

manuscript in Paris, the other from a codex in Brussels). For several memoirs on Sanudo's work I may further refer to the work of G. UZIELLI and AMAT DI S. FILIPPO before cited, as well as to H. SIMONSFELD, *Studien zu Marino Sanuto dem Aelteren* (*Neues Arch. der Gesellsch. für ältere deutsche Geschichtskunde*, Vol. 7, 1881—82). Sanudo's atlas appearing to be partly founded on original informations and being very remarkable through the delineation as well of the northern countries as of Africa, I here (fig. 28) give a fac-simile of its map of the world from the copy in Bongars' work.

The map of the world of ANDREA BIANCO of 1436. Of this excellent artist a map of the world or a planisphere

is still extant besides various portolanos resembling that of Marino Sanudo, but not so well executed. It has been reproduced several times, amongst others in the works of Santarem and Theobald Fischer.

FRA MAURO's map of the world of 1457. A well preserved planisphere, in the *Biblioteca Marciana*, having a diameter of 1,96 m. It is rich in details and legends and of great importance to the history of geography. It was for the first time fully described and reproduced in a work: *Il Mappamondo di Fra Mauro Camaldolese*, published in 1806 in Venice by PLACIDO ZURLA; then by SANTAREM, and on a more or less reduced scale by several other geographers.

## V.

### Extension of Ptolemy's Oikumene towards the north and northwest.

As may be perceived from the general map of Ptolemy, and from his *Tabula 1ma*, 8va *Europae*, and 2da, 7ma, 8va *Asiae* (N. T. I, II, IX, XVII, XXII and XXIII), he, following the example of Marinus, made his atlas of the known world, towards the north, terminate everywhere at lat. 63° N. This boundary-line quite arbitrarily adopted crosses, for about two thirds of its length, the Sarmatian and Scythian deserts. Until the middle of the 16th century, when the English and Dutch began their north-east voyages, the geographers took no notice of what was situated beyond lat. 63° N. Although some notices respecting northern Asia may have penetrated to the civilized countries of Europe through Marco Polo or other Asiatic travellers, and although the constructors of globes, and drawers of general maps of the world, were compelled to let the continent of Europe and Asia terminate towards the north in a coast-line, this hardly justifies us in speaking, before that time, of an extension of the maps of this part of the world beyond Ptolemy's boundary-line. The case was different in the west, where the 63d parallel was drawn by Ptolemy across the island of Thule through *Oceanus Hyperboreus* and *Deucelemonius*. Even here the maps of Ptolemy do not correspond very well with reality, but they show that the accounts of the distribution of land in these parts of the world had already reached, before A. D. 150, as far as to Egypt and Syria. Thus the northern coasts of Germany and the Cimbrian peninsula (Jutland) are laid down at least recognizably and near to their proper latitudes. But in the sea farther to the north there are, instead of the Scandinavian peninsula, only two islands, *Scandia* and *Thule*. Between Thule and the northern extremity of Scotland, which extends much too far to the east, the *»Orcades Insulae 30»* are placed, and between *Scandia* and Jutland, the *»Scandia Insulae 3.»* The main island *Scandia*, as well as *Thule*, had an extension from east to west of only about 150 kilometres. On *Scandia* we read the names of *Levonii*, *Chedini*, *Dauciones*, *Gutae*, *Phiresi*, *Phanone*, among which only a couple can be referred

to nations whose names are still registered on the pages of history. But the inhabitants of the Roman empire soon learned that this map of the northern part of Europe could not be correct, first through the tribes, which from the north invaded the rich countries of the south, and which mentioned with pride the large territory in the North for their home, and afterwards by the Vikings. It was also for that manifestly incorrect part of Ptolemy's atlas that the geographers of the middle ages first composed new maps completely different from the old type. Of such maps the following are yet extant:

I. Maps of the North on portolanos and general maps of the world based on portolanos of the middle ages. Regarding these works, the reader is referred to a preceding chapter. The usual manner in which the Baltic and surrounding lands were drawn on the portolanos is shown by the fac-simile of a part of one of the oldest of them yet extant, the map of DULCERT of 1339. Analogous drawings of Northern Europe are found on the famous *Carte Catalane* of 1375 (see above p. 46), on ANDREA BIANCO's map of 1436, and, as far as I have been able to ascertain, on almost all other earlier portolanos embracing the countries north-east of the mouth of the Scheldt. The most characteristic features of the northern parts of these maps appear to me to be the following.

When these maps were drawn, the Gulf of Bothnia was not yet 'discovered.' Thus the Baltic got its principal extension in east and west, and a form not in the least corresponding to reality. In the centre of its eastern part there is a large island, Gotland (*ya Codladie in qua sunt nonaginta parochie*; ANDREA BIANCO, 1436), often marked with purple and gold, probably to indicate its power and wealth. There are still about ninety parishes on Gotland, but its power and wealth long ago came to a sudden end with the destruction of Visby, in 1361, by the Danish king Valdemar.<sup>2</sup> The north-eastern parts of the portolanos also contain in the east the names of Novgorod and of some other cities, with which the Gotlanders had commercial intercourse. Like the Baltic

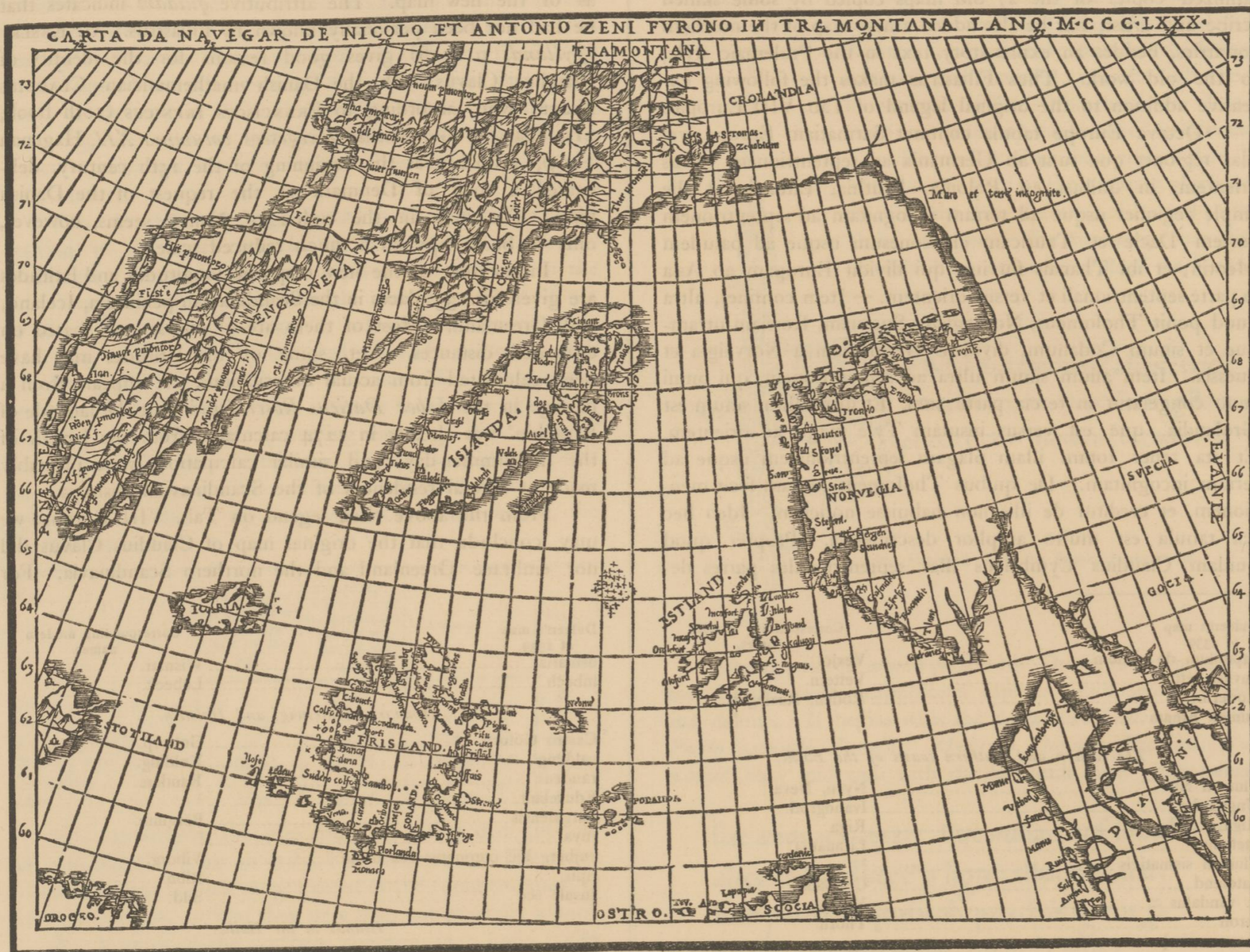
<sup>1</sup> If this map is compared with which Pliny's account of *Scandinavia*, *Baltia*, *Thule*, *Nerigon*, etc. (Lib. IV Cap. XIII and XVI) it will be perceived, that the Alexandrian geographer was not well acquainted with the informations about the northern countries, collected during the military expeditions of the Romans to Britain, Gallia, and Germany.

<sup>2</sup> The importance of this event seems, however, to have been exaggerated. The trade and wealth of Gotland commenced already to decline at the end of the 13th century, with Visby ceasing to be the emporium for the commerce of the Baltic.

the Scandinavian peninsula has on these maps got its greatest extension from east to west. A number of northern names,<sup>2</sup> some of which may be easily identified with known localities, are here met with. The Norwegian mountains are indicated by rough contours, and several legends indicate that the draughtsman of the map knew the country personally. Even to the west of Norway the land and islands are provided with inscriptions (f. i. *y:a Rovercha, Stockfis, Stilanda* on Andrea Bianco's map), testifying that Greenland and Iceland were vaguely known to the mariners from whose reports the map was compiled. As to the style of drawing, the charts of these northern parts differ from the typical portolanos of the Me-

the limits between sea and land, and the forms of lakes and islands, this part of these medieval maps acquires a remarkable resemblance to the cartographical productions of the Arabs. I conjecture, however, that this is only owing to the same cause as that which gives a common stamp to the first scratches of children in different ages and different countries.

Professor Theobald Fischer does not assume the northern parts of the portolanos to be based on direct observations, but on narratives collected by mariners from the South, when they have met the mariners from the Baltic at the mouth of Scheldt. But the rough and shapeless character of these maps, unchanged for centuries, indicate that they



29. Map of the North of the Zenos, printed in Venice in 1558. (Orig. size 380 X 284 m. m.).

diterranean and Black Seas, and by no means to their advantage. Owing to the circle-segments here used to mark

were copies from a common prototype, only slightly modified by generations of map-makers, and various details, e. g.

<sup>2</sup> Some of the legends on the portolanos have been erroneously identified with modern names by authors, not quite familiar with our geography and history. The following collation, made by Mr. E. DAHLGREN, may therefore be of use and interest to investigators into the history of cartography.

Dulcert's map of 1339.	Corresponding modern names.	Dulcert's map of 1339.	Corresponding modern names.
	<i>Norway.</i>		
alogia .....	Halogaland, Helgeland.	scamor .....	Skanör.
nidroxia } .....	Drontheim.	andine .....	Nundinae (Schanienes) = the great fair at Skanör.
tronde } .....	Bergen.	chiclobergis .....	Trelleborg.
bergis .....	Marstrand.	lundes .....	Lund.
mastranto .....	Tönsberg.	ystach .....	Ystad.
trunbeg .....		sormershans .....	Simrishamn.
	<i>Sweden.</i>	aoxia .....	Åhus.
lacus scarse .....	Scara lake = Venern.	lacus stocol .....	Stockholm lake = Mälaren.
scarsa .....	Skara.	stocol .....	Stockholm.
lunde .....	Lund.	kalmā .....	Kalmar.
		suderpigeh .....	Söderköping.
		riperia roderin .....	Roden, Roslagen.

the sketch of a reindeer on a Catalan portolano of the beginning of the 15th century, preserved at the Biblioteca Nazionale in Florence, and reproduced in Fischer's atlas (map XIII), give them the appearance of having been drawn by a Scandinavian, or by a foreigner who had visited the Scandinavian countries.

2. A small map of the North by CLAUDIUS CLAVUS, annexed to the Latin manuscript of Ptolemy's geography mentioned above and preserved at the town-library in Nancy (N. fig. 27). The important codex<sup>1</sup> which contains this map was drawn, probably in Italy, for the Cardinal GUILIELMUS FILIASTRUS, and finished in 1427. Filiastus died in 1428. He not only got the Latin translation of Ptolemy and the latinized copies of the 27 old maps copied by some skilled scribe and artist, but he also added a new map of the northern countries, besides an explanatory text in the Ptolemaic style, to the old work. Thus Filiastus makes the following extensive addition to the original legend of Tab. VIII Europæ:

Octava Europe tabula continet Sarmatiam Europe, vel illas regiones que sunt ab Germania ad septentrionem versus orientem, in quibus est Polonia, Pruthia, Lituania et alie ample regiones usque ad terram incognitam ad septentrionem partem Dacie et Tauricam chersonesum usque ad paludem Meotin; et ibi Thanais fluvius, qui dividit Europam ab Asia in parte septentrionali et versus orientem. — Item continet, ultra quod ponit Tholomeus, Norvegiam, Suessiam, Rossiam utramque et sinum Codanum, dividens Germaniam a Norvegia et Suessia. Item alium sinum ultra ad septentrionem, qui omni anno congelatur in tercia parte anni. Et ultra illum sinum est Grolandia, que est versus insulam Tyle magis ad orientem. Et ita tenet totam illam plagam septentrionalem usque ad terram incognitam. De quibus Tholomeus nullam fecit mentionem, et creditur de illis non habuisse noticiam. Ideo hec 8:a tabula est multo amplior describenda. Propter quod quidam Claudius Cymbricus illas septentrionales partes de-

scripsit, et fecit de illis tabulam que jungitur Europe, et ita erunt 11. Et tamen nullam facit mencionem de illis duobus sinibus maris Norveigie et Grolandie. In hiis regionibus septentrionalibus sunt gentes diverse; inter quas Unipedes et Pimeii, item Griffones, sicut in oriente, velut vide in tabula.

On the tenth map of Europe there is further written: »Hac descriptio et tabula editae sunt a quodam Claudio Cymbrico,» and in the geographical description of Scandinavia inserted in Ptolemy's text may be read (at *Ohdthonis insula* = Fyen): »in qua parte est Salinga, patria villa Claudii Clavii, Svarthonis Melis Petri Tuchonis filii etc. We learn from this, that a Dane, CLAUDIUS CLAVUS or CLAVIUS, was the author as well of the additions to Ptolemy's text as of the new map. The attributive *quidam* indicates that he had not been personally known by Filiastus. Mr ERSLEV (*Jylland*, p. 118) gives good reasons for the identity of Claudius Clavus with the Danish »mathematician» CLAUDIUS NIGER, who, according to FRANCISCUS IRENICUS (10th book, 21st chap. of *Germaniae Exegeseos volumina XII*, Hagenau 1513), probably at the beginning of the 15th century, delineated a map of Denmark at the request of the Danish king. The map in the codex of Nancy seems, however, only to be a copy on a much reduced scale.

In the text of the new map the longitudes and latitudes are given for 133 places in the Scandinavian peninsula, Iceland, and Greenland. Most of them are of course only based on estimated distances. Yet, some of the latitudes may have been calculated from actual observations. It appears from a passage in the *Liber Daticus Roskildensis* that the latitude of Roskilde<sup>2</sup> was already in 1274 calculated from the length of the midsummer-day, and similar calculations were probably made at several residences of the Scandinavian Bishops.

From the above cited legend on Tab. VIII Europæ we may conclude that the original map of Claudius Clavus did not embrace Greenland and the northern Scandinavia. For

Dulcert's map of 1339.	Corresponding modern names.
capitulum de vexiom .....	Vexjö.
fluvius vettur .....	Vettern.
Roderin .....	Roden, Roslagen.
flumen Etham .....	?

*The eastern and southern coasts of the Baltic.*

Flumen Nu .....	Nyen, Neva.
Unguardia .....	Ivanograd.
Riga .....	Riga.
litefanja .....	Lithuania.
Flumen sistmaticis .....	?
kateland .....	Courland.
fl. vandalus .....	Vistula.
turon .....	Thorn.
lacus nerie } .....	Nehrung (= Kurische or
neria } .....	Frische Hafl).
Godansce .....	Dantzig.
elbingana .....	Elbing.
scorpe (? scrope) .....	?
lacus alech .....	} Hela (Leleweil & Tœppen).
allech .....	
stetin .....	Stettin.
Grisualdis .....	Greifswald.
lundis magne .....	Stralsund.
roystoch .....	Rostock.

<sup>1</sup> Notices regarding this codex of Ptolemy are given by:

JEAN BLAU, *Mémoire sur deux monuments géographiques conservés à la bibliothèque publique de Nancy (Mémoires de la Société Royale de Nancy, 1835, p. LIII and Supplement, p. 67)*, an excellent monograph, carefully written and not disfigured by any chauvinism, with enlightening notes, containing extracts from the manuscripts and a reproduction of the map of Claudius Clavus with annexed text.

RAYMOND THOMASSY, *De Guillaume Fillastre considéré comme géographe (Bullet. de la Société de Géographie, T. 17, 1842, p. 144)*.

G. WAITZ, *Des Claudius Clavii Beschreibung des Skandinavischen Nordens (Nordalbingische Studien, 1, Kiel 1844, p. 175)*, reproduction, principally from Jean Blau, of the map and text of Claudius Clavus.

A. E. NORDENSKIÖLD, *Om bröderna Zenos resor och de äldsta kartor öfver Norden (Studier och forskningar förantleda af mina resor i höga Norden, Stockholm 1883)* contains (after p. 60) a fac-simile of the map as well as the text of Claudius Clavus.

EDV. ERSLEV, *Jylland*, Kjöbenhavn 1886, p. 118. Contains important researches of the origin, age etc. of the map.

<sup>2</sup> JACOBUS LANGEBECK, *Scriptores rerum Danicarum Medii ævi*, Tom. III, Hafniæ 1774, p. 267. According to this remarkable passage the latitude was calculated from the time the sun was above the horizon during the longest and the shortest day of the year. The longest day in Roskilde was stated to be 17 h. 4 m., the shortest 6 h. 56 m. Roskilde is situated on 55° 38'. The inclination of the ecliptic in 1274 was 23° 32', whence it may be deduced that the upper border of the sun in that place, observed from a height of 20 feet, including the influence of refraction, in 1274 was 17 h. 35 m. above the horizon.

Dulcert's map of 1339.	Corresponding modern names.
usmaria .....	Wismar.
lubech .....	Lübeck.

*Denmark, Schleswig, and Holstein.*

Castro Gotorp .....	Gottorp.
caldeng .....	Kolding.
randeus .....	Randers.
Eduxelant .....	?
burgalensis .....	Börglum.
ruya .....	?
vujberg hic coronatur rex dacie .....	Viborg.
ripis .....	Ribe.
Insule see .....	Sild.

*Islands in the Baltic.*

Salandia. Insula salandia .....	Seeland.
finonja .....	Fyen.
Langland .....	Langeland.
eria .....	Aerö.
ruya .....	Rügen.
bondolh .....	Bornholm.
liter .....	?
eolad .....	Öland.
(Insula de gotlandia) .....	Gotland.
visbi .....	Visby.
oxilia .....	Ösel.

this part of his new map, Filiastus must have had access to other information, of which, unfortunately, no further account is given. But some guidance for determining their age may possibly be found in the curious manner in which the nations surrounding the native country of Claudius are characterized: *Britanni anglicati apostate — Carelorum infidelium regio maxime septentrionalis — Slavorum regio insidiatrix — Perversa Prutenorum natio*. After the conquest by the Angles, Christianity was definitively introduced into England during the 7th century, and, after that time, the inhabitants of the country never relapsed into paganism; but in the beginning of the 13th century, during the reign of King John, the land was excommunicated by the Pope. The inhabitants of Carelia were baptized in 1296 by Thorkel Knutson; the conversion of the Prussians commenced in the 10th century, but was not completed until the 13th, and the Slaves to the east of the Elbe relapsed for a short time into paganism, at the end of the 12th century. Thus these discourteous legends seem to indicate that the new map in the Nancy codex was partially copied from an original of the 13th century.

That two different originals had been employed for the drawing of the map may also be deduced from its double graduation. In one of these originals the latitudes of the most important places had evidently been determined, if not by direct observations, at least by calculations from northern itineraries; in the other by the graduation of a portolano, with the aid of Ptolemy's Tab. V Europae. No other means being available to make these different statements agree, the difficulty was solved by providing the map with a double graduation. The map of Claudius Clavus is possibly the first map thus graduated.<sup>1</sup> The middle of the graduation on the right and left sides of the map answers tolerably well to the true latitudes, f. i.:

	According to the graduation on the right side of the map.	According to the text and the graduation on the left side of the map.	Average.	True latitude.
Drontheim.....	62°	66°	64°	63° 26'
Stockholm.....	58° 40'	62° 40'	60° 40'	59° 21'
Middle of Oeland.....	56°	60°	58°	57°
Northern point of Jutland.....	55° 30'	59° 30'	57° 30'	57° 44'
Helsingborg.....	55°	59°	57°	56° 3'
Ribe.....	53° 50'	57° 50'	55° 50'	55° 20'

It is remarkable, that the codex of Nancy does not contain any Tabulæ novæ of Italy, France, or Spain. This seems to indicate that no such maps existed at the commencement of the 15th century, or that they were then not generally known.

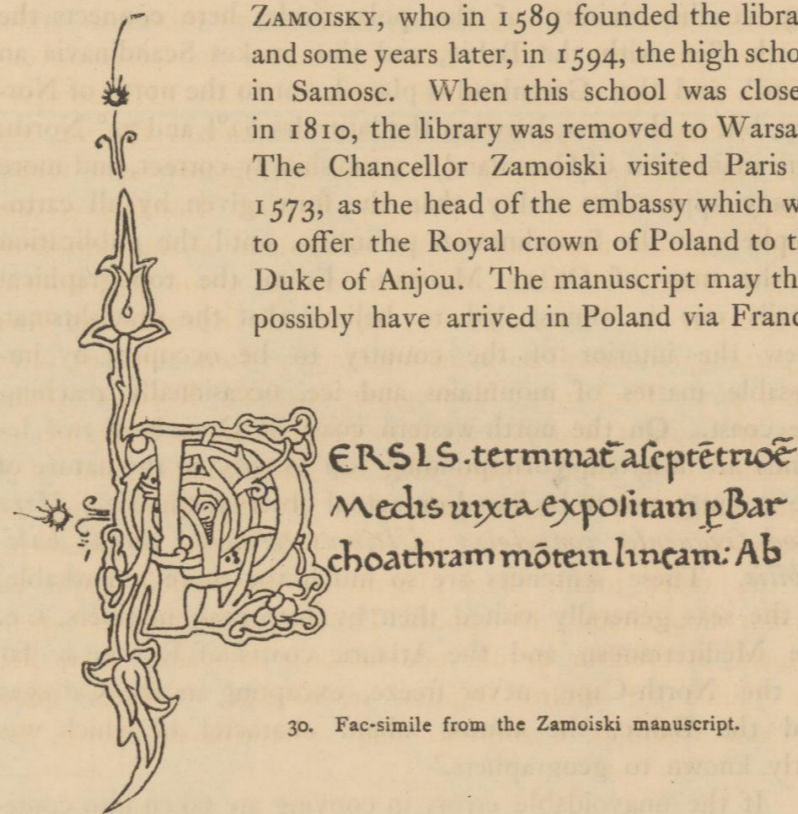
3. A map of the northern countries in a Latin codex from c. 1467 of Ptolemy's geography, belonging to the Zamoisky Majorat-library at Warsaw (*Biblioteka ordynancyi Zamoiskiej*) and given here in fac-simile on pl. XXX. With regard to this map I have made an exception from the adopted rule to give on the lithographed tables fac-similes only of printed maps. The reason or excuse for this is the extraordinary importance to cartography in general, and especially to the precolumbian discovery of America, of this previously unknown map. We have here the prototype, or rather a carefully executed copy on the Donis projection of the prototype as well of the maps of Scandinavia and Greenland in the editions of Ptolemy printed in 1482 and 1486, 1507 and 1508, 1513 and 1520, 1522, 1525, 1535 and 1541, in Schedel's chronicle (Nürnberg 1493), and Bordone's Isolario of 1528, as of the celebrated and much discussed map of the brothers Zeno. It belongs to a splendid

<sup>1</sup> As to the double graduation of maps see: A. BREUSING, *La toleta de Marteloio und die loxodromischen Karten* (*Zeitschrift für wissenschaftliche Geographie*; II, Jahr 1881, p. 195), and EUGEN GELCICH, *Columbus-Studien* (*Zeitschrift der Gesellschaft für Erdkunde zu Berlin*, Bd. 22, 1887, p. 378).

codex on vellum, bound in two folio-volumes covered with red velvet. According to the Librarian, Professor JOSEF PRZYBOROWSKY, the following annotation, dating from the beginning of the 18th century, is written on one of the leaves of paper inserted before the text of the first volume:

*Cosmographia Claudii Ptolomaei Alexandrini, Mathematicorum principis, seculo secundo, scilicet circa annum a nativitate Domini nostri Jesu Christi Centesimum trigesimum octavum, sub Antonio Pio, Imperatore Romano florenti, manu Domini Nicolai Germani, Presbyteri Secularis, descripta, Tabulisque egregie pictis adornata ac Paulo Secundo Summo Pontifice ab eodem circa annum 1467 dedicata.*

It is not known for certain how the library obtained this manuscript, but a tradition says, that it was a present from a Pope to the Polish Chancellor JOHANNES ZAMOISKY, who in 1589 founded the library and some years later, in 1594, the high school in Samosc. When this school was closed, in 1810, the library was removed to Warsaw. The Chancellor Zamoiski visited Paris in 1573, as the head of the embassy which was to offer the Royal crown of Poland to the Duke of Anjou. The manuscript may thus possibly have arrived in Poland via France.



30. Fac-simile from the Zamoiski manuscript.

The manuscript is well preserved. The handwriting is clear and legible, with magnificent capitals, illuminated in gold and colours. It begins with the dedication *Beatissimo Patri Paulo secundo Pontifici Maximo Donnus Nicolaus Germanus* etc., and ends with the fac-simile lines given below:

*Sic annuadvertere siue nullacous locus  
aliquis subduce ē p signū illud fixā:  
siue plures & quib aliqui his igitur p  
finitis que restant incipienda sunt;  
Laus deo Virginiq; matris Marie;  
Nobiliun enūmero scripto y auconus omis  
Sturpe vrellensis scripsit me auctu cadimū.*

I have not succeeded in tracing any notice as to the time, when the \*scriptor\* ANTONIUS VITELLENSIS lived. According to the celebrated Director of the Bibliothèque Nationale at Paris, M. LÉOPOLD DELISLE, to whom some fac-simile lines of the codex have been transmitted, the handwriting belongs to the latter part of the 15th century.

The first volume of the codex contains the text of Ptolemy's geography, excepting the map-legends of the eighth book; the second volume contains thirty maps in double folio, viz., Ptolemy's own twenty-seven maps and three Tabulæ novæ.

The legends on the maps of the eighth book are here inserted, on verso of each of Ptolemy's special maps, as in the edition of 1482. But there are no legends either on the general map of the world, or on the new maps. These are:

- Tab. IV. A new map of Spain.
- » VII. The new map reproduced here of the northern countries.
- » X. A new map of Italy.

All the maps are splendidly executed and illuminated in gold, ultramarine, green, red, brown, black, etc. As may be observed from the fac-simile T. XXX the map VII is, like all the special maps of the codex, drawn on the projection of Donis. The main features of the map are almost the same as on the map in the Brussels manuscript and in the edit. Ulmæ 1482 and 1486, save that a narrow strait, extending from west to east in the vicinity of the polar-circle, here connects the North Sea with the Baltic, and thus makes Scandinavia an island<sup>1</sup>, and that Greenland is placed, not to the north of Norway, but to the west, between the latitudes 62°½ and 71° North. The main form of Greenland is astonishingly correct, and more closely approaches reality, than the form given by all cartographers to the Scandinavian peninsula, until the publication of the map of OLAUS MAGNUS. From the topographical details one is almost led to believe that the draughtsman knew the interior of the country to be occupied by impassable masses of mountains and ice, occasionally reaching the coast. On the north-western coast of Greenland two legends are inserted, corresponding too exactly to the nature of the country not to be based on actual observations, viz., *Mare quod frequenter congelatur; Ultimus terminus terrae habitabilis*. These sentences are so much the more remarkable, as the seas generally visited then by European mariners, i. e. the Mediterranean and the Atlantic coasts of Europe as far as the North-Cape, never freeze, excepting in the Cattegat and the Baltic, the almost inland character of which was early known to geographers.<sup>2</sup>

If the unavoidable errors in copying are taken into consideration, the names in Iceland and Greenland on the map of the Zamoiski codex are almost identical with the corresponding names on the map printed in Ulm 1482 and 1486, and on the Zeno map. The agreement with the map in the Brussels codex, where a number of names have been omitted and a few added, or altered, is less perfect. If, on the contrary, Denmark and Scania are excepted, extremely few of the names on the Zamoiski map are found either on the map of Claudius Clavus, or in the detailed description of the same inserted in Ptolemy's text. Thus it appears to me that there cannot exist the slightest doubt but that entirely different prototypes served as originals for the delineation of the northern part of the Scandinavian peninsula, Greenland, and Iceland, on one hand on the map of Claudius Clavus, and on the other, on the map in the Zamoiski codex.

In my essay on the voyages of Nicolò and Antonio Zeno I have tried to show, that some of the names on the map of Scandinavia in the *Ptolemeus Ulmæ 1482*, and on the Zeno map, have a Scandinavian etymology. Regarding some of the analogies there pointed out, the objection might be made that they were based on purely phonetic resemblances and could not, consequently, be accepted as sufficient and convincing proofs as to the Scandinavian origin of the Zeno map. This

important question may now be considered as definitively settled by the discovery made by Mr. E. DAHLGREN, that several of the legends for rivers and islets on the Zamoiski map are unquestionably derived from the Scandinavian ordinal numbers, *första, andra, tredje, fjerde* (= the first, second, third, fourth).

On the Zamoiski map there may thus be read:

On the eastern coast of the Baltic: *fürsta, auenas, tro-diena, fierdis*.

On the western coast of the Baltic: *agna, trediera, fierdena*.

On the coast of Scania: *fürsta, agnen*.

On the coast of Halland: *forst, äga, trodia*.

These words are certainly of purely northern origin. But inscriptions in good Latin may, on the other hand, be read on the map, for instance: *Non licet ultra ire, Ultimus terminus terrae habitabilis*. This indisputably shows, that the map here under discussion is founded on a northern original, probably compiled by somebody not versed in Latin, and that it had been adopted for Ptolemy by a good latinist but little conversant with the northern languages. In the description of the map of Claudius Clavus the northern words that are capable of translation are generally latinized, though not very correctly.

4. A map of the North, belonging to a codex of Ptolemy's geography, written between 1480 and 1485, and kept at Bibliothèque Royale in Brussels. This map has lately been reproduced in fac-simile in *Les monuments de la géographie des Bibliothèques de Belgique. Cartes de l'Europe 1480—1485. 4 cartes en 8 feuilles, texte explicatif par CH. RUELENS*, Bruxelles (1887). M. Ruelens takes it for granted, that the important maps reproduced by him from this work belong to the 'Donis type.' This view, however, clearly arises from a mistake. As I have several times pointed out here, Donis was never, as far as we know, the author of any new maps. Probably aided by other scribes he produced a number of slightly improved copies from the Latin translation by Jacobus Angelus of Ptolemy's geography, and for these he redrew what may be termed a manuscript edition of the old maps on a new projection. It is this projection which constitutes the only characteristic of the maps of Donis, and which alone gives to 'Donis' a particular place in the history of cartography. For the maps in the Brussels codex, the old equidistant projection of Marinus, not that of Donis, is exclusively employed, which plainly shows that the cartographer Nicolaus Germanus had had nothing to do with them. Yet the maps published by M. Ruelens obtain a higher interest through this circumstance. Evidently we have here tolerably unaltered copies of the first *Tabulae novæ*, added to manuscripts of Ptolemy in the 15th century, and of which the Donis maps are only second-hand copies on a new, considerably improved projection.

5. A map of the North, first published in the edition of Ptolemy, printed at Ulm in 1482, and then in the editions Ulmæ 1486, Romæ 1507 and 1508, Argentinae 1513 etc.; of these editions only that of 1486 contains some explanatory remarks on the map inserted as an appendix to Lib. II. cap. 10 and Lib. III. cap. 5. The map is generally regarded as an original work of 'Nicolaus Donis,' although, as before indicated, without sufficient reason.

Of this map an exact fac-simile was published in *The voyage of the Vega round Asia and Europe* and in *Trois*

<sup>1</sup> In copying the original map for Ptolemy's geography, this strait was evidently added, in order to agree with the old conception of Scandinavia as an island in the Northern Ocean.

<sup>2</sup> It had already been mentioned, in ZIEGLER'S *Schondia* (edition Argentorati 1532, fol. XCII) that the Baltic, the saltness of which decreased on account of the considerable influx of sweet water, freezes, whilst the Ocean between Norway and Iceland is never covered with ice.

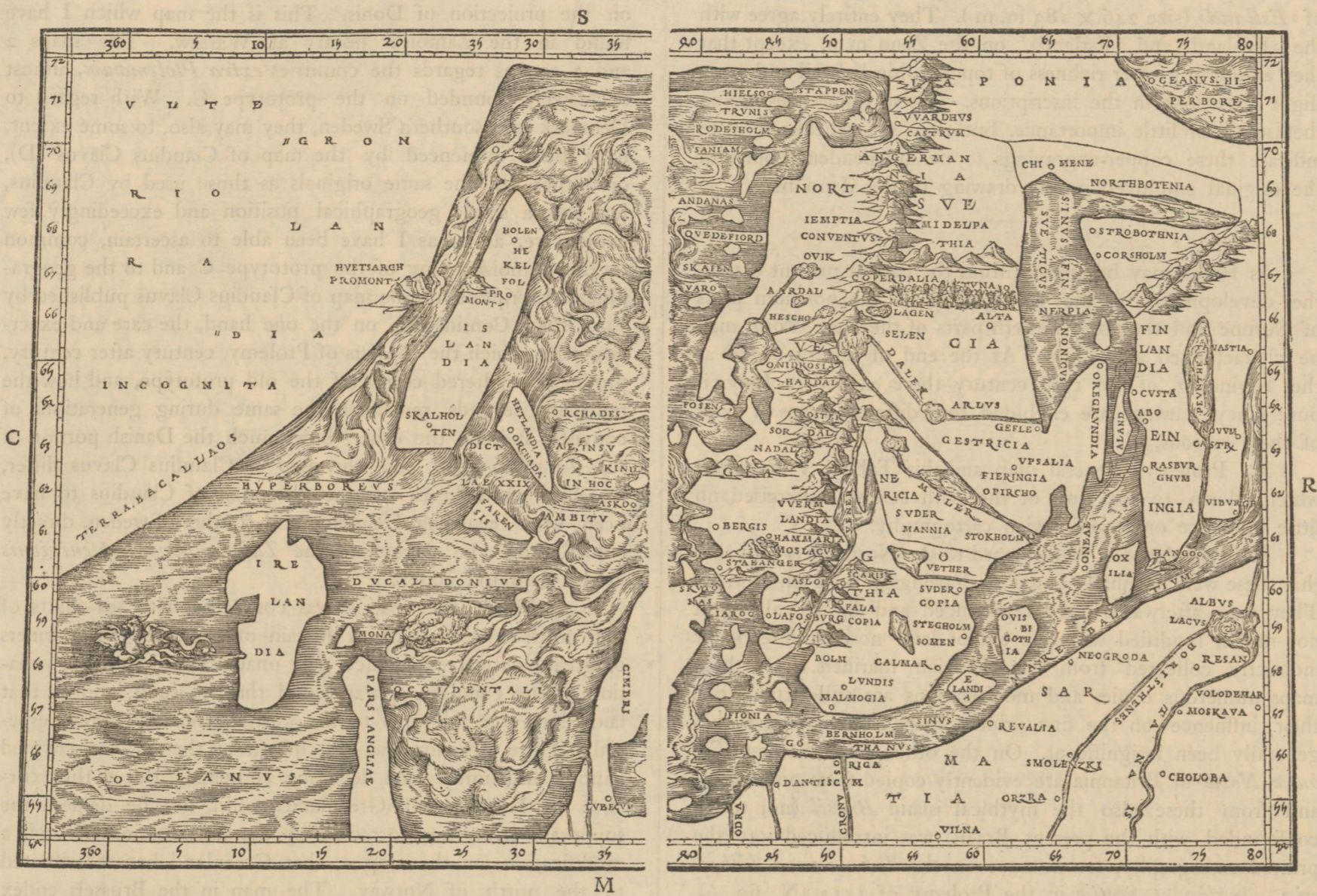
<sup>3</sup> To avoid misunderstandings, I must here mention that as a standard for the resemblance of names on maps, which are considered to have been obtained by repeated copies of the same original, I take the resemblance of names between the maps of the Mediterranean by Dulcert, Barents, and van Keulen (1339—1700), or between the first printed maps of Ptolemy and the maps in the Athos manuscript. On different maps of the same country, there are always some names in common, even when no genetical connexion exists between the maps.

cartes pré-colombiennes représentant une partie de l'Amérique, Stockholm 1883. I here (Fig. 14) give a fac-simile on a reduced scale of the corresponding excellent copper-print in the edition of Ptolemæus Romæ 1507.

6. *Typus Orbis universalis juxta hydrographorum traditionem* (N. T. XXXV), first published in Ptolemæus Argentinæ 1513, and, as to the Northern regions, probably based on the same prototype as Zamoiski's map. In his atlas Lelewel publishes a much reduced copy under the name of *Charta Marina Portugalensium*, and it is possible that we here really have to do with a copy of a Portuguese original. So far as I know, this type was first met with in the *Insularium illustratum Henrici Martelli Germani*, at the end of the 15th century. The original is preserved in the British Museum, and a splendid reproduction in colours is published

was under different forms adhered to until the end of the 16th century, for instance on the globe of VOPEL of 1543 (N. T. XL), and on the map of the world by MYRITIVS of 1590 (N. T. XLIX). The latter (Ruysch's drawing of the polar basin) had the unmerited honor of serving as a model to several works of MERCATOR and his successors. It may be said to be the introduction to a mythical conception of the geography of the Polar regions prevailing down to our day, in the form of a popular belief in an open Polar sea. I will return to Ruysch's map in a succeeding chapter on the first printed maps of the New World.

8. The Zeno map, printed for the first time by Marcolini in Venice in 1558, and pretending to be a copy of a lost original of the 14th century. It was afterwards inserted, with some unimportant modifications, in RUSSELLI's Ptolemy,



31. JACOBUS ZIEGLER'S map of Scandinavia, Argentorati 1532. (Orig. size 358 X 220 m. m.).

in the *Exame das viagens do Doutor Livingstone*, por D. JOSÉ DE LACERDA, Lisboa 1867.<sup>1</sup>

In order here to give a complete enumeration of all the maps belonging to what may be termed the mythic age of northern cartography, two maps must be further mentioned, namely:

7. The map of Ruysch of 1507 (N. T. XXXII). This important map is, as regards the drawing of the arctic regions, characterized by two peculiarities. Firstly, Greenland here forms the point of Asia, which extends farthest to the north-east, and secondly, Ruysch makes the Polar basin contain a number of large imaginary islands. The former theory, which may be regarded as a corollary to the identification by Columbus of his newly discovered lands and islands with *India extra Gangem*,

Venetia 1561, 1564 etc. and often reprinted, or serving as a model for other maps of the northern countries. In this century it has, as an historical document, more frequently been reproduced in fac-simile than most other maps, perhaps with the greatest accuracy in my paper *Om bröderna Zenos resor och de äldsta kartor öfver Norden* (*Studier och forskningar föränledda af mina resor i höga Norden*, Stockholm 1883). I cannot here enter upon an analysis of this map, or of the Zeno question, in many respects so highly interesting to geographers. I can only refer the reader to the extensive literature enumerated by R. H. MAJOR in *The Voyages of the Venetian Brothers Nicolo & Antonio Zeno*, London (Hakluyt Soc.) 1873, PAUL BARRON WATSON, *Bibliography of the Pre-Columbian discoveries of America* (*Library Journal*, Vol. 6, No. 8,

<sup>1</sup> There is also a reproduction in the atlas of Santarem, in my paper on the voyages of the brothers Zeno and (of the northern portion of the map) in Winsor's *Narrative and critical History of America*. According to Marinelli (*Saggio di Cartografia della Regione Veneta*, Venezia 1881, p. 94) the maps in a codex of Ptolemy at the Biblioteca Magliabechiana are signed »Henricus Martellus Germanus fecit has tabulas.»

New York & London 1881), WINSOR, *A Bibliography of Ptolemy's geography*, p. 31. A comparison between the Zeno map and the map from the Zamoiski library in Warsaw, indisputably shows both to be copies of the same original, though various addenda and modifications have been arbitrarily introduced by ANTONIO ZENO, Jun., or by the publisher, MARCOLINI, in order to adapt the map to the text, and perhaps also to remove from it the most striking discrepancies with the map of Olaus Magnus, and other delineations of the northern countries existing in Venice at the time of its publication. As a slight contribution to the Zeno question it may here be mentioned, that in my copy of the collection of maps generally known under the name of Lafreri's Atlas and engraved in copper in Italy, from 1558 to 1572, of which a more detailed account will be given further on, there is among other maps one of »Frisland» (size 250 × 185 m. m.) and one of »Estland» (size 246 × 183 m. m.). They entirely agree with the »Frisland» and »Estland»<sup>1</sup> on the Zeno map, except that they exhibit a greater richness of topographical detail and some slight variations in the inscriptions. These differences are in themselves of little importance, but they nevertheless seem to indicate these copper-engravings to be independent copies of the original employed in the drawing of the Zeno map.

As far as may be inferred from the data at present extant, the development of the cartography of the northern parts of Europe and the north-western parts of the New World may be characterized as follows. At the end of the 14th and at the beginning of the 15th century there existed in Italy, if pure fancy-drawings are excluded, four different types of maps of these regions, viz.

A. Ptolemy's general map and his *Tabula V Europae*, which, down to the end of the 16th century, exercised no little influence on Scandinavian cartography.

B. Portolanos. With regard to the North, it is probable that these were originally based on drawings of the 13th century. They were afterwards often reproduced and slightly, although not much, modified with the aid of later notices, directly or indirectly collected from Scandinavian mariners. Of these maps numerous copies and modifications are still extant, but their influence on the first printed maps of Scandinavia has generally been insignificant. On the other hand the first *Tabula Novæ* of Britannia are evidently copied from portolanos, and from these also the mythical island *Brasil* (not to be confounded with the present Brazil) was introduced into the printed cartography, for instance on the *Tabula nova Hiberniæ, Angliæ et Scotiæ* in the Ptolemy of 1513 (N. fig. 6).

C. A map of the Scandinavian peninsula, Iceland, and Greenland, composed ere the northern mariners became acquainted with the use of the compass, perhaps in the beginning of the 13th century. This map is lost, but an approximate idea of it may be obtained from some more or less altered reproductions (the map in the Brussels codex, the Zamoiski map) of the end of the 15th century.

D. A large map of Denmark and southern Sweden (the ancient Denmark), by Claudius Clavus. This map is now also lost, but a detailed description of it and a reproduction of its main features on a much reduced scale, are to be found in the Ptolemy codex of Filiastus.

By the aid of these four originals, probably still extant in the beginning of the 15th century, the following maps of the North were drawn:

<sup>1</sup> It is remarkable, that these names in the text of the voyage of the Zenos have got a more Italian form (»Frislanda», »Estlanda»). Hence the fact of no slight importance to the Zeno question may be deduced, that these maps are not freehand-drawings for the text printed by Marcolini, but copies from some independent original. These maps are not signed, but are evidently works of the same engraver, who executed two different, though closely resembling maps of *Gottlandia* in my collection, of which the one is signed FERRANDO BERTELLI. He published (1560—1568) several other maps and copper-engravings in Venice.

1. The map, of 1427, inserted into the codex of Nancy. It is generally founded on the map of Claudius Clavus (D), but also, as regards the more distant parts of the Baltic, on the portolanos (B), and as regards the map of Greenland and the northern part of Scandinavia, on the type C. England, and the south coasts of the Baltic, are drawn from Ptolemy. The map of Filiastus obtained little circulation and exercised no influence on later drawings of the northern countries.

2. Another *Tabula nova Septentrionis* made for Ptolemy's geography. This map is also lost, but may yet be found in some Ptolemy codex of the middle of the 15th century. It can easily be restored by redrawing the Zamoiski map on the rectangular projection of Marinus, as I have done fig. 33.

3. A map obtained by redrawing the preceding one on the projection of Donis. This is the map which I have found in the Zamoiski library at Warsaw. The maps 2 and 3 are, as regards the countries *extra Ptolemæum*, almost exclusively founded on the prototype C. With regard to Denmark and southern Sweden, they may also, to some extent, have been influenced by the map of Claudius Clavus (D), or rather by the same originals as those used by Claudius, for not a single geographical position and exceedingly few names are, as far as I have been able to ascertain, common to the Zamoiski copy of the prototype C and to the geographical description of the map of Claudius Clavus published by Filiastus. Considering, on the one hand, the care and exactness with which the copyists of Ptolemy, century after century, produced unaltered copies of the old prototype, and how the portolano legends remained the same during generations of copyists, and, on the other, how much the Danish portion of the Zamoiski map and the map of Claudius Clavus differ, it seems difficult to assume the map of Claudius to have been, even regarding Denmark and southern Sweden, directly copied from the original to the *Tabula nova Septentrionis* in the Zamoiski codex.

4. When the map 2 was compared with sea-charts of the north-western coast of Britain or examined by mariners of great nautical experience, but unacquainted with the variation of the compass, it was found that no such land as that laid down on this map to the west of Ireland existed, especially if the direction was determined by the newly discovered nautical instrument (the deviating compass). But as the existence of Iceland and Greenland could not be denied, the supposed error was corrected by the introduction of such a modification on the map 2, that Greenland became situated to the north of Norway. The map in the Brussels codex belongs to this type, and I suppose that analogous maps will be found in other codices of Ptolemy of the 15th century.

5. Maps of the type 4 were then redrawn on the projection of Donis by Dominus Nicolaus Germanus, or some artist of his school. It is these maps that were printed at Ulm in 1482 and 1486, at Rome in 1507 and 1508, etc.

6. NICOLÒ ZENO Jun. finally reproduced a much worn copy of the original map C on the conical projection, introducing some free-hand corrections borrowed from more modern cartographical works, and adding some islands and mainlands wanting on the original map, but mentioned in the description of the Zeno voyages published by Marcolini in Venetia 1558. That the original map, C, was used as a model for the new delineation, and not maps of the types 2, 3, 4, and 5, may be inferred from the circumstance that none of the features cha-





characteristic of Ptolemy's map and left unchanged on the maps 2—5 (for instance the *Insula Thule*, the *Orcades*, the long projection of the northern Scotland to the east), are found on the Zeno map, and also from the circumstance that, according to the legend to the Zeno map in the Ptolemy of 1561, no net of graduation existed on the original, which was copied for the work of Marcolini.

My view of the correlation between the maps 2, 3, 4, and 5 will be understood by their schematized representation given below (fig. 33—36).

It would be of much interest to the history of the earliest cartography both of Scandinavia and of the New World to be able, as regards the prototype C, to find out its date and origin, and the epoch when copies of it were first known in Italy.

At present no definite answer can be given to these questions. This, however, seems to be beyond doubt that the materials of the map were furnished by a Scandinavian thoroughly acquainted with the voyages of his countrymen to Iceland and Greenland, and that it was reproduced by somebody but slightly versed in the northern languages and perhaps also in the manner of writing of the Northmen during the 14th century. It is further not impossible, that here, as in so many other cases, the answer nearest at hand is the most correct one, i. e. that an old Scandinavian map, afterwards copied and adapted to the work of Ptolemy, was actually brought to Italy by the Venetian freebooters NICOLÒ and ANTONIO ZENO, at the end of the 14th century. But it is evidently absurd to give these brothers a conspicuous place in the history of geographical discovery because, at least in the first instance, they involuntarily followed a northern viking, sea-king, or pirate, in his enterprises to that part of the New World, which half a millennium before had been discovered by Northmen.

During a period of fifty years the map printed Ulmae 1482 constituted the only type on which the countries of the North were delineated. But in 1532 a new type was introduced through a map published by the Bavarian theologian JACOBUS ZIEGLER in a work with the following long title: *Quae intus continentur.*

*Syria, ad Ptolomaici operis rationem . . .*

*Palestina, iisdem auctoribus . . .*

*Arabia Petraea . . .*

*Aegyptus . . .*

*Schondia, tradita ab auctoribus, qui in eius operis prologo memorantur.*

*Holmiae, civitatis regiae Suetiae, deplorabilis excidij*

*per Christiernum Daciae cimbricae regem, historia.*

*Regionum superiorum, singulae tabulae Geographicae.*

*Argentorati apud Petrum Opilionem MDXXXII.*

According to a statement in the text, fol. lxxxv, the data for this new map were furnished by not less than four Scandinavian prelates, whom ecclesiastical and political disturbances had brought to the papal court during a visit of Ziegler in Rome. These were, the Arch-bishop of Drontheim ERIK WALKENDORF, his successor OLOF ENGELBREKTSSON, the Arch-bishop of Upsala JOHANNES MAGNUS, and the Rector PÉDER MÅNSSON from Vesterås, ordained Bishop in Rome. It is remarkable that the author, for his information on *»Gronlandie Chersonesus et insula Tyle,»* gives references not to Walkendorf, who had worked with such energy for the rediscovery of the colonies in Greenland, but to the last named two Swedes. Ziegler, according to his own avowal, calculated the numerous latitudes and longitudes given in this work, from information respecting the reciprocal distances and azimuths of the most important places in the Scandinavian countries. The chapter on Schondia contains a tolerably extensive geographical descrip-

tion of *Gronlandia, Islandia, Heltlandia, Farenensis, Laponia, Nordvegia, Svecia, Bothnia, Ostrobothnia, Gothia; Finlandia.* Under *Gronlandia* some interesting communications about *»ANTONINUS»* (IOANNES) CABOTUS are inserted. His report that he had encountered ice during the month of July in the Greenland Sea is dismissed with the positive assertion that this could not have been possible even at the pole, at that time of the year.

If the map (N. fig. 31) is to be considered as a faithful copy of the original, it shows that the German theologian and the Northern prelates were not particularly well skilled in the art of drawing maps. As regards the principal features of the Scandinavian peninsula their map, however, denoted considerable progress, and the legends on it, or in the text, may generally, without difficulty, be identified with known localities. Unfortunately only one name is to be found on the eastern coast of Greenland, that of a high mountain, *Hvetsargh promontorium*. Both Greenland and Iceland are, besides, far less accurately drawn here than on the map in the Zamoiski codex. In Scandinavia the direction of Kölen is tolerably well represented; several of the great Swedish lakes, Vener, Melar, Vether, Somen, Selen (= Siljan) are laid out on the map, and we have here for the first time a map, though a rough one, of Finland. With regard to further details I may refer to the original, of which there are two editions (Argentorati 1532 and 1536), and also to the reprint of *Schondia*, published by H. HILDEBRAND with a number of explanatory notes in the Journal of the Swedish Geographical Society of 1878.

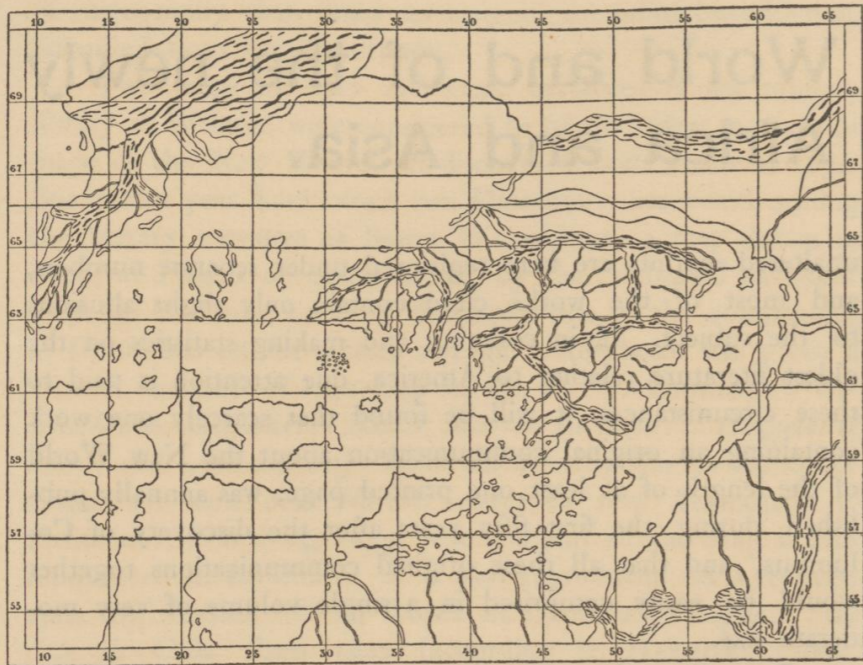
Seven years after the first edition of Ziegler's work another map of the Northern countries was published in Venice by the Swedish Bishop OLAUS MAGNUS. It was printed in 1539 on nine large folio-sheets occupying together a surface of 1700 x 1250 m. m. With the map a short introduction by the same author was printed under the title of: *Opera Breve, laquale demonstra, e dichiara, ouero da il modo facile de intendere la charta, ouer delle terre frigidissime di Setentrione: oltra il mare Germanico, doue si contengono le cose mirabilissime de quelli paesi, fin'a quest'hora non cognosciute, ne da Greci, ne da Latini.* (Colophon: *Stampata in Venetia, per Giouan Thomaso, del Reame de Neapoli, Nel anno de nostro Signore. MDXXXIX.* Of this rare brochure a fac-simile was published at Stockholm in 1887. Slightly modified translations had already been printed in German, Venetiis 1539, and as an introduction to the Latin and German editions of OLAUS MAGNUS, *Historia de Gentibus Septentrionalibus*, printed at Basel in 1567.

The large map of Olaus Magnus was considered as lost, or confounded with poor reproductions of the 16th century, until the rediscovery of the original in Munich, a few years ago, by Dr. OSCAR BRENNER, who published an excellent, though reduced fac-simile of it with a critical description in: *Die ächte Karte des Olaus Magnus vom Jahre 1539.* (*Christiania Videnskabs-Selskabs Forhandlingar*, 1886, N:o 15.) Later, through the exertions of Mr. G. E. KLEMMING in Stockholm, a few copies of a full size fac-simile of the map was published. From a cartographical point of view the large map itself is certainly not to be compared with the map of Schweinheim-Buckinck of 1478, but as regards its size and the profusion of geographical and ethnographical details on it, it stands unrivalled amongst cartographical productions of the first part of the 16th century. When the map of Olaus Magnus was published, there did not, as far as is known, exist any printed map of Italy, Spain, France, England, or Germany, the size of which was equal to that of one of the nine folio-leaves of this atlas of the far North. Nor are there, in all this literature, to be found many descriptions of the former nature of a country

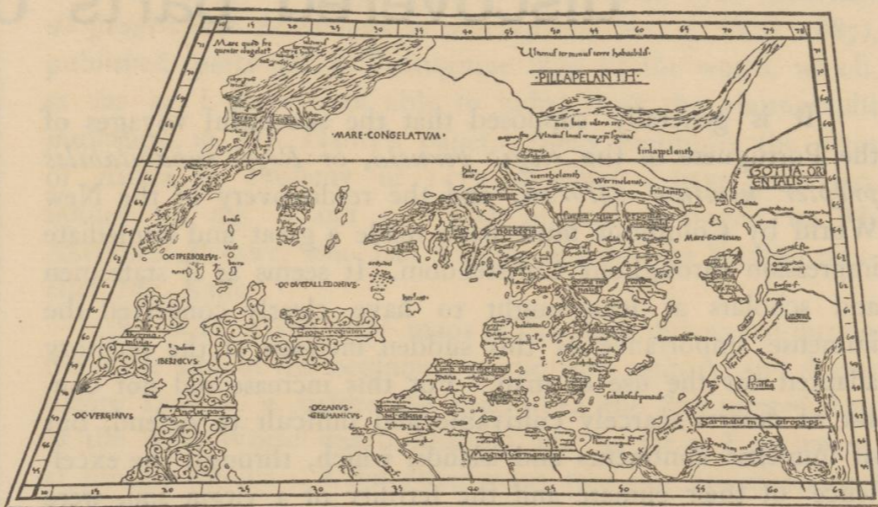
of the habits, customs, household-furniture, etc. of its people, so interesting, so exhaustive and, with all its naïve credulity, so important as the large work of Olaus Magnus Gothus, for which the map was originally intended.

This large map never seems to have had any considerable circulation. It was never fully described and was seldom (as f. i. by CONRAD GESSNER, *Bibliotheca universalis*, fol. 528) mentioned by contemporary authors, and the maps of the Scandinavian countries were invariably drawn according to

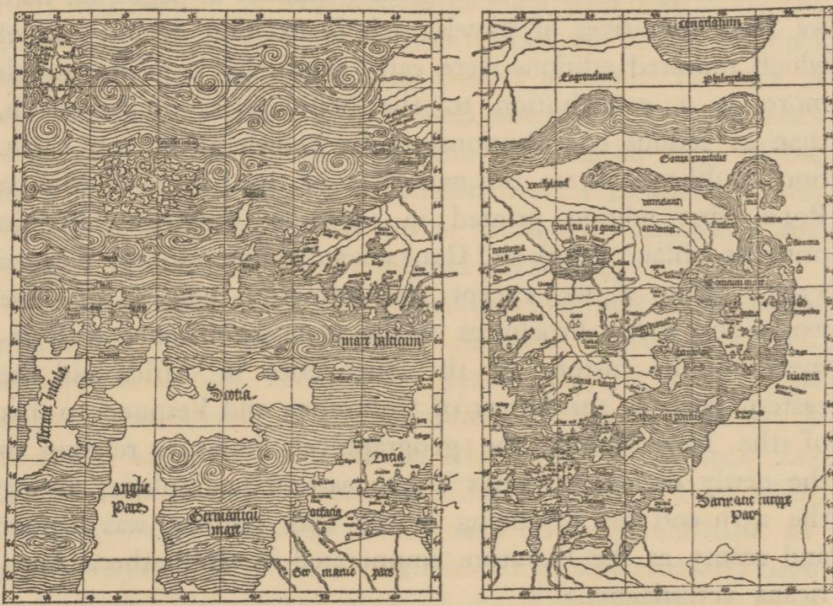
the large and artistically executed original, covered with innumerable legends and drawings. A copy of the original map of Olaus Magnus, carefully reduced to about half size (805 × 533 m. m.), was published in Rome, *ex typis Antonii Lafreri Segnani. Anno MDLXXII* (N. fig. 32). But even this fine copper-engraving cannot, as regards the elegance and clearness of its execution, be compared with the original, which, according to Dr. Brenner, was produced by woodcut and which, from an artistic point of view, as a woodcut-



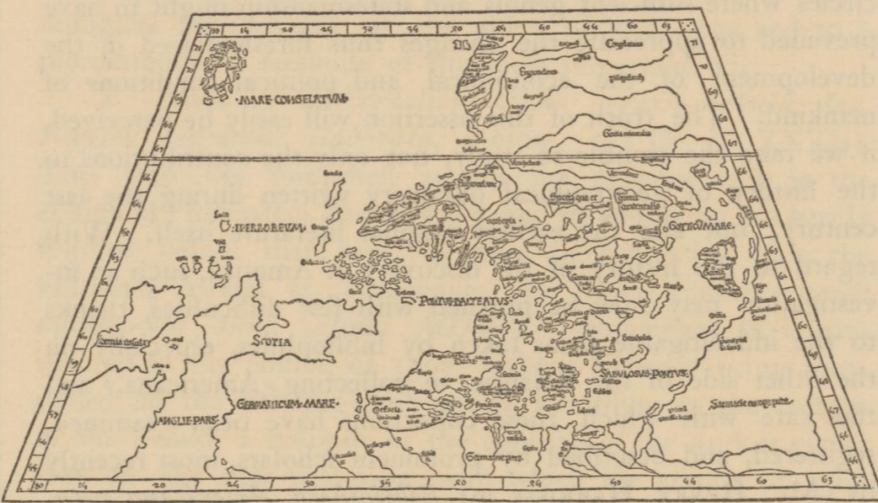
33. The Zamoiski map reconstructed on the projection of the map in the Brussels codex.



34. The map of the North in the Zamoiski codex of 1468 (N. T. XXX). (Orig. size 568 × 313 m. m.).



35. The map of the North in the Brussels codex. (Orig. size 651 × 450 m. m.).



36. The map of the North in Ptolemaeus Ulmæ 1482. (Orig. size. 564 × 312 m. m.).

Ziegler, until a reduced and much modified copy of the original was published first in: *De omnibus Gothorum Svecorumque regionibus Historia*, Romæ 1554, by JOHANNES MAGNUS, and shortly after in the above mentioned work (*Historia de Gentibus Septentrionalibus*) of Olaus Magnus himself. This work was first printed at Rome in 1555 and then reprinted several times, for instance Venetiis 1565 (with the map of 1555 unmodified), Basileæ 1567 (with a new, somewhat better copy of the map of 1539). Yet these reproductions of the 16th century scarcely give us an idea of

map was hardly ever surpassed by any other analogous work. Only a few copies are known of Lafreri's engraving; one in the British Museum, another, the only one in Scandinavia, in my collection of ancient maps. The drawings of monstrous animals, with which Olaus Magnus so liberally decorated his map, and of which Conrad Gessner said, *quæ (animalium figuræ) tamen veræ aut ad vivum pictæ minime videntur* (*Bibliotheca universalis*, fol. 526), were collected by Münster in a large double-folio woodcut, inserted in his cosmography.