

THE TRAGIC HISTORY
OF THE SEA,
1589-1622

C. R. Boxer



THE HAKLUYT SOCIETY

The Tragic History of the Sea, 1589–1622

Narratives of the shipwrecks of the
Portuguese East Indiamen São Thomé (1589),
Santo Alberto (1593), São João Baptista (1622) and the
journeys of the survivors in South East Africa

Edited by
C.R. BOXER

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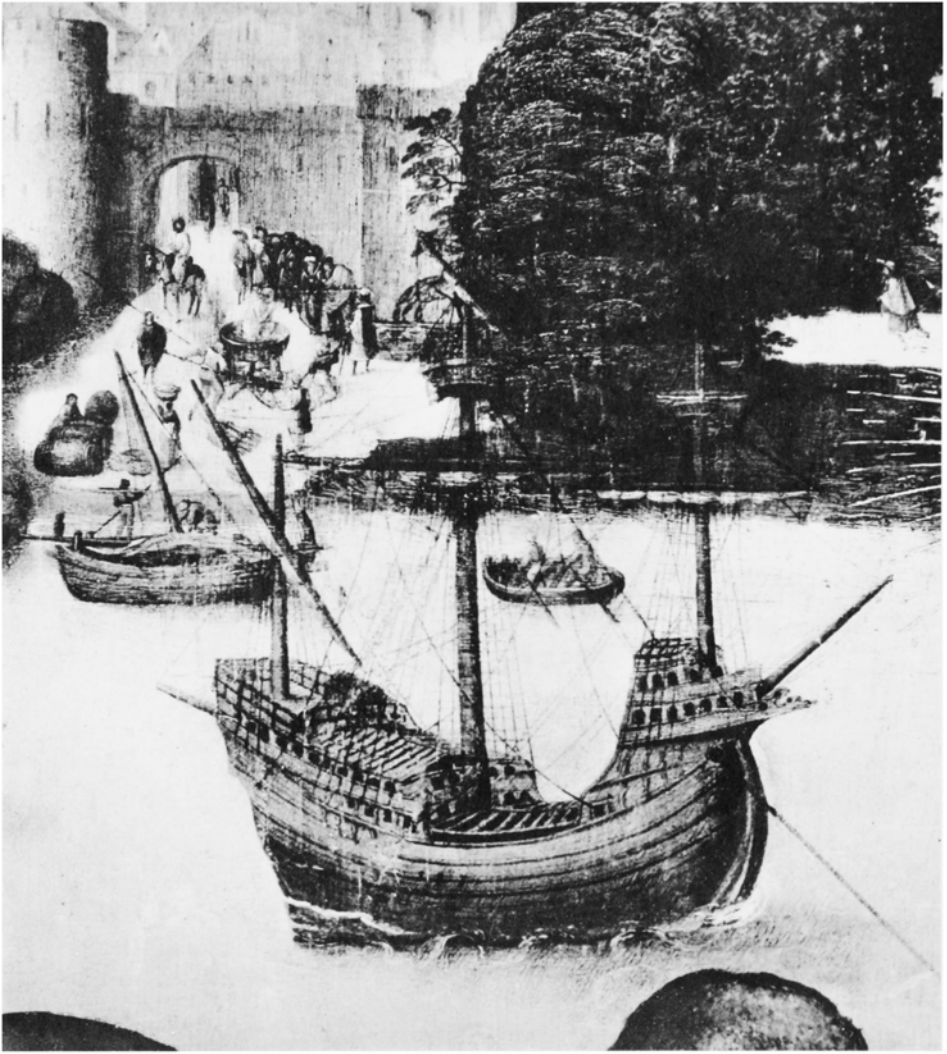
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I. A Portuguese carrack of the sixteenth century
From a painting by the 'Master of Lourinhã'

STO

THE
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East Indiamen *São Thomé* (1589), *Santo Alberto* (1593),
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EDITED FROM THE ORIGINAL PORTUGUESE

BY

C. R. BOXER

*Camoens Professor of Portuguese, University of London,
King's College*

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PREFACE

In the years 1735-6, a dozen narratives (mostly reprints) of shipwrecks and other maritime disasters were published in a collected two-volume edition at Lisbon by Bernardo Gomes de Brito, under the title of *História Trágico-Marítima*, or *Tragic History of the Sea*. The printing and publishing licences of these two volumes bear dates ranging between 8 March 1729 and 12 June 1736, so they were some seven years in the press. During this time, or possibly a little later, a third volume appeared, bearing no contemporary licences but containing about half a dozen narratives of similar origin, separately paginated, and collected together without any general title-page or introductory matter. The person or persons responsible for this clandestinely published third volume, which is much rarer than the other two, have never been identified; but it has always been regarded as forming a continuation of those two volumes, and is discussed by bibliographers and catalogued by booksellers under the same general title. The first two volumes include shipwrecks and maritime disasters from the loss of the *São João* off the coast of Natal in 1552, down to the capture of the *Santiago* by the Dutch off Saint Helena in 1602. The third volume usually contains reprints of six narratives originally published between 1625 and 1651, but it sometimes includes one or more original eighteenth-century relations, and no two of the copies which I have examined are exactly alike.

The bibliographical and editorial problems connected with the *História Trágico-Marítima* have been discussed in considerable detail elsewhere, and there is no need to go over the same ground here.¹ Suffice it to say that these narratives were eagerly read when

¹ J. Duffy, *Shipwreck and Empire. Being an account of Portuguese maritime disasters in a century of decline* (Harvard University Press, 1955); C. R. Boxer, 'An introduction to the *História Trágico-Marítima*', reprinted from the *Miscelânea de Estudos em honra do Professor Hernâni Cidade* (Lisboa, 1957).

they were first published individually in pamphlet form contemporaneously with the disasters they described. Such pamphlets were generally displayed hanging from a string or cord in the bookshop where they were offered for sale, hence the term *literatura de cordel*, or 'string literature', which is often applied to them. They soon went out of print and are nowadays exceedingly rare, some of them surviving in one or two copies only, and the original editions of others are untraceable. Gomes de Brito's collected edition was likewise well received, but it was a long time before these tragic tales of the sea achieved recognition as literary masterpieces. Not until 1904-7 was a second edition of the *História Trágico-Marítima* published, but nowadays this work is generally regarded as a fine example of classical Portuguese prose and is widely used in schools.

The original relations were either the work of survivors or were compiled by contemporary writers from their accounts. They are as a rule movingly and graphically written, if not always as grammatically as could be wished. The majority of the shipwrecks described in the pages of the *História Trágico-Marítima* befell homeward-bound East-Indiamen off the coast of Natal, and the survivors tried to march overland to the seasonal Portuguese trading-station at Delagoa Bay, or to the fort of São Caetano at Sofala. There is thus a basic similarity between these accounts, however much the details may differ. It may be added that the nature of the coastline, and more particularly that of the river mouths, has changed a good deal in certain districts since the sixteenth and seventeenth centuries. Much of the dense bush which then came down to the sea has been cleared away in many places; and allowance must also be made for the seasonal changes which dry up numerous streams at one time in the year and make them raging torrents at another. The going for the half-starved and barefooted castaways of nearly four centuries ago was incomparably harder than it would be for a fit and well-shod man today, as pointed out by Professor P. R. Kirby in his invaluable *Source book on the Wreck of the Grosvenor* (pp. 4-5).

There can be no two opinions about the historical value of the *História Trágico-Marítima*. Written almost invariably with the ut-

most frankness, these narratives bring vividly before us the dangers and discomforts of life aboard the crowded East-India carracks. The reasons for the loss of so many of these 'wooden mountains' and 'floating Babylons', as some contemporary critics called them, are clearly and unanimously stated by all those writers, and are discussed in the first part of the Introduction below. They give us the seamy side of the Portuguese 'conquest, navigation, and commerce', the obverse of which is so majestically perpetuated in the *Decadas* of João de Barros and the *Lusíadas* of Luís de Camões.

The other outstanding feature of most of these narratives is their value for the historical ethnography of the tribes of South East Africa. Their importance in this respect has long been recognized by South African historians and ethnographers, for these early Portuguese relations describe the South African Bantu (and, to a lesser extent, the Hottentots) at a time when they were still unaffected by close contact with white men, or at any rate by white rule. They likewise bring vividly before us the danger and hardships of the 'long march' through Kaffraria.

This also accounts for their inclusion in the truly monumental series translated and edited by George McCall Theal under the title of *Records of South-Eastern Africa* (9 vols., London, 1898–1903), although he provided no introductions or notes. He used the versions printed in the *História Trágico-Marítima*, whereas I have gone to the first editions where these are available; but I checked my translations with his, and, generally speaking, where I found the latter to be markedly superior, I amended my own accordingly. Theal's translation was avowedly a free rather than a literal one, but mine inclines the other way, in order to retain fidelity to the original even at the cost of awkwardness of expression. All translators owe a great debt to their predecessors in any particular field; and if I found a few places where my precursor had slipped up, there were many more where he had solved puzzles which baffled me.

The reason why I selected these three particular narratives out of ten which were relevant to South East Africa is because the first and the third are typical of what generally happened, whereas the

second forms a shining exception. Taken together, they thus display all aspects of the eighteen different relations which make up the *Tragic History of the Sea*, and provide both the variety and the unity which is required in a work of this kind.

ACKNOWLEDGEMENTS

My debt to G. McCall Theal is acknowledged in the preface, but for help in the elucidation or clarification of passages which baffled both of us I am indebted to several kind friends and acquaintances. Dr R. C. Anderson, President of the Society for Nautical Research, Captain António Marques Esparteiro, of the Portuguese Navy, and Lieut-Commander G. P. B. Naish, R.N.V.R., were most helpful in the elucidation of various sixteenth-century Portuguese maritime terms. If some of these have been incorrectly rendered this must be ascribed to my landsman's ignorance—and in part, perhaps, to the obscurity of the originals. Professor Isaac Schapera of the London School of Economics kindly lent me his copy of H. A. Junod's invaluable pamphlet on the condition of the natives of South East Africa in the sixteenth century. Senhor Carlos de Azevedo, the distinguished Portuguese art-historian, kindly provided the photograph of the painting by the anonymous 'Master of Lourinhã' which forms the frontispiece, and obtained permission for its reproduction. The Librarian of the Houghton Library, University of Harvard, kindly supplied photostats of relevant documents among the papers of Dom António de Ataíde, and gave permission for their reproduction. My colleague, Senhor Luís de Sousa Rebello, helped to elucidate some of the more difficult Portuguese words, and the Hon. Secretary, Mr R. A. Skelton, found time amid his manifold occupations to be consistently helpful in his editorial capacity. Last not least, thanks are due to the editor and publisher of *Man* and to Dr W. G. N. van der Sleen of Naarden-Bussum, Holland, author of the article on 'Trade-wind beads' (*Man*, February 1956, pp. 27-9), for permission to reproduce two of the illustrations therein as Plate V of this work. The sketch maps were drawn by Mrs A. M. Huhtala.



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INTRODUCTION

A. *The Carreira da India*

THE *carreira da India* was the term used by the Portuguese for the round voyage made by their Indiamen between Lisbon and Goa in days of sail. It was generally considered by contemporaries to be 'without any doubt the greatest and most arduous of any that are known in the world',¹ although some would have excepted the annual voyage of the Manila galleon across the Pacific. In both cases the seasonal winds of the Tropics formed the determining factor, and the round voyage, including the stop-over at Goa or at Manila, took about a year and a half for the Portuguese ships and a year for the Spanish, under the most favourable conditions.

The SW monsoon, which normally begins on the west coast of India about the beginning of June, had the effect of virtually closing all harbours in this region from the end of May to the beginning of September, whereas the trading season lasted from this latter month to April. Once the Cape route to India had been opened, the Portuguese ships tried to leave Lisbon before Easter, so as to round the Cape of Good Hope in time to catch the tail-end of the SW monsoon winds off the East African coast, north of the equator, which would bring them to Goa in September or October. Similarly, they aimed at leaving Goa (or Cochin) with the NE monsoon about Christmas, so as to round the Cape before the stormy 'winter' weather set in there in May.

The ships used in the *carreira da India* were principally carracks and galleons, smaller vessels being only occasionally employed. The carrack, or *Náo* ('Great Ship'), was a type of merchant-ship used by the Venetians and Genoese in the later Middle Ages; but it was the Portuguese who brought it to its greatest and most spectacular development in the *Náo da carreira da India* during the

¹ A. Valignano, S.J., *Historia del principio y progreso de la Compañía de Jesús en las Indias Orientales* (ed. Rome, 1944), 9.

late sixteenth and early seventeenth centuries. Broadly speaking, a Portuguese East India carrack was a large merchant-ship, broad in the beam, with three or four flush decks, a high poop and fore-castle, but lightly gunned for her size, and often a sluggish sailer. Originally of about 400 tons burden, they eventually attained over 2,000 tons. These huge argosies were the largest vessels afloat at the turn of the sixteenth century, being rivalled only by the great Manila galleons, some of which attained comparable dimensions.¹ They excited the wonder of the Elizabethans in much the same way as the *Queen Mary* does with us. Richard Hakluyt records admiringly the measurements of the 1,600 ton *Madre de Deus*, captured by six English ships off the Azores in 1592 when homeward-bound from India, and taken into Dartmouth. She was the wonder of the West Country, people flocking from all over England to see her. Even the gigantic *Sovereign of the Seas*, built for Charles I in 1637, was apparently surpassed in size by her Portuguese contemporary, the *Santa Tereza*, built as a *Náó da carreira da Índia* at Oporto in the same year, and lost at the battle of the Downs in 1639.²

A galleon, on the other hand, was primarily a fighting-ship, and a lighter and handier vessel than a carrack as a general rule, but more heavily gunned, and with a less cumbersome form of poop and fore-castle. The distinction between carrack and galleon in Portuguese and Spanish terminology was not always a hard and fast one, and in the course of the seventeenth century it became very difficult to draw an exact line between the two types. Although galleons usually did not exceed 500–600 tons, whereas carracks were frequently over 1,000, yet galleons of 800–1,200 tons were not exactly uncommon. Some of these larger vessels were termed *Náos* and *Galeões* indiscriminately, even by the men who sailed in them. Prior to 1622, Portuguese carracks or *Náos* usually had four flush decks, but smaller types of three or even two decks occur, and these latter were sometimes called *navetas*. Here again is another fertile source of confusion, as the term *naveta*

¹ Cf. W. L. Schurz, *The Manila Galleon* (New York, 1939), 193–6.

² C. R. Boxer, *The Journal of Maarten Harpertszoon Tromp, Anno 1639* (Cambridge, 1930), 5, 216–17.

was also applied to small frigate-type India-built vessels which contemporary Dutch and English records call 'yachts' or 'frigates'. These frigates were, of course, much smaller vessels than the warships of the same name developed by the Dunkirk corsairs in the North Sea, and which later became a standard type in all European navies. It may be added that the Portuguese and Spaniards very seldom used the word *carraca* to designate their carracks, but almost invariably called them *Náos* (*Naus* in modern Portuguese). Their Dutch and English contemporaries, on the other hand, equally invariably referred to such vessels as carracks, when they could distinguish them from galleons, and we are therefore justified in using the terms 'carrack' and *Náo* interchangeably to designate the same type of Great Ship.¹

Some of the best and biggest Portuguese carracks were those built in India, where Cochin, Bassein (Baçaim), and, to a lesser extent, Damão, were all shipbuilding centres of importance where ships were built on contract—in the case of Cochin by contract with the local raja at the period with which we are dealing. Pride of place in this respect naturally went to the great royal arsenal and dockyard at Goa, which was probably the most highly organized industrial enterprise in India in the golden days of the Great Mogul.² The superiority of Indian teak over European pine, and even oak, as shipbuilding timber was fully recognized by the Portuguese. A royal order of 1585, repeated textually nine years later, emphasized the importance of building carracks for the *carreira* in India rather than in Europe, 'both because experience has shown that those which are built there last much longer than those built in this kingdom, as also because they are cheaper and stronger, and because timber for these carracks is increasingly hard to get here'.³

¹ Cf. E. E. de Barros, *Traçado e construção das Naus Portuguesas dos séculos XVI e XVII* (Lisboa, 1933); F. C. Bowen, *From Carrack to Clipper* (London, 1948); and articles by R. Morton Nance and L. Guilleux la Roërie on 'The Ship of the Renaissance' in *The Mariner's Mirror*, xli (1955), 281-98; xlii (1956), 180-92; xliii (1957), 179-93, for more technical details, illustrations, and sketches.

² W. H. Moreland, *From Akbar to Aurangzeb* (1923), 7.

³ *Cartas régias* of 22.ii.1585 and 3.iii.1594, in *Arquivo Portuguez Oriental*, III (Nova Goa, 1861), 46, 448-9.

Perhaps the most famous of these India-built carracks was the *Cinco Chagas* ('Five Wounds'), constructed at Goa by the viceroy Dom Constantino de Braganza in 1559–60. She served in the *carreira* for twenty-five years, making nine or ten round voyages apart from others, and was the flagship of five viceroys before ending her days as a hulk at Lisbon.¹ This was in marked contrast to the average Lisbon-built carrack which seldom made more than three or four round voyages or lasted for as long as a decade. For that matter, the English East India Company in the late eighteenth century did not normally allow a merchantman to undertake more than four round voyages. The India-built successor of the *Cinco Chagas* was less fortunate, being burnt and sunk on her maiden voyage after a heroic battle with the Earl of Cumberland's squadron off the Azores in 1594. Equally unfortunate was the India-built *São João Baptista* whose tragic end is the theme of the third narrative here translated

Experience having shown that ships of under 500 tons were more seaworthy and more economical than the unwieldy monsters of 1,000 tons or more, the Crown decreed in 1570 that thenceforth all the carracks constructed for use in the *carreira da India*, whether in Asia or in Europe, should not exceed 450 or be less than 300 tons.² Not much notice seems to have been taken of this instruction, at any rate in the India yards, although it was repeated in modified forms on later occasions, when it was ordered that carracks should have only three flush decks instead of four, but the tonnage limit was raised to 600 tons. Apart from the shipyard officials and building contractors, the ship's complements from captain to cabin-boy were interested in cramming a homeward-bound carrack with as much cargo as she could possibly hold, since their perquisites were correspondingly greater. Despite the obvious danger incurred by overloading a lubberly carrack, the majority of contractors, merchants, and seamen shortsightedly preferred to run this risk rather than have less cargo-space

¹ Diogo do Couto, *Decada VII*, bk. 9, ch. xvii. Gomes de Solis, *Discursos* (1622), fol. 242, and *Alegacion* (1628), fols. 218–19, credits her with only eight round voyages, as do other contemporary writers.

² 'Regimento' of 1.iii.1570, in *APO*, v (Parte II, 1865), 723.

in smaller but more seaworthy ships. The folly of this practice was repeatedly pointed out by more sensible people, both ashore and afloat; but despite repeated legislation by the Crown against overloading and over-ambitious shipbuilding, the vested interests concerned fought a successful rearguard action against the reformers for the best part of a century.¹ Equally ineffective was the legislation regarding the armament of these vessels. The standing-orders (*regimentos*) for this period envisaged that the East India carracks should mount a minimum of 28 guns, but in practice they seldom had more than 22 or 23, and too high a proportion of these were only eight-pounders.

Well aware of the superiority of India-built shipping, the Crown frequently legislated for the construction of carracks and galleons in India. From time to time, however, there was considerable discussion between the authorities at Lisbon and those at Goa as to whether it was cheaper to build ocean-going vessels in India or in Europe. Most of those best qualified to judge argued in favour of India-built shipping. In 1615, the Crown ordered the construction of two carracks yearly, both in Cochin if possible, since the local teak was allegedly superior to that of the North, but failing that, one in Cochin and the other in Bassein. The specie sent out annually from Portugal to defray the cost of these carracks was on no account to be diverted to any other use, however pressing, until such time as the *carreira* 'would be full of ships', when one a year would suffice.² Needless to say, this optimistic expectation was never fulfilled, and the costs of shipbuilding and repair at Goa rose sharply for reasons explained in a dispatch of 1631.

¹ The arguments of the reformers are given at length in João Pereira Corte-Real, *Discursos sobre la navegacion de las naos de la India de Portugal* (n.p., 1622; reprinted under the title of *Discursos y advertencias* in 1635); Duarte Gomes de Solis, *Discursos sobre los comercios de las dos Indias* (n.p., 1622; reprinted, Lisboa, 1943), and *Alegacion en favor de la Compañia de la India Oriental* (n.p., 1628; reprinted, Lisboa, 1955); all of which are conveniently summarized in Manuel Severim de Faria, *Noticias de Portugal* (Lisboa, 1655), 241-7. Cf. *Mariner's Mirror*, xxxvi (1940), 388-406.

² Dispatch of 23.ii.1615, in *APO*, vi (1875), 1074-6. For other legislation on this subject in the period 1585-1623, cf. *APO*, iii (1861), 46, 71, 106, 184, 577, 579, 722-3; *APO*, vi, 848, 860, 1017, 1213, 1229, 1235; *APO*, i (Parte 2), 123.

‘There are no longer here the contractors who used to repair and refit carracks in the old days, and whose prices were reasonable because they tendered in competition with each other. Nowadays it is clean contrary, because they all went bankrupt and have no capital, so that there are only two men left and these two have an understanding between themselves and submit their tenders jointly.’¹ But the hand of the Portuguese shipwright—and of his Indian assistant—had not lost its cunning, and the Goa yards continued to produce carracks and galleons which aroused the admiration of Dutch and English contemporaries, even though, as one of the latter observed, ‘they are very long a-doing and issue at excessive rates’.²

At the period with which we are concerned, an average of four or five of these leviathans left Lisbon annually for Goa. As noted above, the round voyage was estimated to last about eighteen months, including a three or four months’ stay in India to load the spices and other return cargo. On the outward voyage, land was often touched at Mozambique, but sometimes the carracks sailed direct from Lisbon to Goa. On the return voyage a stop was usually envisaged at St Helena, before the Dutch frequented that island and made it dangerous for the Portuguese to do so; but otherwise the Azores were normally the only place of call if the ship did not make a through run as she often did. The duration of the voyage varied greatly, but something between six and eight months in either direction was very common. The quickest outward voyage was probably that made by Captain João da Costa, who took only three months and twenty-seven days from Lisbon to Goa in 1645.³ For the homeward run, an exceptionally favourable voyage was that of Dom Francisco da Gama, who left Goa on Christmas Day 1600 and dropped anchor in the Tagus on 26 May 1601, ‘without having stopped anywhere or lowered the

¹ Papers of the Goa representatives of the Portuguese East India Company, 1629–1633 (hereafter referred to as Codex-Lynch), fol. 83.

² *Travels of Peter Mundy* (Hak. Soc. ed.), III, 59.

³ Simão Ferreira Paes, *Recopilação das famosas armadas que para a Índia foram, 1496–1650* (Rio de Janeiro, 1937), 141. Frazão de Vasconcelos, *Pilotos das navegações portuguesas dos séculos XVI e XVII* (Lisboa, 1942), 30, gives the year as 1640, but from other evidence I think 1645 is the correct date.

main-yard during the whole voyage'.¹ A record round voyage was apparently that of Luis de Mendoça Furtado's two galleons in 1651-2. They took only four and a half months for the outward run and five for the homeward, 'a thing which never happened to any carrack', observed Severim de Faria,² forgetful of Dom Francisco's precedent.

An experienced pilot of the *carreira*, when asked what was the best season for the departure of the Indiamen from Lisbon, is alleged to have replied: 'The last day of February is time enough, but the first day of March is late.'³ Most seamen thought that the first half of March was about the best time, but in practice the ships often left in the second half of March or in the first half of April. Departures later in April, or even early in May, were not unknown, but the ships involved almost invariably made *arribadas*, or abortive voyages, being compelled either to return to Lisbon or to 'winter' in Brazil. Delayed departures were chiefly due to administrative and financial difficulties at Lisbon, such as a shortage of ready money when most needed, and trouble in collecting crews. There was a so-called 'winter monsoon', which involved leaving Lisbon in September, so as to reach Mozambique in March, and Goa before the bar of the Mandovi was closed by the monsoon in May; but this was normally utilized only by advice-ships and the like.

Successful passages out of due season, though extremely rare, were occasionally made. The most spectacular instance was that of the viceroy Matthias de Albuquerque in 1590. His squadron of five carracks left Lisbon on May 8, and as evidence of his determination to reach India he had a representation of himself tramping on Fortune painted on his standard. His four consorts all lost their voyage, but thanks largely to the exceptional skill of his

¹ D. António de Ataide, 'Roteiros para varios pontos' (codex of 1631 in the collection of C. R. Boxer), fol. 39. The pilot's original journal for this voyage (to 11 May 1601) was printed by Frazão de Vasconcelos in *Anais da Academia Portuguesa da Historia*, VIII (1944), 247-85.

² Severim de Faria, *Noticias* (1655), 245, implies the year 1653-4, but from other sources 1651-2 is more likely. The Fleet of 1655 also took just under five months for the outward voyage.

³ M. Faria y Sousa, *Asia Portuguesa*, III (1675), 367.

pilot-major, Vicente Rodrigues, his flagship *Bom Jesus* rounded the Cape and sighted the coast of India before being forced back to Mozambique, which she reached on 10 January 1591 in a very distressed condition, and with most of her complement dead. From here the viceroy proceeded to Goa which he reached in May, a year after his departure from Lisbon.¹ Less dramatic and less costly was the remarkable voyage made by the squadron of Joseph Pinto Pereira in 1632. Leaving Lisbon with three vessels on 4 June, he reached Goa on 28 October, having touched nowhere on the way, and having beaten off an attack by the Dutch East Indiaman *Leeuwarden* in the Indian Ocean. He lost only 33 or 34 men in his own ship, though it would seem that no more than 148 soldiers reached Goa out of 284 who had embarked in this fleet.²

Just as departures from Lisbon tended to take place later than was advisable, so did those from Goa. Instead of leaving at Christmas-tide, or at New Year, ships often left in February or March, or occasionally even in April, when the chance of subsequently weathering the storms in the latitude of the Cape was correspondingly reduced. As at Lisbon, these belated departures in contravention of reiterated royal orders to avoid them, were mainly due to administrative delays at Goa, or to waiting for a full cargo of pepper, which was not easily arranged at times when the petty rajas of the Malabar coast were at odds with the Portuguese. Shortage of ready cash to buy the pepper sufficiently in advance was another perennial cause of delay.

The timing of the departure was also affected to some extent by whether the passage was to be made through the Mozambique Channel, or well to the east of Madagascar. For the first twenty-five years after Vasco da Gama's pioneer voyage, both outward and homeward-bound Indiamen took the former course, despite the notorious unhealthiness of Mozambique island as a port of call. During the period 1525-79, homeward-bound Indiamen

¹ Diogo do Couto, *Decada XI* (ed. 1788), 66-7.

² C. R. Boxer, 'José Pinto Pereira, Vedor da Fazenda Geral da India', in *APH*, VII (1942), 79-80. For that matter, Vasco da Gama left on his pioneer voyage on June 8, but this precedent seems to have been forgotten.

were ordered to avoid the Mozambique Channel (though ships bound for Goa continued to use it), and to take a course which kept them well clear of Madagascar. This outer route was also used in the reverse direction by carracks which rounded the Cape after mid-July. As a disturbing number of homeward-bound Indiamen were lost with man and mouse on this outer passage, the viceroy Dom Francisco da Gama reintroduced the use of the Mozambique Channel route in 1597-8, when a successful voyage was made by the pilot-major, Gaspar Ferreira Reimão.¹ Thenceforward homeward-bound Indiamen took either the outer or the inner passage according to what month they left India. The consensus of expert opinion in 1615 was 'ships leaving from Goa up to the end of December should take the inside passage, since the voyage is safer; from the first of January onwards this voyage is riskier, and they should take the outer passage; all ships leaving from Cochin should take the outer passage'.²

The crew of a four-deck carrack might total over 200, but the number of foremast hands officially allowed at this period was generally 120, equally divided between sailors and grummetts.³ The Crown *regimentos* stressed that only experienced mariners should be entered as sailors for the India voyage, but these have never been too plentiful in Portugal. As early as the first decade of the sixteenth century, a captain found that his rustic crew could not distinguish between starboard and larboard until he tied a bunch of onions to one side of the ship and a bunch of garlic to

¹ Gaspar Ferreira Reimão, *Roteiro da Navegação e carreira da Índia, 1612* (ed. Lisboa, 1939), 43-5.

² Decision of a junta of pilots of the *carreira* at Lisbon, 18.iii.1615, in *Documentos remetidos da Índia ou Livros das Monções*, III (1885), 326-7. Cf. the decisions of similar juntas in 1635 and 1646, respectively, in Frazão de Vasconcelos, *Pilotos*, 79-84.

³ *Grumetes*. They were apprentice seamen, not necessarily boys, though most of them were probably in their teens. They did all the hardest work aboard the ship and slept on the deck at the waist, between the mainmast and foremast. Cf. *Voyage of Pyard de Laval* (Hak. Soc. ed.), II, 187, 189-90. At the end of the last century the word 'grummet' still survived in south-east England with the meaning of 'awkward boy' (R. S. Whiteway, *Rise of the Portuguese Power in India 1497-1550*, London, 1899, 44 note). In 1633 Dom António de Ataíde gave the complement of a *não da Índia* as 18 officers, 60 sailors, 60 grummetts, 4 pages and 26 gunners (Ataíde MSS, Harvard University, I).

the other. Those makeshift seamen who survived a couple of India voyages presumably became 'old salts', but complaints abounded in the years 1570-1650 that tailors, cobblers, lackeys, ploughmen and 'ignorant boys' of all kinds were freely shipped as deep-sea mariners.¹ The viceroy Pero da Silva complained that when he left Lisbon in 1635, ninety youthful stowaways were found in his flagship, and even more in her consort, although thirty had been sent ashore just prior to sailing, mostly boys of six or seven years old, 'and even under, these being brought as merchandise, some to be made friars, etc.'²

The mortality on board the East India carracks was very heavy, for reasons explained below, and the recruitment of sailors for the *carreira* varied a good deal. In 1623 João Pereira Corte-Real complained that the India voyage was so unpopular that it was necessary to press-gang sailors and keep them in irons till the ship had sailed.³ Yet in 1565 and again in 1630, we find that common sailors as well as officers were bribing officials at the India House in order to be entered for the voyage.⁴ In 1634 the viceroy wrote to the home government that he realized they were short of money, but he could not believe that Portugal lacked men.⁵ Nearly everyone else, however, complained that she did, and certainly her population of about a million could not cope with the demands of her maritime and commercial empire from the Maranhão to Macao. Portuguese coastal shipping in Asia was largely operated by Asian seamen, and even the great carracks which visited Japan might have only a few white men besides the captain, pilot, and

¹ *Regimento dos Escrivaens das Naos da carreira da Índia* (Lisboa, 1611 and 1640); Codex-Lynch, fols. 140-1, 161-2; António Vieira [alias António de Sousa de Macedo], *Arte de Furtar* (ed. Lisboa, 1744), 39-40, 79-81.

² Pero da Silva to the Crown, Goa, 17 February 1636, in Torre do Tombo, 'Livros das Monções,' Livro 33, fol. 261.

³ Autograph marginal note by João Pereira Corte-Real in the writer's copy of the *Discursos* (1622). Cf. also *Arte de Furtar* (ed. 1744), 262-3.

⁴ A. da Silva Rego, *Documentação para a história das missões do padroado português do Oriente. Índia*, IX (1953), 535; Codex-Lynch, fols. 140, 161. Pyrard de Laval also states that the sailors had to buy their places in his day (1609). Cf. Hak. Soc. ed., II, 185.

⁵ Linhares's dispatch of 29.xi.1634, printed in the *Chronista de Tissuary*, III (Nova-Goa, 1868), 272.

master-gunner in their complements. In the Indian Ocean the captain was sometimes the only European on board, for even the pilots were often Muslim Gujeratis.¹

Most sixteenth–seventeenth-century Portuguese, including the writers in the *História Trágico-Marítima*, bitterly criticized sailors as a class, and frequently denounced their clownishness, indiscipline, selfishness and brutality. Official correspondence took the same line, and indeed contempt for sailors and their profession was a characteristic of contemporary Spain and Portugal.² This knowledge cannot have helped their self-respect, and the poor pay they received (when they got any at all) and the hard life which they led doubtless helped to brutalize them. It is therefore surprising to read Pyrard de Laval's eulogistic account of the gentlemanly behaviour of the sailors of the *carreira da Índia* in his day, which he contrasted with the boorish behaviour of French mariners.³ There may be something in Pyrard's testimony, particularly since in most respects he is highly critical of the Portuguese and of sailors in general; but the weight of contemporary evidence indicates that the life of the average Portuguese sailor in the *carreira* was nasty, brutish, and short. This does not alter the fact that there were a fair number of men who spent useful lives in that difficult and dangerous calling, and chief among these were the pilots.

The captain of an East India carrack was usually a landsman, and by royal regulations the pilot had sole charge of the ship's navigation. He was therefore a more important and influential person than his equivalent in a Dutch, English, or French India-man, where the captain or master was generally a capable navigator and had the last word in deciding a ship's course. The efficient functioning of the *carreira da Índia* thus depended largely on the pilots, and on the whole they lived up to their responsibilities.

¹ E. Sanceau, *Cartas de D. João de Castro* (Lisboa, 1954), 22, 44; C. R. Boxer, *The Christian Century in Japan 1549–1650* (Berkeley, 1951), 128, 279, for some typical examples which it would be easy to multiply.

² Tomé Pinheiro da Veiga, *Fastigium* (Coimbra, 1911), 54–5; Gomes de Solis, *Alegacion* (1628), fols. 233, 261; M. Herrero Garcia, *Ideas de los Españoles del siglo XVII* (Madrid, 1928), 275–6; J. Duffy, *Shipwreck and Empire* (Cambridge, Mass., 1955), 93–5.

³ *Voyage of Pyrard de Laval*, II, 186.

When we consider the few and elementary navigating instruments which were then available; the inaccurate and small-scale charts which were used; the insufficient knowledge of natural phenomena like magnetic variation and ocean currents; the complete lack of any weather forecast; the want of a reliable nautical time-piece, or method of calculating longitude; and finally the bad sailing qualities of most of the lubberly carracks, it seems nothing short of miraculous that their pilots sometimes reached Goa just when they anticipated after a voyage of over 200 days, perhaps without having sighted land after leaving the mouth of the Tagus.

Miraculous, nevertheless, it was not, although the piety of these pilots and the hostility of their critics often implied that it was. 'God takes them out and God brings them back', was a favourite saying of both parties in the *carreira da Índia* concerning the annual voyage of the carracks. This aphorism was quoted approvingly by Diogo do Couto in his condemnation of pilots who relied on their beautifully decorated but misleading charts, as opposed to those old tarpaulins who had worked their way up from cabin-boy to master-mariner in repeated voyages, and whose skill was based rather on their knowledge of the winds, tides, and other natural phenomena than on their grasp of theoretical navigation. Couto's criticisms were echoed by many of his contemporaries, and the complacent arrogance of the pilots of the *carreira* was indeed proverbial.¹

In the final analysis, a successful voyage resulted from a combination of good fortune and the pilot's skill in navigation. That skill, as Diogo do Couto observed, was only attained by continuous and careful observation throughout a series of voyages. This practical experience formed the basis of the pilots' *roteiros* (*anglice* rutters) or written sailing-directions, many of which were models of their kind. They may be said to be the forerunners of the Eng-

¹ Diogo do Couto, *Decada X*, Livro vii, 123-4 of the 1788 ed., and *Dialogo do Soldado Pratico Portuguez* (Lisboa, 1799), II, 8-12, 99-101; A. da Silva Rego, *Documentação*, VI (1951), 190, and IX, 14; D. Garcia de Silva y Figueroa, *Comentarios, 1614-1624* (ed. Madrid, 2 vols., 1903), I, 48 ff., 80, 109-12, 121; II, 528, 546-50; Fernão de Queiroz, S.J., *Temporal and Spiritual Conquest of Ceylon* (ed. S. G. Perera, Colombo, 1930), 1098-9; Linschoten, *Discours of Voyages* (London, 1598), 146-8, 166.

lish Admiralty Pilot Handbooks which are the standby of navigators at the present day. The first printed *roteiro* of the India voyage was only published in 1608,¹ but manuscript ones were in circulation at least a century earlier. Later editions, with certain variations, were published at irregular intervals throughout the seventeenth century by successive cosmographers-royal of the Portuguese Crown.

The standard *roteiro*, whether printed or manuscript, consisted of two parts. The first was a treatise on the theory of navigation, and contained such items as: (a) calendar and tables of the sun's declination; (b) rules for finding the latitude by observing the sun on the meridian; (c) explanation of the mariner's compass with notes on its variation; (d) rules for plotting a ship's track on the chart; (e) directions for determining latitude by the Pole Star; (f) a traverse table for the dead-reckoning of the course; (g) rules for calculating a ship's daily run, based on the measurement of $17\frac{1}{2}$ leagues to the geographical degree; (h) a brief summary of John of Holywood's medieval *Tractatus de Sphaera*. The second part consisted of sailing directions between Lisbon on the one hand and Goa, Cochin, and Malacca on the other, with an appendix on the regional variations of the compass-needle. For the period 1575-1612, the sailing-directions for the India voyage were chiefly based on those elaborated by Vicente Rodrigues of Lagos, who spent a lifetime in the *carreira* before being lost with the returning *Bom Jesus* in 1591.² From 1612 onwards they embodied many of the amendments introduced by another celebrated pilot, Gaspar Ferreira Reimão, whose *Roteiro* was printed in a very limited edition in that year, and who was directly concerned in two out of the three shipwrecks described below.³

In addition to his own practical experience and that embodied in the *roteiros*, the pilot also had a few simple navigating instru-

¹ Manuel de Figueiredo, *Hydrographia. Exame de Pilotos* (Lisboa, 1608). For subsequent editions see A. Fontoura da Costa, *A Marinbaria dos Descobrimentos* (Lisboa, 1933), 414-19.

² His *roteiros* were included in Linschoten's *Itinerario* which was the vade-mecum of the Dutch and English pioneer navigators in the East during the first two decades of the seventeenth century. Cf. also Silva y Figueroa, *Comentarios*, I, 81.

³ Cf. 39-40 *infra*.

ments, such as the mariner's compass, astrolabe, cross-staff and quadrant. He also had an hour-glass, and a portulan-type nautical chart (*carta de marear*), drawn on a consistent distance scale but not on a consistent projection. Since he had no means of ascertaining the longitude, the chart was of very limited value, and most of the instruments could not be used in stormy or cloudy weather. Even in fine weather, the best he could hope for was a fairly accurate calculation of his position from a combination of observed latitude and dead reckoning when he was out of sight of land. One gets the impression from the surviving ships' journals or *diários do bordo*, that the pilots' chief reliance was on their astrolabe, their mariner's compass, and on their experience of the ocean currents, the varying species of birds they saw, the colour and run of the sea, the kinds of seaweed, the sort of sand they dredged up when they took soundings, and so forth. In other words, on a combination of latitude-sailing, dead reckoning, and, above all, on their knowledge of how to interpret nature's signs. The following extract from Gaspar Ferreira's journal of 17 January 1598 is typical: '... and I tell you that steering this course, as soon as you see large numbers of seagulls from 8° to between 9° and 10° latitude, that you are off the islands of Arro, and you will find gulf-weed and branches of seaweed. On seeing these signs together with men-of-war birds and wind in the east, you should try to work south-westwards and approach Cape Delgado, and although there is likewise gulf-weed off this coast, it is not found together with seagulls and men-of-war birds.'¹

This keen observation of the sea and sky around him did not prevent the pilot from watching his compass-needle continually, as testified in a striking passage by an English contemporary:

'In this point of steeridge, the Spaniards and Portugalls doe exceede all that I have seene, I meane for their care, which is chiefest in navigation. And I wish in this . . . we should follow

¹ Quirino da Fonseca, *Diários da Navegação da Carreira da Índia nos anos de 1595, 1596, 1597, 1600 e 1603* (Lisboa, 1938), 82. For the navigational methods of other nations cf. D. W. Waters, *The Art of Navigation in Elizabethan & Early Stuart Times* (London, 1958); the table of 'Land indications from sea-birds' in H. Gatty, *Nature is your guide* (London, 1958), 205-8; C. V. Sölver and G. J. Marcus, 'Dead reckoning and the ocean voyages of the past', in *Mariner's Mirror*, XLIV (1958), 18-34.

their examples. In every ship of moment, upon the half-deck, or quarter-deck, they have a chair or seat; out of which whilst they navigate, the Pilot, or his *adiutants* (which are the same officers which in our shippes we terme, the Master and his Mates) never depart, day nor night, from the sight of the compasse; and have another before them; whereby they see what they doe, and are ever witnesses of the good or bad steeridge of all men that do take the helme.¹

The navigational hazards of the *carreira da India* did not deter many people of all classes from sailing to seek their fortune in the East. The Italian Jesuit Visitor, Alexander Valignano, who made the voyage himself in 1574, noted that: 'it is an astounding thing to see the facility and frequency with which the Portuguese embark for India. . . . Each year four or five carracks leave Lisbon full of them; and many embark as if they were going no further than a league from Lisbon, taking with them only a shirt and two loaves in the hand, and carrying a cheese and a jar of marmalade, without any other kind of provision.'²

The resultant overcrowding and lack of elementary hygiene were appalling. By the time the carracks reached the equator they were often floating pest-houses, and their occupants died like flies. They had to endure extreme heat in the Gulf of Guinea, where they were sometimes becalmed for weeks together, and bitter cold off the Cape of Good Hope. Tropical rain and seasonal storms wetted or chilled them to the bone, especially the large numbers who had no place to sleep but on the upper decks. The ration-scale was quite adequate, consisting chiefly of biscuit, salted meat, dried fish, wine, and water, but it was not always adhered to as the regulations demanded; and fruit and fresh vegetables were naturally lacking after the first few days. Only the priests, *fidalgos*, and merchants had even the narrowest and most confined quarters. Most of the seamen and soldiers slept on the crowded

¹ *The Observations of Sir Richard Hawkins, Knight, in his Voyage into the South Sea, A.D. 1593* (ed. 1622), 57 of the Argonaut Press edition (1933). Pyrard de Laval likewise noted that a Portuguese pilot 'never leaves his place upon the poop, ever observing his needle and compass; in this he has a second pilot [*sota-piloto*] to help him' (*Voyage*, II, 189).

² Valignano, *Historia* (ed. 1944), 16.