

## BOOK REVIEWS

PRÉZELIN, B. and BAKER, A. D. *Combat fleets of the world, 1992-1993*. U.S. Naval Institute, distributed in U.K. by Airlife Publishing Co, Shrewsbury, 1993. 1016 pp. (250 mm × 230 mm), c.4400 photographs and line drawings. ISBN 1 55750 104 1. Price £95

(reviewed by D. K. Brown, RCNC).

This is an enormous book, bigger and even better than before, with an increase in the number of 'para-military' vessels included and more photographs, 1330 new to this edition. It is the US Naval Institute version of the standard French reference book, revised by the US editor; the French preface (translated) was originally written in October 1991 and revised in June 1992 with an American preface dated July 1992. As usual the book is commendably free of error, based on a detail check of the RN section and sampling of the rest. *Combat Fleets* alternates in publication with *World Naval Weapon Systems* and it is good to see that the publishers have decided to keep a comprehensive coverage of weapons in the ship volume. It even includes a detailed breakdown of the numbers of different types of aircraft in the Fleet Air Arm, something not readily available elsewhere. This edition is dedicated to the memory of Desmond Wettren, so well known for his naval writing.

The most conspicuous change is that of the Soviet Navy into 'Russia', the editors noting that the old USSR fleet is divided into seven other nations. Almost all the ships have been renamed; there is considerable updating of particulars but doubt remains as to how many of those under construction will ever enter service. Most of the disposals have been of 'Old Ming', ships of a generation which have long left the navies of NATO. The Russian Navy today is numerous, well designed and well armed which, with uncertain political control, should still be seen as a potential threat.

Most major navies have been getting rid of older ships but few to the same extent as the RN. The French editor says that 1990 and 1991 were 'not auspicious' for the RN and wonders why such large cuts have been made after the Gulf War showed the 'imperative necessity of having naval forces available'. On a lighter note, the editor suggests that the 152 mm of Peru's *Almirante Grau* are now the largest naval guns in active service.

Even though the USN has had considerable cuts it remains an extremely impressive fighting force with a completely unrivalled ability to launch both air strikes and missile attacks on both surface and aerial targets—and the Gulf War showed that they work. The editor criticizes the hull designations of some recent USN ships (e.g. SSN 21) and it would be useful to have an explanation and list of these designations. In particular, what does LPD mean? To the USN, I think it is Landing (Ship) Personnel & Dock, without Whitehall's dreadful 'platform' word.

There are interesting signs of new technology with the four USN SWATHs of the VICTORIOUS Class (3370 tons) entering service, to be followed by six IMPECCABLES (5270 tons) and also some similar Japanese SWATH ocean surveillance vessels (3700 tons). There are also several side wall hovercraft (SES) completing. The number of references to hull cracking and to stability problems in modern ships of major navies is worrying and suggests false economies both in design teams and in cost cutting on the hull. Such problems may become much more acute in novel ship types where experience at sea is lacking.

The photographs are well selected, relevant and clearly reproduced as are the numerous line drawings—at over 4000, I took the publisher's word for the number and did not count them. The brief comments by the editors are useful and interesting and the book is highly recommended. The only complaint is that made in previous reviews, of its size and weight—3.4 kg—due very much to the number of odds and ends such as police launches and oil barges which are included. A smaller and cheaper book concentrating on 'combat fleets' would be even more welcome.

BUCHANAN, Professor R. A. *The power of the machine, the impact of technology from 1700 to the present day*, London, Viking, 1992. 316pp., 40 photographs, 13 diagrams. ISBN 0 670 836567. Price £20. (reviewed by D. K. Brown, RCNC)

This book is about the complex interactions between technology and society. There are few better qualified to discuss this subject than Professor Buchanan who is a social historian with a long and deep interest in technology; the importance of his work having been recognized by his fairly recent elevation to Professor and the very recent award of the OBE. It is a book which should make all engineers think deeply about the ethics of their profession in the broadest sense and one may hope that it is widely read by the general public, so increasing their understanding of what engineering is about—warts and all.

The short first part of the book sets out the author's approach and defines his terms. Two favourites are 'ratchet—how a new technology builds on the skills of an older one—and 'package'—that innovation depends on the availability of resources (capital, labour, skills) on a market and on an environment which will accept change. There is an interesting passage discussing the extent to which inventions are transmitted or appear simultaneously in different places. I would suggest that, often, the mere knowledge that something is possible is sufficient to trigger invention elsewhere.

Parts 2 and 3 deal with the 'Sources of Power' and 'The Applications of Power'. The reader is led gently and very rapidly through animal power—defined as having a 'high energy gradient', i.e. must be used close to source—water power, steam to electricity. Application deals with the growth of factories, mass production, transport, communication and the infrastructure. Many readers of this journal will be familiar with this history which is well covered and aided by some clear and fascinating diagrams. One or two simplifications may raise the eyebrows of specialists and there is one remark which cannot be left unchallenged, that the Admiralty was 'reluctant' to adopt the steam turbine. In fact the Engineer-in-Chief, Admiral Durston, was one of Parsons's keenest supporters and the first turbine went to sea in the battleship *Sans Pareil* in 1885 driving a dynamo. There is also a problem of selection in such a brief survey; personally, I would have seen developments in materials as deserving more attention, particularly as part of the ratchet effect.

Part 4, 'The Social Context', will probably be of the greatest interest. The author considers, sympathetically, the way in which technology has affected society for good or, less often, for worse. A main topic is the 'chicken and egg' question of whether technology has caused the population explosion or is the only remedy. There are many such questions and readers may well learn most from pondering on sections from which they dissent.

The author ends on an optimistic note, seeing the broad horizons of space as trivializing domestic conflict on earth and suggests that there is no real conflict between space exploration and feeding the starving; we can afford both (thanks to technology).

FUKUI, Shizuo. *Japanese naval vessels at the end of world war II*. (Foreword by J. B. Lundstrom). London, Greenhill Books, 1992. 192 pp., c. 300 line drawings, 108 photographs. ISBN 1 85367 125 8. Price £25.  
(review by D. K. Brown, RCNC).

When Japan surrendered in 1945, the cataloguing of surviving ships of the Imperial Japanese Navy was an urgent task for the Allies. This task was carried out by Shizuo Fukui, a naval constructor and enthusiast whose report forms the core of this book. Some 200 types are described with detailed sketches, particulars and fascinating notes and there is also a magnificent set of USN photographs of the ships as found at the end of the war, often severely damaged. This book is essential reading for the serious student of the IJN but, of course, it is not a complete record of it throughout the war.

BREYER, Siegfried. *Soviet warship development, volume I, 1917-1937*. London, Conway Maritime Press, 1992. 288 pp. 350 photos, 280 line drawings. ISBN 0 85177 604 3. Price £35.  
(reviewed by D. K. Brown, RCNC)

This book is the first of three volumes covering the chronological development of the Soviet Navy and was first published in German in 1987. Secrecy was almost as strict in Czarist days as under Soviet rule and this book will do much to enlighten readers on the ships of their navy. There is substantial coverage of the navy as it was before the revolution including a fascinating section on shipyards, engineering works, etc., and how rapidly they developed in the decade before World War I. It is interesting that the Russians read different lessons from their war with Japan and designed battleships with higher speed and thinner armour over a greater area than did other navies.

The revolution led to the loss of many ships while others were allowed to deteriorate; shipyards and factories were neglected and both crews and shore workers were demoralized and almost starving. Under these conditions, the Soviet achievement of rebuilding a reasonably effective fleet by the late 1930s, well described by the author, is highly commendable. It may also be seen as some justification for the British Government's short-lived 'Ten Year Rule', as building a navy did take about ten years.

Both Czarist and Soviet navies were willing to try new ideas though some of the author's 'firsts' are debatable. (Which was the first warship with triple expansion engines?—probably the Italian cruiser *Dogali* completed by Armstrongs in April 1887). The text is clear, readable and seems accurate. The photographs are, inevitably, of mixed quality; there are many rare shots and some of these are not very clear but the author has done well to find so many. The line drawings are good. These volumes must have been written before full access to Soviet archives was available but it is unlikely that any new material will greatly affect the value of these books which are well recommended.

GARDINER, R. (editor). *The shipping revolution. The modern merchant ship*. London, Conway Maritime Press. 1992. 208 pp., 230 illustrations. ISBN 0 85177 569 1. Price £28.

(review by Lieutenant Commander John M. Maber, RN)

This volume, the third in Conway's 'History of the Ship' series, deals with the merchant shipping revolution which has changed the international trading scene since the end of the Second World War.

In earlier years, between the two world wars, trade was organized to much the same pattern as had been employed since Victorian times. The bulk of seaborne freight was moved in tramp steamers calling at ports for cargo by inducement as

required. In addition a number of specialized vessels were employed in the liner trades carrying refrigerated cargoes (reefers), heavy lift loads, timber and refined oil products, plus, of course, the passenger ships many of which carried large quantities of refrigerated and other goods.

This pattern was quickly re-established after the Second World War but by the mid-1960s much of the passenger traffic had been lost to air transport while the container revolution was beginning to make itself felt in the cargo trades. The changes which followed in wake, involving a complete revision of the concept of freight transport and the design and construction of the ships, forms the subject of this book, written by an international team of academics and professionals, drawn not only from the United Kingdom but also from the United States, France, Sweden and South Korea.

As with the earlier volumes in the series, the book is beautifully produced on good paper with an abundance of clear illustrations and provides an analysis of ship types and functions together with supporting chapters on propulsion, construction and the use of flags of convenience. There are, also, useful appendices covering further reading, a glossary and a detailed list of today's ship types. The book provides an excellent introduction to present-day trends in international trade and its modes.

GARDINER, R. (editor) *Steam, steel and shellfire. The Steam Warship 1815-1905*. London, Conway Maritime Press, 1992. 192 pp., 230 illus. ISBN 0 85177 564 0. Price £28.

(reviewed by Lieutenant Commander John M. Maber, RN)

This volume, the fourth in Conway's 'History of the Ship' series, covers the development of the warship from the first application of steam through to the advent of HMS *Dreadnought* with particular reference to the period from 1860 and the adoption of the armoured iron hull for major warships. The first application of screw propulsion to a battleship was the conversion of the third rate *Ajax* into a steam blockship in 1846. The subsequent Crimean War, in which the utility of steam was confirmed, was followed by the wholesale conversion of suitable existing hulls and ships under construction to steam and the screw propeller. The event which really marked the adoption of the new technology was, however, the launch of HMS *Warrior* in December 1860. Despite the fact that she was second only to Brunel's *Great Eastern* in the matter of size, she was classed originally as an iron screw armoured frigate since she had but one gun deck. Thereafter, lack of war experience meant that development was haphazard; many ships both large and small were 'one off' experiments so that fleets lacked homogeneity not only in size and armament but also in the matters of tactical capability and sea keeping qualities under both sail and steam. A full sailing rig was required in view of the inherent unreliability of contemporary machinery driving a single screw.

Not until William White became Director of Naval Construction in 1885 did ideas begin to coalesce and the battlefleet was replaced by a coherent series of designs with compatible parameters in respect of armament, speed and tactical qualities.

These ninety years of technological revolution form the subject matter of the book which differs somewhat from the earlier volumes in that it is divided into chapters dealing with the various aspects of the development of the steam propelled warship. There are further chapters on undersea warfare introducing the torpedo boat and the submarine, and others on armament, protection and the development of machinery.

The authorship is largely from the United Kingdom with just one contribution, dealing with US Civil War developments, from the United States.

Presentation and illustrations are impeccable and no glaring errors have been noted. The volume is pleasing to the eye and provides a succinct introduction to the development of the warship from Waterloo to the coming of the *Dreadnought* type. A pleasing dust cover shows the french wooden-hulled iron clad *Gloire* of 1859.

ROBERTS, J. *The Battleship Dreadnought*. London, Conway Maritime Press, 1992. 256 pp., 40 photographs, 650 line drawings. ISBN 0 85177 600 0. Price £25.

(reviewed by D. K. Brown, RCNC)

Those who may feel that there is nothing left to say about the *Dreadnought* are unfamiliar with the author's very detailed application of research. He has quite a lot to say about topics not previously covered, including much of interest on the machinery. It seems that the distribution of power between the HP turbine on the outer shafts and the LP on the inners was incorrect and even new propellers did not get rid of the loss of efficiency involved. The cruising turbines did not give the expected reduction in consumption and were unreliable. However, the installation as a whole was a great success, justifying the faith shown in turbines by Sir John Durston (E-in-C), supported by Phillip Watts (DNC) and by Froude. She averaged 17 knots returning from the West Indies on her first voyage, a feat quite outside that possible for earlier battleships.

The detailed history of her service life shows how the battle fleet developed during the war, with improved gun control, better flash protection, bigger and better searchlights and aircraft.

The text is quite short and the important part of this book lies in the drawings. These are in such detail that it would be possible to build a replica of the ship from them. There are conventional general arrangement plans, showing alterations in service and masses of detail with details of riveting procedures, etc. There are several isometric drawings which are particularly interesting as they give a more vivid picture than the conventional plan and elevation. That showing the arrangement of coal bunkers and the coaling routes should interest modern engineers. One does rather wonder who will study the more detailed sketches. John Roberts is an exceptionally skilled draughtsman and his drawings are both clear and beautiful. *Dreadnought* was a most important ship and this is a superb record of her; one can only hope that the author will tackle the submarine *Dreadnought* one day.

GARDINER, R. (ed.). *Warship 1992*. London, Conway Maritime Press, 1992. 256 pp., 258 illustrations. ISBN 0 85177 603 5. Price £24.

(reviewed by D. K. Brown, RCNC)

*Warship 1992* follows the well-known pattern of Conway's annual with 12 feature articles, some shorter notes, a review of the year and many book reviews (some reproduced, with permission, from *JNE*). As the editorial points out, the make up of a book such as this depends on what is offered by authors, most of whom write as a hobby. This year seems a good crop—or maybe it merely reflects your reviewer's interest.

The book opens with an interesting feature on balloons at sea and there were many more than is realized. Perhaps a new role, carrying AEW and ESM? There are several articles on 'intermediate' ships, starting with the US second class battleship *Maine* whose fame rests mainly on her accidental loss; wrongly attributed to sabotage, it led to the Spanish American war. The Japanese heavy

armoured cruisers marked an important step in Japanese warship building but I would disagree with the author who sees them as early battle cruisers. They were the last of the old line of armoured cruisers with a mixed armament and had little in common with Fisher's ships—except weak armour. The Swedish coastal 'mini'-battleships of the SVERIGE Class are also covered.

The value, if any, of armour to World War II cruisers is discussed and there is an article on the last of the big French destroyers, the LE HARDIS. The development of the *Dreadnought's* immediate successors is described in some detail, filling in gaps in a story which has not been well covered before. There is a feature on Allied warships captured and operated by the Germans in World War II with a surprising number of small RN vessels. Romanian submarine operations are covered at length and there is a useful discussion of the facts of the action between *Kormoran* and *Sydney*. The enormous number and variety of Japanese special attack craft are well described—one photograph shows 84 midget submarines completing. There is a detailed account of countermeasures to magnetic mines.

The other features are of interest; one (unusual) error is the description of the Swedish experimental Surface Effect Ship *Smyge* as a catamaran rather than as an SES. The publishers have at last gone away from the practice of putting illustrations across two pages; it is well produced and good value though, personally, I still prefer the quarterly magazine format.

GARDINER, R. *The first frigates 1748-1815*. London, Conway Maritime Press, 1992. 127 pp., 100 plans and photographs. ISBN 0 85177 601 9. Price £25.

(reviewed by D. K. Brown, RCNC)

The National Maritime Museum at Greenwich holds most of the building drawings of British warships since the latter part of the 18th Century. Conway are planning a series of books which will reproduce the majority of significant plans, accompanied by an explanatory text, with lengthy tables and photos of ships or, in this early period, of models. While this particular volume has little relevant to engineering it is beautifully produced and most interesting. Sailing frigates have been a life-long interest of the author and this is his first book, though he has been chief editor of Conway for 15 years.

Part I deals with the evolution of the ships, class by class, and Part II deals with topics such as arrangement, armament, sailing performance etc. For those interest in the period, it is strongly recommended.