

derivation of this name may be deduced from the following passage respecting the first voyage of Columbus in a writing of PETRUS MARTYR at the municipal library at Ferrara: *Et in questa prima navigatione scopersono sei insule sole do delle quali de grandecia inaudita, una chiamò la Spagnola, l'altra la Zoanna. Ma la Zoanna non ebbe ben certo che la fussi insola.* When this was printed in the *Libretto de tutta la Navigation*, Venezia 1504, two islands discovered during the first voyage of Columbus, one of them called *Spagnola* and the other *Zoanna Mela*, are already spoken of. Thus *Zoana* might only be an Italian form of the name *Iuana* or *Johanna*, by which Columbus, after his return from the first voyage, designated one of the West-Indian islands. This explanation of Wieser is probably correct. Before I had seen it, I thought the name alluded to Cabot Senior, whose Christian name, JOHN or GIOVANNI, was also written ZOANNE. In a letter from the Venetian ambassador in London, RAYMONDO DI SONCINO, to the duke of Milano (HARRISSE, Cabot, p. 150 and 324) he is, for instance, called *Messer Zoanne*. As *in* and *m* are written in the same way in several places on the map, so *mela* possibly might have been erroneously written instead of *insula*. It was on the coast where this name is placed, that John Cabot landed in 1497.

It is uncertain whether this map was added to every copy of the *Margarita Philosophica* of 1515,¹ or not. It was certainly wanting or incomplete in most copies of the rare edition I examined, and to enable me to give a complete facsimile it became necessary to consult three copies of the map, one from the R. Library at Stockholm, one from the R. Library at Copenhagen, and one from the Imp. Library at Vienna. In both copies belonging to the Scandinavian libraries a small strip has been cut away in the same part of the map when the book was bound, which defect in the copy here communicated is supplied by a photograph of the Vienna copy. On the reverse of the map there is a geographical description divided in columns of the same size as the text of the book, but, as regards its contents, of scarcely any importance. It may finally be mentioned that the map of ROBERT THORNE of 1527 (N. T. XLI), is, with regard to the Old World, a minute copy of the map here under discussion.

If I except a few maps in the editions of Julius Caesar and Macrobius, published in 1515—1519, and almost worthless in a geographical point of view, and the globe of SCHÖNER of 1515 covered with a map printed in gores for that purpose, and of which an account will be given in the next chapter, the map in the *Margarita* of 1515 is the only printed map known to me between the years 1515 and 1519.

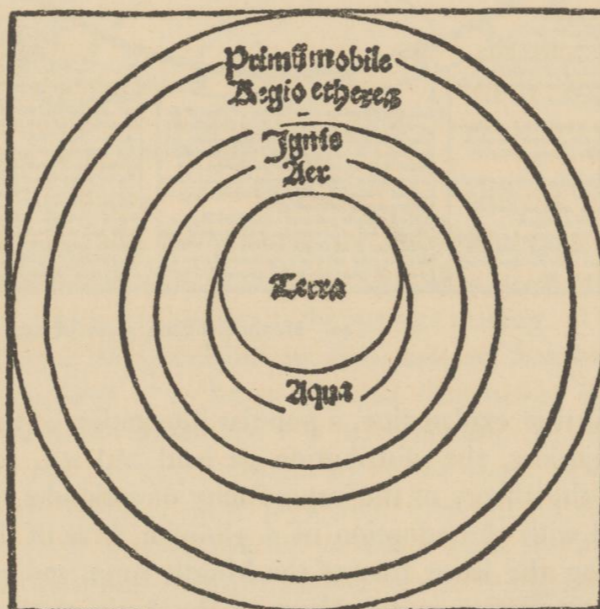
VII.

Terrestrial Globes from the 15th and the first part of the 16th century.

A. Globes from the 15th century.

1. *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 shade of the earth during lunar eclipses), by DICAËARCHUS (through the different times of the setting and rising of the heavenly bodies in different latitudes) and others. ERATOSTHENES (276—195 B. C.), finally, made the first attempts to measure a degree of latitude for determining the circumference of the earth;² 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 probably existed from this time, although none of them are still extant. In the 22d and 23d chapters of his first book of the geography, Ptolemy also gives the necessary instructions for the delineation of the inhabited world (*ἡ οἰκουμένη*) 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



39. Section of the Cosmos from an edition of SACROBOSCO of the 15th century.

several of the most influential and distinguished men of the church. This condemnation was pronounced, in the first place, by LACTANTIUS, who, in the *Institutiones divinae*, Lib. III cap.

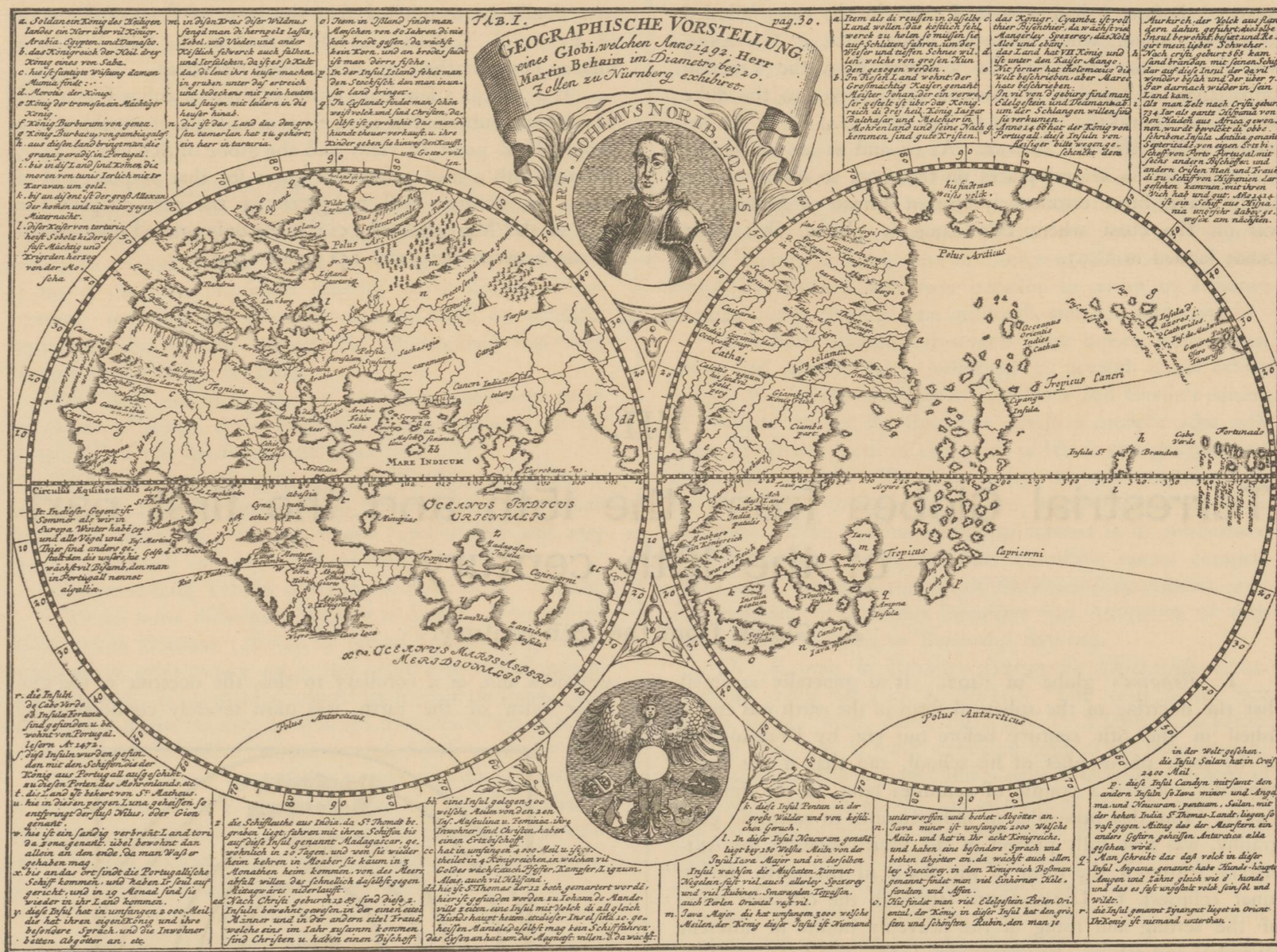
¹ According to HARRISSE, *Bibl. Amer. Vetust.*, p. 341, the *Zoana Mela* map should also be found in the edition of 1535. It is, however, wanting in all the copies I have seen of this edition.

² Compare: FORBIGER, *Handbuch der alten Geographie aus den Quellen bearbeitet*, Leipzig 1842—1848. The numerous references to the classics make the voluminous treatise particularly valuable.

24, exclaims: *Est quisquam tam ineptus, qui credat esse homines quorum vestigia sint superiora, quam capita? aut ibi, quae apud nos jacent, inversa pendere? fruges et arbores deorsum versus crescere? pluvias et nives et grandinem sursum versus cadere in terram? . . . Quid dicam de iis nescio, nisi quod eos interdum puto aut ioci causa philosophari aut prudentes et scios mendacia defendenda suscipere, quasi ut ingenia sua in malis rebus exercent.* 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 antipodes is regarded as absurd, the earth may yet be of a globular form. The figure on the preceding page from an edition of SACROBOSCO gives,

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. It has been the subject of a number of reproductions and monographs, of which the most important are inserted in the following works:

a. JOHAN GABRIEL DOPPELMAYER, *Historische Nachricht von den nürnbergischen Mathematicis und Künstlern*, Nürnberg 1730. On Tab. I of this work Doppelmayer gives



40. Martin Behaim's globe of 1492 from J. G. DOPPELMAYER. (Size of his drawing 414 X 302 m. m.)

without further explanation, a popular illustration of this hypothesis regarding the distribution of land and sea, according to which the theory of the impossibility of antipodes might be reconciled with the adoption of a globular form of the earth.

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 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 1 1/3 Paris-feet or 0^m.541. In accordance with the custom of the period, the drawing is beautifully illuminated and ornamented with standards, Kings sitting

the first copy of the globe, although on a much reduced scale. As, on one hand, the size of the globe does not permit me to give a complete fac-simile, and, on the other, a reproduction of this important work, probably often copied in the 16th century, should not be wanting in an essay on the history of the oldest cartography, I here (fig. 40) give a reproduction of the drawing of Doppelmayer. It was published 158 years ago, when several inscriptions since effaced were still decipherable. 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. The title-legend, within the south polar-circle, is left out by Doppelmayer. By Ghillany it is rendered thus:

Aus fürbitt und beger der fürsichtigen erbaren und weisen als der obesten haubtleut der loblichen Reichsstat Nurnberg die dan zu disen Zeiten regirt haben mit Nahmen hl. gabriel Nutzel hl. p. Volckamer und hl. Nicolaus Gro-land ist diese figur des apfels gepracticirt und gemacht worden aus gunst ausgebung vleys durch den gestrengen und erbar herrn Martin behaim Ritter, der sich dann in dieser kunst Cosmographia viel erfahren hat und bey einen drittel der welt umfahren solches alles mit fleiss ausgezogen aus den büchern ptolom. plinii Strabonis und Marco Polo und also zuzam gefügt alles meer und erden jegliches nach seiner gestalt und form solches alles den erbarn Georgen horschuer von rathswegen durch die gemelte hauptleuthe befohlen worden ist darzu er dan geholffen und gerathen hat mit möglichen fleiss solche kunst und apfel ist geprac-tisirt und gemacht worden nach Christi geb. 1492, der dan durch den gedachten herrn Martin peheim gemeiner Stadt Nürnberg zu ehren und letze hinter ihme gelassen hat sein zu allen Zeiten in gut zu gedencken nach dem er von hinen

c. F. W. GHILLANY, *Geschichte des Seefahrers Ritter Martin Behaim . . . eingeleitet durch eine Abhandlung: Ueber die ältesten Karten des neuen Continents und den Namen America* von ALEXANDER v. HUMBOLDT, Nürnberg 1853. A drawing of the map on the globe is here reproduced in colours, on a stereographic projection, and with the legends complete.¹

A full size drawing of this remarkable »Monument de géographie» is further given in JOMARD's atlas. For various other memoires on the same subject, generally followed by drawings on a reduced scale, I may refer to the treatise by D'AVEZAC on the Laon globe cited below, and to WINSOR's *Bibliography of Ptolemy's Geography*, p. 5.

The most complete of the works enumerated above, is that of GHILLANY. But even his analysis is not exhaustive, and his handsome delineation scarcely comes up to the requirements of our time: nor are the inscriptions on it always rendered with perfect accuracy. Near the North-pole, for instance, we read in Ghillany: *Hier find man weisse völker*, words that



41. D'AVEZAC's reproduction of the map on the Laon globe. (Orig. size 320 X 169 m. m.).

wieder heim wendet zu seinem Gemahl das dann ob 700 mail von hinen ist da er hauss hält und sein tag in seiner Insel zu beschliessen da er daheimen ist.

b. CHR. GOTTLIEB v. MURR, *Diplomatische Geschichte des portugiesischen berühmten Ritters Martin Behaims*. This important contribution to the history of Behaim was first edited at Nuremberg, in 1778, then with considerable additions at Gotha, in 1801. A French translation by H. J. JANSEN was published in the *Recueil de piéces intéressantes concernant les antiquités* etc., Paris 1787 (T. I. p. 317—363; T. II. p. 298—364), another in a French translation of CARLO AMORETTI's *Pigafetta*, Paris 1801. A third French edition was prepared for the press by the author himself and published at Strasburg in 1802. Murr's description of Behaim's globe is minute and very meritorious for its time. But the reproduction he gives in his brochure, only embraces the portion between eastern Asia and the Azores.

have since become the subject of comment, whereas this passage in Murr is rendered by: *Hir fecht man weissen völkern*, which no doubt is the correct reading. Ghillany says (p. 73) that the mechanician who restored Behaim's globe in 1823, declared it to be so decayed that before long it would have perished altogether. It is, therefore, desirable that no time should be lost in obtaining a new copy, which would be absolutely reliable, on a projection more fit for the reproduction of such a document in fac-simile than the stereographic. For this purpose, I should propose one of the globe-projections of GLAREANUS or FLORIANUS (N. T. XXXVII and fig. 48), of course properly corrected according to our present knowledge of the length of lines drawn on the surface of a sphere.

On a closer examination of the drawings and legends on Behaim's globe we shall find it to be based 1st on Ptolemy's atlas; 2d on the narratives of the travels of Marco Polo and other medieval travellers in Asia; 3d on the Portuguese

¹ An incomplete representation of the western hemisphere was published by Ghillany already in the brochure: *Ueber Behaim und Schoner*, Nürnberg 1842 (GHILLANY, *Gesch. Beh.*, p. III).

voyages of discovery; and 4th on the map of the northern countries of Europe in the Ptolemaeus Ulmæ 1482.

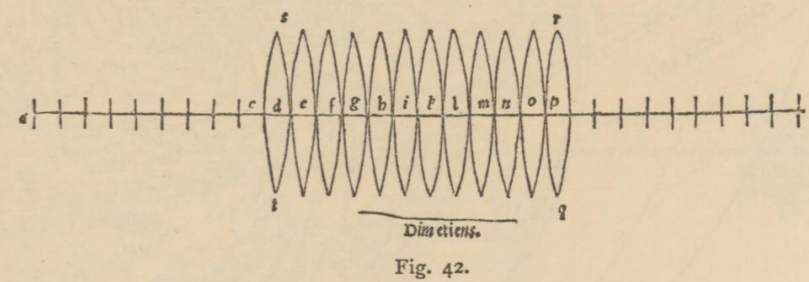
The delineation of the Mediterranean and Black Seas indicates ignorance of the Italian and Catalan portolanos, or rather, perhaps, that Behaim in the inland-town of Nuremberg had not access to these charts, exclusively intended for ship-owners and pilots. On the other hand the delineation of England, the Azores, the Canary Islands, the Cape Verde Islands, the western and southern coasts of Africa, and the long inscription 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 charters in the history of cartography. As regards its significance in this respect the reader is referred to the works of LELEWEL, HUMBOLDT, D'AVEZAC, KOHL, PESCHEL, WIESER, and others. 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 *Tabula Novæ Asiæ* in the Ptolemy of 1513.

According to Ghillany, 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,¹ 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 at Lisbon in 1506. Besides the globe here under discussion, 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 (Lat. edit. 1493 fol. ccxc), where it is said that *Jacobus Canus* and *Martinus Bohemus*, after having crossed the Equator, *in alterum orbem excepti sunt*. But here America is not meant by *Orbis Alter*,² but southern Africa, a nomenclature fully justifiable, according to the older theories of the distribution of land on the earth. The same meaning belongs to *Novi et incogniti Orbis*³ in the *Oratio* by VALASCUS FERDINANDUS, cited by me at p. 62.

2. The *Laon globe of 1493* (fig. 41). Another globe, made at the end of the 15th century, was discovered in 1860 by M. LÉON LEROUX at an antiquarian's shop in Laon and described by D'AVEZAC in *Bulletin de la Société de Géographie*, Sér. 4: T. 20, Paris 1860. This globe consists of a gilded sphere of copper of 170 m. m. in diameter. I here give d'Avezac's representation of it on a slightly reduced scale. The projection chosen by d'Avezac is not very successful, and it is not possible to make out from his description whether the design reproduces the original completely and quite faithfully or not. The globe seems to a considerable extent to be based on that of Behaim and to have been made shortly after, the year 1493 occurring in a legend near the southern part of Africa. The discoveries of the Spaniards and Portuguese after 1497 were, according to d'Avezac, unknown to the engraver.

These two globes, the one drawn on a sphere covered with vellum, the other engraved on metal, are the only ones of the 15th century² at present known to exist. There are, of course, a greater number yet extant of the following century, but even of that period such works are scarce, although maps, in gores, intended for earth globes, had already been printed several times in the beginning of the 16th century.

The manner of drawing the twelve gores of which such globe-maps consist was described for the first time in HENRICI GLAREANI *Poeta laureati de Geographia Liber unus*, of which



there are known editions printed at Basel in 1527, Friburg in 1529, Frankfort in 1532, Friburg in 1533, Venice in 1534, Friburg in 1535, (Brigæ in 1536³), Venice in 1537, Venice in 1538, Friburg in 1539, Paris in 1542. I have had the opportunity of comparing the *editio princeps* and a number of the other older editions, with the Paris edition of 1542, and have found them to be quite identical. The work of Glareanus is a manual of geography of about 70 pages in small quarto. More than the half its contents is devoted to cosmography and spherical geography, of which, however, only two chapters are still of any interest, namely the last one *De regionibus extra Ptolemaicum*, in consequence of its being one of the many instances of the extremely small knowledge the learned world in the first part of the 16th century possessed of the great geographical discoveries, and of the total want of insight into their future importance, as regards the development of mankind; and chapter XIX, *De inducendo papyro in globum*. Here the method employed in delineating maps on the projection which I have designated by the name of Glareanus, is described in the following words (edit. Basileæ 1527): *Sit* (fig. 42) *linea ab, in triginta aequas divisa partes, quales singuli quadrantes æquinoctialis ternas habent. Ponito circini pedem alterum in b, alterum extende in o, sic enim dena*

¹ This is doubted by PESCHEL (*Geschichte der Erdkunde* 1865, p. 215), because Behaim, if the year of his birth was 1459, would have been only 16 years old, when Regiomontanus left Nuremberg. Peschel does not look upon Behaim as being very prominent as a cosmographer.

² In a letter from RAIMONDO DI SONCINO to the Duke of Milan, dated London, Dec. 18th 1497, a globe (*una sfera solida che lui a fatto*), made by *Messer Zoanne*, i. e. JOHN CABOT (HARRISSE, *Cabot*, p. 150) is mentioned. This globe is lost.

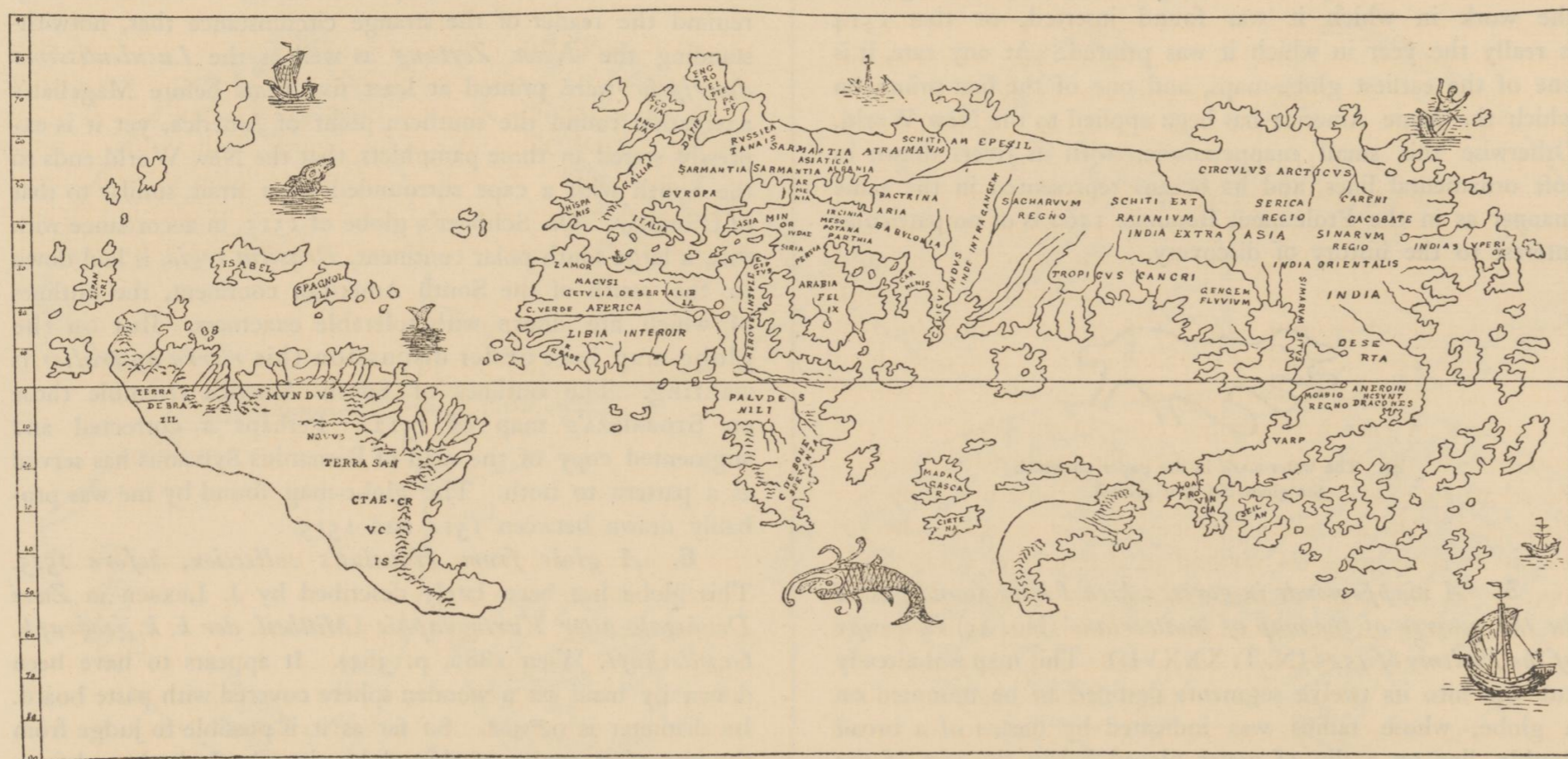
³ This edition is not mentioned by HARRISSE. I have seen it at the R. Library in Berlin. It contains a large map of the world on a double cordiform projection (added to the work at its binding?), which, however, is only a reprint of the heart-shaped map of the world by ORONTIUS FINAEUS (N. T. XLI). But the title-legend on the square field, below, in the middle of the map, is here altered to: *Christianus Wechelius lectori. S. Excuditur vix possit absolutius . . . Vale Ex scuto Basiliensi MDXXXV.*

transmittes spacia, duc arcum q r. Deinde ex b promove circinum uno puncto ita enim alter pes in n veniet. Tum rursus duc arcum, atque ita deinceps, donec in c deventum fuerit. Deinde in marginem alterum transfer circinum, ita ut in a posito uno pede, in d alterum extendas, atque illic duc arcum s t, et emerget duodecima pars superficiæ quam querimus c s d t. Deinde ex a promove uno puncto circinum ut antea in altero margine fecimus, ita enim in e pes alter veniet, ac deinceps promove donec ad p deveneris, ac habebis duodecim partes papyri, quam globo apte circumponere poteris, quaquam superne propter sphaerae coarctationem nonnihil superabit.

I have been unable to ascertain whether, as Myritus pretends, Glareanus was actually the inventor of this construction, which is practical and easy, though not perfectly correct. It does not appear to be mentioned by any other author of the beginning of the 16th century, though the invention must have been made at least fifteen years earlier, maps on such gores already existing in the third

lustre of the 16th century. HENRICUS LORITUS, called GLAREANUS after his birth-place, was a learned and distinguished humanist of the first half of the 16th century. He was born in 1488; in 1512 he was crowned a *poeta laureatus* at Cologne by the Emperor Maximilian, and in 1515 was summoned to the chair in mathematics at the university of Basel. Six years later he removed to Paris, where he professed humanities at the Collège de France. In 1524 he returned first to Basel and then to Friburg, where he died in 1563. I mention these dates, as they might possibly give a clue as to the age of mappemondes constructed in accordance with the instructions of Glareanus.

Owing to the circumstance that a mounted terrestrial globe is generally more easily destroyed than the sheets printed to cover its surface, especially if the latter happen to be inserted in some book or atlas; out of several globes of the 16th century, we only know the mappemonde generally printed on the projection of Glareanus. Fac-similes of such prints are here given T. XXXVII and XL.



43. The globe of Lenox of the beginning of the 16th century, from B. F. DE COSTA'S drawing on an equidistant projection. (Orig. size 369 X 177 m. m.)

B. Globes and globe-prints from the beginning of the 16th century.*

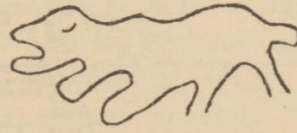
3. *The globe of Lenox from c. 1510* (fig. 43). This small globe was found in 1855, at Paris, by Mr. RICHARD HUNT, who presented it to Mr. JAMES LENOX. It was described, by B. F. DE COSTA, in English in the *Magazine of American History*, Sept. 1879, and in French, with additions by GABRIEL GRAVIER, in the *Bulletin de la Société Normande de Géographie*, 1870. The globe forms a spherical box of copper of a diameter of only 0^m.127. 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 circum-

navigation 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 north-west 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 into 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 fac-simile of DE COSTA'S reproduction.

* I have tried to follow the chronological order as far as possible in this catalogue, but, globes and globe-prints as a rule not being signed or dated, much uncertainty often prevails in this respect. This is for instance the case with Nos. 2, 3, and 4 in this catalogue. It is remarkable that no Italian globes are known of the beginning of the 16th century. That such have existed may be taken for granted. A detailed description of the construction of globes occurs in the beginning of the second part of Ruscelli's Ptolemaeus, Venetia 1561.

4. *A mappemonde in gores engraved in copper 1514* by LUDOVICUS BOULENGER (N. T. XXXVII). This map was found with two other copper-prints, of which one was signed *Artificio Ludovici Boulengier Allebie 1514*, in a copy of: *Cosmographia introductio cum quibusdam geometriæ ac astronomiæ principiis ad eandem necessariis. Insuper quatuor Americi Vesputii navigationes... Impressa per Johannem de la Place, s. l. et a.*, offered for sale by the antiquarian H. Tross at Paris in 1881. A fac-simile of it by Pilinski is given in his Cat. XIV. A copy of the book, but without the map, is described by D'AVEZAC in *Martin Hylacomylus Waltzemüller... par un géographe bibliophile*, Paris 1867, p. 116. He supposes the book to have been printed in 1517—1518. This edition of the famous *Cosmographia Introductio* of WALDSEEMÜLLER should not be confounded with the work of APIANUS, published under the title of *Cosmographiæ Introductio cum quibusdam Geometriæ ac Astronomiæ principiis ad eam rem necessariis*, and of which the first edition was printed at Ingolstadt in 1529. It is not quite certain either that the map of Boulenger originally belonged to the work in which it was found inserted, or that 1514 is really the year in which it was printed. At any rate, it is one of the earliest globe-maps, and one of the first prints, on which the name America has been applied to the New World. Otherwise this small mappemonde, with its rivers drawn in soft ornamental lines, and its oceans represented in the same manner as in the Ptolemæus Bononiæ 1462 is of no particular interest to the history of discovery.



44. The water-mark in the paper on which the globe No. 5 is printed.

5. *A mappemonde in gores, which I have found pasted on the reverse of the map of Switzerland* (No. 45) in a copy of the Ptolemy of 1525 (N. T. XXXVII). This map was already cut up into its twelve segments destined to be mounted on a globe, whose radius was indicated by means of a broad double line on a slip of paper placed below the rest of the map. On the paper of the third segment, containing the map of the Red Sea etc., a water-mark can be discerned. I here give a fac-simile of it, as it might give some clue to the year of the printing of the map.

A fac-simile of the map and an analysis of it is given in the journal *Ymer* of 1884. Only two towns are laid down on the map, namely *S. Jacobus* (Santiago de Compostela) and *Ingolstad* (Ingolstadt). From this it may be inferred that the map was printed or drawn in the latter town, and that its author, in some way or other, had been in communication with Santiago; that, for instance, he had got his material for the map of the New World from that place. Concerning the author of the map, the name of Ingolstadt directs our thoughts to PETRUS APIANUS, who was professor of mathematics in the celebrated Academy at that place from 1527. Yet a comparison with other maps of the beginning of the 16th century, especially with the map of Apianus of 1520 (N. T. XXXVIII), shows that it cannot have been a work of this celebrated cosmographer. As to the outlines and inscriptions on the old hemisphere, this globe-map almost completely agrees with the map in the Ptolemy of 1511 of Bernardus Sylvanus (N. T. XXXIII), inasmuch that, for its few inscriptions, a preference was given to the names printed in red by Bernardus Sylvanus. The form of South America

entirely differs from that on the map of Apianus of 1520, while it is identical with the form of South America on the globe of Schöner of 1515 (but not with that on his globe of 1520). For these and various other reasons, which space does not allow me here to explain, I have arrived at the following conclusions:

that the map under discussion, although not a work of Apianus, is printed or drawn at Ingolstadt;

that it is of a later date than 1511, the year when the original to the delineation of the Old World was printed;

that a common original has served for this map and for Schöner's globe of 1515;

that this map was probably printed before the time when the *Neue Zeytung auss Presillg Landt* (printed before 1515) and Schöner's *Luculentissima quædam terræ latius descriptio*, Nuremberg 1515, became generally known.

Further on I shall have occasion to return to these two insignificant pamphlets, so important, however, in the history of geography. Referring to the careful investigations of HUMBOLDT, VARNHAGEN, RUGE, WIESER, and others, I shall here only remind the reader of the strange circumstance that, notwithstanding the *Neue Zeytung* as well as the *Luculentissima descriptio* were printed at least five years before Magellan's navigation round the southern point of America, yet it is expressly stated in these pamphlets, that the New World ends to the South with a cape surrounded by a strait, similar to that of Gibraltar. On Schöner's globe of 1515, in accordance with this, a large south-polar continent, *Brasilia regio*, is laid down to the south of the South American continent, the outlines of which are drawn with tolerable exactness. But on the globe-map here under discussion this *terra australis* is wanting. The outlines of South America resemble those on STOBNICZA's map of 1512. Perhaps a corrected and augmented copy of the map of Bernardus Sylvanus has served as a pattern to both. The globe-map found by me was probably drawn between 1511 and 1515.

6. *A globe from Hauslab's collection, before 1515.*

This globe has been lately described by J. LUKSCH in *Zwei Denkmale alter Kartographie* (*Mittheil. der k. k. geograph. Gesellschaft*, Wien 1886, p. 364). It appears to have been drawn by hand on a wooden sphere covered with paste board. Its diameter is 0,^m368. So far as it is possible to judge from the imperfect copies of this globe given by Luksch, and from the globe of 1515 by Wieser, these works almost completely agree, except as regards the south polar continent and the large island drawn to the south of Java Minor on Schöner's globe, which are wanting on that of the Hauslab globe. Perhaps we here have one of the oldest of Schöner's works or, perhaps, the first prototype followed by him. F. A. DE VARNHAGEN (LUKSCH, p. 370) considers the globe to have been drawn in 1513 and to have belonged to some ecclesiastical prince at Brixen.

7. *Leonardo da Vinci's globe.* A good representation of the geographical ideas prevailing in the period immediately preceding Magellan's circumnavigation of the earth, is further given by the globe-map, on a peculiar projection, found in a collection of drawings of LEONARDO DA VINCI and critically examined, in his usual masterly way, by R. H. MAJOR (*Memoir on a Mappemonde by Leonardo da Vinci, being the earliest map hitherto known containing the name of America; now in the Royal collections at Windsor*, London 1865). Major, who conjectures the date of the map to be 1512—14 (WINSOR considers it to be one or two years later) has tried to prove that it was actually drawn by the great artist among whose papers it was discovered. From this circumstance a certain interest is attached to this insignificant sketch, which is in no wise distinguished by such

accuracy and mastery in drawing, as might be expected from a map attributed to the great artist among whose papers it was found. It is, however, worthy of attention from a cartographical point of view, not merely on account of the remarkable projection, never before employed, but also because it is one of the first maps on which a south-polar-continent is laid down. It is likewise, if not the first, at least one of the first mappemondes with the name America.

That the da Vinci map is not an original drawing, but a careful copy of a globe, is obvious from the way the inscriptions on the northern coast of South America have been intersected without any reasonable cause, so that parts of the names are written on one, parts on the other segment. This circumstance seems likewise to make it probable, that the copy is not a work by Leonardo himself, but by some ignorant though trustworthy clerk or copyist. For the rest the map deviates considerably from all other maps of the beginning of the 16th century, with regard as well to the inscriptions

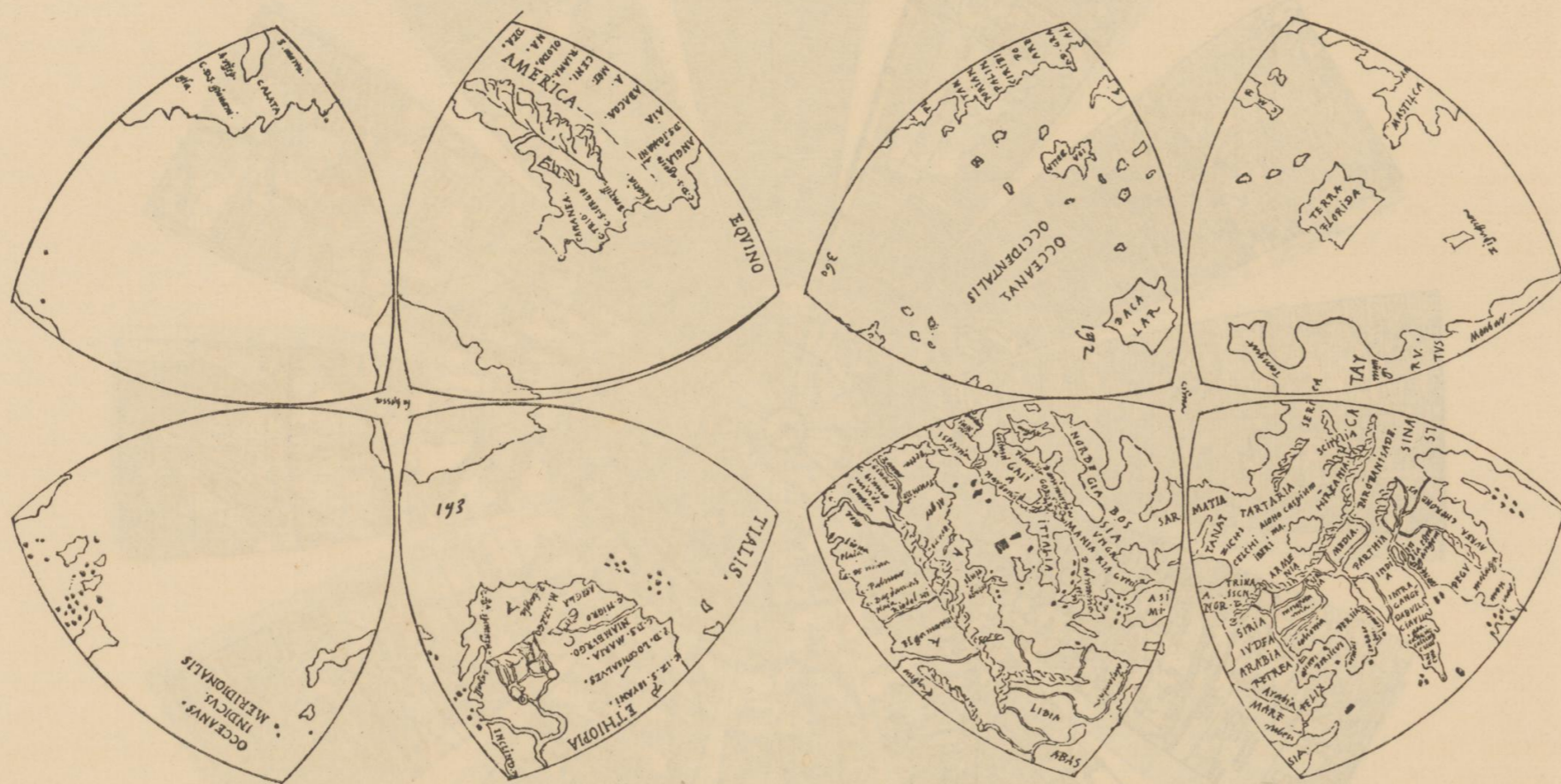
hos: cum Globis cosmographicis, sub multa quinquaginta florennorum Reneum et amissione omnium exemplarium.

The main interest of this work depends, as is shown by Prof. FRANZ WIESER, in his *Magalhães-Strasse und Austral-Continent auf den Globen des Johannes Schöner*, Innsbruck 1881, on the fact that it forms an explanatory text to a globe, *»Globus noster Cosmographicus,»* of which three copies have lately been discovered, or rather identified, by Wieser, and partly on Schöner's mentioning in this brochure, printed seven years before the return of the *»Victoria,»* an otherwise unknown Portuguese exploring expedition, which reached Magellan's Strait previous to the voyage of Magellan. Schöner's words are (Tract. II cap. 11, fol. 61):

Brasilie regio.

A capite bonæ spei (quod Itali Capo de bona speranza vocitant) parum distat.

Circumnavigaverunt itaque Portugalienses eam regionem, et comperierunt illum transitum fere conformem nostræ



45. LEONARDO DA VINCI'S mappemonde from c. 1514. (Distance from the Equator to the Pole on orig. 130 m. m.)

as to the outlines of the continents. That this map is based on Portuguese and not on Spanish originals appears to be deducible from the tolerably correct form of South Africa and from the outlines of the Indian peninsulas, which are here delineated more correctly than on the maps of RUYSCHE, SYLVANUS, STOBNICZA, BORDONE, and in all editions of Ptolemy, before that of RUSCELLI of 1548.

8. Schöner's globe of 1515 (fig. 46 and 47). In this year the celebrated mathematician and cosmographer JOHANNES SCHÖNER published a brochure of 81 quarto pages, with the long title: *»Luculentissima quædam terræ totius descriptio cum multis utilissimis cosmographiæ iniciis. Novaque et quam ante fuit verior Europæ nostræ formatio... Multa etiamque diligens lector nova usuique futura inueniet.* (Colophon:) *Impressum Noribergæ in excusoria officina Ioannes Stuchssen. Anno domini 1515.* Immediately after the title an epigram is inserted, followed by: *Cum Privilegio Invictissimi Romanorum Imperatoris Maximiliani per Octo annos: ne quis imprimat aut imprimere procuret codices*

Europæ (quam nos incolimus) et lateraliter infra orientem et occidentem situm. Ex altero insuper latere etiam terra visa est, et penes caput hujus regionis circa miliaria 60, eo videlicet modo: ac si quis navigaret orientem versus, et transitum sive strictum Gibel terræ aut Sibilie navigaret, et Barbariam, hoc est Mauretiam in Africa intueretur: ut ostendet Globus noster versus polum antarcticum.

Insuper modica est distantia ab hoc Brasilie regione ad Mallaquam, ubi Sanctus Thomas apostolus martyrio coronatus.

Sunt in hac regione loca montosa valde, et in quibusdam hisce locis nix toto anno nunquam dissolvitur. His in locis animalia comperiuntur plura et nobis incognita. Accolæ etiam eorum locorum pellibus animalium præciosius, nedum paratis (quia præparandi modum ignorant) se vestiunt. Ut sunt pelles Leonum, Leopardum, Castorum etc.

These lines prove that the delineation of the southern part of the New World on Schöner's globe of 1515 is founded on

¹ The title etc. of this rare work is given from HARRISSE and WIESER. I had not myself access to the original.

actual observations. Some further particulars about this voyage may be obtained from another rare 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

but that he had there been forced by contrary winds to return. The distance from the Straits to Malacca was said not to be very great. The day of the return of the expedition (the 12th of Oct.) is given, but unfortunately not the year, on the determination of which the Americanists have in vain exercised their learning and sagacity. Wieser supposes the expedition to have taken place before 1509.

Although these brochures were not provided with any maps, the *Terra Australis* was again introduced by them into geographical literature, as a large continent, surrounding



46. Schöner's globe of 1515. Northern Hemisphere. From JOMARD. (Diameter of his drawing = 416 m. m.)

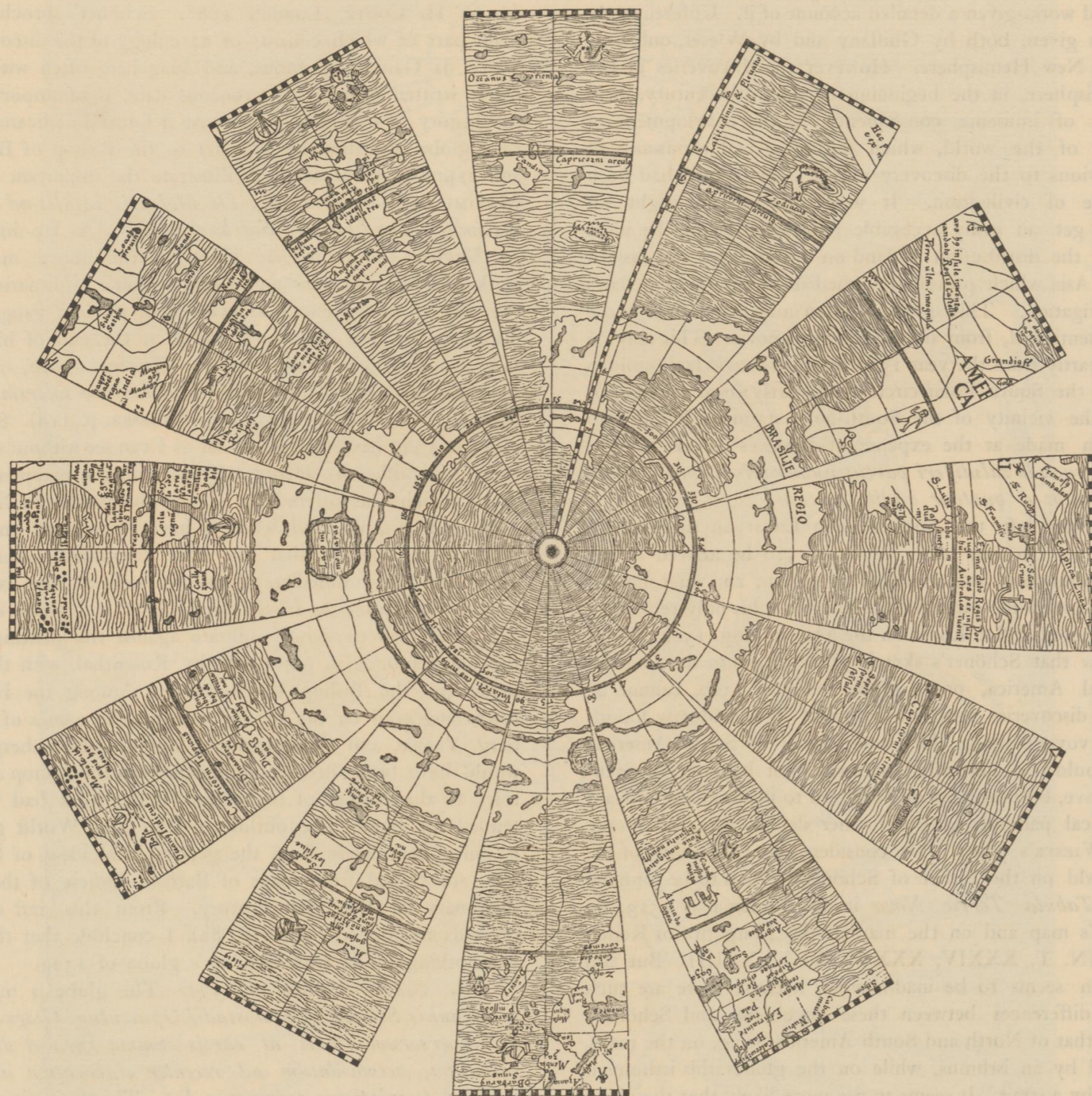
report, probably written by some Italian factor in Lisbon to the manager of the famous commercial-house of Welser at Augsburg. Among other news, some information is here given respecting a commercial voyage of discovery: *So dan Nono un Christoffel de Haro und andere gearmirt oder gerüst haben*. The 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 captain (*piloto*), who said that the expedition had sailed through a strait situated to the south of *Presill*,

the south pole and extending towards the equator far beyond the south polar circle, especially on the meridians of Australia and of the south point of America. From that time it was laid down on most mappemondes far into the 17th century, and is even met with during the 18th, if not on maps, at least in other geographical treatises, until it was definitively confined to the ice-covered regions of the South-Pole, in consequence of Cook's discoveries. Here the ancient inscription *Terra Australis Incognita* is still retained, and will for a long time to come continue to be convenient and adequate.

¹ *IV. und V. Jahresbericht des Vereins für Erdkunde zu Dresden*, 1868, p. 13—27, (with a reprint of *Die neue Zeytung*).

After the discovery of the New World, this continent was for the first time laid down on Leonardo da Vinci's globe and on Schönér's globe of 1515. Wieser has succeeded in identifying three copies still extant of this last mentioned globe, viz., one in the library at Frankfurt o. M., reproduced by JOMARD, and two others at the military library in Weimar. As for the numerous reproductions of this globe, and of the next one, I may refer the reader to WINSOR, *A Bibliography of Ptolemy's Geography*, p. 15. Unfortunately no exhaustive technical description of the globe

pressed 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 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



47. Schönér's globe of 1515. Southern Hemisphere. From JOMARD. (Diameter of his drawing = 419 m. m.)

is given by Wieser. He only mentions its diameter to be 0, m. 27 and that it is printed, not drawn by hand. I presume that it is printed on gores, similar to those of the globes on Pl. XXXVII.

In his account of the first circumnavigation of the earth FIGAFETTA 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 ex-

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 labours 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.

9. *A globe by Schöner, drawn by hand, dated 1520, and preserved at the town-library of Nuremberg.* This large globe, of which the diameter is 0,™366, was described by MURK (*Dipl. Gesch. Behaims*, 2d edit., p. 47). It is critically examined and more or less completely copied by LELEWEL, GHILLANY, HUMBOLDT, KOHL (*Discovery of Maine*, Portland 1869, p. 158), and others. WIESER has also, in his often cited work, given a detailed account of it. Unfortunately the copies given, both by Ghillany and by Wieser, only embrace the New Hemisphere. However the discoveries in the Old Hemisphere, in the beginning of the 16th century, form an epoch of immense consequence to the development of that part of the world, which during several thousands of years previous to the discovery of the New World had been the centre of civilisation. It would be of no slight interest to get an easily accessible representation of the ideas respecting the distribution of land on the southern and eastern coasts of Asia which prevailed immediately before Magellan's circumnavigation. This globe has an advantage over those already mentioned, from its date being known. This may be deduced partly from the year 1520 being written in large golden letters at the South Polar-circle, and partly from an inscription in the vicinity of the South-pole, stating the globe to have been made at the expense of JOANNES SEYLER by JO. SCHÖNER, *quando salutiferi partus numeravimus annos mille et quingentos et quatuor addita lustra.*

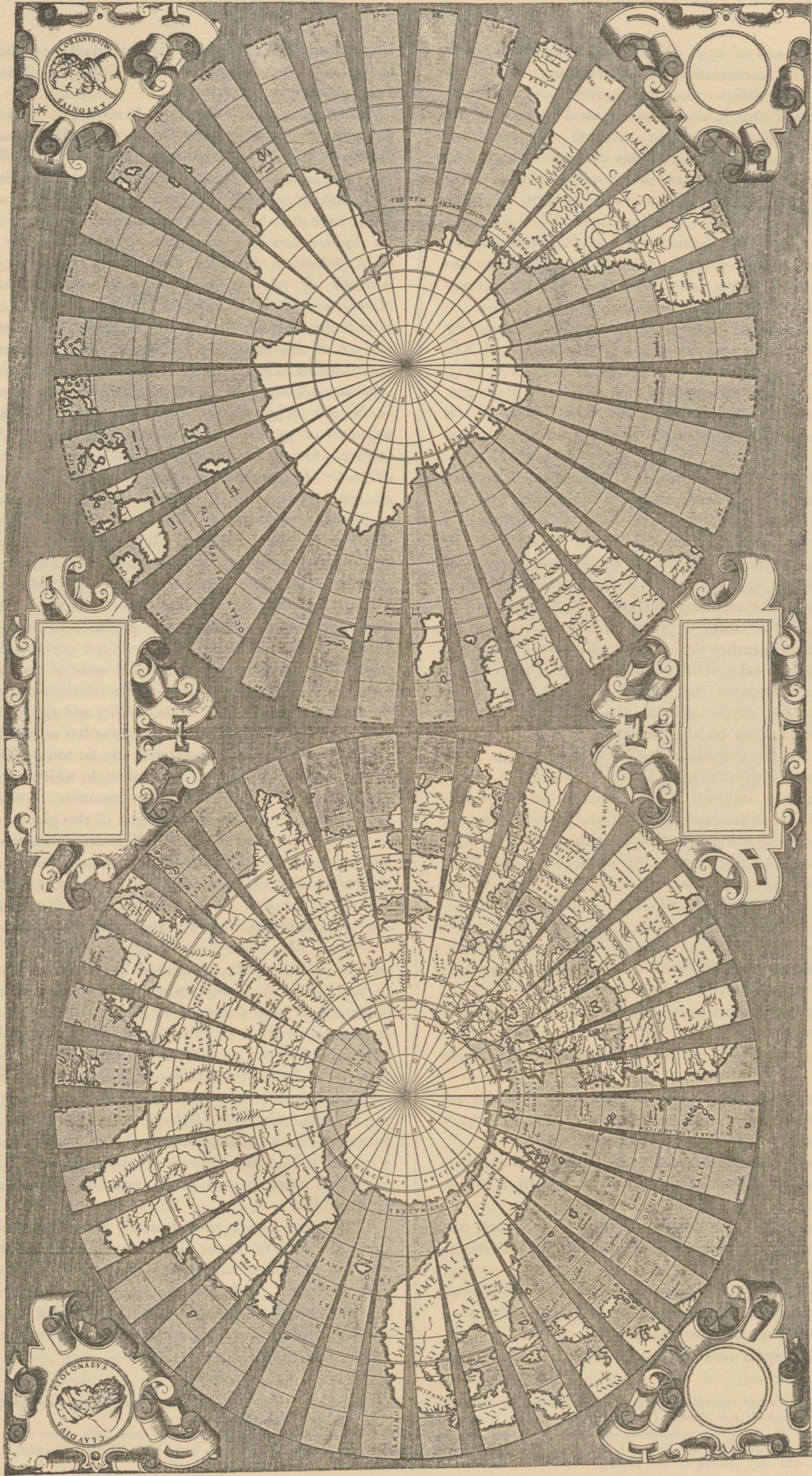
Magellan left the port of San Lucar on the 10th of Sept. 1519. On the 11th of Oct. 1520 he arrived at the western entrance to the straits of Magellan, and after having circumnavigated the earth for the first time, his only remaining vessel anchored at San Lucar on the 27th of Aug. 1522. These dates show that Schöner's sketch of the straits to the south of continental America, on a globe made in 1520, cannot be based on discoveries during this voyage. It is evidently founded on a voyage along the eastern coast of South America, which would be perfectly unknown if it had not, as mentioned above, been occasionally referred to in some insignificant geographical pamphlets. For further details, the reader may consult WIESER's paper. He considers the delineation of the New World on the earlier of Schöner's globes to be founded on the *Tabula Terræ Novæ* in the Ptolemaeus 1513, on Stobnicza's map and on the map in the Margarita of Reisch of 1515 (N. T. XXXIV, XXXVI and XXXVIII). But this assumption seems to be inadmissible, because there are such essential differences between these documents and Schöner's globe, as that of North and South America being, on the maps, connected by an isthmus, while on the globes this isthmus is replaced by a strait. It seems to me more likely that the globe was based on the maps of Ruysch and Bernardus Sylvanus (N. T. XXXII and XXXIII). But, in the first instance, its authority was derived from some charts now lost, on which the delineation of the South American continent deviated from all other maps. The importance of this deviation to the commerce of the world may have been the immediate cause of the publication of the numerous globe prints in central Europe during the second decennary of the 16th century.

10. *A globe of Schöner in 1523, mentioned in: De nuper sub Castiliæ ac Portugalie Regibus Serenissimis repertis Insulis ac Regionibus, Ioannis Schöner Carolopolitani epistola et Globus Geographicus, seriem navigationum*

¹ Wieser supposed this name to be that of some place in the vicinity of Bamberg; Varnhagen that it signifies Erfurt (WIESER, p. 122). Coote gives good reasons for indentifying it with Kirch-Ehrenbach, a place where Schöner performed the functions of a parochial vicar (above cited work, Introduction XII).

annotantibus. Clarissimo atque disertissimo viro Domino Reymero de Streytpergk, ecclesie Babenbergensis Canonico dicata. (Colophon:) *Timiripæ Anno Incarnationis dominicæ Millesimo quingentesimo vigesimotertio.* This brochure is now very rare, but it is reprinted in the above mentioned work of Wieser, and was published as a separate pamphlet by F. AD. DE VARNHAGEN at St. Petersburg in 1872. A fac-simile of the original, with an English translation, is inserted in the newly published elaborate monograph: *Johann Schöner Professor of Mathematics at Nuremberg. A reproduction of his Globe of 1523 long lost etc.* by HENRY STEVENS of Vermont, edited with an introduction and Bibliography by C. H. COOTE, London 1888. Schöner's brochure, the main part of which consists of an eulogy of the discoveries of Vasco da Gama, Columbus, and Magellan, often with incorrectly written names and erroneous data, is of importance to the history of cartography, because it forms a dedicatory letter to a globe presented by Schöner to the Bishop of Bamberg, and expressly constructed to illustrate the important letter of MAXIMILIAN TRANSYLVANUS, *De Moluccis insulis ad reverendissimum Cardinalem Salzburgensem.* A fac-simile and an English translation are given in the above mentioned work of Henry Stevens and Coote. Some information as to the source of Schöner's knowledge of modern geography is obtained, by the following words at the end of his letter: *Globum hunc in orbis modum effingere studui, exemplar haud fallibile aemulatus, quod Hispaniarum solertia cuidam viro honore conspicuo transmisit* (WIESER, p. 118). Schöner's globe of 1523 has been, but so far as I can see without sufficient reason, identified by Henry Stevens with the mappemonde in gores which was offered for sale in the catalogue XLII no. 136 of Rosenthal, and which I have reproduced on the pl. XL. It is obvious that the first circumnavigation of the earth was the immediate cause as well of the last mentioned globe-print, as of Schöner's letter and globe of 1523. But several circumstances militate against the identification of the mappemonde in gores sold by Rosenthal, with the globe made for the Bishop of Bamberg. Among the European towns engraved on the former we find the names of Nuremberg, Venice, and Constantinople, but not of Bamberg, which would have been little complimentary to the Bishop and contrary to the custom of the period, if the work had been intended for him. The outlines of the New World given on it differ completely from the geographical ideas of Schöner, and are copied from maps of Battista Agnese of the fourth decennary of the 16th century. From this and on other grounds mentioned below (p. 82), I conclude that this globe has nothing to do with Schöner's globe of 1523.

11. *Schöner's globe of 1533.* This globe is mentioned in *Iohannis Schöneri Carolostadii Opusculum Geographicum ex diversorum libris ac cartis summa cura et diligentia collectum, accomodatum ad recenter elaboratum ab eodem globum descriptionis terrenæ, s. l. a.* The dedication is dated *Ex urbe Norica 1533.* Besides a couple of worthless geographical drawings of the Old Hemisphere, the work contains the figure of a mounted globe reproduced in fig. 49. The globe alluded to on the title-page of this brochure was considered as lost, until a copy of it was lately discovered by Wieser in the military library at Weimar. Unfortunately it does not appear from Wieser's description, whether the map covering is, as I suppose, printed in gores on the projection of Glareanus, or drawn by hand, nor does he indicate the size of the globe. Wieser only gives a representation of the southern hemisphere on a reduced scale, and he points out the resemblance of the land-outlines on the globe to the heartshaped map



48. Mappemonde of the middle of the 16th century in gores by ANTONIUS FLORIANUS, from 'Lafreni's atlas.' (Orig. size 462 x 835 m. m.)

of ORONTIUS FINÆUS of 1531 (N. T. XLI), on which North America forms a continuation of eastern Asia. In this respect this globe differs so entirely from the previous works of Schöner, that it would be doubtful whether it was really his, if various passages in the text did not prove that Schöner himself had altered his opinion. Chap. XX, Schöner says: *Post Ptolemæum vero ultra 180. gradum versus orientem multae regiones repertae per quendam Marcum Polum Venetum, ac alios, sed nunc a Columbo Genuensi & Americo Vesputio solum loca littoralia ex Hispaniis per Oceanum occidentalem illuc applicantes lustratae sunt, eam partem terrae insulam existimantes vocant Americam, quartam orbis partem.*

12. An unsigned globe, probably made in Nuremberg about 1540. The large mappemonde in gores given on pl. XL, and erroneously supposed to be the work of Schöner in 1523, may, from the general character of the map, with great probability be referred to this place and time. That it was printed in Nuremberg seems to be proved from the fact that *Nuremberga* is, with *Venetia* and *Constantinopolis*, the only name of a European town inscribed on it. The projection is that of Glareanus, although drawn so that the distance from the Equator to the Pole on the gores is exactly what it should be, i. e. $3 \times$ the breadth of the segment at the Equator, and not as on the constructions of Glareanus $3.123 \times$ that distance. There is, as above mentioned, no reason for ascribing this globe to Schöner and to the year 1523. The form of America, the Australian continent, and Asia altogether deviate, not only from the authentic works of this celebrated mathematician, but also from all other printed maps of the 2d and 3d decennaries of the 16th century. On the other hand, the outlines of America agree with the drawing on the earlier of the many portolanos published by BATTISTA AGNESE between 1536 and 1564. Such a map of Agnese is reproduced in KOHL's *Discovery of Maine*, p. 292, from two originals, of which one from Dresden is unsigned, and the other, belonging to the British Museum, signed *Bapt. Agnese Venetiis 1536*.¹ Moreover, the main form of the continents on this globe fairly corresponds with Mercator's double cordiform map of 1538 (N. T. XLIII) and with the *Novae insulae nova tabula* in MÜNSTER's Ptolemæus of 1540. The numerous inscriptions and drawings of monsters characteristic of the globes of Schöner, are wanting here. Instead of the name of *Madagascar* used by Schöner we here read that of *San Lorenzo*. But on the eastern coast of Africa, and on the western coast of India a greater number of names of towns etc. are given. All this seems to me to prove:

- 1st. That Schöner is not the author of this mappemonde in gores;
- 2d. That it is not a work of the 3d, but of the 4th or 5th decennary of the 16th century;
- 3d. That it was made in Nuremberg;
- 4th. That it may, in certain respects, be regarded as a copy on a sphere of the portolanos from Venice by Battista Agnese (about 1536);
- 5th. That it is, like most of the maps of the first part of the 16th century, based on information from Portugal, and not from Spain;
- 6th. That the globe seems to be the work of GEORG HARTMANN, a celebrated manufacturer of globes and cosmographical instruments in Nuremberg. He was born in 1489. In his youth he spent several years in Italy, probably in the

Italian town of Venice, which is marked on the globe. In 1518 he settled in Nuremberg, where he died 1569. (DOPPELMAYER, *Hist. Nachr.*, p. 22 & 56.)

13. MERCATOR's large globe of 1541. This important »Monument de géographie» was also looked upon as lost, when the Royal Library at Brussels, at the sale of the effects of M. BENONI-VERELST in Ghent, succeeded in acquiring the engraved gores belonging both to it and to Mercator's celestial globe.² These have since been published in photolithographic fac-similes in: *Sphère terrestre et sphère céleste de Gérard Mercator, de Rupelmonde, éditées à Louvain en 1541 et 1551, édition nouvelle de 1875 d'après l'original appartenant à la Bibliothèque royale de Belgique*, Brussels 1875, preceded by a brief preface by M. MALOU. A more detailed description and analysis of this important globe-print may be found in J. VAN RAEMDONCK: *Les sphères terrestre et céleste de Gerhard Mercator (Annales du Cercle Archéologique du Pays de Waes, St. Nicolas 1875, V, p. 281)*. The map consists of twelve segments or gores intended to cover a globe 1,^m29 in circumference. On the ninth segment we read: *Edebat Gerardus Mercator Rupelmundanus cum privilegio ces: Majestatis ad an. sex. Lovani an. 1541*, and on the seventh there is a dedication to NICOLAUS PERRENOTUS GRANVELLA. The celestial globe is dated 1551. The terrestrial globe is very rich in inscriptions and other geographical details, which are, in many respects, of great interest. The Scandinavian peninsula and the Baltic are, for instance, here for the first time tolerably correctly represented on a globe, through the guidance of the large map of Olaus Magnus published only two years previously in Venice, from which Mercator has also copied some of the marine monsters represented on his globe. The river-system of Russia is drawn from new sources. The outlines and rivers of Africa are drawn with less accuracy. Madagascar has received much too large an extension. Asia extends too far towards the east, but is separated from America by a strait, in which a walrus (from the drawing of Olaus Magnus) is swimming. America has almost the same form as on the largest of the globes reproduced on pl. XL. Round the South Pole an immense continent is laid down, for the existence of which Marco Polo is referred to. When Mercator's globe was published, it was, without comparison, the most complete work of its kind. Unfortunately its size does not permit me to give a satisfactory reproduction of it here.

14. *The Nancy globe of the middle of the 16th century.* This globe, presented by CHARLES V of Lorraine to a church in Nancy, where it was used as a wafer-box (*ciboire*), is now preserved in the city library of that place. It is a globe of silver gilt engraved with admirable skill and having a diameter of 0,^m16. It was described for the first time by M. BLAU in *Mémoires de la Société Royale de Nancy*, 1835, p. 97. For later publications of it, the reader is directed to WINSOR, *Critical History*, III, p. 214. A comparison between the reproduction of it in Blau's memoir and VOPPEL's globe, preserved in Copenhagen (N. T. XL), will show that there exists a great resemblance between these two small globes.

15. *De Bure's globe* is nearly related to Schöner's globe of 1515. It is of copper gilt, formerly belonging to the brothers DE BURE and now preserved in the Bibliothèque Nationale in Paris. As I have not seen either the original or a reproduction of it, I must refer the reader to the above mentioned paper of J. VAN RAEMDONCK, p. 281, and to WINSOR, *Critical History*, III, p. 214.

¹ For further details regarding AGNESE's maps the reader is referred to HARRISSE, *Cabot*, p. 188, and WIESER, *Der Portulan des Infanten und nachmaligen Königs Philipp II von Spanien (Sitzber. der k. Ak. d. Wiss. Philos.-hist. Cl., Vol. 82, Wien 1876, p. 541)*.
² According to a private communication by M. RUELENS, two more copies of these globes, already glued to their balls, have since been found. One of them was purchased by the Vienna Library, and the other by »la Société Archéologique du Pays de Waes à St. Nicolas» (Belgium). The Brussels edition of 1875 was only printed in 200 copies.

16. *Vopel's globe of 1543*, preserved at the *Oldnordiske Museum* in Copenhagen. According to Mr. KRISTIAN BAHNSON, this little globe is mounted as an armillary sphere surrounded by 11 brass-rings corresponding to the Equator, the Tropics, the Ecliptic, etc. On the brass-ring around the northern Tropic there is engraved: *Casper Vopell Medebach hanc sphaeram faciebat Coloniae 1543*. On a paper fixed on the bottom of the case in which the globe is locked, there is written in a more modern hand:

Nicolaus Copernicus

1543

— ty — *Brah* (= Tycho Brahe?).

COPERNICUS died in May 1543; TYCHO BRAHE was born in 1546. The globe is supposed to have belonged to the last mentioned great astronomer. Its small size has, of course, not admitted of the insertion on it of any extensive geographical details. As to the general outlines of the continents, it makes North America the eastern part of Asia. This was, as is known, the opinion of Columbus, and the first printed map of the New World (Ruysch's map of 1508) is drawn in accordance with it. On the heart-shaped map of Orontius Finæus of 1531 (N. T. XLI) we find this theory fully developed, and it is still adhered to on the map of the world in MYRTIUS, *Opusculum geographicum*, Ingolstadii, 1590. Yet it was never generally adopted. It was, for instance, severely censured by POSTELL in a letter of the 9th of April 1569 to ORTELIUS (ABRAHAMI ORTELIJ *Epistulae*, Cantabrigiæ 1884, p. 43).

Besides the globes here mentioned, there are various others of which I have neither seen the originals, copies nor satisfactory descriptions, and which I am consequently only able to enumerate. To this category belong:

A copper-globe made in Venice and signed EUPHROSYNUS ULPUS 1542. This globe was found by BUCKINGHAM SMITH in Spain and now belongs to the New York Historical Society (HARRISSE, *Notes sur la Nouvelle France*, Paris 1872, p. 222; WINSOR, *Critical History*, III, p. 214).

A globe of 1524 (?) (D'AVEZAC, *Bull. de la Société de Géographie*, 1860, p. 398; RAEMDONCK, *Les sphères de Mercator*, p. 28).

A globe made by HONTER in the year 1542 (WINSOR, *Bibliogr. of Ptolemy's Geography*, p. 28).

As attention has been more generally drawn to the importance of these geographical documents, several other globes, as well printed as drawn by hand or engraved on metal, will doubtless soon be discovered. With regard to the latter class of globes it should, however, not be forgotten that they have often been erroneously looked upon as scientific documents worthy of critical examination by students of the history of geography. They are generally nothing but hand-specimens of goldsmiths' work, on which the map has merely been treated from an artistic or ornamental, and not from a geographical point of view. A nicely executed gilt globe, belonging to the Swedish regalia, and made in 1561 for the coronation of Erik XIV, the son of Gustavus Vasa, is an example of such work.

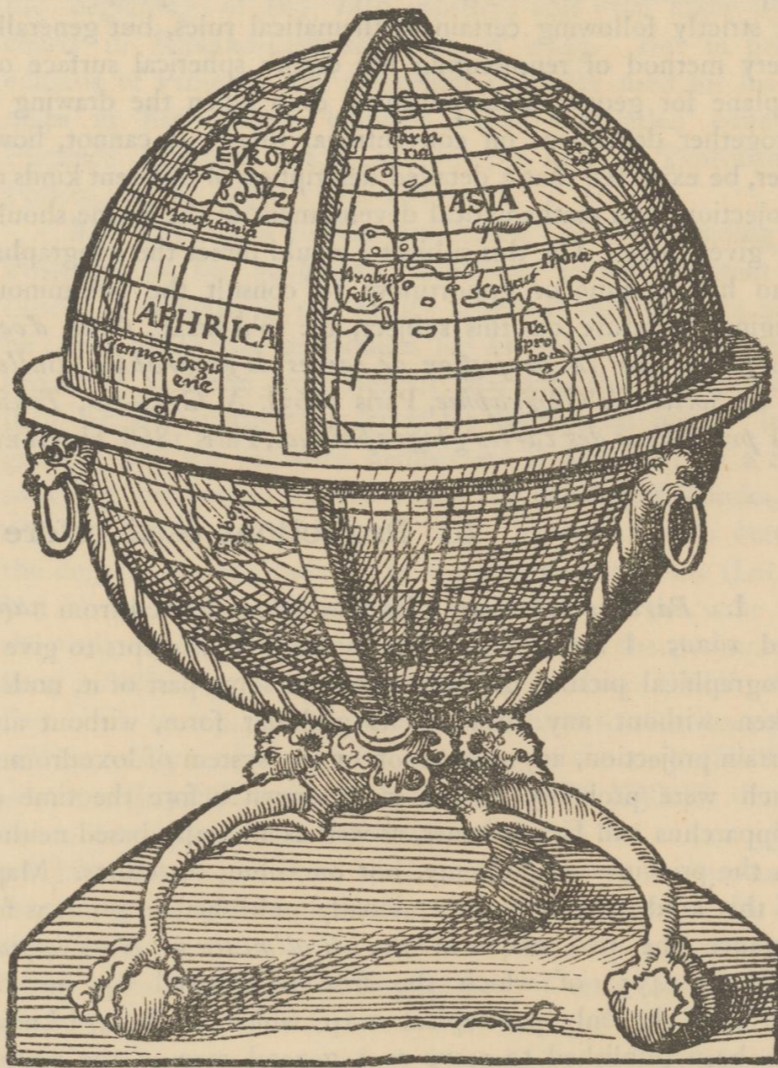
The terrestrial globes preserved from the 15th and the first half of the 16th century may, on the grounds indicated above, be divided into the following groups:

1. Globes made without any knowledge of the new world — Behaim's globe and the Laon globe.

2. Globes made from 1492 to 1515, i. e. after the discovery of the New World, but before the existence of a large South Polar-continent was admitted. To this group belong the globe of Lenox, that of Boulenger-Tross of 1514, the mappemonde in gores found by me, and the globe in Hauslab's collection mentioned under No. 6.

3. Globes made from 1515 to 1523, i. e. before the results of Magellan's voyage were known, but after the introduction or re-introduction of the South Polar-continent on the mappemondes. To these belong Schöner's globes of 1515 and 1520, and the globe attributed to Leonardo da Vinci.

4. Globes made after Magellan's circumnavigation of the earth, but whilst the northern portion of the New World was still believed to have an inconsiderable extension, or was



49. Drawing of a globe from SCHÖNER'S *Opusculum geographicum*, Norimbergæ 1533.

considered as a complex mass of large and small islands — Schöner's globe of 1523 (?).

5. Globes on which North America is a continuation of Asia. The globe at Weimar, which has been identified by Wieser with Schöner's globe of 1533, Vopel's globe of 1543, and the Nancy globe, probably dating from about the same time.

6. Globes on which the Isthmus of Panama is laid down, and on which the northern part of the New World has a greater extension; North America is separated from Asia by a narrow strait drawn from the Gulf of California across Hudson Bay to Davis Strait. The globe No. 12 made at Nuremberg in about 1540, Mercator's globe of 1541, Demongenet's globe of 1552, and Floriani's mappemonde (fig. 48) belong to this group.