45 · Maritime Cartography in the Low Countries during the Renaissance

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The Mediterranean was the cradle of European marine cartography, just as it had been the junction for commerce and transport as well as the center of sciences since the Middle Ages. When the focus of commerce and navigation moved to western Europe during the fifteenth and sixteenth centuries, new navigation centers were created. The tradition of navigation that had developed in the Mediterranean spread to the western European coasts. As the world was divided into a Spanish and a Portuguese sphere of influence, both of these countries played major roles in the area of transatlantic voyages, and they helped the art of navigation to flourish. In the beginning, the active range of Dutch seamen was restricted to the European coasts, but from 1580 onward, this range was extended.

The rise of trading and shipping in northwest Europe, focused on the Flemish ports and the Hanseatic cities, made nautical aids increasingly necessary. Nautical traditions and practices that had been developed in the Mediterranean were continued in the northwest in the fifteenth century and, following the example of the Italian portolanos covering the Mediterranean Sea, sailing directions were written for the North Sea and the Baltic Sea.

Production of and trade in nautical maps, pilot guides, and maritime atlases began to develop as an independent branch within commercial cartography by the middle of the sixteenth century. There is little that points to any decisive influence from the large atlas publishers in the following century. At the peak of their rivalry in atlas production, Willem Jansz. Blaeu and Johannes Janssonius made only small attempts to expand their world atlases with their own nautical maps, although both were active in publishing pilot guides. Blaeu intended to publish a sea atlas for his Atlas major, but he never did. However, Janssonius's sea atlas formed part of his Atlas novus from 1656. Furthermore, within the realm of maritime cartography, there was no southern Dutch period to speak of. The occasional nautical map was published in Antwerp during the sixteenth century—the printers in Amsterdam at the time lacked both knowledge and experience—but the author and designer was invariably from the northern Low Countries.

Sailing directions, in their broadest sense, include both rutters (sailing directions that may contain coastal profiles) and pilot guides (books of sailing directions that contain coastal profiles and/or charts). In Dutch, the term for a rutter is *leeskaart*. Quite literally, it means "a book to be read as a chart" (*lees* meaning read and the syllable *kaart* denoting a chart), and it should not be confused with a drawn chart.

Along the coasts of western and northern Europe, the information in rutters was provided by experienced seamen familiar with small sections of the seas from many years of personal observation. As a result of the large tidal range and shoals, the North Sea and the Atlantic coasts of France and Great Britain were more difficult to sail than the Mediterranean, and consequently rutters used in those seas were more sophisticated and more necessary. The oldest specimen of a rutter for the North Sea and the Baltic is the fifteenth-century German manuscript "Seebuch." The oldest known printed rutter, *Le routier de la mer* by Pierre Garcie (sometimes called Ferrande), from 1483 or 1484, describes the coasts of England, Wales, France, and Portugal from the Schelde to the Strait of Gibraltar.²

Apart from written information on courses, distances, and landmarks, sailing directions also gave precise information on how to enter a port, often a delicate maneuver due to shoals along the North Sea coasts. Landmarks, indispensable because buoys were rare in the first half of the sixteenth century, were shown as illustrations for the first time in Garcie's expanded edition, *Le grant routtier* (1520).³ The rather crude woodcuts represented hilltops, dunes, mountains, remarkable steeples of churches, and

Abbreviations used in this chapter include: AN for C. Koeman, Atlantes Neerlandici: Bibliography of Terrestrial, Maritime and Celestial Atlases and Pilot Books Published in the Netherlands up to 1880, 6 vols. (Amsterdam: Theatrum Orbis Terrarum, 1967–85), and MCN for Günter Schilder, Monumenta cartographica Neerlandica (Alphen aan den Rijn: Canaletto, 1986–).

^{1.} Manuscript preserved in Hamburg, Commerzbibliothek. See W. Behrmann, "Über die niederdeutschen Seebücher des fünfzehnten und sechzehnten Jahrhunderts," *Mitteilungen der Geographischen Gesellschaft in Hamburg* 21 (1906): 63–176; reprinted in *Acta Cartographica* 15 (1972): 20–136.

^{2.} The only copy known is in the BNF (Rés. Z 2747). See also David Watkin Waters, *The Rutters of the Sea: The Sailing Directions of Pierre Garcie. A Study of the First English and French Printed Sailing Directions* (New Haven: Yale University Press, 1967).

^{3.} The only known copy of the first edition of the larger work (1520) is in the Bibliothèque de Niort.

castles. Improved illustrations, finely cut and very detailed, were introduced by Cornelis Anthonisz. in later Dutch sailing directions around 1543.⁴

From the thirteenth to the sixteenth century, portolan charts of the Mediterranean and adjacent coasts were needed in addition to written and pictorial information to visualize and plot distances and courses. Less necessary than rutters and pilot guides for short-distance sailing, where ships kept close to shore, they were indispensable for long-distance navigation because ships were away from land for several days and nights.

The marine cartographers of the Low Countries succeeded the Italian, Majorcan (or Catalan), and French chartmakers. They added detailed depictions of the North Sea and the Baltic and met the previously unsatisfied needs of merchants and skippers in the ports of the northern countries. Adequate charts of the coasts and seas of northern Europe by the chartmakers of the Low Countries did not appear until approximately 1550. Paradoxically, printed charts appear to antedate manuscript charts in the Low Countries (as in Scandinavia and Germany), with no known manuscript charts dated prior to about 1588. The general trend in the history of the graphic arts shows transmission from Italy and Spain into France, but no farther, which also applies to the illuminating of manuscript charts. Moreover, manuscript charts on parchment were simply too expensive for a pilot's purse. The paper products of the printing press, however, brought printers and customers together. A full-fledged manuscript chartmaker's school, like the nearby Dieppe School, did not flourish in the Low Countries until the last quarter of the sixteenth century.5

In 1584, Lucas Jansz. Waghenaer of Enkhuizen published the *Spieghel der zeevaerdt*, for the first time incorporating charts in a book of sailing directions. Waghenaer's charts were clearly intended for pilotage, for entering ports, and for sailing along the coasts of western Europe, and not for ocean navigation. This book, so different from conventional pilot books, soon became known as a *waggoner* whether Waghenaer published it or not. In addition to the *waggoners*, books comprised exclusively of sea charts were published in the seventeenth century. These sea atlases contained from ten to fifty charts without text, usually preceded by a short introduction to the art of navigation.

DUTCH PILOT GUIDES AND SEA ATLASES

THE FIRST RUTTERS AND PILOT BOOKS SUPPLEMENTED BY CHARTS

Besides a sounding line and compass, sailing instructions and rutters describing the coastline were the most important aids to navigation that Dutch seamen used.⁶ At first, rutters of frequently sailed waters were written by pilots

who were handy with a pen and drawing instruments. They indicated the routes and distances between harbors and capes and included the pilots' own practical findings from their travels as well as information provided by the local population—mainly regarding sailing in difficult waters—on landmarks, tides, and so forth. Sometimes, they were illustrated by simple sketches of the capes and coasts, so the notes and map sketches served as aids to orientation for the next journey. These rutters may be seen as precursors of the sea chart.

The text of the rutters of northwest Europe began at the Flemish coast and followed the coasts of Holland, Friesland, the Deutsche Bucht, Denmark, and the Baltic. A separate chapter dealt with the Zuiderzee, and the rutter often concluded with a chapter on maritime law, the so-called sea law of Wisbuy.⁷

Printed rutters appeared during the first half of the sixteenth century (see appendix 45.1 and fig. 45.1). Publishers in Amsterdam, such as Jan Seversz. and Jan Jacobsz., printed them in response to the favorable commercial climate and the increasing need for navigational aids. Initially, these little booklets in duodecimo size covered both the Western and Eastern navigations but did not include any land explorations as illustrations. 10

- 4. Cornelis Anthonisz. of Amsterdam is generally accepted as the innovator of the style and format of printed sailing directions wherein the coastal profiles play a dominant role.
- 5. C. Koeman, "The Chart Trade in Europe from Its Origin to Modern Times," *Terrae Incognitae* 12 (1980): 49–64; reprinted in C. Koeman, *Miscellanea Cartographica: Contributions to the History of Cartography* (Utrecht: HES, 1988), 349–64.
- 6. A good insight on this subject is found in Arend W. Lang, Seekarten der südlichen Nord- und Ostsee: Ihre Entwicklung von den Anfängen bis zum Ende des 18. Jahrhunderts (Hamburg: Deutsches Hydrographisches Institut, 1968).
- 7. The so-called sea law of Wisbuy is a corpus of juridical provisions regulating the relations between ship owners and masters, between ship owners and the cargo, and between port authorities and the ship masters and pilots. This corpus has been composed from rules and provisions first written down in the fifteenth century at Visby on the island of Gotland in the Baltic Sea. It occupies a chapter in various editions of the Dutch rutter *Die kaert vander zee*.
- 8. AN, 4:7–16; C. Koeman, The History of Lucas Janszoon Waghenaer and His "Spieghel der Zeevaerdt" (Amsterdam-Lausanne: Elsevier-Sequoia, 1964), chap. 2; Willem F. J. Mörzer Bruyns, "Leeskaarten en paskaarten uit de Nederlanden: Een beknopt overzicht van gedrukte navigatiemiddelen uit de zestiende eeuw," in Lucas Jansz. Waghenaer van Enckhuysen: De maritieme cartografie in de Nederlanden in de zestiende en het begin van de zeventiende eeuw (Enkhuizen: Vereniging "Vrienden van het Zuiderzeemuseum," 1984), 11–20; and idem, Konst der stuurlieden: Stuurmanskunst en maritieme cartografie in acht portretten, 1540–2000 (Amsterdam: Stichting Nederlands Scheepvaartmuseum Amsterdam; Zutphen: Walburg Pers, 2001).
- 9. On Jan Seversz., see E. W. Moes and C. P. Burger, *De Amster-damsche boekdrukkers en uitgevers in de zestiende eeuw*, 4 vols. (Amsterdam, 1900–1915; reprinted Utrecht: HES, 1988), 1:109–20. On Jan Jacobsz., see idem, *Amsterdamsche boekdrukkers*, 1:181–85.
- 10. The traditional organization of sailing directions was, first, an introduction to the art of navigation, then directions for Eastern naviga-

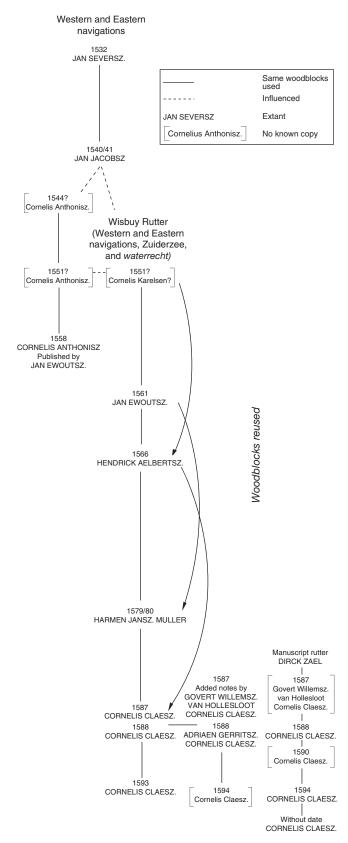


FIG. 45.1. DIAGRAM OF DUTCH PRINTED RUTTERS, 1532–94. Based on MCN, 7:28 (fig. 2.10).



FIG. 45.2. TITLE PAGE OF JAN SEVERSZ.'S DE KAERT VA[N]DER ZEE, 1532.

Size of the original: 14.8×9.5 cm. Photograph copyright Royal Library of Belgium, Brussels (Section des cartes et plans, II 28.584 A[RP]).

The oldest known printed rutter was published by Jan Seversz. in 1532, but the only extant copy is incomplete. *De kaert va[n]der zee* (fig. 45.2) gives an extensive description of the North Sea coast, France, Spain, and the southern coast of England, with its tides, currents, distances, and routes, and gives instructions for navigation to Norway and through the Öresund to Gdańsk, Riga, Gotland, and Tallinn.¹¹ The text is the result of notes on

tion (of the Baltic, the coasts of Norway, and the North Sea), and finally directions for Western navigation (of the English Channel and the coasts of France, Spain, and Portugal).

11. Moes and Burger, Amsterdamsche boekdrukkers, 1:118–20; C. P. Burger, "Oude Hollandsche zeevaart-uitgaven: De oudste leeskaarten," Tijdschrift voor boek- en bibliotheekwezen 6 (1908): 241–61, esp. 251–55; Lang, Seekarten, 9–10; and AN, 4:12 (K.v.d.Z.1). An edited version of this 1532 rutter is Jan Seversz., De kaert vander zee van Jan Seuerszoon (1532): Het oudste gedrukte Nederlandsche leeskaartboek, ed. Johannes Knudsen (Copenhagen: G. E. C. Gads, 1914), in which Knudsen presents the relevant divergences from the

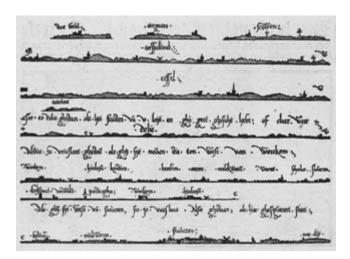


FIG. 45.3. WOODCUT PROFILES FROM CORNELIS ANTHONISZ.'S CAERTE VAN DIE OOSTERSE SEE, 1558. The profiles were about 20 cm wide.

By permission of Houghton Library, Harvard University.

the same stretch of coast made by various helmsmen. Despite its imperfections, Burger calls it the *editio princeps* of Dutch rutters.¹²

After Jan Seversz. died in 1538, Jan Jacobsz. took over his shop and printing establishment and in 1540 and 1541 published an expanded and revised edition of the rutter.¹³ Besides additions and corrections regarding the English and northern waters, the new edition was primarily intended to give a fuller description of the Dutch waters, as is evident not only from the remarks on the islands of the Wadden Zee and the most important estuaries, but also from the addition of an essay on the Zuiderzee as a separate booklet dated 1540, describing the course from and to Amsterdam and specifying all the beacons, buoys, depths, and tides. The rutter of the Zuiderzee is followed by a treatise on the waterrecht (law of the seas) of Amsterdam, with its own title page and imprint. Even though this and subsequent editions were extensively revised and corrected, the same form was generally followed, and this combination of navigational description and maritime law prevailed for over half a century. 14 The printer must have been given some kind of privilege, because there is a statement prohibiting the printing of copies without permission from the government of Amsterdam. 15 There is also a reference to the place of sale: one of the little shops on the Old Bridge that at the time was let to Seversz. and after his death was kept on by Jacobsz. Despite the improvements, this rutter still belongs to the early stage of development of printed rutters in light of its uneven treatment of the various coastlines and subjects.

Cornelis Anthonisz. wrote an extensive account of the navigation of the Baltic area to complement his famous chart *Caerte van Oostlant* (1543). ¹⁶ Three editions of this written rutter appeared: the oldest probably in 1544, fol-

lowed by another around 1551, and the third—the only known copy—in 1558.17 This seventy-six-page booklet was composed of two parts: the first, a textbook on the art of navigation, and the second, the rutter.¹⁸ Both parts contain many long woodcut profiles, which determined the oblong shape of the book (fig. 45.3). The easily understandable and clear representation of the numerous coastal profiles certainly would have helped a helmsman who, as far as was possible, stayed in sight of the coastline and the islands lying along the coast. That is why the accurate representation of striking points and landfalls looming on the horizon was of such great significance, and coastal profiles remained in use as an aid to navigation. Among his sources, Anthonisz, mentioned reports of experienced seafarers, including an old man who had sailed the seas for over fifty years.¹⁹ The basis of his work, how-

anonymous manuscript rutter "Seebuch" (ca. 1450) and the printed 1541 rutter by Jan Jacobsz.

12. Burger, "De oudste leeskaarten," 255.

13. Dit is die kaerte van dye Suyd zee (1540), in 2 parts, and Dit is die caerte von der zee (1541), both reprinted in facsimile (Leiden: E. J. Brill, 1885). See also Moes and Burger, Amsterdamsche boekdrukkers, 1:181–83; Burger, "De oudste leeskaarten," 255–59; C. P. Burger, "Oude Hollandsche zeevaart-uitgaven: Het leeskaartboek van Wisbuy," Tijdschrift voor boek- en bibliotheekwezen 7 (1909): 1–17 and 49–60, esp. 1–2; idem, "Oude Hollandsche zeevaart-uitgaven: De zeekaarten van Cornelis Anthonisz.," Het Boek 2 (1913): 283–85; idem, "Oude Hollandsche zeevaart-uitgaven: Het waterrecht," Tijdschrift voor boek- en bibliotheekwezen 7 (1909): 123–32 and 157–72, esp. 166; F. J. Dubiez, Cornelis Anthoniszoon van Amsterdam: Zijn leven en werken, ca. 1507–1553 (Amsterdam: H. D. Pfann, 1969), 88–89; and AN, 4:12 (K.v.d.Z.2 and K.v.d.Z.3).

14. About the waterrecht, see Burger, "Het waterrecht."

15. "No one shall print these rutters unless he has permission of the Amsterdam magistrates or their representative, those who lay buoys or set beacons."

16. Woodblock print in nine sheets. The only known copy of a third edition, published in Antwerp by Arnold Nicolai, has been preserved in Wolfenbüttel, Herzog August Bibliothek (K 1.1). See figure 45.10. A full-size facsimile is in Arend W. Lang, Historisches Seekartenwerk der Deutschen Bucht, vol. 1 (Neumünster: K. Wachholtz, 1969). Lang also wrote a monograph about this chart: Die "Caerte van Oostlant" des Cornelis Anthonisz., 1543: Die älteste gedruckte Seekarte Nordeuropas und ihre Segelanweisung (Hamburg: Ernst Kabel, 1986).

17. An extensive description can be found in Lang, "Caerte van Oostlant," 58–61 (erroneously giving the Taylor Collection at Yale University, New Haven, instead of the Houghton Library, Harvard University, Cambridge).

18. Part 1 of Anthonisz.'s rutter is titled Onderwijsinge vander zee, om stuermanschap te leeren... and part 2, Hier beghint die Caerte van die Oosterse See... See Otto Steppes, Cornelis Anthonisz "Onderwijsinge van der zee" (1558) (Juist: Die Bake, 1966), and Lang, "Caerte van Oostlant," 82–85.

19. "Which I have partly from an old seaman who used the sea for probably fifty years, and then secondly from the most famous pilots, and other writings and directions which I have received and gathered a great expense, with great effort and toil." Quoted in the introduction, "Aen den leser," to part 1 of Anthonisz.'s rutter (the Onderwijsinge vander zee).

ever, was the descriptions of the waters and coasts available in the rutter that Jan Jacobsz. had published in 1541.

We can only guess about the content and the appearance of the two older editions of Anthonisz.'s rutter, both of which have been lost. No doubt they also contained coastal profiles, because Anthonisz. had indicated as much on his chart of 1543. He wanted to complement the chart with descriptions in a rutter "with depictions of certain coasts in the manner in which they are seen by seafarers." 20 It is generally assumed that the older editions were not published in oblong octavo format but in high octavo and that some of the profiles of the first editions were preserved (as prints made from woodblocks cut by Anthonisz. himself or as contemporary replicas) in the leeskaartboek van Wisbuy (the editions of ca. 1551, 1561, and 1566 as well as later editions), which cover both Western and Eastern navigations.²¹ The distinguishing features of Anthonisz.'s coastal profiles have been drawn with great care, providing evidence that he could only have drawn them by personally making the journeys. His work clearly reflects the goal he set for himself: in the rutter he attempted to explain and describe, as precisely as possible, both in text and in pictures, the routes most traveled at the time by the Dutch merchant marine fleet, especially for the trade in grain and salt, on the North and Baltic Seas. But he also gave due attention to the sailing journals of the "Vaart op de kleine Oost," to river approaches—instructions for entering the Ems, the Weser, and the Elbe—and to setting course for the southern coasts of Scandinavia as far as the Öresund.

The Leeskaartboek van Wisbuy

Cornelis Anthonisz.'s work significantly influenced the rutter known far and wide as the *leeskaartboek* van Wisbuy (Wisbuy rutter).²² For over forty years, this rutter served as a guide to seafarers from various countries. Like the older Jacobsz. rutter, the Wisbuy rutter was part of a book in three parts: general sailing instructions for the Western and Eastern navigations (the Wisbuy rutter), a description of navigation in the Zuiderzee, and the *waterrecht*. The texts were based largely on the older rutter, though they also contain significant additions. An important difference between this edition and the older ones is found in the woodcut coastal profiles that illustrate the text. Some are thought to go back to both of Cornelis Anthonisz.'s oldest, though not extant, editions of 1544 and 1551.

Like so many documents made to be used at sea, copies of these rutters are extremely rare today. The oldest edition, that of 1551, was mentioned in the eighteenth century by a bibliophile who noted its location in a private library in Minden, Germany. Today, however, nothing is

known of that copy.²³ The oldest extant copy of the *leeskaartboek* van Wisbuy dates from 1561. It is bound together with a description of the Zuiderzee, which was made to accompany it and is dated one year prior to the rutter,²⁴ as well as with the *waterrecht*. It was published and printed by the Amsterdam bookseller Jan Ewoutsz., who lived in the Kerkstraat.²⁵ Ewoutsz. did not have access to the woodcuts of the previous publisher, but as a skilled woodcutter, he could replicate the series of coastal profiles to use in his edition. The same woodblocks were used again to illustrate a later edition published by his son, Harmen Jansz. Muller.

Five years later, in 1566, Jan Roelants brought out a new edition of the *leeskaartboek* van Wisbuy. The colophon says it was printed in Antwerp rather than in Amsterdam.²⁶ But evidence that it was published in Amsterdam is found in the mark of the falcon and the fact that the coat of arms of Amsterdam is shown below the monogram of the printer. Moreover, the treatise on the *waterrecht* that forms part of this edition refers to Hendrick Aelbertsz., a publisher in Amsterdam.²⁷ The impetus for publishing the rutter could have come from Aelbertsz.'s relations with the family of Cornelis Karelsen, for Aelbertsz.

- 23. Burger, "Het leeskaartboek van Wisbuy," 2–3. Burger also refers to a short work published in Amsterdam by Cornelis Karelsen and printed in Kampen by Steven Joessen's printing house. Karelsen published several works in the years 1546–54, printed by Joessen; see Moes and Burger, *Amsterdamsche boekdrukkers*, 1:203–15.
- 24. The leeskaartboek is titled Dits die caerte vander see om oost en[de] west te seylen, en[de] is vandie beste piloots, en[de] is wt die alderveste caerten gecorrigeert . . . ; the Zuiderzee rutter is titled Dit is die caerte vander Suyder See . . . (1560). See C. P. Burger, "Een 16°-eeuwsch zeekaartboekje teruggevonden," Het Boek 8 (1919): 225–28; the introduction by Burger in Anthonisz., Het leeskaartboek van Wisbuy, xix-xxi; and AN, 4:12–13 (K.v.d.Z.5).
- 25. On Ewoutsz., see Moes and Burger, Amsterdamsche boek-drukkers, 1:148-78.
- 26. Titled Dit is die caerte vander see om oost ende west te seylen, ende is van die beste piloots ende wt de alder beste caerten ghecorrigeert... See Burger, "Het leeskaartboek van Wisbuy," 4–5, and AN, 4:13 (K.v.d.Z.7).
- 27. The imprint reads: "They can also be found for sale in Amsterdam in the Gulde[n] Bybel, at the house of the bookseller Heyndrick

^{20.} This quote is from the Latin explanation to the reader on the 1543 chart.

^{21.} Lang, "Caerte van Oostlant," 78. The coastal profiles in the leeskaartboek van Wisbuy are shorter and thicker.

^{22.} See Burger, "Het leeskaartboek van Wisbuy," and Cornelis Anthonisz., Het leeskaartboek van Wisbuy: Gedrukt te Antwerpen by Jan Roelants en te koop te Amsterdam by Hendrick Albertsz, 1566, ed. Johannes Knudsen, intro. C. P. Burger (The Hague: Martinus Nijhoff, 1920). The name was the source of confusion in two respects. The waterrecht was generally taken to be a law of Wisbuy. Subsequently, the rutter itself was therefore presumed to be an old work that had originated in that renowned Baltic city, which by then was already in decline. Lucas Jansz. Waghenaer refers to it as "this very famous rutter of the renowned city of Wisbuy."

acted as guardian for Karelsen's children. The printer did not use the woodblocks of the coastal profiles made by Jan Ewoutsz. in 1560/61. Instead, he used Karelsen's woodblocks or perhaps more recent copies thereof. The newly cut printer's monogram may be interpreted as evidence in support of new copies.

The next known edition of the *leeskaartboek* van Wisbuy was published by Harmen Jansz. Muller, who succeeded his father, Jan Ewoutsz., around 1570.²⁸ The only extant copy is nearly complete (fig. 45.4). The three parts—the rutter for the Western and Eastern navigations, the rutter for the Zuiderzee, and the *waterrecht*—are dated 1579 and 1580.²⁹ Muller had his father's series of woodblocks at his disposal, and a comparison with the 1566 edition shows the only differences are minor adaptations to the text.³⁰

The last editions of the *leeskaartboek* van Wisbuy were printed by Cornelis Claesz. in 1587–88. The fact that there was still interest in this old and out-of-date booklet demonstrates how wedded seafarers were to traditional knowledge and practices. In the meantime, however, the rutters by Govert Willemsz. van Hollesloot and Adriaen Gerritsz. were already in press at Claesz.'s house, and the pioneering works by Waghenaer and Aelbert Haeyen had already been published by the branch of the Plantijn publishing house in Leiden. Nonetheless, it was apparently still sufficiently lucrative for Claesz. to bring out an unaltered edition of the *leeskaartboek* van Wisbuy. It followed the traditional three-part construction. However, no complete copy containing all three parts in a single binding is known today.³¹

Manuscript Rutters Published Later by Claesz.

Despite new developments in the field of navigation, older works were still being reprinted. Continued demand for the *leeskaartboek* van Wisbuy—the pilot guide born of experience of the seas, coasts, and harbors of northern and western Europe—still existed. In addition to these printed rutters, hand-written rutters still enjoyed widespread use. Some belonged to experienced seafarers, and these personal journals provided quite a bit more information than the old printed booklets. The demand for this kind of rutter was so keen that an enterprising publisher, Cornelis Claesz., was lured into publishing a number of such works, most of which he acquired from the estates of two renowned helmsmen, Govert Willemsz. van Hollesloot and Adriaen Gerritsz. of Haarlem.

Lucas Jansz. Waghenaer provided some important details about these editions in his *Thresoor der zeevaert* (1592). When collating his pilot guide, Waghenaer studied all of the earlier rutters and charts and compared them with one another. Indeed, his work opens with a "Regis-

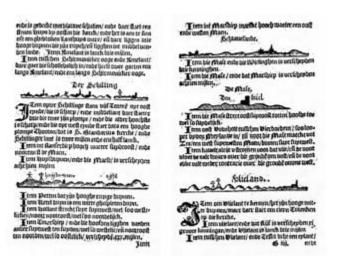


FIG. 45.4. FACING PAGES FROM HARMEN JANSZ. MULLER'S *DE CAERTE VANDER ZEE*, 1579/80. Nederlands Sheepvaartmuseum, Amsterdam (inv. no. S.0584[02]). Permission courtesy of Uitgeverij Canaletto/Repro-Holland, Alphen aan den Rijn.

ter of the mistakes and falsifications of all the charts that were made for the Eastern and Western navigation." ³² In

Aelbrechtson." On Hendrick Albertsz., see Moes and Burger, Amsterdamsche boekdrukkers, 1:217–37.

28. On Muller, see Moes and Burger, *Amsterdamsche boekdrukkers*, 1:285–337; *The New Hollstein Dutch & Flemish Etchings*, Engravings and Woodcuts, 1450–1700, vols. 15–17, *The Muller Dynasty*, 3 vols., comp. J. P. Filedt Kok et al., ed. Ger Luijten and Christiaan Schuckman (Rotterdam: Sound & Vision Interactive Rotterdam, 1999), esp. 1:73–75 and 3:19–22; and *MCN*, vol. 7.

29. The three parts, now separated, were once united in one volume and formed part of the J. W. Six Collection. See the auction catalog *Catalogue de la Bibliothèque de M.-J. W. Six de Vromade*, 2 vols. (The Hague: Van Stockum's Antiquariaat, 1925), 1:91 (lot 501). See also Burger, "Het leeskaartboek van Wisbuy," 5–7; *Nederlands Historisch Scheepvaart Museum: Catalogus der Bibliotheek* (Amsterdam: N. Israel, 1960), 64 and 941; *AN*, 4:13 (K.v.d.Z.9); and Paul Valkema Blouw, *Typographia Batava*, 1541–1600: *Repertorium van boeken gedrukt in Nederland tussen* 1541 en 1600, 2 vols. (Nieuwkoop: De Graaf, 1998), 2756.

30. Knudsen's annotated edition of Anthonisz., *Het leeskaartboek van Wisbuy*, mentions the most important differences between the two editions in the footnotes.

31. The rutter dated 1588 is in Göttingen (see Burger, "Het leeskaartboek van Wisbuy," 7), acquired from Frederik Muller, *Catalogue of Books, Maps, Plates on America* (Amsterdam, 1872; reprinted Amsterdam: N. Israel, 1966), no. 2329. See MCN, 7:33 n. 40. There are three known editions of the sailing instructions for the Zuiderzee dated 1587 and 1593; see Valkema Blouw, *Typographia Batava*, 1541–1600, 2763–65, and John S. Kebabian, comp., *The Henry C. Taylor Collection* (New Haven: Yale University Library, 1971), 35 (no. 186). There are also several known editions of the *waterrecht* dated from 1587 to 1590; see Burger, "Het leeskaartboek van Wisbuy," 7–8, and *Nederlands Historisch Scheepvaart Museum*, 941.

32. Lucas Jansz. Waghenaer, *Thresoor der zeevaert* (1592), fol. B; see idem, *Thresoor der zeevaert: Leyden 1592* (Amsterdam: Theatrum Orbis Terrarum, 1965).

the first chapter, he reviewed the mistakes in the "oude Leescaerteboeck van Wisbuy." To compile the list of errors, he used an edition with some notes ascribed to Govert Willemsz. van Hollesloot that had been added to the text in smaller print. In the second chapter, Waghenaer specified the errors and shortcomings he found in the "rutter, attributed to Govert Willemsz, Anno 1587."

Another contemporary work gives an even more complete summary of the aids to navigation in use at the time and sheds light on the rutter attributed to Govert Willemsz. Adriaen Veen also conducted an extensive comparative study of all the rutters and charts.³³ He published the results in the form of a table in his Napasser vande westersche ende oostersche zee-vaert (1597). At the beginning of the work is a list of the sources he studied, a list that includes two works by Willemsz. van Hollesloot: one printed in 1590, the Groote zee-caertbouck, and an undated Kleyne zee-caertbouck.34 The latter was undoubtedly meant to be the "oude Leescaert bouck van Wisbuy" that Waghenaer cited in 1592. It was published in 1587/ 88 and is the one in which additional notes in a smaller typeface were inserted, ascribed to Govert Willemsz. van Hollesloot.

At present, a copy of Willemsz. van Hollesloot's work is bound with three other small contemporary printed works.³⁵ The title page confirms that it is a reissue of the leeskaartboek van Wisbuy, with the additions in smaller print ascribed to Willemsz. van Hollesloot. Moreover, we now know that Cornelis Claesz. published it. The old leeskaartboek van Wisbuy was not adequate in certain circles of helmsmen, who apparently wanted a corrected inexpensive edition. Cornelis Claesz. met this demand by using the Willemsz. van Hollesloot version with notes. On the reverse of the title page, in smaller print, is Govert Willemsz. van Hollesloot's account, which apparently was based on notes this famed helmsman had written himself repeatedly referring to his own experience on sailing voyages.³⁶ At the end of the booklet, Claesz. appealed to his clientele to draw his attention to any errors they might find so that he could immediately amend and correct the text.³⁷

In 1587, Cornelis Claesz. commissioned printer Peter Jansz. in Harlingen to print another work using Willemsz.'s name. This work was cited by Waghenaer as the *Kaertboeck*, *dat Gouert Willemsz. toe gheschreuen wort* (1587) and by Veen as the *Groote zee-caertbouck* (1590).³⁸ It differs from the printed rutters described thus far in its extensive illustrations, which vary widely in quality. In some instances, the old coastal profiles were cut anew without any changes. In other cases, new coastal profiles and sketches were made in a much longer format, sometimes running across two pages. The sketches are very diverse: they range from quick, rough drawings (in combination perspective, oblique, and profile views) to woodcuts that were more carefully made and finished.³⁹ Burger assumed

that the work was created by collating drawings and sketches that were found in the estate of Govert Willemsz. van Hollesloot, and that this entire work is tied to a text of the old rutter that this helmsman himself might already have rearranged during his voyages, expanding and correcting it, as the title indicates with the words "by various helmsmen much expanded." ⁴⁰

- 33. On Adriaen Veen, see Moes and Burger, Amsterdamsche boekdrukkers, 3:187–225; W. Voorbeijtel Cannenburg, "Adriaen Veen's 'Napasser' en de 'ronde, gebulte kaarten," Jaarverslag Vereeniging Nederlandsch Historisch Scheepvaart Museum 7 (1923): 74–78; Ernst Crone, "Adriaen Veen en zijn 'gebulte kaart," Mededelingen van de Nederlandse Vereniging voor Zeegeschiedenis 12 (1966): 1–9; and C. Koeman, "De 'zeepasser' van Adriaen Veen," Mededelingen van de Nederlandse Vereniging voor Zeegeschiedenis 33 (1976): 5–17.
- 34. The sources listed were "Lucas Jansz. Waghenaers: Thresoor. Generale Pascaert van Europa ghedruct Anno 1589. Spieghel. Pascaert inde Spieghel ghedruct Anno 1592. Adriaen Gerritsz.: Zeevaert ghedruct Anno 1594. Pascaert ghedruct Anno 1591. C. D.: Graed bouck oude stijl. Pascaert vant Oosterwater ghedruct Anno 1589. Govert Willemsz.: Groote Zee-caertbouck ghedruct Anno 1590. Kleyne Zeecaertbouck.'t Graed-bouck nieuwe Styl. Albert Hayens Amsterdamsche zeecaert ghedruct Anno 1594. De Ronde ghebulte Pas-caerte."
- 35. De caerte vander zee, om oost ende west te seylen, ende is van de beste piloots, ende wt die beste caerten ghecorrigeert, die men weet te vinden, ende elck cust op zijn gestelt, elck met zijn figueren verbetert, ende vermeerdert: Opt nieus met veel tijts en moeyte van Gouert Willemsz. vermeerdert . . . ; copy in Amsterdam, Universiteitsbibliotheek. See Valkema Blouw, Typographia Batava, 2757.
- 36. "To wit. Truly I was happy to note that many shipmasters already have this nautical map in their ship without any further aid and so I have added something in between so that any seafaring man will be fine and often make good use of it. Fare well. By Master Gouert Willemsen van Hollesloot." And, opposite fol. L, "I, Gouert Willemsz., have sailed as follows," followed by sailing instructions in small type covering more than one page.
- 37. "I ask that each and every pilot and shipmaster, and all who have knowledge of the sea, that they will make notes of everything on this rutter that is omitted or wrong and turn them over to me Cornelis Claesz., printer. I promise to correct them right away, and those who turn such in to me, I will pay them double for their efforts."
- 38. For an analysis, see C. P. Burger, "Oude Hollandsche zeevaartuitgaven: Het groote zeekaartboek van Govert Willemsz.," Tiidschrift voor boek- en bibliotheekwezen 9 (1911): 69-79. When Burger carried out his study of this work, other than the editions cited in Waghenaer and Veen, he knew only of an undated copy that was held in Amsterdam, Universiteitsbibliotheek. After a thorough analysis, he concluded that that copy must have been published after 1592, reasoning that many of the mistakes that Waghenaer had mentioned in his Thresoor had already been corrected. Other editions have since come to light: three copies from 1588, in Emden, in Göttingen (Behrmann, "Die niederdeutschen Seebücher," 141-43 and map V), and in Rotterdam, Maritiem Museum (AN, 4:517-18 [Wil 4]), and two copies from 1594, Amsterdam, Nederlands Scheepvaartmuseum, and Copenhagen, Mariens Bibliotek (A. E. Nordenskiöld, Periplus: An Essay on the Early History of Charts and Sailing-Directions, trans. Frances A. Bather [Stockholm: P. A. Norstedt & Söner, 1897], 106-7). See also AN, 4: 517-18 (Wil 2 and Wil 4); the Amsterdam, Universiteitsbibliotheek, copy is not a fourth edition, but an undated fifth edition.
- 39. See Behrmann, "Die niederdeutschen Seebücher," 141–43, for a description of the twenty-five most important sketches.
- 40. Burger, "Het groote zeekaartboek van Govert Willemsz.," 71.

This conclusion is only partially true. The maps and texts of Govert Willemsz. van Hollesloot very strongly resemble two anonymous manuscript rutters now in Antwerp and Brussels; in particular, the similarity to the copy in Brussels is astounding. When Denucé and Gernez compared the two manuscripts with Willemsz. van Hollesloot's printed work, they concluded that they were not copied from Willemsz. van Hollesloot; rather, the Brussels manuscript, or a copy of it, was used by the compilers of Willemsz. van Hollesloot's printed work. Furthermore, the Antwerp manuscript, which is older than the one in Brussels, seems to be closest to the original manuscript of the helmsman Dirck Zael, from which the Brussels manuscript also stems. 42

This comparative research also reveals that Willemsz.'s estate included a copy of a rutter by Zael, which Cornelis Claesz. published under the name of Govert Willemsz. van Hollesloot. The only essential additions to this rutter were several charts that were found when the estate was purchased. Two sketch maps show how Claesz. dealt with the situation. On the map of the Kattegat is the following remark: "We found this chart of Norway only at Govert Willemsz., and because it is the last work and better than the others, the chart has been added here." The other example is the map of the area around the delta of the rivers Eider, Elbe, and Weser. Here, Claesz. wrote: "This map of the Elbe, copied by Govert Willemsz., is correct and was therefore here added."

Claesz. also succeeded in obtaining the nautical and cartographic material of Adriaen Gerritsz., a "famous pilot and teacher of helmsmen" from Haarlem, who had died sometime around 1580. On 6 July 1585, the states of Holland and West Friesland granted his widow, Alijt Meynaerts, a patent for eight years "to print the charts, instruments, and other things concerning the art of navigation by her deceased husband practiced, made, and left behind." Alijt Meynaerts was needy; the patent refers to her as a "poor and insolvent widow with little children." Apparently, Claesz. took over the rights that had been granted to her and compensated her financially. In 1587, he published Gerritsz.'s chart of Europe, followed by his rutter the year after. 44

To a large extent, this rutter was apparently the result of Gerritsz.'s own work, though others helped finish the work after his untimely death.⁴⁵ Financial support for that effort came from Claesz., as is noted at the end of the word of thanks to the publisher.⁴⁶ Yet this must be viewed with caution, for Gerritsz.'s rutter was criticized in Waghenaer's *Thresoor*.⁴⁷ Waghenaer emphasized that the notebooks of the excellent helmsmen Willemsz. van Hollesloot and Gerritsz. had fallen into other hands and that no steps had been taken to have these texts checked and corrected. On the contrary, those who had taken possession of the texts immediately printed them, and, "what

is more, they have suppressed many things, which they did not understand and because they had not and do not have knowledge about matters concerning navigation." ⁴⁸ This sharp criticism was leveled at Cornelis Claesz.

The great interest in Gerritsz.'s rutter among seafarers is demonstrated by the fact that Adriaen Veen used a 1594 reprint of that work in his *Napasser* (1597).⁴⁹ Veen's tables show that the publisher actually took note of Waghenaer's criticisms. A large number of the mistakes mentioned in the *Thresoor* (1592) were corrected in the 1594 edition.⁵⁰ Gerritsz.'s work stands as a significant advancement when compared to the older *leeskaartboek* van Wisbuy; however, in view of the fact that Gerritsz.'s rutter was published late, the work was obsolete in many respects.

In conclusion, it is clear that the works published in 1587/88 and later under the name of Govert Willemsz. van Hollesloot were not typical of the rutters produced at the end of the sixteenth century in the Netherlands. Even though the rutters by Willemsz. van Hollesloot and Adriaen Gerritsz. were published later than Waghenaer's *Spieghel der zeevaerdt* (1584–85), they nonetheless reflect much earlier works and should be seen as precursors to the work of Waghenaer and Haeyen. Moreover, it should be realized that these works appeared only posthumously, and neither pilot had had the opportunity to select and edit his collected material or to take the necessary care in preparing it for publication.

- 41. Antwerp, Stadsbibliotheek (B 29166), and Brussels, Royal Library of Belgium (HS 27158). For a discussion of these manuscript rutters, see Jean Denucé and Désiré Gernez, Het Zeeboek: Handschrift van de Stedelijke boekerij te Antwerpen (Nr. B 29166) (Antwerp: "De Sikkel," 1936).
 - 42. Denucé and Gernez, Het Zeeboek, 65-72, esp. 70.
- 43. Resolutions by the States of Holland and West Friesland, 6 June 1585.
- 44. De zeevaert ende onderwijsinge der gantscher oostersche ende westersche zee = Vaerwater, door den vermaerden piloot ende leermeester der Stuerluyden Adriaen Gerritsz. van Haerlem. Two copies are known: The Hague, Nationaal Archief (formerly Algemeen Rijksarchief), and Lunds Universitets Bibliotek. See Moes and Burger, Amsterdamsche boekdrukkers, 2:57–58, and AN, 4:11 (which refers only to the copy in The Hague, Ger). A more detailed analysis was done by C. P. Burger in "Oude Hollandsche zeevaart-uitgaven: 'De Zeevaert' van Adriaen Gerritsz.," Het Boek 2 (1913): 113–28. Further references to this work are also in Lang, Seekarten, 33–34, and MCN, 7:40-43.
- 45. The title of the chart of Europe that Cornelis Claesz. published in 1587 also mentions "help from very honorable people."
- 46. That part of the note reads: "[Cornelis Claesz.] who has striven and brought to bear at great expense and effort."
- 47. In the fourth chapter of Waghenaer's register summarizing all the errors of the previous sea charts and rutters, he discusses extensively the shortcomings of Gerritsz.'s rutter; see Burger, "'De Zeevaert' van Adriaen Gerritsz.," 117–25.
- 48. Waghenaer, Thresoor (1592), xv-xviii.
- 49. There is no known copy of this 1594 edition.
- 50. Burger, "'De Zeevaert' van Adriaen Gerritsz.," 119-20.

Cornelis Claesz. also published two unusual thin maritime booklets in duodecimo format. They are extremely rare today because they were so frequently taken on board ship for use at sea. Two types were published in the 1580s: one in the old style, *Graetboeck nae den ouden stijl* (calculated by the Julian calendar), and one in the new style, *Graetboecken naden nieuwen stijl* (calculated by the Gregorian calendar).

The forty-page *Graetboecxken naden nieuwen stijl*⁵¹ begins with tables for the declination of the sun for each day of four consecutive years—extremely important aids in determining latitude at sea. The booklet then gives information on indicators of the position and course of the sun and moon as well as figures on the declination of a number of fixed stars, followed by lists of the tides and observations on the currents. The last eight pages are devoted to a very concise rutter for the Eastern and Western navigations, ⁵² which Veen included in its entirety in his *Napasser* (1597). Claesz. printed various editions of the *Graetboecxken naden nieuwen stijl*. ⁵³

The twenty-eight-page *Graetboeck nae den ouden stijl* suggests that in certain circles of seafarers, Waghenaer's *Spieghel der zeevaerdt* (1584–85) was considered too revolutionary. Furthermore, as Claesz. explained to the reader in describing his reasons for publishing this edition, helmsmen still needed more simple and concise navigational aids:

As I hear that all the seafarers in the course of time do not understand the corrected "Graetboeck" as published in the pilot guide of the famous pilot and helmsman Lucas Jansz. Waghenaer, and also because all their astrolabes have not been corrected and the helmsmen follow the same old way, I published this "Graetboeck" for all the helmsmen's own good. As all tables published before had many mistakes, partly made by the printer or having slipped in in another way, this work has been corrected with great accuracy and at our great expense in such a way, that all people using it will have their convenience and profit.⁵⁴

For this edition, Claesz. brought in Cornelis Doetsz. (Doedsz., Doetsen, Doedis) of Edam, who was one of the most important representatives of the North Holland school of cartography. His name is recognizable in the initials found in this note on the title page: "Examined and found to be correct by C.D."55 Before Doetsz. established himself in Edam as a chartmaker, he had probably gone on sea voyages in his youth. His charts suggest that he had probably remained in close contact with the skippers and helmsmen he had known after he gave up life at sea. The earliest chart by Doetsz., published by Cornelis Claesz., dates from 1589 and shows the Eastern and Northern navigations.⁵⁶ Doetsz. discovered firsthand that there was a demand among the more conservative seafarers for a Graetboeck nae den ouden stijl. That knowledge probably influenced him in collaborating with Claesz.

The first ten pages of the booklet are taken up by tables giving the daily declination of the sun in four consecutive years, and this is followed by six pages devoted to tide tables. The rest of the booklet is a concise rutter for the Western and Eastern navigations. First, it gives distances along the coasts of Holland and Flanders followed by those for voyages along the coasts of France and on the Bay of Biscay, along the Iberian Peninsula, from the Marsdiep to England, and between England and France. After that are figures on the distances to the Baltic Sea without any further regional breakdown. It is fair to say that these declination tables—just like those in the leeskaartboek van Wisbuyhad their origin in a practical setting and apparently still filled a need felt by a number of helmsmen. Strangely enough, these outdated booklets were sold and taken to sea at the same time that Waghenaer's works were widely available.

The Pilot Guides by Waghenaer and Haeyen

Lucas Jansz. Waghenaer published three pilot guides in various formats—Spieghel der zeevaerdt, Thresoor der zeevaert, and Enchuyser zee-caert-boeck—which signify a milestone in the development of western European navigation and had a decisive influence on both his contemporaries and succeeding generations. In addition to the more complete works by Waghenaer, the Amstelredamsche zee-caerten by Aelbert Haeyen was also able to boast considerable success. With the expanding horizons of Dutch maritime trade along the coasts of western Europe, seamen clearly needed better aids to navigation, a demand met by Waghenaer's exceptional Spieghel.⁵⁷ It is little wonder that the stimulus for better pilot guides came from West Friesland, with its flourishing harbors on

^{51.} A copy of the *Graetboecxken naden nieuwen stijl*. once belonged to the library of J. W. Six de Vromade and was auctioned by Van Stockum in 1925. See *Catalogue de la Bibliothèque de M.-J. W. Six de Vromade*, 1:98 (lot 535). The same copy was described by C. P. Burger in "Kaartboeken van de tweede helft der XVIe eeuw," *Tijdschrift voor boek- en bibliotheekwezen* 8 (1910): 257–59, and is now in the Maritiem Museum, Rotterdam; see *MCN*, 7:42–45.

^{52.} Titled "Alle de Coersen ende streckinghen vande oost ende wester Zee."

^{53.} One fragment (four pages) is preserved. The title and text were typeset differently; see AN, 4:8.

^{54.} In the word to the reader of the *Graetboeck nae den ouden stijl*. See Günter Schilder, "De Noordhollandse cartografenschool," in *Lucas Jansz. Waghenaer van Enckhuysen: De maritieme cartografie in de Nederlanden in de zestiende en het begin van de zeventiende eeuw* (Enkhuizen: Vereniging "Vrienden van het Zuiderzeemuseum," 1984), 47–72, esp. 50, and *MCN*, 7:44–46.

^{55.} The initials were also used alone in Cornelis Claesz.'s 1589 publication of Cornelis Doetsz.'s chart of northern Europe.

^{56.} A facsimile is in MCN, vol. 7, facsimile 6.

^{57.} For facsimile editions, see Lucas Jansz. Waghenaer, Spieghel der zeevaerdt: Leyden, 1584–1585, bibliographical note by R. A. Skelton

the Zuiderzee and the prominence of shipping and commerce.

In the introduction and dedication to his works, Waghenaer gave a hint of how the material for his pilot guide was compiled. It is evident that during his active employment as a pilot, while sailing the expansive and dangerous waters between Cádiz and the west coast of Norway, he was actively preparing charts and textual material that would find a place in his future work. Indeed, Waghenaer repeatedly referred to his own depth measurements and findings. The high quality of the actual publication of the Spieghel was largely because Waghenaer gave the manuscripts to the Plantijn publishing house of Antwerp, which had opened a branch in Leiden.⁵⁸ Christoffel Plantijn, the publisher of Ortelius's Theatrum orbis terrarum from 1579, used the same format and a similar layout for Waghenaer's Spieghel. He chose Joannes van Doetecum, one of the best engravers of that period, to engrave the charts, which undoubtedly contributed to the creation of an extremely attractive pilot guide.⁵⁹ Clearly organized and beautifully executed, the Spieghel overshadowed all other commonly used rutters published thus far. Waghenaer financed the publication of the Spieghel an investment that was no doubt beyond his individual financial capacity. In the foreword to the second part of the Spieghel, he acknowledges the great support of his friend François Maelson, the mayor of Enkhuizen.

The first part of the Spieghel was published in 1584.60 It contained an overview map of western Europe, covering the coasts and seas between the North Cape and the Canary Islands as well as from Iceland to the Gulf of Finland, followed by twenty-two larger-scale charts of the Western navigation showing the coasts between the isle of Texel and Cádiz. This was followed by part 2, which had its own title page dated 1585 dedicated to the states of Holland and West Friesland followed by twenty-two charts of the Eastern navigation covering the waters lying east of the Zuiderzee up to Norway and Finland. The first detailed chart in the *Spieghel* shows the coast of Holland between Ameland and Katwijk. The last chart in the second part connects to this one: it shows the coast of the German part of Friesland and Groningen from the river Weser to Ameland.

The *Spieghel der zeevaerdt* begins with a beautifully engraved title page and dedication to Prince Willem van Oranje followed by an introduction to the art of navigation. In the thirty-three pages of part 1, there is a brief tract on cosmography and navigation, with tables to use to determine the tides of the new moon, instructions on how to find the declination of the sun using tables in the work, and tables to use to calculate the declination of the stars and an instrument to find them. The *Spieghel* explains the cross staff and how to use it, tells how to make and use a portolan chart, gives the routes and distances between many points on the coasts of western Europe,

and includes a tide table and notes on the depth measurements and sandbanks in various parts of the North Sea from the English Channel to the Bay of Biscay. Standard symbols for buoys, seamarks and landmarks, anchorages, reefs, rocks, and shoals are described in a legend and drawn on the charts for the first time in the history of chartmaking.

It is interesting to observe how systematically Waghenaer arranged the charts in the Spieghel. Each area is a unit consisting of four pages. The first page contains a description and sailing instructions for the coastal strip that is depicted on the map, which is shown on the second and third pages; the fourth page is blank. The charts themselves were drawn at a scale of about 1:400,000, with the mouths of the rivers and the harbors depicted at a larger scale (plate 54). For harbors, there are clusters of depth figures, indicating that these charts were used for sailing in and out of the harbors and rivers. Waghenaer combined the coastal profile and the coastline—a method already applied by the Portuguese mapmaker João de Castro in his rutter for the Red Sea (1541).61 Nevertheless, Waghenaer's original contribution was to apply this principle consistently in a series of consecutive coastal charts drawn at a uniform scale. A seaman could see at a glance what kind

(Amsterdam: Theatrum Orbis Terrarum, 1964), and Koeman, "Spieghel der Zeevaerdt." For information on Waghenaer, see R. D. Baart de la Faille, "Nieuwe gegevens over Lucas Jansz. Wagenaer," Het Boek 20 (1931): 145–60; Désiré Gernez, "Lucas Janszoon Wagenaer: A Chapter in the History of Guide-Books for Seamen," Mariner's Mirror 23 (1937): 190–97; idem, "The Works of Lucas Janszoon Wagenaer," Mariner's Mirror 23 (1937): 332–50; C. Koeman, "Lucas Janszoon Waghenaer: A Sixteenth Century Marine Cartographer," Geographical Journal 131 (1965): 202–17; Lucas Jansz. Waghenaer van Enckhuysen: De maritieme cartografie in de Nederlanden in de zestiende en het begin van de zeventiende eeuw (Enkhuizen: Vereniging "Vrienden van het Zuiderzeemuseum," 1984); and MCN, 7:47–75.

58. The most comprehensive work on the Officina Plantiniana is offered by Léon Voet, *The Golden Compasses: A History and Evaluation of the Printing and Publishing Activities of the Officina Plantiniana at Antwerp*, 2 vols. (Amsterdam: Vangendt, 1969–72). On the Leiden branch, see E. van Gulik, "Drukkers en geleerden: De Leidse Officina Plantiniana (1583–1619)," in *Leiden University in the Seventeenth Century: An Exchange of Learning*, ed. Th. H. Lunsingh Scheurleer and G. H. M. Posthumus Meyjes (Leiden: Universitaire Pers Leiden, 1975), 367–93

59. For information on the Van Doetecum family, see *The New Hollstein Dutch & Flemish Etchings, Engravings and Woodcuts 1450–1700*, vols. 7–10, *The Van Doetecum Family*, in 4 pts., comp. Henk Nalis, ed. Ger Luijten and Christiaan Schuckman (Rotterdam: Sound and Vision Interactive Rotterdam, 1998), esp. pt. 3, 229–82, which describes Joannes van Doetecum's work on the *Spieghel*.

60. The dedication copy is kept in Utrecht, Universiteitsbibliotheek (P. fol. 111 Rariora).

61. See the discussion of João de Castro on pp. 1015–17 in this volume; Désiré Gernez, "L'influence Portugaise sur la cartographie nautique Néerlandaise du XVI^e siècle," *Annales de Géographie* 46 (1937): 1–9; and Armando Cortesão and A. Teixeira da Mota, *Portugaliae monumenta cartographica*, 6 vols. (Lisbon, 1960; reprinted with an introduction and supplement by Alfredo Pinheiro Marques, Lisbon: Imprensa Nacional–Casa de Moeda, 1987), 1:137–44.

of coast (e.g., dunes or cliffs) he would have to deal with. Moreover, noteworthy structures along the coast and rising on the horizon farther inland (church towers, castles, windmills, trees, and beacons) were drawn in. In addition to the sailing instructions, the text contains some general remarks concerning products of the region.

The *Spieghel der zeevaerdt* went through a number of editions in various languages.⁶² The first state of the copperplates had the chart titles and the text accompanying the profiles in Dutch. In the second state, the titles were reengraved in Dutch and Latin, but having a bilingual text for the profiles detracted from the simple clarity of the charts. The third state shows the number of the copperplate in both lower margins of the charts.

In 1588, a pirated edition of the *Spieghel* was published in London titled *The Mariners Mirrour*.⁶³ The *Spieghel*'s title page and charts were copied by a team of engravers (Theodor de Bry, Augustine Ryther, and Jodocus Hondius), and the English translation was done by Anthony Ashley. Hondius worked in England from 1583 to 1593, when he possibly came into the possession of the copperplates for the English edition. After his return to Amsterdam, he published another edition in 1605.

In 1589, the worn plates and the right to publish the *Spieghel* were purchased by Cornelis Claesz., and the texts and charts were brought up to date according to the latest nautical information. In this new form, they appeared in various editions published in a collaborative venture by Claesz. in Amsterdam and Jean Bellère in Antwerp from 1589 until 1605.⁶⁴ In the French edition, a translation of the text describing the profiles was printed outside the chart's frame.

When Claesz, expanded the work in 1596, the title was changed to Den nieuwen Spieghel der zeevaert, and this title was pasted onto a newly designed title page. The smallscale chart of western Europe that appeared in the Latin edition engraved by Baptista van Doetecum in 1592, was considerably enlarged by adding the northern European coastline stretching eastward. To this and the following editions, two large-scale charts of the northern part of Norway and Ireland were added, both prepared by Willem Barents and engraved by Pieter van den Keere. A 1603 edition by Cornelis Claesz., Den groten dobbelden nieuwe Spiegel der zeevaert, had long sections of text and many coastal profiles from Waghenaer's Thresoor der zeevaert inserted between the map sheets. Three new doublesided maps and twelve smaller maps engraved by Benjamin Wright were added.

Claesz. offered Waghenaer's *Spieghel* for sale in various combinations. Customers could buy part 1 and part 2 separately for 3 guilders and 6 stuivers apiece. For the entire work, they had to lay out 6 guilders and 10 stuivers. In the end, the expanded version of the last edition cost 9 guilders and 10 stuivers.⁶⁵



FIG. 45.5. FRONTISPIECE FROM LUCAS JANSZ. WAGHENAER'S *THRESOOR DER ZEEVAERT*, 1592. Photograph courtesy of the Maritiem Museum, Rotterdam (WAE 125).

Around 1589, when Waghenaer sold the copperplates and the rights to publish the *Spieghel* to Claesz., he had already been mulling over the idea of compiling a new pilot guide. After the *Spieghel* was published, Waghenaer had busily set about collecting new hydrographical material on seas and routes that were not described in that work. There is little doubt that he obtained this information from Dutch skippers, revealing how much the Dutch fishing and trading territory had expanded since 1580.

Waghenaer had reached the conclusion that the folio format that he had used for the *Spieghel* was simply too big for seafarers. Moreover, he felt that its sailing instructions were not sufficiently elaborate. Therefore, he decided on both a different format and different illustrations for his second pilot guide, the *Thresoor der zeevaert*, published in 1592 by François van Raphelengien (Franciscus Raphelengius) in Leiden (fig. 45.5).66 He

^{62.} See AN, 4:477–501. Nalis, in Van Doetecum Family, pt. 2, 229–82, offers an analysis of the different states of the copperplates.

^{63.} About this edition, see Lucas Jansz. Waghenaer, *The Mariners Mirrour: London*, 1588 (Amsterdam: Theatrum Orbis Terrarum, 1966).

^{64.} For a detailed description of these editions, see AN, 4:490-96.

^{65.} Const ende caert-register, in welcke gheteyckent staen, alderhande soorten van caerten ende mappen des gantschen aertbodems, groot ende cleyn . . . (1609), fol. B³ (Wolfenbüttel, Herzog August Bibliothek). For more about this sale catalog, see B. van Selm, Een menighte treffelijcke boecken: Nederlandse boekhandelscatalogi in het begin van de zeventiende eeuw (Utrecht: HES, 1987), 174–319. See also MCN, 7:21–24.

^{66.} Concerning Waghenaer's *Thresoor der zeevaert*, see Edward Lynam, "Lucas Waghenaer's 'Thresoor der zeevaert,'" *British Museum Quarterly* 13 (1938–39): 91–94; Waghenaer, *Thresoor der zeevaert* (1965); *AN*, 4:502–12; and Nalis, *Van Doetecum Family*, with a detailed analysis of the different states of the charts in pt. 4, 61–90.

chose the much handier oblong format and went back to his original idea of illustrating the rutter with profiles in woodcut. It was certainly recognized that charts used alone for navigation were deficient in many ways and had to be supported by extensive texts.

Waghenaer's *Thresoor* consists of three parts and ends with a ten-page appendix on navigation outside European waters. The first part contains a much more elaborate treatise on the art of navigation than the one found in the Spieghel. The second and third parts together form the major portion of the pilot book. The second part contains twenty large-scale coastal charts and 166 pages of sailing instructions in twenty-one sections for the Western, Northern, and Eastern navigations. Throughout the text there are numerous woodcut profiles. In the first edition, five of the charts were signed by Joannes van Doetecum, but most of the remaining charts also follow that artist's style. For the first time in a Dutch publication, charts and sailing instructions for navigating the northern part of Scotland, the group of islands to the north of Scotland, and the White Sea were included. The third part of the Thresoor, containing sailing instructions without charts for the western part of the Mediterranean Sea, had its own title, and it is quite possible that it could have been purchased separately. The Thresoor was the oldest pilot book with sailing instructions for these waters.⁶⁷

The sailing instructions included in the *Thresoor* are more extensive and more accurate than those given in the Spieghel. Just as in the earlier rutters, the coastal profiles in the Thresoor were included in the text and not in the map. That practical arrangement is still in use today. The orientations of the charts vary, using the oblong format of the plates to its greatest advantage. The charts were drawn to the same scale (ca. 1:600,000) and were printed on two pages (fig. 45.6). The map titles were given in Dutch and French. Just as in the *Spieghel*, the coasts were drawn in profile, though they were shown in less detail because the scale is smaller and the mouths of the rivers and the harbor entrances were again depicted larger than the rest. There is a new item, however: lines of bearing were drawn in the direction of striking landmarks, inspired by Aelbert Haeven's Amstelredamsche zee-caerten (1585), and are evidence that Waghenaer recognized the reliability of Haeyen's method of depiction.

Waghenaer's *Thresoor der zeevaert* was appreciated in seafaring circles, as is witnessed by the continual flow of new editions. It was published only in Dutch and French; both of the first editions of 1592 came out of the Plantijn publishing house in Leiden, but all subsequent editions were printed in Amsterdam by Cornelis Claesz., although Waghenaer initially held the copyright.

Around 1601, the copperplates were so worn that they had to be replaced, and Claesz. had copies engraved using impressions from the original plates. The task was as-

signed to Benjamin Wright, Josua van den Ende, and members of the Van Doetecum family. In 1602, a Dutch edition was published with an added appendix of sailing instructions and coastal profiles for the East and West Indies. This edition shows the first Dutch attempts to break into the Portuguese empire in the East (the spice trade) and to penetrate the Spanish empire in the West (the trade in salt).

Claesz. published his last edition with a new title page and thirty charts in 1609, three years after Waghenaer's death and the year Cornelis Claesz. died, signaling the end of the publication of pilot books by Lucas Jansz. Waghenaer. One year earlier, in 1608, Willem Jansz. Blaeu had published his *Licht der zee-vaert*, following the *Thresoor* in format, construction, and chart design.

The rarest of Waghenaer's works is the *Enchuyser zee-caert-boeck*, which he had Cornelis Claesz. publish in 1598.⁶⁸ This octavo work served the simple seafarer who could not afford Waghenaer's other pilot guides. For a reasonable price, seamen could obtain extensive navigation information for Europe.

Waghenaer returned to the original form of the rutter for this pilot guide. The two little maps that accompany it (of the Zuiderzee and Enkhuizen) were added more as homage to Enkhuizen, his place of birth, than for the help they could offer to the helmsmen. The centerpiece of the work is a rutter for the Eastern and Western navigations that runs to no less than 346 pages and is illustrated with numerous woodcut coastal profiles. It also contains sailing instructions for voyages to West Africa and Brazil. The *Enchuyser zee-caert-boeck* was issued in second and third editions in 1601 and 1605, respectively.

Although Waghenaer's works were much more complete and well known, the *Amstelredamsche zee-caerten* by Aelbert Haeyen was also renowned for its great success.⁶⁹ Because sufficient descriptions were not available of the unreliable waters of the coasts of the North Sea and the route to the Baltic region, the city council of Amsterdam decided to initiate a "reformation of a new and correct as possible sea chart." ⁷⁰ The execution of this commission was entrusted to a helmsman from Haarlem, Aelbert Haeyen. In 1585, the Plantijn house in Leiden published

^{67.} Willem Barents's *Nieuwe beschryvinghe ende caertboeck vande Midlandtsche Zee*, published by Cornelis Claesz. in 1595, is the oldest printed atlas with full-size charts for navigation in the western part of the Mediterranean.

^{68.} AN, 4:513-16 (Wag 25). A copy is in Amsterdam, Nederlands Scheepvaartmuseum (A. 1309).

^{69.} On Aelbert Haeyen, see Moes and Burger, *Amsterdamsche boekdrukkers*, 3:37–52; Désiré Gernez, "Les Amstelredamsche zeecaerten d'Aelbert Haeyen," *De Gulden Passer/Compas d'Or* 12 (1934): 79–106; Lang, *Seekarten*, 29–32; and *AN*, 4:220–22.

^{70.} Quotation from the word to the reader in the 1585 edition (MCN, 7:57).

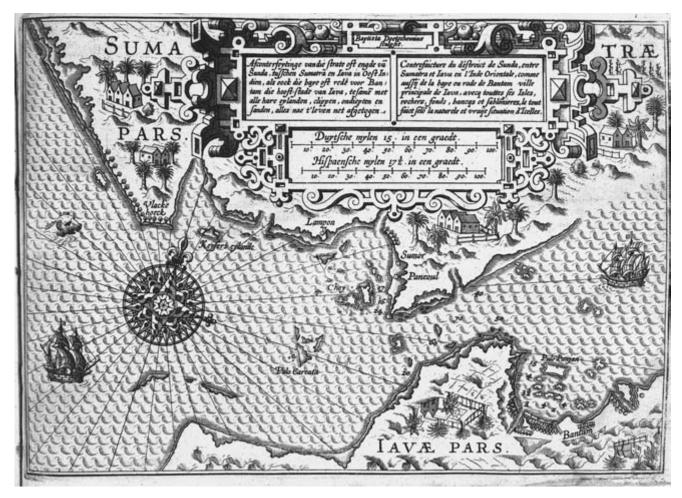


FIG. 45.6. CHART OF THE SUNDA STRAIT FROM WAGHENAER'S *THRESOOR*, 1602.

Size of the original: 18.8×26.7 cm. Photograph courtesy of the Maritiem Museum, Rotterdam (WAE 126).

the first part of Haeyen's *Amstelredamsche zee-caerten*, "in which descriptions as well as charts clearly and apparently indicate the difficulties of the bottoms, shallows, and sands confronting a seafarer between the Hoofden and Schaghen [the Strait of Dover and Skagen in Denmark] during the exiting and entering of the streams, rivers, and harbors situated between them." ⁷¹ With this description, Aelbert Haeyen briefly summarized his work. It received a positive response from helmsmen, who liked its handy size and its extensive treatment of the inlets and harbors in a limited area. The work includes five charts, noteworthy because bearing lines have been drawn in marking the location of the buoys, the limits of the shallows and channels, and so forth, with respect to certain prominent features.

In comparison to Waghenaer's *Spieghel*, Haeyen's *Amstelredamsche zee-caerten* placed much more emphasis on the description of the coastlines and the coastal waters. The charts provide a visual interpretation of the sailing instructions. Haeyen's work served the need of Dutch

seamen for a reliable guide, and it went through no fewer than five corrected print runs.

Willem Barents's Pilot Guide of the Mediterranean Sea, 1595

In view of the increase in shipping through the Strait of Gibraltar to Italy, Willem Barents started to make sailing descriptions and charts for the coasts along which the merchant mariners had to sail. Eventually, he decided to publish his notes and charts "for the good of navigation in general and in the interest of its progress." ⁷² This decision was undoubtedly influenced by Petrus Plancius and Cornelis Claesz. Plancius's name appears along with that of Barents on the first map in Barents's *Nieuwe beschryvinghe ende caertboeck vande Midlandtsche Zee*, the gen-

^{71.} Quotation from the title page in the 1585 edition; see MCN, 7:58 (fig. 3.18).

^{72.} Quotation from the preface to the reader in his pilot guide of 1595 (MCN, 7:135).

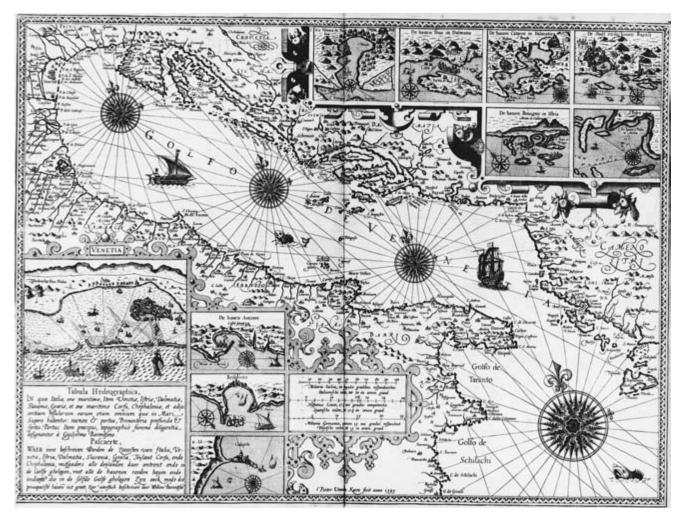


FIG. 45.7. CHART FROM WILLEM BARENTS'S NIEUWE BESCHRYVINGHE ENDE CAERTBOECK VAN DE MID-LANDTSCHE ZEE, 1595. Published by Cornelis Claesz.

Photograph courtesy of the Universiteitsbibliotheek Amsterdam (OF 86-3).

eral overview map of the Mediterranean Sea. Plancius had singled out Willem Barents for a leading role in the Arctic expeditions of 1594–96, indicating that the two men had known each other for some time.

It should come as no surprise that Cornelis Claesz. also played a decisive role in the publication of this printed folio-size pilot guide for the Mediterranean. He already owned the rights to Waghenaer's *Spieghel*, and in the privilege granted to Barents, he was allowed to begin his maps where Waghenaer's coverage ended. As had been the case in previous maritime works, Claesz. wanted to keep closely informed about developments and advances in navigation and also to take advantage of the growth of Dutch shipping through the Strait of Gibraltar. As could be expected, Cornelis Claesz. made an attractive edition of Barents's *Caertboeck*. ⁷³ For engraving the maps, he engaged two of the best engravers in Amsterdam: Jodocus Hondius and Pieter van den Keere.

The overview map is followed by nine detailed maps modeled after Waghenaer's successful *Spieghel*, combining the coastline and the coastal profile (fig. 45.7). Without leaving any gaps between adjoining sections, the large-scale maps cover the entire northern part of the Mediterranean Sea from the Strait of Gibraltar up to and including the Adriatic Sea. On the overview map and two of the large-scale maps, a number of small insets show harbors at a larger scale, which would make it easier to come into port. All of the maps except the overview map have a description of the depicted coasts and the routes to be followed printed on the reverse. Additional text pages, accompanied by coastal profiles in woodcut, are bound into the book between the charts.

^{73.} A facsimile edition, accompanied by an introduction, was published: Willem Barents, *Caertboeck vande Midlandtsche Zee: Amsterdam, 1595* (Amsterdam: Theatrum Orbis Terrarum, 1970).

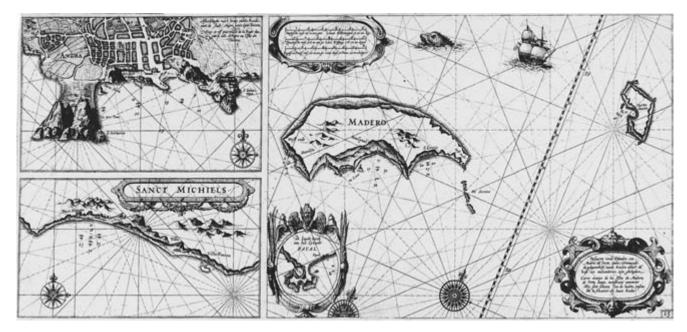


FIG. 45.8. CHART FROM BLAEU'S HET LICHT DER ZEE-VAERT, 1608.

Size of the original: 26×55 cm. Photograph courtesy of the Maritiem Museum, Rotterdam (WAE 118, p. 15).

Willem Barents did not write the entire text based on his own experiences. The second section, for example, which gives sailing instructions for the eastern part of the Mediterranean Sea, was drawn entirely from an Italian source translated by Maarten Everaert of Bruges: Paolo Gerardo's *Il portolano del mare* (Venice, 1584; original edition 1544). In content, this work is identical to the translation in Barents's *Caertboeck*, though the sequence of the chapters differs.

Beginning in 1599, Cornelis Claesz, also provided French editions that were apparently in high demand, because we know of 1607, 1608, and 1609 editions.74 After Claesz.'s death in 1609, the copperplates came into the hands of Johannes Janssonius, who published prints from them anew in 1626 without any changes. The only known impression consists of just a title page, with the title pasted in, and a set of ten maps without text on the reverse.⁷⁵ In all likelihood, it was decided not to include the text portion in this edition of a reprint. Perhaps one reason was that the third part of Willem Jansz. Blaeu's Het licht der zee-vaert, which had appeared in 1618, treated navigation to and within the Mediterranean Sea with the help of thirty-three maps and extensive textual descriptions (fig. 45.8).⁷⁶ Eventually, Janssonius used the plates again in 1654 as part of his Descriptio Maris Mediterranei.⁷⁷

PILOT GUIDES AND SEA ATLASES IN THE SEVENTEENTH CENTURY

During the seventeenth century, and specifically from 1620 to 1700, the trade in pilot guides and sea atlases ex-

perienced unprecedented growth. This growth was accompanied by increasing competition, beginning about 1630, particularly in the publication of pilot guides, among the houses of Blaeu, Janssonius, and Colom.

The arrival of Johannes Janssonius's *Water-weereld* in 1650 marked the opening of a new competitive market for pilot guides and sea atlases. Various Amsterdam publishers, including Arnold Colom and Pieter Goos, produced competing products from about 1640 until about 1675, attempting to price each other out of the market, each of them claiming that his publications were "new" and "expanded" compared to their predecessors. It is questionable, however, whether there really was any updating or expansion. Johannes van Keulen, a newcomer to the field of maritime cartography, would eventually introduce changes with his *Zee-atlas of water-werelt* at the end of the seventeenth century.

Pilot Guides

In 1599, Willem Jansz. Blaeu established himself in Amsterdam, and in 1605 he moved into a house "at the Water," where he opened a shop. There at the Damrak, as it

^{74.} For a bibliographical description of the various editions, see *AN*, 4:22–26.

^{75.} This copy is kept in Universiteitsbibliotheek Utrecht, Collection of the Faculty of Geosciences (VIII N.f.3).

^{76.} For this pilot guide, see AN, 4:44-46 (M. Bl 8).

^{77.} AN, 4:272–73 (M. Ja 4). The copperplates for the *Descriptio* were made more modern by removing old decorations.

is called today, many ship chandlers, booksellers, and mapsellers kept shops. Next to Blaeu's shop was Johannes Janssonius from 1618 onward, and opposite him lived Jacob Aertsz. Colom. Claesz., the famous printer who came from the southern Netherlands and settled in Amsterdam in 1578, also had his premises "at the Water." Much to his regret, Blaeu met with serious competition from his neighbors Janssonius and Colom (see appendix 45.2 for a summary of pilot guides published between 1584 and 1681).

Blaeu accomplished a great deal for navigation in European coastal waters. In 1606, he received a privilege "to print a certain book of charts, gathered and compiled by him, in the interest and promotion of navigation." ⁷⁸ This pilot guide, *Het licht der zee-vaert*, was published for the first time in 1608 and resembled Waghenaer's *Thresoor der zeevaert*. ⁷⁹ Blaeu used the same oblong format and constructed it in a series of chapters containing descriptions and woodcut profiles for a specific stretch of coast and the corresponding chart.

The many successive editions and translations into English and French are evidence of the popularity of *Het licht der zee-vaert*. Because Blaeu feared no competition, there was no impetus to revise. He never even finished the publication. In the first edition of 1608, he wrote that the work would consist of four parts: the routes to the West; the routes to the East; the Mediterranean Sea; and the coasts of Guinea, Brazil, and the East and West Indies. The first edition included only the first and second parts. The third part, with thirty-three maps of the Mediterranean Sea, appeared ten years later, in 1618. The fourth part was never published.

In 1620, when the first privilege expired, Janssonius published his own edition of *Het licht der zee-vaert*. ⁸¹ This was a shameless copy of not only the text but also the maps in Blaeu's edition. The title and title page were identical, and Janssonius even included Blaeu's name as author. Janssonius's publication was likewise a success: reprints followed in 1623, 1627, and 1629. Blaeu's answer to Janssonius's edition was a new and enlarged version of his pilot book titled *Zeespiegel*.

The Zeespiegel went through fifteen editions between 1623 and 1652, five of them with English text. 82 The pilot guide consisted of three parts and included 111 new maps on a larger scale. The introduction to the art of navigation was the first part; the second part treated the eastern and northern routes; and the third part concerned the western routes. The third part of *Het licht der zeevaert*, on the Mediterranean Sea (after 1618), could be added as a separate fourth part to the *Zeespiegel* (and, after 1638, a reprint of this work appeared under the title *Vierde deel van de zeespiegel*). Pilot guides were naturally objects of desire in a maritime power such as the Seventeen Provinces, and Blaeu's *Zeespiegel* became a bestseller.

A serious challenge to Blaeu's supremacy came in 1632, when Jacob Aertsz. Colom published *De vyerighe colom*, a book of sailing directions with forty-two charts. 83 Colom, who had been born and bred in Dordrecht, established himself in Amsterdam in 1622 as printer, bookseller, and producer of nautical maps. Initially, he could not compete against Blaeu and Janssonius in the pilot guide market, but when the two competitors shifted the focus of their activities to other publications, Colom sensed his opportunity. With *De vyerighe colom*, he could no longer be overlooked in the area of maritime cartography.

The size of the charts in *De vyerighe colom* was increased to approximately thirty-eight by fifty centimeters, and the text was generally an enlargement of the text in Blaeu's pilot book. Colom's book, a folio much like Waghenaer's, was very successful. Between 1632 and 1671, eight editions were issued with a text in Dutch, five in French, and eleven in English. Despite this success, Colom added a smaller pilot guide to his stock in 1648. This *Oprecht fyrie colomne* was produced in the oblong format familiar to conservative seamen.

Colom did little to flatter Blaeu in *De vyerighe colom*, announcing in the title of his pilot guide: "The defects and errors of the previous Light or Mirror of the Sea [are] exposed and corrected." Blaeu reacted immediately with the

^{78.} Resolutions by the States General, 27 February 1606; The Hague, Nationaal Archief (Arch. St. Gen. 3156, fol. 72r).

^{79.} See Willem Jansz. Blaeu, *The Light of Navigation: Amsterdam*, 1612, bibliographical note by R. A. Skelton (Amsterdam: Theatrum Orbis Terrarum, 1964), and *AN*, 4:27–53.

^{80.} For the many editions of the *Het licht der zee-vaert*, see *AN*, 4:32-75.

^{81.} See AN, 4:54-75.

^{82.} See Willem Jansz. Blaeu, *The Sea-beacon: Amsterdam*, 1643, bibliographical note by C. Koeman (Amsterdam: Theatrum Orbis Terrarum, 1973); *AN*, 4:78–112; and *MCN*, 4:20 (index of the charts in the *Zeespiegel*).

^{83.} AN. 4:119-51. Colom's work as a globemaker is discussed on pp. 1368-69 in this volume. The licht (light), vyerighe colom (burning column), spiegel (mirror), and the like found in the titles of many of these pilot guides have their roots in the need of a pilot for a light on shore when making landfall or entering a port at night. Because lighthouses in the modern sense did not exist, fires were kept burning on elevated structures. This gives a realistic foundation to names such as "Seatorch" and "Burning fen," in particular the latter, because it is a pun on the surname "Veen," which is Dutch for peat, associated with fens. In the case of the name Colom—the appearance of a burning pillar in the heavens guiding the people of Israel at night on their flight from Egypt (Exodus 13:21)—this is what induced Jacob Aertsz. Colom to name his pilot guide Vyerighe colom, suggesting a lighthouse on shore. The less studied constructions for the name of a pilot guide may be seen in the names used by Waghenaer and Blaeu: "Mirrour," and "Light," in their purest allegoric sense of reflecting knowledge to the apprentice or spreading the light of understanding. On this subject, see Hendrickje Bosma, "Het licht der zeevaart: De symbolische betehenis van licht in drie 17e-eeuwse lierboehen over zeevaanthude," Caert-Thresoor 3 (1984): 58-62.

publication of the *Havenwyser van de oostersche, noordsche en westersche zeen* (1634), for which he used sixtytwo of the maps from the *Licht der zee-vaert* and the *Zeespiegel*. ⁸⁴ In his introduction, Blaeu criticized those who thought they could improve on his pilot guides, although he introduced a number of new errors himself. In 1634, Janssonius likewise came out with a new pilot guide: *Het nieuw vermeerde licht, ghenaemt de sleutel van 't tresoor, spiegel, gesicht, ende vierighe colom des grooten zeevaerts*. ⁸⁵ This work comprised fifty-one maps, thirtytwo from *Licht der zee-vaert* and the remaining nineteen maps with the name of Joris Carolus as author; Carolus also revised the text.

Neither Blaeu nor Janssonius was in a position to price Colom out of the market. After two French editions of the *Nieuw vermeerde licht* (1635 and 1637), Janssonius got out of the pilot guide market for a long time, until after 1650, when he brought out a pilot guide in cooperation with Pieter Goos. Willem Jansz.'s son Joan Blaeu contented himself with reprints of the *Zeespiegel*. Unlike Blaeu's pilot book, Colom's was continuously enlarged; consequently, Colom rapidly became the leading chart publisher of the first half of the seventeenth century. The competition had become too fierce for the Blaeus, who were not just ship chandlers but printers of fine and scholarly books.

Yet in 1644, Colom's position was threatened by the publication of an even more comprehensive pilot book by Anthonie Jacobsz. of Amsterdam, De lichtende columne ofte zeespiegel, which cleverly combined the titles of both his competitors' pilot books. Jacobsz. quickly published an English edition, The Lightning Columne or Seamirrour, which was favorably received. The number of charts in his book was greater than in any previous pilot guide: thirty-two, thirty, and twenty charts, respectively, in the first, second, and third parts. In addition, the size of the charts was enlarged to forty-three by fifty-five centimeters. Nothing like this comprehensive work had ever been produced in either England or France. A series of editions with Dutch, English, and French text were published between 1643 and 1715 by Jacobsz. and his sons and successors, Jacob Theunisz. and Casparus, who are better known by their name of Lootsman.86

In addition to the large pilot guide, Anthonie Jacobsz. was also considering the publication of a small guide before he died. Under the guidance of his widow, it appeared in 1652. After Pieter Goos acquired the copperplates for *De lichtende columne ofte zeespiegel*, Jacob Theunisz. had new maps engraved for his own new pilot guide, *De nieuw' en groote Loots-mans zee-spiegel*.

Although at least ten shops and/or ship chandlers on the waterfront at Amsterdam sold maritime printed matter, they were not all printers. Table 45.1 shows the differentiation in their professions. When the imprint of a

Table 45.1 Professions of Sellers of Maritime Printed Matter, Mainly from the Seventeenth Century

Shopowner	Printer	Engraver	Book- and Chart- seller	Instru- ment and Chart- maker
Blaeu family	X		X	X
Colom family	X		X	X
Hendrik Doncker			X	X
Pieter Goos	X	X	X	
Johannes Janssonius	X		X	
Van Keulen family	X		X	X
Jan van Loon		X		X
Johannes Loots			X	X
Lootsman family	X		X	
Jacob Robijn		X	X	

book with charts says "printer and bookseller" it may well be that only copperplate printing is meant. After 1650, competitors printed similar works by copying the text and printing the charts from newly engraved copperplates—as Hendrik Doncker did—or by buying Lootsman's plates—as Pieter Goos did. The well-known printer Janssonius also retailed the *Lichtende columne ofte zeespiegel* for some time. The bibliographical history of Dutch pilot books becomes complicated at this stage, particularly with the appearance of Doncker's very similar chart book. Koeman unravels this tangle of publishers and pilot guides.⁸⁷

Three competing publishers controlled the market for pilot guides after 1660: Goos, the Lootsman brothers, and Doncker; all three used the same text but added their own maps. Dozens of pilot guides with nearly identical titles made for bibliographic mayhem but nonetheless illustrated the great demand for this type of publication. These guides were made up of the usual three parts: western routes, eastern routes, and the Mediterranean Sea. Pieter Goos was the first to add printed nautical maps of coastal areas outside of Europe. In 1675, the same year that he died, he brought out a pilot guide of the coasts of the West Indies, *Het brandende veen*, with texts and maps by Arent Roggeveen. A second part on the coasts of West

^{84.} AN, 4:76-77.

^{85.} AN, 4:63-66 (M. Bl 20[J]).

^{86.} German editions were not necessary because Dutch was spoken by mariners along the coast of northern Germany. The family name of the Lootsman brothers was Theunisz. Their father was Theunis, or Anthonie, Jacobsz.

^{87.} AN, vol. 4.

Africa and Brazil was in preparation, but it was not printed until 1685, by Jacob Robijn. 88 At that point, Van Keulen's *Zee-fakkel* had been prepared, and Robijn and others realized that continuing the production of pilot guides for non-European waters was no longer profitable.

This printing activity was, of course, linked to the enterprise of shipping and trading and to the volume and diversity of shipping and seafaring. Unfortunately, it is impossible to produce figures for the print runs of works such as a Light of Navigation or a Zeespiegel. No records of the firms Blaeu, Colom, Goos, or other booksellers have been preserved. Only in exceptional cases, when a notary certificate of a wholesale of stock had been drawn up, are figures mentioned—for example, for the sale of Doncker's shop in 1693. In that notary certificate, a stock of fortyfive hundred books on the art of navigation, almanacs, and astronomical tables are mentioned, which gives us an impression of the size of a ship chandler's bookstore at the waterfront in Amsterdam. Almanacs and astronomical tables for the sun and moon had to be reprinted frequently. Therefore, the traditional chapter on the art of navigation in a pilot book was reprinted every ten years, as the copies that have been preserved demonstrate. Charts, on the other hand, had to be corrected and reprinted continuously because of the shifting of shoals along the coast of the North Sea—although this was practiced to a lesser degree for charts of the Mediterranean Sea.

Sea Atlases

Although pilot guides, almanacs, tables, loose charts, and textbooks were used on board ships, sea atlases covering all the world's coasts were not part of the regular equipment of a master or a pilot. On shore, in offices, and in private libraries of well-to-do citizens and scientists, the sea atlas was a favored book. From about 1660, the sea atlas grew from 20 to over 160 charts. Generally speaking, fewer copies of sea atlases were produced (often assembled to order and usually without text except for short introductions) than pilot guides. However, because sea atlases were seldom used at sea, many more copies have been preserved than printed pilot guides with charts.

In addition to pilot books, the previously discussed printers also published sea atlases comprising varying numbers of charts, partly taken from the pilot books. The first sea atlas, the *Water-weereld*, appeared in 1650, published by Johannes Janssonius as the fifth part of his *Novus atlas*. ⁸⁹ The description of the earth did not end at the coast, Janssonius wrote in the introduction to the *Water-weereld*. This was the origin of the first real sea atlas, which Janssonius combined with a historical atlas. Countless pilot guides with maps had been published since 1584, but a collection of nautical maps, bound together in folio format, had not yet been published for general use. Jansso-

nius's *Water-weereld* contains twenty-three charts and ten geographical maps. The accompanying texts contain only general information and have little to do with navigation issues.

The publication of the *Water-weereld* had a domino effect on other publishers who, up to that point, had been exclusively concerned with purely navigational works, such as pilot guides. It revealed a hole in the market into which they were able to dive with little difficulty. They already had access to nautical maps, which they now compiled in a new way in order to reach a new audience (see appendix 45.3).

Jacob Aertsz. Colom's Groote lichtende ofte vyerighe colom of 1651 can be considered the first successor to the Water-weereld. This large pilot guide later formed the basis of Colom's Atlas of werelts-water-deel of 1663. With the publication of Arnold Colom's Ora maritima orbis universi sive atlas marinus of 1654 (the Dutch edition of 1658 was titled Zee-atlas ofte waterwereldt), a number of otherwise restricted charts became public. Before that date, only the Westindische paskaart (a navigation chart for the West Indies), printed on two folio sheets, was available to anyone who could afford the price, 15 guilders. In Colom's Zee-atlas, several other navigation charts for the oceans were published at one-folio size, a novelty for that time. Colom's atlas also contained a chart of the coast of "Nieu Nederland," the Atlantic coast between Cape Cod and Atlantic City, at a scale of 1:1,500,000, which was the first detailed printed chart of that area.

Another now-famous sea atlas was the Nieuwe zeeatlas of water-werelt by Pieter van Alphen (Rotterdam, 1660), which included twelve beautiful long-distance sailing charts on Mercator's projection. Also, Jacobus Robijn of Amsterdam published a sea atlas for which he used plates from Pieter Goos's Zeespiegel and his Zee-atlas, but in 1683 Robijn also published a fine sea atlas with twenty charts from his own plates. Goos had employed Doncker's plates for a sea atlas that appeared in 1666, and many copies have survived. 90 In his imprint on the title page, he altered the date, and the "Short declaration of the division, situation, and qualities of the earth" preceding the charts was reprinted several times (in Dutch, French, English, and Spanish), but the set of charts remained unaltered. Goos's charts were reprinted in England, where John Seller made the first attempt to compete with Dutch pilot guides, but in so doing, he plagiarized Dutch material. In 1669,

^{88.} For English facsimilies, see Arent Roggeveen and Pieter Goos, *The Burning Fen: First Part, Amsterdam*, 1675, bibliographical note by C. Koeman (Amsterdam: Theatrum Orbis Terrarum, 1971), and Arent Roggeveen and Jacob Robijn, *The Burning Fen: Second Part, Amsterdam*, 1687, bibliographical note by C. Koeman (Amsterdam: Theatrum Orbis Terrarum, 1971).

^{89.} AN, 2:492-98 and 4:273-75.

^{90.} AN, 4:196-200, lists seventy copies.

Seller acquired at least sixty-three old plates, and announced in his *Praxis nautica* of that same year: "I do hear make known unto you, that I intend, with the assistance of God, and am at present upon making (at my own cost and charge) a Sea Waggoner for the whole World." ⁹¹ He fulfilled this promise with the *English Pilot* of 1689. After the example of Goos's very popular sea atlas, Seller also produced in 1675 an *Atlas maritimus*. ⁹²

Of all the chartmakers in Amsterdam, Doncker stands out as the most qualified due to his originality and the revisions he applied to his own maps in the *Nieuwe groote vermeerderde zeeatlas* of $1675.^{93}$ His choice of subject was original; he produced charts for navigation along the coasts of Africa and Brazil. These engraved charts, on scales of between 1:1,000,000 and 1:3,000,000, have all the characteristics of the manuscript charts drawn by the hydrographers of the Verenigde Oostindische Compagnie (VOC, or Dutch East India Company), although there is no reference to their provenance. Doncker employed a larger press (or built a larger press) than those currently in use to accommodate a larger format (55×61 cm). In 1705, his son Hendrik enlarged the atlas with twenty-five charts on Mercator's projection. 94

In 1661–76, Jan van Loon also published a work of importance, the *Klaer lichtende noortster ofte zee-atlas*, with between thirty-five and forty-seven original charts. ⁹⁵ The largest of all sea atlases published at Amsterdam was that by Johannes Loots, from about 1707. ⁹⁶ It contained 124 charts, of which 79 were on the Mercator projection. These were all charts intended for a sea atlas and not prints from the plates used for pilot books. A few sea atlases published at Amsterdam were composed of charts that also appeared in pilot guides. ⁹⁷

Beginning in 1680, the Van Keulens—first Johannes and later his son Gerard—dominated publishing in maritime cartography for almost two centuries. ⁹⁸ The Van Keulens not only acquired a monopoly over the production of nautical maps and atlases, but they were also concerned with cartographic renewal. Johannes van Keulen became a member of the Amsterdam booksellers' guild in 1678, and he concentrated mainly on navigation books and instruments. With the participation of the mathematician and surveyor Claes Jansz. Vooght, Van Keulen's publications were assured of a high scholarly quality.

Van Keulen's *De groote nieuwe vermeerderde zee-atlas* ofte water-werelt of 1680 introduced him to the public as a new publisher of navigation books. By the time this atlas was published, Van Keulen and Vooght were already busy with the production of a much larger work: a multipart pilot guide (with text) in folio format. The first and second parts of *De nieuwe groote lichtende zee-fakkel* were published in 1681. Three other parts followed in a period of four years. *De nieuwe groote lichtende zee-fakkel* was the *Atlas maior* among nautical pilot guides,

consisting of five folio volumes with a total of 135 precise and reliable maps of all the coasts and seas of the world (fig. 45.9).99 The division of the guide into sections followed the traditional pattern: the first three parts concern the European coasts, and parts 4 and 5 cover the eastern and western shipping routes, corresponding to the first and second parts of Pieter Goss's Het brandende veen (see table 45.2). Given that Goos's publication was not completed until 1685, Van Keulen was the first publisher to provide the Amsterdam market with a global pilot guide. Both the Zee-fakkel pilot guide and the Zee-atlas steadily grew in scope, such that the latter became more and more a byproduct of the former: an increasing number of maps from the Zee-fakkel were added to the thirty original maps of the Zee-atlas. In 1684, the atlas included more than 150 maps and could be delivered with an introduction in Dutch, French, English, or Spanish.

Johannes van Keulen had no scientific education. However, his son Gerard van Keulen proved himself to be a good student of Vooght. When Gerard took over his father's business in 1704, he gave new impetus to the production of nautical maps, and although he expanded the *Zee-fakkel* and the *Zee-atlas* significantly, he became known mainly for his trade in manuscript maps. ¹⁰⁰ Thanks to the initiatives of the publishing house Van

^{91.} Quoted in Coolie Verner, "John Seller and the Chart Trade in Seventeenth-Century England," in *The Compleat Plattmaker: Essays on Chart, Map, and Globe Making in England in the Seventeenth and Eighteenth Centuries*, ed. Norman J. W. Thrower (Berkeley: University of California Press, 1978), 127–57, esp. 140, and the biographical note to the edition of the fourth book, [John Seller], *The English Pilot: The Fourth Book, London, 1689*, intro. Coolie Verner (Amsterdam: Theatrum Orbis Terrarum, 1967).

^{92.} John Seller, *Atlas Maritimus*; or, *A Book of Charts Describing the Sea-Coasts*... in Most of the Knowne Parts of the World (London: John Darby, 1675).

^{93.} AN, 4:164 (Don 15).

^{94.} AN, 4:170-72 (Don 29).

^{95.} AN, 4:403-8.

^{96.} AN, 4:409–21; Désiré Gernez, "Le libraire néerlandais Joannes Loots et sa maison d'éditions maritimes," *Mededeelingen, Academie van Marine van België* = Communications, Académie de Marine de Belgique 8 (1954): 23–65.

^{97.} Jacob Aertsz. Colom's *Atlas of werelts-water-deel*, 1663; Jacob Theunisz. and Casparus Lootsman's *Nieuwe water-werelt ofte zee-atlas*, 1666; and Johannes van Keulen's *De groote nieuw vermeerderde zee-atlas ofte waterwerelt*, 1680. See *AN*, 4:276–301.

^{98.} E. O. van Keulen, Willem F. J. Mörzer Bruyns, and E. K. Spits, eds., "In de Gekroonde Lootsman": Het kaarten-, boekuitgevers- en instrumentenmakershuis Van Keulen te Amsterdam, 1680–1885, exhibition catalog (Utrecht: HES, 1989).

^{99.} C. Koeman, *The Sea on Paper: The Story of the Van Keulens and Their "Sea-Torch"* (Amsterdam: Theatrum Orbis Terrarum, 1972), and AN, 4:302–66.

^{100.} C. Koeman and Günter Schilder, "Ein neuer Beitrag zur Kenntnis der niederländischen Seekartografie im 18. Jahrhundert," in *Beiträge zur theoretischen Kartographie . . . : Festschrift für Erik Arnberger* (Vienna: Deuticke, 1977): 267–303, and Dirk de Vries et al., *The Van*

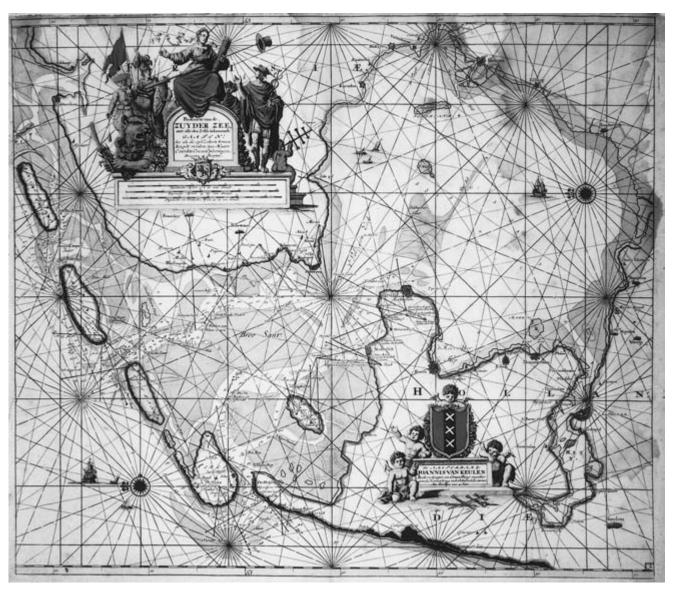


FIG. 45.9. CHART OF THE ZUIDERZEE FROM JOHANNES VAN KEULEN'S DE NIEUWE GROOTE LICHTENDE ZEE-FACKEL, [1689].

Photograph courtesy of Nederlands Scheepvaartmuseum, Amsterdam (inv. no. B.0032[159]).

Keulen, in the eighteenth century Dutch maritime cartography did not follow its previous trajectory in the production of maps and atlases; it was transformed into an industry in which old maps were reprinted and maps from abroad were copied.

The Context of Chartmaking

Against the background of the maritime history of the Netherlands, chartmaking is just one of the many elements associated with shipping, trading, and overseas expansion. ¹⁰¹ Although we possess sufficient knowledge of the history of maritime cartography in the Low Countries, we still have to find answers to specific questions concerning

the distribution of charts and pilot books. For example, were the sixteenth- and seventeenth-century methods of distribution among pilots efficient or not? Did the reduction of production costs have an impact on sales figures? Did the customer always get the best for his money?

In the early part of the sixteenth century, sailing directions circulated mostly in manuscript. When a printer (at the request of a literate pilot) produced one in printed form, he economized on paper: duodecimo format would sell. Both printed and manuscript charts were prohibi-

Keulen Cartography: Amsterdam, 1680–1885 (Alphen aan den Rijn: Canaletto/Repro-Holland, 2005), 91–114.

101. Koeman, "Chart Trade in Europe."

TABLE 45.2 Contents of Johannes van Keulen's *De* nieuwe groote lichtende zee-fakkel

Part	Year	Region Represented
1	1681	Eastern shipping routes and north Russia
2	1681	Western shipping routes as far as the Cape Verde Islands
3	1682	Mediterranean Sea
4	1684	Caribbean Sea and the eastern coasts of North America
5	1684	Atlantic coasts of Africa and South America

Source: Based on Peter van der Krogt, "Commercial Cartography in the Netherlands, with Particular Reference to Atlas Production (16th–18th Centuries)," in *La cartografia dels Països Baixos* (Barcelona: Institut Cartogràfic de Catalunya, 1995), 71–140, esp. 127.

tively priced for the average pilot. At the end of the sixteenth century, with the rise of economic prosperity in parts of the Low Countries, printers in Amsterdam and Leiden enjoyed a growing market for sailing directions and charts, although prices were still relatively high. Unfortunately, with the exception of the figures in Plantijn's records, we do not know the print runs or the quantities sold; none of the ten publishers active in Amsterdam around 1640 left records. Three factors controlled the price of all maritime printed matter: competition, labor costs, and opportunism (from borrowing plates to piracy).

During the period from 1584 (Waghenaer's Spieghel) to 1623 (Blaeu's Zeespiegel), a close link between the seaman and the printer was a control on quality. After about 1640, this link weakened for two reasons: competition and the printers' decreasing devotion to this specific group of customers. The large firms and printsellers of Amsterdam, such as the Blaeus, Janssonius, Pieter Mortier, and Frederick de Wit, had clientele mainly among the educated citizens of European cities. The picture of small shops at the waterfront had changed into one of impressive front gables of print shops where customers, according to the fashion of the period, could choose from thousands of different prints and maps. Charts and sea atlases were no longer the main commodity. Also, at the end of the seventeenth century, the only remaining ship chandler with his own printing section (copperplate as well as book printing) was the house of Van Keulen, which fit the new picture of prestigious presentation.

A large, capital-rich firm such as Van Keulen's was beneficial for the promotion of scientific improvements in nautical instruments and nautical publications such as tables, textbooks, and pilot guides. One may conclude that the link between the seaman and the printer (which had weakened dangerously) was restored in the period after about 1680 by the collaboration of mathematical practitioners with the house of Van Keulen. Ultimately, this firm

became the hydrographic bureau of one of the greatest trading companies of the eighteenth century: the VOC.

SINGLE-SHEET CHARTS: PRINTED AND MANUSCRIPT TRADITIONS UP TO 1630

Dutch seamen had a vital interest in having certain knowledge of the course of coasts of the North and Baltic Seas, whose flat coasts comprising dangerous lowland plains and sandbanks and their often invisible currents made sound knowledge of the sea absolutely crucial. 102 Rutters with coastal profiles were followed by rutters and charts in combination with sailing directions and coastal profiles. The sketches and small charts occasionally found in rutters were, from the start, simply a means of explaining the written or printed sailing instructions. These highly simplified drawings, however, are the prototype of the detailed sea charts that followed, the so-called *paskaarten* (derived from the Dutch word *passer*, meaning a set of compasses used to determine distance).

THE EARLY DEVELOPMENT OF DUTCH SEA CHARTS

The earliest Dutch sea chart was the southeast-oriented Kaart van de Oosterscher Zee by Jan van Hoirne (Antwerp, 1526). This chart, early proof of the importance of commerce between Flanders and Holland and the northeast, presents a general overview of the North and Baltic Seas without latitude or longitude but covered with a net of compass lines which, because they are rather imprecise, were unlikely to be of much help to the seamen. The cartographer succeeded in showing the main course of the Netherlands-German-Danish coast surprisingly accurately in this rough woodcut. Unfortunately, the one known example exists only in fragments, and the area of the Baltic Sea is missing ("Oosterscher Zee" in the title conclusively points this out).

A contemporary sea chart by Jan de Pape showing the coasts from Brittany to Gdańsk does not survive. How-

^{102.} Arend W. Lang, "On the Beginnings of the Oldest Descriptions and Sea-Charts by Seamen from North-West Europe," *Proceedings of the Royal Society of Edinburgh* 73 (1971–72): 53–58, and idem, *Seekarten*.

^{103.} Woodcut preserved in three fragments, figure 43.3 in this volume. See Bert van 't Hoff and L. J. Noordhoff, "Een kaart van de Nederlanden en de 'Oosterscherzee' gedrukt door Jan de Beeldesnyder van Hoirne te Antwerpen in 1526," Het Boek 31 (1953): 151–56; Bert van 't Hoff, "Jan van Hoirne's Map of the Netherlands and the 'Oosterscher Zee' Printed in Antwerp in 1526," Imago Mundi 11 (1954): 136 (with illustration opposite); and H. A. M. van der Heijden, Oude kaarten der Nederlanden, 1548–1794: Historische beschouwing, kaartbeschrijving, afbeelding, commentaar/Old Maps of the Netherlands, 1548–1794: An Annotated and Illustrated Cartobibliography, 2 vols. (Alphen aan den Rijn: Canaletto/Repro-Holland; Leuven: Universitaire Pers, 1998), 1:137–38.

ever, its existence is confirmed by a proof of payment dated 9 February 1530, which reads: "Map, made by Jan Jansz. or De Pape, of the waters, streams, cities, and regions from Brittany to Danzig." ¹⁰⁴ Doubtless, the making of such manuscript sea charts was not unusual, but they were used more as general views and not on board ships, where written sailing instructions together with the sounding line were still the most important nautical devices.

A Dutch Pioneer in Maritime Cartography: Cornelis Anthonisz, and His Work

The loss of sea charts makes it difficult to judge how much Cornelis Anthonisz. had taken over from his predecessors when producing his famous Caerte van Oostlant (1543), which represents an important milestone in the history of the development of sea charts in the Netherlands. The comment he made in 1558, that "we Dutch from Holland and Zealand have not described these waters of the North Sea, Denmark, and the Eastern (Baltic) sea as it should be," shows that he was not content with the material available up to that time. 105 He was also not surprised that these seas had not been described any better, "because most of the pilots scorned the charts [of these areas] and there are still many who reject them." 106 Although these were the perceptions of Dutch seamen in the mid-sixteenth century, there were signs of change that began to stimulate the use of sea charts. Rapid economic development of the coastal towns of the Netherlands in the middle of the sixteenth century, especially those associated with the grain trade in the Baltic, required good charts in order to guarantee safe navigation.

Before producing the *Caerte van Oostlant*, Anthonisz. had already repeatedly shown his cartographic skills. Although they do not survive, we know from city accounts that he made the following sea charts: a "chart of the channels that one passes through when sailing from the North Sea into the Zuiderzee inward to show her Majesty the Queen the great dangers and expense encountered by the merchants coming from the East before they manage to reach Amsterdam by ship," a "chart of the North Sea and Zuiderzee with the depths and the hidden sandbanks," and "two charts made by him for the city showing the channels, banks, and the location of the Baltic Sea." 107

The original *Caerte van Oostlant*, which was printed from nine woodblocks, is known only from a single impression produced later by the publisher Arnold Nicolai of Antwerp (fig. 45.10).¹⁰⁸ Lang has shown that no fewer than three editions of the chart must have existed: the original version of 1543, which can be reconstructed from the reduction produced by the Venetian publisher Michele Tramezzino in 1558, followed by a revised copy by Cornelis Anthonisz. himself around 1553, and, finally,

by a further revised edition by the Antwerp publishing house of Nicolai about 1560.¹⁰⁹

Anthonisz.'s chart comprises the North Sea and the Baltic Sea, the English and Scottish coasts, and the Finnish skerries, from Cape Stad in Norway as far south as Calais in northern France. A dense net of compass lines covers the sea areas of this plane chart. The main lines of the coasts have been drawn with surprising accuracy. Mistakes in the configuration of the coasts in the eastern part of the Baltic Sea show that Anthonisz. had insufficient source material for this area, but the chart displays detailed knowledge of the Dutch waters, the southern coast of the North Sea, and the Kattegat.

A pilot guide published in Amsterdam in 1541 provided much of the direction and distance information for Anthonisz.'s chart. This provisional base map was then filled in with details, and through this combination the final chart evolved. The relatively detailed chart was further enhanced with the publication of Anthonisz.'s rutter in 1544 (known through a third edition of 1558).

The Invention of Spherical Charts by Adriaen Veen

Toward the end of the sixteenth century, there were many attempts to eliminate the shortcomings of the plane *paskaarten*. Adriaen Veen developed a completely different map type, the so-called spherical chart (*gebulte kaart*), that attempted to represent the true shape of the earth. As he wrote: "Without doubt, the whole world and its parts need to be depicted in a spherical way, after proportion of the roundness of the earth." ¹¹² Unfortunately, none of these charts survive.

Veen drew a small part of the earth's surface onto a globe segment instead of a flat surface. By using this method, the depicted area was correct with respect to angles, distance, and surface. Additionally, the use of such a globe segment made it possible to describe a section in

^{104.} Johannes Keuning, "XVIth Century Cartography in the Netherlands (Mainly in the Northern Provinces)," *Imago Mundi* 9 (1952): 35–63, esp. 37.

^{105.} Quoted in Johannes Keuning, "Cornelis Anthonisz.," *Imago Mundi* 7 (1950): 51–65, esp. 55; see also idem, "Cornelis Anthonisz.: Zijn Caerte van oostlant, zijn Onderwijsinge vander zee en zijn Caerte van die oosterse see," *Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschap* 67 (1950): 687–714; Dubiez, *Cornelis Anthoniszoon*; and Lang, "Caerte van Oostlant."

^{106.} Anthonisz., Onderwijsinge vander zee.

^{107.} Dubiez, Cornelis Anthoniszoon, 14-15, and Lang, "Caerte van Oostlant," 22-23.

^{108.} A full-size facsimile is in Lang, Historisches Seekartenwerk.

^{109.} See the detailed study by Lang, "Caerte van Oostlant."

^{110.} Lang, "Caerte van Oostlant," 44-54.

^{111.} Cambridge, Harvard University, Houghton Library (NC5.An866.544oc). Described by Keuning in "Cornelis Anthonisz.," 53–54, but in more detail by Lang in "Caerte van Oostlant," 58–81.

^{112.} Quoted in the dedication of Adriaen Veen's Napasser (1597).

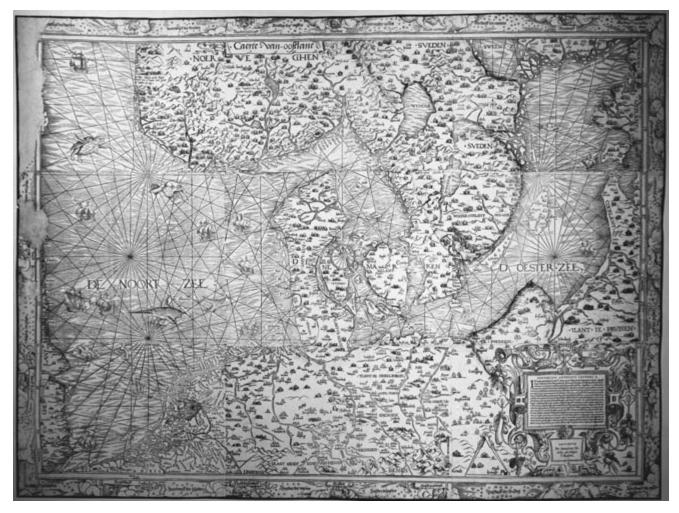


FIG. 45.10. THIRD STATE, CA. 1560, OF *CAERTE VAN OOSTLANT* BY CORNELIS ANTHONISZ. Woodcut, nine mounted sheets, scale ca. 1:1,540,000.

Size of the map: 73×96.5 cm; with border, 80.8×106.8 cm. Photograph courtesy of the Herzog August Bibliothek, Wolfenbüttel (shelf number K 1.1).

more detail at a larger scale than was possible when using a complete globe. On 12 September 1594, the States General granted Veen the privilege of producing such navigational aids.¹¹³

This new map type was originally designed for use in Europe. Veen first produced a *Westercaerte*, which was designed for navigation between Calais and the Azores and the Canary Islands, in 1597, and a year later an *Oostercaerte* appeared that included the channels between the North and Baltic Seas and the region between Norway and Iceland. Veen took pains to analyze all rutters and *paskaarten* currently available. The results of his research were published in written form in his *Napasser vande westersche ende oostersche zee-vaert* (Amsterdam, 1597). This contained a treatise on how to keep a ship journal, how to use a three-legged pair of dividers, and how to use a triangular scale—the last two for use with a spherical map (fig. 45.11).

The measuring of course and distance on a spherical map was, in practice, not easy. The loxodromes would be bent lines, and in order to take better measurements Veen designed a three-legged pair of dividers, which he called a *zeepasser*, and described in detail how to use this new instrument in the *Napasser*.¹¹⁴ In 1598, among the equipment for an expedition to the East Indies by the Compagnie of Verre, there were "nine blank spherical charts." ¹¹⁵ This probably referred to sketch charts prepared by Veen with white or blank space for the pilots to

^{113.} Moes and Burger, *Amsterdamsche boekdrukkers*, 3:197–98. About the "spherical charts," see Voorbeijtel Cannenburg, "Adriaen Veen's 'Napasser,'" 74–78, and Crone, "Adriaen Veen."

^{114.} C. Koeman, "Flemish and Dutch Contributions to the Art of Navigation in the XVIth Century," *Série Separatas* 213, Centro de estudos de história e cartografia antiga, Lisbon, 1988, and idem, "De 'zeepasser' van Adriaen Veen."

^{115.} Resolution dated 24 January 1598, Gemente-Archief Veere.



FIG. 45.11. DETAIL FROM THE TITLE PAGE OF ADRIAEN VEEN'S *NAPASSER*, 1597. Shows pilots at work on a spherical chart with a three-legged divider.

Photograph courtesy of the Universiteitsbibliotheek Amsterdam (OG 82-6).

fill in with their experiences, improvements, and details. When Jacob Cornelisz. van Neck returned with his fleet from the East Indies, among the navigational aids that were given to Plancius on 26 September 1599 were spherical charts. 116 A spherical chart of the southern Atlantic must have existed in 1598, because Hendrick Ottsen reported in his journal that he had drawn his tracks on such a chart.¹¹⁷ Ottsen returned from his journey to South America in February 1601. Veen probably waited until he had all his prototypes back again before casting his charts in their definitive form. On 8 September 1601, Veen informed the States General that he would offer three new charts within the next two months, "and two further charts next April that will cover as far as the river at Bantam."118 Although Veen's invention represented progress in solving a navigational problem and the Admiraliteit financially supported further development of this new chart type until 1611, the spherical charts were little used, probably because of the difficulty in plotting a track and estimating distances.

A FIRM COMMERCIAL BASE FOR DUTCH MARITIME CARTOGRAPHY BY CORNELIS CLAESZ.

Early in the seventeenth century, Cornelis Claesz. became one of the most important personalities in Dutch maritime cartography.¹¹⁹ Amsterdam had rapidly developed into an important international trade metropolis by the

end of the sixteenth century, creating extraordinarily favorable conditions for a talented publisher such as Claesz. He quickly became the most important Amsterdam publisher in the field of cartography, geography, the history of discovery, and the art of navigation, a monopoly he maintained until his death. His business was "on the water" (today, in Damrak), the center of trade and shipping. The wharf where the ships moored and where the merchants carried out their trading activities was exceptionally suitable for a publisher and book dealer.

An extremely important source of information about the Golden Age of Dutch cartography is provided by Claesz.'s *Const ende caert-register*, published in 1609.¹²⁰ This was not simply a sales catalog with a list of his stock; Claesz. made it clear that this catalog listed all those prints and maps for which he owned the copperplates. We thus obtain unique insight into the chart production of Amsterdam's leading publisher of this period. Much of the material listed has not survived; however, with the help of this catalog we can imagine what charts were then available.

Claesz. obtained nautical material to publish from various sources: he bought some manuscript material from families of deceased pilots, sometimes he took over publication rights from other publishers, and sometimes he was the publisher of completely new material. At the beginning of his publishing career, Claesz. also published a number of rutters.

The oldest sea chart known today that was published by Cornelis Claesz. is Adriaen Gerritsz.'s chart of Europe (1587).¹²¹ In the *Const ende caert-register*, this sea chart was offered either printed on vellum or printed on paper and then pasted onto vellum. After Gerritsz.'s death, Cornelis Claesz. bought his publishing rights. The separate

^{116.} Johannes Keuning, ed., *De tweede schipvaart der Nederlanders naar* Oost-Indië onder Jacob Cornelisz. van Neck en Wybrant Warwijck, 1598–1600, 5 vols. (The Hague: Martinus Nijhoff, 1938–51), 5:133.

^{117.} Hendrick Ottsen, Journael oft Daghelijcx-register van de Voyagie na Rio de Plata (1601), 10 June 1599.

^{118.} Resolutions by the States General, 8 September 1601, The Hague, Nationaal Archief.

^{119.} On Claesz., see Moes and Burger, *Amsterdamsche boekdrukkers*, 2:27–196. The complete maritime works of Claesz. are discussed in *MCN*, vol. 7.

^{120.} See p. 1394, note 65.

^{121.} Die generale pascaerte vanden vermaerden Adriaen Gerritsen van Haerlem Stierman, ende een leermeester aller stierluijden. Seer gebetert omt verloopen der sanden ende gaten . . . , printed on paper and mounted on vellum (48 × 61.5 cm). The only known copy is kept in Amsterdam, Universiteitsbibliotheek (L.K. VI 10). See Nalis, Van Doetecum Family, pt. 4, 22–23. Facsimile by Jan W. H. Werner, "De paskaart van Europa door Adriaen Gerritsen, 1587: Een korte introductie," in Adriaen Gerritszoon van Haerlem, stuurman, leermeester aller stuurlieden en kaartenmaker (Lelystad: Rotaform, 1997), 1–5 (accompanied by a full-size facsimile of Gerritsz.'s chart). See also Jan W. H. Werner and P. H. J. M. Schijen, "Adriaen Gerritzens paskaart van Europa uit 1587 geeft geheimen prijs," Kartografisch Tijdschrift 28 (2002): 7–15, and MCN, 7:77–80.

chart of Europe seems to have been extremely popular, and a new edition, greatly revised, appeared only four years after the first, in 1591. 122

This 1587 chart of Europe, engraved by Joannes van Doetecum, marked the beginning of a very fruitful collaboration between Cornelis Claesz. and the well-known Van Doetecum family of engravers. Shortly thereafter, Joannes van Doetecum, together with his son Baptista, engraved Waghenaer's chart of Europe on four sheets (1589) ¹²³ and the chart of northern Europe by Cornelis Doetsz. (1589) for Claesz. ¹²⁴ In 1592, Baptista van Doetecum engraved a new chart of Europe in folio format that served as a general overview for Lucas Jansz. Waghenaer's *Speculum nauticum* (1591) and was also sold (without text on the reverse) as a separate sea chart. ¹²⁵

The Oldest Set of Charts, 1592-1594

Cornelis Claesz, worked intensively with Petrus Plancius, who was the central intellectual figure in Dutch expansion. 126 This collaboration manifested itself first in the publication of a large wall map of the world, described as a geographical and hydrographical map, with Plancius as author and Claesz. as publisher. 127 The sources that Plancius used are presented to the "Geographical Readers" in a legend where he emphasized that care was taken to study charts that the Portuguese and Spanish took to sea with them as well as to compare them with other charts. The legend explains that, among other material, a very exact chart of the whole world and fourteen detailed charts were obtained from Portugal, by means of which it was possible to construct a highly accurate picture of the contemporary world incorporating the latest geographic knowledge. In addition to a twelve-year privilege for Plancius's world map granted by the States General, Claesz. also received a privilege "to print or draw with the pen all such twentyfive detailed sea charts, as he obtained by the direction of Master Petrus Plancius, but at his own expense, from Bartholomeo Lasso, cosmographer and master of navigation to the King of Spain, comprising all the sea coasts of the whole world." 128 We do not know whether Claesz. published all twenty-five charts mentioned, and there is the slight anomaly that Plancius mentions only fourteen particuliere (detailed) charts that he used to produce his map of the world of 1592.¹²⁹

Cornelis Claesz. published the earliest set of Dutch maps of non-European coasts available to the Dutch seaman on his voyages. Published in 1592–94, the eight charts covered the northern Atlantic Ocean; the northern part of South America as far as 35° south; the southern part of South America; the Azores, with the Canary Islands and the opposite coasts of the Iberian Peninsula and North Africa; the Atlantic Ocean between northwest Africa and northeast Brazil; southern Africa; the Indone-

sian Archipelago and the Far East (fig. 45.12); and Europe with an inset map of Novaya Zemlya. ¹³⁰ Without a doubt, the source material was of Spanish and Portuguese origin; nevertheless, these maps represented an important basis for further research and improvement by Dutch sailors.

None of these maps carried the name of Plancius, but they can probably be ascribed to him.¹³¹ This is not only because Cornelis Claesz. published them and they were engraved by the Van Doetecum family, but also because they are identical in appearance to maps of France and Italy produced during the same period that do carry the name of Plancius as author. Proof that the earliest printed set of Dutch sea charts were extremely popular and sold quickly in shipping circles is the fact that second and even third editions of most of the maps are known.

The First Charts on Mercator's Projection

All the sea charts mentioned so far used plane graticules for latitude and longitude, resulting in a projection that

122. Three copies are known: Göttingen, Niedersächsische Staatsund Universitätsbibliothek (printed on paper and mounted on linen); Leiden, Universiteitsbibliotheek (printed on vellum); and Weimar, Herzogin Anna Amalia Bibliothek (printed on paper and pasted on vellum). See *MCN*, 1:17–18, and vol. 7, facsimile 1.

123. See Nalis, *Van Doetecum Family*, pt. 4, 38–39; MCN, 3:5–6 and 7:84–90 and facsimiles 2.1–2.4; and Günter Schilder, "The Chart of Europe in Four Sheets of 1589 by Lucas Jansz Waghenaer," in *Theatrum Orbis Librorum: Liber Amicorum Presented to Nico Israel on the Occasion of His Seventieth Birthday*, ed. Ton Croiset van Uchelen, Koert van der Horst, and Günter Schilder (Utrecht: HES, 1989), 78–93.

124. See Nalis, Van Doetecum Family, pt. 4, 36–37; MCN, 1:16–17, n. 51, and 7:100–101 and facsimile 6 (first state); and F. C. Wieder, ed., Monumenta Cartographica: Reproductions of Unique and Rare Maps, Plans and Views in the Actual Size of the Originals, 5 vols. (The Hague: Martinus Nijhoff, 1925–33), vol. 1, pl. 6 (second state).

125. See Nalis, *Van Doetecum Family*, pt. 4, 56 and 59, and *MCN*, 1:19 and 34, n. 120, and 7:90–92 and facsimile 3.

126. On Plancius, see Johannes Keuning, *Petrus Plancius*, *theoloog en geograaf*, 1552–1622 (Amsterdam: P. N. van Kampen, 1946), and *Plancius*, 1552–1622, Maritiem Museum "Prins Hendrik," exhibition catalog (Rotterdam, 1972).

127. See the section on Flemish map engravers and publishers in Amsterdam, pp. 1309–14, in this volume.

128. Printed in Wieder, Monumenta Cartographica, 2:28-30.

129. Wieder gave the plausible explanation that the fourteen charts depicted the whole world, while the other eleven were larger-scale charts of parts of the earth. See F. C. Wieder, "Nederlandsche kaartenmusea in Duitschland," *Tijdschrift van het Koninklijk Nederlandsch Aardrijkskundig Genootschap* 36 (1919): 1–35, esp. 20–22. A 1590 set of sea charts by Lasso are held by Rotterdam, Maritiem Museum. Described and reproduced in Cortesão and Teixeira da Mota, *Portugaliae monumenta cartographica*, 3:91–92 and pls. 369–76.

130. For a fuller description, see Wieder, *Monumenta Cartographica*, 2:37–38 (nos. 15–34), and *MCN*, 7:110–32 and facsimiles 4 and 8–14. See also Nalis, *Van Doetecum Family*, pt. 4, 110–23 and 136–37.

131. In Cornelis Claesz.'s *Const ende caert-register* of 1609, only the charts of Europe and of the Moluccas bear the name of Plancius as author.



FIG. 45.12. MAP OF THE INDIAN ARCHIPELAGO AND THE FAR EAST BY PETRUS PLANCIUS, PUBLISHED BY CORNELIS CLAESZ., 1592–94.

Size of the original: 39×55.5 cm. Photograph courtesy of the Universiteitsbibliotheek Amsterdam.

presented neither direction nor distances correctly. Although none are extant, we know that Plancius produced a number of sea charts in 1594 that were drawn according to Mercator's projection. This projection, with its lines of latitude spaced farther apart as they moved away from the equator, was adopted in shipping circles only slowly because the untrained sailor was unable to calculate distances on such a chart. Using sea charts on the Mercator projection became easier when Edward Wright produced a set of tables for the increasing lines of latitude, which were then published in 1594 by Thomas Blundeville. Plancius was probably able to consult Blundeville's publication when constructing the Mercator charts.

One of Plancius's maps appears to have been a general chart of the Mediterranean drawn on this projection. On 12 September 1594, the States General awarded Plancius a privilege for twelve years, stating "that he alone in the United Provinces is allowed to have printed and sold the sea-chart, by which with great and prolonged labour he has reduced all the sea-coasts of Europe, Asia and

Africa, that are situated on the Mediterranean . . . to their true degrees of latitude and altitude of the Pole . . . and that without any shortening or diminution of the countries, though on the Spanish, Portuguese, Italian, Sicilian and other sea-charts they are placed three, four and five degrees, and more, outside their true position and latitude." The privilege granted Plancius the right to print other sea charts drawn on the Mercator system: "all such new forms of sea-charts as the said Plancius has invented, on which the three sides of the triangle are good and true, because in them the degrees of latitude have their natural proportion with the degrees of longitude." ¹³⁴

We know only from other sources that Plancius actually produced charts of various parts of the world's seas drawn

^{132.} MCN, 7:241-44.

^{133.} Thomas Blundeville, *A New and Necessarie Treatise on Navigation* (London, 1594), under the title "A Table to Draw Thereby the Parallels into the Mariners Card."

^{134.} Printed in Wieder, Monumenta Cartographica, 2:40.

on Mercator's projection. For example, Albert Haeyen criticized the chart material that Plancius had given to the pilots on the second expedition in search of a northeast passage in 1595. Haeyen obviously did not understand the charts with increasing width between parallels and accused Plancius of intentionally falsifying the charts to make the northeast sea journey appear much shorter than it really was. Haeyen, a seaman of the old school, had disdain and mistrust for the work of the academically minded Plancius, who had never been to sea. When Plancius put together the sailing instructions for the first Dutch voyage to the East Indies in 1594, he already had before him a chart of the area with increasing latitude. 135 Although we cannot be certain whether the first fleet under Cornelis de Houtman (1595–97) was equipped with sea charts on the Mercator projection, clearly the expedition of Jacob Cornelisz. van Neck and Wybrant Warwijck, which set sail in 1598 for the East Indies, did. Apart from the reports in the journals written during the voyage, Plancius wrote in the sailing instructions he prepared for the fleet about the difference between the common (plane) sea charts (gemeyne zeecaerten) and the sea charts with increasing lines of latitude (zeecaerten met wassende graeden): "In the sea charts with increasing degrees are all three sides of the triangle so good and correct as they are on the terrestrial globe." 136 When the first contingent of Van Neck's fleet returned to Holland in 1599, among twenty-six charts produced by Plancius, five charts with increasing lines of latitude (caerten met wassende graeden) were mentioned. 137 We know that Plancius personally produced sea charts with increasing latitude, gave these charts to sailors, and mentioned the advantages of this projection in his sailing instructions, but it would be some time before the useful Mercator charts would take the place of the *paskaarten*.

Later Activities

The Dutch made significant contributions to the charting and exploration of the northern polar regions, and Cornelis Claesz. was responsible for publishing journals of discoveries and charts expressly designed to illustrate the route taken by Dutch voyages. The Dutch voyages of discovery in 1594–97 did not find a northeast passage, but they did provide greater knowledge of the region as far as Vaigach Island and added to the map new discoveries in the northern Arctic. The public was informed of the adventures and the cartographic results of Willem Barents's famous third voyage by the publication of crew member Gerrit de Veer's journal and Barents's polar map (fig. 45.13),¹³⁸ both published by Cornelis Claesz. in 1598.

The Portuguese were the Dutch pilots' predecessors and instructors in navigating African and Asian waters. Using information he had collected in India, Jan Huygen van Linschoten wrote the *Itinerario*, *voyage ofte schip*-

vaert, the first major work on the Portuguese colonial empire, which also might be described as the first Dutch encyclopedia. It was published by Claesz. in 1596, and, in addition to numerous illustrations, it included six maps. Together, the Plancius map of the world in two hemispheres engraved by Joannes van Doetecum Jr. and the other five maps engraved by Arnold and Hendrik van Langren provide a complete picture of the African, Asian, and South American coasts. Claesz. offered these charts as a set in his sale catalog of 1609.

When the first Dutch expedition to the Indies (1595–97) returned to Holland under the command of Cornelis de Houtman, efforts were made to publish the results of the voyage as soon as possible. In April 1598, Claesz. published the journal of Willem Lodewijcksz., clerk on De Houtman's voyage. 142 In addition to this richly illustrated journal, Claesz. also printed a map in two sheets, now very rare, on which the route taken by De Houtman's expedition was drawn (fig. 45.14). 143

139. For more details, see the works by the Linschoten-Vereeniging, nos. II, XXXIX, and XLIII (The Hague: Martinus Nijhoff, 1910–39) and LVII, LVIII, and LX (The Hague: Martinus Nijhoff, 1955–57).

140. On the world map, see Nalis, *Van Doetecum Family*, pt. 4, 134–35; Rodney W. Shirley, *The Mapping of the World: Early Printed World Maps*, 1472–1700, 4th ed. (Riverside, Conn.: Early World, 2001), 206–7 (no. 187); C. Koeman, *Jan Huygen van Linschoten* (Lisbon: Instituto de Investigção Científica Tropical, 1984); and *MCN*, 7:204–18 and facsimiles 18–24.

141. "The engravings and maps by Jan Huygen [van Linschoten], about 48 in all, are available for sale individually." See Claesz., *Const ende caert-register*, fol. Bv.

142. Willem Lodewijcksz., D'Eerste Boeck: Historie van Indien, waer inne verhaelt is de avontueren die de Hollandtsche Schepen bejeghent zijn... For a detailed description of this voyage, see G. P. Rouffaer and J. W. IJzerman, eds., De eerste schipvaart der Nederlanders naar Oost-Indië onder Cornelis de Houtman, 1595–1597, 3 vols. (The Hague: Martinus Nijhoff, 1915–29).

143. Two copies are known: Amsterdam, Nederlands Scheepvaartmuseum, and Rotterdam, Maritiem Museum. See *MCN*, 7:258-64 and facsimile 25.

^{135.} Discussing the geographical position of Java, Plancius says that this island "has been drawn in the charts on Mercator's projection 100 German miles further away from Cape of Good Hope," as on the parallel projection of the Portuguese charts. See "Memorie by Plancius gemaeckt," manuscript in Amsterdam, Nederlands Scheepvaartmuseum (A IV-2 243a).

^{136.} Keuning, De tweede schipvaart, 2:243.

^{137.} The Hague, Nationaal Archief (Archieven van de Compagnieën op Oost-Indië, 1594–1603, 1.04.01, no. 27).

^{138.} Gerrit de Veer's journal is titled Waerachtighe beschryvinghe van drie seylagien, ter werelt noyt soo vreemt ghehoort, drie jaeren achter malcanderen deur de Hollandtsche ende Zeelandtsche schepen by noorden Noorweghen, Moscovia ende Tartaria, na de coninckrijcken van Catthai ende China (Amsterdam: Cornelis Claesz., 1598; facsimile ed. Franeker: Van Wijnen, 1997). On the map, see Willem Barents, Deliniatio cartae trium navigationum per Batavos, ad Septentrionalem plagam . . . , intro. Günter Schilder (Alphen aan den Rijn: Canaletto/Repro-Holland, 1997), and MCN, 7:172–82 and facsimile 16.

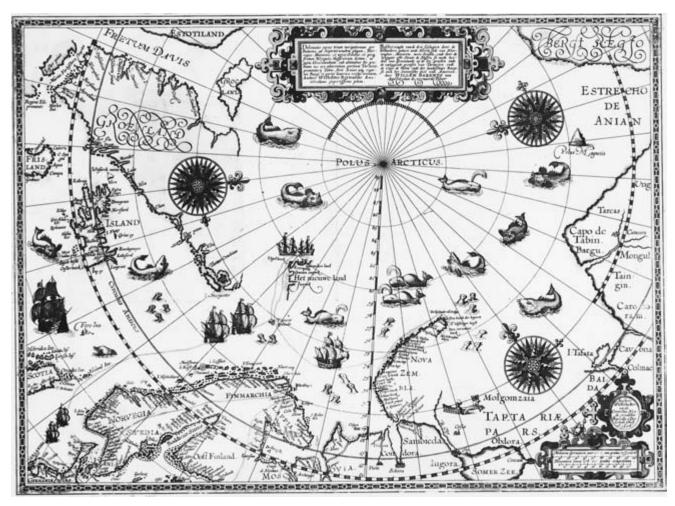


FIG. 45.13. WILLEM BARENTS'S POLAR MAP, PUB-LISHED BY CORNELIS CLAESZ., 1598. Titled Delineatio cartae trium navigationum per Batavos, ad Septentrionalem plagam, Norvegiae, Moscoviae et novae Semblae... The route

taken by the ships from Amsterdam to Spitsbergen and Novaya Zemlya is drawn in.

Size of the original: 42×56 cm. Photograph courtesy of the Universiteitsbibliotheek Amsterdam (OK 129).

At the same time, Claesz, published a separate chart of the Java Sea by Willem Lodewijcksz. derived from the first Dutch voyage to the Indies.¹⁴⁴ It was initially intended to be included in the printed journal of the voyage of 1598, but Amsterdam merchants, who had outfitted this expedition, prohibited this action. 145 The results of the first voyage to the Indies failed to meet the great commercial expectations there had been for it, but its most important objective—the exploration of the sea route—had been achieved. A succession of fleets were outfitted for trading voyages to the Indies by various companies of merchants, the most important of which was the Amsterdam fleet of eight ships under the command of Admiral Jacob Cornelisz. van Neck and Vice-Admiral Wybrant Warwijck that sailed from 1598 to 1600. In 1600, Cornelis Claesz. published not only the journal illustrated with twenty-five plates but also a special map on which the fleet's route was drawn in.146

With the publication of the journal of the first Dutch voyage around the world by Olivier van Noort (1598–

^{144.} Nova tabula, Insularum Iavae, Sumatrae, Borneonis et aliarum Malaccam usque . . . Copies are in Amsterdam, Nederlands Scheepvaartmuseum; Universiteitsbibliotheek Utrecht, Collection of the Faculty of Geosciences; the BL; and the BNF. See MCN, 7:264–69 and facsimile 26.

^{145.} Three copies with detailed textual descriptions of the area on the backside are known: Paris, Bibliothèque de l'Arsenal; Rotterdam, Maritiem Museum; and Vienna, Akademie der Wissenschaften (Collection Woldan).

^{146.} Tabula itineraria octo navium ductore Iacobe Cornelio van neck... The following copies are known: BNF and Rotterdam, Maritiem Museum. A full-size facsimile was published by Frederik Muller in his series Remarkable Maps of the XVth, XVIth & XVIIth Centuries Reproduced in Their Original Size, 6 pts. (Amsterdam, 1894–97), 2:2, after the copy in the BL (which is now lost). See also MCN, 7:273–77 and facsimile 28. In Claesz.'s sale catalog, this map, together with the plates, is offered for 22 stuivers; see Claesz., Const ende caert-register, fol. Br.

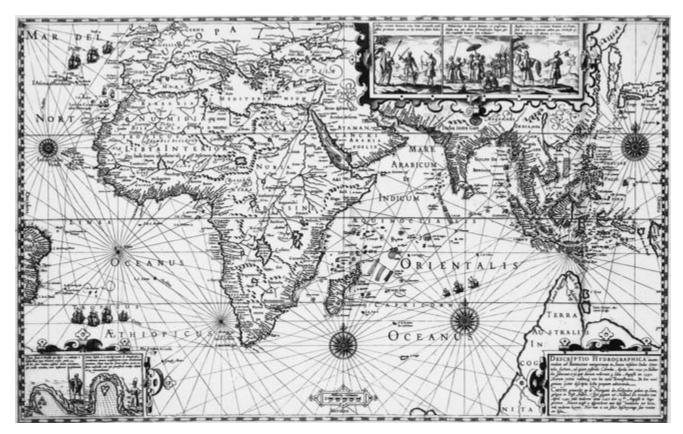


FIG. 45.14. MAP SHOWING THE ROUTE OF THE FIRST DUTCH FLEET TO THE EAST INDIES, 1595–97. Published by Cornelis Claesz. in 1598 and titled *Descriptio hydrographica accommodata ad Battavorum navigationem in Javam in-*

sulam indae Orientalis, factam: Ad quam postridie Calendas Aprilis ann. 1595.

Size of the original: 40.7×67.5 cm. Photograph courtesy of the Maritiem Museum, Rotterdam.

1601) and a map of the world showing the route, Claesz. decisively committed to spreading knowledge of Van Noort's voyage. 147 This voyage did not result in new discoveries or increased knowledge of the world, nor did it open up new routes for Dutch trade. Nevertheless, it stood as a source of pride for the Dutch, bolstering the reputation of the young republic that was still fighting for its independence and claiming its place among the seafaring nations. The map of the world in four sheets, known only in a later edition of 1650 by Claes Jansz. Visscher, glorifies the first Dutch circumnavigation. 148 This is evident in the two long legends, the strip of decorations at the bottom border, the portrait of Van Noort, and the depiction of his route. In Cornelis Claesz.'s sale catalog, this map was offered for 12 stuivers. 149 The last and most recent chart, listed under the heading "The maps of all voyages" in Claesz.'s 1609 catalog, was a decorative map of West Africa Claesz. published in 1602, at the same time as the earliest and most detailed description of the Bay of Guinea was written by Pieter de Marees. Of this chart, only a later edition by Hugo Allard is known. 150

The growing demand by Dutch pilots for a good chart for use in the trade with Kola and Archangel was met by Claesz. with the publication, in 1608 or earlier, of an important chart by Mouris Willemsz. The Russian coast is shown with surprising accuracy and must have been put together with the aid of the latest Dutch cartography

^{147.} Olivier van Noort, Beschryvinghe vande voyagie om den geheelen werelt cloot, ghedaen door Olivier van Noort; see J. W. IJzerman, De reis om de wereld door Olivier van Noort, 1598–1601, 2 vols. (The Hague: Martinus Nijhoff, 1926).

^{148.} The map is without a title; each of the four sheets is 40.5 by 56 centimeters. Two copies are known: National Maritime Museum, London, and Atheneum Library, Boston. The two left sheets are also to be found in a private collection in Chicago. See Günter Schilder, *Three World Maps by Francois van den Hoeye of 1661, Willem Janszoon (Blaeu) of 1607, Claes Janszoon Visscher of 1650* (Amsterdam: N. Israel, 1981), 41–51 and plates IV.3A–IV.3H, and MCN, 7:311–27 and facsimiles 33.1–33.8.

^{149.} Claesz., Const ende caert-register, fol. Br.

^{150.} The Allard edition is Effigies ampli Regni auriferi Guineae in Africa siti, extensum inde ab insulis Atlanticis, vulgo dictis, de Cabo Verde . . . ; a description and illustration are also in Cortesão and Teixeira da Mota, Portugaliae monumenta cartographica, 3:67–70 and pl. 362D. See also Nalis, Van Doetecum Family, pt. 4, 304–5, and MCN, 7:298–302 and facsimile 32.

^{151.} Rechte pascaerte om te beseylen S. Niclaes, ende Archangel, ende alle de costen, tot de Strate van Nassou genoemt Waygats...The

and materials supplied by the Russians. The chart also presents the first detailed mapping of the Dvina estuary, with soundings drawn by Thomas Jacobsen, and also gives us new ideas concerning the discovery of Edge Island, proving that the island ("Groen Landt" on the chart) was discovered by an unknown Dutch whaling ship in 1608 or earlier.

Willem Barents's Sea Charts

In his catalog of 1609, Cornelis Claesz. offered for sale two charts by Willem Barents in various forms under the heading "Pas-Caerten" (the amounts are in stuivers):

- 1a. Chart by Willem Barents of the Mediterranean Sea with the harbors, printed on vellum, highlighted with gold, 50;—
- 1b. Idem, pasted on francyn, 35;—
- Chart by Willem Barents of East and West, printed on vellum and highlighted with gold, 50;—
- 2b. Chart by Willem Barents of East and West, paper [pasted] on vellum, colored, 25;—

No example of chart 2 has survived. About chart 1 we know somewhat more. Claesz. published Barents's Nieuwe beschryvinghe ende caertboeck vande Midlandtsche Zee in 1595.152 With the increase in Dutch shipping trade through the Strait of Gibraltar in the last decade of the century arose the need for a sailing handbook of the Mediterranean with Dutch charts and text. In his foreword, Barents stated that he "was prepared from his childhood to map to the best of [his] ability the countries and surrounding seas and waters [he] visited or sailed." Collaboration between Plancius and Barents is documented by the fact that both names are mentioned in the general chart, and both men worked closely together in 1593/94 when planning a course for the discovery of a Northeast Passage. The general chart included in the *Caertboeck* was also published separately—a copy colored with gold and printed on vellum sold for 50 stuivers, and a copy "pasted on francyn" went for 35.153 In Cornelis Claesz.'s sales catalog, there is mention of a "small map of the Mediterranean," which could allude to the other charts in the Caertboeck at a larger scale, which would also have been available separately.

THE NORTH HOLLAND TRADITION OF MANUSCRIPT CHARTMAKERS

Before Amsterdam became the entrepôt of Europe and took the leading role in producing maps and sea charts, an extremely important tradition of cartography was already flourishing in North Holland. ¹⁵⁴ Centered in Edam and Enkhuizen on the Zuiderzee, the members of what has been called the North Holland school specialized in

sea charts, taking advantage of the towns' roles as trading ports and harbors, which created the perfect conditions for the development of cartographic workshops. A maritime tradition emerged there whose roots could be traced back to the first half of the sixteenth century.

The first major breakthrough in cartographic production came in the work of Lucas Jansz. Waghenaer, which had a profound influence on the development of western European navigation. Waghenaer must, without doubt, be regarded as the most important representative of this North Holland school of chartmakers. While Waghenaer's work, published in many languages, received sufficient recognition, the same cannot be claimed for his colleagues who were active from the 1590s.

The Meaning of the North Holland School of Dutch Maritime Cartography

In Enkhuizen and Edam, many so-called *caert-schrijvers* (chart draftsmen) were active, including Cornelis Doetsz., Evert Gijsbertsz., Jan Dircksz. Rijckemans, Augustijn Robaert, Claes Pietersz., Joris Carolus, and the brothers Harmen and Marten Jansz. Although we know very little about these people, their cartographic work indicates the important part they played in Dutch marine cartography. Only a small portion of their work was printed, with the vast majority in manuscript on vellum. One reason why so little was known about this tradition of cartography until recently is because most of their charts are scattered throughout the world (in Sydney, Tokyo, Paris, London, and Berlin), with only a few examples held in Dutch collections. The surviving map material of the North Holland school can be divided into two main categories. The first consists of charts of a functional character that would have been used by sailors as navigational aids on board ship. 155 With the exception of a beautifully drawn compass rose, the charts are characterized by their

only known copy is in the BL (Maps Mar. II.5). An illustration and description are in Günter Schilder, *Plaatsbepaling: De oude kaart in zijn verscheidenheid van toepassingen* (Amsterdam: Nico Israel, 1982), 20–21, and *MCN*, 7:182–84 and facsimile 17. See also idem, "Unknown Steps in the Arctic Sea: The Voyage by Mouris Willemsz (1608 or earlier)," in *Accurata descriptio* (Stockholm: Kungl. Biblioteket, 2003), 403–18.

- 152. Barents, Caertboeck vande Midlandtsche Zee (1970), and MCN, 7:141-44 and facsimile 15.
- 153. A copy printed on vellum is preserved in Rotterdam, Maritiem Museum.
- 154. Remarks about this school are in Wieder, *Monumenta Cartographica*, 1:7–9, and Keuning, "XVIth Century Cartography," 62. Giuseppe Caraci informs us about a discovery of five charts of this school in "Di alcune antiche carte nautiche Olandesi recentemente ritrovate," *Il Universo* 6 (1925): 795–827; reprinted in *Acta Cartographica* 26 (1981): 257–98. A summary based on more recent research is found in Schilder, "De Noordhollandse cartografenschool."

155. MCN, 7:234-45.

simple, unadorned representations. The second group consists of what could be called office maps. Because of their very decorative nature, containing rich colors and miniature painted scenes, these maps served as wall decoration and sources of information for wealthy shipowners and merchants in their offices. Waghenaer, with a few exceptions in later editions of the *Thresoor*, confined his work to navigation along the coast of Europe. The rest of the *caert-schrijvers* of the North Holland school, however, usually depicted a complete continent or an ocean with the adjoining coastline.

This school of cartography attracted different types of mapmakers. Some, such as Waghenaer and Carolus, collected most of their mapping material during an active life at sea. The larger group, however, were the armchair scholars, such as Doetsz., Gijsbertsz., and the Jansz. brothers, all of whom produced their charts with the help of material from others. Probably they obtained some of their knowledge directly from Spanish and Portuguese sources (with new information received from newly arrived ships), and some from the works of Dutch scholars and travelers, such as Plancius and Van Linschoten, who themselves had Iberian maps and sailing directions. The caert-schrijvers were not content with simply copying, however, but added the results of the growing Dutch trading voyages and expeditions of discovery so that they offered a map with the latest geographic knowledge.

This school of chartmakers was in close collaboration with Amsterdam publishers such as Cornelis Claesz., Willem Jansz. Blaeu, Dirck Pietersz., and Everard Cloppenburg. Only in Amsterdam could one find the necessary preconditions for the successful production of these large maps: many highly skilled engravers and publishers with both capital and large plate presses as well as printers who had the necessary experience to print onto vellum. Amsterdam publishers repeatedly printed manuscript charts by the *caert-schrijvers* and played a decisive role in the distribution of the products of this school.

Insight into the wide range of sea charts produced by this cartographic school that were available to the Dutch seaman is found in the sales catalog of Cornelis Claesz. Several of the charts listed there are no longer extant, but it is interesting to note that some maps were printed from the copperplate directly onto vellum and some onto paper that was subsequently pasted on vellum in order to extend the life of the chart. The latter method was naturally less expensive and less time-consuming than printing onto vellum. In addition to the printed charts, the Amsterdam publishers also had the hand-drawn charts of the caert-schrijvers in stock, as is clear from a note in Claesz.'s catalog next to the list of printed charts: "Furthermore, I have for sale manuscript charts of all kinds on East-Indies, West-Indies, Guinea, Terneuf [Newfoundland] drawn by the best chart writers." 156

Separately Published Charts by Lucas Jansz. Waghenaer

In addition to three printed pilot guides, Spieghel der zeevaerdt (1584-85), Thresoor der zeevaert (1592), and Enchuyser zee-caert-boeck (1598), Lucas Jansz. Waghenaer also drew separate manuscript sea charts that are known only from written sources. 157 Fortunately, we have some extant examples of the printed charts that were sold separately. Two general charts of western Europe that were integral to Waghenaer's *Spieghel* were also published separately. The older general chart, dated 1583, is the very first map in the first part of the Spieghel, which appeared in 1584.158 In a short text on the reverse, the following explanation is given (this is the English translation as printed in 1588): "Wherein you may playnly perceaue, how the particular Countries are annexed and ioyned eache to other, and every one of them in his right place, distance, poynt of compas, degrees, minutes, &c. I have therefore thought necessary to place this generall table (or poortraict) at the very beginning of this booke before all the rest: to th'end, you may thereby the better seeke and finde out particulars, observynge th'order and methode of this booke." It is highly probable that this chart was published separately, with no text on the back, in 1583. Drawn to a scale of approximately 1:8,500,000, it presents the coasts of all of western Europe extending from the North Cape and Iceland as far southwest as the Canary Islands, with the Gulf of Finland appearing for the first time in its correct east-west orientation.

The expanding Dutch knowledge of northern areas and northern waters is visible in Waghenaer's chart of Europe of 1592 (fig. 45.15), which had already appeared as the new general map in the 1591 edition of Waghenaer's *Speculum nauticum.* There is no doubt that this map was also published separately, and a version pasted onto vellum was offered for 15 stuivers in Claesz.'s 1609 catalog. The map itself had much in common with the 1583 chart, with the coverage extended eastward to include all of Scandinavia and Finland, the Gulf of Bothnia (Noord Bodem), the White Sea, and the Barents Sea as far as the southwest coast of Novaya Zemlya. Waghenaer also published other sea charts; three years after Waghenaer's death, Cornelis Claesz.'s catalog listed those copper engravings and maps for which he owned the plates. Five charts by Waghenaer were offered under the heading "Pas-Caerten": "Great charts with the 2 globes by Lucas Jansz. on 4 large Lombard sheets, colored on vellum, with the Levant sea and in the north to the River Ob" for 50 stui-

^{156.} Claesz., Const ende caert-register, fol. B3r.

^{157.} See Koeman, Lucas Janszoon Waghenaer, 28-29, and MCN, 7:84-85.

^{158.} Vniverse Europe maritime eiusq nauigationis descriptio . . . ; MCN, 7:80-83.



FIG. 45.15. MAP OF EUROPE BY LUCAS JANSZ. WAGHENAER, 1592. Titled *Universe Europæ maritime eiusque navigationis descriptio* . . .

Size of the original: 65×42 cm. Photograph courtesy of the Maritiem Museum, Rotterdam (Waghenaer Atlas 77).

vers; a "chart by Lucas Jansz. Waghenaer of East and West with the tides and degree book pasted on vellum, colored" for 25 stuivers; a "chart by Lucas Jansz. Waghenaer on vellum Eastern navigation only, colored" for 15 stuivers; a "chart by Lucas Jansz. Waghenaer, Western navigation only pasted on vellum, colored" for 25 stuivers; and a "chart by Lucas Jansz. Eastern and Western pasted on vellum" for 15 stuivers. ¹⁵⁹ Of these five charts, two have survived; the last mentioned is the chart of Europe of 1592.

One copy of the first and most expensive chart in the list, at 50 stuivers, has been known only since 1985. The area covered by the chart—the complete eastern, northern, and western sea routes and the navigation of the whole of the Mediterranean—is described in the detailed title. The award of a privilege for ten years by the States General is also mentioned on the chart. Waghenaer dedicated this chart of Europe to his greatest sponsor, François Maelson. It clearly shows the development of the role that the Dutch shipping agents were playing as European freight carriers. Waghenaer's chart of 1589 is convincing testimony to the claim laid by the northern province, with Amsterdam at its center, that it had the dominant position in trade.

The Work of Cornelis Doetsz.

Cornelis Doetsz., a caert-schrijver living in Edam, was one of the most active members of the North Holland school of chartmakers. 161 A highly respected man who held many offices, he was selected as special delegate to the Admiraliteit in Hoorn in 1611. His earliest known work was the recently discovered small navigation booklet Graetboeck nae den ouden stijl, published by Cornelis Claesz. and discussed earlier. Claesz. also published various charts by Cornelis Doetsz. In his catalog of 1609, the following charts were offered: "Large charts by Cornelis Doetsz., of four large Lombard sheets, East and West on large scale with the globes and harbors, colored" for 50 stuivers; "charts of the East and West, medium-sized, by Cornelis Doetsz. with the harbors, printed on vellum, well colored and heightened in gold" for 50 stuivers; a "chart by Cornelis Doetsen of the East and West, with the harbors, medium-sized, pasted on vellum, colored" for 25 stuivers; and a "chart by Cornelis Doetsen, pasted on vellum, of the Eastern navigation only, colored" for 15 stuivers. 162 Of these charts, only the second and fourth (on paper and the earliest known work of Doetsz.) have survived.

Doetsz.'s 1589 chart *Pascaerte inhoudende dat ghe*heele oostersche en noortsche vaerwater was of great importance for navigation in the Baltic and White Seas and documented the latest cartographic knowledge the Dutch had of the northern European coasts and the coastline of the Baltic.¹⁶³ After Claesz. died in 1609, the copperplate of Doetsz.'s chart came into the hands of the Amsterdam engraver and publisher Claes Jansz. Visscher, who reissued the chart—with altered imprint only—the following year.¹⁶⁴

A unique cartographic document of Dutch trade at the turn of the sixteenth century is Doetsz.'s *Nieuwe paschaerte getrocken by Cornelis Douszoon inde 4 heems: Kinderen chaertschrijver, begrijpende seer perfectelijck alle de zeecusten van Europa,* engraved by Jodocus Hondius and published by Claesz. in Amsterdam in 1602. The chart gives an amazing overview of the development of Dutch trade and shipping in a period when the young republic, fighting for its independence, was also claiming an important role among seafaring nations (fig. 45.16). The character and the content of this chart of Europe, which had not appeared anywhere else, make it one of the earliest examples of Dutch thematic cartography.¹⁶⁵

The earliest known chart of Europe in Doetsz.'s own hand is in Florence.¹⁶⁶ Willem Jansz. Blaeu mentioned that he had used a chart of Doetsz.'s as a basis for his first sea chart of Europe in 1605.¹⁶⁷ The oldest surviving manuscript map by Doetsz. is dated 1598 and shows the area between the unknown Southland and Japan (fig. 45.17).¹⁶⁸ This and two anonymous vellum charts remind us of the

^{159.} Claesz., Const ende caert-register, fol. B3r.

^{160.} Generale pascaerte van gantsch Europa: Inhoudende de geheele oostersche, noortsche en[de] westersche zeevaert, desgelycx oock de navigatie van de gantsche Middelantsche Zee . . . The only known copy, in four sheets, 73.5 by 90.5 centimeters, originally pasted on vellum, is in Amsterdam, Universiteitsbibliotheek. The chart, engraved by Joannes van Doetecum and his son Baptista, could be bought, as mentioned on the chart, from both Waghenaer and Claesz.; see Schilder, "Chart of Europe"; Nalis, Van Doetecum Family, pt. 4, 38–39; and MCN, 7:84–90 and facsimiles 2.1–2.4.

^{161.} On Doetsz., see Schilder, "De Noordhollandse cartografenschool," 55-59.

^{162.} Claesz., Const ende caert-register, fol. B3r.

^{163.} Tabula hydrographica, tum maris Baltici (quod Orientale hodie vocant) tum Septentrionalis Oceani nauigationem continens . . . Amstelreodami ex officina Cornelij nicolai ad intersigne diarij 1.5.8.9. The only known copy is preserved in the BL (Maps C.8.b.6; bound in a copy of Waghenaer's Spieghel from 1596). MCN, 7:100–101 and facsimile 6.

^{164. &}quot;Printed in Amsterdam by Claes Janss Visscher, living on the new side of Colck Inde Visscher 1.6.1.0." Wieder offers a reproduction and description of the Oslo copy in his *Monumenta Cartographica*, vol. 1, pl. 6. Another copy is preserved in Rotterdam, Maritiem Museum.

^{165.} Günter Schilder, "Een handelskaart van Europa uit 1602: Een Nederlandse bijdrage aan de historisch-thematische kartografie," *Kartografisch Tijdschrift* 7 (1981): 35–40, and *MCN*, 7:101–4 and facsimile 7.

^{166.} Florence, Biblioteca Nazionale Centrale (Port. XXVIII). See Giuseppe Caraci, "Un cartografo olandese poco noto: Cornelis Doetz. una carta dell'Europa," *Bibliofilia* 27 (1925–26): 52–57.

^{167.} See p. 1422, note 196, in this chapter.

^{168.} Reproduced in Keuning, *De tweede schipvaart*, facsimile vol., pl. VIII.

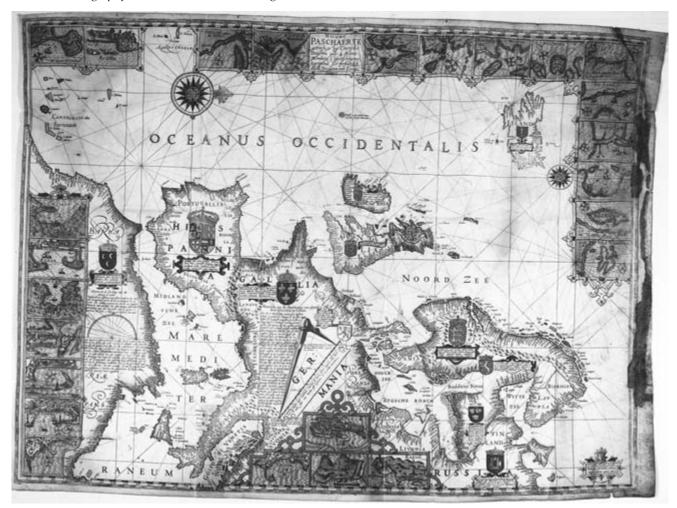


FIG. 45.16. CORNELIS DOETSZ.'S NIEUWE PASCHAERTE... VAN EUROPA, 1602. Printed on vellum. The role that Dutch shipping agents played as European freight carriers is clearly seen on this chart. It is primarily concerned with the exchange of goods, where Dutch shippers and merchants played the leading roles as buyers, sellers, agents, and shippers. The trading nature of Doetsz.'s chart manifests itself most clearly in the cartouches, in which the goods to be had in the various countries are depicted. Apart from the pre-

sentation of the trading goods, along the borders of the chart are twenty-five scenes of important harbors where Dutch shippers plied their trade. These small charts were designed to make sailing in and out easier. Additionally, two extensive legends give the pilot details as to how to calculate the distances between harbors.

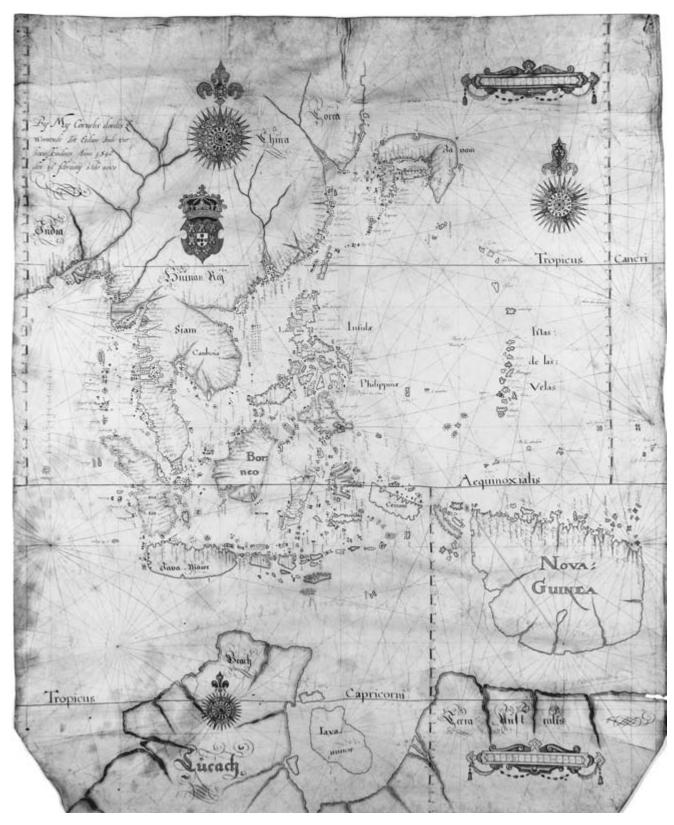
Size of the original: 54×70.5 cm. Photograph courtesy of the Badische Landesbibliothek, Karlsruhe (F 14 [R]).

earliest Dutch contact with Japan, and it is extremely likely that these charts belonged to the equipment on board the ship *De Liefde*, the only ship of the fleet of Jacques Mahu and Simon de Cordes to reach Japan in 1600. The chart itself was based entirely on Portuguese material, and Doetsz. relied chiefly on Jan Huygen van Linschoten's *Itinerario* of 1596, which presented a summary of Portuguese knowledge of the region.

Doetsz.'s chart of the Indian Ocean,¹⁶⁹ which served as the basis for the chart produced by Petrus Plancius and appeared in the *Itinerario*, was also based on Portuguese material. All the toponyms are Portuguese, although Doetsz. notes the observations of Mauritius by Wybrant Warwijck during the second expedition to the East Indies

in 1598: "Do Cirne of Mauritius lant." There are two hand-drawn maps by Cornelis Doetsz. in Dutch collections. One is a general chart of the Atlantic Ocean dated 1600 with the American coast to the west and the coasts of Europe and Africa to the east; thirty years later, this

169. Florence, Biblioteca Nazionale Centrale (Port. XXIX). A description is in Giuseppe Caraci, "Un'altra pergamena di Cornelis Doetz.: Carta dell'Oceano Indiano," Bibliofilia 27 (1925–26): 58–60; and idem, Tabulae geographicae vetustiores in Italia adservatae: Reproductions of Manuscript and Rare Printed Maps, Edited and Explained, as a Contribution to the History of Geographical Knowledge in the Period of the Great Discoveries, 3 vols. (Florence: O. Lange, 1926–32), 1:16–17 and pls. XVIII–XIX.



 $_{\rm FIG.}$ 45.17. CORNELIS DOETSZ.'S MANUSCRIPT CHART OF THE FAR EAST, 1598.

Size of the original: 92 \times 71.8 cm. Photograph courtesy of the Tokyo National Museum (A-9412).

type of chart was called a "West-Indische paskaart." ¹⁷⁰ These small-scale general charts were primarily designed for longer journeys to trading regions of Africa and America. Once the coast was sighted, navigation could be carried out with the help of sailing instructions and other manuscript maps at larger scales.

Cornelis Doetsz. laid an important foundation for the mapping of New Holland with his map of part of the East Coast of North America. The Dutch were relatively late in coming into contact with the North American continent. The immediate impulse for the first Dutch trading voyages to this area, which was later named Nieuw Nederland, was the expedition of Henry Hudson that was carried out in 1609 on behalf of the VOC. On 11 October 1614, the States General granted the Compagnie of Nieuw Nederland exclusive privilege to carry out four expeditions in the course of the next three years along the American coast between the latitudes of forty and fortyfive degrees. This company consolidated their claim with the help of, among other things, a figurative caerte. 171 This manuscript map, drawn on vellum, not only shows the coasts but includes inland regions of Nieuw Nederland and New England. Recent research has discovered that, while in Nieuw Nederland in the years 1613 and 1614, skipper Adriaen Block drew sketches onto a base map that had been prepared by Cornelis Doetsz. 172 There is clear evidence of a compilation through the differences in the mapping, the handwriting, and also the coloring. One of the findings that Block brought back to Holland was seen in the depiction of Manhattan as an island; on the island, the Indian tribe Manhates was named. 173

Other Caert-schrijvers

Other members of the North Holland school are known from a far smaller corpus. Jan Dircksz. Rijckemans, a caert-schrijver of Edam, is known only from a single sea chart of the North Atlantic Ocean on vellum, evidence of the earliest Dutch voyage to the West.¹⁷⁴ The same holds true for Claes Pietersz. of Warder, a small village between Edam and Hoorn, known only from a single hand-drawn chart of the Atlantic. 175 On his vellum chart, dated 1607, the coastlines of the continents and islands have been diligently drawn, as was common on other maps produced by the North Holland school of chartmakers. Though the cartographic content of this general map hearkens back to the original Portuguese and Spanish sources, the results of Dutch travels have been incorporated as well. Names along the South American coast between the Amazon and Trinidad on Pietersz.'s map clearly show evidence of information gathered on the Dutch journeys around 1600.

Five manuscript charts on vellum by Evert Gijsbertsz. have survived, of which four, with luxuriant drawings and beautiful coloring, must be categorized as represen-

tative of the decorative group of maps within the North Holland school (plate 55). Three of these maps are signed and dated. A glance at the chart of the Indian Ocean and the Far East from 1599 (now in Sydney) clearly reveals that the map was never designed for navigation on board a ship; its surplus of artistically drawn scenes were intended to serve a decorative function.¹⁷⁶ This chart and another signed by Evert Gijsbertsz. dated 1599 (now in Paris) are the two earliest Dutch manuscript charts of the Indian Ocean. The charts are based completely on Portuguese sources; the maps in Van Linschoten's Itinerario (Amsterdam, 1596) played a central role. Indeed, Gijsbertsz. copied four of the five miniature scenes on the chart in Sydney directly from the Itinerario. In the reproduction of the Indian Archipelago and the Far East, however, he diverged from Van Linschoten and followed the Portuguese charts of Fernão Vaz Dourado. The other chart of the Indian Ocean (in Paris) is of a completely different character.¹⁷⁷ It offers an entirely new depiction of the Indian Archipelago, especially with regard to the Philippines (fig. 45.18). Instead of adopting the charts of Vaz Dourado, Evert Gijsbertsz, here chose the much more accurately engraved maps from the Itinerario.

174. BNF (S. H. Archives no. 4). See Catalogue des cartes nautiques sur vélin: Conservées au Département des Cartes et Plans (Paris: Bibliothèque Nationale, 1963), 175.

175. Florence, Biblioteca Nazionale Centrale (Port. XXXIV). An illustration and description are in Caraci, "Di alcune antiche carte," 811–24.

176. Sydney, State Library of New South Wales (Dixson Galleries). A description and illustration are in Günter Schilder, "Een Nederlands kartografisch meesterwerk in Sydney: Evert Gijsbertsz.' kaart van de Indische Oceaan, 1599," Bulletin van de Vakgroep Kartografie (Utrecht, Geografisch Instituut der Rijksuniversiteit) 14 (1981): 57–62. This chart was offered for sale in Frederik Muller's Catalogue Afrique: Histoire, géographie, voyages, livres et cartes (Amsterdam 1904), no. 928, for the price, at the time very high, of 1400 guilders.

177. An illustration is in Pál (Paul) Teleki, Atlas zur Geschichte der Kartographie der japanischen Inseln (Budapest: Hiersemann, 1909; reprinted Nedeln: Kraus Reprint, 1966), pl. V, and Catalogue des cartes nautiques sur vélin, 92–93.

^{170.} Leiden, Universiteitsbibliotheek (Bodel Nijenhuis Collection, inv. 003-13-001).

^{171.} The Hague, Nationaal Archief (VEL 520).

^{172.} K. Zandvliet, "Een ouderwetse kaart van Nieuw Nederland door Cornelis Doetsz. en Willem Jansz. Blaeu," *Caert-Thresoor* 1 (1982): 57–60.

^{173.} When Block returned to Amsterdam, he left the first yacht ever built in America, the *Onrust*, to skipper Cornelis Hendricksz., who proceeded to carry out further expeditions of discovery and cartography in the Hudson and Delaware areas. The map made during these voyages, the so-called second figurative map, is an extremely valuable document because of the large number of Dutch place-names along the Hudson River that are mentioned for the first time; see The Hague, Nationaal Archief (VEL 519). See also Isaac N. P. Stokes, *The Iconography of Manhattan Island*, 1408–1909, 6 vols. (New York: Robert H. Dodd, 1915–28), 2:63–75 and pls. 23–24.

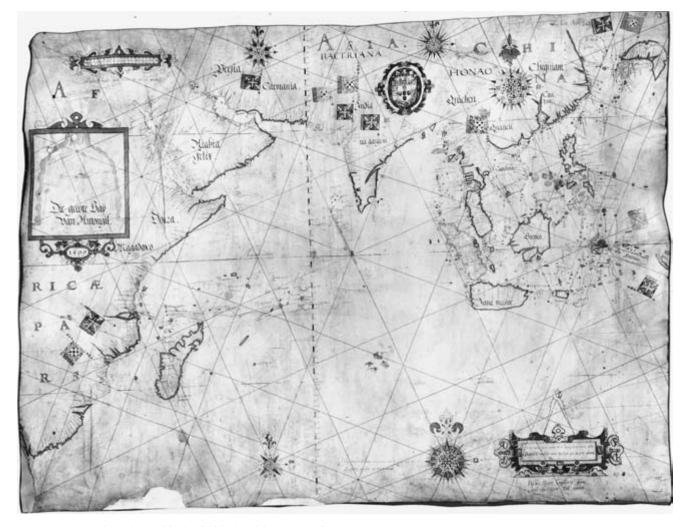


FIG. 45.18. MANUSCRIPT CHART OF THE INDIAN OCEAN AND EAST INDIES BY EVERT GIJSBERTSZ., 1599.

Size of the original: 74×100 cm. Photograph courtesy of the BNF (Rés. Ge AA 569).

The last known work of Evert Gijsbertsz. is a chart of the North Sea dated 1601.¹⁷⁸ In this decorative manuscript chart, surrounded by a wide band of flowers and fruit, the sea areas contain decorative scenes of Neptune, sea monsters, and a compass rose, and in Holland and Norway two miniature paintings have been added. However, one should not be distracted by the decorative elements, for this chart also has very detailed drawing of the coastlines of the North Sea, attesting to the intimate knowledge of these waters gained by Dutch sailors. Not a single contemporary printed map shows the North Sea in such detail and at this scale. Whether Evert Gijsbertsz. copied from another manuscript chart that has now been lost or whether he was drawing from his own sketches cannot be ascertained.

Two further *caert-schrijvers* of the North Holland school of chartmakers were the Jansz. brothers, Harmen and Marten. Sea charts of both the decorative and the

functional type exist from both brothers. In the former category is a manuscript chart of the world in four sheets, produced by both brothers in 1610, based on the wall map of the world in Mercator projection published by Willem Jansz. Blaeu in 1607. The Harmen and Marten Jansz. copied the coastlines, names, and legends and then added miniature paintings to inland areas on the continents.

Three fragments of a hand-drawn world map on vellum also came out of the workshop of the Jansz. brothers. ¹⁸⁰ On one of the three fragments, their names are

^{178.} Florence, Biblioteca Nazionale Centrale (Port, XXXI). See Caraci, "Di alcune antiche carte," 801–06, and idem, *Tabulae geographicae vetustiores*, 1:17–18 and pl. XX.

^{179. &}quot;Nova orbis terrarum geographica ac hydrogr. tabula . . . ," BNF (Rés. Ge A 1048). On the 1607 wall map, see Schilder, *Three World Maps*, 23–40, pls. IV.2A–IV.2D.

^{180.} London, National Maritime Museum (G.201:1/16-A, B, C).

clearly legible. Given the unusual circular form of the other two fragments, one is led to the assumption that they were designed as a drumhead. Of an entirely different character is the sea chart of the Atlantic Ocean that Harmen and Marten Jansz. drew on vellum in 1604. ¹⁸¹ This is another example of a small-scale general Atlantic map. The contact between the Amsterdam publishing world and the school of cartography in North Holland during the period 1590–1630 is evidenced by the publication of a general map of Europe produced by the Jansz. brothers and published by Jan Evertsz. Cloppenburg, with a new edition on vellum issued in 1631. ¹⁸²

Finally, we must briefly outline the very active life of Joris Carolus, who regularly referred to himself as a helmsman and caert-schrijver in Enkhuizen. Carolus must have been a very experienced mariner, for he undertook repeated voyages of exploration for the Noordsche Compagnie in Arctic waters. 183 In 1614, he was given the contract to find the longed-for Northeast Passage and two ships, the Gulden Cath under skipper Jan Jacobsz. May and the Orangienboom under skipper Jacob de Gouwenaer, were equipped and placed under his command. The results of this journey were documented on a manuscript chart on vellum that Carolus drew after the expedition. 184 The north coast was drawn from Spitsbergen as far as the Hinlopen Strait, which separates the main island from the smaller isles to the northeast (Nordaustland). Because Carolus could not continue his journey through pack ice farther than Edge Island, he set course to the west. When he sighted Jan Mayen Island he believed he was its discoverer. For this reason, on the large manuscript chart one finds the island named for Carolus (M^r. Ioris Eylandt). However, the island had been sighted many times since 1608.

The following year, Carolus undertook another journey into Arctic waters. The vellum chart he drew in 1626 that shows Iceland, Greenland, and northeastern America announces: "Written and compiled and for three times sailed by master Joris Carolus, helmsman and *caertschrijver* in Enkhuizen." On the west coast of Greenland and the coast of Labrador, Dutch names can be read that are probably connected with an expedition Carolus carried out in 1615. In Greenland, at 61° north, appears the name "Mr. Ioris hoeck," with which Joris Carolus wanted to express his participation in the expedition.

In 1618, Carolus undertook an expedition on behalf of the States General in the ship *Bruyn-Visch* in order to verify in practice the techniques described by Jan Hendrick Jarichs van der Ley concerning globe and chart use in long-range shipping. A commission of experienced mariners was at Carolus's disposal, and being named leader of the expedition must have been a great honor. The voyage of the *Bruyn-Visch* (4 June–19 November 1618) to the Davis Strait was a personal success for Van

der Ley. On 22 February 1620, the States General granted him a twelve-year privilege to publish his *Voyage van experiment* . . . , which reported on the expedition of the *Bruyn-Visch* and gave three practical examples for the *Generale regul*. ¹⁸⁶ The calculations made under Carolus's supervision compared the use of globe and chart, and several passages made reference to sea charts of the North Holland school of chartmakers.

Joris Carolus was highly respected, and in 1619 he was appointed teacher of the art of navigation in Copenhagen, where he taught nautical classes for Danish helmsmen for five years. During this period, he was able to learn about Danish waters in more detail and produced a manuscript chart. On his return to Holland, the States General granted him a privilege for six years to publish a "certain map of the true situation of the coasts, lands, bancs, capes and islands of the kingdom of Denmark." On 3 April 1625, Joris Carolus sold his publishing rights to Johannes Janssonius. Whether or not this Amsterdam publisher had the manuscript map of Denmark engraved on copper is not known; no copy has been found.

On 10 April 1626, Carolus obtained a privilege to print a map "of the miraculous island of Iceland, according to the true shapes of all its bays and rivers thereto, as well as its principal towns and mountains of this island; all of these put down to the correct longitude and latitude and also reflecting the proper courses and distances." ¹⁹⁰

^{181.} Florence, Biblioteca Nazionale Centrale (Port. XMI). See Caraci, "Di alcune antiche carte," 806-11.

^{182.} Nieuwe pascaerte van alle de zeecusten van geheel Europa . . . Helsinki University Library (Helsingin Yliopiston Kirjasto), Nordenskiöld Collection (K 117). A copy from 1631 is preserved in Copenhagen, Det Kongelige Bibliotek (S. Kab. III).

^{183.} Samuel Muller, Geschiedenis der Noordsche Compagnie (Utrecht: Gebr. Van der Post, 1874), and Günter Schilder, "Mr. Joris Carolus (ca. 1566–ca. 1636), 'Stierman ende caertschryver tot Enchuysen,'" in Koersvast: Vijf eeuwen navigatie op zee (Zaltbommel: Aprilis, 2005), 46–59.

^{184.} BNF (Rés. S.H. Archives no.7). A description and illustration are in F. C. Wieder, *The Dutch Discovery and Mapping of Spitsbergen* (1596–1829) (Amsterdam: Netherland Ministry of Foreign Affairs and the Royal Dutch Geographical Society, 1919), pls. 5 and 6.; see *Catalogue des cartes nautiques*, 179–80.

^{185.} The Hague, Nationaal Archief (VEL 1). See Axel Anthon Bjørnbo and Carl S. Petersen, *Anecdota cartographica septentrionalia* (Copenhagen, 1908), 12–13 and facsimile XI.

^{186.} Jan Henrick Jarichs van der Ley, Voyage vant experiment vanden Generale regul des gesichts vande Groote Zeevaert (The Hague: Hillebrant Iacobsz., 1620), 46–48.

^{187.} The royal instructions have been preserved. See Copenhagen, Rigsarkivet (Sael. Reg. XVI, fol. 425v-426v).

^{188.} The Hague, Nationaal Archief (Staten Generaal no. 12303, fol. 98v-99r).

^{189.} Amsterdam, Gemeentearchief (Not. Arch no. 223, fol. 173).

^{190.} The Hague, Nationaal Archief (Staten Generaal no. 12303, fol. 162).

His map of Iceland was repeatedly published by various Dutch publishers.¹⁹¹ At the same time, the States General also granted Carolus a further privilege for the publication of "a new [spherical chart] of North Pole, Spitsbergen, Iceland, Davis Strait and the land in the west, and also the newly found sea and strait, named Christian Sea and from there southwards to the Azores. In addition a paskaart with the same contents as a plane chart for use on the high sea." ¹⁹² This chart would seem to have been the basis for the previously mentioned vellum map of 1626. A printed version, published as a plane map or as a spherical chart, is not known.

Carolus brought together on paper the elements of his considerable experience, accumulated during a long life as pilot and teacher in the art of navigation, in a pilot guide with the title *Het nieuw vermeerde licht, ghenaemt de sleutel van 't thresoor, spiegel, gesicht, ende vierighe colom des grooten zeevaerts* published in Amsterdam by Johannes Janssonius in 1634. ¹⁹³ Of the fifty-one charts, thirty-two were printed from copperplates that had already appeared in Janssonius's plagiarized edition of Blaeu's *Het licht der zee-vaert*. Seven of the nineteen new charts name Carolus as author. In his address to the reader, Carolus related that he had put the pilot guide together "not according to information acquired from others, but from [his] own observation, made in person."

AMSTERDAM PUBLISHERS OF SEPARATE CHARTS

Cornelis Claesz. was one of the first to react to the greater need for better navigational aids in the sixteenth century, and he quickly brought a rich supply of sea charts onto the market, making Amsterdam the center for map production and map sales. In this favorable climate of commercial activity and good prospects in the field of navigation and maritime cartography, Willem Jansz. Blaeu and Hessel Gerritsz. appeared. Blaeu was a newcomer and suffered from the competition of Cornelis Claesz. and Jodocus Hondius, who dominated the market. In the beginning, Blaeu had to fight for a place in the shadow of these two publishers of great experience and established reputation. He enjoyed his first successes in globe production, but in 1605 he began to publish sea charts.

Gerritsz. was one of the most versatile persons on the Dutch geographic-cartographic scene during the first three decades of the seventeenth century. He was not only a designer and engraver of maps, but also a publisher, printer, and bookseller. ¹⁹⁴ Many institutions repeatedly exploited his vast experience in the field of navigation; among other offices, he occupied the position of mapmaker to the VOC (1617–32) and the WIC (West India Company) (see chapter 46 in this volume), but he was also active in the field of European navigation and shipping.

Charts for European Navigation by Blaeu

As was the case with his competitors, Blaeu had knowledge that was based not on personal experience gathered during journeys along European coasts but on the purchase of nautical drawings, sketches, and sea charts from various sources, which he then processed. Blaeu published relatively few separate sea charts: his reputation in the maritime sector was won mainly through the publication of his pilot guides Het licht der zee-vaert (from 1608) and Zeespiegel (from 1623). The publication of both these pilot guides in various languages served a complete generation of seafarers. But with respect to sea charts, Blaeu was very much aware "that the co[m]mon flatte Sea-cardes many tymes in some places are untrue, specially those that set forth great voyages, farre from the Equinoctiall: but the Sea-cardes that are commonly used here aboutes for the East & West voyages by Sea, they are reasonable true, or els the faults therin are so smale, that they cannot be any hinderance thereunto: they are most fitt Instruments to be used by sea." He vehemently criticized the opinion held generally by pilots "that the written Cardes are much better and perfecter, they meane the written Cardes that are dayly made by men, are everie day corrected, & the printed never." Blaeu explained that manuscript charts were in no way better, "because so much cost for one peece alone were to much, but all one after the other, with the least labour copied out, and many tymes by such persons that have litle or no knowledge therein." 195

The earliest known sea charts that Blaeu published separately were two charts of Europe based on manuscript charts by Cornelis Doetsz. On the earliest chart, published in 1605, Blaeu explained in his dedication to the reader that the map shows "new information on all places, corrected diligently and much improved by Cornelis Doedsz. of Edam." ¹⁹⁶ The publication of this chart shows that Blaeu was able to overcome successfully the competition of Cornelis Claesz., and that he was also able to obtain and publish the best available manuscript material.

Another map of Europe by Doetsz. and published by Blaeu appeared only one year later; the map covered a wider area to the north and east than did the earlier map

^{191.} See the description and illustration in Haraldur Sigurðsson, Kortasaga Íslands frá öndverðu til loka 16. aldar (Reykjavik: Bókaútgáfa Menningarsjóðs og Þjóðvinafélagsins, 1971), 32–37.

^{192.} Resolutions by the States General, 10 April 1626. See Schilder, "De Noordhollandse cartografenschool," 68.

^{193.} AN, 4:63-66 (M. Bl 20[J]).

^{194.} Johannes Keuning, "Hessel Gerritsz.," Imago Mundi 6 (1949): 48–66.

^{195.} Blaeu, Light of Navigation, fol. F2r-v.

^{196.} Generale pascaerte vande gheheele oostersche westersche ende een groot deel va[n] de Middelantsche Zeevaert . . . The only known copy is in the BNF (Rés. Ge D 2427). See MCN, 4:37–38.

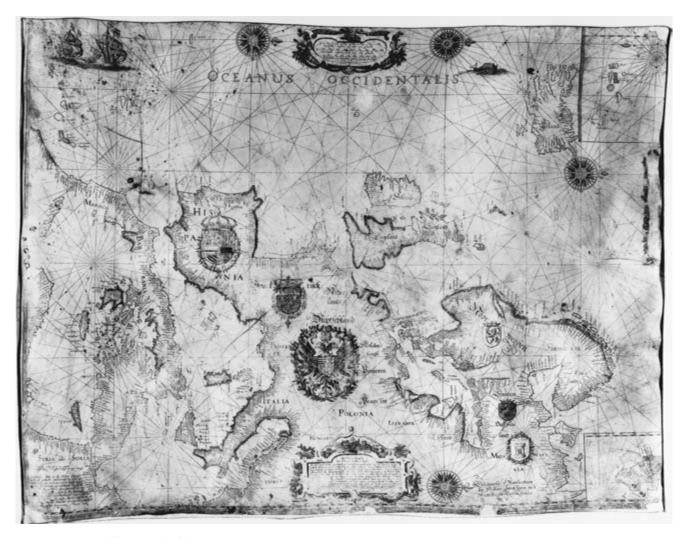


FIG. 45.19. DOETSZ.'S CHART OF EUROPE, PUBLISHED BY BLAEU, 1606. This is the only copy known.

Size of the original: 60.5×76.5 cm. Photograph courtesy of the Royal Geographical Society, London (Sign. Europe G99).

(fig. 45.19).¹⁹⁷ It had no title, but the map content was clearly explained in the address to the reader:

Willem Ianszoon to the willing reader. On this sea chart (willing spectator) you have all the sea coasts of Europe, drawn with great perfection by Cornelis Doetsz. of Edam, in their perfect bearings and true latitudes, with the sole exception of the Mediterranean, where the author has deliberately disregarded the latitude (from Malta eastwards) and only observed the bearings according to our ordinary German compasses, which around Crete and Cyprus are half a point to the northwest. This is shown by the fact that Malta, the south coast of Crete and Cyprus are at the same latitude of 36 degrees, yet cannot be sailed in an easterly or westerly course from one to another, as can be seen with the eyes on this map.

Because Blaeu also wanted to include the Levant coast in the map, he moved it to an inset inside North Africa.

The map stretches from 25°20′ north to 75°20′ north and includes Bear Island and Iceland to the north, the complete Canary Island group to the southwest, and Novaya Zemlya to the east, where the privilege granted by the States General for this map was printed in abbreviated form. When one compares the map content to that of maps of the same area by his famous predecessor, Lucas Jansz. Waghenaer, there are obvious improvements in the overall workmanship and the depiction of the coastline.

This chart of Europe must have been appreciated in shipping circles and enjoyed good sales because a second edition was published.¹⁹⁸ Cornelis Doetsz. had died, so

^{197.} See Günter Schilder, "Willem Janszoon Blaeu's Map of Europe (1606), a Recent Discovery in England," *Imago Mundi* 28 (1976): 9–20, and *MCN*, 4:42–43.

^{198.} Three copies are known: Helsinki University Library (Helsingin Yliopiston Kirjasto), Nordenskiöld Collection (K 106); BNF (Rés. Ge

Blaeu alone was responsible for updating the map. The original copperplate was improved in two places, with the most obvious change that of eliminating the west coast of Novaya Zemlya and replacing it with an inset map of Spitsbergen. Jan Mayen Island was also added to the map. These two changes were hardly surprising, for these two lands formed the most important bases for Dutch whaling after the Noordsche Compagnie was established in 1614.

In 1608, Blaeu began a successful attack on the dominant position held by Claesz. with the publication of his new pilot guide *Het licht der zee-vaert*. Claesz. responded the following year with a new edition of Waghenaer's *Nieuwe thresoor der zee-vaert* containing new maps. However, Claesz. died that same year, giving Blaeu free rein in maritime activities. Whether any maps from *Het licht der zee-vaert* of 1608 were available separately at the time is not known, but the importance of these pilot guides lay in combining maps and detailed text descriptions; individual publication of the maps was not a priority. ¹⁹⁹

We know for certain that the first two maps of the third volume of Blaeu's *Het licht der zee-vaert* (1618) were published separately, and two examples on vellum are known. The vellum sheets have been mounted on three wooden boards connected with iron hinges—a unique example of such a mounting in Dutch maritime cartography.²⁰⁰ Blaeu appears to have employed a format already used in London by members of the Drapers' Company: the vellum charts would not have to be stored rolled in a cylinder, but were protected by the wooden boards and easily accessible for use by sailor or merchant.

In 1623, Blaeu published a completely new pilot guide, the *Zeespiegel*, probably in part due to Janssonius's plagiarism of his *Het licht der zee-vaert*. One of the charts included in the *Zeespiegel*, the *Pascaert vande Oost-zee*, appeared separately: a copy printed on vellum is known.²⁰¹ At about the same time, Blaeu published a map of the Bay of Biscay printed on vellum, proving that smaller general charts not included in Blaeu's pilot guides were also issued.²⁰²

In the mid-1620s, Willem Jansz. Blaeu published a new chart of Europe offered on both paper and vellum. In contrast to the earlier charts of 1605 and 1606 (and the second state of the one from 1606), this chart covered an area that stretched farther northward and westward (so that there was no need for insets of Spitsbergen or the Azores) and also included Greenland. Comparing the map to earlier charts of Europe reveals considerable improvements in the drawing of the coasts in many places, such as Ireland, Iceland, the Gulf of Danzig in the Baltic Sea, and also the Gulf of Finland. However, the depiction of the White Sea and the Kanin Peninsula, is actually far less accurate in the new map than in the 1606 chart.

Blaeu's Charts for Navigation outside Europe

Willem Jansz. Blaeu produced separate sea charts for navigation of non-European waters. His *Paskaart van Guinea*, *Brasilien en West-Indien* was an important Atlantic sailing chart showing the east coasts of North and South America from Newfoundland to Río de la Plata and the west coasts of Europe and Africa between the same latitudes.²⁰⁴ The idea behind the production of such a general map designed for transatlantic sailing was not new; it had been used by the Dieppe school and by members of the North Holland school of chartmakers at the end of the sixteenth century. Blaeu's contribution, however, lies in the fact that his was the first printed *overzeiler* (long-range plotting chart) of the Atlantic Ocean, and that the map content reflects the results of the latest Dutch discoveries and explorations in America.

Because this was a general map, Blaeu was forced to limit himself to including the most important elements. Nevertheless, the map formed the starting point for the printed cartography of Nieuw Nederland, and on it the name Nieuw Nederland was found on a printed map for the first time. The Hudson River, here named Mauritius

C 2347); and Universiteitsbibliotheek Utrecht, Collection of the Faculty of Geosciences (VIII.N.d.2).

199. The possibility remains, however, that the second map, *Pascaarte van Hollandt*, *Zeelandt ende Vlaenderen*, and the twentieth map, showing the coasts of Friesland and Groningen, had appeared separately before 1608; these were the only maps out of the complete set to mention the name that Blaeu used before 1621, Willem Janszoon, and one is dated 1607.

200. Hamburg, Universitätsbibliothek, and French private collection. See *MCN*, 4:90–91.

201. London, National Maritime Museum (G 313:1; ex collection Mensing). See *MCN*, 4:102.

202. A copy is in the BL (Maps C.22.b.16; bought from *Catalogue* 22 [London, Robert Douwma, 1979], no. 15). See MCN, 4:91–92.

203. Pascaarte van alle de zècusten van Evropa . . . ; see the illustration in Klaus Stopp and Herbert Langel, Katalog der alten Landkarten in der Badischen Landesbibliothek Karlsruhe (Karlsruhe: G. Braun, 1974), pl. VI; Schilder, "Blaeu's Map of Europe," 17; and MCN, 4: 100–102, where the known copies are listed.

204. In addition to the only known copy mentioned by Wieder in the collection of Phelps Stokes (now in the New York Public Library, New York), three other copies have been discovered in The Hague, Paris, and Weimar (printed on vellum). See Stokes, Iconography of Manhattan Island, 2:78-82, 137, and pl. 25; Wieder, Monumenta Cartographica, 3:70, no. 41; Johannes Keuning, Willem Jansz. Blaeu: A Biography and History of His Work as a Cartographer and Publisher, rev. and ed. Y. Marijke Donkersloot-De Vrij (Amsterdam: Theatrum Orbis Terrarum, 1973), 72-73; Marcel Destombes, "Quelques rares cartes nautiques néerlandaises du XVIIe siècle," Imago Mundi 30 (1978): 56-70, esp. 64, 66-67, and 69, reprinted in Günter Schilder, Peter van der Krogt, and Steven de Clercq, eds., Marcel Destombes (1905-1983): Contributions sélectionnées à l'histoire de la cartographie et des instruments scientifiques (Utrecht: HES, 1987), 513-27; MCN, 4:97-99; and Philip Burden, The Mapping of North America: A List of Printed Maps, 1511-1670 (Rickmansworth, Eng.: Raleigh, 1996), 239-41 (no. 194).

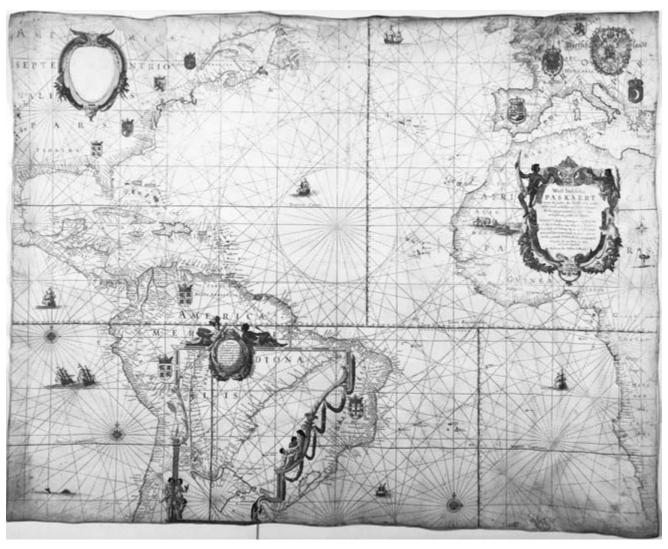


FIG. 45.20. WILLEM JANSZ. BLAEU'S WEST INDISCHE PASKAERT, CA. 1630. Printed on vellum. The area mapped stretches from Ireland and Newfoundland in the north to the Cape of Good Hope and Río de la Plata in the south, and from the Gulf of Mexico in the west as far as Greece in the east. In

the interior of South America, there is an inset map of part of the southern part of the continent as far as Cape Horn, which could not be shown on the main map.

Size of the original: 78×97.5 cm. Photograph courtesy of the Badische Landesbibliothek, Karlsruhe (D 40 [R]).

Rivier, is shown as far inland as Fort Nassau, the first settlement in this region. Manhattan Island was shown as an island for the first time on a printed map, although it was not named.

Another very remarkable sea chart of the Atlantic is Blaeu's *West Indische paskaert*, which appeared in 1630 and was drawn on Mercator's projection (fig. 45.20).²⁰⁵ It presents one of the earliest practical uses of the Mercator projection, which was only slowly being accepted in shipping circles. The title of the chart states that this *overzeiler* was designed for voyages to the trading regions of Africa and America, regions where the WIC, formed in 1621, enjoyed a monopoly. Blaeu produced his chart with the help of manuscript material of the area and supple-

mentary material that was provided by pilots who had sailed these routes. The latest geographic additions were names taken from the 1623–26 expedition of Admiral

205. West Indische paskaert waerin de graden der breedde over wederzijden vande middellijn wassende soo vergrooten dat die geproportioneert sijn tegen hunne nevenstaende graden der lengde . . . There are two copies: Brussels, Royal Library of Belgium (III 9359), and Karlsruhe, Badische Landesbibliothek (D 4 [R]). More details are in Marcel Destombes and Désiré Gernez, "La 'West Indische paskaert de Willem Jansz. Blaeu' de la Bibliothèque Royale," Mededeelingen, Academie van Marine van België = Communications, Académie de Marine de Belgique 4 (1947–49): 35–50, reprinted in Marcel Destombes (1905–1983), 23–40; MCN, 4:114–17; and Burden, Mapping of North America, 288–91 (no. 233).

Jacques l'Hermite. This small-scale map was designed principally for the transatlantic part of the voyage. As soon as the coast came into sight, the voyage could be continued using a pilot guide of the region, such as Dierick Ruijters' *Toortse der zee-vaert* (1623) and manuscript charts at larger scales.

Without doubt, Blaeu was able to fill a gap in the market with the production of his West Indische paskaert. Although this sea chart was probably printed in large numbers, only two examples are known today, both on vellum. On 11 February 1634, Blaeu announced the forthcoming publication of a world atlas in four languages in Jan van Hilten's Courante uit Italië; however, only the German edition was produced that year. In order to publish on time, Blaeu resorted to shortcuts. For his map of Central America, he used only the northwest part of the plate of his West Indische paskaert for printing by covering the remaining parts of the plate. The map title was printed in book type onto a piece of paper that was then stuck onto the partly remaining cartouche of the West Indische paskaert.²⁰⁶ Blaeu's copperplate was used continuously throughout the seventeenth century by various Amsterdam publishers: first by Jacob Robijn, then in editions by Pieter Goos and Johannes Loots. The long life that Blaeu's copperplate enjoyed speaks for its quality; moreover, the chart itself served as a basis for the maps published by other Amsterdam publishers such as Anthonie Jacobsz., Hendrik Doncker, Justus Danckerts, Hugo Allard, and Johannes van Keulen.

Blaeu published a booklet of instructions complementary to the *West Indische paskaert* of which no example has survived. Bierens de Haan mentioned it in 1883, but unfortunately did not identify where it could be found,²⁰⁷ and it may be that he was quoting a 1659 source: "And as . . . this increasing latitude chart has nothing in common with the measurements in the plane charts we would like to recommend to our reader to consult a booklet called Instructions for and use of the West Indian plotting chart, with increasing latitudes published and described by Willem Jansz. Blaeuw." ²⁰⁸ In summary, Blaeu's *West Indische paskaert* represents one of the most important Dutch contributions to the history of hydrography of the seventeenth century.

For general charts, especially at higher latitudes, plane charts were unsuitable. Blaeu had to cope with these problems in his *Paskaarte van de westersche zee* and at higher latitudes—in order to eliminate the greater longitudinal scale. There is a double representation of Greenland, depicted once for ships approaching from the Shetland Islands and once for ships sailing from Newfoundland.²⁰⁹ The legend explains the reason as follows: "because in plane charts, three places, forming a triangle cannot be depicted according to their true relative position, distances and latitudes."

In addition to his cartographic activities in relation to navigation in African and American waters, Blaeu made contributions to the development of maritime cartography while active in the Hydrographic Office of the VOC during the last six years of his life (1633–38).²¹⁰ His rights, duties, and tasks as chartmaker of the Amsterdam Chamber of the VOC are treated in chapter 46 in this volume.

Charts by Hessel Gerritsz.

Hessel Gerritsz.'s earliest contributions to maritime mapping were manuscript charts of Ireland bound into a copy of a pilot guide of Ireland that he prepared for the Amsterdam Admiralty, the Beschrijvinghe van de zeecusten ende Havenen van Yerlandt (Amsterdam, 1612). The author of the guide was a pilot from Plymouth by the name of John Hunte. In the foreword, Gerritsz. explained that he translated the English text and added a small paskaart of Ireland. According to Gerritsz., further details in the pilot guide had been gratefully received from Dirck Gerritsz. of Dublin, from the English pilot Lery of Westford (Wexford), and from Lucas Jansz. Waghenaer. Gerritsz. included their descriptions and drawings within John Hunte's text, and for his efforts received payment from the Amsterdam Admiralty on 24 November 1612. The pilot guide of Ireland and the manuscript maps that went with it were printed at the specific request of the admiralty in Amsterdam by Gerritsz. in a limited edition. It was thought that this pilot guide in Dutch would give warships a much-needed nautical aid for pursuing the English pirate vessels that often took refuge in the many Irish bays and harbors.211

206. Insulae Americanae in Oceano Septentrionali, cum tertia adiacentibus. For copies, see Tony Campbell, "One Map, Two Purposes: Willem Blaeu's Second 'West Indische paskaart' of 1630," Map Collector 30 (1985): 36–38, and MCN, 4:115–16.

207. David Bierens de Haan, Bibliographie Néerlandaise historiquescientifique: Des ouvrages importants dont les auteurs sont nés aux 16°, 17°, et 18° siècle, sur les sciences mathématiques et physiques, avec leurs applications (Rome, 1883; reprinted Nieuwkoop: B. de Graaf, 1965), 27 (no. 9). We do not know if Bierens de Haan actually saw a copy.

208. E. de Decker, Practyck vande groote Zee-vaert ende nu op nieuws verrijckt met twee Aenhange (Rotterdam, 1659), 7.

209. Paskaarte van de westersche zee vertonende de custen van Nederlandt, Vrancrijck, Engelandt, Spangien en Barbarien . . . Two copies are known: Paris, Bibliothèque de la Sorbonne, and Universiteitsbibliotheek Utrecht, Collection of the Faculty of Geosciences (VIII N.b.2). See Wieder, Monumenta Cartographica, 3:70 (no. 43); Désiré Gernez, "Quatre curieuses cartes marines néerlandaises du XVII° siècle," Mededelingen, Academie van Marine van België = Communications, Académie de Marine de Belgique 7 (1953): 157–63; Destombes, "Quelques rares cartes," 64, 66–67, and 69; and MCN, 4:99–100.

210. Günter Schilder, "Organization and Evolution of the Dutch East India Company's Hydrographic Office in the Seventeenth Century," *Imago Mundi* 28 (1976): 61–78, and MCN, 4:341–43 (appendix VI).

211. This pilot guide is preserved in Göttingen, Niedersächsische



FIG. 45.21. HESSEL GERRITSZ.'S "CARTE NAUTIQUE DES BORDS DE MER DU NORT, ET NOROUEST MIS EN LONGITUDE, LATITUDE ET EN LEUR ROUTE, SELON

LES RINS DE VENT," 1625. Size of the original: 87×112 cm. Photograph courtesy of the BNF (Rés. Ge DD 2987 [no. 9648]).

Gerritsz. was also very interested in Arctic regions. His pamphlet *Histoire du pays nommé Spitsberghe* (Amsterdam, 1613) informs the reader about the first Dutch whaling voyages to the waters around Spitsbergen. ²¹² In this polemic, Gerritsz. defended earlier Dutch rights against the incursion of the English at Spitsbergen. The attached map, as Gerritsz. himself wrote, was partly based on a lost manuscript map that was produced by John Daniel in London in 1612. ²¹³ The map content depicts the same coastal section as that in the polar map of Willem Barents (see fig. 45.13); however, the coast has been drawn in more detail, and there are some English names.

Another Gerritsz. map of Arctic waters is his 1625 manuscript (fig. 45.21), representing an overview of English and Dutch voyages of discovery, trade, and whaling to Hudson Bay, Davis Strait, and Spitsbergen.²¹⁴ The abundance of Dutch names in the areas of Labrador and the

Staats- und Universitätsbibliothek. See W. Voorbeijtel Cannenburg, "An Unknown 'Pilot' by Hessel Gerritsz, Dating from 1612," *Imago Mundi* 1 (1935): 49–51. A manuscript chart of France on vellum must also be attributed to Hessel Gerritsz. on the evidence of the style of drawing and the style of the compass rose; see BNF, Service Hydrographique (Pf. 32–5). See also Marcel Destombes, "An Unknown Chart Attributed to Hessel Gerritsz, about 1628," *Imago Mundi* 6 (1949): 14.

212. S. P. L'Honoré Naber, Hessel Gerritsz.: Beschryvinghe van der Samoyeden Landt en histoire du pays nommé Spitsberghe (The Hague: Martinus Nijhoff, 1924).

213. "La cognaissance doncques que nouvellement nous este faite, de ceste terre nommée Spitsberque, avons exprimé dans la Carte cy devant mis, & avons suivy pour la plus grand part les annotations des Angloys, tirée d'une carte de Iohn Daniel, escrit a Londres, l'An 1612." See L'Honoré Naber, *Hessel Gerritsz.*, 87.

214. See the description and illustration in Michel Mollat du Jourdin and Monique de La Roncière, *Sea Charts of the Early Explorers 13th to 17th Century*, trans. L. le R. Dethan (New York: Thames and Hudson, 1984), pl. 79.

west coast of Greenland (with dates from 1616 and 1625) provide an impression of Dutch undertakings to the northwest and supplement the sparse written sources.²¹⁵ All toponyms along the coast west of Spitsbergen are Dutch, without exception, while east of the Stor Fjord only English names are to be found—having been taken from a map by Thomas Edge (1625).²¹⁶

A similar portrayal of the Arctic regions depicting the results of English and Dutch voyages of the time is presented in a remarkable manuscript chart produced by Gerritsz. employing an azimuthal projection.²¹⁷ Particularly conspicuous is the clear drawing of possible northeast and northwest passages. The chart also provides further facts regarding climatology; for example, the edge of the pack ice is drawn, which stretches from Edge-øya as far north as the northern tip of Novaya Zemlya.

SUMMARY REMARKS

Dutch maritime cartography developed largely as an autonomous branch of commercial cartography. During the sixteenth and seventeenth centuries, the publication of pilot guides, sea atlases, and maps was primarily limited to the northern Low Countries, and a southern Dutch tradition never emerged. Just as in university cities, which had a consumer market for scientific works, in port towns such as Amsterdam and Rotterdam there was a need for shops selling navigational works, charts, and sea atlases.

One Dutch maritime cartographic innovation was Lucas Jansz. Waghenaer's *Spieghel der zeevaerdt* of 1584–85. It was there that nautical maps were published in book form together with sailing instructions for the first time. The *Spieghel* had an influence on other folio pilot guides well into the seventeenth century.

The Golden Age of the northern Dutch trade in pilot guides and atlases occurred between 1620-1700. As in

the case of the trade in maps, atlases, and globes, there was intense competition among the various publishers. However, there was little innovation during the second half of the seventeenth century. It was only after the Van Keulen firm became involved in maritime cartography, around 1680, that original material once again appeared on the market.

The production of loose nautical maps began in the first half of the sixteenth century. Cornelis Anthonisz. of Amsterdam was a pioneer in this field. Thanks to the rapid development of the Dutch sea trade during the second half of the sixteenth century, there was increasing demand for nautical maps. The North Holland school of nautical mapmakers, established in Edam and Enkhuizen on the Zuiderzee, produced two kinds of manuscript maps: nautical maps for use on board a ship and maps to decorate the offices of shippers and businessmen.

At the end of the sixteenth century, Cornelis Claesz. was the most important figure in maritime map publishing. He published some original nautical maps, but he also took over the manuscripts and publication rights of third parties. Hessel Gerritsz. and Willem Jansz. Blaeu carried the torch over the course of the seventeenth century. Blaeu, in particular, eventually took the most commercial advantage of the single-sheet nautical map.

^{215.} Günter Schilder, "Development and Achievements of Dutch Northern and Arctic Cartography in the Sixteenth and Seventeenth Centuries," *Arctic* 37 (1984): 493–514.

^{216.} Günter Schilder, "Spitsbergen in de spiegel van de kartografie: Een verkenning van de ontdekking en kartering," in *Walvisvaart in de Gouden Eeuw: Opgravingen op Spitsbergen*, exhibition catalog (Amsterdam: De Bataafsche Leeuw, 1988), 30–48.

^{217.} Carte geographique des costes et bords de Mer, iusques a present descouvert en la zone frigide boreale... Paris, Bibliothèque de l'Institut de France. For illustration, see Schilder, "Development and Achievements," 504.

APPENDIX 45.1 DUTCH PRINTED RUTTERS, 1532–1594

Year	Printer/Publisher	Title	Remarks
1532	Jan Seversz.	De kaert va[n]der zee	Brussels, Royal Library of Belgium (Kostbare Werken II 28.584A).
1540/41	Jan Jacobsz.	Dit is die kaerte van dye Suyd zee/Dit is die caerte vander zee om oost ende west te zeylen	Revised edition of Seversz.'s rutter. Amsterdam, Universiteitsbibliotheek (UBM: Ned. Inc. 151a).
[Ca. 1544]	Cornelis Anthonisz.	[Caerte van die Oosterse Zee]	Description of the Baltic waters. No copy known
[Ca. 1551]	Cornelis Anthonisz.	[Caerte van die Oosterse Zee]	Description of the Baltic waters. No copy known
1551	?	["Leeskaartboek van Wisbuy"]	Western and eastern navigation. No copy known
1558	Jan Ewoutsz.	Caerte van die Oosterse Zee	Cornelis Anthonisz.'s rutter. Oblong format with coastal profiles. Cambridge, Harvard University, Houghton Library (NC5.An866.544oc).
1561	Jan Ewoutsz.	Dits die caerte vander see om oost en[de] west te seylen	Western and eastern navigation. Munich, Bayerische Staatsbibliothek (Rar. 554).
1566	Jan Roelants	Dit is die caerte vander see om oost ende west te seylen	Reprint of the 1551 edition. Copenhagen, Det Kongelige Bibliotek (130;76)
1579/80	Harmen Jansz. Muller	De caerte vander zee, om oost ende west te seylen/Dits die caerte vander Suyder Zee / Dit is dat hoochste ende dat outste Waeter recht	Reprint of the 1561 edition. Amsterdam, Scheepvaartmuseum (A III 2-1; Inv. S 584 [1] / A III 2-2a; Inv. S 584 [2]/N 1; Inv. S 584 [3]).
[1580s]	Cornelis Claesz.	Graetboecxken naden nieuwen stijl	Declination tables. Rotterdam, Maritiem Museum (W. A. Engelbrecht Collection, 4 A 35). Fragment of earlier edition in Amsterdam, Universiteitsbibliotheek (UBM: 1804.F.4 ³).
[1580s]	Cornelis Claesz.	Graetboeck nae den ouden stijl	Declination tables. Emden, Gesellschaft für bildende Kunst und vaterländische Altertümer (3158); Rotterdam, Maritiem Museum (W. A. Engelbrecht Collection, 4 A 31).
1587	Cornelis Claesz.	Dit is de caerte vander Zuyder Zee	Sailing instructions for the Zuiderzee. Amsterdam, Universiteitsbibliotheek (1804 F 4 [4]).
1587	Cornelis Claesz.	Dit is dat hoochste ende dat oudste water-recht	The <i>waterrecht</i> (sea law). Amsterdam, Universiteitsbibliotheek (1804 F 4 [2]).
[1587/88]	Cornelis Claesz.	De caerte vander zee, om oost ende west te seylen	Western and eastern navigation with additional notes by Govert Willemsz. van Hollesloot. Amsterdam, Universiteitsbibliotheek (1804 F 4 [1]).
1588	Cornelis Claesz.	Dit is dat hoochste ende dat oudste water-recht	Reprint of the 1587 edition. Copenhagen, Det Kongelige Bibliotek (A 6905 8°; formerly preserved in the University Library).
1588	Cornelis Claesz.	Dit is de caerte vander Zuyder Zee	Reprint of the 1587 edition. New Haven, Yale University (Taylor Collection no. 186).
1588	Cornelis Claesz.	De caerte vander zee, om oost ende west te seylen	Copy of Anthonisz.'s rutter. Göttingen, Niedersächsische Staats- und Universitätsbiblio- thek.
1588	Peter Jansz. / Cornelis Claesz.	Die caerte va[n]de oost ende west Zee	Rutter by Govert Willemsz. van Hollesloot. Amsterdam, Universiteitsbibliotheek (UBM: 1803 D 2); Emden, Gesellschaft für bildende Kunst und vaterländische Altertümer (no. 3158); Göt- tingen, Niedersächsische Staats- und Universitäts- bibliothek; Rotterdam, Maritiem Museum (A 27).

APPENDIX 45.1 (continued)

Year	Printer/Publisher	Title	Remarks
1588	Cornelis Claesz.	De zeevaert ende onderwijsinge der gantscher oostersche ende westersche zee-vaerwater	Rutter by Adriaen Gerritsz. The Hague, Nationaal Archief (VEL E); Lunds Universitets Bibliotek (Fol. Utl. Sjöv).
1590	Cornelis Claesz.	Dit is dat hoochste ende dat oudste water-recht	The <i>waterrecht</i> . Amsterdam, Scheepvaartmuseum (A 2684 (N 164)).
1593	Cornelis Claesz.	Dit is die caerte vander Zuyder Zee	Title page only. BL.
1594	Peter Jansz./ Cornelis Claesz.	Die caerte va[n]de oost ende west Zee	Rutter by Govert Willemsz. van Hollesloot. Amsterdam, Nederlands Scheepvaartmuseum (A III-2-173); Copenhagen, Marinens Bibliotek.

Source: Based on MCN, 7:25-46.

Appendix 45.2 Pilot Guides Published in the Netherlands, 1584-1681

Year of First		
Edition	Printer/Publisher	Title
1584	Lucas Jansz. Waghenaer	Spieghel der zeevaerdt, part 1
585	Lucas Jansz. Waghenaer	Spieghel der zeevaerdt, part 2
585	Aelbert Haeyen	Amstelredamsche zee-caerten
592	Lucas Jansz. Waghenaer	Thresoor der zeevaert
595	Willem Barents	Nieuwe beschryvinghe ende caertboeck vande Midlandtsche Zee
596	Lucas Jansz. Waghenaer	Den nieuwen spieghel der zeevaert
598	Lucas Jansz. Waghenaer	Enchuyser zee-caert-boeck
603	Lucas Jansz. Waghenaer	Den groten dobbelden nieuwen Spiegel der zeevaert
608	Willem Jansz. Blaeu	Het licht der zee-vaert
609	Cornelis Claesz.	Nieuwe thresoor der zeevaert
612	Willem Jansz. Blaeu	The Light of Navigation
618	Willem Jansz. Blaeu	't Derde deel van 't licht der zee-vaert
619	Willem Jansz. Blaeu	Le flambeau de la navigation
620	Johannes Janssonius	Het licht der zee-vaert
623	Willem Jansz. Blaeu	Zeespiegel
1625	Willem Jansz. Blaeu	Sea Mirrour
627	Johannes Janssonius	't Derde deel van 't licht der zee-vaert
.632	Jacob Aertsz. Colom	De vyerighe colom
633	Jacob Aertsz. Colom	L'ardante ou flamboyante colomne de la mer
633	Jacob Aertsz. Colom	The Fierie Sea Columne
634	Willem Jansz. Blaeu	Havenwyser van de oostersche, noordsche en westersche zeen
634	Willem Jansz. Blaeu	Het nieuwe licht der zeevaert
.634	Johannes Janssonius and Joris Carolus	Het nieuw vermeerde licht, ghenaemt de sleutel van 't tresoor, spiegel gesicht, ende vierighe colom des grooten zeevaerts
635	Johannes Janssonius and Joris Carolus	Le nouveau phalot de la mer
.638	Willem Jansz. Blaeu	Het vierde deel der zeespiegel
.643	Willem Jansz. Blaeu	The Sea Beacon
644	Anthonie Jacobsz. / Johannes Janssonius	De lichtende columne ofte zeespiegel
648	Anthonie Jacobsz. and Jacob Theunisz. Lootsman	't Nieuw groot straetsboeck
648	Jacob Aertsz. Colom	Oprecht fyrie colomne
650	Pieter Goos	De lichtende columne ofte zeespiegel
650	Louis Vlasbloem	Nieuwe ende klaere beschrijvinge van de Middellantsche Zee
650	Johannes Janssonius and Jan van Loon	Le nouveau flambeau de la mer
651	Jacob Aertsz. Colom	Groote lichtende ofte vyerighe colom
652	Widow of Anthonie Jacobsz.	't Nieuwe en vergroote zeeboeck
655	Hendrick Doncker	De lichtende columne ofte zeespiegel
655	Joan Blaeu	De groote zeespiegel
656	Louis Vlasbloem	Claare beschrijvinge vande zeecusten
656	Louis Vlasbloem	The North Zea
662	Pieter van Alphen	A New Shining Light
662	Jacob Theunisz. Lootsman	Nieuw' en groote Loots-mans zee-spiegel
.662	Pieter Goos	Nieuwe groote zee-spiegel inhoudende het straetsboeck
.664	Hendrick Doncker	Nieuw groot stuurmans zeespiegel
.675	Pieter Goos and Arent Roggeveen	Het brandende veen, part 1 (part 2 published in 1685 by Jacob Robij
680	Jacob Robijn	Nieuwe groote zeespiegel
1681	Johannes van Keulen	De nieuwe groote lichtende zee-fakkel, parts 1 and 2

APPENDIX 45.3 SEA ATLASES PUBLISHED IN THE NETHERLANDS, 1650-1680

Year of First Edition	Publisher/Printer	Title
1650	Johannes Janssonius	Water-weereld or Atlantis majoris quinta pars, orbem maritimum (text in Dutch, French, German, and Spanish)
1651	Jacob Aertsz. Colom	Groote lichtende ofte vyerighe colom
1654	Arnold Colom	Ora maritima orbis universi sive atlas marinus (in 1658, the Dutch edition Zee-atlas ofte waterwereldt was published)
1658	Louis Vlasbloem	Christianus orbis sive Europae marina
1659	Hendrik Doncker	De zee-atlas of water-waereld (text in Dutch, French, English, and Spanish)
1660	Pieter van Alphen	Nieuwe zee-atlas of water-werelt (text in Dutch, English, and Spanish)
1661	Jan van Loon	Klaer lichtende noortster ofte zee-atlas
1663	Jacob Aertsz. Colom	Atlas of werelts-water-deel (text in Dutch, Latin, French, Spanish, and Portuguese)
1666	Pieter Goos	De zee-atlas ofte water-weereld (text in Dutch, English, French, and Spanish)
1666	Anthonie Jacobsz., Jacob Theunisz. Lootsman, and Casparus (Theunisz.) Lootsman	Nieuwe water-werelt ofte zee-atlas (text in Dutch, English, and French)
1680	Johannes van Keulen	De groote nieuw vermeerderde zee-atlas ofte waterwerelt (text in Dutch, French, English, and Spanish)

Source: Based on Peter van der Krogt, "Commercial Cartography in the Netherlands, with Particular Reference to Atlas Production (16th–18th Centuries)," in La cartografia dels Països Baixos (Barcelona: Institut Cartografic de Catalunya, 1995), 126, and AN, vol. 4.