Tirpitz*, taken during her scrapping after the war. Another shows the surrender of the German Auxiliary *Externsteine* to the US coastguard—in this case the text reveals a little to the reader of the importance of meteorological information and briefly discusses the 'Weather War of 1943–44.' This illustrates another secondary purpose of the book—to prompt the reader's interest in some of the less well known aspects of the war at sea. In this respect it would have been more successful if a bibliography had been included.

Overall this book may be regarded as a high quality naval history 'coffee table book'. The wide range of photographs together with its high standards of presentation make it well worth acquiring for any enthusiast of WW2 naval affairs.

TUPPER, Eric. *Introduction to Naval Architecture*. Butterworth Heineman, Oxford, 1996. 361 pages, many diagrams. ISBN 0 7506 2529 5. Price NK (Paperback).  
(reviewed by David K. BROWN, RCNC)

## **THE BRITISH SHIPBUILDING HISTORY PROJECT**

Some time ago the Universities of Newcastle, Glasgow and the Maritime Museum saw a need to record the traditional techniques of British Shipbuilding and Marine Engineering before all knowledge died out. They were able to obtain some financial support and work has started. A considerable number of monographs will be produced on specific topics over the years, two of which are reviewed below. These will then be used as a source for a multi volume history of British Shipbuilding which over three centuries built some 100,000 ships—and made the country wealthy.

If you can help in writing, criticising the work of others, in supplying original material—or providing funds—please write to:

Dr I.L. Buxton  
Dept of Marine Technology  
Newcastle University  
Newcastle  
NE1 7RU

This book is the replacement for the well known *Muckle's Naval Architecture for Marine Engineers* and, like its predecessor, it is intended to give a basic grounding in naval architecture to those involved with ships but who are not naval architects. Eric TUPPER is the co-author of the best known text book *Basic Naval Architecture* and has had a distinguished career in warship design and associated research. It is recognized that almost all the basic calculations will be carried out using standard computer programs but the author believes that users should have some understanding of what these calculations mean.

In merchant ship design, many of the calculations have a legal basis and these are outlined first. The book then proceeds through numerical integration, calculations on form and basic stability. There is a brief chapter on the marine environment which naturally leads into seakeeping. There is an excellent chapter on strength as one would expect since the author was Superintendent of the structures laboratory at Dunfermline. His experience at Haslar shows in successive chapters on Resistance, Propulsion and Manoeuvring. The concluding chapters cover vibration, shock and noise followed by a discussion on the nature of design.

The difficulty in writing a simple book is in deciding what to leave out and no two naval architects would agree on this. The only omission I would note is the failure to draw attention to the ease with which computers can be used to give false answers. There can be simple errors in data input (wrong key) or more complicated errors in which the watertight boundary is incorrectly defined. Default values can be used outside their range of validity and so on. All results should be compared with trend curves and with the values for similar ships and one differing by more than a standard deviation should be treated with suspicion. On page 199, I would add paint to the cause of roughness. Ten micron of roughness adds 1% to the frictional resistance. Poor preparation and application can easily add 100 microns and the cost in wasted fuel is considerable.

Anyone involved with ships as a seagoing engineer, marine superintendent or in marine engineering ashore will benefit from studying this book—as will administrators. Perhaps the only real risk is that Eric TUPPER makes it all seem a little easy! The style is clear and the diagrams helpful so that no great knowledge of maths is needed to follow the argument.



## Research Paper 1.

NEWMAN, B. *Plate and Section Working Machinery in British Shipbuilding 1850–1945*. 59 pages, 13 illustrations. ISBN 09520160 0 1. Glasgow, 1993. (reviewed by D.K. BROWN, RCNC)

This booklet describes the various sturdy machines used to bend and shear plates and sections and to punch them for rivets. They could be driven off a shaft line or by electric or hydraulic supply while a few had their own steam engine. Some such machines remained in use for a very long time; there is mention of one said still to be efficient after 100 years (I doubt the efficiency).

There is some information on the firms which build the machines and how much they cost. A combined punch and shears would cost about £300 at the end of the 19th century. Unfortunately, a rigid interpretation of the starting date as 1850 means that the best description of early machinery is omitted—Stanislas DUPUY de LOME, *Memoire sur la Construction des Batiment en Fer*, Paris 1844. He was a young French constructor, later Director General, sent to Britain to study iron shipbuilding.

## Research Paper 3.

NEWMAN, B. *Materials Handling in British Shipbuilding 1850–1945*. 19 (large) pages, 11 illustrations. ISBN 0 9520160 3 6. Glasgow, 1993. (reviewed by D.K. BROWN, RCNC)

The most common means of handling was sheer muscle power; in 1895 it was agreed that plates of up to 4cwt could be lifted by three men. Heavier plates could be carried with an extra man per 2cwt. This was part of a deliberate policy to keep down capital cost which could not easily be matched to fluctuations in demand as could 'hire and fire' labour. For a very long while this meant that the only lifting devices on the slip were wooden derricks, hand powered. Sheer legs were used to lift heavier items—there is a fascinating drawing showing an 18 inch armour plate, weighing at least 10 tons, being lifted on to the battleship *Victoria* with sheer legs, props and screws.

Even when it was realized that the small plates, which had to be used in the absence of proper lifting equipment, involved an uneconomical extent of riveting, it was difficult to change as owners were reluctant to accept large plates which could not be replaced in most repair yards. Some yards, usually those linked into a shipping group, felt secure enough to invest in more powerful lifting gear. These were often gantries which soon became inadequate as the size of ships increased rapidly.

Warship building yards needed one really big crane to lift battleship turrets but cranes really only came into general use with welded, pre-fabrication at the end of the war. Up to the outbreak of World War II British shipbuilders dominated the world market with this crude equipment; who is to say they were wrong?

These papers can be obtained at £3 each (+ 50p postage) only from:

The Centre of Business History  
Glasgow University  
G12 8QQ.