





NOTES RELATIVE
TO
A COMPASS ROSE

designed by C. DE BIE of VOSSEMEER 1689, and
EARLY CARTOGRAPHY.

BY DIRECTOR J. M. PHAFF.

IT would be very astonishing to find that a Dutch Compass Rose engraved at the end of the 17th century should resemble modern roses in their practical but absolutely inartistic form. This engraving was made during the period of those great Dutch artists, the painters whose pictures are still considered the master-pieces of all galleries. Many of those masters did not content themselves with the brush only, several of them excelled in etching and line engraving.

Yet these artists were not appreciated by their contemporaries, in fact a great number of them led a life of trouble and trial, if not of poverty and misery. HOBBEEMA was buried in a pauper's grave, FRANS HALS and RUIJSDAEL ended their lives in necessitous circumstances, DE BIE received but three and a half florins (5^s - 9^d or \$ 1.35) per day. Several of them were obliged to work at a profession much below their capacity in order to gain their living. DE KONINCK was agent for a canal barge, BIZE was the door-keeper at a theatre, VAN DER NEER, WIJNANDS and others were innkeepers; the wife of ADRIAAN VAN DE VELDE made a better living by keeping shop than did her husband with his brush.

REMBRANDT, the prince of painters, was the only one who could afford the luxury of asking reasonable prices for his work, but in our eyes what prices! He was paid 500 florins for a portrait which the other masters painted for one fifth of this sum, and his "*Night Watch*" or "*Sortie of the Banning Cock Company*", which has been considered worthy to be exhibited at the Rijks Museum at Amsterdam in a room

specially constructed for the purpose, brought him 1600 florins. But when he fell into financial difficulties and his creditors sold his collection, his pictures fetched but absurdly low prices.

Others artists, cartographers and engravers had better luck, for they were justly appreciated.

During the 16th century Antwerp was the centre of European commerce, and even of that of the world. Dutch ships brought merchandise from the Atlantic coasts of Europe — salt from Portugal, wine from France, cereals from Germany, lumber from Norway and iron from Sweden. But in 1572 Spain began to put so many obstacles in the way of this trade that it all passed to Holland, principally to Amsterdam.

For a long time trade had been established with Guinea, on the West coast of Africa, and with Brazil, but towards the end of this century, when Dutch vessels could no longer visit Spanish and Portuguese ports on account of the risk of confiscation and of imprisonment of the crews, they penetrated into the Mediterranean where, in a few years, they extended their trade as far as Anatolia and Syria. However, until 1611 they always flew the French flag when there, for this, owing to the commercial treaty concluded between the French and the Sublime Port, insured their security against the Barbary pirates. Finally, before the commencement of the 17th century, the voyage to the East Indian Archipelago was successfully accomplished *via* the Cape of Good Hope, the voyage to Chile by the Straits of Magellan, to Japan through the Pacific Ocean and the circumnavigation of the globe. From this time on Dutch vessels were found in every sea.

But these voyages were not undertaken with any scientific object in view. The ship and freight owners of these exploring vessels caused the voyages to be undertaken for the sole purpose of opening up direct trade with distant countries whose produce was rare and, therefore, valuable.

These navigators required charts and sailing directions which, though at first crude, became gradually more complete, more exact and more artistic. These charts were illustrated with decorative and emblematic figures, and the compass rose under consideration retains traces of this.

The development of nautical documents will have taken place as follows: —

A captain, who was visiting some very little known part of the world, made notes with reference to navigation therein (this is still

done) and inserted information picked up locally ; he illustrated these notes with views and sketches to help him in later voyages. This primitive form of sailing directions was first copied by other seamen, but later the data with reference to the same parts of the world was collected and published in small volumes to which the Italians and Portuguese gave the name of "*Portolan*", the Spaniards called them "*Derrotero*" and the Dutch "*Leeskaart*".

The Italian and Catalonian "*portolans*" dealing with the Mediterranean by GIOVANNI DA CARIGNANO (1300 to 1344), PETRUS VISCONTI (1311 to 1327) and ANGELINO DULCERT (1325 to 1339) are much earlier than the "*Leeskaart*" of the Atlantic coast of Europe.

One of these works, which was found about fifty years ago, is the "*Altes Seebuch*" of the late 15th or early 16th century. It gives information with reference to navigation in the Baltic and on the Spanish and Portuguese coasts. This *Leeskaart* is, without any doubt, of Flemish origin for the Coasts of Flanders was the point of arrival and departure of all the voyages described. This little volume was a great find, for consecutive editions up to 1588 are known to have been issued and some of them have been discovered and, by means thereof, it has been possible to follow, to a certain extent, the development of Dutch cartography during this period.

When printing began to improve the text was printed and the views reproduced by wood-cut ; one of the first printed editions of the above mentioned works is the "*Caert der Zee*", published by JAN SEVERSZOON at Amsterdam, and the date thereof, as determined by the experts, is 1532.

The dates when sketches became drawn charts and, later, engraved and printed charts have not yet been established.

Drawn charts are of a very remote date. If the Egyptian, Greek and Roman maps and those of the Middle Ages, which, with the exception of those of the Mediterranean are valueless, be not considered, then the oldest known maps which show definite dates are : — a map of the world of the 13th century which was found in a manuscript belonging to GERARDUS DE ANTWERPIA and the "Pisan" chart by a Genoese cartographer of the middle of that century ; the most remarkable is the chart of the world drawn by FRA MAURO in 1458, and this is in no way inferior to the best Italian chart of the 16th century.

NICOLAUS GERMANUS introduced convergent meridians in 1466.

The oldest known printed maps are : — A map of Germany of 1468 (Pierpont Morgan collection) which has not yet been discussed ; the 1478 edition of the Ptolemy by JACOBUS ANGELUS DE SCARPIA,

printed at Vicenza ; Central Europe by Cardinal NICOLAUS KREBS A CUSA, printed at Eichstadt in 1491 and the charts of the world of CONTARINI-ROSELLI (1506) probably published at Florence and only recently discovered ; the chart of the world by WALDSEEMÜLLER (1507) ; that of JOHAN RUIJSCH (1508) and that of JAN SEVERS published at Leyden in 1514. The East coasts of the two Americas, as far as they were then known, are shown on these charts.

The first cartographic work produced specially for navigation is the chart by WALDSEEMÜLLER dated 1516, while in an ancient document a chart of the Baltic by JAN DE BEELEDSNIJDER, probably published at Antwerp (1526), is mentioned.

It is inadmissible to state definitely that the charts just mentioned were the first that were ever engraved.

An art which produces charts of the world and which knows how to utilise so quickly the results of the discoveries of navigators, can scarcely be said to be in its infancy. It is doubtless a fact that it must have been developing for a long period and, further, it is permissible to affirm that printed charts were produced as early as the first half of the 15th century, though at present we know of none earlier than the middle of this century.

The date 1418, which has been ascribed to a "*Virgin*" of the Flemish school, having been disputed, the first known authenticated date of any xylography, which is the art of printing onto paper figures and fixed characters engraved on a block of wood (woodcuts), is 1423, (*St. Christopher*), and it is certain that in 1483 the fifth edition of the "*Speculum*", which was illustrated by this process, had already been reached. It is said that these illustrations recall the influence exerted on art by the VAN ENCKS on account of the taste shown in the drawing and the style, and also that there is an obvious contrast between the imperfection of the topography and the degree of perfection of the plates with which the volume is embellished.

"*Peace*", (*Coronation of the Virgin*) by MARIO FINEGUERRA, a Florentine goldsmith, carried out in intaglio and intended for niellure, dates from 1452, and this vignette is treated with so much taste and knowledge that it seems that the artist must have served a long apprenticeship in a good school.

The oldest dated relief engraving on metal is the "*St. Bernadino of Sienna*" of 1454 ; the date (1406) ascribed to two Flemish or German engravings "*en criblé*" (a rougher form of relief engraving) namely "*La Sainte Face*" and "*Christ bearing the Cross*", does not appear to be fully established.

It cannot be doubted that engravers of such works of art were fully capable of reproducing a chart. Now, the want of such charts being admitted, and also the existence of the necessary data and of artists capable of utilising them in this connection, it may be said that it would be incredible that such work should not be done. It could have been done in Holland even, for it is known that LUCAS VAN LEIJDEN, who, in 1508, at the age of 14, published a much appreciated copper engraving, was not the first to do so. It is stated that his predecessors were not artists but more or less clever workmen with the graving tool, one at least of their engravings has been handed down to posterity.

The earliest printed charts are known as "*Pascaert*" in Holland. They were ornamented with views and inserted in Sailing Directions and these remarkable works of the late 16th and of the 17th centuries are called *Thresoor*, *Spiegel* or *Light der Zeevaart*, *Zeefakkel*, *Vyerighe colom*, *Brandende veem*, etc. In the latter half of the 17th century they were bound together without the text and such collections are known by the name of "*Zeeatlas*"

Though the maps of the world mentioned above were published early in the 16th century and the collection of maps of the whole world, which contains the first separate chart of the East Indian Archipelago and which was produced by ORTELIUS, a merchant of Antwerp and Cartographer to the King of Spain, were published in 1570, Dutch cartography of this century dealt mainly with the Atlantic coasts of Europe. Amongst the best charts of this period are those of the Baltic by CORNELIS ANTHONISSEN (1540); the collection of charts of the North and West coasts of Europe by LUCAS JANSZ WACHENAAR, in the production of which the English engraver BENJAMIN WRIGHT collaborated, published by PLANTIJN at Leyden (1584), an epoch-making production on account of its accuracy, great detail and artistic execution; the charts of the Mediterranean (1595) and of the Arctic Ocean, published in 1598, of WILLEM BARENSZ, who died in Nova Zembla in 1597. The collection of maps drawn by SGROOTEN (1573) is of great interest to seamen on account of the distances which are given between the principal ports of the Netherlands, Germany and the North of France.

During the closing years of the 16th century there occurred a development in Dutch cartography which was as great as it was unexpected.

The Portuguese, Spaniards and English traded with the East Indian Archipelago, which was known by the Dutch from the maps of VAS DOURADO (1568) and others, but they guarded jealously the secrets of navigation in those seas. These secrets were divulged in Holland at

about this time by some seamen who had served in Portuguese vessels and who had been imprisoned in Portugal in order to prevent them from communicating to their compatriots the knowledge acquired and the charts which they had succeeded in obtaining.

These data fell into the hands of a compiler, who was as hard working as he was capable, namely, that erudite geographer and cartographer PLANCIUS, a Protestant minister who, in 1592 (a memorable year for Dutch cartography), published at Amsterdam through CORNELIS CLAESZ, the predecessor of the BLÆUS, several charts of the route to the East Indies and a chart of the world on a very large scale, all engraved and illustrated by JOHANNES VAN DEUTICOM and his son BAPTISTA. The charts which PLANCIUS edited and published were of Portuguese origin and drawn up by BARTHELOMEU LASO. The chart of the world, which contained many new data, was intended likewise for use in navigation.

These are the charts by the help of which PIETER DIRKSZ KEIJSER and DE HOUTMAN made the first voyage to the East Indian Archipelago by rounding the Cape of Good Hope, after the attempts to do so *via* the Arctic Ocean had failed. This voyage, which ended in 1597, was not very successful and had not given the commercial results expected from it, but it had shown that the difficulties to be overcome were not so great as had been expected; a further effort was made, therefore, and soon success was attained.

The year 1595 is a no less remarkable date, for it is that in which the son of MERCATOR published an "Atlas" in Germany, a year after the death of his father (who was a reformer and organiser rather than a creator). He borrowed the name of this collection from that of the mythical King of Lybia to whom the construction of the first celestial globe is attributed.

This atlas is far better than that of ORTELIUS, which was but an incomplete collection of maps though the first known, and also than that of GÉRARD DE JODE who copied GASTALDI principally. The charts were absolutely up to date and the author assumed full responsibility for his work.

We owe the first Dutch edition of MERCATOR'S Atlas (1606) to JODOCUS HONDIUS the elder who inserted into it the first chart of the Straits of Magellan and maintained the atlas up to date. This work was continued by JOHANNES JANSONIUS who had renewed nearly the whole atlas by 1644 when he republished it under his own name.

As for the so-called MERCATOR projection, it is known that it is of much earlier date than that of the man whose name it bears. A port-

able sun-dial of 1513, by the Nuremberg cartographer ERHARD ETZLAUB contains a chart of Europe, on a small scale, in which the degrees of latitude increase in length. E. WRIGHT improved the method in 1599 and HENRIJ BOND propounded the exact formulæ in 1645.

At the beginning of the 17th century the numerous voyages of navigators of various nationalities who overran the world, brought in such a great number of cartographic data that charts gradually became more and more complete and publishers vied with each other in their eagerness to issue them.

Amongst the more remarkable of the Dutch charts of this period the following are worthy of mention : — The first charts of the East Indian Archipelago (1618) and of the Pacific (1622), by HESSEL GERRISTZ ; of the Atlantic by JOHAN AERTZ COLOM (1630); of Bermuda and of the coasts of America by HENRICUS HONDIUS (1630); of Spitzbergen by MIDDELHOVEN ; of the West Indies by BLAEU (1639) and the chart of Brazil by MARGRAVIUS (1647).

CHRIS BURRUS (1632) and ATHANASIVS KIRCHER (1643) published, at that period, the first magnetic chart and in 1665 the latter issued the first current chart. HALLEIJ, who in 1683 corrected the magnetic chart just mentioned, was the first to compile (in 1686) a wind-chart.

A typical detail of the chart by HONDIUS is that New England, Florida and the island of Cuba, which are too distant to be included in the frame, are shown in the margin on a smaller scale.

One of the difficulties which had to be surmounted was due to the very imperfect knowledge which the cartographer of that time had of projections by means of which the surface of the globe might be represented on a plane surface with the greatest possible accuracy. The problem was a real puzzle when it was required to represent an area of considerable extent in longitude and lying in fairly high latitudes. Even the great BLAEU was seriously embarrassed in his attempts to draw a chart of the North Atlantic (about 1625) and the only solution that he could find was to show Greenland twice, one to the Eastward for navigators approaching it from Europe and again on the Westward for those coming from America.

These cartographers had, likewise a method different to ours of representing mountains ; they drew them in elevation so that they were shown as in a view. Some charts were still being drawn in accordance with this principle in the 18th century.

In the second half of the 17th century, and particularly about 1660, a large number of marine atlases were published at Amsterdam. The better known of these are those of FREDERIK DE WIT, ANTHONIE JACOBSZ,

ARNOLD and JACOB COLOM, PIETER GOOS, HENDRIK DONKER, PIETER VAN ALPHEN and JOHANNES VAN LOON, which appeared nearly simultaneously and have a great resemblance though each has merits of its own. They represent the coasts of the world, whereas those of JACOB AERTZ COLOM and JORIS CAROLUS and the first atlas of BLAEU gave the coasts of Europe only.

These atlases were not used solely in Holland for, editions having been issued with texts in English, French, German, Italian, Latin and Spanish, they were employed everywhere and thus Amsterdam was, at this period, the publishing centre of charts for the whole world.

However, it was not always easy for the cartographers to obtain the necessary data for keeping their charts up to date. Each nation tried, at least, to keep the secret of its new discoveries; Spain forbade the publication of the rare charts which she possessed. For a long period after the spread of printed charts, the Dutch "*Oost Indische Compagnie*" continued to use ocean charts drawn on parchment, which the Captains were obliged to send for correction and revision to the official Cartographer of the Company after each voyage.

But it was impossible to keep secret facts of which so many seamen were actual eyewitnesses.

The history of this period, which, in so far as charts are concerned, is nearly two centuries later than that of the apogee of Italian cartography, which in former times was made so remarkable by the work of GASTALDI, BERTELLI and FORLANI, is fairly well known; it suffices to mention the most celebrated names: BLAEU and VAN KEULEN.

WILLEM JANSZ BLAEU, who was a cartographer though principally a merchant and publisher, began with a terrestrial globe in 1599 and then issued a large scale map of the world in 1605. These were followed by a set of charts and Sailing Directions. In 1633 he replaced HESSEL GERRITSZ, the first Cartographer to the "*O. I. Compagnie*", and this post passed from father to son in the BLAEU family for three generations; this fact gave them early knowledge of nearly all new discoveries.

His *Atlas of the World* in two volumes (1635) was gradually enlarged up to twelve volumes by his son JOAN and this publication, which was not specially intended for navigation, is generally recognised as being beyond comparison on account of its accuracy and the artistic character of execution.

The house of VAN KEULEN was the preëminent creator and publisher of charts; the official cartographers of the "*O.I. Compagnie*" were its patrons during nearly a century. JOHANNES the founder, inaugurated

his work by the publication in 1680 of the first volume of his atlas which differs but little from those published about 1660. This atlas grew gradually and, at the end of the 17th century, it had already reached 5 volumes. It is renowned for profusion of detail but contained no charts of the East Indian Archipelago.

JOHANNES, the grandson, remedied this omission by the help of JAN de MARRE who had visited the Archipelago. In 1753 he issued the sixth volume which contained charts of all those parts of the world and of the approaches thereto from the Cape of Good Hope as far as Japan, both included.

This publication marks the highest point of Dutch marine cartography. Soon afterwards the decline set in, became accentuated and the decay progressed much faster than had the growth. The invention of the sextant and chronometer, by means of which the English made triangulations and determined longitudes, lowered the value of the Dutch work which was based on fixes determined by latitude and bearing.

The seamen of the 16th century did not use charts exclusively, their navigation involved the use of globes also; Christopher Columbus and Magellan carried them during their voyages. These latter may be seen, with the other navigational instruments of this period, in all the vignettes on the frontispieces of atlases and Sailing Directions.

The first were celestial globes; these are known of Arabian, Greek and Roman origin and also of the Middle Ages. They were constructed of various materials, such as of silver, copper, marble and even glass; those of Chinese origin are formed of bronze rings representing the principal great circles of the universe.

The earliest known terrestrial globes are the "*Erdapfel*" designed on gores by MARTIN BEHAIM (1492) and the copper globe of LAON (probably earlier than 1500) though the notion of the sphericity of the Earth was very much older. It is said that the first printed globe is that of a certain WILLEM VAN DE VELDE, of some date prior to 1506 but which has not been discovered. Those of known date are that of MARTIN WALDSEEMÜLLER (1507) and the "*Lennox*" (1510) the "*Green*" (1515) and the "*Gilt*" globe by ROBERT DE BAILLEY (of about 1525). The most important to navigation, on account of the loxodromic curves shown on it, is that of MERCATOR (1541).

JACOBUS FLORIS VAN LANGREN in a petition for a licence for his globes, which had been published twelve years earlier, supports it by stating that several navigators used them when sailing to Guinea, Brazil

and elsewhere. The English globe by MOLYNEUX is very well known ; it was engraved by JODOCUS HONDIUS the elder in 1593. Others were published after 1599 by the BLAEU family and, of these, those of 1648 are of great size.

Shortly thereafter globes lost their utility to seamen and passed from shipboard to the studies of geographers.

Though many of these cartographers and publishers knew how to handle the graving tool, and some of them, *e. g.* JODOCUS HONDIUS the elder and CLAES JANSZ VISSCHER, even excelled in the art of engraving, yet it was but rare for them to engrave their own charts and globes. This was done mostly by subordinates whose little known names, *e. g.* SIMON VAN DE HAMERSVELD, appear occasionally on their work ; DE GHEIJN and SERWOUTERS were the only ones whose methods were imitated.

On the other hand the illustration of the charts was done by artists who are known on account of others works, FRANCISCUS HOGENBERG has engraved views of towns, JAN JUIJKEN scenes of home life and DE GHEIJN military subjects. Undoubtedly the most celebrated of them is ROMEIJN DE HOOGHE whose illustrations of the "*Neptune François*" are of the greatest beauty.

It is possible that C. DE BIE of Vossemeer, an agricultural village of some importance in the island of Tholen in Zeeland, for it was already stated to be so in a bill of sale dated 1415, was one of these engravers ; painters and engravers of his name were known to have worked at Amsterdam and Antwerp in the 17th century.

With reference to the compass, it is stated that it had been introduced on board ship by 1205 but it is established that its use was not general in Europe during the 14th century. The English maintain that it was employed by seamen who visited Iceland at this period. The celebrated HENRI THE NAVIGATOR of Portugal (1394-1460) refused to employ Flemish captains because they did not understand its use. But during the 15th century this instrument came into general use ; on the chart of FRA MAURO mentioned above, there is a note of the fact that, in the Baltic, navigation is not carried out by means of the compass but by means of the lead.

The compass rose dates from a much earlier period. Besides the Chinese and Persian roses and those of the Middle Ages, two of the first compasses known are those of PIERRE DE MARICOURT of 1269 (others attribute these to PETRUS PEREGRINUS) and one of them is a floating

compass. The roses are attached to a load stone and the circle is divided in degrees, one from 0 to 360° and the other in four quadrants of 90°. Above each rose there is an alidade which turns about the centre and has at each extremity a vertical point probably intended for taking bearings*.



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