BOOK REVIEWS

LE BAILLY, Vice-Admiral Sir LOUIS. *The man around the engine.* Emsworth, Kenneth Mason. 1990. 192 pp, 24 photographs, 2 maps. ISBN O 85937 354 1. Price £14.95.
(reviewed by Rear-Admiral P. R. Marrack, C.B., C.Eng.)

Vice-Admiral Sir Louis Le Bailly, who is widely known for his stimulating contributions to Service journals, has now concentrated the experience of his 46 years service in the Royal Navy into two books. The first of these—the book now under review—is largely autobiographical. The second, which has not yet been published, is intended to be a non-technical history of naval engineers and engineering from 1900 onwards.

It is an unusual attribute in a British naval writer to be able to draw upon service experience both as a seaman and as an engineer. The author started life in the Navy as an Executive Officer but, when he was a sub-lieutenant, a slight eyesight deficiency resulted in his transfer to the Engineering Branch in which he served for the rest of his career. This duality of viewpoint illuminates some of the more penetrating insights in the book.

This book is likely to be a hotbed of nostalgia for anyone who knew Malta as a peacetime naval base, and for those officers who joined Dartmouth in the late 1930s or who were at Keyham and Manadon in the early years of the Second World War. For people who served in H.M. Ships in the Mediterranean from 1939 to 1945, the book's graphic accounts of the war at sea will bring back grimmer memories, albeit memories which ought never to be lost. But this book will appeal to a much wider audience than just those who took part in the events described in its pages. Anyone with an interest in 20th century naval history, in the leadership and motivation of people, in engineering operation under stress, or in ships and the sea should read this book.

It begins with the author's picture of life in the spartan environment of Dartmouth in the 1930s, and moves on to his experience as a young Executive Officer in the battle-cruiser *Hood*. Then follows his four years of engineering education at the Royal Naval Engineering College, Keyham. In this chapter, he outlines how the tradition of excellence and pride of service was generated at Keyham before the war, and became the ethos of the R.N.E.C., where it continues to motivate the young officers of the Manadon of today.

The author's return to sea in 1937 was a return to the *Hood*, where he gained his engine room watchkeeping certificate and served as a watchkeeping officer into the early months of the war. Owing to *Hood*'s impressive appearance and elegant lines, she was always the Admiralty's first choice for showing the flag and her refitting and modernization took second place. The description of the ship's machinery dilapidation and poor hull condition show that by 1939 she was in no fit state to go to war.

The story moves on to the author's appointment to H.M.S. *Naiad*, a DIDO Class cruiser building on the Tyne. He took *Naiad* to sea in 1940 and served in her, initially as a watchkeeping officer and latterly as the Senior Engineer, until she was sunk in 1942. After operating with the Home Fleet in 1940, *Naiad* moved to the mediterranean in 1941 where she was soon involved in the thick of the Greek campaign. The heavy and prolonged air attacks during the invasion and evacuation of Crete are vividly described. Throughout, one obtains a clear impression of what action was like for the men of the Engine Room Department on whom the ship's mobility and survival ultimately depended, but who were denied the morale-sustaining activity of personally fighting back at the enemy. The author describes how discipline and high

efficiency were maintained in the heat, noise and sometimes acute loneliness of the confined machinery compartments of a ship in action.

The technical side of a cruiser in action is also well covered in the text and it is clear that, despite its well-known deficiencies, our pre-war ship's propulsion machinery was rugged in the extreme and well able to stand up to heavy pounding in battle.

The Mediterranean story continues with action in the Eastern Mediterranean, along the North African coast and the Malta convoys, culminating in *Naiad*'s sinking by a German submarine at the end of nine hours of continuous air attack. The author was pulled out of the sea by the Chief of H.M.S. *Jarvis* and in due course was sent to R.N.E.C. Keyham and Manadon to teach marine engineering—a timely and well-judged appointment.

At that time—the autumn of 1942—the reviewer was in his second year as an officer-under-instruction at Keyham, and well remembers absorbing much useful steam-, oil- and salt-laden advice distilled by the author from his recent experience at sea.

By the end of 1944, the author was back at sea as the Senior Engineer of the battleship *Duke of York* and bound for the Pacific and operations against the Japanese. In addition to an interesting account of the Royal Navy's involvement in the Pacific war, the book outlines the difficulties which the R.N. ships encountered when they operated with the United States Navy. These problems highlighted the inadequacies of our pre-war ships' propulsion machinery designs, particularly in respect of the limitations they imposed on the ships' range and mobility. The advanced steam conditions employed in the American ships, their use of boiler compound which greatly extended their boiler cleaning intervals, and their ability to replenish fuel underway from their high speed fleet tankers gave the Americans immense advantages which the R.N. ships could not match.

The author's reports on our ships' deficiencies, although not received with immediate acclaim in some quarters of the Admiralty, were soon instrumental in helping to generate a rapid renaissance in British naval machinery design. It is fortunate that at the end of the War, the control of R.N. machinery design improvement still lay entirely in the hands of the Engineer-in-Chief's Department. Unlike the large and unwieldy organizations which the MOD Design Departments were later to become, the Admiralty's E-in-C Department was small, lean and very manageable. It was a scene where keen and highly motivated Engineer Officers at commander level could take important technical decisions quickly with only the minimum of essential guidance from above.

Under the direction of a handful of these officers, some of the best brains of the U.K. power generation and gearing industries were applied to the Navy's needs and by the early 1950s, the new and advanced DARING Class machinery was in production. It was the beginning of two decades of major engineering innovation for the Navy, which clearly owes a great debt to the author for the impetus he gave to its inception. No doubt he will deal with these developments in greater depth in his second book.

After a spell in a Specialist Section in Admiralty Bath, the author's next sea appointment was to the cruiser *Bermuda*, based in South Africa. Then followed another Admiralty appointment which made him very well known to every Engineer Officer in the Navy below the rank of captain. He was the much respected and sometimes feared 'E' Appointer—the dispenser of jobs which could include, for the occasional unfortunate recipient, the dreaded 'pier head jump' to somewhere very inconvenient.

After being second-in-command at Manadon, the author was promoted to captain and had several Admiralty appointments which are only lightly

touched on in this book. His involvement with the Royal United Services Institute and the Imperial Defence College are recounted and some interesting philosophy emerges, albeit briefly. This section appears to be a lead in to deeper analysis in his second book.

A more detailed treatment is given to the author's time as British Naval attaché Washington. He was the first Engineer Officer to hold this influential post and he brought a new flavour to the Royal Navy's relationship with the Americans in general and the U.S.N. in particular. His interaction with Admiral Rickover makes interesting reading. On the occasions when the latter was feeling relatively friendly to the British, the officers involved in the R.N. nuclear submarine programme achieved useful exchanges of reactor plant information with their U.S.N. 'opposite numbers'—information which was sometimes vitally important for submarine safety in both navies.

The final chapter deals with the author's last two appointments in the Ministry of Defence, first as Director of Service Intelligence and then as Director General of Intelligence. For obvious reasons, the book provides little detail of his work in these posts, but it does throw interesting light on the organization of defence intelligence and on the personalities and politics involved.

The book is nicely illustrated and has a good index. Across one of the more exciting half-centuries of the Navy's history, the reader is swept along by the pace and vigour of the narrative. An absorbing and interesting story, it is never dull and is thoroughly recommended.

FRIEDMAN N. *The Naval Institute guide to world naval weapon systems.* Annapolis. Naval Institute Press, 1989. U.K. distributors, Tri-Service Press. 536 pp., 700 illus. ISBN 0-87021-793-3. Price £59.95.
(reviewed by D. K. Brown R.C.N.C.)

This is a big book which inevitably has one reaching for superlatives. It weighs 2.2 kg, the 536 pages are each 30 cm × 22½ cm and a full page of text contains about 1500 words. It can also be regarded as several books.

There is a general introduction, six pages long, in which the author sets out the political and strategic background to weapons at sea. This is followed by a very useful section of notes covering such topics as the frequency range of different radar bands, national designation systems, etc.

The main part of the book is then arranged in six sections; Surveillance and Control, Strategic Systems, Strike/Surface Weapons, Anti-Aircraft Warfare, Anti-Submarine Warfare and Mine Warfare. Each of these warfare areas has several pages of introduction outlining the problems, solutions and tactics involved. The general introduction together with the area introductions form a fascinating and very readable book in their own right.

The bulk of the book is formed by notes and data on individual systems. These are first grouped by category, e.g. AAW has six headings such as airborne radars, surface-to-air missiles etc. Weapons in each category are then listed by country of origin in alphabetical order. This arrangement makes for ready comparison of similar weapons but it is a lengthy task to find all the systems in even a simple ship. Integrated systems are split; Aegis gets half a page for its radar and a quarter page some way away for the missile. In comparison, Sea Dart gets a page (Sea Slug half) and all U.K. MCM equipments are covered in 4½ pages.

The value of a book like this depends on the coverage being complete and accurate and it is not easy to judge these aspects. Dr Friedman's reputation for careful research gives confidence and this is supported by a number of spot checks—though my possibly fallible memory suggests that *Chivalrous*'s 4·5 Mk. 5 regularly achieved 18 rounds per minute instead of the 14 quoted.

Every weapon system I looked for got a mention and it would seem that this book is as near the 'whole truth' as any unclassified work can be.

The author has clearly had to rely to a considerable extent on manufacturers' literature and in a few cases one may wonder if the system exists other than as a sale brochure.

The publishers intend to revise and re-issue the book every two years, alternating with *Combat Fleets*, a combination which will provide excellent coverage of naval capability. This first issue is comprehensive and most interesting and, at today's book prices, is very good value for money.

BEALE, R. F. *Surveying and repairing GRP vessels.* Coulsdon, Fairplay Publications. 1989. xi, 123 pp., 2 photographs, 80 figures. ISBN 1 870093 22 4. Price £20.
(reviewed by D. M. Allison, R.C.N.C.)

Reg Beale has condensed more than half an average lifetime's experience into this small publication. The book is divided into 2 parts, the first dealing with single skin structures and the second dealing with GRP sandwich structures. Each part contains chapters on typical structures and the defects which can arise from errors in design and production and from simple abuse. Clear guidance is given on the procedures to be adopted when surveying GRP vessels and assessing defects, followed by copious guidance notes on repair techniques.

Of particular value are the numerous sketches in the 80 figures. All defects likely to be encountered in conventionally laid-up boats and vessels are illustrated, together with many examples of the right and the wrong ways of doing things. However, the reviewer did find the considerable separation of text and the figures referred to, particularly in Chapter 1, somewhat irksome.

The style of the text is rather colloquial, and certain concepts could be more clearly described. A particular example is to be found in Chapter 3 where the explanation of the origins of a lack of styrene in a polyester resin could be explained more clearly. Although there is a comprehensive chapter by chapter index in the front of the book, those seeking an alphabetical index will be disappointed. However, the book does contain a useful Glossary of Terms.

Despite the criticisms, this is a book which can be commended to all concerned with the survey and repair of GRP Vessels. The clearly expounded 'common sense' approach to survey, defect assessment, and rectification could profitably be followed by those responsible for surveying and repairing the Royal Navy's boats and vessels.

BROWN, D. K. *Before the ironclad.* London, Conway Maritime Press. 1990. 217 pp., 188 illustrations, 7 maps. ISBN 0 85177 532 2. Price £30.
(reviewed by Lieutenant-Commander John M. Maber, R.N.)

As on several occasions in the past, David Brown has chosen a much neglected subject for his latest book. While it is true that some attention has been devoted to the development of the 'capital' line of battleship between 1815 and the conception of Isaac Watts's *Warrior* which took to the water in 1860, little has appeared dealing with the frigate and lesser vessels within the ambit of the Royal Navy. This was, however, no period of stagnation since, in particular, Robert Seppings recast the design of the wooden fighting ship thus enabling larger craft to be built, while Thomas Lloyd did much to further the introduction of steam machinery in the fleet. In later years Lloyd became Engineer-in-Chief of the Navy and earned a rightful place as one of the truly great Victorian engineers.

Following an introduction outlining the influence of the early industrial revolution within the Royal Navy, the author gives a concise account of the state of marine technology during the French wars of 1793–1815.

The Admiralty took an early interest in the application of steam to marine propulsion although it had to be borne in mind that the paddle wheel was then the only available propulsor, which obviously could not be applied to major warships of the line. In 1816, however, Marc Brunel (father of Isambard) suggested trials with steamships. In reply the First Lord, Lord Melville, proposed that initially these should be confined to towing sailing warships in and out of harbour against adverse winds and tides. Trials with hired vessels were undertaken with varied success and in 1821 the Admiralty placed an order with Deptford Dockyard for a steam tug to be named *Comet*. Thus the Navy acquired its first steamship although she was not listed as an H.M. Ship until 1831.

The application of paddle propulsion to fighting ships, i.e. frigates and lesser vessels, is dealt with in some detail as is the premature introduction of iron hulls for these craft in the eighteen forties.

In the meantime the development of the screw propeller and its application, in 1838, by Francis Petit Smith to the steamship *Archimedes*, is discussed at some length since it opened the way for the installation of steam machinery in ships of the line. The genesis of the screw propeller overcame the problems associated with paddle propulsion. Firstly the paddles were vulnerable to enemy gunfire, in addition to which they entailed a reduction in the number of broadside guns mounted. On the other hand, the screw and its machinery were protected by being below the water-line, while a full broadside could be mounted.

Conversion of the 1761 ton ship of the line *Ajax*, as the world's first steam battleship, was completed in September 1846 and thereafter developments followed apace. Vessels such as the *Ajax*, known as 'screw blockships', were capable of only 5 to 6 knots under steam but were powerful enough to take up their allotted stations in the event of any emergency.

At the outbreak of war in March 1854, an Anglo-French fleet was already present in the Black Sea, the allied squadrons including screw battleships and numerous steam-propelled frigates and minor war vessels. The progress of the Crimean War is dealt with at length and it is interesting to note the vast numbers of wooden gunboats, some built of unseasoned timber, which were ordered for general duties with the fleet, in addition to mounting heavy calibre guns suitable for the bombardment of fixed fortifications. While some rotted without entering service, others survived many years afloat including the former *Dapper*, launched in 1855, which continued to serve until 1922, latterly as YC (Yard Craft) 37.

The next development was the construction of five wooden-hulled iron armoured steam-driven batteries. One was destroyed by fire before being launched but a replacement was ordered from H.M. Dockyard, Chatham, although in the event, none was completed in time to see service before the war ended. Of greater importance were the succeeding three units of the EREBUS Class, launched in 1856, which being iron hulled and iron armoured, provided the inspiration for the construction of the sea-going iron steam battleship.

The construction of the *Warrior* represented the culmination of this first phase of technical change insofar as the Royal Navy was concerned. Starved of financial and material resources, much had been achieved. Steam machinery associated with the screw propeller had become the standard installation for all combatant vessels, although for some years more ships were provided with a full outfit of sail, this being of particular importance in view of the appetite for coal and the relative unreliability of contemporary single screw

machinery. The installation of a hoisting screw and funnels capable of being housed enabled full use to be made of a ship's sailing outfit when winds were favourable during long ocean passages.

The author is to be congratulated for putting this period of intensive technical change into perspective. Certainly, there were few signs of obstructionism on the part of the Admiralty, although a few ageing admirals voiced their doubts about developments. The changes had been, in fact, such as to maintain the pre-eminent position of the Royal Navy amongst the world's fighting fleets.

The volume does much to bring light to a largely unresearched period of naval history and in the circumstances deserves a place on the shelves of everyone interested in the nineteenth century navy of Britain—despite the £30 price tag which is in line with the current trend for books of erudite parentage with a limited print run.

GRÖNER, E. *German warships 1815-1945, vol. 1: major surface vessels* (revised and expanded by D. Jung and M. Maass). London, Conway Maritime Press, 1990. 255 pp. ISBN 0 85177 533 0. Price £30. (previously published as *Die deutschen Kriegsschiffe 1815-1945*)
(reviewed by D. K. Brown, R.C.N.C.)

This book was first published in 1936 and was very much expanded and updated after the war by the same author. Further material was added after Gröner's death in 1965 by P. Mickel and F. Mrva. It now presents exceptional data on some 10 000 German warships, including many designs that were not built.

All the usual reference material such as dimensions, speed and power, arms and armour are clearly presented. There is a section for most classes titled 'handling' which covers steering, pitch and roll motions, wetness etc. The judgements are mainly subjective, based on contemporary sources and hence are probably not to a common base; a 'good seaboat' of World War I would not be seen as such in the later war. However, this is a fascinating section and will repay further study. It is interesting that the German navy in World War II operated ships captured from other navies and, to generalize, German stability and seakeeping were poor, French were worse and Italian worse still.

There are innumerable drawings, all to the same scale, which are very clear. In general, profiles only are given but there are quite a number of deck plans, particularly of the larger ships. It is fascinating to compare the tiny paddle gunboats with the enormous *Bismarck* and her larger planned successors.

Brief details are given of the career, fate and modifications to each ship. This comprehensive book sets a very high standard for reference books; I hope that one day a similar book may be available on the Royal Navy.

ABBOTT, P. *The British airship at war, 1914-1918*. Lavenham, Terence Dalton, 1989. 151 pp., 91 illus., ISBN 0 86138 073 8. Price £12.95.
(reviewed by D. K. Brown, R.C.N.C.)

This book tells the little-known story of British airships in World War I, concentrating on the operational aspects and, though design and support are discussed, coverage is fairly brief. The numbers involved will surprise many; at the start of the war there were seven British airships and during the war a further 224 were accepted and 24 sold to Allies. All but 14 were non-rigid—'blimps'—a simple gasbag with a car containing the crew and engine hung on below.

The SS Zeros were probably the best of these, with a speed of 52 mph from a 75 hp Rolls-Royce engine carrying two 100 lb bombs and a Lewis gun. An average patrol lasted six hours but they could stay up very much longer.

Their achievement is hard to measure; one U-boat sunk and some mines destroyed yet it is said that no merchant ship escorted by an airship was sunk. They kept the submarine submerged where its mobility was restricted. The cost was low, 45 airships and 48 men lost in 88 000 flying hours—2 million miles. Production costs were also low; the early ones cost about £2,500 and the SS Zero £4,000. Since they were supported by a bag of hydrogen it is surprising that only nine were lost from fire, three in one hangar disaster. Operational life was not great at about 1000 hours.

In contrast, the rigid airship programme was an expensive failure. Costs were upwards of £125 000 each, with virtually no operations. When the war ended, the successful blimps were hastily disposed of while a small development programme continued on the unsuccessful rigids.

The design and operations of the blimps were in the hands of reservists and there was no one to support these gas bags when money became short after the war. There was also bitter feuding between the non-rigid designers at Kingsnorth, the Vickers team and the rival R.C.N.C. rigid designers. These quarrels were locked into the greater battle between the new R.A.F. and the R.N.

The R.N. did not operate airships in World War II but the U.S.N. were pleased with the performance of their non-rigids and are now building more—with U.K. assistance. This fascinating, well-written and well illustrated book should be read by all interested in air power at sea.

PATTERSON, B. H. *"Giv'er a cheer Boys" The great docks of Portsmouth Dockyard 1830-1914*. Portsmouth Royal Dockyard Historical Society Publication No. 5. 1989. 60 pp. Price £3.25 including postage, from the Society at 15 Brecon Avenue, East Cosham, Portsmouth.
(reviewed by Lt-Commander K. J. Yearling, R.N.)

The author states that his book is a modest publication and so it is. Describing the development of Portsmouth Dockyard 1830-1914, a time of great change for the Royal Navy in the move from sail to steam, he also touches briefly on a variety of other topics of the time, not the least important being a change in the power of the Shipwrights, the increasing influence of the Engineer and the emergence of 'The Electrician', and their significance in the building of the iron battleship.

Patterson has made good use of many original and action photographs which provides for a feeling of familiarity on almost every page. Readily recognized landmarks will stir the memory of those who spent many years in and around Portsmouth Dockyard.

A most interesting read and at £3.25 a good buy.

BUCHANAN, R. A. *The Engineers, a history of the engineering profession in Britain, 1750–1914*. London, Jessica Kingsley Publishers. 1989. 240 pages. ISBN 1 85302 036 2. Price £25.
(reviewed by D. K. Brown, R.C.N.C.)

This fascinating book tells the story of the development of engineering as a profession and of its organization. The author starts with the Society of Civil Engineers in 1771 though this was very small and mainly a dining club, reaching a membership of 20 by 1792. Even in a short book, the much larger Society for the Improvement of Naval Architecture which had 270 members within a year of forming in 1791, deserves a mention.

The Institution of Civil Engineers was started by Maudslay, Palmer and Field in 1818 and this grew slowly, the 16th member, Telford, joining in 1820. Telford was a great organizer and within a few years had established a structure which has been copied by all other British Institutions. The Civils obtained their charter in 1828 and started publishing *Transactions* in 1836.

In those days, Civil meant all forms of engineering other than military. However, from the formation of the Mechanicals in 1847, there were increasing numbers of break-away institutions some of which further fragmented later. At a time when mergers are in favour, it is well to study the reasons for the initial separation.

There is a chapter on education, viewed with some suspicion by many engineers who believed a good pupillage was the answer. The naval architects were different, being based on the 'Schools' from 1811. Finally, there is a chapter on engineers' ideas and beliefs. I would suggest that the different attitude of the engineer and social scientist is that the latter looks to an ideal society whilst the engineer knows that both men and materials are defective.