

The earliest known sailing directions in English

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NAVIGATION

► ROBIN WARD

The earliest known Sailing Directions in English

Transcription and Analysis¹

Background

By early in the fifteenth century, northern shipmasters had access to hand-written copies of sailing directions to purchase, copy or simply memorise, as *aides mémoires* to familiar waters or as pilots for areas new to them. The number of copies of these sailing directions (or *rutters*) for northern waters was small and unsurprisingly, given conditions at sea, no used examples are known. The oldest surviving rutters compiled by northern seamen are copies which have been preserved in private libraries; they are a Middle English rutter, in several MS copies of variable length and accuracy², and the Low German 'Seebuch', in a MS copy of each of two editions.³ The two better copies of the English rutter are bound with other MS treatises in two mediæval 'Grete Bokes', the Hastings collection (the rutter section of which is hereafter referred to as H) and the Lansdowne collection (the rutter hereafter referred to as L).

The Hastings book belonged to Sir John Astley (d. 1486); it was written by several scribes in good book hands on vellum of approximately 250 x 170 mm and has 320 leaves. In addition to the rutter, the volume contains a miscellaneous collection of treatises on knighthood, jousting, state ceremonial, classical texts, astrology, weather forecasting, and various domestic subjects. Astley expanded the book with two personal texts and, after his death, several further, unrelated texts were added. The Lansdowne book belonged to Sir John Paston (1442-1479); it was written in a good secretarial hand on paper of approximately 300 x 215 mm and has 222 leaves, 21 of which were added after Paston's death; its contents are very similar to those of the Hastings book.⁴

A printed version of approximately the first third of the text of H and L, entitled *A newe Routter of the Sea for the North parties* and attributed to Richard Proude, was added to the 1541 and subsequent editions of Robert Copland's *The Rutter of the See*, the first rutter to be printed in English, in 1528. Copland's work was a translation of Pierre Garcie's *Le routier de la mer*, first printed in France in 1502.⁵ Textual differences between *A newe Routter* and H and L establish that the first was not copied directly from either of the other two and, since the printer 'tailed off' the type and added *Finis*, that portion of the text of the English rutter apparently existed independently in 1541, or had been separated for publication from a larger work. The word *newe* in the title suggests a corrected or augmented edition, but nothing is known of an earlier work, nor of Richard Proude.

The two surviving MS editions of Das Seebuch, designated 'A' and 'B' by Koppmann in 1876⁶, have been dated by their watermarks to 1472/73 and 1466/67 respectively. They are bound

together, the title 'Altes See-Buch' having been added some time later. Since Koppmann's edition, the Seebuch has been the subject of various research projects but a comprehensive analysis of the whole was not undertaken until Sauer's work, published in 1996.⁷ This work is in two parts, an analysis of the philology and content of the text, and an outline of contemporary navigational techniques. No English translation of the Seebuch, nor any detailed comparison between it and the English rutter, has yet been made.⁸

Previous work on the H and L texts

The Lansdowne book has been available for study since at least the 1880s but the Hastings, although it was known to exist, was not located for research until the late 1960s. Gairdner, who transcribed L in 1889, identified the hand of the scribe William Ebesham, and so was able to date that MS to *t.* Edward IV.⁹ A glossary of the place names in the pilot was appended to Gairdner's transcription by Delmar Morgan, who suggested that the directions had been compiled by Clement Paston, whom he described as a well-known mariner *t.* Henry VIII.¹⁰ In 1947, Burwash had no doubt that L was 'in the main an English product' because the place names were English forms and much of the coast discussed was of interest only to English seamen. She also noted that the rutter did not correspond very closely in arrangement or in data to any other, German, French or Italian sailing directions, and that only it and the Seebuch dealt, although in a dissimilar manner, with the E coast of England. Burwash described the directions as falling into five geographical areas which covered all the usual English mediaeval sea trade routes except for Iceland, the North Sea and the Baltic.¹¹

In 1956, Taylor noted that, unlike Mediterranean pilots, the emphasis of the English rutter was on tides, depths and grounds, with distances scarcely mentioned, and that the bearings were based on a 32-point compass, a fact important in the dating of the original text.¹² In 1967, Waters transcribed and edited L, printed a facsimile of the 1557 edition of Proude's printed extract, amended and expanded Delmar Morgan's glossary of place names, and noted the existence, but at location unknown, of H, which he thought to be a copy of L or of a common original.¹³ He speculated on a north-eastern English origin for the rutter which, he suggested in a footnote, had some similarities with the Seebuch in the treatment of the E coast of England. Because of the different organisation of information, he was unable to compare L with *The Rutter of the Sea* or *Le routier de la mer*.¹⁴ In 1984 and 1994, Lester, working on H and L, concurred with all the previous observations except that he preferred six rather than five geographical sections; suggested that the absence of landmarks indicated that the directions were compiled by someone for his own use; and improved Waters' glossary of place names. Lester was of the opinion that twelve of the twenty texts in the Lansdowne book, including the rutter, had been copied in 1468-69 from the Astley MSS (H) by William Ebesham. Lester also suggested that because its subject is quite unlike that of the other texts in the book, the rutter may have been added as a scribal filler.¹⁵

In 1996, Sauer compared parts of L with the relevant chapters of the Seebuch, finding little coincidence. He remarked on the geographical rather than thematic organisation of L and pointed out a number of deficiencies, for example, the absence of distances and the paucity of tidal Establishments.¹⁶

The dating of the H and L copies

On *f.* 130*v* of H there is a well-known full page coloured illustration of ships in an anchorage; and on the last leaf, *f.* 138*v*, after five lines of text, there is another well-known illustration, also

coloured, of a ship taking soundings off an unidentified coast. The structure and rigging of the ships depicted on *f.* 130*v*, which may not always have been bound in with the text¹⁷, have been dated to the early sixteenth century, whereas the vessel on *f.* 138*v*, which is an integral part of the text, is almost certainly mid- to late fifteenth century.¹⁸ The absence of the Garter on the arms of the Earl of Hastings, reproduced on three pages of the book including the rutter, suggests that at least those parts of the collection were written before 1461 when he was appointed to the Order.

The discovery of Ebesham's invoice, (drawn up, Ebesham poignantly adds, while he was in *seintwarye* [sanctuary] from creditors), for work done for Sir John Paston, establishes that L was copied in, or shortly before, 1468¹⁹; the chronological evidence, therefore, allows L to be a copy of H, but not *vice versa*. To confirm this hypothesis, the two very similar MSS are compared in Appendix 2. The L text runs with 'seamless joins' from beginning to end whereas in H there is a space of four lines between two parts (here designated 5 and 6), after which the text is unbroken to the end.²⁰ In addition to minor orthographical variants and 'literals', there are 15 defective compass bearings in L and but one in H. Of the other errors in L, ten arise from one or two missing words, and five from the omission of parts of two or more lines of text. The larger omissions appear to be the result of the scribe's eye skipping over lines in his master copy, but the first and last words of each omission from L are nowhere vertically aligned in H, as might be expected at a 'skip'. Conversely, there are a few minor errors in H which do not occur in L. Although there are a few peculiarities common to H and L, for example, a blank half line where a destination has been omitted, and the word *tide* (or *strem*) twice omitted from the duplex *half tide* (or *half strem*)²¹, it appears very probable that neither MS is a copy of the other but that both are copies, or copies of copies, of an unknown, and in some respects imperfect, *ur*-text.

Whatever the precise dating of H and L, it can be said with some confidence that both MSS, and therefore the *ur*-text of the English rutter, are some decades older than the printed editions of Garcia's *routiers* and about a century older than Copland's translation. They are also approximately contemporary with the MS copies of the Seebuch, although both rutters appear to contain fourteenth century material.

Analysis of the navigational information in the English rutter²²

The H MS, which is textually better than the L, perhaps because the copyist had more understanding of maritime matters than Ebesham²³, has been used for this analysis; it is transcribed in Appendix 1. Previous researchers have seen the English rutter as five (Burwash) or six (Lester) geographical sections, depending on whether or not the directions covering the E coast of England and the Channel, and the offshore routes across the Bay of Biscay, are separated. In the present work the rutter has been divided into seven parts, following Lester's division, plus a separation of the Bay of Biscay coastal and off-shore routes. References to Lester in the identification of place names are to his glossary, which he derived from Waters', in turn derived from Delmar Morgan's. Most courses are given as 'forward' and 'back' bearings on a 32-point compass rose²⁴; in general, that course which follows the direction of progress of the rutter has been appraised on current Admiralty charts.²⁵ Those within about half a compass point (5.6°) of the correct course have been defined, somewhat arbitrarily, as 'good' and those within about one point (11.25°) as 'acceptable', with some tolerance for the situation. Those more than one point out, some of which are dangerous, have been deemed 'aberrant'. Generally, points of departure and arrival have been taken for the appraisal as 1 nM off-shore.²⁶ Of necessity, the mediaeval shipmasters obtained their bearings empirically; those may have been 'magnetic' or have been



Ill. 1 Ships in an anchorage. (New York, Pierpont Morgan Library, Hastings MS 775, f. 130v)



Ill. 2 Ships taking soundings off an unidentified coast. (New York, Pierpont Morgan Library, Hastings MS 775, f. 138v)

corrected automatically by an off-set magnetised needle fixed during manufacture of the compass. As it happens, recent research has established that the magnetic variation in western Europe around 1450 was less than half a point; no correction for deviation has therefore been necessary in this analysis.²⁷

The few tidal Establishments given were easily checked but tidal stream information, since it is not always clear from the text whether it is for the flood or the ebb and whether it is flowing towards or away from the direction given, was more difficult, and at times impossible to analyse.²⁸ Further, the positions of sandbanks 500 years ago, particularly on the E coast of England and in the Gironde, have changed and the tidal flow around them is unlikely to have been the same as today. Tidal stream analyses are therefore less than satisfactory.

Part 1 (H f. 131r, line 1 – f. 132r, line 16): The East Coast of England

The first part of the rutter lists waypoints and tidal streams from Berwick to The Downs, with compass bearings of the courses between the waypoints and with frequent references to rocks and sandbanks to be avoided. Directions through the sandbanks include leading marks, transits and depths; the instructions between Harwich and the Thames being particularly detailed using, in addition, compass bearings and, on one occasion, elapsed time. There are no distances (except the analogous elapsed time), few landmarks, no descriptions of the sea-bed, and no details of havens.

The compass bearings between identifiable waypoints, compared with those on an Admiralty chart, are listed in table 1a. The first three courses are seriously aberrant and, indeed, a safe passage from Berwick to Tynemouth requires a 'dog-leg' to avoid all dangers. The confusion continues with the stretch of coast from Hunt Cliff to the Humber where the S-bound bearings are all dangerous. These course errors between Berwick and the Humber have no obvious explanation. The course for the long passage between Wainfleet and Flamborough Head is safe for S- and N-bound ships, but only if the point of departure for the latter is 6 nM off-shore. From Wainfleet, from which only S-bound courses are given, the bearings are generally good until The Naze, from where the waypoints are sandbanks of uncertain position and the courses cannot be appraised. Over all, about 50% of the identifiable courses are 'good' or 'acceptable', the remainder are uncertain, aberrant and, in some cases, dangerous.

Tidal stream information, interspersed amongst the courses, generally includes both flood and ebb directions (although which is which is not always certain), and the time of change of direction of the stream is given in relation to HW ashore, *i.e.* the Establishment of that location.²⁹ The delay between HW and the reversal of the tidal stream is given in the rutter as the formulaic 'half tide (3 hours) or quarter tide (1 hr 30 mins) under other' but the Establishment, necessary for the calculation of the delay, is not given. Since on the E coast of England the tidal wave, and therefore the time of HW, progresses regularly S-ward, a local seaman who knew the coast well could keep a mental tally of HW times ashore.³⁰ Tidal stream directions are more complex; off the NE of England they radiate from an amphidrome oscillating in each tidal cycle between Tynemouth and the Wash, and off the SE they are distorted by the meeting of North Sea and Channel tides. Analysis is further complicated by the uncertainty of whether the directions given are those *towards* or *from* which the streams flow. Although today's tide tables and atlases are of limited use because of the changed topography of sandbanks and shore lines, an overview of the 21 tidal predictions listed in table 1b suggests that the stream directions are approximately correct and that the times of change are, in general, within a quarter tide (1 hr 30 mins). Clearly these conclusions must be regarded with some circumspection.

The paucity of information, apart from course bearings and tidal stream directions, suggests that part 1 of the rutter was compiled by a shipmaster familiar with local landmarks and the

tidal cycle, who required merely an *aide mémoire* for passage planning.³¹ The only advice on the best time of departure to benefit from the tidal stream is for the passage from The Downs to Sandwich with a contrary wind. Although this part would be of little use to a stranger visiting East Anglian ports, the courses and stream directions through shoal water could be a useful supplement to other pilot books, if any were available, which gave details of landmarks, havens and tidal Establishments.

Berwick, in the fourteenth and fifteenth centuries, was a prosperous port town; interestingly, the Inquisition of Queenborough (1375-1404) specified that the wage rate and *portage* allowance for crews working between London and Berwick were to be double that paid between London and Newcastle.³² The port towns of East Anglia were important during the years of large wool exports, on English, Hanse and other ships.³³

Chapter XIV of the 'B' MS of the Seebuch is the only other known rutter with sailing directions for the E coast of England and therefore its treatment of the area is of interest. The few similarities the English and German pilots share are more generic than specific. Both rutters progress from N to S; the English starting at Berwick, the German at the Wash but moving N to Flamborough Head and thence S, both ending in The Downs. The information in both is given in a narrative rather than thematic format, an organisation which in the Seebuch is unusual but in the English rutter is more general. Dissimilarities are more striking. The English rutter covers the whole of the E coast of England in under 700 words whereas the German has over 1800 words for about half the distance. This is due to the descriptions in the Seebuch of the approaches to, and anchorages at, East Anglian port towns, information omitted entirely from the English rutter. The Seebuch gives no tidal stream information but three Establishments; the English rutter is rich in tidal stream information but gives no Establishments. While both pilots give off-shore depths to assist in the avoidance of sandbanks, only the Seebuch records the nature of the sea-bed. Part 1 of the English rutter appears to have been written by a local mariner for his own use, the Seebuch appears to have been compiled for strangers to the area. Although there is no evidence of a direct relationship between the two pilots, it is curious that their strengths and deficiencies are so complementary.

Part 2 (H f. 132r, line 16 – f. 133v, line 15): The English Channel

This part deals with the S coast of England from The Downs to the Isles of Scilly *via* a series of eight waypoints on the English coast linked (with one gap) by course bearings. There are also over 30 courses from the English waypoints to locations in France. There are no identifying landmarks; no distances between waypoints; only three depths, all off the Kentish coast; and no instructions for entering or anchoring in havens. Tidal stream directions on the English side of the Channel, and their times of change relative to HW ashore, are interspersed with the courses and there are two – but only two – tidal Establishments for the whole length of the Channel. The bearings between identifiable waypoints have been listed in two groups, those along the S coast of England in table 2a and those across the Channel in table 2b. Of the nine courses listed in table 2a, three are aberrant while the remainder are good or acceptable (*i.e.* 67% safe); analysis of the courses to France, in table 2b, is more complex because of cross-passage tidal drift.

The tide flows vigorously through the Channel so that any trans-Channel course should allow for estimated drift (unless the duration of a passage is expected, fortuitously, to be a multiple of 12 hours, giving six hours drift in each direction). There is some evidence of such tidal allowances in the courses given, but confirmation of that is difficult because of the general inaccuracies of the compass bearings. Cross-Channel sailing directions range from the extremely detailed to the skeletal; from The Downs to Calais is an example of a detailed course with a tidal

correction, a suggested time of departure (two hours after HW Dover if the wind is WSW) and of arrival at Calais harbour (at or an hour before HW), and with instructions on avoiding the Goodwin and Brake sands. (If the point of departure from The Downs was other than from the S of the area, the course would lead over the Calliper Sands). In describing transit marks which have to be aligned before departure for Calais, a steeple and a fan are mentioned; the 'fan' has been translated by Lester as a weather-vane, but another possibility is that the word is related to French *fanal*, a signal light, which could be a fire beacon as in the illustration on f. 130v.³⁴

In comparison with the Downs to Calais directions, other instructions give only the minimum of information, as examples: 'Beachy Head and Dieppe SE and NW; Beachy Head and Cap d'Antifer, S and N; Arundel and Struysaert, SSE and NNW', with no indication of tidal allowance, if any. The same caution has to be applied in the analysis of almost all the other trans-Channel courses. For example: the courses from Dungeness to Dieppe and to the R. Somme are seriously in error, but they happen to lead to the R. Authie (Berck) and to Boulogne, here there could be either errors in naming or an unknown tidal correction. The location described in the rutter as the *hey wode be weste dertemouthe* [high wood to the W of Dartmouth] is unidentified by Lester but it could be the 164 m wooded hill 3 M to the W of Dartmouth, behind Start Bay and visible from the sea. Unless there is a substantial tidal correction, this departure point gives an aberrant course to Guernsey, however, where arrivals appear generally to be to the E of the island, perhaps for St. Peter's Port; a similar doubt applies to the St. Catherine's Pt. to Guernsey course.

The position of *strotarde* is uncertain; Lester suggests Sassetot in Seine-Maritime as a possibility, but the course leads to Cap d'Antifer (tidal stream ignored), the location assumed here. *Seyne hed* has been taken as Cap de la Hève, although its identification is also uncertain.³⁵ *Chalkishorde*, identified by Waters/Lester as Chichester, is Calshot.³⁶ Lester's glossary suggests that *popil hope* is Hope Nose (Torquay, Devon)³⁷, but the two courses given from there lead towards the Baie de St. Briec, not to Ouessant and Le Four (again ignoring tidal effects). Back bearings from Ouessant and Le Four indicate that *popil hope* is in the region of Land's End, an hypothesis perhaps confirmed by the Cornish context of the text. In part 2 there are no other courses to France from Land's End whereas in part 5, Land's End is important for both N- and S-bound passages.

The course given from Rame Head to Le Four is direct but leads over the Eddystone rocks; it would be dangerous at night. Locations variously described as *seynte marie of cille*, *cille*, and *seynt marie sownd of cille* have all been taken for the analyses as St. Mary's in the Isles of Scilly; this allows a good result for all three given courses. The last course given, Ouessant to Île de Sein, links part 2 with part 3 (and is repeated in part 3).

25 of the 32 courses from England to France listed in table 2b are identifiable; without any tidal allowance, 8 of these are 'good' (32%), 10 are acceptable (40%) and 7 are 'aberrant' (28%), an achievement of 72% safe. With the incorporation of a tidal allowance, that percentage might well be improved. Of the 7 uncertain courses, 3 are unidentifiable and may well be 'good' or 'acceptable', and 4 cannot be analysed.

Interspersed with the courses are tidal stream directions, although only for the English side of the Channel; an occasional note of the duration of the flow; and two tidal Establishments, all are listed in table 2c. The Establishments given are for the Solent (*with inne wiet* [within the Isle of Wight]), and for the havens between Start Point and Lizard Point; they are accurate to within half an hour.³⁸ The stream directions are largely localised (Poole and Weymouth harbours and Portland Bill) and are difficult to analyse; they do not reflect the general Channel tidal flow.

The E to W direction of progress along the Channel, contrary to that of other rutters, suggests again that the compiler was working outwards from home on the E coast of England and

that at least this section of the work is original. The absence of landmarks suggests that he was familiar also with both sides of the Channel. That Calais is the most easterly continental port mentioned is perhaps because wool had to be unloaded at the Staple, firmly established there by 1400.

Parts 3 and 4: The West Coast of Continental Europe

This section of the rutter, working from St. Malo to Gibraltar and then N to Ireland, begins *In spayne and bretayne this is the cours and the tide*. Although it appears to have been intended as one chapter, it changes format about two thirds of the way through; the analysis has therefore been divided into two parts, the first defining in-shore courses from St. Malo to the R. Adour (part 3), and the second, courses across the southern Bay of Biscay, down the Iberian coast and then N to Ireland (part 4).

Part 3 (H f. 133v, line 15 – f. 134v, line 4): Brittany and the Bay of Biscay

A string of waypoints leads from St. Malo to the Île de Batz and then into the Chénel du Four from where it splits into an inshore passage through the Raz de Sein, and a more direct passage outside the Chaussée de Sein to the Gironde and the R. Adour in Bayonne. As before, the courses are interspersed with information about tidal streams; one, and only one tidal Establishment is given, purporting to be valid from the Raz de Sein to 'Morocco'.

The courses between identifiable waypoints are tabulated in table 3a. From St. Malo to Le Four, the instructions are confused, indeed the course to the Île de Batz leads overland and is clearly in error. The correct passage plan, which has to be a dog-leg to clear the Paimpol peninsula, is informative: 60 nM from St. Malo on 292⁰³⁹, then 26 nM on 243° to a position c. 7 nM N of Batz from where La Lande (assumed to be the *langas*) would be 'open'. From this position, after a distance of 37 nM on a course of 247° (which is the course given in the rutter from St. Malo), a course of 169° (given correctly in the rutter) leads through the Chénel du Four, passing Pointe de Saint-Mathieu by about 1 nM and clearing all the dangers of the Sound of Brest. The correct courses are therefore included, but in the wrong order. The location of *the est brigge* is uncertain but it may be Les Sept Îles which have to be passed on the first leg of the passage from St. Malo.⁴⁰

saym, (the Île de Sein) has been taken to be the extreme W end of the rocks off the Chaussée de Sein and the *forlonde of fontenes* has been taken as the Pointe de Raz, both identifications agreeing with Lester's. Which side of the island is intended to be the waypoint on Belle-Île, Oleron and Yeu is not clear but courses have been charted to the W side of each, (on Belle-Île, specifically to Pointe de Talut). Contradictorily, the course from Penmarc'h to Belle-Île, which may be aberrant, leads to the E side of the island.

There is advice for the best time to depart Audierne to take advantage of the tidal stream and a warning about the Îles de Glenans followed by sailing directions for the approaches to, and passage up, the Gironde. These instructions are far from clear and that, together with an ignorance of the positions of the sandbanks in early and mid-fifteenth century, negates any attempt accurately to plot the Gironde passage. The information has been paraphrased, with the component courses numbered, to draw up a possible, but not definitive, passage plan:

- 1 *goo fro the saym southe est and be est and ye be in lx fadim deep and x and ye schal falle with olleron* When in 60 fms⁴¹ [about 10 nM W of the Chaussée de Sein], sail on 124° [128° would be better] until, at 10 fms, the N end of Oleron is abeam [and off about 6 nM W],

- | | |
|---|---|
| <p>2 <i>than goo yowre cours with the polehed southe est and be southe and ye be in xij fadim deep and that schal lede yow with oute the pollis</i></p> <p>3 <i>ffro the polles ye muste goo est northe est til ye be aboute the piper</i></p> <p>4 <i>than goo est and be northe for cause of the hors scho.</i></p> <p>5 <i>And then ye may goo fro opyn on the blak schore est southe est til ye come as hy in geronde as talamont</i></p> <p>6 <i>for the groundes on the sowther side lynfer oute and arne schore to for ye may come no nere hem than vij fadim</i></p> <p>7 <i>and when ye come anens talamon ye schall goo with castillon southe southe est and beware of the middel grounde</i></p> | <p>then [from that uncertain point] sail 146° towards the polehede [Cordouan suggested] and keep in 12 fms to clear <i>pollis</i> [Pte. de la Coubre and off-lying dangers suggested].</p> <p>From there go 45° until N of <i>piper</i> [a sandbank],</p> <p>then 79° to avoid the Horseshoe sandbank,</p> <p>and continue from abeam the Pointe de Terre Nègre on 112° to Talmont [this course would now have to be greater than 130° to clear the Banc de St. Georges];</p> <p>and because the land on the southern side comes far out and is not sheer-to, go no closer than a depth of 12 fathoms.</p> <p>When Talmont is abeam, sail on 158° to the Tour de Castillon, and beware of the sandbanks in the middle of the river.</p> |
|---|---|

After the Gironde, the passage continues to the R. Adour with the Île de Pilier, *tutpert* and *pollis* mentioned as waypoints. *polehead*, *piper*, *pollis*, *pekelerre* and *tutpert* have been identified by Lester, with more or less confidence, as, respectively, Cordouan, a sandbank, a group of small islands or rocks, Picquelier Island in the Vendée, and Pointe de Talut on the W side of Belle-Île. The course given from the Pointe de Talut to *pollis* is the same as that from Belle-Île to the Île de Pilier; if *pollis* is the Pointe de la Coubre as above and confirmed below by the accuracy of the course from Coubre to the R. Adour, then the course from Talut to *pollis* should be 140° *i.e.* SE or SEs and not ESE.

Of the 11 identifiable courses given, only two are dangerously wrong while nine are 'good'; an achievement of 82% safe courses. A further six courses, three of which are to do with the Gironde, offer insufficient information to be analysed. It is curious that the order of presentation of forward and back bearings varies: while Pointe de Raz to Penmarc'h, Penmarc'h to Belle-Île and Île de Sein to Île d'Oleron work southward, Penmarc'h to Île de Sein' and Île de Sein to Ouessant lead northward (the last is given in part 2 in a southerly direction only). These courses may have been derived from observations made later or were perhaps gleaned from another rutter.

The tidal information is simplistic: four stream directions, one time of directional change and one Establishment from Île de Batz to Gibraltar. The stream directions said to be E off the Île de Batz and ENE off St Mathieu, are more or less correct for the flood tide, but SW off the Pointe de Raz corresponds to the ebb. *Half tide*, or three hours, delay in change of stream direction between Ouessant and Le Four is aberrant, being correctly approximately one hour after HW ashore. The one tidal Establishment given, 15.00 from the Pointe de Raz to the Straits of Gibraltar, is inaccurate; the Establishments from Brest to Bayonne are around 16.00 and at Gibraltar it is about 18.00. *Vpdrawtis* are presumably local tidal anomalies in estuaries and deep bays; the word occurs again in part 7 with the same apparent meaning.

Part 4 (H f. 134v, line 4 – f. 135r, line 14): The West Coast of France and Spain and to Ireland

Part 4 consists of bearings for courses between waypoints situated along the W coast of Europe; no other information is given except a single warning to beware the Chaussée de Sein, a

warning, curiously, for a passage which does not pass the Chaussée. The data fall into three groups; the first progresses S from waypoints on the French W coast to havens in N Spain; the second continues S with waypoints along the Iberian coast to Gibraltar; and the third works N with offshore courses from NW Spain to the Scilly Isles and Ireland. Because of the specialised nature of the information (courses only), this part gives the appearance of being an extract from a thematically organised rutter. If that rutter were of southern provenance, the courses might be expected to be given S to N, but only seven of the 30 courses are defined by the S to N bearing first, all but one of which start from Spain. The remaining 23 courses reflect the usual direction of the English rutter, *i.e.* N to S, and are probably original material. It is possible, of course, that an extract from an earlier, unknown, thematic English rutter, has been augmented by borrowings from a rutter of southern provenance. The identifiable courses are listed in table 4.

Pollis, of uncertain location, appears again as a waypoint; if it is taken, as in part 3, as the Pointe de la Coubre (although Corduan is also possible), the course given (248°) is good as far as Ortegal from where it must be altered for Finisterre. A direct course of 185° from Île de Yeu to Cabo Machichaco would pass over the dangerous Plateau de Rochebonne; the given course of 146° clears well to the E of the Plateau but requires a correction, which is not given, to make the dog-leg. The E/W Adour to Finisterre course leads over the Ortegal peninsula and may have been meant merely as a directional indicator; to sail clear of land the course from the Adour has to be no less than 275°. The S-bound course from the Illhas Berlingas to Cabo Roca (158°) also leads over land and would have to be no less than 180° to pass clear. W-bound from Cabo St Vincent to Cabo St Maria the course must be S of W to avoid land and not 281°, and the courses involving Cadiz are confused.

Analyses of the courses in table 4 show that there are 8 'good' (26%), 8 'acceptable' (26%) and 6 'aberrant' (19%) with a further 9 aberrant but possibly explicable, that is, something over 52% safe courses. Of the eleven courses from Brittany to N Spanish havens, eight arrive E of the objective (and three to the W); the sample is too small to draw conclusions, but this may be evidence either of 'fail-safe' navigation – make landfall and turn to starboard (W) – or allowance has been made for the westerly current which sets along the N coast of Spain.

Part 5 (H f. 135r, line 14 – f. 137v, line 5): Land's End to the Isle of Man

Part 5, the longest in the rutter, begins *A neue cours & tide betwene engelonde and erelonde*, suggesting, as did Richard Proude's *neue Routter of the northe partis*, that this was either completely new information or an edited version of an older (and now unknown) pilot. The initial courses lead from the SW of England to Irish havens between Tuskar Rock and the Old Head of Kinsale; a stretch of coast beyond which, in the fifteenth century, the crews of English ships sailing N and W respectively of those waypoints, were entitled to a wage increase of 20%.⁴² There are also courses cross-linking the Irish S coast havens and two passages to the N of Ireland, one clockwise around Ireland and the other anti-clockwise, the two meeting at Fair Head in the NE. The Part ends with courses linking SW England, the Isle of Man, Wales and Ireland and finally, an unusual invitation to take one's rest at Rhuddlan in N Wales.

The courses are grouped roughly, but not exclusively, into: England to Ireland; England to Wales and Lundy; along the S coast of Ireland; W and N coasts of Ireland; E coast of Ireland; and courses across the Irish Sea. The directions are in narrative form, alternating courses with tidal streams but for which there are no tidal Establishments. Within this restricted range of sailing directions there is more detail than elsewhere in the rutter, with information about rocks, narrow channels and unexpected tidal stream directions. There are, however, no soundings, sea-bed descriptions, harbour approaches or anchorages.

About 40 locations are named but not all are links in a chain of waypoints; some, for example the Bishop Rocks, have no commercial significance but may have been included as markers for tidal information. The location of St. Thomas Head is suggested by Lester to be between Weston-super-Mare and Cleveland but the course from there to Skomer would pass over St. Anne's Head (the N point of the entrance to Milford Haven); a back bearing from Skomer gives a good course to Bideford Bay, one promontory of which might have been known as St. Thomas Head. Overall, the courses between SW England and Ireland and along the S coast of Ireland are identifiable and achieve four 'good', two 'acceptable' and two 'aberrant', *i.e.* 75% safe courses.

The courses in St. George's Channel and the Irish Sea between England, Ireland, Wales and the Isle of Man, achieve seven 'goods', two 'acceptables' and two 'aberrants', a safe rate of 82%, although, as in part 2, the inclusion or omission of compensation for tidal drift is not known.

The passage around the W and N of Ireland is confused, with difficult identifications, waypoints out of sequence, and courses leading over land. To attempt to clarify the directions, the information from Blasket Sound to Rathlin Island has been paraphrased; the numbers denote individual legs of the passage:

- 1 *blaskay and the ackiles – northe and southe*
- 2 *blaskey and the stakis of connothe – north northe est and southe southe west*
- 2a *(but thou must goo northe and be est for a rok)*
- 3 *the stakis of rouney and the londe ende of erlonde northe northe est and southe southe west*
- 3a *(and soo thou must goo to the ylonde of torre)*
- 4 *the stakis of connoth and [destination omitted] southe west and northe est*
- 5 *fro the stakis of connoth to the legge of rabyne the cours is west southe west and est northe est*
- 6 *the sownde of torre lyeth west southe west and est northe est*
- 7 *the sownde and the furlonde be est loswille lyeth west southe west and est northe est*
- 7a *(but be ware of the rok in the baye of loswille).*
- 8 *fro the forlonde of loswille to donsmers hede the cours is west northe west and est southe est*
- 9 *the sownde of ranseyves the same cours with benestor.*

The correct passage from Great Blasket Island around the N of Ireland is: Blasket Islands – Stags of Connaught (off Broadhaven Bay) – Stags of Rouney (off the Island of Aran) – Sound of Tory – Malin Head – Rathlin Isle – Fair Head. Using that passage plan as a template, the rutter's information, after correction of the order of waypoints, may be interpreted as follows:

Passage 1, from Blasket Islands to Achill Island is good. There is no course from Achill to the Stags of Connaught, but see passage 2.

Passage 2, from Blasket to the Stags of Connaught, is acceptable provided Achill, which lies on the direct route, is avoided (see passage 1).

Passage 5, from the Stags of Connaught to Rathlin Isle, subsumes passage 4, if the omitted destination is the Stags of Rouney (Island of Aran), and passages 3, 3a and 6, (although 3 omits the course for the final leg from Malin Head to Rathlin Isle).

Passage 9 is obscure but is perhaps from the Sound of Rathlin to Fair Head on the NE coast, meeting there the anticlockwise passage to complete the circumnavigation; Lester agrees that *benestor* might be Fair Head.

Passage 8 appears to be a diversion from the circumnavigatory voyage; it leads into Loch Swilly suggesting that *donsmers head* might be Dunree Head on the E side of Loch Swilly, a course which would keep a ship clear of the rocks mentioned in 7a; Lester, however, suggests Dunmore Head, Donegal for *donsmers head* and therefore precludes entry into Loch Swilly.

The large number of suppositions and assumptions renders useless any estimate of accuracy of the courses on the W and N coasts of Ireland, but it is clear that several are only indications of general direction, not intended for detailed navigation.

Tidal streams in St. George's Channel and the Irish Sea follow the coastline on both sides but radiate from and to an amphidrome in the channel between Ireland and the S end of the Isle of Man. The stream directions given in the rutter are in-shore or in havens and appear to be generally accurate. In St. George's Channel the stream changes direction at 3 to 4 hrs after HW Milford Haven and Cork, *cf.* the 3 hours in the rutter for Milford Haven, Tuskar and *all that see between erlonde and walis*. In the Irish Sea, the streams reverse at about the time of HW Belfast, *cf.* the 1.5 hours delay reported in the rutter for Copeland Island, Dundalk and Ardglass. In general, therefore, the reported times are acceptable. It may be significant that there is no tidal information on the N coast of Ireland where streams are strong – was Ireland generally not circumnavigated? No serious tidal streams are encountered on the W side of Ireland, except around headlands, but these, too, are unnoticed.

Part 6 (H f. 137v, line 6 – f. 138r, line 12): The Gironde to Ouessant and Beachy Head

The format of part 6 is thematic, listing only pairs of soundings and descriptions of the sea-bed, both with reference to waypoints between the Gironde and England. Alone, it would have been of little use to a navigator and it is probable that it is an extract from another complete set of sailing directions. Because of its intrinsic interest it has been transcribed and analysed in tables 6a and 6b and, with two reservations, that information has been used to plot a hypothetical off-shore course across the Bay of Biscay.

The first reservation concerns the rutter's tidal datum and the height of the tide when the soundings were made, both of which are unknown. The depths given in the rutter cannot be related with any certainty to the Admiralty chart datum and, as the range of Spring tides on the French coast can be over 6m, there would be a significant error if HW or LW were wrongly chosen as the tidal height when the depths were measured. As the minimum depth is generally of greater importance to mariners than the maximum, however, it is probable that the soundings were either made at, or converted to, LWS⁴³, and that, given the lack of sophisticated bathymetry in the fifteenth century, LWS was the rutter's datum. In table 6b, the soundings have been converted from fathoms to metres and corrected, on those assumptions, to conform to an Admiralty chart.⁴⁴ Although these corrected soundings must be regarded with circumspection, any error will be common to all positions and, as the isobathic lines in the Bay follow the shape of the coast, any hypothetically reconstructed course based on soundings should be parallel to the actual.

The second reservation is the meaning of the recurring phrase *opyn o* in the context of an off-shore passage. In current nautical English, 'open of' defines the spatial relationship between an object and a ship, for example, a mark which has become visible or abeam, the latter situation implying that the line of sight is at right angles to the ship. In the rutter, *opyn o* requires other interpretations since in its first occurrence, *opyn o geronde*, it almost certainly means 'clear of the Gironde estuary' and in subsequent appearances it refers to waypoints which would be out of sight during an off-shore passage.⁴⁵ When used in reference to out-of-sight waypoints, *open o* must have had an alternative meaning.

The first possible interpretation is that shipmasters, accustomed to coasting around the Bay knew, from experience, the in-shore distances between waypoints. The distance run on an off-shore course (*i.e.* elapsed time x speed), therefore, with some instinctive correction for the difference between the length of the off-shore chord and the inshore arc, could give the shipmaster his approximate position relative to invisible waypoints. Alternatively, and more controversially, the meaning of *opyn o* might have been 'at the same astral height as', an expression which an experienced mid-fifteenth century English shipmaster would almost certainly have understood from talking to Iberian seamen to mean 'due E or W of', a convenient navigational fix off

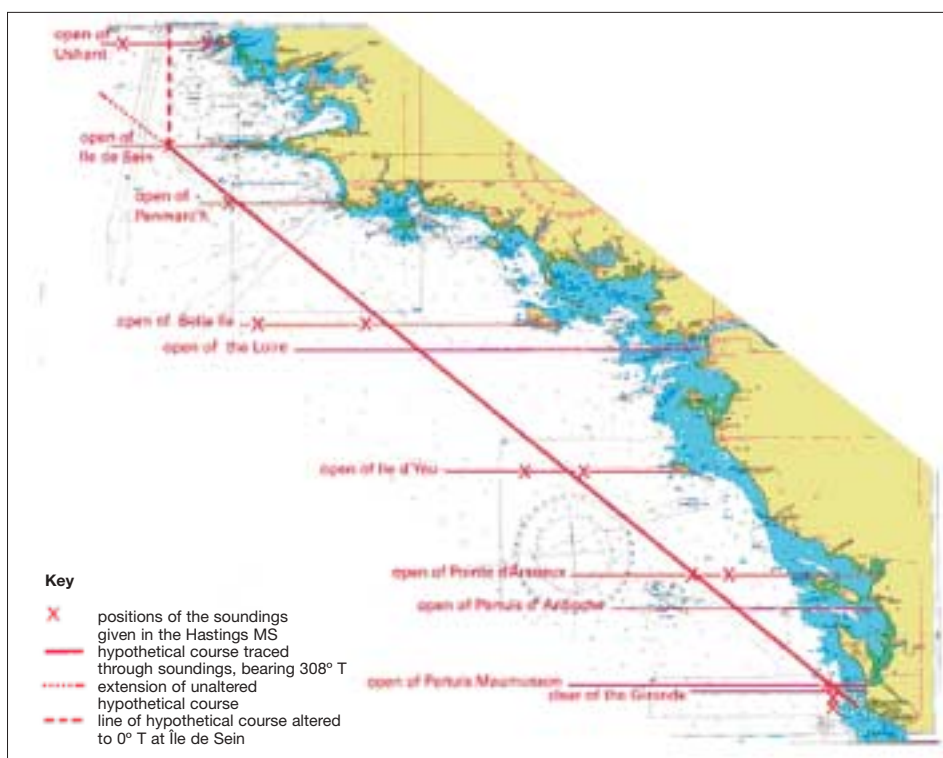
the W coast of France. Although actually taking astral heights was, so far as is known, not part of an English shipmaster's expertise, it was within the capabilities of contemporary Portuguese seamen, suggesting the possibility of some Iberian influence in the compilation of part 6 of the English rutter.⁴⁶

The suggested 'on the latitude of' meaning for *opyn o* fails in the Channel section of the passage, where the phrase relates to waypoints such as The Lizard and Beachy Head becoming visible in a northerly direction. It is possible, therefore, that there are two components to part 6; the Bay of Biscay section, possibly of Iberian provenance and reflecting the use of astro-techniques for out-of-sight waypoints, and the Channel section, of English provenance, based on traditional, visible waypoints as listed in part 2 of the rutter. The phrase 'open of' occurs twice elsewhere in the rutter, both instances in part 3: La Lande 'visible from behind' the Île de Batz, and the ship 'abeam of' Terre Nègre in the Gironde; neither occurrence contributes to the present debate.

Using the data in table 6b, the soundings were pricked on a chart on lines drawn to correspond with each interpretation of *opyn o*, in one case subtended at right angles to the ship's course ('abeam') and in the second, due W from the waypoint. Two courses were then drawn from the Gironde to Ouessant between the pairs of soundings given in the rutter. The course based on the interpretation of *opyn o* as 'abeam' was found to be irregular and took ships over the Plateau de Rochebonne. The course based on *opyn o* meaning 'on the latitude of' was, with the omission of one obviously erroneous sounding, straight and clear of all dangers. The rutter's picturesque description of the sea-bed at each sounding ('stinking mud' and 'fishy stones') was compared with the more mundane Admiralty data ('mud' and 'stones') and with known geological conditions; a good coincidence was found over the length of the 'latitude' course.⁴⁷

This hypothetical course runs from the Pointe de la Coubre, on a bearing of 310° (probably thought of as NW (315°), across the Bay of Biscay.⁴⁸ It passes just clear E of the Plateau de Rochebonne which lies 35–40 nM W of the Île de Ré, and about 15 nM W of the end of the Chaussée de Sein and its off-lying rocks. Extrapolation of the course beyond the Île de Sein leads further to the W of Ouessant than the positions indicated by the soundings and than is necessary for ships bound for England. It is probable, therefore, that an alteration of course from the original 310° to due N was made, probably between the latitudes of the Île de Sein and Penmarc'h, to pass between the two rutter soundings *opyn o* Ouessant and to lead more conveniently into the Channel. The course across the Bay of Biscay before the alteration also appears to lead further to the W than is necessary (after passing the Plateau de Rochebonne) but this may have been an allowance for the easterly set of the current.⁴⁹ The section of chart in illustration 3 shows the suggested passage plan from the mouth of the Gironde to Ouessant, including the northerly alteration. It is some 260 nM in length which would require at least two days and nights, during most of which a ship *en voyage* would be out of sight of land.

It is known that ships, including those carrying pilgrims, were sailing off-shore between England and the Iberian peninsula in the fifteenth century and, indeed, parts 4 and 7 of the rutter give courses for such passages. It is not known, however, if the wine ships bound for England and northern Europe followed the French coastline or sailed off-shore across the Bay of Biscay, if they passed through or outside the Chénal du Four, and if outside, whether they sailed to the E or W of Ouessant. And, if bound for England, did they sail straight across the Channel and then follow the English coast eastward, or did they cross diagonally to a convenient English waypoint? Copland's rutter gives only coastal sailing directions from Ouessant to the Gironde and so, in default of any other information, it has been assumed that the wine ships held inshore.⁵⁰ The hypothetical passage plan described here, however, indicates that the wine ships sailed off-shore to the W of Ouessant and then diagonally across to Beachy Head. The coast of Brittany was notoriously dangerous and by sailing directly from Bordeaux to Ouessant ships



III. 3 The hypothetical NW course from the Gironde to Ouessant. (Extract from Admiralty Chart 10014, Île d'Ouessant to Pointe de la Coubre)

could avoid the dangerous headlands, reduce the risks of piracy, and save time on the passage.⁵¹ It would be surprising if the offshore route was not generally used by shipmasters with compasses and confidence.

If the course required an understanding of latitude, the first section of part 6 could not have been compiled by an English shipmaster before the second half of the fifteenth century. Iberian ships had been trading between Biscayan and English ports since the thirteenth century, however,⁵² and it is possible that an English seaman, aware of the Iberians' ability to calculate their 'northing', had the Bay of Biscay section of a *roteiro* copied and translated without fully understanding the techniques involved, a situation presaging the translation by Copland of Garcia's *rutier*. In translation, perhaps, *altura* became 'open of', a term with which English shipmasters were familiar. A southern European provenance for the Biscay directions would also explain the progression in this Part from S to N.

Part 7 (H f. 138r, line 12 – f. 138v, line 5): Northwest Spain to Southeast and Southwest England

This highly specialised part of the rutter, perhaps incomplete, appears to be the work of yet another hand; in 28 lines of text it offers only two courses from NW Spain to SW and SE England. No tidal information was necessary for much of this passage as there would have been little or no off-shore stream, and no soundings by lead-line were possible until the continental shelf was reached and the course led into the Channel.

After beginning *here beth the groundes of Engelonde bretayne and cille*, (which is inappropriate) the instructions may be interpreted as follows: a course of 23° from Cape Finisterre is to be followed until, at an estimated two parts *ouyr the see*, those bound for the Severn should alter course to 11°, and at an estimated three parts, those bound for the Channel should alter to 34°. The Severn-bound ships stay on 11° until they reach soundings when they alter again to due N until reaching 72 fms and fair grey sand. They are then on the Rig, between Cape Clear and the Scilly Islands, and should continue N until they find mud, when the course should be altered to 68° or 79°, and thence to Stepilhorde. The Channel-bound ships hold the 34° course until they reach soundings when they alter to 45° until they are in 40 fms. If they find there *stremy grounde* they are between Ouessant and the Scilly Islands and must hold their course until they find 60 fms from where the course is 68° *alonge the see, et cetera*.

A reconstruction of these instructions is not straight-forward. In default of other information, a 'part' has here been interpreted as a quarter of the distance from Finisterre to Land's End; as this is c. 480 nM, the first alteration of each course takes place at c. 240 nM for the Severn passage and c. 360 nM for the Channel passage. For the former, the first leg of 240 nM on a course of 23°, followed by 11°, leads to the edge of the continental shelf after c. 11 nM at a depth of 90 to 100 fms with fine grey sand on the sea-bed (Jones Bank). A further 140 nM due N then leads to an area of muddy bottom at c. 40 fms whence a 45° course leads into the middle of the Bristol Channel. From there a 79° course leads to the S side of that Channel. These directions certainly allow a safe passage, but Jones Bank (if it is still in the same position) is too far S to be *the rig* and the alternative of Labadi Bank, which also has fine sand, is not S of a muddy area. *Stepilhorde* and its *coppid hill*, which *ye schal not fayle by much*, has not been identified but appears to be somewhere on the S side of the Bristol Channel. Lester suggests that *stepilhorde* is Steephill, Ventnor, Isle of Wight, but the ship should be in the Severn estuary; the meaning of *coppid hill*, unexplained by Lester, is probably 'like a high-crowned hat'.⁵³

For those 'bound for the narrow sea' (the Channel) the passage follows a sweeping arc of c. 360 nM around NW Brittany to an uncertain point on the N side of the Channel; the distances and final location cannot be accurately calculated as the depths given do not correspond with those on today's Admiralty charts. Towards the end of the passage a shipmaster would be able to identify points on the English coast and could refer to part 2 of his rutter for the remainder of the voyage (which may explain the terminal *et cetera*).

Part 7 may have been added to the English rutter for shipmasters sailing to and from Coruña with Santiago de Compostela pilgrims, a route of growing popularity early in the fifteenth century.⁵⁴ The S to N progression of the directions, the return voyage for an English ship, suggests a southern provenance for this part of the rutter. The somewhat abrupt ending perhaps marks the point at which the English editor of the rutter, copying from another pilot, realised that the passage had reached familiar waters. Although the instructions for both courses appear to be good, they imply several days of accurate steering out of sight of land and an accurate judgement of distance, calculated with the formula [elapsed time (by sand-glass) x estimated ship's speed (by eye)] – with no possible confirmation of position by sounding until the final stages.

Summary

From the evidence of surviving copies, the assembly of navigational information which made up the fifteenth century English rutter, was an eclectic mix written in several styles and formats. Of variable accuracy and thoroughness, much of it would have been of little use to shipmasters unfamiliar with the areas described but as an adjunct to other contemporary sailing directions, the rutter could have been useful.

Parts 1, 2 and 3 contain incomplete sailing directions for the E coast of England, the Channel and the W coast of France; they are written in a narrative rather than thematic format, probably by the same hand, and appear to have been notes for the compiler's own use. The first two parts, printed and published in 1541, may at one time have existed independently. Part 5 contains sailing directions for Ireland and the E coast of England; it is also in narrative style but with more detailed information. Duplications and some confusion of waypoints in this part, suggest the addition of information from other contributors to the compiler's own notes.

Parts 4 and 6 are thematically organised sailing directions, the former giving courses between waypoints on the W coasts of France and Spain and the latter listing waypoints, soundings and sea-bed information in the Bay of Biscay and Channel. They appear to be largely extracts taken from sailing directions of northern and southern provenance. A hypothetical off-shore passage from the Gironde to England has been plotted from the information in part 6. Part 7 bears no resemblance to any of the preceding parts; written in narrative form, it is very specialised, with complete sailing directions for two passages between Cape Finisterre and England. It appears to be of southern origin and was intended for ships returning pilgrims from Coruña to England.

Tidal stream directions, included only in those parts written in narrative format, are detailed and generally accurate but tidal Establishments, landmarks and distances are omitted except in part 7 in which distances *en voyage* are given. Information about the nature of the seabed is given only sporadically except in Part 6 in which it is detailed and accurate and related to waypoints and soundings. The accuracy of course bearings varies from 87% safe in part 3, 70% in part 2 and about 50% safe in parts 1, 4 and 5, although knowledge of incorporated tidal allowances could improve these figures. The value of the rutter's information would have been: parts 1, 2 and 3 – restricted in use to local seamen; parts 4, 5 and 6 – of limited use without other information; part 7 – complete and usable *per se*.

The compiler, or editor, appears to have been a late fourteenth/early fifteenth century literate shipmaster from the E coast of England. He may have carried wool to the Calais Staple, freighted to and from Brittany, Bordeaux, Spain and Ireland, and carried pilgrims to Coruña – or, at least, he prepared for such passages. The information in the rutter is eclectic, but that covering his home waters, especially if it were intended for the use of others, is less than generous.

Table 1a: Courses on E coast of England

From	To	Rutter	Chart	Comments
Berwick	Golden Stones	S/N = 180°/360°	123°/303°	aberrant course
Holy Isle	Berwick	WNW/ESE = 292°/112°	301°/121°	acceptable course
Bamburgh	Farne Islands	N/S = 360°/180°	075°/255°	aberrant course
Tynemouth	Farne Islands	NNW/SSE = 337°/157°	351°/171°	aberrant course
Flamborough	Hunt Cliff	NW/SE = 315°/135°	321°/141°	see text
Huntcliff	Humber	SExS/NWxN = 146°/326°		see text
Wainfleet	Flamborough	NNW/SSE = 337°/157°		safe but see text
Wainfleet	Cromer	ESE = 112°	108°	aberrant course
Spurn Head	Cromer	SE = 135°		good course
Kirklees	Orfordness	SxW = 191°		good course
Orfordness	Orwell	SW = 225°		good course
Orwell	Naze	SW = 225°		good course

The courses given between The Naze and the sandbanks *the spetis*, *the horse scho*, *the grene banke*, *the slade*, *the brakis* and *the knake* are too uncertain to be appraised.

Table 1b: Tidal streams on E coast of England

Location	Stream	Delay to Change	
Bamburgh	NNW	<i>quarter tide be-owtyn</i>	= 1 hr 30 m
Tynemouth	NE/SW		
Flamborough/Huntcliff	WSW/ENE		
Whitby		<i>half [tide]</i>	= 3 hrs
Huntcliff/Humber	SExS/NWxN		
Flamborough	NW/SE	<i>quarter tide and half [tide]</i> (? or 1/4 tide & 1/2 of quarter)	= 4 hr 30 m (= 2 hr 15 m)
Holderness on the londe	NE	<i>quarter tide in the fairway</i>	= 1 hr 30 m
The Well	E/W	<i>half streem vndir rothir</i>	= 3 hrs
Cromer on the londe	WNW	<i>half streem vndir rothir</i>	= 3 hrs
Winterton/Kirkley on the londe	NW	<i>quarter tide and half</i> <i>quarter vndir rothir</i>	= 2 hr 15 m = 1 hr 30 m
Kirkley/Orfordness	SSE	<i>quarter tide</i>	
Orfordness/Orwell	SSE		
Orwell haven	S/N		
Orwell/Naze	SxE		
Shoeburyness	S/N		
Kentish Knock	S		
N end Goodwin	SSW		
S end Goodwin	SWxS		
Thanet/? Whitstable	SSE		
Sandwich & Davies Gate	S		
The Downs		<i>half tide vndir rothir</i>	= 3 hrs

Table 2a: Courses along the English Channel

From	To	Rutter	Chart	Comments
St. Margaret's Stairs	Dungeness	SSW = 202°	227°	course safe but into fairway, not to Dungeness
– gap in series of waypoints from Dungeness to the Needles –				
Needles	Cornwall	W = 270°		indicative of direction only?
Needles	Portland	WSW = 247°		acceptable course
Portland	Berry Hd.	WxS = 259°	261°	good course
Berry Hd.	Start Pt.	WSW = 247°	210°	aberrant course
Start Pt.	Lizard	W = 270°	259°	aberrant course
Lizard Point	Land's End	WNW = 292°	286°	acceptable course
Land's End	Longships	NNW = 337°	315°	aberrant but short passage
Longships	St. Mary's	WSW = 247°	247°	good course

Table 2b: Courses between England and France

From	To	Rutter	Chart	Comments
The Downs	Calais	SE = 135°	140°	? tidal allowance
Dungeness	Cap Griz-nez	E = 090°	096°	acceptable course
	Dieppe	SExE = 124°	177°	? tidal allowance
	R. Somme	ESE = 112°	153°	? tidal allowance
	Cap de la Hève	SSW = 202°	202°	good course
Beachy Head	Cap de la Hève	S = 180°	186°	good course
	Dieppe	SE = 135°	144°	acceptable course
Arundel	Cap d'Antifer	SSE = 157°	156°	good course
St. Catherine's Pt.	Cap d'Antifer	SE = 135°	133°	good course
	Guernsey	SSW = 202°	217°	see text
	Cap de la Hague	SxW = 191°	207°	acceptable course
	Pte. de Barfleur	SSE = 157°	179°	? tidal allowance
Needles	S.-Vaast de-la-Houge	S = 180°	162°	aberrant course
Abbotsbury	Le Four	SW = 225°	214°	acceptable course
Portland	Cap de la Hève	ESE = 112°	120°	? tidal allowance
	Guernsey	S = 180°	180°	good course to E Guernsey
<i>popil hope</i>	Le Four	SxE = 169°	?	departure unidentified
	Ouessant	SSE = 157°	?	departure unidentified
Berry Head	Le Four	SWxS = 214°	205°	acceptable course
Dartmouth	Cap de la Hève	ExS = 101°	110°	good course
	Guernsey	ESE = 112°	135°	? tidal allowance
Start Point	Île de Batz	S = 180°	190°	acceptable course
Rame Head	Le Four	SSW = 202°	193°	acceptable course
	Ouessant	SWxS = 214°	198°	acceptable course
	Île de Batz	SxW = 191°	179°	aberrant course
Falmouth	Le Four	S = 180°	177°	good course
Lizard Point	Ouessant	S = 180°		safe course W of Ouessant
	Le Four	SxE = 169°	171°	good course
Scilly Isles	Le Four	SE = 135°	142°	safe course W of Ouessant
	Ouessant	SExS = 146°	154°	acceptable course
	Île de Seine	SSE = 157°	157°	good course
Ouessant	Île de Seine	S = 180°	170°	acceptable course

Table 2c: Tidal Streams in the English Channel

Location	Stream	Delay to Change
Dungeness	S	<i>half and half quarter tide</i> = 2 hr 15 m
Hastings		<i>half tide</i> = 3 hrs
Beachy Head		<i>quarter tide</i> = 1 hr 30 m
St. Catherine's Pt.		<i>quarter tide</i> = 1 hr 30 m
St. Catherine's Pt. – St. Helens		<i>half tide vndir rothir</i> = 3 hrs
St. Helens – Chichester		<i>half tide</i> = 3 hrs
Solent [Establishment]	<i>southe mone maketh hiest water</i>	HWS = 12.00 hrs
Needles	SExS	
Poole harbour	NW/SE	
Poole fairway	SSE/NNW	
Weymouth harbour	E/W	
Portland Bill	SSE/NNW	
Portland – Start (havens)	E/W	
Berry Head – Land's End		<i>half tide</i> = 3 hrs
Start/Lizard [Establishment]	<i>all the hauenes be full at a west southe west mone</i>	HWS = 16.30 hrs
Longships – Land's End	WSW	<i>half tide vndir rothir</i> = 3 hrs

Table 3a: Inshore Courses on the Western Seaboard of France

From	To	Rutter	Chart	Comments
– for discussion of courses from St. Malo to Le Four, see text –				
St. Malo	Île de Batz	ENE/WSW		aberrant course
	For ships E-bound	NE		?
	For ships W-bound	WSW		?
Chénel du Four		SxE/NxW = 169°/349°	169°	good course
Pte. de Raz	Penmarc'h	NW/SE = 135°/315°	137°	good course
Penmarc'h	Sein	NWxW/SExE = 124°/304°	124°	good course
Sein	Ouessant	N/S = 000°/180°	170°	acceptable course
Penmarc'h	Belle-Île	WNW/ESE = 112°/292°	116°	good course to E isle
Sein	Oleron	SxE = 124°	130°	good course
– approaches to the Gironde (Oleron to Castillon) are discussed in the text –				
Île de Yeu	Belle-Île	SE/NW = 135°/315°	135°	good course
– for discussion on location of <i>pekelerre</i> and <i>pollis</i> , see text –				
Belle-Île	<i>pekelerre</i>	WNW/ESE = 292°/112°		?
Talut Pt.	<i>pollis</i>	WNW/ESE	140°	?
<i>pollis</i>	R Adour	S & N	185°	good course

Table 3b: Tides on the Western Seaboard of France as given in the Rutter

Location	Stream	Delay to Change
St. Malo – Île de Batz <i>on the coste</i>	E/W	
Ouessant – Le Four		<i>half tide</i> = 3 hrs
St. Mathieu	ENE/WSW	
Pte. de Raz	SW/NE	
Pte. de Raz – Gibraltar [Establishment]	<i>a southe west mone maketh hiest water be the see coste and in the vprdrawtis it dooth not soo</i>	HWS = 15.00 hrs
Îles de Glenans	SW/NE	

Table 4: The W Coast of France and Iberia and to Ireland

From	To	Rutter	Chart	Comments
<i>pollis</i>	Finisterre	WSW = 247°		see text
Île de Yeu	C. Machichaco	SExS/NWxN = 146°/326°	185°	see text
Belle-Île	C. Machichaco	SxE/NxW = 169°/349°	175°	acceptable course
Belle-Île	Santoña	S/N = 180°/360°	183°	good course
Belle-Île	Santander	NxE/SxW = 011°/191°	186°	good course
Belle-Île	C. Ortegal	SWxS/NExN = 214°/034°	223°	acceptable course
Belle-Île	Finisterre	SWxW/NExE = 236°/056°	226°	acceptable course
Sein	R. Adour	SE/NW = 135°/315°	151°	aberrant course
C. Machichaco	Sein	SExS/NWxN = 146°/326°	159°	aberrant course
Sein	Santoña	SSE/NNW = 157°/337°	166°	acceptable course
Santander	Sein	NxW/SxE = 349°/169°	169°	good course
S. Sebastian	Sein	S/N = 180°/360°	155°	aberrant course
C. Ortegal	Ouessant	SSW/NNE = 202°/022°	202°	good course
Pt. de Raz	Finisterre	NE/SW = 045°/225°	214°	acceptable course
R. Adour	Finisterre	E/W = 090°/270°		direction only ?
Finisterre	Berlengas	S/N = 180°/360°	183°	good course
Berlengas	C. Roca	SSE/NNW = 157°/337°	180°	dangerous, <i>v. text</i>
C. St. Vincent	C. Sta. Maria	ExS/WxN = 101°/281°	090°	dangerous, <i>v. text</i>
C. Sta. Maria	Cadiz	SExE/NWxW = 124°/304°	108°	?
Cadiz	Gualdaquivir	SExS/NWxN = 146°/326°		?
C. Sta. Maria	Gibraltar	SE/NW = 135°/315°	119°	aberrant course
Straits of Gibraltar		ENE/WSW = 067°/247°	076°	acceptable course
Finisterre	Mizen Head	NxW/SxE = 349°/169°	357°	acceptable course
Finisterre	C. Clear	N/S = 360°/180°	360°	good course
Finisterre	Scillies	NNE/SSW = 022°/202°	012°	acceptable course
C. Clear	R. Adour	SE/NW = 135°/315°	153°	aberrant course
C. Clear	Santoña	NNW/SSE = 337°/157°	160°	good course
C. Clear	C. Ortigal	NxW/SxE = 349°/169°	176°	acceptable course
C. Clear	Sein	ESE/WNW = 112°/292°	152°	aberrant course
C. Clear	Scillies	SE/NW = 135°/315°	137°	good course
Scillies	Kinsale	SExE/NWxW = 124°/304°	321°	aberrant course

Table 5a: Courses from SW England to E and W Ireland and the Isle of Man

From	To	Rutter	Chart	Comments
Land's End	Old Hd. Kinsale	WNW/ESE = 292°/112°	311°	aberrant course
Shipman Head	Seven Stones	SW/NE = 225°/045°	063°	aberrant course
Longships	Seven Stones	E/W = 090°/270°	085°	good course
Land's End	Youghal	NW/SE = 315°/135°	324°	acceptable course
Land's End	Waterford	NNW/SSE = 337°/157°	339°	good course
Waterford	Old Hd. Kinsale	N/S = 360°/180°	061°	aberrant course
Land's End	Saltees	NxW/SxE = 349°/169°	344°	good course
Tuskar	Longships	N/S = 360°/180°	352°	acceptable course
Shipman Head	Milford Haven	NExN/SWxS = 034°/214°	023°	acceptable course
Shipman Head	Lundy	NE/SW = 045°/225°	042°	good course
Lundy	Caldey Island	N/S = 360°/180°	360°	good course
<i>Seynt thomas forlonde?</i>	Skomer Island	NW/SE = 315°/135°		? St. Anne's Head or Bideford Bay
Lundy	Old Hd. Kinsale	WxN/ExS = 281°/101°	280°	good course
Tuskar	Old Hd. Kinsale	WSW/ENE = 247°/067°	067°	good course
Old Hd. Kinsale	Cape Clear	WxS/ExN = 259°/079°	074°	good course
C. Clear/Mizen Hd./	Dursey Island	NW/SE = 315°/135°	294°	acceptable course
Dursey Island	Loop Head	NNW/SSE = 337°/157°		land between
Blasket Sound		N/S = 360°/180°		accurate direction
– courses from Blasket Sd. to Rathlin I. are discussed in the text –				
Ramsey Island	<i>benestor ?</i>	WNW/ESE = 292°/112°		? on SE Ireland
Saltee Isles	Tuskar	E/W = 090°/270°	075°	aberrant course
Tuskar	Skerries	NNE/SSW = 022°/202°	040°	aberrant course
Skerries	Ardglass	N/S = 360°/180°	324°	aberrant course
Ardglass	Copeland I. and if S-bound	SSE/NNW = 158°/338° SExS = 146°		aberrant course ? S end Isle of Man
Copeland I.	<i>woluvfryth ?</i>	NNE/SSW = 022°/202°		? Firth of Clyde
Wolverfrith	<i>benestor ?</i>	SSE/NNW = 157°/337°		? Fair Head/ Anglesey
Copeland I.	S of I. of Man	SExE/NWxW = 124°/304°	147°	aberrant course
I. of Man	Ardglass	ENE/WSW = 067°/247°	080°	(to N of I. of Man)
I. of Man	Lambay I.	NE/SW = 045°/225°	052°	S end of I. of Man
			045°	W end – good course
Howth	Holyhead	E/W = 090°/270°	093°	good course
Lambay	Ramsey I.	N/S = 360°/180°	175°	good course
Wicklow	Ramsey I.	NNW/SSE = 337°/157°	159°	good course
Leave Wicklow		SE/NW = 135°/315°		clears Wicklow Hd.
Tuskar	Ramsey I.	E/W = 090°/270°	124°	aberrant course
Waterford	Gresholm I.		108°	(to clear Bishop Rock)

Table 5b: Tides from SW England to E and W Ireland and the Isle of Man

Location	Stream	Delay to Change	
Milford Haven	E/W	<i>half streme vndir rothir</i>	= 3 hrs
Outside Milford Haven	NE/SW		
Land's End – Lunday	WSW/ENE		
Lunday – Holmes Islands	ExN/WxS		
Iron Grounds	NE		
Bridgewater	WNW		
Lunday – Holmes Islands	E/W	[duplication of three items above]	
Holmes – <i>ketelis wood</i> – Portishead	WxN/ExS		
King Road	E/W		
<i>all that see between erlonde and walis goth</i>		<i>half tide vndir rothir</i>	= 3 hrs
Barrel Rocks – Small Rocks	NNE/SSW	<i>half tide vndir rothir</i>	= 3 hrs
<i>for it floweth on land</i>	E/W		
Tuskar – Dunmore			
<i>It floweth be the see coste</i>	WSW/ENE	<i>but in the updrawtes it dooth not so</i>	
Tuskar – <i>the red banke</i>		<i>half tide vndir rothir</i>	= 3 hrs
Tuskar – Benmore/Fair Head	SSE/NNW		
Copeland I. – Dundalk – S Ardglass		<i>quarter tide vndir rothir</i>	= 1.5 hrs
Small I. – Barrels Rocks – Bardsey I.		<i>all that see goth half tide</i>	= 3 hrs
<i>on the mayne londe</i>	E/W	<i>half tide</i>	= 3 hrs
Ramsey Island	N/S		
<i>In the sowndeand be owtyn</i>			
Bishop Rocks	NNW/SSE		

Table 6a: Transcription, translation and commentary, part 6

Transcription (paragraphed to match the translation)	Translation (punctuation added, names modernised)	Commentary
<p><i>Opyn o geronde ther is wose and sonde to gedir & it is bein xij or xiiij or xvji fadim deep up on o pertus mamoschant there is stynkyngge wose and xij fadim deep Opon o pertus antiage ther is blak sonde</i></p>	<p>When clear of the Gironde, there is mud and sand together and it is between 12 or 14 or 16 fms deep. When open of Pertuis Maumusson, there is stinking mud and 12 fms depth. When open of Pertuis d'Antioche, there is black sand.</p>	<p><i>Opyn o</i> is ambiguous, see text. <i>geronde</i> is <i>grounde</i> in <u>L</u>. Pertuis Maumusson is the passage S of Île d'Oleron. Pertuis Antioche lies between Île de Ré and Île d'Oleron.</p>
<p><i>Open o the tayle of ars in xxiiij or xxvj fadim deep there is gret grey sonde and smale blake stones and grete white [sch]elles amonge opon of vse ther is in l or lx fadim deep wosi sonde</i></p>	<p>When open of the Pointe d'Arseaux, in 24 or 26 fms depth, there is large gray sand and small black stones with large white shells amongst them. When open of the Île d'Yeu there is, in 50 or 60 fms depth, muddy sand.</p>	<p>Pointe d'Arseaux, or St. Martin's Bank, extends from the N end of Île de Ré.</p>
<p><i>Opon on leyre ther is stremy grounde and white schelles. Opon o belille ther is in lx fadim or lxx smal dial sonde Opyn of penmark ther is in l. fadim blak wose. Opyn of the saym in lx fadim ther is sondi wose and blak fischey stonys a mong</i></p>	<p>When open of the Loire, there are striped stones and white shells. When open of Belle-Île there is, in 60 fms or 70, small round sand. When open of the Pointe de Penmarc'h there is, in 50 fms, black mud. When open of the same, in 60 fms, there is sandy mud with black fishy stones amongst it.</p>	<p><i>leyre</i> is assumed to be the Loire. <i>stremy</i> is assumed to be 'veined'.⁵⁵ <i>grounde</i> here appears to refer to the material lying on the sea-bed. <i>dial sand</i> is assumed to be round grains suitable for an hour-glass. <i>fischey</i> stones are 'mica fish'.⁵⁶</p>
<p><i>Opyn of huschannt in l. or lx fadim ther is red sonde and blak stonys and white schellis amonge betwene cille and huschant ther is gret stremy grounde with white schellis amonge with oute cille west southe west of him the grounde is red sonde and white schellys amonge</i></p>	<p>When open of Ouessant, in 50 or 60 fms, there is red sand and black stones with white shells amongst them. Between the Scilly islands and Ouessant there are large striped pebbles with white shells amongst them. Outwith the Scillies, WSW of them, the bottom is red sand with white shells amongst it.</p>	<p>Beyond Ouessant has been included here only for interest. <i>grounde</i> is again taken to be material lying on the sea-bed.</p>

between cille and lesarde the grounde is whit sonde and white schellis amonge. Obyn o lesarde is gret ston as it were benys and it is raggid ston. Obyn o dodman in xl fadim ther is red sonde and white shellis and smale blak stonis amonge

Opon o portelonde ther is fayre white sonde and xxiij fadim with red schellis ther in and in xiiij or xvj fadim ther is rokki grounde and in som place ther is fayre sley grounde Opon o wiete ther is fer harde platmer grounde and in the farway in xxx fadim ther is white chalk grounde Opon o bechef ther is sonde and grauell to gedir in xx fadim deep.

Between the Scillies and Lizard Point the bottom is white sand with white shells amongst it. When open of Lizard Point, there are large stones like beans and it is rough stone. When open of Dodman Point, in 40 fms, there is red sand and white shells with small black stones amongst them.

When open of Portland, there is fair white sand and 24 fms with red shells therein and in 14 or 16 fms there is a rocky bottom and in some places there is a fair clay bottom. When open of the Isle of Wight, there is a fair hard flat bottom and in the fairway, in 30 fms, there is a white chalk bottom. When open of Beachy Head, there is sand and gravel together in 20 fms depth.

Dodman Point lies between Falmouth and Fowey.

grounde here and below must refer to the solid seabed.

platmer is assumed to be 'flat'.⁵⁷

sley is *cley* in L which is almost certainly correct.

Table 6b: Analysis of part 6

Open o	Soundings		Sea-bed information		other	Postulated chart position		Distance from hypothetical course
	<i>rutter</i> fms	corrected m	<i>rutter</i>	chart		lat. N	long. W	
The Gironde	12 or 14 or 16	22 26 29	} M S	M S		45°46'	1°24'	on course
P. Maumusson	12	22		'stinking' M	M		45°48'	1°29'
P. d'Antioche	-	-	blk S	S				
Pte. d'Arseaux	24	44	} l gy S, sm blk St & l w Sh	S, Sh		46°16'	2°10'	5 nM E of course
	or 26	48		S, Sh		46°16'	2°18'	on course
Île d'Yeu	50 or 60	92 110	M S	M S M S		46°42' 46°42'	2°57' 3°18'	} straddling 8 nM W } course
Loire	-	-	'stremy' gr veined stones	M S Sh	w Sh			
Belle-Île	60 or 70	110 129	sm rd S	M S S		47°19' 47°19'	4°14' 4°54'	on course 29 nM W (aberrant)
Penmarc'h	50 & 60	92 110	blk M M S & blk fishy stones	M S Sh S		47°49' 47°49'	5°04' 5°13'	on course 4 nM W of course
					'mica fish'			
Ouessant	50 or 60	92 110	} r S, blk St & w Sh	S Sh fS blk Sh		48°27' 48°27'	5°12' 5°43'	5 nM W of Ouessant 23 nM W of Ouessant
Between Scillies and Ouessant			l 'stremy' gr w Sh					
Off Scillies to WSW			r S w Sh					
Between Scillies and Lizard Point			w S w Sh					
Lizard Point			l St 'beans' rough St					
Dodman Point	40	74	r S w Sh sm blk St					
Portland	24 14/16	44 26/29	w S r Sh r clay					
Isle of Wight			'hard platmer'					
In fairway off Wight	30	55	w chalk gr					
Beachy Head	20	37	S 'gravel'					

Abbreviations used in table 6b

(Abbreviations are based, where possible, on Admiralty usage):

blk black, f fine, fy fishy, gr 'ground', gy gray, l large, r red, rd round, sm small, stk stinking, str striped, w white.

M mud, R rock, S sand, Sh shells, St stones.

Note: A position within 1 nM of the hypothetical course has been deemed to be 'on course'.

Table 7: Courses from NW Spain to SE and SW England

From	To	Rutter	Chart	Comments
Finisterre	<i>ij partis ouyr the see</i>	NNE	= 023°	
then	100 or 90 fms	NxE	= 011°	<i>and be bounde in to seberne</i>
then	72 fms, fair grey sand	N	= 360°	<i>betwene clere and cille</i>
then	mud	N	= 360°	
then	<i>stepillhorde</i>	NE or ExN	= 045° or 079°	
Finisterre	<i>ij partis ouyr the see</i>	NNE	= 023°	
then	100 fms	NExN	= 034°	<i>yf bone in to the narow see</i>
then	80 fms, <i>stremey ground</i>	NE	= 045°	<i>betwene huschant and cilli</i>
then	60 fms	ENE	= 067°	

Appendix 1: Transcription of the Hastings MS rutter

The original foliation is noted in square brackets []; line ends are marked |; each 'part' has been separated and numbered. Abbreviations have been silently expanded and Middle English 'thorn' has been modernised to 'th'. Random punctuation in the original has been omitted; punctuation marks added to the transcription are enclosed in square brackets []. The capitalisation of the original has been preserved and no capitals have been added. Obscure Middle English place names and words have been translated at first occurrence and, as with explicatory additions, are enclosed in square brackets [].

[f. 130v] Full page illustration of ships with unidentified landmarks (illustration 1).

Part 1

[f. 131r] [Line 1, illuminated initial B, 4 lines depth] *berwik lieth southe and northe of golde | stones [rocks between Holy Isle and the Farne Islands]. the ylonde [Holy Isle] and berwik hauen lyne | west north west and est southe est. and | fro vamborow [Bamborough] to the pointe of the ylonde | the course lieth north and south[;] and beware of the | goldestones. hit floweth north north west and quarter | tide. be owten fro tilmoth [Tynemouth] to fenyn ylonde [Farne Island] the cours is | north northe west and south south est[;] and tilmothe is tide | north est and southe west. betwene the hedlonde [Flamborough Head] and | houndeclyf fote [Hunt Cliff Foot] the cours is north west and south est[;] | and it floweth west southe west and est northe est[;] | And at whitoyes [Whitby] halfe. And fro hounde clif fote to humbr [R. Humber] | the cours is southe est and be/southe[;] north west and be | northe. ffro leyrnes [Wainfleet] to the hedelound the cours is north | north west and southe southe est. At the hedelonde the | streme setteth north west and southe est[;] And it flow | eth on the londe of holdirnes north est and quarter | tide in the fairway. And at hedlonde quarter tide and | half. And yf ye goo fro leyrnes to the schelde [cliffs at Cromer] ye schal | goo est southe est for to goo clene of rosand [a sandbank] and be | southe[.] And yf ye haue an ebbe goo southe est and be est[.] | And yf ye goo fro the spone [Spurn Head] to the schelde and at the | wynde be at north west your cours is southe est till ye | be passid welle bank [a sandbank]. And in welle [Wells-next the Sea] it - floweth est and | west and ther gooth half strem vndir rothir[.] And at | the schelde it floweth on the londe west north west | and half strem vndir rothir be the londe till ye co | me to wyntirbornesse [Winterton Ness] and fro wyntirbornesse til ye |*

[At bottom of folio, c. 30 mm representation of the arms of the Earl of Hastings]

come to fyrkle rode it floweth on the soude north weste and
 quarter tide and half quarter vnder rothur And if ye goo
 fro the schelde to the holmes and it be in the nyght ye
 schal goo but viij fethim. fro the cofe. til the gisse that
 ye be passid lumbet and vry. And goo the estmore
 course til ye come to viij fadim. and goo yourre course.
 southe southe est. till ye be passid the holmes. but the
 mooste wisdom is to abide till it be day. fro fyrkle hol
 mys to Orfordness. and the wynde be on the soude.
 sailk yourre wey southe and be weste it floweth on the
 soude southe southe est. And at the holmes heed. quar
 ter tide. fro orfordness to orwelle. waymys the cours
 is southe weste and it floweth southe southe est. and
 in orwell hampn with the wears southe & north
 And ye goo oute of orwell waymys. to the nase. ye
 myste goo southe west fro the nase to the markis. of
 the spetis. yourre cours is weste southe west. and it
 floweth southe and be est brynge yourre markis to
 gedir that the parisse steytt. be ought be este ye abbot
 of synt hosles than goo yourre cours ouer the spetis
 southe til ye come to x fadim or viij. than goo yourre
 cours with the horse scho southe southe west. and if
 it be on flood come not be in viij fathim And that
 schal brynge you to xi. or viij. fathim. than goo yourre
 cours in to tenesse. with the greue banke west southe
 weste. and at the horse scho it floweth southe & north
 And oute of orwell waymys fo: to goo oute at the
 slade. yourre cours is est southe est fo: cause of ye rigge

¶ Devolw' heth south and north of Golden pome. the floude & bedrois, haben
 hen west north west and eft south est. And from south to the point of the
 floude the course lieth north & south. And adware of the yoldo pome it fildometh
 north north west and quarter tide be dute five tilmouth to ffenyn floude. the
 four is north north west and south south est. And tilmouth is tide north
 est & south west bedmenc the hedelonde & honudclif fore the course is north west
 and adware & south est. And it flaweth west south west & eft north est
 And at voluedier half and fro honudclif fore to humber the course is south
 est & be south. north west & by north. fro leyne to the hedelonde the course is
 north north west and south south est. at the hedelonde the same south north
 west & south est. and is flaweth on the londe of goldesme north est and giter
 tide in the same way and at hedelonde quarter tide & half. And yif ye go from
 lounes to the shelde ye shall go fro south est for to go cleene of the sande & by
 south. And yif ye have an ebbe ye shall go fro south est & by eft. And yif ye go fro the
 spone to the shelde and if the wynde be at north west. ye shall go south est and
 ye do passid wellbunt. And in well it fildometh est & west. And there goeth half
 strem vnder Kote. And at the shelde it flaweth on the londe west north
 west. and half strem vnder Kote by the londe till ye come to Domesbourne
 And from Domesbourne till ye come to fülle rode it flaweth on the londe north
 west and quarter tide & half quarter vnder Kote. And yif ye go fro the shelde to
 the holmes and it be in the nyght ye shall go but xij fadome fro ye take
 all the yess that ye do pass timber and berry and fro the ester mare come
 till ye come to xij fadome. And fro the four south south est till ye do passid

III. 4-5 Sheets from the Hastings collection (left; New York, Pierpont Morgan Library, Hastings MS 775, f. 131v) and the Lansdowne collection (above; London, British Library, Lansdowne MS 285, f. 138r)

[f. 131v] come to kyrkle rode [Kirkley Road] it floweth on the londe northe west and | quarter tide and half quarter vnder rothir[.] And yf ye goo | fro the schelde to the holmes [Holm Sand] and it be in the nyght ye | schal goo but xvij fethym fro the coste til the gisse [estimate] that | ye be passid lymber and vrry [Leeman and Ower sandbanks] and goo the estirmore | course til ye come to xiiij fadym and goo yowre course | southe southe est till ye be passid the holmys[.] but the | most wisdom is to abide till it be day. fro kirkle hol | mys to Orfordnesse and the wynde be on the londe[.] | saile yowre wey southe and be/west[;] it floweth on the | londe southe southe est. And at the holmys heed quar | ter tide. fro orfordnesse to orwell waynys the cours | is southe weste and it floweth southe southe est and | in orwell hauyn[.] withinne the weris[.] southe and northe[.] | And ye goo oute of orwell waynis to the nase ye | must goo southe west[;] fro the nase to the markis of | the spetis [The Spits, a sandbank] youre cours is weste southe west. And it | floweth southe and be est[.] brynge yowre markis to | gedir that the parisshe stepill be ought be est the abbey | of seynt hosies [St. Osyth] than goo yowre cours ouir the spetis | southe til ye come to x fadim or xij than goo yowre | cours with the horse scho [sandbank off Shoeburyness] southe southe west. And yf | it be on flood come not be in viij fathim and that | schal brynge yow to xj or xij fathim than goo yowre | course in to temesse [Thames] with the grene banke [? Isle of Grain] west southe | weste[.] and at the horse scho it floweth southe and northe[.] | And oute of orwell waynis for to goo oute at the | slade [the Sledway] yowre cours is est southe est for cause of the rigge | [rocks off Harwich]

[f. 132r] and the rokkis till ye come to xv fadim deep and for | the longe sonde[.] than ye may goo southe southe est | til ye come to xvij or xvij fathim deep[.] than ye must | goo southe a glass or ij for cause of the rokke[.] than goo | southe southe west and seke vp tenet [Thanet] and seke vp v | fathim on the brakis [the Brake Sand][.] than goo yowre cours southe[;] | it is yowre farway[.] and at the knake in the kentisse | see [the Kentish Knock sandbank] it floweth southe[.] and at the northe hed of godwyne | the streme renneth to the southe southe west and it | floweth fro Tenet on to wyet [?] on bothe sides on the | mayne londe southe southe est. At sandewiche at dauy | es gate southe[;] and in the downys gothe half tide vnd | ir rothir[.] and yf ye ride in the downys and will | in to sandewiche hauyn[.] rere it [weigh anchor] be a turnynge wynde [head wind] | at an est south est mone and yf it be a folowyng | wynde ye may abide the lenger[.]

Part 2

[f. 132r, line 16] And yf ye be bounde | to calis [Calais] hauyn and ride in the downys and the wynde | be west southe west[.] ye must rere at a north north | est mone. And gete yow in to yowre markis the stepill | in to the fan. than goo yowre cours est southe est | ovyr[.] and aftir yowre wynde and yowre tide serve | yowre cours[.] and loke ye seke calis hauyn at a southe | southe est mone or ellis at a southe and be est[.] and yf | ye turne [tack] in the downys come no nere goodwyn th | an ix fathim ne no nere the brakis than v fadm. ffro | seynt margrete steyres and ye will goo with dengenes [Dungeness][.] | yowre best way is southe southe west and seke you | xvij fathim deep betwene seynt margret steyres and |

[f. 132v] dengenes[.] gooth half tide. And fro dengenes to hildrenes [Cap Gris Nez] | yowre cours is est and weste[.] dengenes and the watir | of sowm [River Somme] lyeth est southe este and west northe weste[.] denge | nes and depe [Dieppe] southe est and be est[.] northe west and be | weste[.] dengenes and the seyne hed [Cap de la Hève] southe southe west. go | fro dengenes and ye have xx fadym deep[.] west southe west | and est northe est that is youre cours a long the see. | And at dengenes is half and half quarter tide and sou | the un to hastynges half tide[.] at bechiffe [Beachy Head] quarter tide. | bechif and depe southe est and northe west[.] bechif

and | the seyne hed southe and northe[,] the ylonde of arundell | and strotarde [Cap d'Antifer] southe southe est and northe northe west[,] | the seyne hed and wolueshorde [St. Catherine's Point] southe est and northe west[,] | berfletnes [Pointe de Barfleur] and wolueshord southe southe est and northe | northe west. The chapel of hoggis [St. Vaast de la Hogue] and the nedlys southe | and northe[,] the hagge [Cap de la Hague] be est rokysnesse [Cape Rokeine, Guernsey] and wolueshord | southe and be west northe and be est. Wolueshorde and | garnesey southe southe west and quarter tide at wolue | shorde. ffro wolueshorde to the ligge of seynt Elenes [St. Helen, Isle of Wight] is | half tide vndir rothir. And fro seynt elenes to chalkishor | de [Calshot] is half tide and a southe mone maketh hiest water | withinne wiet [Solent, 'inside Isle of Wight']. the nedlys and the forne [Le Four] lyeth southe | west and be west[,] northe est and be est[,] the nedlys and | cornlonde [Cornwall] est and west. At the nedlys it floweth southe | est and be southe. fro the nedelys to portelonde the | cours is west southe west and est northe est. at the | polkith [Poole] in hauyn it floweth northe west and southe | est and in the fayre way southe southe est and northe |

[f. 133r] northe weste. At waymouth with in hauyn est and west[,] | at the bil at portelonde southe southe est and northe no | rthe west. the seyne hed and portelonde lyeth west northe | west and est southe est[,] portelonde and garnesey southe | and northe[,] seyne hed and the hey wode be west derte | mouthe [? see text] est and be/southe[,] west and be northe. Abotis bery | and the forne lyeth northe est and southe west[,] portelonde | and beri londe [Berry Head] est and be northe[,] west and be/southe[,] bery | londe and the start west southe west and est northe est[;] | betwene portlonde and the start euery hauyn is tid est | and west. betwene berilonde and the londes ende of en| gelonde ther is half tide. In the fareway betwene the | start and lisart the cours is est and west and be ware | of the hedre stonys [Eddystone Rocks]. All the haunenes be full at a west | southe west mone betwene the start and lisart[,] the lon | des ende and lesarde lyeth est southe est and west nor | the west. At the londes ende lyeth raynolde stone [Runnel Stone]. A lital | birthe of but xij fadim [a width of only 12 fms] schal lede yow al be owtyn | him. And southe southe west of the londes ende lyeth | the gulf[;] the langeschepes and the londes ende lyen | northe northe west and southe southe est. and it flow | eth west southe west and half tide vndir rothir be | the londe but none [? error][,] the longeschippes and seynt mary | sownde of cille [Isles of Scilly] lieth west southe west and est northe est[,] | seynt marie of cille and vschaute [Ouessant] lieth northe west and | be northe[,] southe est and be southe. cille and the sayne [Île de Sein] | lieth southe southe est and northe northe west. the sayne | and huschant lieth southe and northe. huschant and |

[f. 133v] the pople hop [? see text] lieth northe and be west[,] southe and be | est[,] huschant and lesarde [Lizard Pt.] northe and southe[,] lesarde and | seynt mary sownde of cille est and west[,] but be ware the | gulf. Seynt mary sownde and the forne north west and | south est[,] the forne and the popil hope northe northe west | and southe southe est. the forne and lesarde northe and | be west[,] southe and be est[,] the forne and the grey [St. Michael's Mount] be est [? omission] | falmouth northe and southe[,] the forne and the ram hed [Ramehead] | southe southe west and northe northe est[,] huschant and the | ram hed north est and be northe[,] southe west and be | southe[,] the forne and berylonde northe est and be northe[,] | southe west and besouth. the start and baspalis [Île de Batz] northe | and southe[,] baspalis and the ramhed north and be est[,] | southe and be west[,] garnesey and the heywode be/west dert | mouth [? see text] west northe west and est southe est[,]

Part 3

[f. 133v, line 15] In spayne | and breytayne this is the cours and the tide. fro seynt | maluys

[St. Malo] *un to baspalis the cours is est northe est and | west southe west and opyn of baspalis lieth the langas* [? see text][,] | *it floweth est and west on the coste. the langas and the | est brigge* [? see text] *lyeth southe west and be west[,]* *northe est and | be est til ye come in to yowre fareway. yf ye be bounde | estwarde ye schal goo northe est and yf ye be bounde west | warde ye schal goo west southe west til ye come ayens | the forne. At the forne goth half tide betwene huschant | and the forne[,]* *the cours of the chanell of seynt mathyus* [St. Mathieu][,] | *and ye goo withoute the braderith* [L'Iroise][,] *ye must goo for to goo | clene of all daungeris yowre cours is southe and be est[,]* | *northe and be west[,]* *but wynde maketh cours. And at |*

[f. 134r] *seynt mathewes it floweth est northe est and west southe | west. at the forlonde of fontenes* [Pointe de Raz] *it floweth southe west | and northe est[,]* *but a man that rideth in the way | of odyerne* [Audierne] *at an ankir[,]* *he may begyn to rere at an | est southe est mone for to turne and the wynde be | at the northe est or how evir it be[,]* *fro the furlonde | of fontenes to the strayts of marrok a southe west mone | maketh hiest water be the see coste and in the vpdraw | tis it dooth not soo[,]* *the furlonde of fontenes and pen | mark lieth northe west and southe est and penmark | and the saym northe west and be west[,]* *southe est and | be est. the saym and huschant northe and southe[,]* *pen | mark and belylle* [Belle-Île] *west northe west and est southe est[,]* | *be ware of vas glenant* [Îles de Glenans][,] *the strem setteth southe | west and north est[,]* *goo fro the saym southe est and be es | and ye be in lx fadim deep and x and ye schal falle | with olleron* [Île d'Oleron][,] *than goo yowre cours with the pole | hed* [? Cordouan, see text] *southe est and be southe and ye be in xij fadim | deep and that schal lede yow with oute the pollis* [? see text][,] *ffro | the polles ye muste goo est northe est til ye be aboute | the piper* [? see text][,] *than goo est and be northe for cause of the | hors scho* [? see text]. *And then ye may goo fro opyn on the blak | schore* [Terre Nègre] *est southe est til ye come as hy in geronde as ta | lamont* [Talmont][,] *for the groundes on the souther side lyne | fer oute and arne schore to* [are not sheer-to] *for ye may come no nere | hem than vij fadim[,]* *and when ye come anens* [abeam of] *tala | mon ye schall goo with castillon* [Tour de Castillon] *southe southe est | and be ware of the middel grounde. Vse* [Île d'Yeu] *and belille lyen |*

[f. 134v] *southe est and northe west. belille and the pekelerre* [Île de Pilier] *lyen | west northe west and est southe/estt[,]* *the tutpert* [Pointe de Talut, Belle-Île] *and the pol | lis lyne west northe west and est southe est[,]* *the pollis and | the borow of vaion* [River Adour] *southe and northe.*

Part 4

[f. 134v, line 4] *goo fro the pol | lis of amias* [? see text] *west southe west and goo clene of all the coste | of spayne and ye schal come be siete of cap finestre[,]* *all hy | up[.] Vse and mache-schaco* [Cabo Machichaco] *southe est and be southe[,]* *northe | west and be northe[;]* *belille and makeschaco southe and | be est[,]* *northe and be west[;]* *belille and seynt tony* [Santoña] *southe | and northe[;]* *belille and seynt Andrewes* [San Andrués] *northe and be | est[,]* *southe and be west. belille and ortingere* [Cabo Ortigal] *southe west | and be southe[,]* *northe est and be northe. belille and | the cap fenyster southe west and be west[,]* *northe est and be | est. the saym and the bokow of vayon southe est and | northe west. mascheco and saym southe est and be | southe[,]* *northe west and be northe. the saym and seynt | tonye southe southe est and northe northe west. seynt An | drues and the saym northe and be west[,]* *southe and be | est. Seynt sebastians* [San Sebastian] *and the saym southe and northe[;]* | *ortinger and huschant southe southe west and northe | northe est. the forlonde of fontenes and the cap finistir | northe est and southe west[,]* *be ware of the saym[,]* *fro the | bokowe of bayon to the cap fenistre the farway is est | and west. the cap fenistre and the berlinges* [Ilhas de Berlingas] *southe and |*

northe[;] the birlynges and the rokke seynter [Cabo Roca] southe southe | est and north north west[;] cape seynt vincent and cape | seynt marie est and be southe[,] west and be northe[;] cape | seynt mary and calus malus [Cadiz] southe est and be est[,] |

[f. 135r] northe west and be west[;] calus and the ryuer of ceuylle [Seville] | southe est and be southe[,] north west and be north [;] cape | seynt mari and the straytes southe est and northe west[;] | the straytes est northe est and west southe west[;] cape fe | nystre and mewes nes [Mizen Head] northe and be west[,] southe and | be est[;] cap fenistir and clere [Cape Clear] in erlonde northe and southe[;] | cap fenestre and cille north north est and southe southe | west[;] clere and the bokowe of vaion southe est and northe | west[;] clere and seynt tony in spayne northe northe | west and southe southe est[;] clere and ortingere northe | and be west[,] southe and be est[;] clere and the saym est | southe est and west northe west[;] clere and cille southe est and | northe west[;] cille and the hold hed of hyndifforde [Kinsale] southe | est and be est[,] northe west and bewest.

Part 5

[f. 135r, line 14] A new cours and | tide betwene engelonde and erlonde[;] the londes ende | and the olde hed of hyndifford west northe west and | est southe est[;] schipmanhed of cille and the vij stonys | southe west and northe est[;] the longeschippes and the vij | stonys est and west[;] the londes ende and the yokillis [Youghal] | northe west and south est[;] the londes ende and the | towre of watir forde north norwest and southe southe est[;] | the toure of watir forde and the toure of velafad [Kinsale] | northe and southe[;] the londes end and saltays [Saltees] north | and be west[,] southe and be/est[;] tuscard and the longeschippes | northe and southe[;] frestonhorde [?] and smale of skid | wale [the Small Rocks] north and be est[,] southe and be west[;] frestonhord | and seynt thomas forlonde [St. Thomas Head] on the west side of milforde | northe northe est and southe southe west[.] est and weste it |

[f. 135v] floweth with in the hauyn and half streme vndir ro | thir and withouten it renneth northe est and southe | west[.] schipman hed and milforde northe est and be no | rthe[,] southe west and be southe[;] schipmanhed and londay | northe est and southe west[,] be ware of the vij stonys[;] | frestonhorde and londay [Lundy Island] northe est and be northe[,] southe | west and be southe[;] londay and calday [Caldy Island] northe and southe[.] | fro the londes end to londay it floweth west southe | west and est southe est[.] fro londay to the holmes [Flat Holm and Steep Holm islands] est and | be northe[,] west and besouthe[,] be ware of the yren groundes [rocks, ? N Devon] | and of youre stremes of flood for thei sitten northe est | on the yren groundes and on ebbe spare not to goo[,] | for the stremes of brigge watir [Bridgewater] sette west northe west[,] | and be ware of coluersonde [Culver Sand][.] it floweth fro londay to | the holmes est and west. and fro the holmes for to goo | clene of the wasshe groundes [rocks off Watchet] and of langbord [? Langford Grounds][,] the cours | is northe est and ye come on ebbe[.] and sithe goo est and | northe est with portis hed[,] but yf ye haue a quarter | tide at the flat holme ye may goo est northe est or est | and be southe[;] and goo ouer langborde with ketelis wod [?] | with a good ship for ye schal haue iij fadim on the | sonde or more be that ye come there[.] betwene the hol | mes and keteleswode and portis hed it floweth west and | be northe[,] est and be southe. At kyngrode [King Road] hyt floweth | est and west and set on no lasse watir aboute ho | lmes than xij fadim at the leste. Seynt thomas for | londe and scalmay [Skomer Island] lyeth north west and southe est[.] | All that see betwene erlonde and walis goth half tide |

[f. 136r] vndir rothir. londay and the olde hed of hyndifforde | lieth west and be northe and est and be southe and yf | ye be bounde [half line blank] | goo west northe west and ye schal go

clene of kidwale [Skidwhale] and smale[.] and ye haue an ebbe the streme setteth | northe northe est and southe southe west and ther is | half tide vndir rothir for it floweth on londe est and | weste. fro tuscarde to the olde hed of hyndifforde the | cours is west southe west and est northe est [;] fro the olde | hed of hyndifforde to clere in erlonde the cours is west | and be southe[.] est and be northe. clere and mewes nes | and thursay [Dursey Island] northe west and southe est[;] thursay and | the lewe [Loop Head] north north west and southe southe est[;] the | sowde of blaskay [Great Blasket Island] lieth northe and southe. blaskay and | the ackiles [Achill Island] northe and southe[;] blaskey and the stakis of | connothe [Stags of Connaught, Broadhaven Bay] north northe est and southe southe west but | thou must goo northe and be est for a rok[.] the stakis | of rounney [Stags of Aranmore] and the londe ende of erlonde northe northe | est and southe southe west and soo thou must goo | to the ylonde of torre [Tory Island]. The stakis of connoth and [location omitted] | southe west and northe est[.] and fro the stakis of co | nnoth to the legge of rabyne [Rathlin Island] the cours is west southe | west and est northe est[;] the sownde of torre lyeth west | southe west and est northe est[;] the sownde and the fur | londe be est[;] loswille [E side of entrance to Lough Swilly] lyeth west southe west and est | northe est but be ware of the rok in the baye of los | wille [Fanad Head]. fro the forlonde of loswille to donsmers hede [Dunmore Head] | the cours is west northe west and est southe est[;] the |

[f. 136v] sownde of ranseyves [Ramsey Island] the same cours with benostor [? Benmore or Fair Head] |. fro tuscarde to donsmere hed it floweth be the see coste | west southe west and est northe est but in the updrawtes | it dooth not soo. fro tuscarde to the red banke [?] it is | half tide vndir rothir. fro saltays to tuscarde the | cours is est and weste[;] fro tuscarde to the hed of the | scarris [the Skerries] for to goo clene of all the grounde betwene | tuscarde and dalcay [Dalkey Island] the cours is northe northe est | and southe southe west[;] fro the scarris vn to arglas | the cours is northe and southe[;] from arglas ye schal go | with capman eylonde [Copeland Island] southe southe est and northe | northe west but and ye be bound to capman ylonde | ye schal goo northe and be west for cause of ij rok | kis that lyen in the wey and yf ye be bounde southe | warde ye schal goo southe est and be southe[.] fro cap | man ylonde to the forlonde of woluerfrith [?] ye schal | goo northe northe est and southe southe west[;] fro the | forlonde of woluuefryth to benestore southe southe west | and northe norwest[.] it floweth on the coste betwene | tuscarde and benefrod southe southe est and northe | northe west[;] betwene capman ylonde and donbalk [Dundalk] | and be southe arglas ther gooth quarter tide vndir | rothir[.] capman ylonde and the ile of man[.] the southe | end[.] lieth southe est and be est[.] northe west and be | west[;] the ylonde of man and arglas est northe est | and west southe west. the yle of man and lambay | ylonde northe est and southe west. the howe [Howth] and the | holy hed [Holyhead] est and west. lambay and the ramsayr northe |

[f. 137r] and southe[;] the churche of wiklow and the ransayr | northe northe west and southe southe est[.] but a man | that rideth in the rode of wiklowe muste goo oute of | the churche of wiklowe southe est and northe west. tus | carde and the ramseyr est and west[;] the towre of wa | tirforde and gresholme west and be northe[.] est and be | southe[;] all that see goth half tide betwene the smale | and skidwhale and the barsseys [Bardsey Island] and it floweth este | and weste on the mayne londe, and at the ramseires | northe and southe. the stremes renne in the sownde | and be owtyne the beschopis and his clerkis [the Bishop and his Clerks rocks] northe | northe west and southe southe est[.] sculke holme [Skokholm Island] and | the sounde of ramseys northe and southe and be ware | the rok men calleth sampson for he lieth at the southe | poynte on seynt dauy [St. David's Head] side and kepe more nere the | ylonde than the mayne londe til ye be passid the | poynte and thorow the sownde and than goo northe | til ye come at

a nothir rok[,] and for cause of that rok | ye must goo northe and bewest ellis northe and be | est for northe is euen with the rok[,] and the name of | the rok is called the kep and he lieth vnder the watir | but hit breketh vp on hym and the breke scheweth[.] | And then yowre cours is northe northe est for to go | with berseys stremes. And seynt dauyes londe northe | est and southe west[,] and so goo yowre cours northe | northe est and southe southe west til ye come to yre [Point of Ayre (Isle of Man) or Point of Ayr (Dee estuary)] | northe west vp on skotlande[.] the holi hed and the | yle of man northe and be/est [,] southe and be west and |

[f. 137v] *yf ye goo to chestre ye schal goo fro the scarris til ye | come anens the castell of rotlonde [Rhuddlan][:] yowre cours is | west southe west and est northe est[,] and take yowre | slawhte [rest] on the maynelonde of walis[.] rotlonde and | the redbanke in chester water northe and southe[.] |*

[gap of five lines]

Part 6

[f. 137v, line 6] *Opyn o [see text] geronde [River Gironde] ther is wose [mud] and sonde to gedr & | it is bein xij or xiiij or xvj fadim deep[:] up on o | pertus mamoschant [Pertuis de Maumusson] there is stynkyng wose | and xij fadim deep[.] Opon o pertus antiage [Pertuis d'Antioche] ther is blak | sonde[.] Open o the tayle of ars [Pointe d'Arseaux] in xxiiij or xxvj fa | dim deep there is gret grey sonde and smale blake | stones and grete white schelles amonge[:] opon of vse | ther is in l. or lx fadim deep wosi sonde[.] Opon on | leyre [River Loire] ther is stremy grounde [?] and white schelles. Op | on o belille ther is in lx fadim or lxx smal dial | sonde[.] Opyn of penmark ther is in l. fadim blak | wose. Opyn of the saym in lx fadim ther is sondi | wose and blak fischey stonys [see text] amonge[.] Opyn of hus | channt in l. or lx fadim ther is red sonde and blak | stonys and white schellis amonge[:] betwene cille and | huschant ther is gret stremy grounde [?] with white | schellis amonge[.] with oute cille[,] west southe west of | him[,] the grounde is red sonde and white schellys | amonge[:] between cille and lesarde the grounde is whit |*

[f. 138r] *sonde and white schellis amonge. Opyn o lesarde is | gret ston as it were benys and it is raggid ston. Opyn | o dodman in xl fadim ther is red sonde and white | shellis and smale blak stonis amonge[.] Opon o porte | londe ther is fayre white sonde and xxiiij fadim with | red schellis ther in and in xiiij or xvi fadim ther is | rokki grounde and in som place ther is fayre sley [clay] | grounde [:] Opon o wiete ther is fer harde platmer | grounde [flat seabed] and in the farway in xxx fadim ther is whi | te chalki grounde[.] Opon o bechef ther is sonde and | grauell to gedir in xx fadim deep.*

Part 7

[f. 138r, line 11] *here beth the groun | des of Engelonde[.] Bretayne and cille. And ye come | oute of spayne and ye be at cape fenestir[,] go yowre | cours northe northe est and ye gesse yow ij partes | ouyr the see and be bounde in to seberne [River Severn][:] ye muste | goo northe and be/est til ye come in to sowndynge | and yf ye haue an c fadim deep or ellis iiij^{xx} and x | than ye schal go northe vn til ye sownde ayen in lxxij | fadim in fayre gray sonde and that is the rigge [shoal] that | lieth betwene clere and cille[:] than goo northe till ye | come in to sowndynge of wose and than goo yowr | cours est northe est or ellis est and be northe and ye | schal not fayle moche of stepilhord [?][:] he resith al rounde | as it were a coppid [high crowned hat-shaped] hill. And yf ye be iij partis ouyr | the see and ye be bone in to the narrow see and ye go | northe northe est than chaunge yowre cours and go | northe est and be northe til ye come in to sowndinge | of an c fadim deep than goo yowre cours northest |*

[f. 138v] *til te come in to iij^{xx} fadim deep and yf it be stremy [? veined stones] | grounde it is betwene huschant and cille in the entre | of the chanel of flaundes and soo goo yowre cours | til ye have fivti fadim deep than goo est northe est | a longe the see et cetera.*

Below the last five lines of text there is an illustration filling the remainder of the page, of a ship sounding, off an unidentified coast (illustration 2).

Appendix 2: Comparison of texts of H and L

Folio/line ref. no.	Hastings MS (<u>H</u>)	Lansdowne MS (<u>L</u>)	Variants
131r/6 ref 1	Part 1 <i>ffloweth</i>	Part 1 <i>folowith</i>	<i>folowith</i> incorrect in <u>L</u>
131r/12 ref 2	<i>and at whitvyes halfe ^.</i> <i>and fro hounde clif fote</i>	<i>and at whitevies half ^</i> <i>and fro houndeclif fote ...</i>	Omission of <i>tide</i> after <i>half</i> in both
131r/18 ref 3	<i>and at hedlonde quarter tide & half ^.</i>	<i>at hedelonde quarter tide and half ^.</i>	As above
131v/5 ref 4	<i>and goo the estirmore course</i>	<i>and to the estermare cours</i>	<i>to</i> incorrect in <u>L</u>
131v/15 ref 5	<i>and ye goo oute of orwell waynis</i>	<i>and yif ye go oute of orwell waynis</i>	Addition of <i>yif</i> in <u>L</u>
132r/12 ref 6	<i>in the downys gothe half tide vndir rothir ... and will in to sandewiche... at an est southe est mone and yf it be a folowyng wynde</i>	<i>in the doownys goth half tide undir rothir ... and will go into Sandwiche At an est south of the moone and yif it be a flowyng wynd</i>	<i>Under rothir</i> in both MSS Additional <i>go</i> in <u>L</u> <i>est</i> omitted from <u>L</u> <i>flowyng</i> incorrect in <u>L</u>
132r/16 ref 7	Part 2 <i>dengenes and the seyne hed southe southe west go fro dengenes and ye have xx fadym deep</i>	Part 2 <i>dengenes ^ and ye have xx^{ti} fadome depe</i>	<i>and the seyne hed southe southe west and go fro dengenes</i> (2 x 1/2 lines) omitted from <u>L</u>
132v/1 ref 8	<i>un to hastings half tide at bechiffe</i>	<i>unto hastings half tide as by cheffe</i>	<i>as</i> incorrect in <u>L</u>
133r/3 ref 9	<i>the seyne hed and portelonde lyeth west northe west and est southe est portelonde and garnesey southe and northe</i>	<i>the seyne hede at portlonde ^ and garnesey south and north</i>	<i>at</i> incorrect in <u>L</u> <i>lyeth west northe west and est southe est portelonde</i> (2 x 1/2 lines) omitted from <u>L</u>
133v/15 ref 10	Part 3 <i>the langas and the est brigge lyeth southe west and be west north est and be est</i>	Part 3 <i>the langas and the estbrigge lye south ^ and by west north est and by est</i>	<i>west</i> omitted from <u>L</u>
134r/1 ref 11	<i>And at seynt mathewes it floweth est northe est and west south weste</i>	<i>And at seynt matheus it flowith est north est and south south west</i>	<i>south</i> in place of <i>west</i> in <u>L</u>
134r/13 ref 12	<i>penmark and belylle</i>	<i>Penmarke and be like</i>	<i>belylle</i> in <u>H</u> ; <i>be like</i> in <u>L</u>
134r/28 ref 13	<i>use and belille lyen ... belille and the pekelerre</i>	<i>use and be lile lien ... be like and the pekelerre</i>	<i>belylle</i> in <u>H</u> ; <i>be lile and be like</i> in <u>L</u>

134v/4 134v/8 ref 14	Part 4 <i>belille and macheschaco southe and be est. northe and be west. belille and seynt tony southe and northe</i>	Part 4 <i>belile and ^ seint tony south and north</i>	<i>macheschaco southe and be est. northe and be west. belille and (2 x 1/2 lines) omitted from <u>L</u></i>
135r/14 135r/18 ref 15 135v/17 ref 16 136r/3 ref 17 136r/8 ref 18	Part 5 <i>and the vii stones southe west and northe est and of langbord ye cours is northe est and yf ye be bounde... fro tuscarde to the olde hed hyndilforde the course is west south west and est northe est fro the olde hed of hyndilforde to clere in erlonde</i>	Part 5 <i>and the seven stones southe and northeast and of longbors the cours is north and yf ye be bounde ... fro tuscarde to the olde hede of hindilforde ^ to clere in Irlonde</i>	<i>southeast incorrect in <u>L</u> est omitted from <u>L</u> half line blank in both MSS the cours is west south west and est northe est fro the olde hed of hyndilforde (1 1/2 lines) omitted from <u>L</u></i>
136r/23 ref 19	<i>the sownde of torre lyeth west southe west and est northe est the sownde and the furlonde be est</i>	<i>the sonde ^ and the forelonde be est</i>	<i>of torre lyeth west southe west and est northe est the sownde and (2 x 1/2 lines) omitted from <u>L</u></i>
136v/8 ref 20	<i>the cours is northe northe est and southe southe west</i>	<i>the cours is north ^ est and south south west</i>	<i>north omitted from <u>L</u></i>
136v/24 ref 21	<i>the southe end lieth southe est and be est northe west and be west</i>	<i>the south end lieth south ^ and by est northwest ^</i>	<i>est and and be west omitted from <u>L</u></i>
137r/1 ref 22	<i>the church of wiklow and the ransayrs northe northe west and south south est</i>	<i>The chirch of wiklowe and the ransires ^ south southeast</i>	<i>northe northe west and omitted from <u>L</u></i>
137v/6 137v/6 ref 23 138r/7 ref 24	Part 6 <i>geronde</i> <i>sley</i>	Part 6 <i>grounde</i> <i>cley</i>	<i><u>H</u> correct <u>L</u> correct (for clay)</i>
138r/11 138r/26 ref 25	Part 7 <i>... northe northe est than chaunge yowre course and go northe est and by northe til ye come in to soundinge</i>	Part 7 <i>... northe northe est ^ and by northe till ye come into sowdyng</i>	<i>than chaunge yowre cours and go northe est (about one line) omitted from <u>L</u></i>

Folio and line numbers refer to the text of the original Hastings MS (v. Appendix 1).

Orthographic variations which maintain the meaning have been ignored.

The symbol ^ denotes an omission, included in the right hand column.

Appendix 3: 'Boxing' the compass, angular bearings and lunar time

Compass bearing	Notation	'Lunar time' at F & C	'Lunar time' at quadrature
0°/360°	N	00.00/12.00	05.36/17.36
11.25°	N by E	00.45/12.45	06.21/18.21
22.5°	NNE	01.30/13.30	07.06/19.06
33.75°	NE by N	02.15/14.15	07.51/19.51
45°	NE	03.00/15.00	08.36/20.36
56.25°	NE by E	03.45/15.45	09.21/21.21
67.50°	ENE	04.30/16.30	10.06/22.06
78.75°	E by N	05.15/17.15	10.51/22.51
90°	E	06.00/18.00	11.36/23.36
101.25°	E by S	06.45/18.45	12.21/00.21
112.5°	ESE	07.30/19.30	13.06/01.06
123.75°	SE by E	08.15/20.15	13.51/01.51
135°	SE	09.00/21.00	14.36/02.36
146.25°	SE by S	09.45/21.45	15.21/03.21
157.5°	SSE	10.30/22.30	16.06/04.06
168.75°	S by E	11.15/23.15	16.51/04.51
180°	S	12.00/24.00	17.36/05.36
191.25°	S by W	12.45/00.45	18.21/06.21
202.5°	SSW	13.30/01.30	19.06/07.06
213.75°	SW by S	14.15/02.15	19.51/07.51
225°	SW	15.00/03.00	20.36/08.36
236.25°	SW by W	15.45/03.45	21.21/09.21
247.5°	WSW	16.30/04.30	22.06/10.06
258.75°	W by S	17.15/05.15	22.51/10.51
270°	W	18.00/06.00	23.36/11.36
281.25°	W by N	18.45/06.45	00.21/12.36
292.5°	WNW	19.30/07.30	01.06/13.06
303.75°	NW by W	20.15/08.15	01.51/13.51
315°	NW	21.00/09.00	02.36/14.36
326.25°	NW by N	21.45/09.45	03.21/15.21
337.5°	NNW	22.30/10.30	04.06/16.06
348.75°	N by W	23.15/11.15	04.51/16.51
360°	N	24.00/00.00	05.36/17.36

Notes:

To 'box' the compass is to name in order the points on the rose.

F & C is 'Full and Change', when the moon is full or new. Hence HWF & C denotes a Spring High Water.

Quadrature is when the moon is 7 and 14 days old, i.e. it is in its first or last quarter and has a longitude 90° from that of the sun.

Notes:

- 1 The author is grateful to Drs. Wendy Childs, Maryanne Kowaleski and Richard Unger for their constructive comments on early drafts of parts of this paper and to Dr. Albrecht Sauer for useful discussions on the organisation of, and information in, *Das Seebuch*.
- 2 New York, Pierpont Morgan Library, Hastings MS 775, ff. 130v-138v; and London, British Library, Lansdowne MS 285, ff. 136r-142r. Also a poor copy of the first eight lines of the *rutter*: Bodleian Library, MS Rawlinson D 328, f. 183 and a later, more complete copy, probably of the Lansdowne MS, London, College of Arms, MS 2M 16, ff. 131-141.
- 3 MSS 'A' and 'B' are bound together in Hamburg, Commerzbibliothek, S72, 'Altes See-Buch, saeculi, ut videtur, XIV', MS 'B' ff. 1r-38r and MS 'A' ff. 39r-70v. There is also a 'fragment' of later date in the Gymnasialbibliothek, Halberstadt.
- 4 Geoffrey A. Lester, 'The Earliest English Sailing Directions', *Popular and Practical Science of Medieval England*, ed. Lister M. Matheson, (East Lansing, 1994), pp. 331-67, [Lester, Hastings] and G.A. Lester, *Sir John Paston's 'Grete Boke': a Descriptive Catalogue, with an Introduction, of British Library MS Lansdowne 285*, (D.S. Brewer, 1984), [Lester, Lansdowne], pp. 164-6; pp. 31-4 for comparison of H and L.
- 5 D.W. Waters, *The Rutters of the Sea*, (Yale, 1967), [Waters, Rutters], *passim*. Copland's explains his translation: ... a mariner of the Citty of London beinge in the towne of Bourdewes boughte a pretty booke imprinted in the frenche language called the Rutter of the see ... And consideringe that it was expedient and necessary for al Englyshe men of his facultye to have it in theyr owne language ... he instanted me to translate into English; introduction to Robert Copland's *Rutter of the Sea*; Waters, Rutters, pp. 52-3.
- 6 *Das Seebuch*, ed., Karl Koppmann, *Niederdeutsche Denkmäler I*, (Bremen, 1876).
- 7 *Das Seebuch*, ed., Albrecht Sauer, *Schriften des Deutschen Schiffahrtsmuseums 44*, (Bremerhaven, Hamburg 1996), *passim*.
- 8 Dr. Sauer and the present author propose to publish parallel translations of *das Seebuch* in German and English.
- 9 James Gairdner, *Sailing Directions for the Circumnavigation of England and for a Voyage to the Straits of Gibraltar*, Hakluyt Society, (1889), [Gairdner, Directions]; E. Delmar Morgan's notes and glossary, Gairdner, Directions, pp. 23-37, were used by Waters and Lester in the compilation of their glossaries.
- 10 Gairdner Directions, p. 25. The attribution is unlikely; Clement was William Paston's fourth son, b. 1442, d. before 1479. He trained as a lawyer and left no record of sea-going: Colin Richmond, *The Paston Family in the Fifteenth Century*, (Cambridge, 2002), *passim*. Henry VIII is probably an error for Henry VII.
- 11 Dorothy Burwash, *English Merchant Shipping 1460-1540* (Toronto, 1947), pp. 24-6.
- 12 E.G.R. Taylor, *The Haven-Finding Art* (London, 1956), pp. 131-6. The 32-point rose was sufficiently new in 1391 to be remarked upon by Chaucer in his *Treatise on the Astrolabe*: 'al be it so that shipmen rekene thilke parties in 32'; *The Complete Works of Geoffrey Chaucer*, ed. F.N. Robinson, (Oxford, 2nd. ed. 1957), p. 558.
- 13 Waters, Rutters, transcription pp.185-95; facsimile copy pp. 25-34; ref. to H, p. 4 fn. 3.
- 14 Waters, Rutters, pp. 13-14; similarity with *das Seebuch*, p. 439, fn. 4.
- 15 Lester, Lansdowne, pp. 33-34 and Hastings, pp. 331-7.
- 16 Sauer, *Seebuch*, pp. 82-88.
- 17 Lester, Hastings, p. 334; after Astley's death (1486) and a change of ownership, the book was expanded with other texts, notably Benedict Burgh's 'Cato' and a Latin calendar; f. 130v may have been bound into the book at that time.
- 18 Harold Arthur, Viscount Dillon, 'On a manuscript collection of ordinances of chivalry of the fifteenth century belonging to Lord Hastings', *Archæologia*, 2nd Series, 7, [vol. LVII], (1900), 29-70; A.H. Moore, 'Some XVth Century Ship Pictures', *Mariner's Mirror*, [MM] 5, (1919), 15-20; G.F. Howard, 'The Date of the Hastings Manuscript Ships', *MM*, 63, (1977), 3, 215-8. Howard concluded that the f. 138v ship may be c. 1470 and those on f. 130v, by the gun-ports on the lower deck, perhaps 1510-30.
- 19 *The Paston Letters and Papers of the Fifteenth Century*, ed. Norman Davis, (Oxford, 1976), II, pp. 386-7, 391-2, letters 751 (invoice) and 755 (receipt) dated between July and end of October, 1468. But, Curt Bühler, in 'Sir John Paston's 'Grete Booke', a 15th century 'best seller', *Modern Language Notes*, 56, (1941), 345-51, discusses whether Ebesham's invoice was indeed for the Grete Booke or for other MSS in Paston's library.
- 20 H f. 137v, after line 5.
- 21 f. 133v, line 3; f. 131r, lines 8 and 13.
- 22 An abbreviated version of this paper, without the tables, is to be published in the *Mariner's Mirror*, the International Journal of the Society for Nautical Research.
- 23 Ebesham's situation may have been similar to Copland's: ... me thought [translation] veray diffycyle to me, not knowinge the termes of maryners ... as a blind horse in a myl turnynge the quern yngorantly ...; Robert Copland, *The Rutter of the See*, (1571), p. 5.
- 24 Compasses with graduated cards were carried on some English ships late in the fourteenth century, v. fn. 12. Inventories of early fifteenth century English naval ships, however, show a compass on only two ships; *The Navy of the Lancastrian Kings; Accounts and Inventories of William Soper, 1422-1427*, ed. Susan Rose, Navy Records Society (1982), pp. 142 and 155. Compasses were probably the personal property of shipmasters and would not have appeared in ships' inventories.
- 25 The Admiralty charts used were:

- E coast of England: 108, 1190, 1191, 1192, 1406 and 1408;
 English Channel: 2675;
 Bay of Biscay: 10014, 1094 and 1104;
 SW England, Wales, Ireland, Isle of Man: 1121, 1123, 1125, 1127, 1410, 2723 and 2725;
 W coast of Spain, 87.
- 26 Statute and nautical miles are abbreviated to M and nM respectively.
- 27 Two archæomagnetic studies report 2° E and 5° E at the NW of Spain; 3° E and 3° W at Ouessant and in the Irish Sea; 4° E and 2° W down the E coast of England; and 5° E and 1.5° W along the coast of Brittany in 1450; L. Hongre, G. Holst, & A. Khokhlov, 'An Analysis of the Geomagnetic Field over the Past 2000 years', *Physics of the Earth and Planetary Interiors*, 106 (1998), pp. 311-35; C.G. Constable, C.L. Johnson & S.P. Lund, 'Global Geomagnetic Field Models for the Past 3000 Years: Transient or Permanent Flux Lines?', *Philosophical Transactions of the Royal Society of London*, 358 (2000), pp. 991-1008.
- 28 Current convention defines wind direction as that from which it blows and tidal stream direction as that to which it flows. Mediæval convention is less clear.
- 29 High and Low Water are abbreviated in the translation to HW and LW, with a suffixed S for Springs. Tide times are given in the rutter as lunar bearings; these are tabulated for Full, New and Quadrature moon times in Appendix 3. HWS occurs fortnightly at about the same time at each location – the Establishment or Lunar-tidal Interval of that place, defined in the rutter as the moon bearing at H- or LWS. Tide times taken from *Reeds Nautical Almanac*, (Westbourne, 2004), [Reeds].
- 30 There is about a ten hour difference between the Establishments of Berwick and the mouth of the Thames, with a more or less regular retardation from N to S until Norfolk from where the retardation accelerates to the Thames estuary. From there, the tides are complicated by the influence of water flowing in and out of the Channel.
- 31 Lester, *Hastings*, pp. 331-2, also suggests that a mariner, regularly sailing between Berwick, English, Irish and continental ports, wrote the rutter for himself.
- 32 E.g.: *Item, entre Londres et Berewyke prendra ung mariner huit souez de luyer desquelz il sera paie illecques affin quil en pourra acheter telles marchandises come lui plaira lesquelz seront chargez en meisme la nef en la quelle prendra ledit wages pour son portage*; Inquisition of Queenborough, article 13: *The Black Book of the Admiralty*, ed. Sir Travers Twiss, 4 vols. Rolls Series, (London, 1871-6), [Twiss, *Black Book*].
- 33 Das Seebuch makes several references to laden vessels, e.g.: *item wultu myt enem swaren schepe segelen in norwelle so nym ene halve vloet dar is dat deyp genoech over alle sande...* [if you want to sail into Orwell haven with a heavy ship, take the tide at half flood which is deep enough over all the sands ...]; das Seebuch, B, f. 37r, item 2.
- 34 Lester, *Hastings*, p. 357, line 69.
- 35 Sauer, in *das Seebuch*, identifies without comment *seine hovede* as Cap de la Hève; given the use made of the port by fourteenth and fifteenth century English military expeditions, Honfleur may have been the more specific location of *seyne hed*.
- 36 *Chalkishorde* corresponds closely to *Calchesorde* in *Inquisitions Miscellaneous*, 1347, Rolls Series (1916 etc.) where it is the present-day Calshot.
- 37 Another possibility is Hope Cove, W of Dartmouth.
- 38 HWS Coves is at 12.30 against the rutter's 12.00, and HWS in the natural harbours of Penzance (04.40), Helford River (05.00), Falmouth (05.13) and Fowey (05.20), averages 05.00 against the rutter's 04.30.
- 39 Compass points have been converted to angular bearings, see Appendix 3.
- 40 Lester suggests the Tour de la Lande for langas but has no suggestion for *est brigge*.
- 41 Fathoms are abbreviated in the translation to fms.
- 42 *Item, entre Londres et Irlande prendra ung mariner dix souez de luyer et le portage de trois dikers de cuir et sil passe la Holdeheude de Endeffelde vers le west adonques aura chascun mariner deux souez plus de regard et mesme le regard aura il silz passe Tuscard devers le north*; Twiss, *Black Book*, Inquisition of Queenborough, article 7.
- 43 The tidal information in das Seebuch for the Brittany coast relates generally to LWS.
- 44 MLWS at Ile d'Oléron is 1 m, and at Ouessant 1.4 m, above chart datum; this correction has been subtracted from the soundings in Table 6b.
- 45 Visibility limit in nM = 2.072 x ($\sqrt{H_e} + \sqrt{H_o}$) where H_e and H_o are the heights in m above sea level of eye and object, which \approx 17-18 nM from a mediæval mast-top to trees on shore.
- 46 'Latitude' was understood by academics ashore; Chaucer, in his 1391 *Treatise on the Astrolabe*, confirms this; Robinson, *Chaucer*, pp. xxix and 921. Portuguese seamen, apparently using *Alturas*, were able to return to the Açores after their discovery in 1427. In 1455 Alvise de Cadamosto gauged the height of *Polaris* relative to a lance when off Gambia and Diogo Gomes gives 'heights' along the W African coast in his 1460 *Relação do Descobrimento de Guiné*: António Estácio dos Reis, *Medir Estrelas*, (Lisbon, 1997), pp. 47-79. The exchange of information between shipmasters is recorded in an alliterative poem written c.1400:
*Thane the marynerse mellys [mix], and maysters of chippis,
 Merily iche a mate meny [tells] tille other;
 Of there termys they talke, how thay ware tydd,
 Morte Arthure*, ed. Edmund Brock, Early English Text Society, 1961, lines 3652-4.

- 47 *Underwater Handbook, Western Approaches to the British Isles*, (Hydrographic Department, Ministry of Defence, London, 1970), chapter 5, pp. 1-9.
- 48 Ships sailing from and to England would have used the channel N of Cordouan; the Black Prince erected a beacon on Cordouan as a guide for the wine ships.
- 49 'When crossing the Bay, allow for some set to the E, particularly after strong W winds', *Reeds*, p. 978.
- 50 Although she discusses routes, Marjory K. James makes no mention of offshore passages; *Studies in the Medieval Wine Trade* (Oxford, 1971), pp. 119-124.
- 51 Indicative of the dangers, *brefs* were sold to merchants by the counts of Léon as guarantees that their goods would be safe after shipwreck (contrary to the local *droits de bris*). In 1235, Guyomarc'h de Léon described the coast as *une pierre plus précieuse qu'aucun joyau*: Jean Delameau, *Histoire de la Bretagne*, (Toulouse, 1987), pp.160-2.
- 52 Wendy R. Childs, *Anglo-Castilian trade in the later Middle Ages*, (Manchester, 1978), pp. 12 ff. From the 1451 fall of Bordeaux until Henry VII's attempts in the 1480s to redress the situation, much of the wine was freighted on Breton, Gascon and Iberian ships.
- 53 O.E.D., 'copintank', 'cf. 1519, Horman, *Vulgaria* 121/1, *Sometyme men were coppid cappis like a sugar loaf*'.
- 54 Coruña, the pilgrims' port, was reached by direct passage from Bristol. The huge increase in licences for ships for this traffic early in the fifteenth century perhaps indicates that it had become preferable to travel by sea rather than overland: Wendy R. Childs, 'The Perils, or Otherwise, of Maritime Pilgrimage to Santiago de Compostela in the Fifteenth Century' in *Pilgrimage Explored*, ed. J. Stopford, (York, 1999), pp. 123-143.
- 55 The meaning of *stremy ground* is unclear; by analogy with Middle English textile vocabulary, *stremy* may mean 'striped' perhaps indicating pebbles of schist interleaved with quartz or feldspar, i.e. 'veined' in current English. The word occurs twice in Part 6 and once in Part 7; Lester suggests scratches on the tallow 'armed' on the lead, caused by an undersea current dragging the lead over a rocky sea-bed; Lester, *Hastings*, pp. 358.
- 56 Dr. Gerald Roberts, University of London, kindly identified 'mica fish' as black lenticular porphyroclasts of biotite, distorted to fish shapes by tectonic stresses. They occur on the geological fault running through Quimper and out to sea, allowing an accurate latitude fix.
- 57 *platmer* is taken to be cognate with French 'plat'.

In spite of intensive efforts it was not possible to obtain original reproductions of the three folios from the Hastings MS 775 kept in the Pierpont Morgan Library, New York. Illustrations 1 and 2 included in this paper are based on former reproductions by the Pierpont Morgan Library imprinted in Sauer, *Das Seebuch*, v. fn. 7; illustration 4 has been made available by the author.

Die ältesten bekannten Segelanweisungen in englischer Sprache. Transkription und Analyse

Zusammenfassung

Die originären Zusammenstellungen navigatorischer Informationen, die in die früheste Segelanweisung (Rutter) in englischer Sprache einfließen, sind nicht bekannt. Erhalten sind nur Abschriften aus der Mitte des 15. Jahrhunderts, die nie auf See benutzt wurden. Der vorliegende Aufsatz ist eine kommentierte Analyse einer Segelanweisung aus der Hastings Manuskript-Sammlung der Pierpont Morgan Library in New York. Der auf Pergament geschriebene Text, der zwei weitbekannte kolorierte Schiffsminiaturen enthält, datiert vor 1461 und ähnelt einem anderen aus der Lansdowne Collection der British Library in London, ist aber textlich weniger verderbt. Die Segelanweisung ist eine eklektische Mischung aus originär englischen und anderen Quellen, die wahrscheinlich im frühen 15. Jahrhundert zusammengetragen wurden. Sie schließt ältere Informationen wahrscheinlich des 14. Jahrhunderts und Auszüge aus südeuro-

päischen Segelanweisungen mit ein. Obwohl der Kompilator des Textes nicht bekannt ist, legen textimmanente Merkmale nahe, daß es ein Schiffer der Ostküste Englands war, dessen Seegebiet sich vom Ärmelkanal und den Gewässern um Irland bis zu den atlantischen Küsten Frankreichs und der Iberischen Halbinsel erstreckte.

Die englischen Informationen, die in einem narrativen Stil niedergeschrieben sind, schreiten generell von Nord nach Süd fort und wurden wohl vom Kompilator als persönliche Erinnerungshilfe aufgezeichnet. Sie bestehen aus Wegpunktlisten, verbunden durch Kursangaben, wobei Gezeitenstromangaben und wenige Landmarken, Lotungstiefen, Hafenzeiten, Bodenbeschaffenheiten des Meeresgrundes sowie Informationen über Ansteuerungen und Reeden eingestreut sind.

Das als Auszüge aus anderen Segelanweisungen erkennbare Material ist thematisch geordnet und besteht aus Kursen zwischen Wegpunkten oder Lotungstiefen mit Angabe der Grundbeschaffenheit. Es schreitet generell von Süd nach Nord fort. Auf der Grundlage einer der Sequenzen von Tiefenangaben wird eine hypothetische Route der Weinschiffe über den Golf von Biscaya nachgezeichnet.

Die wechselnde Lage von Sandbänken und Küstenlinien schließt den genauen Nachvollzug der Kurse in bestimmten Gebieten aus, aber die Genauigkeit der nachprüfbaren Peilungen/Kurse reicht von 87% »Sicherheit« an der französischen Westküste bis zu 50% »Sicherheit« an der englischen Ostküste. Wenn bekannt wäre, ob die Schiffer ihre Versetzung durch Gezeitenstrom berücksichtigten, könnten diese Zahlen besser sein. Die Richtungsangaben für Gezeitenstrom sind meistens akzeptabel, aber ihre Zeitangaben sind für eine wirkliche Berechnung durch zu wenige Hafenzeiten abgesichert. Der Wert der navigatorischen Angaben variiert abhängig vom Seegebiet von »in Verbindung mit einem Lotsen wertvolle« bis »verhältnismäßig sorgfältige, wenn auch schlichte Segelanweisung«.

Transcription et analyse des plus anciennes instructions nautiques connues en anglais

Résumé

La plus ancienne aide à la navigation (Rutter) en langue anglaise comporte des instructions sur la navigation dont l'agencement original est inconnu. Seules ont été conservées des copies datant du milieu du XVe siècle, qui ne furent jamais utilisées en mer. L'article présent est une analyse commentée des instructions nautiques provenant de la collection de manuscrits de Hastings, de la Pierpont Morgan Library de New York. Le texte, écrit sur parchemin, qui comporte deux miniatures de navires colorées très connues, est daté d'avant 1461 et se rapproche d'un autre texte issu de la Lansdowne Collection de la British Library de Londres.

Les indications forment un mélange éclectique de sources originaires d'Angleterre et d'ailleurs, qui furent probablement rapportées au début du XVe siècle. Elles comprennent également des informations plus anciennes, datant peut-être du XIVe siècle et des extraits d'indications concernant le Sud de l'Europe. Bien que le compilateur du texte ne soit pas connu, des caractéristiques du texte révèlent qu'il devait s'agir d'un marin de la côte est de l'Angleterre, dont le domaine maritime devait s'étendre de la Manche et des eaux irlandaises jusqu'aux côtes atlantiques de la France et de la Péninsule ibérique.

Les informations en anglais, qui sont notées sur le mode narratif, suivent généralement un axe Nord-Sud et furent certainement conçues comme un aide-mémoire personnel par le com-

pilateur. Elles comportent des listes de points de repère reliées par des données sur le cours à suivre, parmi lesquelles sont parsemées les données sur les courants de marées et quelques amers, profondeurs de sondage, marées portuaires, ainsi que la constitution des fonds marins et des informations pour gouverner au cap et d'autres encore sur les rades.

Le matériel reconnaissable comme étant des extraits d'autres indications est ordonné par thèmes et est constitué soit de cours entre des repères, soit de profondeurs de sondage avec les données sur la composition des fonds marins. Il se déplace généralement du Sud vers le Nord. Sur la base d'une séquence de données de profondeur, une route hypothétique des navires chargés de vin est signalée à travers le golfe de Biscaye.

Les bancs de sable et la ligne côtière ayant changé, il est impossible de suivre exactement les cours dans certaines régions, mais la précision des relèvements ou cours vérifiables va de 87% de fiabilité sur la côte ouest de la France à 50% de fiabilité sur la côte est de l'Angleterre. Si l'on savait si les marins prenaient en compte ce déplacement selon le courant des marées, les chiffres pourraient être améliorés. Les directions données pour le courant des marées sont la plupart du temps acceptables, mais leurs données horaires sont peu sûres pour un véritable calcul, du fait que trop peu de marées portuaires sont relevées. La valeur des données varie sur une échelle allant de «précieuse, en rapport avec un pilote» à «instructions relativement soigneuses bien que simples» selon le domaine maritime.