6.—On the Beginnings of the Oldest Descriptions and Sea-charts by Seamen from North-West Europe. By A. Lang. (With 4 plates and 1 text-figure)

Sailing directions are one of the oldest aids to navigation that we know of in Europe [1]. Starting from the earliest, primitive descriptions of the courses (Octhere *ca* 800), the oldest sailing directions to Iceland/Greenland [2], and a brief description of the Bremen-Portulan fragment, from Jutland to the Holy Land (about 1200) [3], a long period covers the history of those descriptions of the courses, and information about routes for shipping in our latitudes.

Other than the well-known descriptions [4], one important sailing direction, from the mid-fourteenth century charts, Italian and Catalonian sources, is preserved in the Portulan charts. This describes the voyage from Utrecht via the channels of the Zuider Zee along the Frisian Islands to Wangerooge, over to Helgoland, then to Ribe in Jutland, and thence to the Baltic Sea [5].

During the fifteenth century there were more and more signs of the existence of nautical publications of North European origin. In 1439 the Catalonian Valsecha drew a Portulan chart giving several details of the coasts of the northern half of Europe unknown until then. This was followed by a chart, dated 1448, by the Venetian Bianco, published in London.

The description of large areas of the North Sea, shown on the Portulan chart of 1462, by the Catalonian Roselli, gives evidence of the existence of North European sailing directions, akin to the so-called 'Lower German Sea-Book' [6]. For the first time there was shown a near-likeness to the true relation of the Dutch, German and Danish coasts. Missing details and stretches of the coastline give grounds for the assumption that sketch charts of such areas existed in the middle of the fifteenth century.

The 'Sea-Book', together with the oldest English sailing directions of the same century, the Lansdowne manuscript [7], give not only an astoundingly accurate general lie of the coastlines, but also detailed descriptions of several sea areas and prominent landmarks. Such manuscripts cover the area from Berwick through the English Channel, the Irish and French coasts to Spain; the Lower German 'Sea-Book' covering the coasts from the Baltic to Gibraltar.

Before the end of that century, the French seaman, Pierre Garcie, set down similar sailing directions for these areas, namely from Flanders/England to the Iberian Peninsula. They were published between 1502 and 1510 under the title *Le routier de la mer* [8]. In 1520 there followed his *Grand routier de la mer*, the first sailing handbook containing pictures of prominent landmarks. These at last gave seamen a pictorial representation of important landmarks, and were easier to understand that the often confusing descriptions of such areas. Although these pictures were cut on wood in a rough manner and gave a 'heavy' impression, they were decisive in the development of nautical aids to navigation. Since that time it would be unthinkable for handbooks to be without them.

It is remarkable that similar 'land-views', although evidently known to the publishers, were not given in earlier 'sailing-books' [9]. Neither the Netherlands *Kaert vander Zee*, published in Amsterdam in 1532, nor the sea handbook of 1541 [10], nor the English work *The Rutter of the Sea* from 1536 [11] provided such a pictorial representation of coastline, although they most probably existed as hand sketches in North Europe. It may well be that the printing processes of those times were not capable of reproducing such sketches.

The *Kaert vander Zee* of 1532 mentions as a source, a 'passekaerte', that is, a sea-chart. It is not clear in this case if a South European Portolan chart was meant or a sea-chart of North European origin. The last mentioned were long in existence, and indeed printed, as is evident from the *Kaert van de Oosterscher Zee* (Pl. 1), published by Jan van Hoirne in Antwerp in 1526 [12]. This chart is known only by existing fragments, and may have shown the coasts of Dover/Calais in the West to the Baltic. The narrow angle of 15° of the German Bight reminds one of other publications of the fifteenth century [13].

From the southern North Sea coast it is clear that little more than the general run of the coast, the more important channels, the number of Frisian Islands, and the names of some seaports, were known. Helgoland is wrongly placed, all other islands are given an uncertain oval shape. Only the lie of the Netherlands coast, with the Zuider Zee, reflects more detailed knowledge. It was hard for the cartographer to cover up a lack of knowledge with a foreground of pictorial art.

In spite of current awareness of defects, these fragments of the oldest published sea-chart of North European origin were important, in that at last they did away with the legendary run of coastline as given by scholars and South European seamen.

Whether the same can be said of another sea-chart, 'Of the waters, streams, towns and countries from Bretagne to Danzig' by the Dutchman Jan de Pape (1530), is hard to say, in that no traces of this chart exist [14]. Only the title, as with Hoirne, indicates that it dealt with a sea voyage.

The epoch-making chart *Caerte van Oostlant* [15] by the Amsterdamer artist Anthonisz (1543), also a general chart, was an important step in the development of cartography in North and East Europe (Pl. 2a). For the first time the relation of the land masses between South Norway, England, Flanders and Finland were astoundingly accurate. Also the author had, in principle, correctly given the lie of the coastlines and divided and related the various land masses. The accuracy of the chart and the richness of its content is amazing, especially so when at this time no measurement of distances over such large areas was possible. The author had more or less based his publication on the compass courses and estimated distances given in the then existent 'sailing directions'. Where mistakes in the directions occur, these are due to shortcomings in the chart. Such are shown by the run of the coastline north of the Thames Estuary, the Weser/Jade area and stretches of the Baltic coastline.

Although copied by cartographers and hydrographers many times in the sixteenth century, the exemplary chart *Caerte van Oostlant* lacked detail. These missing details show the lack of knowledge, especially a reliable description for the approaches to estuaries or river mouths. In this respect the chart was not only a 'sea-chart' but it would provide evidence that official detailed charts were not in print or hand-printed copies not available for general use. This, in turn, does not exclude the assumption that clever seamen had, for themselves or their Guilds, hand sketches of important

waters, in particular native seamen, fishermen and pilots. The oldest dated pictures of different coastal points or stretches of North Europe show profiles of coasts. They are found scattered in the text of a comparatively large collection of sailing directions for the North and Baltic Seas, which were used by Anthonisz as a main source of information for his chart. They come under the title *Hier beghint die Caerte van die Oosterse See*, dating possibly from 1544, and were edited three times up to 1558 [16].

In comparison with the very rough representations of 25 years earlier, by Garcie, the sketches of Anthonisz, which include a side view of Beachy Head (Pl. 2b), other parts of the English coasts, the Frisian Islands, Kap Skagen or Lyserort in Kurland, were much more finely cut in wood, and were partly the result of careful observation. It was not only on these grounds that they set an example for similar pictorial representations hundreds of years later.

Amongst the sketches of Anthonisz are found a few which differ from the principle of a simple side view and show a two-dimensional scene [17]—as seen in a sketch of Arendal in South Norway (Pl. 3a). It shows a prominent background of the mountain range of Tromlingerne. The straight line represents the horizon. As opposed to the majority of coastal scenes, the observer is placed to the south, and is thus given a better view of prominent points: the Island Maerdø and Hesnasø with Møwenholm [18], Tromsø, with its churches, sea-marks and anchorages. The method of combining side and front views—this was most probably copied from Portuguese seamen [19]—although giving a positive likeness also gives a naïve and unskilled impression.

A more primitive impression is given by a chart made earlier to the same principle —a detailed 'chart of the Downs' by the Dutchman Gerritsz (Pl. 3b), approximately 1550–60 [20]. The sketch, from a southerly aspect, shows the buoyage of the Stour river-mouth, with the port of Sandwich, and also the approaches to the anchorage, important landmarks, the North and South Foreland, castles, churches and a windmill. These are evidently the result of careful observations. The shaded sketch demonstrates a relatively high degree of technical knowledge and shows a surprisingly inept picture of two shoals, the Goodwin Sands and Quern. Size and extent of the shoals show not only a dangerous ignorance, but their relation with the coast profile in respect of chart representation is very poor. Here again one finds we are in the early stages of construction of detailed charts.

Both of these examples show in a convincing way that such sketches played only a secondary role as aides to navigation, and were not fit for practical use—that is to say, the sailing directions were, as before, the prime means of course finding.

In the development of cartography, the sketches of the Downs (Pl. 3b) and Arendal (Pl. 3a), together with similar representations, have one principal factor—they all show the earliest known, and imperfect, attempts at shading in a chart-like manner, in a restricted part of the coastline.

This method of constructing 'detail charts' was perhaps not normally used. The overwhelming number of representations of the sixteenth century were, without doubt, chart-like sketches or 'bird's-eye' views.

One of the remaining examples of this type is the representation of the Outer Elbe (text-fig. 1) made by Gerritsz about 1550 [21]. Without recourse to any dividing-line between the mainland and the Island of Neuwerk, the sparse information concerns itself with the reproduction of the low water levels (given as a dotted line), of

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the sandflats, of the islands and the mainland. Those sandbanks lying in the main channel are likewise marked. The author also included other important sea marks, buoys, buildings [22], and capes in their characteristic forms.

It would not be wrong to assume that we have here before us a typical example of
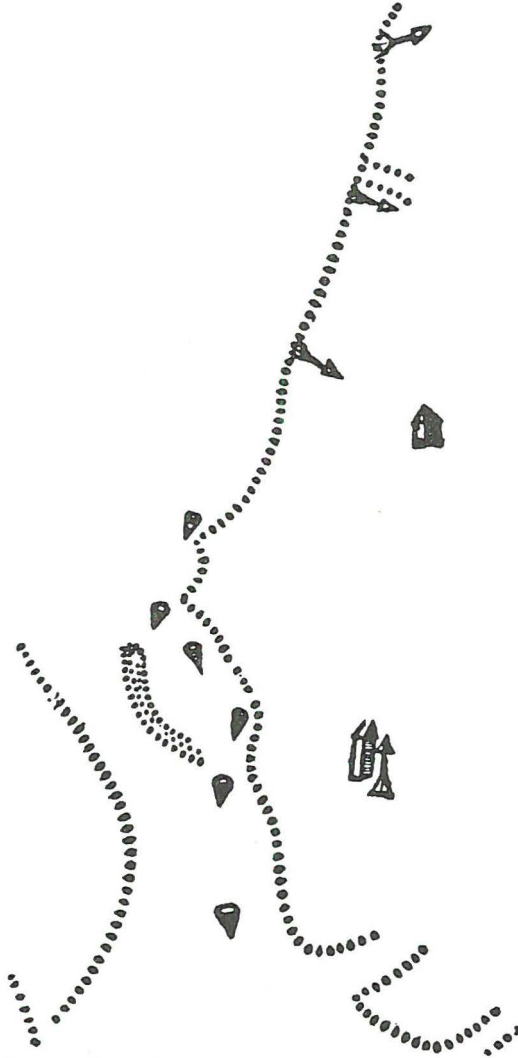
TEXT-FIG. 1.—Adrian Gerritsz, Outer Elbe, about 1550. One of the oldest 'Special Charts'. Primitive sketch showing the low-water line on the sandbanks and land, also the important sea marks, including the tower on Neuwerk. (From A. Gerritsz, *Zeevaert ende Onderwijsinge* . . . Amsterdam, 1588).

an early detailed chart, made by a seaman, who ignored those details which to him did not appear important, and concerned himself only with a few significant facts needed for practical purposes [23].

Many sketch charts, compiled by two Dutchmen, give different views of several parts of the European coastline, from Cadiz to Helgoland and the Baltic, from which it can be assumed that they were based on 'detail charts' and not shaded sketches.

Plate 1

Jan van Hoirne, 1526. *Caerte van de Oosterscher zee*. Antwerp. Fragment of the oldest existing printed sea-chart of Northern Europe. Correct representation of the Netherlands, German and Danish North Sea coast with Helgoland. (Groningen, Holland: Gemeente Archief.)

(*a*) Cornelis Antonisz, 1543. *Caerte van oostlant*. Amsterdam. Part view. In spite of some mistakes, an epoch-making chart, showing a nearly true relationship between the North and Baltic Seas. (Wolfenbuttel, Germany: Biblotheca Augusta.)
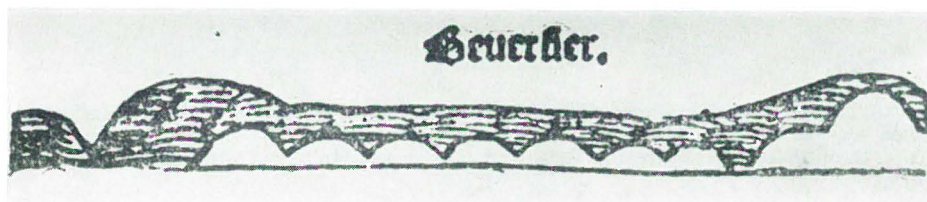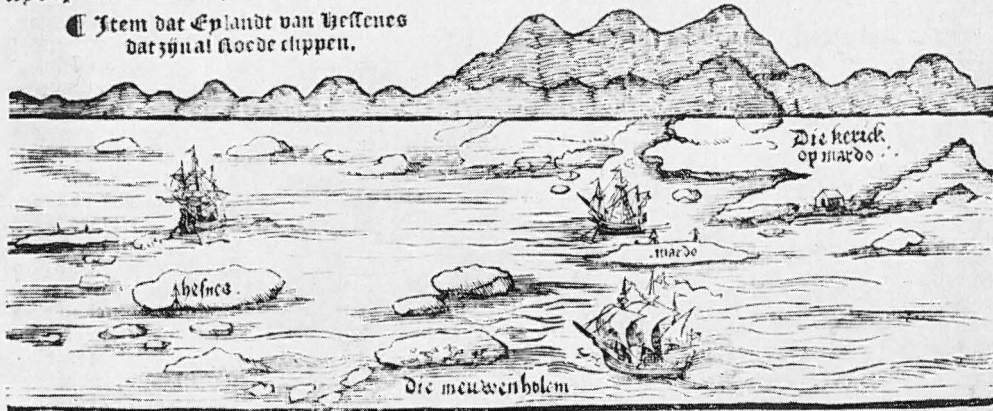

(*b*) Cornelis Antonisz: oldest coast profile cut in wood, of Beachy Head with heights, chalk cliffs and the seven characteristic white cliffs. About 1550. (From *Die Caerte van der See*, Antwerp, 1566.)

bouen water lept alſo langhe dat ghy die waerden ſien moecht daer ghy after legghen ſitie.   Item dat
weſter ghat van Uleckeroer daer ſtreckt in nooztooſt/en dat Ooſterghat ſtreckt weſt nooztweſt / en laet
dat eplandt met al die groene rudſen aen backboozt loopt binnen die witte holm/en laet die clepne ſwar-
te rudtſe aen ſtuerboozt daer of ſeuenthien vaem diep/en vooz dat Ooſterghat moecht ghy die Bos ſien
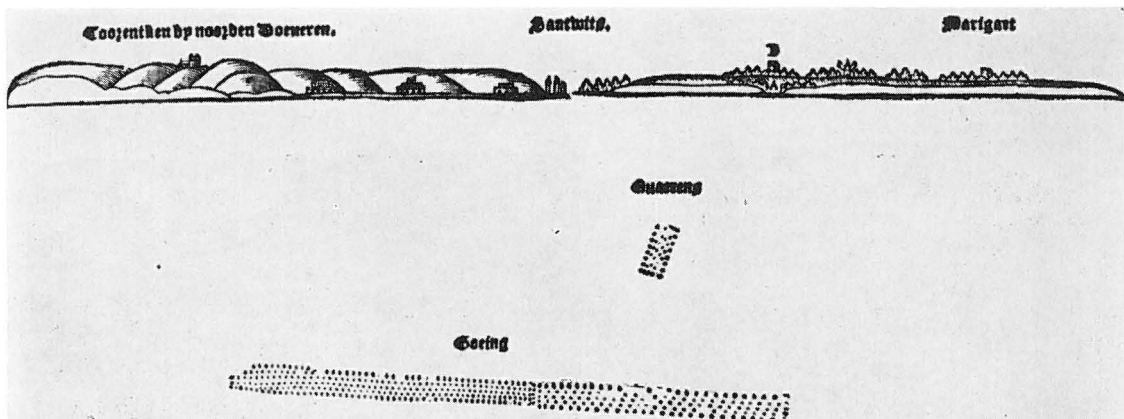een mijl bp ween Heſſenes daer lept die Hamerſoudt/ende daer zijn graeuwe wtrudtſen.
        Item een half mijl bp ooſten Hamerſout lept een Uercke voozt/ende daer ſtaen twe waerders op die
ſwarte clippe/ende die een aenſtuerboozt ende die ander aen backboozt/ende ghaet eerſt noozdtwaert in/
ende dan ooſtwaert/ende op derthien vaem ende bp dat weſtlandt lept een blinde clip int vaerwater en
lept op dzie vaem een half mijl bp ooſte Uercke voozt lept Heſſenes.   Die Drommelinghen.

    Item dat Eplandt van Heſſenes
       dat zijn al goede clippen.

Die kerck
op mardo

hesnes

mardo

Die meuwenholem

Item dat Ooſtergat van Mardou is acht Ellen die en daer lept een blinde Clip en die barrent altoos
Item als die Drommels nooztweſt van u lept ſo ſijt ghi open vooz Maerdou en dat ooſt Epnde van
                                                                                             die wterſte

(a) Cornelis Antonisz: Arendal surroundings, South Norway. About 1550. Chart-like presentation,
a panoramic-type view. In the background Tromlingerne, in the foreground the entrance to Arendal.
(From *Caerte van die Oosterse See*, Amsterdam, 1558.)

Toorentien op noozden Boeueren.   Santwits.   Marigat

Quaerens

Goeing

    Item die after t'Boozlant ſetten wil op eenen w /ſ/w /wint/ die ſet die Noozthoeck vant Boozlant in /ende w /ten noozden van b/
ende dat ſ/ enie vant Boozlandt ſi ſ/w /ende ſ w /ten ſ/ van bop viij.ir.r.vadem waert u beſt duunckt/t'is daer ouer al black water.
Die dan van daer nae die Dupns wil /die ſepl ſo /ende ſ o /ten o ſoo lange tot dat die Toozen bp Noozden Boeueren compt int ſ.
Clif van die hoeck af/ ſoo hebt ghy eerſt vij.viij.ir.vadem / ende nae Goedinck woztet ir.r.rj.vadem/ want dicht aen Goedinck iſ
ſchoz/ r.rj.ru.vadem / houdt die Toozn vooznoempt ſoo ſtaende/van die Toozn B.roempt in die wijck oft dal A/ſoo zijt ghy tegen die
Quaerens/ die moecht ghy looden op v.bi.vij.vadem/ t'rechte dirp ir.vadem/ voozt houdt die landtmercken ſoo ſtaende tot in die
Dupns toe /ende en compt op geen dieper water aen Goeting alſ ir.vadem/ende niet naerder aen die Quaerens alſ vijf vadem ſoo en
moecht ghy niet onder ſeplen aen bepde zijden,
                                                                                                                              Poortlande

(b) Adrian Gerritsz, The Downs. About 1550–60. In the background the coast profile in the region
of Sandwich. In the foreground Goodwin Sands and Quern. (From A. Gerritsz, *Zeevaert ende
Onderwijsinge . . .* , Amsterdam, 1588.)
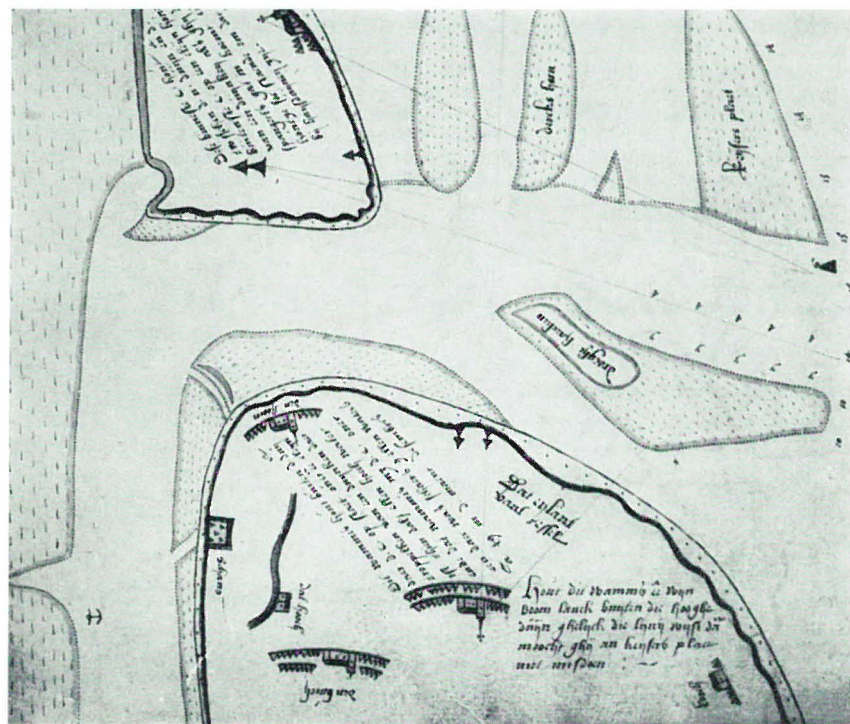
(b)
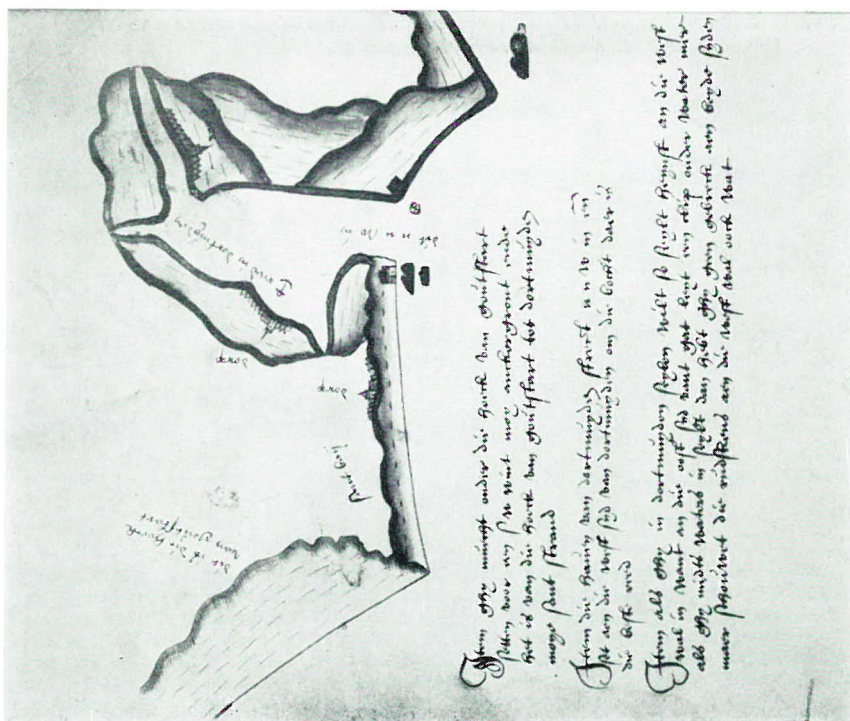
(a)

(a) Anonymous, Dartmouth Harbour (part). About 1500–1560. Between Start Point (left) and the Mewstone (right) the inner Bay and Anchorage of Dartmouth, with St Petrox Church. (Antwerp: Belgium Town Library.) (b) Anonymous, Marsdiep, 1549 (part). Oldest dated detail chart. Left, part of the island of Texel. Right, North Holland with Huisduinen. In the entrance to the Zuiderzee, the main channel runs between sandbanks, with fairway buoy, and bearing buoys. (Brussels, Belgium: Bibliothèque Royale.)

They most probably belong to the middle of the sixteenth century [24]. We will now discuss two of the many examples.

In the reproduction of Dartmouth Harbour [25], a heavy border line separates coast outline from the sea (Pl. 4*a*). This line offers a bird's-eye view presentation, which at last comes near to our present-day idea of a chart. It shows the narrow entrance to the Bay of Dartmouth, also the River Dart to the North-East. An anchor indicates the anchorage. The dotted lines are meant to show the different heights, also indentations denote the shoreline of the bay. Once again the principle of the two-dimensional drawing appears, although it is self-evident that this 'detail chart' with its various inlets is not the result of one observation of the coast.

The second example [26] shows a picture of the Marsdiep, an entrance to the Zuider Zee (Pl. 4*b*). On the left, that is North, is the island of Texel, and to the South, on the right, the point of North Holland is seen. Both are shown bird's-eye view combined with a side view of the seaward parts. Between them runs the Marsdiep. Five different types of dotted line are boundaries of the higher sandbanks, which are shaded. Amongst the prominent landmarks are the church tower of the village Den Westen, sea marks and capes. From the sea marks are leading lines or bearings, with their compass direction to sea. Cross-bearings show the position of a fairway buoy and the run of a fairway. An anchor denotes the anchorage. Different numerals give depths in the fairway. On the right side of the chart there are detailed sailing directions. These are not shown in the figure which is reproduced.

Not only these two, but nearly all other pictures from the same source, show progress towards a chart-like presentation, which is very marked when compared to the sketches discussed previously. They show a similarity in the use of symbols for sea marks, castles, towers, villages, anchorages and sandbanks. Bearings or leading lines are given, as are soundings. There is not, admittedly, any sign of chart orientation, degrees of latitude or scale.

These clumsy, rough sketches, which show only the bare necessities, represent the oldest 'detail charts' of our coastline. In the majority of cases they were the work of seamen, not cartographers, who, without the aid of maps or atlases, sketched what they saw freehand. At times the result was so grotesque as to be useless. They are nothing more than primitive pictorial aids to the more important sailing directions. The written sailing directions remained, as before, the only relatively reliable means of course finding. For more than 200 years they were, for the seamen, of the greatest importance.

Surprisingly, the type of the last two 'detail charts' formed the base for many other charts which followed. Although much better in detail, the principle remained the same 200 years later [27].

In spite of many shortcomings, these and other hand drawn or printed coast profiles of the same period, together with the sailing directions were the material upon which the world-famous sea-charts of Waghenaer, Blaeu and Greenville Collins were based.

NOTES AND REFERENCES TO LITERATURE

[1] GERNEZ, D., 1947–49. Les 'periples' des anciens Grecs et leurs Rapports avec les Livres d'Instructions nautiques. *Meded. Akad. Mar. Belg.*, 4.
[2] TAYLOR, E. G. R., 1956. *The Haven-finding Art*, 65. London.

[3] Magistri Adam. Bremensis Gesta Hammaburg. eccles. pontificum (Edit. III, cur. B. Schmeidler), 229. Hannover and Leipzig, 1917.
    See also WATERS, D. W., 1958. *The Art of Navigation in England in Elizabethan and early Stuart Times*. London.

[4] KRETSCHMER, K., 1909. *The Italian Portolane of the Middle Ages*. Berlin.
    MOTZO, B. R. (Ed.), 1937. *Il Compasso da Navigare*. Cagliari.

[5] Comparisons thereto and following: LANG, A., 1955. Traces of Lost North European seacharts of the 15th Century. *Imago Mundi*, **12**.

[6] KOPPMANN, K., 1876. *Das Seebuch*. Bremen.

[7] WATERS, D. W., 1967. *The Rutters of the Sea*, 185. New Haven and London.

[8] The 1521 publication is reprinted in facsimile by Waters [7]. He suggests (p. 3) that perhaps an even older print of Garcie's work existed. The so-called Portolano Rizo was published in Venice in 1490.

[9] KNUDSEN, J. (Ed.), 1914. *De Kaert vander Zee*, XXIV/8 Cabo Prior. Kopenhagen/Den Haag.

[10] ROGGE, H. C. (Ed.), 1885. *Dit is die Caerte van der Zee*. Leiden (reimpression).

[11] The first edition (1528) was lost; also the later editions, as such, from 1555, have no coast profiles (Waters, *Rutters*, 31).

12] The fragment was found a few years ago by Dr Noordhoff in Rijksarchief Groningen, Holland. It was edited by B. van 't Hoff, 'Jan van Hoirne's map of The Netherlands and the Oosterscher zee', printed in Antwerp in 1526. *Imago Mundi*, **11**, 1954.

[13] Compare with the presentation of the chart (from Roselli). In Lang, *Traces*, fig. 4.

[14] KEUNING, J., 1952. Sixteenth century cartography in The Netherlands. *Imago Mundi*, **9**, p. 42, note 4.

[15] KEUNING, J., 1950. Cornelius Anthonisz. *Imago Mundi*, **7**, and *Tijdschr. K. Ned. Aardrijksk. Genoot.*, **67** (6), 687. The *Caerte van Oostlant* was 96×69 cm and produced original size in A. W. Lang (1969), *Historical Sea-chart Work of the German Bight*, **1**, Neumunster.

[16] KEUNING, J., 1950. Cornelius Anthonisz, *Tijdschr, K. Ned. Aardrijksk. Genoot.*, **67** (6), 693.

[17] As, for example, Helgoland and Öland.

[18] Entrances/Gateways.

[19] GERNEZ, D., 1937. L'influence Portugais sur la Cartographie nautique Néerlandaise du XVIᵉ siècle. *Annls Géogr.*, **46**, 1; and KOEMAN, C., 1964. The History of Lucas Janszoon Waghenaer and his 'Spieghel der Zeevaert', 38. Lausanne.

[20] GERRITSZ, A., 1588. *De Zeevaert ende onderwysinge der gantscher Oostersche ende Westersche Zeevaerwater*, fol. 34b. Amsterdam.

[21] *Ibid.*, fol. 25a. The sickle form of the buoyage south of the 'Neuen Grunde' allows a more or less correct dating of the sketch in that the buoys to the north of the 'Neuen Grunde' must have been laid in 1558.

[22] Including a tower, erected in 1310, on the island of Neuwerk, one of the oldest existing landmarks of Europe. Compare with A. W. Lang (1968), *Seacharts of the Southern, North and Baltic Sea Coasts. Their development from the beginnings and to the end of the 18th century*. Bonn.

[23] Their preservation may be due, in the first instance, to the fact that no other Detail Chart of the Elbe mouth existed. In spite of their age it is possible they were then, for lack of something better, put into a sailing handbook. No other critical reprinting appeared for many years after the death of their author.

[24] DENUCE, J. and GERNEZ, D., 1936. *Het Zeeboek* (Antwerp Stedelyke Boekery, MS B 29 166 and Brussels, Bibliothèque Royale, MS Nr 21 758).

[25] *Ibid.*, Tab. XXI.

[26] Brussels, Bibliothèque Royale. MS Nr 21 758. In the drawing is an important note that the channel sketch was executed in December 1549.

[27] Compare also with WATERS, D. W., 1958, *The Art of Navigation in England in Elizabethan and Early Stuart Times* (London: Hollis), special pp. 168 and 322; GERNEZ, D., 1950. Esquisse de l'histoire de l'evolution des livres d'instructions nautiques. *Meded. Akad. Mar. Belg.*, **5**; and LANG, A. W., 1968. *Seacharts*, 25–48.