# Introduction

The main aim is to give an introduction and awareness to those interested in *Ship Design and Ship Performance*. It is written to underpin and support the more erudite books published on Naval Architecture and Marine Engineering by Elsevier Ltd.

It will also bring together the works of Masters, Mates, Marine Engineers and Naval Architects engaged in day-to-day operation of ships at sea and in port.

*Part 1* This part illustrates how a ship is designed from limited information supplied from the shipowners to the shipbuilders. It shows how, after having obtained the Main Dimensions for a new ship, the Marine Engineers select the right powered engine to give the speed requested by the shipowner in the Memorandum of Agreement.

Chapter 1 deals with determining the Main Dimensions. Chapter 2 looks into how group weights are estimated. Chapters 3 and 4 analyse capacities and hydrostatics for new vessels.

Personnel engaged in the Maritime Industry can sometimes be uncertain on which *resistance*, which *speed* or which *power* is being referred to in meetings. Chapters 5–8 will assist in removing any such uncertainty. Chapter 9 shows preliminary methods for designing a propeller and a rudder for a new ship.

*Part 2* Chapters 10 and 11 give particulars relating to modern Merchant ships. After a ship has been designed and built, she must then be tested to verify that the ship has met her design criteria. She must attain the shipowner's prerequisites of being seaworthy and commercially viable. Chapters 12–16 cover the various ship trials carried out by the shipbuilder on a newly completed ship.

Over the last three decades, ships have greatly increased in size (e.g. Supertankers). They have also increased in service speed (e.g. Container ships). Groundings and collisions have become more common. Frequently this has been due to ship squat and Interaction effects. One only has to recall the incidents of 'Herald of Free Enterprise', and the 'Sea Empress'.

Chapters 17–19 explain these problems. Suggestions are given for reducing the effects of excessive squat and interaction.

Occasionally errors in design do result. Chapters 20 and 21 discuss in detail, how shortfalls can be put right, with either a replacement or with a retrofit.

Chapter 22 discusses the improvements in propeller performance.

This book tabulates general particulars of 39 ships designed, built and delivered in this Millennium. It also covers many ship types designed and built over the last 20 years. Discussed in detail are new inventions and suggestions for enhanced ship performance in the next decade.

Finally, if you are a student, good luck in your studies. If you are either sea-going or shore-based personnel, best wishes for continued success in your job. I hope this book will be of interest and assistance to you. Thank you.

*Dr. C.B. Barrass*