Document 1510

Cartography of the Pacific—Part 1

Source: Adapted from A. E. Nordenskiöld's "Facsimile-atlas to the Early History of Cartography"...Stockholm, 1889 (reprinted by Dover, New York, 1973), Chapters VI & VII.

The first maps of the New World and of the newly-discovered parts of Africa and Asia, circa 1510

It is generally supposed that the successful voyages of the Portuguese in the *Regio perusta*, or *Regio inhabitabilis propter nimium calorem* [i.e. the Tropics], and the rediscovery of the New World by Columbus must have made a great and immediate impression throughout Christendom. It seems as if statesmen and scholars at least ought to have clearly conceived the immense importance of this sudden increase of the territory adapted for the use of man. For this increase did not consist of deserts scarcely cultivable and difficult to defend, but of immense continents and islands, which, through the excellence of their climate and the fertility of a virgin soil, were capable of giving millions of human beings the means of a subsistence, more easily acquired, richer and more abundant, than in the densely populated countries of the Old World, with its soil impoverished by repeated harvests, and its social conditions fettered by thousands of traditional prejudices. Yet, this was so far from being the case, that scarcely any discovery of importance was received with so much indifference, even in circles where sufficient genius and statemanship ought to have prevailed to appreciate the changes thus foreshadowed in the development of the economical and political conditions of mankind. The truth of this assertion will easily be perceived, if we take the trouble to study, not only the contributions to the history of geographical discovery written during the [19th] century, but also the earliest original literature itself. With regard to the history of the discovery of America, such an investigation may now be pursued with few difficulties, thanks to the indefatigable pains taken by bibliophiles...in collecting "Americana", and the care with which these collections have been examined, registered, and described by prominent scholars, most recently by Mr. Henry Harrisse in: **Bibliotheca Americana Vetustissima. A description of Works relating to America published between the years 1492 and 1551**, New York, 1866, and its **Additions**, Paris,

1872. According to the Chronological Table at the end of the last-mentioned work, Mr. Harrisse has, in his **Bibliotheca**, registered altogether 432 works or pamphlets printed before 1551 and containing passages respecting the new world. Different editions and unaltered reprints are here registered under separate numbers, and most of the works cited contain only slight allusions to the subject. If, in collating and making statistics on the oldest literature relating to America, due attention is paid to these circumstances, it will be found that scarcely one work containing an original communication about the New World of the length of at least one printed page, was annually published during the first 50 years after the discovery of Columbus, and that all these original communications together would be easily comprised in a single volume of very moderate size.

Regarding the early discoveries in the east of Asia and along the coasts of Africa, round the Cape of Good Hope to India, the oldest literature has been subject to no such exhaustive researches as the oldest literature relating to America. It might perhaps fill a greater number of pages, for here we have narratives of travels, rich in exciting details, and of which repeated editions were early published in print, though more as a contribution to the belles-lettres of the epoch, than as serious contributions to the knowledge of our earth. Such publications are the narratives of the travels of Marco Polo (first edition printed in 1477), of Varthema (editio princeps Milan 1505), and Cadamosto (editio princeps Vicenza 1507). But, as we except the numerous editions of these works and a few brochures of the same significance with respect to the history of the discoveries in Africa and the eastern Asia, as the letters of Columbus and Vespucci to that of the New World, the geographical literature relating to the newly-discovered lands in the eastern hemisphere, during the 15th and the beginning of the 16th century, was as poor and scanty as the literature enumerated in **Bibliotheca Americana Vetustissima**.[1]

Still poorer is the oldest printed literature of maps. The first drawings or inscriptions on a printed map referable to the voyages of the Portuguese is met with, as far as I know, 56 years after the voyages of Cadamosto, on the map in Reisch's **Margarita Philosophica** of 1503... But it was 5 years later, in 1508, that a map was first published in print, on which the coast of Africa discovered by the Portuguese, and the newly-discovered passage to India were clearly laid down. To prevent any misunderstanding I may here again expressly state, that I speak of printed, not manuscript maps. Tolerably complete map sketches drawn to illustrate the reports of explorers or adventurers were probably made for the government or the ship-owners after almost every more or less successful voyage, but they were seldom published. They generally seem to have been jealously concealed in public or private archives. Most of them have since been lost, or exhumed from the dust of libraries for the first time in the present century. They have

1 Ed. note: Between 1958 and 1962, a Spanish researcher named Carlos Sanz has not only reprinted Harrisse's B.A.V. of 1866 and 1872, but also published 4 additional volumes of corrections and additions to the collection, with an updated chronological table, and finally a two-volume edition of the logbook of Columbus: *El diario de Colón*, Madrid, 1962.

thus often had much less influence on the development of cartography than many an insignificant printed production, compiled from hearsay reports.

Two maps of 1527 and 1529, preserved in the military library at Weimar, were considered to be the oldest manuscript maps of the New World yet discovered, even as late as 1832. But in that year Alexander von Humboldt discovered, among the literary treasures of Baron Walkenaer, a map drawn in 1500, at Puerto de Santa Maria, by the celebrated navigator Juan de la Cosa, or Juan Biscaino, one of the companions of Columbus on his second voyage. Humboldt has given a critical account of this map in Dr. F. W. Ghillany's **Geschichte des Seefahrers Ritter Martin Behaim...**, Nuremberg, 1853, where a part of the map is also reproduced in facsimile. It is also reproduced on a reduced scale by Ramos de la Sagra in **Histoire physique... de l'île de Cube,** Paris, 1842, by Lelewel, Sophus Ruge, H. H. Bancroft, and others. A complete facsimile is found in Jomard's Atlas[1]. It has given rise to an exhaustive literature, enumerated by Winsor[2]. After the death of Walkenaer the map was bought by the Spanish government and is now preserved at the Naval Museum of Madrid... It does not appear to have exercised any direct influence on the first printed maps of the New World, as may be concluded from a comparison with the maps of Ruysch, Sylvanus, Stobnicza, Aeschler and Übelin, and others.

More important in this respect is a map sent to Hercules d'Este, the Duke of Ferrara, by Alberto Cantino, his ambassador in Lisbon, between the years 1501 and 1505. The original is at present in the Biblioteca Estense in Modena, [Italy]. A facsimile has been published by Harrisse for his work **Les Corte Real et leurs voyages au Nouveau Monde**, Paris, 1883, where a precise analysis of the map is given in Chapter IV (pp. 69-158). This map, or copies of it, has evidently been used for the first printed maps of the New World...

Among **manuscript** maps of the New World, one map of 1503-1504 attributed to Salvat de Palestrina, and one by Pedro Reinel of 1505, require further mention. Regarding these maps, I may refer to Harrisse (**Cabot**, pp. 161-162), and to Kunstmann

1 Ed. note: Entitled: "Les monuments de la géographie ou recueil d'anciennes cartes européennes et orientales publiées en facsimile de la grandeur des originaux", Paris., 1842-62.

2 In his book: "Bibliography of Ptolemy's Geography", p. 7.

(**Atlas**, Munich, 1859). In a Latin manuscript in the British Museum there is also the above-mentioned map of the world by Henricus Martellus, on which the discoveries of the Portuguese along the African coasts down to 1489 are registered. Finally Dr. E. T. Hamy has lately published parts of a Portuguese map of the world[1], which, as far as I have been able to judge from the photographs published in Mr. Hamy's paper, closely resembles the maps of Africa in the Ptolemy edition of 1513... The original belonged to M. Alphonse Pinart, who had bought it from the English traveller Mr. King.

No other manuscript maps of the lands discovered during the 15th and in the beginning of the 16th century, and drawn before 1508 (i.e. before the year when the first printed map of the New World was published), are, as far as I am aware, at present known. A few other maps, now lost, are mentioned in old documents. But the majority, doubtless including the most important, were so well concealed that every reference to them has been suppressed. It is thus often very difficult to point out the originals[2] of the old printed maps of the New and of the newly-discovered lands of the Old World. Here I can only cursorily refer to this question, which will, perhaps, hereafter be elucidated by new dicoveries in libraries and among archives.

[Some of the oldest printed maps available are as follows:]

The Ruysch Map of the World — *Nova et universalior Orbis cogniti tabula, Ioa. Ruysch Germano elaborata*, Rome, 1508.

This map was published among the *tabulæ novæ* in the edition of Ptolemy of Rome 1508... The map of Ruysch forms an epoch in the development of cartography.

It is the first printed map of the world on which the discoveries of the Portuguese along the coasts of Africa are laid down... It is the first printed map representing Afri-

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1 "Notice sur une mappemonde portugaise anonyme de 1502", in Bulletin de géographie historique et descriptive, n° 4, Paris, 1887.

2 The early printed maps, as well as of America as of the newly-discovered parts of Africa and Asia, are generally founded on Portuguese, not on Spanish originals. The reason probably is that the commercial intercourse of the Portuguese with the rest of Europe, owing to the discovery of the new way to the commercial treasures of India, was far more considerable during the 15th and the first part of the 16th century than that of Spain. The latter country only imported cargoes of the precious metals from its colonies, which were procured by immense sacrifices and at great cost; while their amount was much over-rated. The large commercial factories, through which the maps and accounts of new voyages were generally transmitted to Italy, Germany, etc. were accordingly situated chiefly in Portugal, not in Spain. Perhaps also powerful Spain was better able to protect, what may be termed the "map secret", than the more feeble Portugal. I have never heard of any maps printed in Portugal during the period of the incunabula of cartography.

ca as a peninsula encompassed by the ocean. The southern point of Africa moreover is here placed on a nearly correct latitude, thus giving a tolerably exact form to that part of the world. Ruysch also gives on his map a relatively correct place to the Azores, Madeira, Canary and Cape Verde Islands.

Ruysch's map is the first published in print, on which India is drawn as a triangular peninsula projecting from the south coast of Asia and bordered on the north by the rivers Indus and Ganges. Even though it has not yet received its full extension as a peninsula, yet an important deviation from Ptolemy's geography is thus made on the map of a part of the world to which almost a privilegium exclusivum of knowledge was attributed to the ancients. Ceylon is also laid down by Ruysch under the name of Prilam[1], with about its proper size, and correctly as regards the southern point of India. Trapobana alias Zoilon[2] is placed further east..., in which position this geographical remnant from the time of Alexander the Great was retained, down to the middle of the 16th century.

Ruysch has given the first printed map on which the delineation of the interior and eastern parts of Asia is no longer based exclusively on the material collected by Marinus of Tyre and Ptolemy more than a millenium previously, but on more modern reports, especially those of Marco Polo. Various new names are here added...beyond the eastern limits of Ptolemy's *oikumene*. Here the Chinese river system is given in a manner indicating other sources for the geography of eastern Asia, than Marco Polo's written words. In its main features the delineation of eastern Asia, to the south of lat. N. 60°, on the map of Ruysch, so nearly resembles Behaim's globe, that a common original might have served for both...

Ruysch is the first who gives us a map of the New World.[3] This part of the map may be said to be a tolerably exact representation of the geographical knowledge of that part of the world in the beginning of the 16th century. Greenland is here, for the first time, drawn without being connected with Europe by a vast polar continent, bordering the northern part of the Atlantic. Instead it is connected with Asia, through Newfoundland or Terra Nova; a hypothesis regarding the extension of the continents in the northern hemisphere, which was still adhered to by some geographers in the beginning of the 17th century.

It is evident, from what has already been said, that Ruysch deserves to be placed in the first rank among the reformers of cartography. His map is not a copy of the map of the world by Ptolemy, nor a learned masterpiece composed at the writing table, but a revision of the old maps of the known world, made on a Ptolemaic, i.e. on a scientific basis, with the aid, on the one hand of great personal experience and geographical learning and, on the other, of extensive knowledge combined with a critical use of the tradi-

1 Ed. note: A close rendition of its modern name, Sri Lanka, which was also its ancient name.
2 Ed. note: Actually, Trapobana should never have been confused with Ceylon, as it is the name that Marco Polo meant to be applied to Sumatra.
3 Ed. note: Wroth (p. 243) says that Nordenskiöld wrote his comments before the historical importance of this map was somewhat lessened by the discovery of the Walseemüller map of 1507.

tions among practical seamen of different nations. The legends [i.e. captions] on this map are consequently of very high interest, and form a more important contribution to the history of geography than many a bulky volume...

(Facing page) **The Ruysch Map of the World in 1508**, *reduced to Mercator's projection by Fiske. Nordenskiöld has reproduced a facsimile in its original conical projection. This map shows that, in 1508, Europeans had discovered parts of America but not yet the Pacific Ocean, which was first sighted by Balboa only in 1513. An English translation of the various legends upon the map is as follows:*

A. *"Here the ship's compass loses its property, and no vessel with iron on board is able to get away."*

B. *"This island was entirely burnt [i.e. blowed up in an eruption] in 1456."*

C. *"The ships of Ferdinand, King of Spain, have come as far as here."*

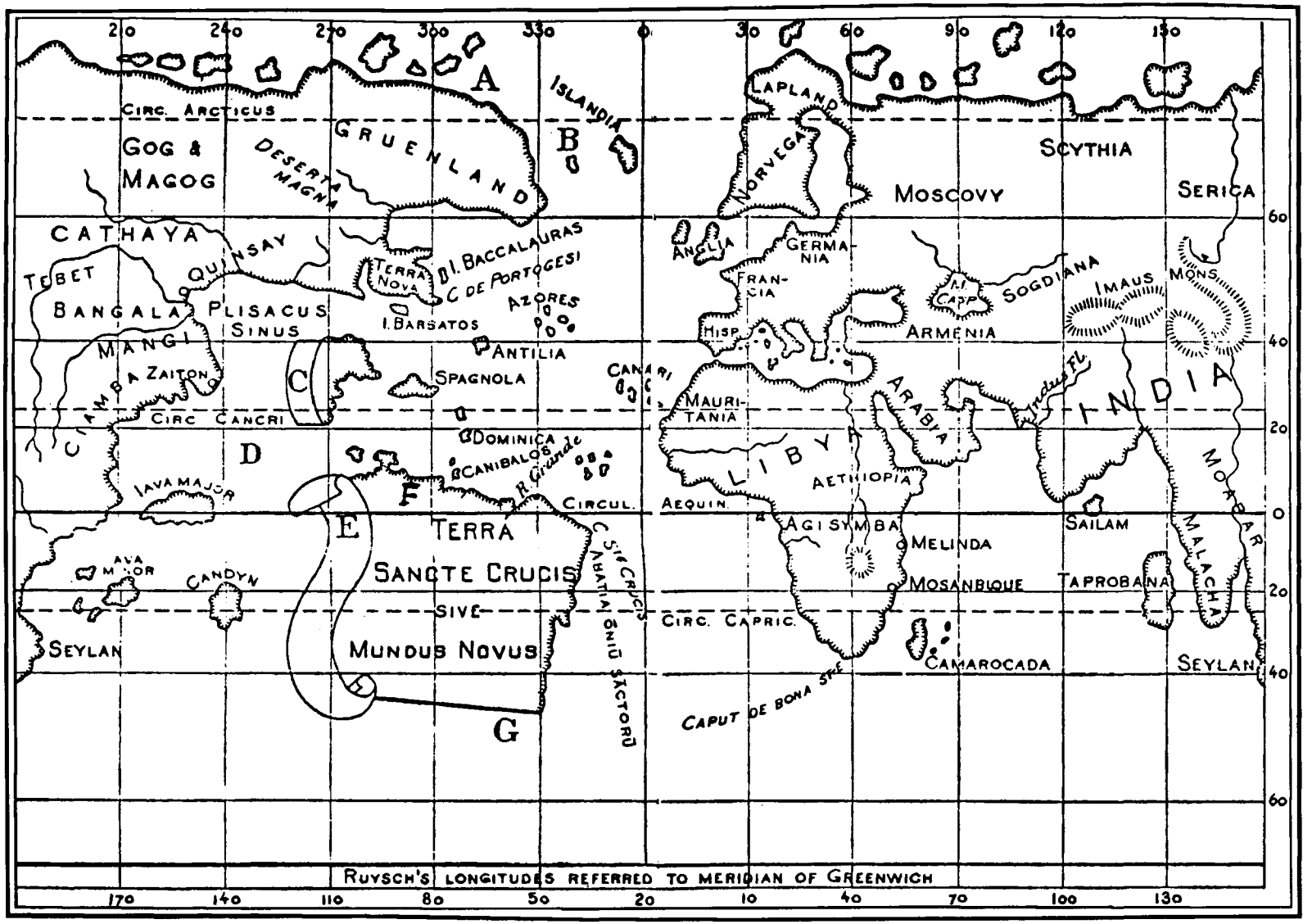
D. *"Marco Polo says that 1,500 miles [rather li] eastward from the port of Zaiton [in China] there is a very large island called Cipango [i.e. Japan], whose inhabitants are idolaters, and have their own king, and are tributary to no one. Here is a great abundance of gold and all sorts of gems. But as the islands discovered by the Spaniards occupy this spot, we have not ventured to place this island here, thinking that what the Spaniards call Spagnola [Hispaniola] is the same as Cipango, since the things which are described as in Cipango are found in Spagnola, except the idolatry."*

E. *"Spanish sailors have come as far as here, and they call this country a New World because of its magnitude, for in truth they have not seen it all nor up to the present time have they gone beyond this point. Wherefore it is here left incomplete, especially as we do not know in what direction it goes."*

F. *"This region, which by many people is believed to be another world, is inhabited at different points by men and women who go about either quite naked or clad in interwoven twigs adorned with feathers of various hues. They live for the most part in common, with no religion, no king; they carry on wars among themselves perpetually and devour the flesh of human captives. They enjoy a wholesome climate, however, and live to be more than 140 years old. They are seldom sick, and then are cured merely by the roots of herbs. There are lions here, and serpents, and other horrid wild beasts. There are mountains and rivers, and there is the greatest abundance of gold and pearls. The Portuguese have brought from here brazil-wood and quassia."*

G. *"Portuguese mariners have examined this part of this country, and have gone as far as the 50th degree of south latitude without reaching its southern extremity."*

(From John Fiske, ***The Discovery of America****, Boston & New York, Houghton & Mifflin, 1892, Vol. II, pp. 114-115)*



Farther to the west, on Ruysch's map there is inserted a summary of the description by Marco Polo of a large, independent island, Sipangus [in Latin], situated 1,500 miles to the east of Zaiton... The considerable distance from the eastern coast of China adopted for Zipangu by the geographers of the first part of the 16th century depends, according to Peschel, on the distance being given by Marco Polo in Chinese *li*, of which there are 350 on one degree of latitude. This Chinese *li* was by the European cartographers confounded with the Italian mile (60 = 1°).

The westernmost of the legends on the Asiatic coasts declares the discoveries of the Portuguese to have proved that the Indian Ocean, which was considered by Ptolemy to be an inland sea surrounded by land, is a part of the Ocean.

On Trapobane alias Zoilon, which almost corresponds to the immense island at present called Sumatra, there is a long legend, partly borrowed from Ptolemy, but with the interesting addition that Portuguese mariners arrived there in 1507. Another legend on the south-eastern part of Asia alludes to the existence of numerous islands in that part of the ocean, of which notices from Indian merchants seem to have already reached Europe.

Ruysch's delineation of the New World seems to indicate that he was not acquainted with the latest discoveries of the Spaniards. Cuba has thus got too large an extent. Its western coast is unknown to Ruysch[1], and of the northern part of the New World only Greenland and Newfoundland are represented. The names applied to the West Indian islands are, at least partly, taken from the narrative of the second voyage of Columbus. South America is called *Terra Sancte Crucis sive Mundus novus* [Land of the Holy Cross or the New World]. Twenty-nine names are here given. Most of them correspond to the names on *Tabula Terræ Novæ* in Ptolemy 1513. Only a few are found in the letters of Vespucci[2], which may be owing to the scarcity of geographical names in the description of his voyages.

A legend on South America at the lower border of the map is particularly interesting. It tells us that Portuguese mariners had followed the eastern coast of the country, down to Lat. S. 50°, but without reaching its southern extremity.[3] We here obtain notices regarding exploring voyages undertaken before 1508, of which no other information is met with in the history of geographical discovery...[4]

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1 Ed. note: Fiske has pointed out that this piece of land was in fact Florida (upside down), not Cuba, which is missing on the map.

2 Ed. note: See, for instance, the book by F. A. de Varnhagen: "Amerigo Vespucci. Son caractère, ses écrits...sa vie et ses navigations", Lima, Mercurio, 1865.

3 Ed. note: This exploration occurred before the voyage of Magellan. He was to find the mouth of the strait that bears his name just 2 degrees further south.

4 Ed. note: Nordenskiöld has failed to notice that Harrisse (B.A.V., 1866, pp. 172-174) had mentioned a printed plaquette, and given other proofs, about visits by French navigators to Brazil as early as 1503, and also in 1504.

This summary review of the most important features and legends on Ruysch's map will suffice to show its immense importance to the cartography as well as of the old as of the new hemisphere. It would therefore be very interesting to obtain some biographical data respecting its author. On the title page of the edition of Ptolemy of 1508 we read his name and nationality (Joannes Ruysch, *Germanus*), and from the *Nova orbis descriptio*... by Marcus Beneventanus, inserted in the same work, we know that he had sailed from southern England to the eastern coast of America. From his map we may further conclude that he was both a man of some learning and a practical mariner. But nothing, save these scanty notices, is known of his life, social position, and voyages. The name belongs to an old noble family in the Netherlands...[1]

Map of the world by Johannes Stobnicza, Cracow, 1512

This map, printed from a very crude and badly-executed woodcut, occurs in a rare work, of which the [partial] title is: *Introductio in Ptholomei Cosmographiam cum longitudinibus et latitudinibus regionum et civitatum celebriorum... Impressum Cracovie per Florianum Unglerium A.D. MDXII.*[2] ...This map (See figure below) is, in spite of its crudeness, of great interest and importance to the early history of cartography, because:

1) North and South America are here drawn, for the first time, as two large continents connected by a long and narrow isthmus. It is the earliest printed map on which the newly discovered lands in the Atlantic are in their whole extent so separated from the Old World, that they may, with full reason, claim the name of *Novus Orbis*.

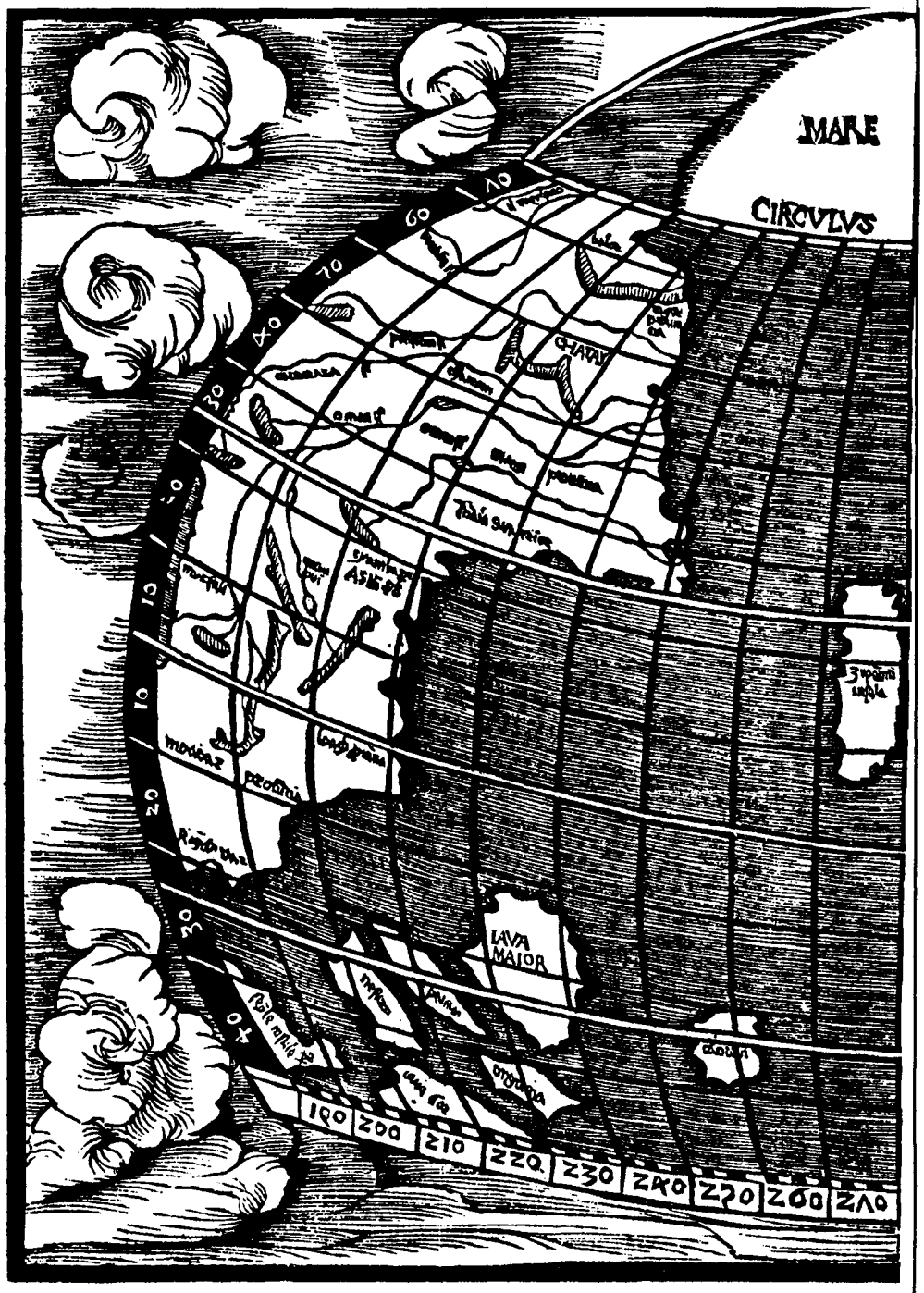
2) Stobnicza's map, published one year before the 25th of September 1513, when Vasco Nuñez Balboa sighted the "Mar del Sur" from the mountains of the Isthmus of Darien, is the earliest on which the sea between Europe and Asia was divided by the newly-discovered continent into two almost equal oceans, communicating only in the extreme south and the extreme north. This complete breaking with the old theory of one single Ocean, surrounding Europe, Asia and Africa, may to a certain extent be explained by the fact that coastlines are here substituted for the large unfolded rolls with legends which occupy the western coast of America on Ruysch's map. Several details, however, seem to prove that Stobnicza, or the unknown author of the map in his Introductio, had had access to geographical reports unknown to Ruysch. The method here employed of indicating the western coast of America by a succession of dashed lines, in order to denote that the delineation was conjectural and not dependent on real observations, is worthy of note.

1 Ed. note: This will not be the last time that we encounter the words "Germanus" or "Alemán" used to mean either Dutch or Belgian citizens, rather than Germans.

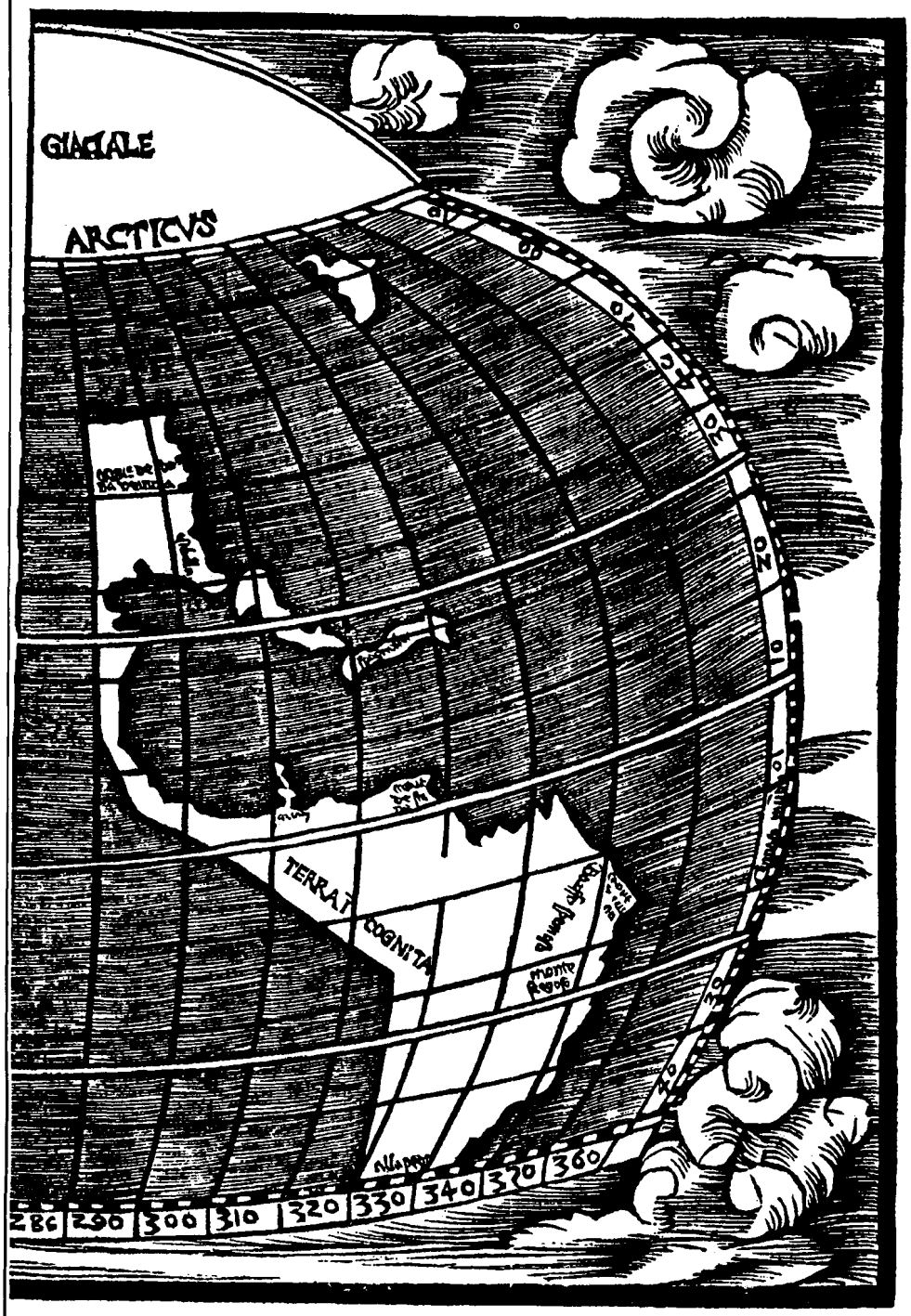
2 Ed. note: Stobnicza was then Bishop of Poznan, Poland. Wroth (p. 240) says that this map was copied from the insets on the Walseemüller world map of 1507.

3) There is no place on the map for a full extension of a new continent towards the south, but the coasts on both sides of its southern extremity are drawn in such a manner, that a southern communication between the two oceans evidently seems to have been admitted by the author.

4) On Stobnicza's map the surface of the earth is, for the first time, divided into two hemispheres, each of which was laid down on the homeother [sic] projection of Ptolemy.



Stobnicza's Map of the World *published in Poland in 1512, one year before the Pacific Ocean was discovered by Balboa, and 8 years before Magellan sailed upon it. (From Johannes Stobnicza's "Introductio in Ptholomei Cosmographiam", Cracow, 1512. One hemisphere only)*



The map is based on the map of the world in Ptolemaeus 1482 (the Mediterranean Sea, northern Europe and southern Asia), on the map of Ruysch (Africa and eastern Asia), and, as regards the West Indies, the Isthmus of Panama and North America, on data not before reproduced in printed maps. This map certainly has nothing in common with the two "tabulæ novæ" of the world in the Ptolemy of 1513. The inscriptions on Stobnicza's map are often difficult to decipher. Those on the newly discovered lands alone have some interest. They appear to be:

"[Citate?] de bona ventura" [= Good Luck City?]
"Isabella" [= Florida, rather than Cuba or the Bahamas]
"Spagnolla" [= Hispaniola]
"Arcay" [= Guajira peninsula, Columbia?]
"Caput deseado" [= Cape Desired]
"Gorffo Fremoso" [= Gulf Fremoso?]
"Caput S. Crucis"[= Cape of Santa Cruz]
"Monte Stegoso"
"Alla pego" [= future Strait of Magellan]
"Terra incognita" [= Unknown land]...[1]

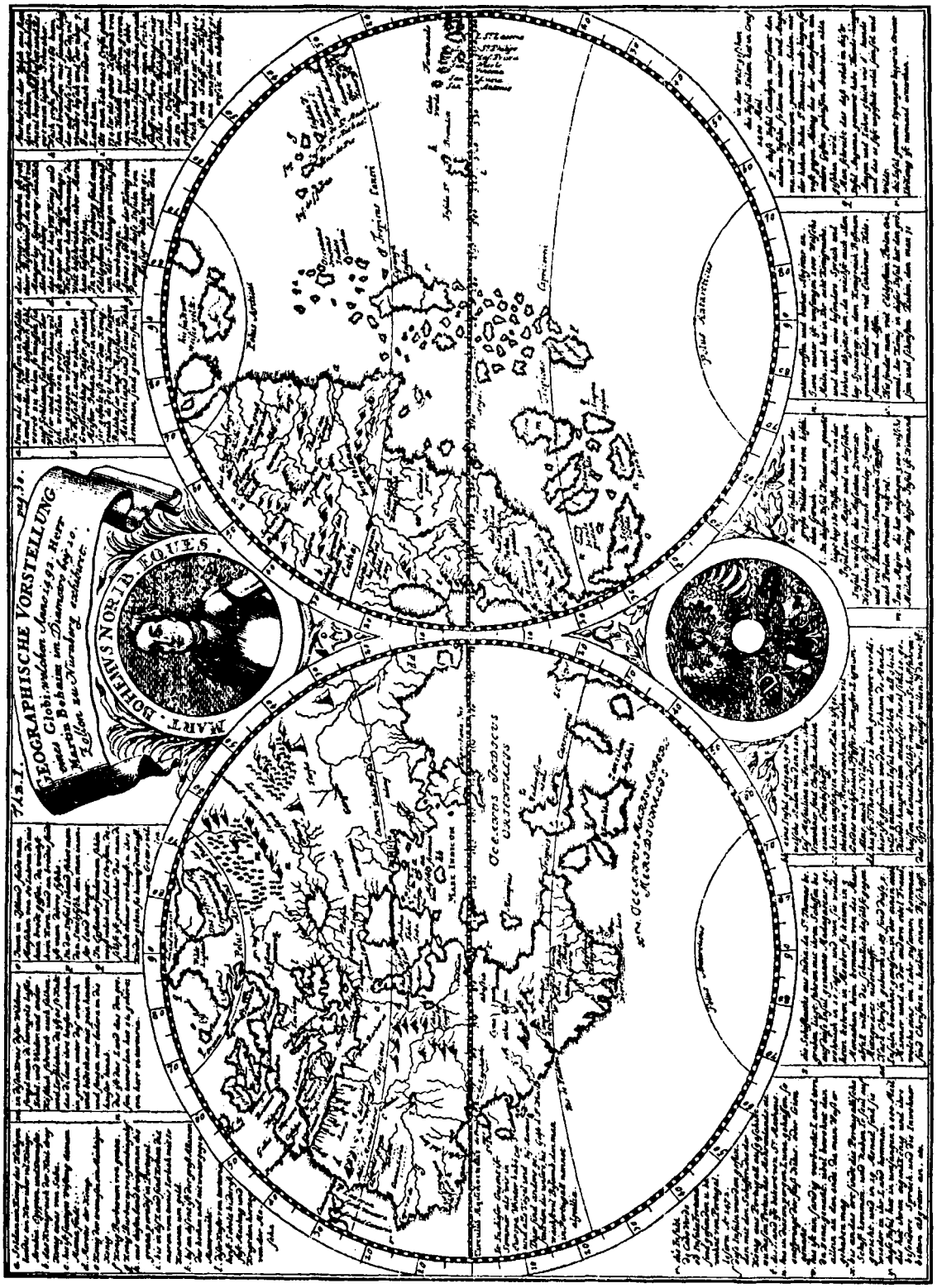
1 On folio vii of the text of the work for which this map was originally drawn, is written: "Quarta pars orbis America"... Thus Stobnicza is one of the first geographers who adopted the name **America**, proposed by Waldseemüller... Ed. note: The island in the sea marked "Zipangu insula", means Çipango [Japan], while the names of "Chatay", i.e. Cathay or China, and "India superior" or Upper India, appear on the eastern coast of Asia. Nordenskiöld has also published five important maps among the "tabulæ novæ" found in the "Ptolemæus Argentinæ" of 1513... among them the "modern map of India" [Reproduced before Doc. 1501 above]...

Terrestrial Globes from the 15th and the first part of the 16th centuries

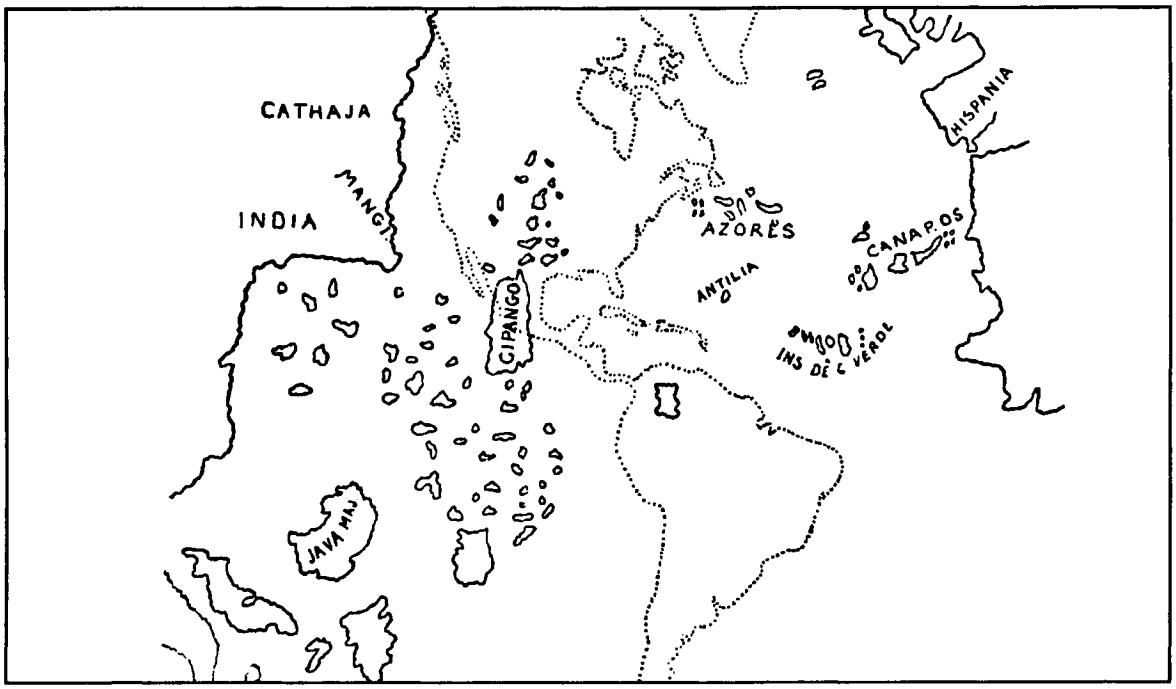
Behaim's globe of 1492.

It is generally assumed that the doctrine of the spherical form of the earth was established in the 6th century before our era, by Pythagoras, or by some philosopher of his school, and that it was more generally adopted a couple of centuries later, in the times of Plato. But this principle, so indispensable to scientific geography, was first fully proved in the fourth century, by Aristotle (through the form of the earth's shadow during lunar eclipses), by Dicaearchus (through the different times of the setting and rising of the heavenly bodies in different latitudes) and others. Eratosthenes [276-105 B.C.], finally, made the first attempts to measure a degree of latitude for determining the circumference of the earth; and Hipparchus [160-125 B.C.] fixed the first geographical positions. Through these observations the most important scientific data, necessary for the construction of a globe of the earth, i.e. of a geographical representation of the lands and seas of the earth drawn on the surface of a globe, had been determined. Geographical globes possibly existed from this time, although none of them are still extant. In Chapters 22 and 23 of his first book on geography, Ptolemy also gives the necessary instructions for the delineation of the "inhabited world" (*oikumene* in Greek) on a sphere, but he does not mention that such a work had been actually executed. During the succeeding centuries, until the end of the Middle Ages, the doctrine of antipodes and, as a corollary to this, the doctrine of the globular form of the earth, was most severely condemned by several of the most influential and distinguished men of the Church. This condemnation was pronounced, in the first place, by Lactantius, in the *Institutiones divinæ, Lib. III cap. 24*... Even Augustine adopted this opinion though, as appears in the *De civitate Dei, Lib. XVI cap. IX*, with some hesitation, while admitting that even if the doctrine of the existence of the antipodes is regarded as absurd, the earth may yet be of a globular form...

During the latter part of the Middle Ages, and especially after the circulation in the West of the Latin translations of Ptolemy's works, the doctrine of the globular form of the earth, and the possibility of the antipodes, was again accepted by unprejudiced cosmographers. Yet no older globe, even of that time, than that which Martin Behaim presented to his native city of Nuremberg in 1492, has been preserved. This globe is thus the oldest at present known. It is drawn on parchment stretched on a sphere of a diameter of 541 mm. In accordance with the custom of the period, the drawing is beautifully illuminated and ornamented with standards, kings sitting on their thrones, etc. It is rich in geographical details and in inscriptions of great importance to the history of geography. For these reasons, and owing to the prominent position occupied by Behaim with regard to the discoverers at the end of the 15th century, this globe has become not only the first, but also, without comparison, the most important document of this kind, of the period of the great geographical discoveries, that has been preserved.



Martin Behaim's globe of 1492. *(From J. G. Doppelmayer's Historische Nachricht von den nürnbergischen Mathematikern und Künstlern, Nuremberg, 1730)*



Part of Behaim's Globe. *It is easy to see how it caused Columbus to believe that sooner or later he would reach Japan. (From Sophus Ruge's Geschichte des Zeitalters der Entdeckungen, p. 230)*

It has been the subject of a number of reproductions and monographs, of which the most important are inserted in...Johan Gabriel Doppelmayer's **Historische Nachricht von den nürnbergischen Mathematikern und Künstlern**, Nuremberg, 1730. As Figure I of this work, Doppelmayer gives the first copy of the globe, although on a much reduced scale. It was thus published at a time when several inscriptions, since erased, were still decipherable.[1] It is therefore necessary that, in the study of this important geographical document, regard should always be paid to the versions on this first complete copy, which, for the rest, gives us a very good and comprehensive view of the principal features of the globe...

On a closer examination of the drawings and legends on Behaim's globe we shall find it to be based: (1) on Ptolemy's atlas; (2) on the narratives of the travels of Marco Polo and other medieval travellers in Asia; (3) on the Portuguese voyages of discovery; and (4) on the map of the northern countries of Europe in the Ulm edition of Ptolemy, 1482.

The delineation of the Mediterranean and Black Seas indicates ignorance of the Italian and Catalan portolans, or rather, perhaps, that Behaim in the inland town of Nuremberg had not access to these charts, exclusively intended for ship-owners and pilots. On the other hand, the delineation of England, the Azores, the Canary Islands, the Cape Verde Islands, the western and southern coasts of Africa, and the long inscrip-

1 The mechanic who restored Behaim's globe in 1823 declared that it was so decayed that before long it would have perished altogether.

tion at Iceland indicates personal observations or access to original documents now lost. To this it may be added, that the globe presents a faithful picture of the ideas regarding the distribution of land on the surface of the earth prevailing among the mariners of Europe, and especially among the mariners from the country of Henry the Navigator, at the period immediately before the first voyage of Columbus. All this makes the globe of Behaim one of the most important charts in the history of cartography... Finally, it may be mentioned that Behaim's globe, or the original documents on which it was based, had been used for the drawing of the maps of eastern Asia by Ruysch and by the authors of the *Tabulæ Novæ Asiæ* in the Ptolemy of 1513.

According to Ghillany[1], Martin Behaim was born in about 1459. He belonged to a family which was originally Bohemian, had settled in Nuremberg, and had there been early included among the patrician families. After having in his youth been a disciple of Regiomontanus, he applied himself to commerce. He went to Antwerp in about 1475. Thence, in about 1480, he removed to Portugal, where, in 1486, he married a daughter of the hereditary governor of the islands of Fayal and Pico in the Azores. Owing to his mathematical insight, he seems soon to have acquired a high reputation in his new fatherland. He was made member of a commission charged to invent some practical method of determining a ship's position at sea by means of astronomical observations. He then, in the capacity of astronomer and cosmographer, accompanied the expedition of Diogo Cão in 1484 and 1485 along the western coast of Africa.

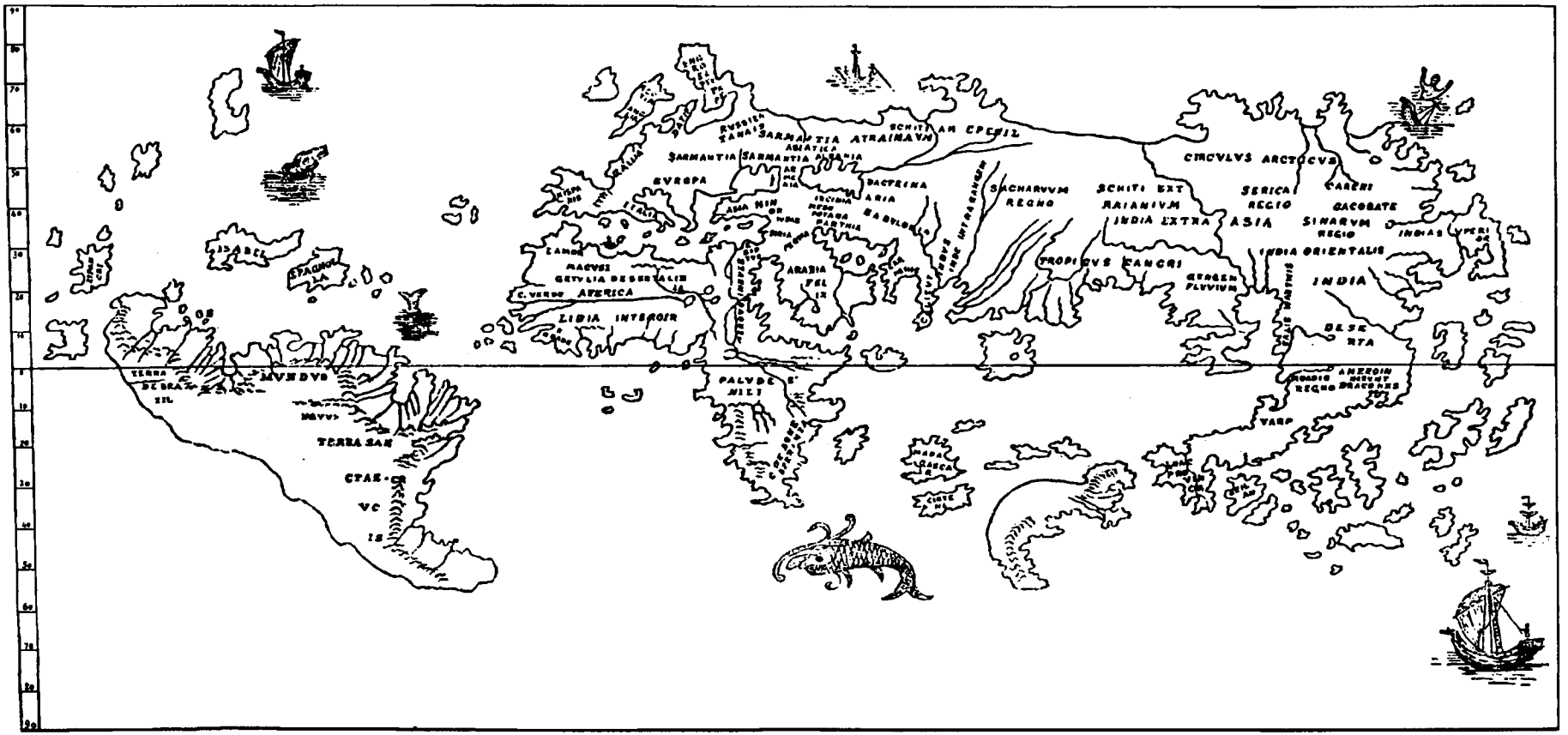
In Portugal Behaim had, no doubt, had communication with Columbus. In the year 1491 he visited Nuremberg, probably on business, where he remained for two years and where he made his globe. In 1493 he returned to Portugal and died in Lisbon in 1506.

Besides the globe under discussion here, Behaim (or his son, who was also called Martin) appears to have made another, which is mentioned in the accounts of Magellan's voyage, and which might have been similar to Schöner's globe of 1515. The report that Behaim had discovered America before Columbus, originated from an erroneous interpretation of a passage in Schedel's chronicle (Latin edition of 1493, fol. ccxc), where it is said that *Jacobus Canus* and *Martinus Bohemus*, after having crossed the Equator, *in alterum orbem excepti sunt.*[2] But by this "other world" is not meant America but the southern part of Africa, a nomenclature fully justifiable, according to the older theories of the distribution of land on the earth...

(Facing page) **The Lenox Globe, circa 1510,** *from B. F. de Costa's drawing on an equidistant projection. (From Nordenskiöld's Facsimile-Atlas, p. 75)*

1 F. W. Ghillany, in his book "Geschichte des Seefahrers Ritter Martin Behaim"..., Nuremberg, 1853.

2 Ed. note: Which can be translated as: "They found themselves in another world."

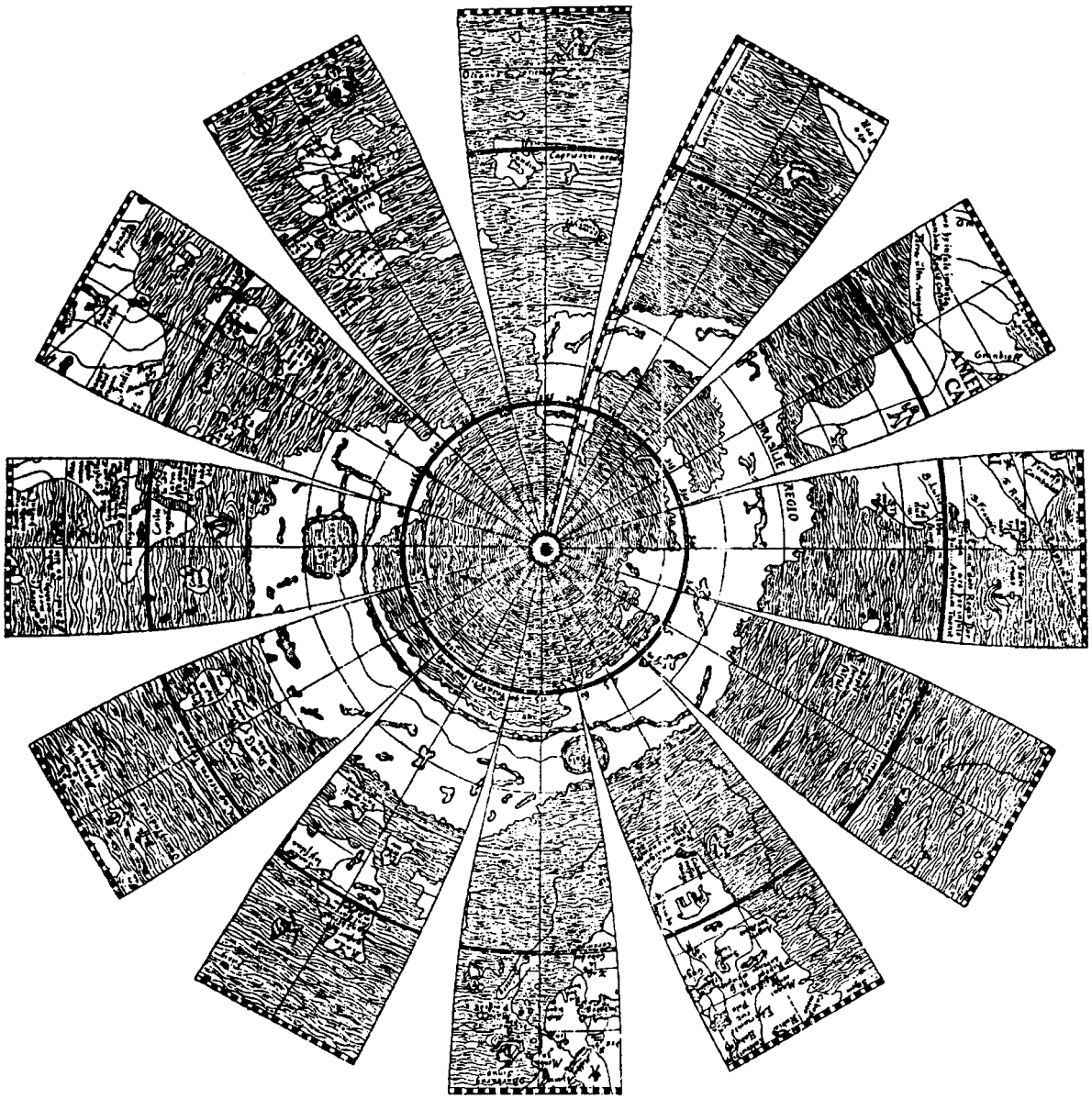


The Lenox Globe and the New World. *Japan was then thought to coincide with North America. (From Winsor, ii, p. 123)*

The globe of Lenox, circa 1510.

This small globe was found in 1855 at Paris by Mr. Richard Hunt who presented it to Mr. James Lenox. It was described by B. F. de Costa in English in the *Magazine of American History*, September 1879, and in French, with additions by Gabriel Gravier, in the *Bulletin de la Société Normande de Géographie*, 1870. The globe forms a sphere of copper of a diameter of only 127 mm. There is no graduation on the map. Mr. de Costa assigns to it a date of 1508-1511, which seems to be confirmed by the general form of the continents and by several other peculiarities of the globe. The western coast of South America is here, as in other maps which were drawn before the news of Magellan's circumnavigation had arrived in Europe, laid down not by direct observation but by estimation, and as may be concluded from the want of all inscriptions at Corte Real's land, the draughtsman has only had access to very vague reports of a continent or of larger islands to the northwest of the West Indies. The southern coasts of Asia are drawn less correctly than on the map of Ruysch and on the *tabulæ novæ* of Asia, inserted in the Ptolemy of 1513.

Notwithstanding all these defects and its small size, this globe, being the first post-Columbian globe at present known, is of considerable interest in the history of cartography. I, therefore, think it desirable to give here a slightly reduced facsimile of De Costa's reproduction...



Schöner's Globe of 1515, *southern hemisphere only, as reproduced by Jomard in his book "Les monuments de la géographie ou recueil d'anciennes cartes européennes et orientales publiées en facsimile de la grandeur des originaux", Paris, n.d.*

Schöner's globe of 1515.

In this year the celebrated mathematician and cosmographer Johan Schöner published a brochure of 81 quarto pages, with the title: *Luculentissima quædam terræ totius descriptio cum multis utilissimis cosmographiæ iniciis...* (Nuremberg, 1515)... The delineation of the southern part of the New World on Schöner's globe of 1515 is founded on actual observations. Some further particulars about this voyage may be obtained from another German pamphlet, which, according to Sophus Ruge and Wieser, forms the source of Schöner's notices in the *Luculentissima descriptio*, and which consequently must have been printed before 1515, namely *Copia der Newen Zeytung aus Presillg Landt.* We here have the first print with the title *Zeitung.* Several editions of it are known, but all undated; two of them are printed in Augsburg. According to Wieser, a number of names and expressions show it to be a translation from a commercial report, probably written by some Italian factor in Lisbon to the manager of the famous commercial house of Welser at Augsburg. Among other news, some information is here given respecting a commercial voyage of discovery: *So dan Nono un Christoffel de Haro und andere gearmirt oder gesrüst haben.* The expedition consisted of two Portuguese vessels, of which one returned during the stay of Welser's correspondent at Lisbon. He declares himself to have been a great friend of the pilot, who said that **the expedition has sailed through a strait situated to the south of Presill** [Brazil], but he had there been forced by contrary winds to return. The distance from the Straits of Malacca was said not to be very great. The day of the return of the expedition (the 12th of October) is given, but unfortunately not the year, on the determination of which the American-

Portrait of Schöner. (From Reusner's Icones, Stras., 1590)

Schöner's Globe of 1520. *The original was kept at Nuremberg. (From Winsor, ii, p. 119)*

ists have in vain exercised their learning and sagacity. Wieser supposes the expedition to have taken place before 1509...

Wieser has succeeded in identifying three copies still extant of Schöner's globe, viz., one in the library at Frankfurt-on-Main, reproduced by Jomard (See Figure above), and two others at the military [Grand Ducal] library in Weimar. As for the numerous reproductions of this globe... I may refer the reader to Winsor's **A Bibliography of Ptolemy's Geography**, p. 15. Unfortunately, no exhaustive technical description of the globe is given by Wieser. He only mentions its diameter to be 270 mm and that it is printed, not drawn by hand. I presume that it is printed in gores...

In his account of the first circumnavigation of the earth, Pigafetta says that **"Magellan, before his passage through the straits which now bear his name, had had access to a sea-chart by Martin de Bohemia"**, and the Spanish historian Herrera relates that Magellan had, in 1517, exhibited a globe to the Bishop of Burgos, on which the place where the straits were situated was left blank, but that he had expressed himself as sure of success, because he had seen the straits laid down on a sea-chart by the Portuguese Martin de Bohemia, a native of the island of Fayal[1] and a cosmographer of great reputation (Ghillany, p. 62). The cosmographer generally designated in the history of geography by the name of Martin Behaim died in 1506. It is difficult to understand how Magellan, with reference to the voyage he wished to undertake round the New World to the Spice Islands, could have referred to a sea-chart or to a globe drawn so long before. Both must have become too antiquated in 1517. Neither was the separation of the Ocean into two parts by the New World likely to have been known in 1506, i.e. seven years previous to the discovery of the Pacific by Balboa, which discovery must be presupposed before a strait between those two parts of the Ocean could have been spoken of. This difficulty may perhaps be explained by assuming that Martin Behaim, the father, who was born in Nuremberg, who accompanied the expedition of Diogo Cão, and who constructed the globe at Nuremberg, etc., has here been confounded with his son, who, according to Ghillany, was also called Martin. This Martin was actually born in Fayal. It is not at all improbable that he, following his father's example, had occupied himself with cosmographical labors and researches, and that he had registered the results of later voyages of discovery, of which nothing had been noted down on the pages of history, on his sea-charts, or on charts inherited from his father.

1 Ed. note: He means Martin Behaim, Junior (see below).