

VI.

The first maps of the New World and of the newly discovered parts of Africa and Asia.

It is generally supposed that the successful voyages of the Portuguese in the *Regio perusta*, or *Regio inhabitabilis propter nimium calorem*, and the re-discovery 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 statesmanship 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 last 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, especially on the other side of the Atlantic, 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 *Bibliotheca Americana vetustissima. A description of Works relating to America published between the years 1492 and 1551. 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 fifty 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 Milano 1505), and CADAMOSTO (Editio princeps Vicenza 1507). But, if 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, fifty-six years after the voyages of CADAMOSTO, on the map in REISCH'S *Margarita Philosophica* of 1503, which I have already mentioned above (p. 40), and of which a fac-simile is given on T. XXXI. But it was five 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

¹ One of the first publications containing some words about the discoveries of the Portuguese, is *Valasci Ferdinandi . . . Regis Portugallie oratoris ad Innocentium octavum pontificem maximum de obedientia oratio*, s. l. et a., (first edition Romæ 1485. HAIN No. 15760). In about the middle of the small, unpaginated work we read the following remarkable words, which I give here from an edition (HAIN No. 15761) printed somewhat later (1494?): *Non desunt Beatissime pater quam plura alia eius in christi ihesu fidem et Romanam ecclesiam merita, que si sigillatim recensere velim longius quam par esset progredierer, sed duo tantum quam brevissime perstringam. Primum quod eo regnante Henrici patrum eius de quo supra meminimus industria cepta navigari Ethiopia est. Alterum vero sit quod eodem tempore in oceano atlantico decem insule vix ipsis orbis descriptoribus cognite a nostris invente sunt et in omnes Lusitanie colonie reducte. In quibus iam mira incolarum frequentia habitatis christiana fides haud minore ceremonia quam inter nos colitur. Ita ut mihi vere Alfonsus Rex gloriosus ad christianam religionem sacratissimam colendam non contentus maiorum suorum finibus videatur, nisi etiam novas provincias, nova regna, novas insulas et quasi novos et incognitos orbis christi nomini et Romane ecclesie et vobis tandem pater beatissime et successoribus vestris in posterum addiceret.*

to India were clearly laid down. To prevent any misunderstanding I may here again expressly state, that I speak of printed, not of manuscript maps. Tolerably complete map-sketches¹ 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 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 . . . Eingeleitet durch eine Abhandlung: ueber die ältesten Karten des neuen Continents und den Namen Amerika* von ALEXANDER V. HUMBOLDT, Nürnberg 1853, where a part of the map is also reproduced in fac-simile. It is also reproduced on a reduced scale by RAMON DE LA SAGRA in *Histoire physique . . . de l'île de Cuba*, Paris 1842 (according to HARRISSE, *Cabot*, Paris 1882, p. 157), by LELEWEL, SOPHUS RUGE, H. H. BANCROFT, and others. A complete fac-simile is found in JOMARD'S Atlas. It has given rise to an extensive literature, enumerated by WINSOR (*Bibliography of Ptolemy's geography*, p. 7). After the death of Walkenaer the map was bought by the Spanish government and is now preserved at the Marine-Museum of Madrid (HARRISSE, *Cabot*, p. 157). The size of the original is 1,80 x 0,97. 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 (N. T. XXXII—XXXVI).

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*. A fac-simile has been published by HARRISSE for his work *Les Corte-Real et leurs voyages au Nouveau Monde*, Paris 1883, where a minute analysis of the map is given in Chapt. IV (p. 69—158). This map, or copies of it, has evidently been used for the first printed maps of the New World. It is of special interest in the cartography of the North, Greenland being represented on it with tolerable exactness, although too

far to the east. Probably Cantino here followed a map of the Zamoiski type. But it seems, from a long legend on the east coast, that the Portuguese had also penetrated as far as to the vicinity of Cape Farewell.

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*, p. 161 and 162, and to KUNSTMANN, *Atlas zur Entdeckungsgeschichte Americas*, München 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, in *Notice sur une Mappemonde portugaise anonyme de 1502* (*Bulletin de géographie historique et descriptive*, No. 4, Paris 1887), published parts of a Portuguese map of the world, 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 Ptolemy of 1513, of which I have given fac-similes on fig. 8 and 9. 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 originals² of the oldest printed maps of the New and of the new-discovered lands of the Old World. Here I can only cursorily refer to this question, which will, perhaps, hereafter be elucidated by new discoveries in Libraries and among Archives. I must confine myself to a chronological enumeration of the oldest printed maps and to a reproduction in facsimile of the most important, viz.

1. *Nova et universalior Orbis cogniti tabula, Ioa. Ruysch Germano elaborata*, Romæ 1508 (N. T. XXXII). This map was published among the *tabulae novae* in the edition of Ptolemaeus Romæ 1508, and its engraving was hardly finished before that year, as may be concluded from the following legend at Trapobane: *Ad hanc Lusitani nante navigarunt anno salutis MDVII.*³ Sometimes it is also inserted in the edition of 1507, without however being mentioned on the title-page, on which, according to the custom of the period, a synopsis of the contents of the work is given. But on the new title-page, with which the edition of 1508 was provided, this passage is printed: *In hoc opere haec continentur: — — — Nova et universalior Orbis cogniti tabula Ioa Ruysch Germano elaborata.*

¹ In the 31st chap. of GASPAR CORREA'S account of the first voyage of VASCO DA GAMA (edit. by HENRY E. J. STANLEY for the Hakluyt Society, London 1869, p. 260) it is related how several persons, during the return-passage along the eastern coast of Africa, zealously occupied themselves in collecting material for a chart of the coast by order of Da Gama. It was due to an attack of illness suffered by the clergyman JOAN FIGUEIRA, at Melinda, that an account of these proceedings was inserted in Correa's *Lendas da Índias*. Figueira seems to have been a secretary to the pilots. During his illness he transmitted his notes to Gama. Several copies were afterwards taken of them. Correa saw one of these copies among old papers belonging to ALBUQUERQUE, and the maps given by me in fac-simile from Ptolemy of 1513 are certainly partly founded on this survey.

² The early printed maps, as well 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 incubula of cartography.

³ In *Kritische Untersuchungen* etc., Berlin 1852, II p. 294 note, HUMBOLDT says: »Reidel will selbst . . . dass sie aus dem Jahre 1507 herrühre, wegen einer Angabe in calce Planisphaerii welche ich in keinem der Exemplare gefunden habe, deren ich mich in Frankreich und Deutschland bediente». By *Planisphaerium* Ridel, however, did not mean, as Humboldt assumes, the Ruysch map, but the translation of *Planisphaerium Ptolemaei* inserted between the text and the maps in the editions of 1507 and 1508, and dated (in the colophon): Romæ, Die VIII Septembris MDVII.

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. With the exception of some small maps based on the cosmographical speculations of the ancients, and inserted in the works of MACROBIUS, SACROBOSCO, and others (N. T. XXXI),¹ it is the first printed map representing Africa 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 *Insule de Azores, Insula de Madera, Ins. Canariarum* and *Insule de Capo Verde*.

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*, with about its proper size, and correctly as regards the southern point of India. *Taprobana alias Zolion* is placed further towards the East Indian peninsula, 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 in *Scytia intra Imaum*, as *Tartaria Magna* and *Volha* (= Volga), and an immense, quite new territory, an *Asia extra Ptolemaicum*, or *Asia Marci Pauli Veneti*, is 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. Both deviate from Fra Mauro's map of the world, which gives us a representation of these regions much inferior to both Behaim and Ruysch.

The exaggerated extension given by Ptolemy to the Mediterranean is here much reduced, or from 62° to 53°, the actual difference of longitude between Gibraltar and the western coast of Syria amounting only to 41° or 42°. This correction had been made, centuries previously, on the portolanos. The first cartographer who adopted Ruysch's reduction, was the celebrated Gerard Mercator. On his famous map *ad usum Navigantium* of 1569, he gives the Mediterranean Sea a length of 52°. Ruysch's map is also the first printed map on which, in conformity with the drawings on the portolanos, a tolerably correct direction is given to the northern coast of Africa, by attending to the considerable difference of latitude between the coast-lines to the east and to the west of Syrtis, and by giving a proper form to that bay.

The map of Ruysch is the first map published in print which, following a correction made in the portolanos since the

beginning of the 14th century, leaves out that excessive projection towards the east, which characterizes Ptolemy's map of the northern part of Scotland.

Ruysch is the first who gives us a map of the New World. This part of his 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 New Foundland or Terra Nova; an 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 master-piece 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 traditions among practical seamen of different nations. The legends 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. Only a few of them can here be the subject of some critical remarks.

Far in the north we find an imaginary representation of the regions nearest to the pole, afterwards reproduced with some modifications by MERCATOR and, after him, by various other cartographers. Ruysch gives a reference to this extravagant theory respecting the geography of the north polar-regions in the following legends on the right limb of the map: *Legere est in libro de inventione fortunati sub polo arctico rupem esse excelsam ex lapide magnetæ 33 miliarium germanorum ambitu. Hanc complectitur Mare Sugenum fluidum instar vasis aquam deorsum per foramina emittentis etc.* By the *liber de inventione fortunati* no doubt is meant the same work as that thus referred to by HAKLUYT in: *The principael Navigations . . . of the English Nation*, London 1589, p. 249: *A Testimonie of the learned Mathematician, maister John Dee, touching the foresaid voyage of Nicholas de Linna. Anno 1360 a frier of Oxford, being a good Astronomer, went in companie with others to the most Northern islands of the world, and there leaving his company together, he travelled alone, and purposely described all the Northern islands, with the indrawing seas: and the record thereof at his returne he delivered to the king of England. The name of which booke is Inventio Fortunata (aliter fortunæ) qui liber incipit a gradu 54 usq. ad polum.*² *Wich frier for sundry purposes after that, did five times passe from England thither, and home againe.* In connection with this story Hakluyt mentions *privileges granted to the Fishermen of the towne of Blacknie in the said countie of Norfolke, by King Edward the third, for their exemption and freedome from his ordinary service, in respect of their trade to Island.*³ Mercator, again, in the first edition of his Atlas (on the verso of *Palus*

¹ These maps ought rather to be considered as cosmographical schemes, than as actual representations of the earth. More important are some hand-drawn maps of the 14th and 15th centuries, the authors of which, guided perhaps by the writings of Arabian geographers, make the Atlantic Ocean in the south communicate with the Indian Ocean: for instance MARINO SANUDO's planisphere of 1306; *Portolano della Mediceo-Laurenziana* of 1351; *Planisfero della Palatina* of 1417; and FRA MAURO's planisphere of 1457. In his Lib. II, cap. III STRABO gives a tolerably detailed account of the opinions held in antiquity, regarding the possibility of circumnavigating Africa, from which it appears that this question had, even then, been already much discussed.

² The maps of the northern region in the Zamoiski codex, and in the editions Ulmæ 1482 and 1486 begin near that latitude.

Acticus, ac terrarum circum jacentium descriptio) gives the Itinerarium of JACOBUS CNOXEN BUSCODUCENSIS as reference for the description of the arctic regions by NICOLAS DE LINNA (*Menorita quidam Anglus, Oxoniensis Mathematicus*).

To the north of Iceland we read the remarkable inscription: *Hic incipit Mare Sugenum. Hic compassus navium non tenet, nec naves quae ferrum tenent revertere valent.* The story of a magnetic mountain exercising a powerful attraction on vessels with iron nails is very old. It is mentioned by Ptolemy on »Undecima Asiae tabula» in a legend referring to some islands, *Maniolae Insulae*, in the Indian Ocean and in Lib. III, cap. II of the text. Afterwards such mountains play a part in the fictions of the Arabs, and from these it found its way into the medieval literature of Europe. The existence of a magnetic rock on the east coast of Greenland was also said to be the cause of the failure of MOGENS HEINNESSEN'S voyage in 1567.¹ Yet the words »Hic compassus navium non tenet,» with which this legend on Ruysch's map commences, seem to indicate an actual experience regarding the uselessness of the compass in the vicinity of the magnetic pole.

Below this inscription, there is an island between Iceland and Greenland, with the interesting legend: *Insula haec in Anno Domini 1456 fuit totaliter combusta.* The Iceland annals do not mention any such occurrence, but, considering the want of knowledge, at the end of the 15th century, of the changes occasioned by volcanic forces, and the slight interest then paid to similar occurrences in distant countries, the catastrophe here mentioned cannot have been invented. It probably refers to a volcanic eruption on the western coast of Iceland. It is, however, remarkable that the sagas of Iceland mention a small island between Iceland and Greenland, from which the coast-mountains of both were visible, although no such island at present exists in the strait between these countries.

Somewhat farther down, between *Gruenlant* and *Terra Nova*, there are two islands, with the legend: *Apud has insulas quando naute perveniunt illuduntur a demonibus ita ut sine periculo non evadunt.* This legend no doubt recalls an encounter between European sailors and Esquimaux, in which the former did not play the winning part. This may possibly have occurred during the old voyages of the Scandinavians to Greenland. There is to be seen on ANDREA BIANCO'S map of 1436, to the west of the Straits of Gibraltar, in the Atlantic Ocean, first a large island, *y:a de Antillia*, the outlines of which are only indicated, and then farther north, at the western corner of the map, another rather large island, *y:a de la man Satanaxio*. This legend, or the narrative to which it alludes, seems to have impressed the geographers of the following centuries, the *Insula Daemonum* being retained on manuscript and printed maps long after the rediscovery of the New World, f. i. on a map of WYTFLEET of 1597.

Still farther south there is, on Ruysch's map, a large island in the middle of the Atlantic Ocean between Lat. N. 37° and 40°. It is called *Antilia Insula*, and a long legend asserts that it had been searched for in vain, but that it had been discovered long ago by the Spaniards, whose last Gothic king, RODERIK, had taken refuge there from the invasion of the Barbarians. The inscription depends on a myth, which has played a certain part in the history of geography, and from which is derived the present name of the islands between Florida and the northern coast of South America. The earliest delineations of an island, *Antilia*, in the Atlantic Ocean, are found on a portolano of 1425, belonging to the

Library at Weimar, and on Andrea Bianco's map of 1436. On the Globe of Behaim to the south of the Azores an island of the same name is also represented, provided with a long inscription, corresponding, but not identical with the legend of Ruysch.

Farther to the west, on Ruysch's map there is inserted a resumé of the description by MARCO POLO of a large, independent island, *Sipangus*, situated 1500 miles to the east of *Zaiton*, inhabited by idolaters and rich in gold and precious stones. »But,» adds Ruysch, »as the islands discovered by the Spanish navigators exactly occupy this place, I have not ventured to lay down this island, presuming that the land called Hispaniola by the Spaniards must be Sipangus, especially as everything written about the former is applicable to the latter, excepting the idolatry.»² 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 250 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 *Taprobane 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 parts 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, 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 Sanctae Crucis sive Mundus novus*. Twenty-nine names are here given. Most of them correspond to the names on *Tabula Terrae Novae* in Ptolemy 1513 (N. T. XXXVI). Only a few are found in the letters of Vespucci, 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. We here obtain notices regarding exploring-voyages undertaken before 1508, of which no other information is met with in the history of geographical discovery. In the interior of *Terra Sanctae Crucis* there is another long legend describing the inhabitants and natural productions of the country, »*quae a plerisque alter terrarum orbis existimatur.*» The main part of this inscription is taken from the letters of Vespucci, but there are differences showing that Ruysch had had access to other materials than the printed and probably corrected editions. Ruysch f. i. speaks of lions in the interior of the continent, the existence of which Vespucci expressly denies, and of the abundance of gold in the rivers and mountains of

¹ Regarding this compare: *Den andra Dicksonska expeditionen till Grönland*, p. 55.

² »*Præter idolatriam.*» As the long legend in the middle of the South American continent shows, the natives of the New World were considered to live *nulla religione, nullo rege*. They were accordingly not even idolaters.

and BARTLETT, *Bibliograph. Notices of books in the Library of Carter Brown*, p. 36 and 40.

3. A map printed in Strasburg in 1509 on the title-page of a small work, *Globus mundi* etc. (see p. 40). As the fac-simile (N. fig. 22) shows, the map is very insignificant, but it is the first printed to the north of the Alps on which a small part of the New World is laid down, and on which any regard is given to the circumnavigation of Africa by the Portuguese.

4. A map of the West Indies (fig. 38), inserted in some copies of: *P. Martyris angli mediolanensis opera. Legatio babylonica. Oceani decas. Poemata. Epigrammata.* (Colophon:) *Hispani cum summa diligencia per Iacobum Corumberger alemanum. Anno Millesimo quingentesimo XI.*

This map is rare. It has in vain been sought for in most copies of the very rare work for which it was intended. This circumstance is believed to be due to a suppression of the small drawing by the suspicious Spanish authorities. Notwithstanding its size and insignificant exterior, the map is of interest as the first printed Spanish map of some part of the New World, and perhaps also as the first (?) map printed in Spain. It is far more correct than other contemporary maps of the West-Indian islands, which is not astonishing, as PETRUS MARTYR D'ANGHIERA was personally acquainted with several of the great discoverers of the 15th and the beginning of the 16th century. For further bibliographical minutiae I may refer to the works of HUMBOLDT, HARRISSE, WINSOR, and CARTER-BROWN already cited. A special monograph of Petrus Martyr, with a fac-simile of the map, was published by HERMANN A. SCHUMACHER, New York 1879.

5. A map of the world printed in the Ptolemy of 1511 by BERNARDUS SYLVANUS under the title of: *De universalis habitabilis figura cum additionibus locorum nuper inventorum* (N. T. XXXIII). This is the second printed map of the world, in the delineation of which some attention has been paid to the great geographical discoveries of the preceding years. I have already (p. 18) given the full title and some bibliographical data of the work in which this map was first published. The following characteristic statement in the introduction, as to the origin of the new map and its relation to the old maps of Ptolemy, may be further quoted: *Placuit insuper univērsę habitabilis figuram, cum iis omnibus quę recentiorum navigationibus reperta, et nobis tradita sunt, ex nostro addere. Quam nulla tamen ex parte, ab univērsali Ptholemaei descriptione differre sentias, modo illa quę Ptholemaeo ignota fuerunt demantur. Id vero ea tamen ratione egimus, ut videant qui Ptholemacum damnarunt, quod nihilo nostri temporis navigationibus, ac veritati, modo neglectis prioribus numeris verba observentur, adversari videatur.* Bernardus Sylvanus here pronounces the indisputable truth, that if Ptolemy's longitudes and latitudes are duly corrected, and these new data employed as the basis of a new delineation of the world, we shall obtain a correct map, except of those parts of the earth which were unknown to Ptolemy. Sylvanus has generally followed Ptolemy, although with necessary modifications, in the delineation of Britain, the Scandinavian peninsula, south Africa, and eastern Asia, which have received a considerable prolongation beyond the bordering meridian of Ptolemy, with the addition of the recently discovered countries to the west of the Atlantic Ocean. The map of Sylvanus does not embrace the part of the earth which is situated between the 260th and 300th meridian. This map

is further remarkable as the first on which a heart-shaped homeoter-projection was employed.

We here also find the earliest allusion on a printed map to the discoveries of CORTE REAL, in the outlines of a land, *Regalis Domus* (instead of *Terra de Corte Real*), situated beyond *Terra Laboratorum*.¹ No other part of the North American continent is here laid down, and Greenland (*Gruenlant*) is transferred to eastern Asia. Cuba is drawn as a large island (*Terra Cube*); South America as an enormous continent (*Terra Sanctę Crucis*), of which the western limits, as well as the western limits of *Regalis Domus* and the eastern of Asia, are left unfinished. Africa has a tolerably correct shape, but the legends are copied from Ptolemy with a few exceptions, e. g. *Caput bonę spei* and *Melinde*, which is the only town indicated on the whole African continent. The *Menutias* of Ptolemy is drawn as an insignificant island and not identified with Madagascar, which has received an enormous extension and is, under the name of *Comorbina Insula*, transferred too far to the south.

6. A small map of the world in the *Meteorologia Aristotelis*, Norinbergę 1512, betrays a knowledge of the discoveries of the Portuguese. This is shown on the fac-simile T. XXXI. The New World is not laid down, but in the text *Nova illa Americi terra admodum nuper inventa* etc. is mentioned (compare p. 40).

7. Map of the world by JOHANNES STOBNICZA, Cracovię 1512 (N. T. XXXIV). This map, printed from a very rude and badly executed wood-cut, occurs in a rare work, of which the complete title is: *Introductio in Ptholomei Cosmographiam cum longitudinibus et latitudinibus regionum et civitatum celebriorum. Epitoma Europe Eneę Silvii. Situs et distinctio parcium tocius Asię per brachia Tauri montis ex Asia Pij secundi. Particularior Maioris asię descriptio ex ejusdem Pij asię. Sivię compendiosa descriptio ex Isidoro. Africe brevis descriptio ex paulo orosio. Terre sanctę et urbis Hierusalem apertior descriptio: fratris Anselmi ordinis Minorum de observancia* etc. (Colophon:) *Impressum Cracovię per Florianum Unglerium Anno Dni MDXII.*

The name of the author is given in a dedication, *Joanni dei gracia Episcopo Posnaniensi*. Besides the above cited edition there are two others, viz. *Editio princeps*, for the most part identical with the preceding one, save the last leaf, which is somewhat differently printed and without date; and an edition of 1519, in which the numerous printer's errors and the faulty and capricious orthography of the previous editions are corrected. None of the many copies of these three editions, which I have examined in the libraries of Scandinavia, Russia, and Poland, contained any map. But in the Imperial library at Vienna there is a copy of the edition of 1512 with a map. The Munich Library is also said to possess a copy of the same edition, with a map. It is possible that the map has been excluded from the work, on account of the rudeness of its wood-cut, or on account of its being contrary to the old doctrines of the church. But that it was originally intended for the 'Introductio' is shown by the identity of the watermark on the map with that on the paper employed for the text. The fac-simile here given on pl. XXXIV is a photolithographic copy of the original in Vienna. This map is, in spite of its rudeness, of great interest and importance to the early history of cartography, because:

1st. 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

¹ The origin of this strange name, which here appears for the first time on a printed map, is not certainly known. In the Library of Wolfenbüttel there is a large (2^m,21 × 0^m,75) map of 1534, drawn on parchment, on which there is a legend at *Tiera del Labrador*, stating the land to have been discovered by Englishmen from Bristol and that it got this name because the man who gave the first notice of it was a labourer from the Azores (HARRISSE, *Cabot*, p. 186).

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*.

2d. Stobnicza's map, published one year before the 25th of September 1513, when VASCO NUÑEZ BALBOA sighted the »Mare 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 Europa, 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 straight lines, in order to denote that the delineation was conjectural and not dependent on real observations, is worthy of note.

3d. There is no place on the map for a full extension of the 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.

4th. 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 homeoter projection of Ptolemy.

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 *tabulae novae* 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:

- ? de bona ventura.
- Isabella.
- Spagnolla.
- Arcay.
- Caput destado.
- Gorffo Spemosa.
- Caput S. Crucis.
- Monte Stegoso.
- Alla pego.
- Terra incognita.¹

At a considerable distance from the eastern coast of Africa two large islands are drawn, the northern designated by the name of *Mardagascar*, the southern by that of *Zinzabar*. The name of Madagascar is, though somewhat differently spelt, already found in MARCO POLO, but here it is for the first time shown on a printed map. The name *Menutias* of Ptolemy is supposed to refer to this island. It is called *Camarocada* by Ruysch (1508), *Comorbina* by Sylvanus (1511), and *Madagascar* in Ptolemaeus 1513. When it was rediscovered in 1506 by ANT. GONÇALVES, on the day of St. Laurence, it received the name of *San Lorenzo*, which, as far as I know, is first met with on a printed map on the

heart-shaped map of ORONTIUS FINÆUS of 1531 (N. T. XLI) and on the mappemonde in gores printed at Nuremberg in about 1540 (N. T. XL).

The copy of the map given on pl. XXXIV is a carefully photolithographed fac-simile. If the inscriptions are sometimes difficult to decipher and consist of letters with indistinct outlines, this is the fault of the original, which, with all its defects, is faithfully rendered by the copy.

8—12. Five important maps among the *tabulae novae* in Ptolemaeus Argentinae 1513. As mentioned above (p. 19) this edition contains, besides Ptolemy's text and the ordinary 27 old maps, an appendix of twenty new ones, preceded by a long second title-page: *In Claudii Ptolemei Supplementum* etc., and a short preface. On five of these new maps the discoveries of the Spaniards and Portuguese during the preceding century are represented. Of these, the *Hydrographia, sive Charta marina: continens typum Orbis universalem iuxta Hydrographorum traditionem* is given on pl. XXXV; the *Tabula oceani occidentalis seu Terra novae* on pl. XXXVI, and two maps of Africa and one of southern Asia, on a reduced scale, in fig. 8—10.

On the verso of the second title-page we read: *Charta autem Marina, quam Hydrographiam vocant, per Admiralem quondam serenissimi Portugaliae regis Ferdinandi, ceteros denique lustratores verissimis peragrationibus lustrata: ministerio Renati dum vixit, nunc pie mortui Ducis illustriss. Lotharingae liberalius praeolographationi tradita est: cum certis tabulis a fronte huius chartae specificatis. Cuius item Ducis illustriss. honori cedit extensa ad finem Domini sui tabula studiosissime pressa. Nam eius terrae latebris, Vosagi dico rupibus nobile hoc opus inceptum, licet quorundam desidia ferme sopitum, a sexennali sopore per nos tandem excitatum est.*

Portugaliae is here probably a misprint for *Hispaniae*. The mistake has, however, given rise to some controversies among students of the history of discovery of the New World. This passage has, furthermore, been interpreted by several prominent authors, such as SANTAREM, HARRISSE etc., as an assertion that the map on which a portion of the new world is represented, was a copy of a drawing by the »admiral» (Columbus) himself. But the passage supposed to support this conjecture evidently only states that this sea-chart (*Charta Marina*) was based on observations made in the time of Duke RENATUS, during voyages of discovery, »per admiralem . . . ceterosque lustratores,» and that the map had, after the death of Renatus (in 1508), together with the other maps enumerated on the title-page, been handed over with much liberality to the ducal printing-office of Lorraine. The above quoted words seem further to suggest² that the new edition of Ptolemy, printed at Strassburg in 1513, was commenced six years earlier in the Vosges mountains. This corresponds with the supposition that this edition of Ptolemy, so important owing to its supplement, was prepared by the same learned coterie at St. Dié, that inscribed its name on the history of geography by having unjustly given Amerigo's name to the world newly discovered by Columbus. But the argument generally quoted for regarding WALDSEEMÜLLER as the author of the twenty new maps in this edition depends, as before (p. 21) pointed out, on an incorrect interpretation of a passage in the edition of 1522. There further occurs another very common error, with respect to the new maps in this edition, namely

¹ On fol. VII of the text of the work for which this map was originally drawn, is written: *Quarta pars orbis America. Non solum autem praedictae tres partes (Europa, Africa, Asia), nunc sunt lacius lustrate verum et alia quarta pars ab Americo vesputio sagacis ingenii viro inventa est, quam ab ipso Americo eius inventore amerigem, quasi americi terram sive americanam appellari volunt etc.* Thus Stobnicza is one of the first geographers who adopted the name *America*, proposed by Waldseemüller.

² If not the map of Lotharingia is meant by »nobile hoc opus» in the above cited passage from the introduction to the supplement. The opening word *Nam* supports this interpretation as well as the epithet *nobile*, so appropriate for a work executed under princely patronage. But in this case much of what is written about the gymnasium of St. Dié and WALDSEEMÜLLER has been a useless exhibition of learning.

that the map 2, with the inscription: *Haec terra cum adjacentibus insulis inventa est per Columbum Ianuensem ex mandato regis Castellae*, was connected with the above cited, erroneously interpreted passage in the preface... *per Admiralem Portugaliae regis Ferdinandi*, which map, accordingly, has been designated *the Admiral's map*.¹ But the passage in question does not refer to the second but the first among the *tabulae novae* (N. T. XXXV), on the second title-page termed *Hydrographia sive charta Marina*.² This map is evidently of Portuguese origin and scarcely shows any progress from the point reached by the maps of Ruysch, Sylvanus, and Stobnicza. More original and important is the second map, enumerated on the title-page, among *Particulares tabulae Europae*, under the name of *Tabula Terrae Novae* (N. T. XXXVI). A number of names are here met with, on the American continent. It is here that we first find a group of islands, *Y. tebas*, to the south of the Equator, between Africa and the New World, roughly corresponding with Ascension or St. Helena, discovered by JUAN DE NOVA in 1501 and 1502.

The most important maps of Africa in the Ptolemy of 1513, however, are the two maps in double-folio which I have reproduced on a reduced scale in fig. 8 and 9. They form admirable though hitherto completely neglected illustrations of one of the most important episodes in the history of Navigation, and they are evidently directly based on carefully registered observations during the Portuguese exploring voyages round Africa to India.

For their exactness, and in the richness of names along the coasts of Africa, these maps are comparable with the old portolanos of the Mediterranean Sea.

The corresponding map of Asia (N. fig. 10) shows on the contrary that the geographical notions about the Indian Peninsula when the map was drawn (1507?) were still very vague in Europe, and dependent on hearsay.

The remaining *Tabulae novae* in the Ptolemy of 1513 are: *Tabula nova Hiberniae, Angliae et Scotiae*. If we except *tabula prima Europae (Albion et Ibernica)* of Ptolemy, often published in print before 1513, this is the first printed map of Great Britain. It is evidently copied from some portolano, and the interior of the country is, as in the portolanos, left as blank as the interior of Africa on maps printed half a century ago.

Four new maps, one of Spain, one of France, and two of Italy. New maps of these countries are already found in BERLINGHIERI (*Gallia*, N. fig. 7), and in the editions of Ptolemy printed Ulmæ 1482 and 1486 (*Hispania* and *Italia* N. fig. 11 and 12) and Romæ 1507 and 1508.

A map of Scandinavia, copied from the corresponding map of the edition Ulmæ 1482.

Tabula moderna Germaniae, roughly copied from the central part of Nicolaus a Cusa's map in the Ptolemy of TOSINUS of 1507 and 1508 (N. fig. 13).

Tabula moderna Sarmatia Europæ sive Hungariae, Poloniae, Russiae, Prussiae et Watachie. This map of the country between the Baltic, the Oder, the Danube, and the Dnieper is a copy of the eastern part of the above mentioned map in the Ptolemy of Tosinus.

Tabula moderna Bossinae, Serviae, Graeciae, Sclavoniae, and *Tabula nova Asiae Minoris*. Here we have the first printed modern maps of Greece with the Balkan countries, and of Asia Minor. From the want of details in the interior of the countries, we may conclude that they are copies of portolanos of the 16th century.

Tabula moderna Terræ Sanctæ. The map of Palestine, or of *Idumea, Palestina, Iudea, and Samaria*, in the Geography of Ptolemy, is inserted on the *Quarta Asiae tabula* as a part of Syria. No Christian influence can be detected on this map, and this may be considered as evidence of its prototype having been drawn in the heathen time of the Roman empire. When Ptolemy's geography, a millennium later, became the principal geographical codex of the Christian world, the insufficiency of this map was manifest. Palestine therefore became one of the first countries on which the geographers of the 15th century exercised themselves in the art of map-drawing. The first productions destined for book-print were not very successful, as may be judged from the maps in *Rudimentum Novitiorum* (N. fig. 3). But already in Berlinghieri and in the Ptolemy editions of 1482, 1486, 1507, 1508, and 1513, the new maps of the Holy Land, all founded on a common prototype, are far better.

Aeschler and Übelin, after having added one *tabula marina* and fifteen new maps (*Tabulae particulares*) of larger districts to the old series of maps of Ptolemy, furthermore inserted in their edition four *Chorographiae*, i. e. maps of minor districts, but on a larger scale and more minute than the previous ones; namely, of Switzerland, of the Provinces of the Rhine, of Crete, and of Lorraine. The scale of these maps, to which I shall have occasion to return in a future chapter, varies between one millionth and 2,2 millionths.

As I have pointed out several times before, isolated new maps had already been published in several works before 1513. But in the addenda of Aeschler's and Übelin's edition of Ptolemy we for the first time obtain a modern atlas with maps of all the parts of the globe of which new geographical data could be had. To some extent this atlas may therefore be regarded as the opening chapter of the modern literature of atlases. This attaches additional interest to its publication, though its maps, as regards their execution, cannot compete either with the copper-plates of Buckinck-Schweinheim, with the woodcuts of Johannes Schnitzer von Armsheim, or with those in the Ptolemy of Bernardus Sylvanus.

13. A map in REISCH's *Margarita Philosophica*, Argentorati 1515 (N. T. XXXVIII). The map in the first edition of this work, dated 1503 (N. T. XXXI) is, as before pointed out, only a badly executed copy of the *mappemonde* in Ptolemaeus Ulmæ 1482, and is only of secondary interest in the history of cartography, on account of an incidental allusion to the voyages of discovery from Portugal during the 15th century. On this map, which was printed in 1503, but inserted in several editions of a much later date, we look in vain for any lands, or islands, or inscriptions indicating some acquaintance with the voyages of Columbus.

This omission was first rectified in the edition Argentorati 1515 by the insertion of a map on which the newly discovered lands on the other side of the Atlantic Ocean are laid down. This map is, in its main features, a rude reproduction in wood-cut of the *Orbis typus universalis* and *Tabula Terræ Novæ* in Ptolemaeus 1513 (N. T. XXXV and XXXVI). Only two inscriptions on the New World are worthy of notice. On its southern part we read *Paria seu Prissilia*. It is the first time such an appellation is on a printed map applied to the large continent of which the main portion now bears that name.³ In the northern part we read *ZOANA MELA*, an inscription of rather mysterious appearance at the first sight. In the *Zeitschrift für wissenschaftliche Geographie*, Bd. 5, Wien 1885, p. 1, WIESER has shown that the

¹ Centuries before CABRAL this name had been employed on portolanos to designate a mythical island in the Ocean to the west of Ireland, and in this sense it is also employed on the new map of England in the Ptolemy of 1513 (N. fig. 6). In its present sense it is for the first time met with in *Copia der Neuen Zeytung auss Presillg Landt*, s. l. et a., a print from 1508 or 1509 of only a few leaves, but important to the history of the discovery of America (WIESER, *Magalhães-Strasse und Austral-Continent*, Innsbruck 1881, p. 92).

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.

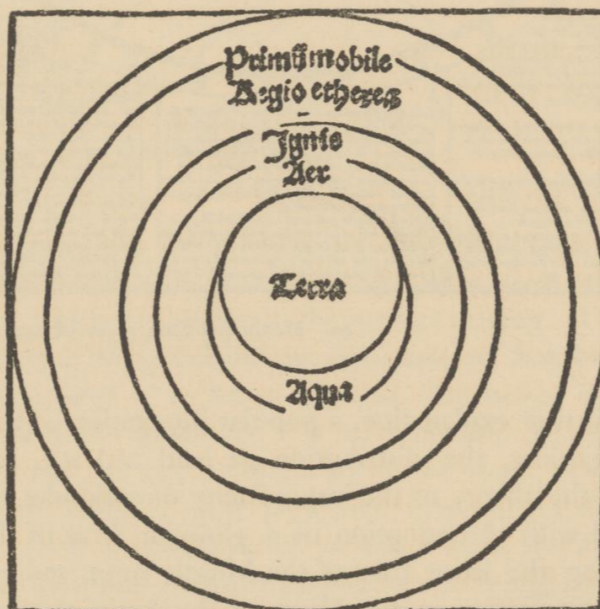
VII.

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 DICAÆARCHUS (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.