BOOK REVIEWS

BROWN, D. K.: *A Century of naval construction. The history of the Royal Corps of Naval Constructors*. London, Conway Maritime Press. 1983. 384 pp. Price £20.
(reviewed by Lieutenant-Commander John M. Maber)

The Royal Corps of Naval Constructors is one hundred years old, having been conceived by Sir William White in 1880, eventually to be constituted by Order in Council in August 1883. In part, its creation stemmed from the need to set educational standards for those naval architects to be charged with the design of warships for the Royal Navy, whilst affording at the same time official recognition for the profession. In so far as the general public, or even its informed element, is concerned, however, little has appeared outside the pages of the relevant institutional journals to make known the activities of the Corps although it is probably true that names such as Barnaby, White, Watts, Tennyson d'Eyncourt (who served as Director of Naval Construction although not in fact a member) and Goodall have reached the public eye via the columns of the national press. As a result British warships, invariably the subject in basic concept and design of severe

financial restraints, have been made the butt of much ill-informed criticism, when compared with their foreign rivals, by armchair strategists and others writing, perhaps anonymously, as 'Our Naval Correspondent'. Many designs were constrained of course by international treaty or dictated by the ideas of successive Board officers and one has only to note the many ill-judged statements made in respect of the battleships *Nelson, Rodney,* and the KING GEORGE V Class, the COUNTY class cruisers of the 1920s and contemporary destroyers—all of which stood up well to the trials of war—to realize that the constructor has in fact done a better job than his critics would have led us to believe.

Now, not only is much revealed but the whole story has been set against the contemporary political backdrop by Mr. D. K. Brown, R.C.N.C., Deputy Chief Naval Architect and naval historian of repute, council member of both the Navy Records Society and the Royal Institution of Naval Architects, who is in addition a member of the Historical Group of the latter institution and a member of the Society for Nautical Research. He is thus uniquely qualified for the task. In so far as it is possible the story is told '... in the words of the men who did the job ...' and traces the ancestry of the Royal Corps from the Master Shipwrights of Tudor days down to the appointment of the first Director of Naval Construction (Sir Nathaniel Barnaby, who in 1883 became the first head of the Royal Corps) and thence chapter by chapter, each dealing in turn with the periods of overlordship of one or more DNCs, down to 1958 when Sir Alfred Simms came to office in the newly created role of Director General Ships. Subsequent chapters complete the story to date and tell of the varied tasks of the constructor in the dockyards and in research, development, and training. Due recognition is given, of course, to the merger between the Royal Corps and the very much younger (1963) Royal Naval Engineering Service in the guise of an expanded Royal Corps of Naval Constructors. The author concludes with a brief account of Corps activities in support of the Falkland Islands campaign.

The century covering the history of the Royal Corps has witnessed many successes including the first aircraft carriers, the system of longitudinal framing which enabled 155 feet of the destroyer Javelin to survive two torpedoes and the loss of both ends, noise-reduced propellers, the Type 12 hull form and glass re-inforced plastic (GRP) construction for both submarine casings and for the hulls of mine counter-measures vessels. On the other hand, as the author is at pains to point out, there have been occasional failures such as the error in calculation which meant the first twenty (Type 1) HUNT Class destroyers of 1940 being unable to carry their designed armament and, again, the evident structural weakness which led to cracking in the vicinity of the break of the forecastle in the DARING Class destroyers of 1952–53. Nevertheless, it is apparent that the Royal Corps has served the Royal Navy well; the design of any warship is a matter of compromise between the requirements of the user in terms of offensive power, protection, speed, and stability, and it is the latter consideration that has been of primary concern to the naval architect. The point is made that the amalgam achieved has given the Royal Navy successive generations of effective fighting ships with a degree of stability unmatched by other schools of warship design and thus has been avoided any repetition of disasters such as the loss of the masted ironclad battleship *Captain* which capsized in heavy weather in the Bay of Biscay during the early hours of the 7 September 1870.

David Brown has produced an absorbing story, illustrated by many an anecdote and a wealth of contemporary photographs few of which have been seen in any earlier publication. The style and clear type-face makes for easy reading and the volume should find a place on the bookshelf of any engineer associated with the naval service.

JUNG, I.: *The Marine turbine—a historical review by a Swedish engineer. Part 1, 1897–1927.* London, National Maritime Museum. Monograph no. 50. 1982. 150 pp. Price £1.50 paperback from the National Maritime Museum; £6 hardback from the Institute of Marine Engineers.
(reviewed by Vice-Admiral Sir George Raper, K.C.B.)

We owe a tremendous debt to Professor Ingvar Jung for writing this history of marine turbines, bringing together the many fragments of information about the first turbines and their gearing as developed by Charles Parsons, by De Laval in Sweden, and by their various contemporaries such as Rateau and Zoelly in Europe, by Curtis in U.S.A., and by Emmet and Campbell of General Electric.

The profiles of the great men themselves add to the value of the book. The inclusion of Wilfred Campbell of General Electric is to me particularly welcome as his classic papers on 'wheel flap' and turbine impulse blade vibration were still current in my youth when we met these things in the ships of the Royal Navy long after they had been met and beaten in 'land' installations. The part played by Emmet in the development of turbo-electric drive is also a matter of great interest. He was a great influence at G.E.C. and did much to encourage the development of impulse turbines. It is of interest, too, that George Westinghouse was a friend and admirer of Charles Parsons, which may well account for the different paths of development taken by the great U.S.A. corporations, G.E.C. and Westinghouse.

The story of the development of gear-cutting methods in the various companies of the U.S.A. is of special interest, because it explains largely why the U.S. Navy had comparatively little difficulty in adopting double reduction gearing for their warships before they joined in World War II, whereas the gearing in all other navies at that time was single reduction. The gearing was the key to many developments like the use of higher strength steels and higher r.p.m. for turbine rotors and indeed for the use of the then current power station steam conditions, which the U.S. Navy adopted in the late 1930s first for their destroyers and then for their larger ships.

One result of Parsons's ingenuity in inventing the 'creep' mechanism, which was fitted to almost all the hobbing machines in Britain, was to disguise the geometric inaccuracies from which we suffered and which, in the end, necessitated a rehabilitation programme towards the end of World War II to improve the accuracy of our hobbing machines.

Had we been less inward-looking between the wars and had such books as this one been available, which would have allowed us to benefit from knowledge of other nations' developments, we might have developed naval machinery further, as the U.S. Navy did, before World War II.

The information in this book is as trustworthy as anything taken from old records is likely to be. It is worth remembering, however, that there was no generally accepted displacement at which trials were run, so the displacement, and hence the speeds attained, depended largely on how much coal had been loaded for a given trial. This applied until the Washington Treaty, so that not until after the 1920s was there a defined trials displacement.

I feel I should point out that one of the reasons given in public for the adoption of turbines in H.M.S. *Dreadnought* was the consequent reduction in Engine Room complement due to the much greater efficiency of the turbine over the steam reciprocating engine at high power. This was no doubt offset to some extent by the additional power that could be installed in the same space.

COX, J. G.: *Cox and the Juju coast. A journal kept aboard H.M.S. Fly, 1868/69.* St. Helier (Jersey), Ellison. 1968. xxvi + 88 pp.
(reviewed by Lieutenant-Commander John M. Maber).

Published unobtrusively in Jersey in 1968 this slim volume has but recently been brought to notice. However, it is worthy of note since it reproduces the daily journal of one John George Cox, engineer of the 603 ton gunboat *Fly*. It spans a period of ten months from commissioning in Devonport for service on the West Africa station through to the 9th October 1869 when, with the ship lying at anchor off Fernando Po, Cox finishes abruptly in mid-sentence, perhaps taken sick! The book presents a lively commentary on life in one of H.M. ships more than a century ago and includes much interesting detail concerning the work of the engine room department. Thus, on 7 January 1869: 'The Keyham Steam Factory people have been employed all day overhauling the machinery and repairing the donkey feed engine.'

An introduction sets the contemporary political scene on the Benin coast (present-day Nigeria) in the wake of the suppression of the slave trade. Comprehensive notes provide much interesting detail concerning the ships and personalities mentioned in the journal itself.