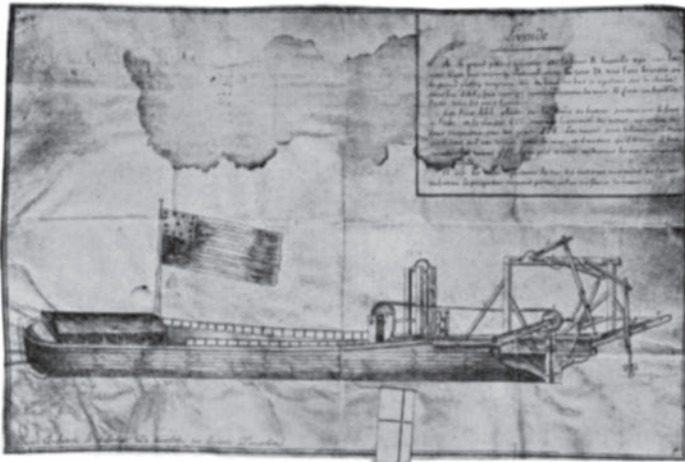


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PLATE I



FITCH'S FRENCH PATENT, 1791
Courtesy of United States National Museum

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OF NAVAL AND MARINE
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by

ENG. CAPT. EDGAR C. SMITH, O.B.E., R.N.

With a Foreword by

MAJOR P. J. COWAN, M.B.E.

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TO MY
WIFE, SONS and
DAUGHTER

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ERRATA

- Page 112, line 29, *for* Pl. V *read* Pl. VI
,, 118, ,, 30, *for* Pl. V *read* Pl. VI
,, 181, ,, 29, *for* engines *read* pressure
,, 181, ,, 30, *for* pressure *read* engines
,, 218, ,, 1, *for* 1819 *read* 1810
Pl. IX, facing page 247, *for* ENGINE *read* ENGINES
Page 247, line 13, *for* Pl. X *read* Pl. IX
,, 309, ,, 9, *for* 1891 *read* 1881
,, 321, ,, 25, *for* figure *read* figures
,, 322, ,, 16, *insert* 17,000 *before* horse-power
,, 362, Babcock and Wilcox Boilers, *for* 51 *read* 251
,, 371, Normand, J. A., *delete* 223

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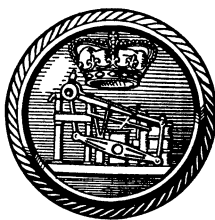
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Coat Button
worn by Engineers
in Royal Navy
1841 to 1856.

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FOREWORD

SHOULD any commendation of this volume be deemed desirable by possible readers, it affords me great pleasure to testify, from long association with my friend the author, to his qualifications for the task he set himself in its preparation.

Engineer Captain Edgar C. Smith is largely endowed with the traits so necessary to success in such a venture, and during the course of the preparation of the material, most of which, spread over some years, has appeared in the pages of *Engineering*, I can vouch for the careful manner in which clues have been followed up, sources of information traced and the value of “facts” brought to light appraised. Some of the phases dealt with have, of course, been the subject of previous memoirs—often of a somewhat biased nature. It has been Captain Smith’s endeavour throughout to weigh evidence fairly and to arrive at a just conclusion. Material has thus been brought into juxtaposition for the first time, with the result that new light is often thrown upon old subjects, while the fairness with which international claims have been handled will be found to be a marked characteristic of the chapters into which these enter.

The actual collection of material for the work was commenced more than thirty years ago, and in the intervening period Captain Smith has been able to track down many elusive points. Starting in one direction, a clue has often put the searcher on to other and in some cases unexpected sources, until the author has been able to feel assured that the pieces of his puzzle

fit true and snugly together. It has been of great interest to me to watch this evolution, and that the finished work will be read with interest may be taken as proved by the notice which the original articles in *Engineering* attracted at home and abroad as they appeared. In view of the proximate centenary of the Transatlantic Service, the appearance of the volume is opportune, while it is no less fitting that its contents should be brought together in volume form and in this way be made more readily accessible to the wide circle it deserves as an historical reference book.

P. J. COWAN

Engineering

35 & 36 BEDFORD STREET
STRAND, LONDON, W.C. 2

PREFACE

BACON once wrote, “I hold every man a debtor to his profession from the which as men of course do seek to receive countenance and profit so ought they of duty to endeavour themselves to be a help and an ornament thereto.” With this saying in mind this book has been written as a contribution to the great branch of engineering in which I have been engaged, and with the hope that it will prove of interest to many of the thousands concerned with ships and their machinery.

Its publication has been rendered possible by the kind permission of the Editor of *Engineering*, Major P. J. Cowan, to include in it the greater part of the series of articles I had the privilege of contributing to that journal during 1930–3 entitled “Chapters in the History of Naval and Marine Engineering”. Chapters xx, xxi and xxii, however, appear for the first time. To him I am also indebted for the Foreword.

The book is an attempt to fill a gap in the literature of marine engineering, but no claim is made that it is in any way an exhaustive history of the subject. The material on which it is based has been gathered together during a long period and from many sources. Technical papers, presidential addresses, journals, textbooks, biographies, official regulations, personal letters, reminiscences and hitherto unpublished manuscripts have all been drawn upon to illustrate the many aspects of naval and marine engineering, and their influence on naval warfare and sea transport. Efforts have been made to do justice to the pioneers who took those first

steps, which are always the most difficult, remembering the saying of Edward Lear that “if a man does anything at all through life with a deal of pother, and likewise of some benefit to others, the details of such pother and benefit may as well be known accurately as the contrary”. As the book is admittedly of a popular character it has not been considered desirable to give a mass of detailed references, but sufficient have been included to assist those who wish to pursue the subject further.

In bringing to a close the task I set myself, it is both my pleasure and my duty to record my sincere thanks to all those who, during the last twenty or thirty years, have assisted me in one way or another. The pleasure is not untinged with sadness, for as I turn over my letters, I meet with signature after signature of those I can no longer thank in person. I have been helped by the loan or gift of books, documents, photographs and drawings, and by first-hand accounts of personal experiences. For example Inspector of Machinery Matthew McIntyre, who died in 1931 at the age of 93, when nearly eighty years of age wrote me an account of his whole career in the Royal Navy, which began in 1859 in a ship with boilers working at 10 lb. pressure and with engines with wooden-toothed gearing. It would be quite impossible to mention all those I should like to, but I may perhaps especially thank Engineer Rear-Admiral Sir Robert Beeman, Mr Charles de Grave Sells, M. Paul Augustin-Normand, Mr W. A. Tookey, Mr A. A. Gomme of the Patent Office Library and Mr H. W. Dickinson; the last named has read all the chapters both in manuscript and in proof and his assistance has been invaluable.

I have also been assisted by various Government de-

P R E F A C E

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partments, technical institutions and societies, and by many firms. For illustrations in the book I have to thank Babcock and Wilcox, Limited; Cammell, Laird and Co., Limited; the Chief Librarian of Birmingham; the Editor of *Engineering*; The Fairfield Shipbuilding and Engineering Co., Limited; Harland and Wolff, Limited; the Maschinenfabrik Augsburg-Nürnberg A.G.; The North-Eastern Marine Engineering Co., Limited; Sautter-Harlé and Co. of Paris; John I. Thornycroft and Co., Limited; Vickers-Armstrongs, Limited; and Yarrow and Co., Limited.

I have also to thank Mr Carl W. Mitman of the United States National Museum for the photograph of Fitch's patent of 1791; the American Society of Mechanical Engineers for the photograph of the bust of Admiral Isherwood; the Deutsches Museum, Munich, for the portrait of Rudolph Diesel; Mr James Napier for permission to reproduce the portrait of his great-grandfather, Robert Napier; Blackie and Son, Limited, for permission to reproduce the portrait of Herbert Akroyd Stuart, and the Director of the National Portrait Gallery for permission to reproduce the portrait of I. K. Brunel. The storehouse of engineering history is, as every student knows, the Science Museum, South Kensington. I have made free use of its publications and to its Director I am indebted for the portraits of Ericsson and Sir F. P. Smith, the illustrations of the *Archimedes*, *Great Western*, *Britannia* and *Rattler* and *Alecto*, and for the cross-sectional sketch of the *Great Eastern*.

EDGAR C. SMITH

PURLEY, SURREY

July 1937