Macrobius World Maps, 400 CE, ***#201***

Cartographically, the medieval period begins with the maps inspired by Macrobius *(see monograph* ***#201****).* Medieval European cartography reflected the arrest and decline in, or the expression of, their knowledge of world or local geography following the collapse of the Roman world. As mentioned in Part I, Claudius Ptolemy's *Geographia (see monograph* ***#119****)* remained known only to Byzantine and Arab scholars, and thence it came to influence the early students of Arab Islamic geography, but not European cartography for another one thousand years.

Only in one type of medieval Christian European map does there survive, in very simple form, some concept of Greek geography. The hemispheric maps of Macrobius, drawn in Spain and later reproduced in the works of the Venerable Bede, Lambert of St. Omer and others, show the habitable known world of the northern hemisphere and the uninhabited world of the southern, marked with climatic-zones derived from Pomponius Mela's and Ptolemy's *clima*, and, unlike many other European medieval maps, they are oriented with North at the top instead of East.

The world map that illustrates Macrobius' *Commentarii* exists in many different states, in thirty-five manuscripts prior to 1I00, and around 150 manuscripts overall, up to and including the 15th century. In Macrobius' maps the entire eastern hemisphere of the earth is shown, divided into five zones: two polar or frigid zones, two temperate, and one equatorial, Torrid Zone. The concept derives from the Greek scientist, Crates of Mallos *(****#113****),* in the second century BCE, who hypothesized that there were four landmasses on the earth, each containing a habitable zone. An impassable ocean, swept by tides, divided these lands from one another. Early Christians found this concept difficult to stomach. If each of these lands were inhabited, how did the descendants of Adam get there? And how was the mission of the apostles, to convert the entire world, feasible? Despite these concerns, Macrobius' book, *Expositio In Somnium Scipionis ex Cicerone* [Commentary on the Dream of Scipio by Cicero] and map circulated throughout the Middle Ages in hundreds of manuscripts and was a basic text of medieval science.

In the *Somnium Scipionis* of *de Republica* and elsewhere, Cicero makes clear his belief in the theory of a southern continent or *Antipodes*. Macrobius' fifth century CE commentary carries further the statement of Cicero concerning the habitable character of this southern zone, specifically known as the *Antichthon*. Like Crates, Macrobius affirms that it is reason alone that permits us to assume its habitable character, for the intervening Torrid Zone prevents us from ever knowing what the truth of that matter may be.

The map illustrated below is characteristic of the later medieval versions of the Macrobian world-picture, although some examples preserve richer nomenclature. This example displays a roughly drawn landmass to the left, representing Europe: *Temperata nostra*, above which is the northern Frigid Zone: *Septentrionalis frigida inhabitabilis*. The enclosed water represents the Mediterranean Sea, the Black Sea, etc. To the right is a vaguely formed Asia with the words *Mare Caspian*, set down at random, below which are areas intended to depict Arabia and India. The scribe has mis-located the caption for the Red Sea and Indian Ocean: *Mare Rubrum Mare Indicum*.

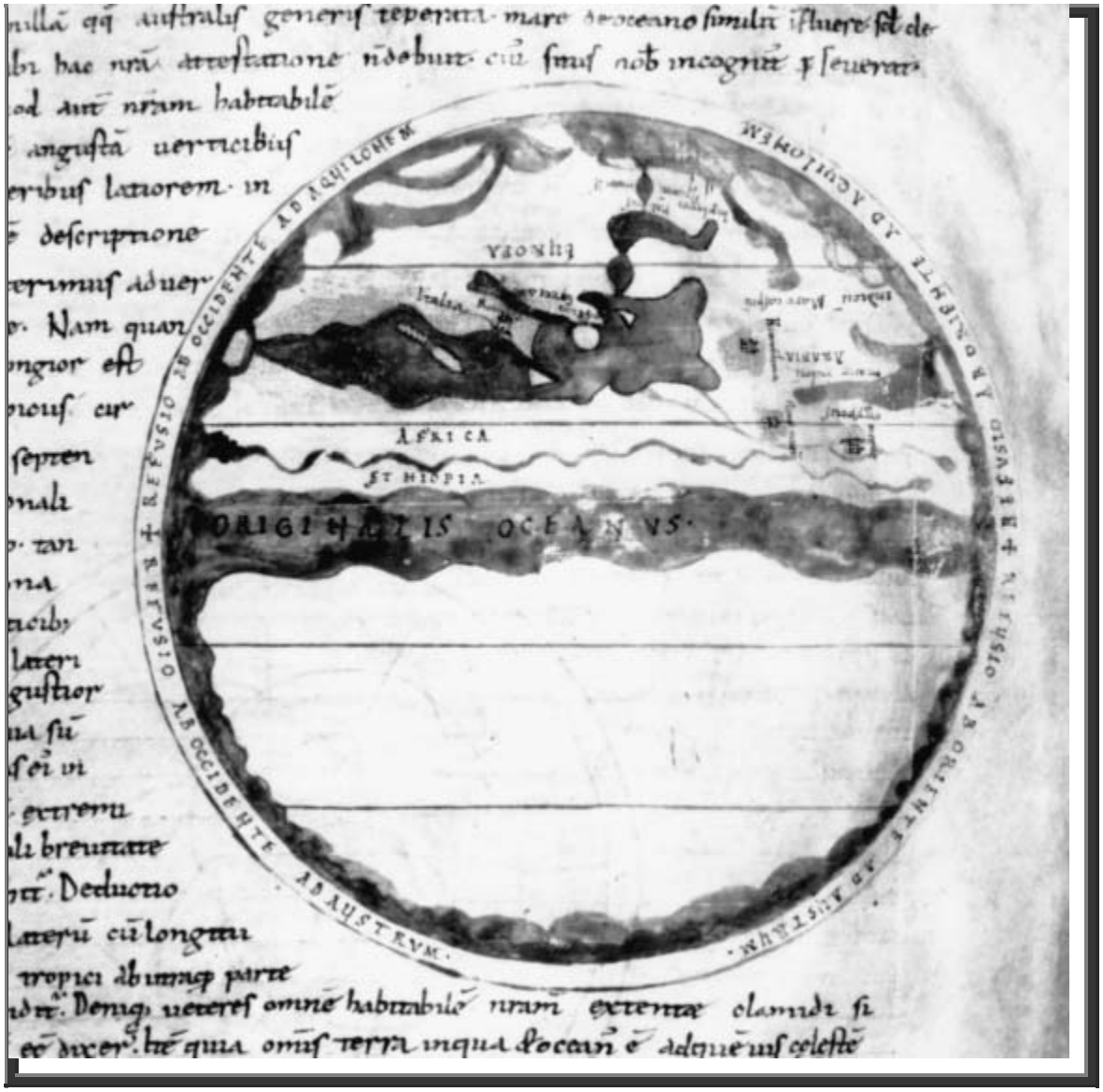
Africa, intercepted by the equatorial *Perusta zona* just below the Mediterranean edge, finally tapers off against the impassable stream which cuts the known world off from the bowl-shaped continent at the south of the circle, *Temparata Antipodum*, and below, the *Frigida Australis Inhabitabilis*. In the ocean to the left of Europe are two large

islands labeled *Horcades Insulae* [the Orkneys]. Other islands and landmasses are reduced, in Cicero's words, to the position of mere 'specks' upon the water.

Macrobian world map, 1483
*The Huntington Library, San Marino, California (HEH 91528)(**#201A**)*
Africa is very truncated and denoted as APHRICA and PERUSTA, with the Atlas Mountains and Ethiopia labeled, along with the cities CARBA and ALECAN

*World map from a south German manuscript of Macrobius, Commentary on the Dream of Scipio, ca. 1000 CE. The North separated from the South by an equatorial ocean-river, and each is divided into the three Greek climatic zones. Note how space in the text has been left for the drawing. The designation of the southern temperate zone as "temperata antiktorum" is unusual, Oxford, Bodleian Library, MS D'Orville 77, fol. 100r. (***#201***)*

*A 16th century edition of In Somnium Scripionis, Lib II, Saturnaliorum, Lib. VII. Venetis: Ioan Gryphius Exudebat, ca. 1560 from Ambrosius Macrobius, who promulgated the idea of a round earth with northern and southern hemispheres showing climate zones and divided by an equatorial ocean. Africa is designated as AFPHRICA, AETIIOPIA and PERUSTA. Note that in most of these examples of Macrobian maps there is little-to-no cultural or natural detail such as rivers, mountains, cities, etc. (**#201**)*



11th century manuscript of Macrobius' Commentary on the Dream of Scipio

This is unusual for the large amount of ecumenical detail in the northern hemisphere in contrast to the entirely blank southern hemisphere. Features eccentric to the tradition of Macrobius maps include the ideograms that mark certain cities (Rome, Jerusalem, Corine [Corinth ?], Syene and Meroe), *and the attempts to represent the British isles and the Scandinavian peninsula in the far northwest, Sicily (the triangle beneath Italy), and other Mediterranean islands. An unmarked river, presumably the Nile, extends from the Mediterranean, and surrounds Meroe; a second river extends from the Atlantic horizontally, dividing Ethiopia from Africa. (**#201Y**)*

Munich, Bayerische Staatsbibliothek Clm 6362, fol. 74r. Appendix 1, no. 23.
(Reproduced with permission from the Bayerische Staatsbibliothek.)

Isidore of Seville, 7th century, **#205**

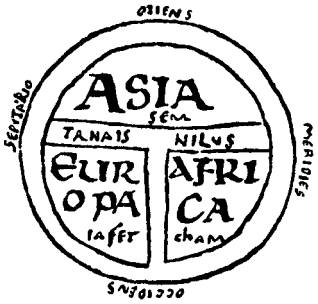
The *Etymologiarum sive Originum by St. Isidore of Seville (600-636 CE)* is a seminal work that was initially compiled in manuscript form on vellum, with drawings in red and black. The *Etymologiarum* consists of 20 Books on 175 leaves, including a *mappamundi*, and was meant to be an encyclopedia that summed up the knowledge accumulated by early seventh century Europe. So significant was its impact that during the following centuries it served as a model of style and composition, as well as a primary source for many medieval writers. While the original manuscript has not survived, many copies of it have, reaching back to the eighth century. The title of *Etymologiae*, or simply *Origines* as it is also known, refers to the fact that the author always gives the etymology of everything that he describes or defines. Indeed, the Xth Book contains only the etymological definition of words alphabetically arranged. Of specific interest, however, are the XIIIth and XIVth Books that deal with geographical topics and where Isidore attempts a survey of the world in a brief, definitive and educational manner. The XIIIth Book discusses the earth as a whole - the oceans, the seas, both open and enclosed, the tides, rivers and winds - in other words, physical geography. In the XIVth Book Isidore enumerates and briefly describes the political divisions of the world.

Concerning Africa, Isidore says little that enables one to put bounds on it; "*it begins at the boundaries of Egypt, continuing to the south through Ethiopia to Mount Atlas.*" As to Ethiopia in particular, he states that: "*the whole of it is under the southern pole [i.e., hemisphere]. Towards the west it is mountainous; in the middle it is sandy; to the east a desert ... In the south it is bounded by the ocean, and in the north by the river Nile. It contains very many tribes of different aspects, with strange forbidding countenances.*"

For a professed theologian, Isidore shows a noteworthy breadth of general ideas, even admitting the possible existence of *Antipodean* lands (roughly translated):

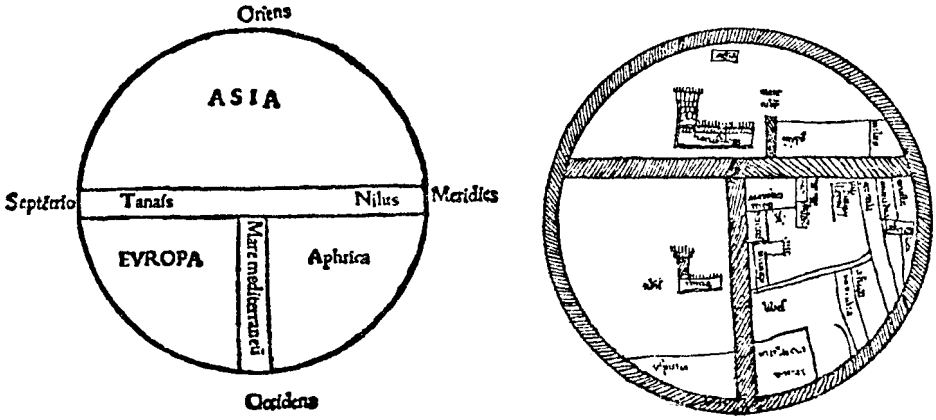
> Moreover beyond [these] three parts of the world, on the other side of the ocean, is a fourth inland part in the south, which is unknown to us because of the heat of the sun, within the bounds of which the *Antipodes* are fabulously said to dwell.

This concession by Isidore as expressed in the brief quote above indicated that he more than half believed in the sphericity of the earth and quite fully in the doctrine of the *Antipodes*. As far as his own graphic expression of the world's geography, one of the map designs frequently associated with Isidore of Seville is actually a survival of the ancient Greek tripartite division of the world into Asia, Africa and Europe, surrounded by the Ocean Sea. As can be seen, this simple design by no means reflects the breadth of knowledge and ideas that can be found in the text. Probably conceived as early as the fifth century B.C. by Ionic philosophers, this popular scheme of dividing the world into the three known major land masses is effected by using a T-shaped partition, a "T" within an "O". Variously labeled *Imago Mundi Rotunda, Noachid* maps, *T-in-O* [*Orbis Terrarum*] and/or *wheel-maps*, this simplistic, diagrammatic plan formed the basis for one of the major design features of most subsequent "learned" medieval cartography and survived as a cartographic form long after more direct information made it difficult to accommodate such an artificial scheme.



The **T** within the **O** produced a world image divided into half (by the cross of the T) and two quarters. The half segment (east) at the top of the map represents Asia, the lower left Europe, and the lower right Africa. These segments also represented, according to Isidore, the divisions of the earth apportioned to the three sons of Noah: Shem, Japhet and Ham, respectively (hence the term *Noachic* maps). The **T** separating the boundaries between the three continents also represented three of the principal waterways of the world. The upright stem of the letter **T** running east and west, to the center of the world was the Mediterranean Sea. The northern (left) half of the cross bar represented the river *Tanais* [Don], and the southern (right) half of the cross bar represented the river Nile.

The most closely related or influenced maps of the T-O's are those that accompany manuscripts of Caius Crispus Sallustius' works and may have originally been drawn to illustrate a passage from Sallust's *De bello Jugurthino* which, like Isidore's treatise, also attempted to briefly describe the countries of the world. While the T-O format is carefully followed, the *Sallust* maps add the legends and pictures or vignettes that increased their aesthetic appeal. The religious theme is predominant, Jerusalem being emphasized with the inclusion of an immense church or castle (***#205F***, ***H***, and ***O***).



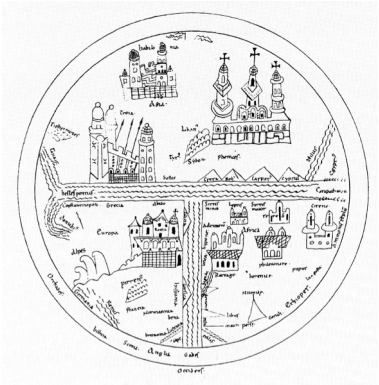
*T-O maps from 12th century Sallust MS from Zacharias' Orbis breviarium (**#205F**)*

Caius Crispus Sallustius, generally known as Sallust (86-34 BCE) was a Roman senator and historian, who subsequent to his falling out with the Caesar, was sent to Africa as a governor of Numidia (In the north-west of Africa}. He spent some time in Africa and returned home a rich man. During his mission there he was involved in various rebellions and conflicts with neighboring powers and has left accounts of his activities.

He produced his most important works on the conspiracy of Catiline and the war of Rome with Jugurtha. Both accounts appear bound in one manuscript that was copied and used as a textbook of history for almost a millennium. In his *Jugurthine War* Sallust writes about Africa, describing its geographic location and climatic conditions, as well as its demography where he narrates how the Armenian mercenaries settled in North Africa and intermingling with the Libyan tribes, gave rise to the peoples that inhabit the region today. An excerpt of the text is given below.

> In the division of the earth, most writers consider Africa as a third part; a few admit only two divisions. Asia and Europe, and include Africa in Europe. It is bounded, on the west by the strait connecting our [Mediterranean] sea with the [Atlantic] ocean; on the east by a vast sloping tract that the natives call the *Catabathmos*. The sea is boisterous, and deficient in harbors; the soil is fertile in corn, and good for pasturage, but unproductive of trees. There is a scarcity of water both from rain and from land-springs. The natives are healthy swift of foot and able to endure fatigue. Most of them die by the gradual decay of age, except such as perish by the sword or beasts of prey, for disease finds but few victims. Animals of a venomous nature they have in great numbers, Africa, then, was originally occupied by the Getulians and Libyans, rude and uncivilized tribes, who subsisted on the flesh of wild animals, or like cattle, on the herbage of the soil. They were controlled neither by customs, laws, nor the authority of any ruler, they wandered about, without fixed habitations and slept in the abodes to which night drove them. But after Hercules, as the Africans think, perished in Spain, his army, which was composed of various nations, having lost its leader, and many candidates severalty claiming the command of it, was speedily dispersed. Of its constituent troops the Medes, Persians and Armenians having sailed over Into Africa, occupied the parts nearest to our sea.
>
> The Medes and Armenians connected them selves with the Libyans who dwelled near the African sea, while the Getulians lay more to the sun, not far from the torrid heats; and these soon built themselves towns, as, being separated from Spain only by a strait, they proceeded to open an intercourse with its inhabitants. The name of Medes the Libyans gradually corrupted changing it in their barbarous tongue, into Moors.

Some copies of *Sallusts* manuscripts, which have reached us, also include a simple T-O map, which relates to his narrative of the *Jugurthine War.* Many copies of this map mention the name of Armenians in North Africa, along with the names of the Medes and the Persians. These were probably the forbearers of the first T-O maps, as we know them today.

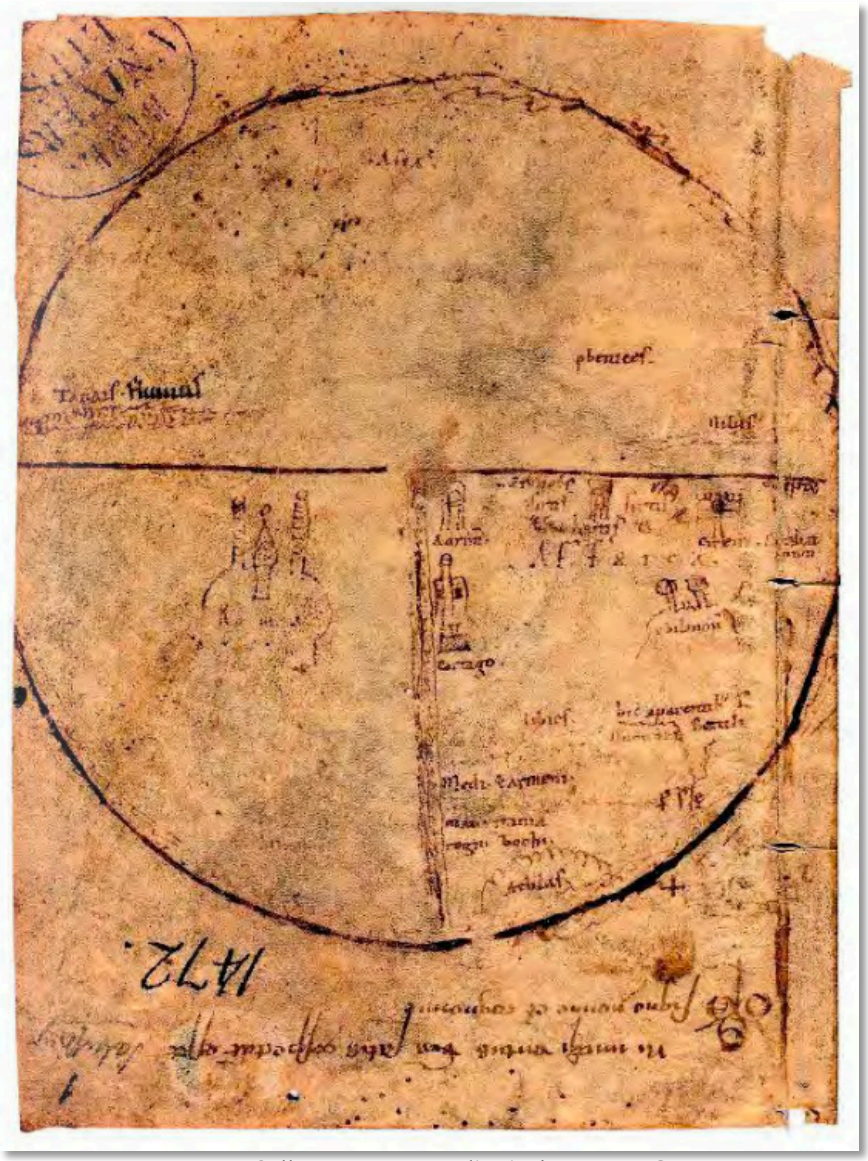


As mentioned above, Sallust's works were copied and re-copied and were in use until the late medieval period and many of the later copies of his manuscripts have reached us. Some of these include basic T-O maps, which show the continents, including the names of some countries and peoples. Since they are about the history of northern Africa, this particular area is shown in more detail. These maps are taken from various manuscript copies of *Sallusts* works some of them dating from as late as the 13th and the 14th centuries, when they were still in use as textbooks by historians and scholars.

The map shown below is a basic T-O map and is one of the oldest surviving *Sallust* maps. The copy dates from the ninth or tenth century and is drawn on vellum and taken from a *Sallust* manuscript now in the University of Leipzig in Germany. Unusual for T-O maps, it includes the vignettes of some cities and provinces. In line with all T-O maps, this one is also oriented with East at the top.

The territory of Asia includes only four legends, *Tanais, Asia, Phenices* and *Nilus.* In the area of Europe there are no legends, only the city of *Roma* is represented with a vignette of a castle and its name, attesting to the importance of the power of Rome in the Empire.

Since Sallust was the governor of Numidia, he has naturally paid more attention to the details of this continent. *Affrica* contains 24 legends, which include cities of *Harran, Cartage* [Cartage] plus four other cities. Various provinces are shown including rivers and names of certain tribes. The fourth line from the center bottom, near mount *Athlas* reads *Medi - Armeni,* a reference to the Armenians and Medes having settled in the area.

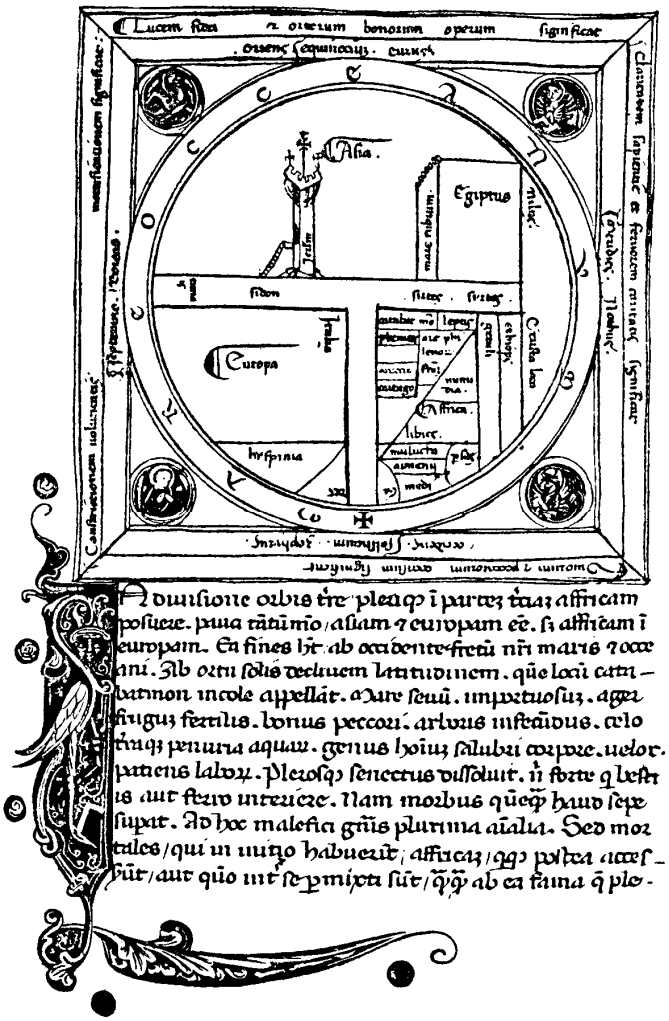


Sallust mappamundi, ninth century CE,
*University of Leipzig Library, Leipzig, Germany, MS 1607, f. 1 r, (**#205G1**)*

The map below is from a 14th century copy of a *Sallust* manuscript. It shows the accepted tripartite division of the circular world. In Europe only the name of the continent and two countries of *Italia* and *Hyspania* are shown. In Asia beside the name of the continent, river *Nilus*, *Egypt* and *Mare Rubrum* [Red Sea] are mentioned, while the tall rising tower bears the legend *Jrslm* [Jerusalem].

In the bodies of water dividing the world into the three continents, the Mediterranean bears no legend. The left arm of the T is inscribed *Tanais*, but the right arm, which should have borne the name *Nilus*, is only connected to the Nile at the right extremity, where the *Nilus* is shown as a vertical line. Near the Nile the land is described as *Exusta* [parched], a reference to the southern parched areas. The central part of the T bears the legends of *Sidon* and *Sirtes* (twice). The water surrounding the whole of the circular landmass is inscribed *Mare Oceanum*.

In Africa the picture is completely different. There are 15 toponyms and the countries of *Phoenicea, Carthago, Ethiopia, Numidia* and mountains of *Catabatmon* are shown. At the centre bottom (Western Africa) the names of the three tribes of *Armani* [Armenians], *Medi* [Medes] and *Perside* [Persians] are singled out. These are the people, that according to Sallust settled in North Africa, giving rise to the North African tribes of today.

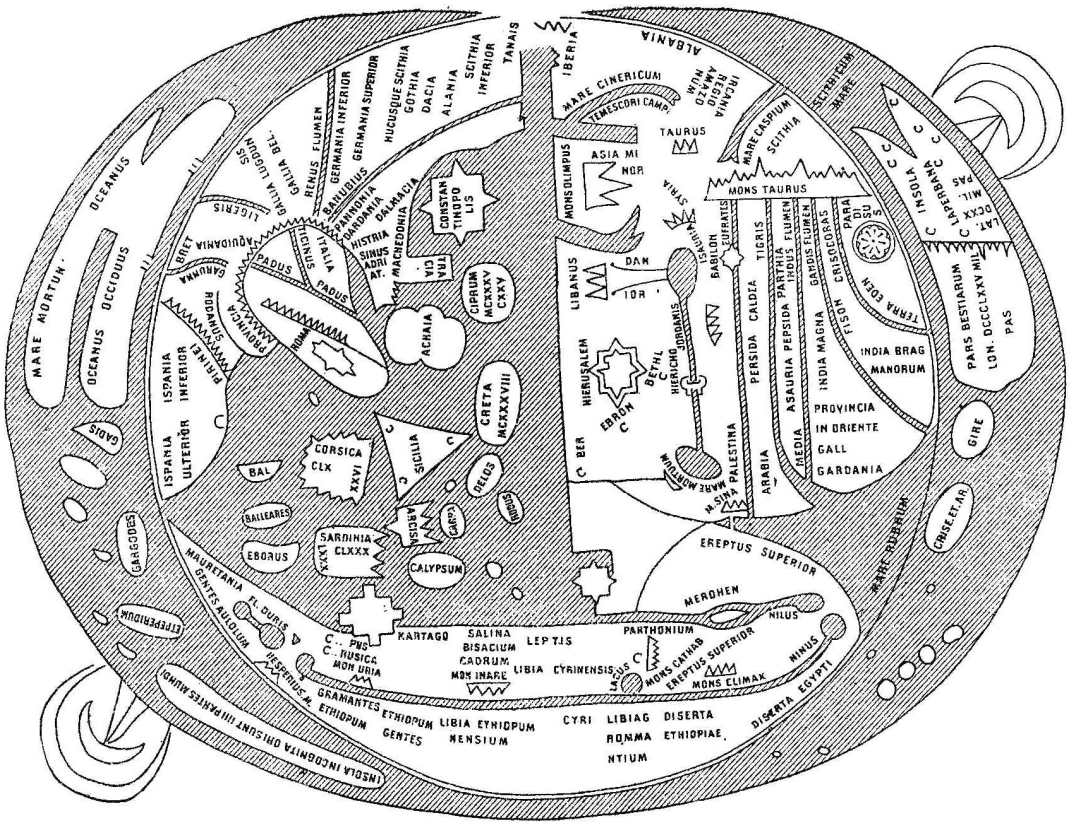


From Sallustius, the Bellum Jugurthinum
14th century. Bibliotheca Marciana,
Venice. Ms. Ant. Lat. 432 (1656), f. 40r.
(#205H)

*T-O Noahic map from Jean Mansel's La fleur des histiores, Lambert of St Omer, 30x22cm, 15th century showing the three continents settled by the three sons of Noah – Shem, Ham and Japhet (**#205**)*

The map shown here is from Jean Mansel's *La fleur des histiores, Lambert of St Omer* epitomizes the T-O tradition coupled with the religious emphasis in the maps produced in Europe during the early medieval period by showing the three continents settled by the three sons of Noah – Shem, Ham and Japhet (oriented with East at the top, the African continent is enlarged below).

This "Vatican T-O" is an eighth century T-O map bound with Isidore's Etymologiarum. *One of the oldest detailed world maps, placed with a group of computus materials. It shows the inhabited continents as a circle surrounded by the Ocean. To the southwest of Africa is the island which has been interpreted as a vestigial fourth continent. Paradise is represented by a rosette in the Far East. Two apparent islands in the northwest are both labeled with the names of seas: 'mare mortun' and 'oceanus occiduus' [dead sea, or sea of the dead, and western ocean]. Oriented with East at the top. (***#205***)*



*An interpretation of the Pseudo Isidorean Vatican map of the world, re-oriented with North at the top. Note that the Nile River seems to flow east and numerous areas such as Mauritania, Egypt, Meroe and Ethiopia are labeled in Africa (**#205**)*

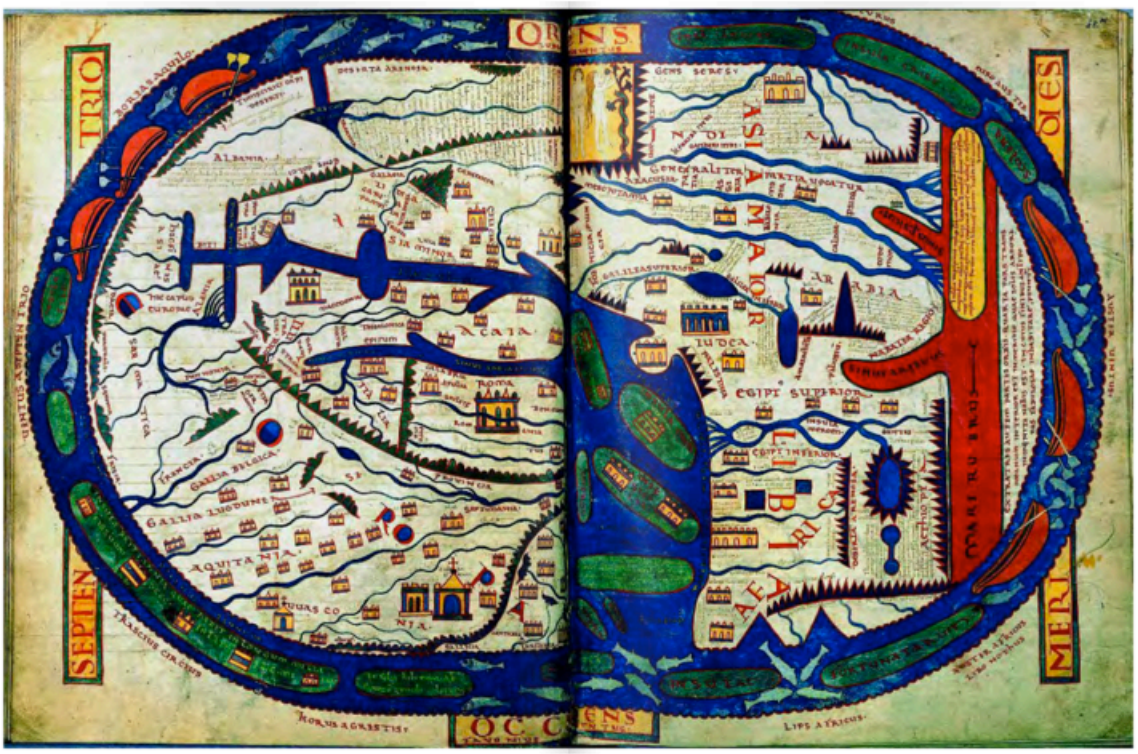
The much more elaborate map of the world shown below also belongs to the T-O category of maps, but has already evolved and contains much more information than the previous T-O maps. There are many copies of T-O maps in the various works of Isidore Bishop of Seville which are mostly diagrammatic and simple, though a flew others such as this reproduction from an 11th century manuscript copy, are more elaborate and contain mythical, as well as religious symbols and legends.

This map is also in the basic shape of the T-O maps, oriented with East at the top. The stem of the T in the map, occupying a large portion or the map area, is the Mediterranean Sea with twenty-two islands. Three of the islands include vignettes of buildings. Of these the triangular island in the West Mediterranean is the island of Sicily, the square island in the southeast is Crete and the smaller rectangular one in the east is Cyprus. The Red Sea, combined with the Arabian Sea, is represented as the large red wedge-shaped inlet at the top right of the map. The biblical parting of the Red Sea permitting the Israelites to pass through is also shown. The twelve principal winds are surrounding the globe around its external perimeter. The map is filled with vignettes of buildings and churches representing towns and religious centers, the largest one being Jerusalem, topped with a large cross.

Africa (on the right) brims with drawings of wild beasts and towns, the most important of which is Alexandria situated between the two mouths of the Nile. There is

a large three-arched building named *Castellum Alexandri* setting on the three-peaked mountain, bearing the legend *Mount Catabathmon*. This, according to Sallust is the area between Libya and the Egyptian city of *Seyene* [Aswan]. The city of *Carthago* is shown on a peninsula protruding from Africa towards Sicily. To the west of Carthage, between the two rivers the red-lined building vignette bears the legend of *Yppo* [Hippo, today's Annaba]. Further west, near the Atlantic Ocean the green mass is *Mons Atlas* [the Atlas mountains], with the city of *Calpe* [Gibraltar] to its left. This map also shows a close relationship with the *Descriptio mappe mundi,* attributed to Hugh Saint-Victor (1096-1141), placing two of winged serpents, one of them labeled *prester*, along the southern edge of Africa.

The Munich Isidore mappamundi, ca. 1130, **#205**
oriented with East at the top (Africa is on the right-hand side populated with fantastic creatures and castellated settlements)



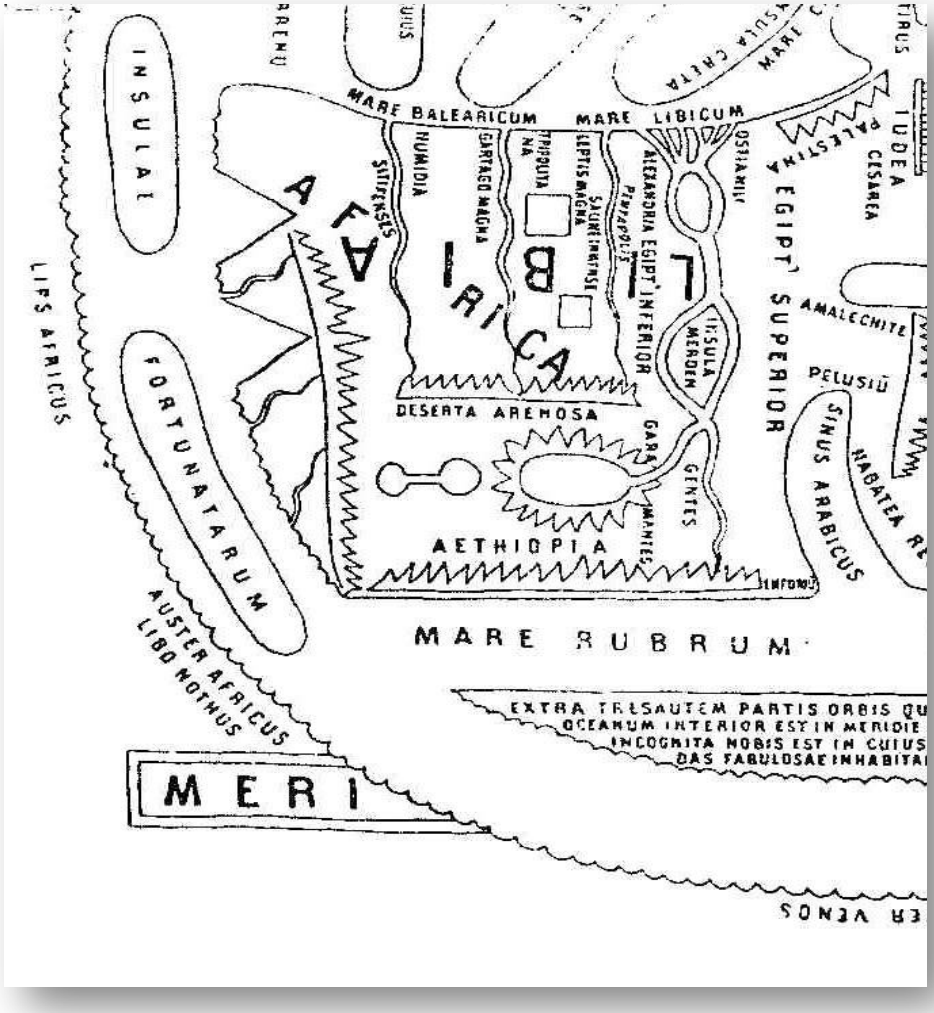
Saint-Sever, a.k.a. Paris I, Beatus mappamundi, 1060, Bibliotheque Nationale, Paris, France, oriented with East at the top (see monograph ***#207.13****)*

Beatus Mappaemundi, 11th century, **#207**

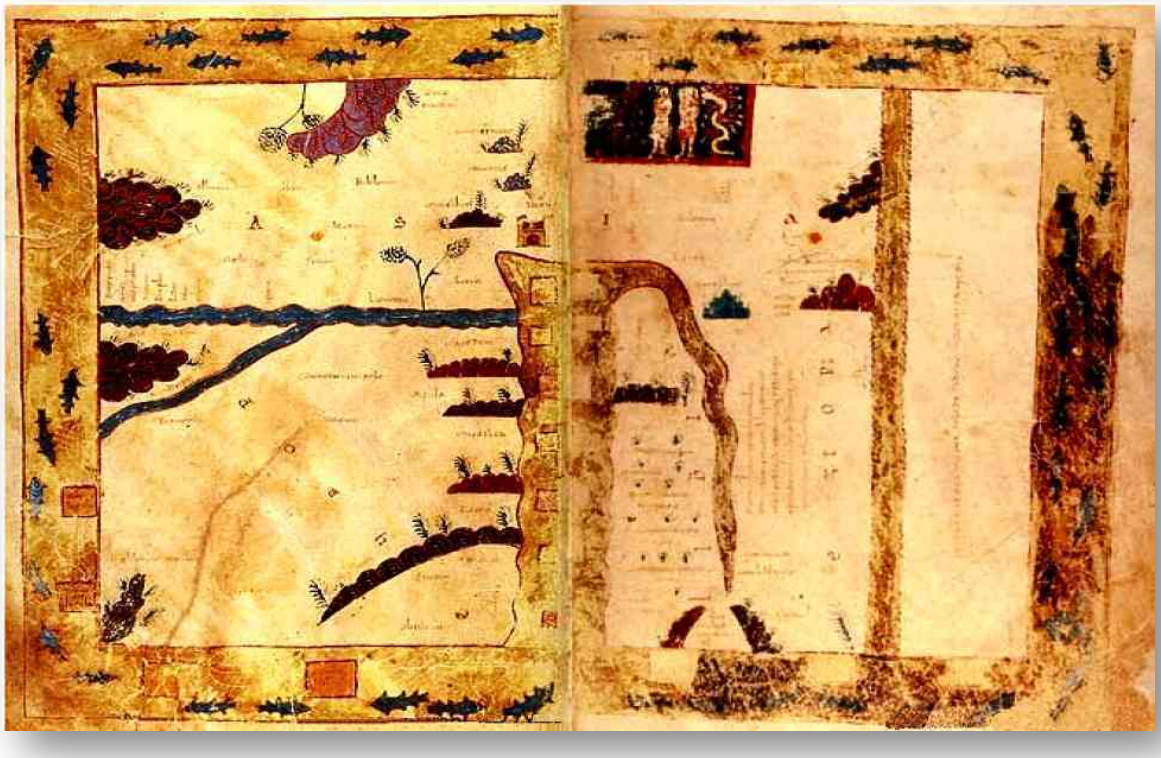
A "fourth part of the world", represented as a strip of land along the southernmost edge of the earth, beyond the *Mare Rubrum (on the far right)*, is, as it is on all other Beatus *mappae mundi*, displayed here on the *Saint Sever* edition of Beatus. A legend, again taken from Isidore, informs us on the map that "*In addition to the three parts of the world, there is a fourth part beyond the ocean in the midst of the south and unknown to us on account of the heat of the sun. Within its confines the Antipodians are fabulously said to dwell.*"

In the south the *Mare Rubrum* [Red Sea], colored red, cuts off the African continent and branches into two gulfs in the east, the Arabian and Persian Gulfs *[sinus Arabicus* and *sinus Persicus]*. The Nile River in the *Saint-Sever* map, which originates in a lake within a mountain chain near the *mons Atlans* [Atlas Mountains], is shown as two rivers that join and un-join three times, creating two interior islands, among which we find the *insula Meroen,* and ends in the form of a delta before flowing into the Mediterranean. The lake of the river Nile is surrounded by mountains; a text next to it explains the representation: "*These mountains lie beneath a marsh similar to the Sea of Azov through which the Nile flows*". Another example is the texts on the Tribe of Israel's exodus through the desert. The encircling ocean on the *Saint-Sever* map is interrupted by inlets representing two gulfs off the southwest coast of Africa north of the Atlas Mountains. This ocean is also filled with illustrations of fish in a blue color, boats with oars but no sails, and no sea monsters.

Detail of the Saint Sever Beatus mappamundi showing Libia (Africa) and the "fourth continent", reoriented with North at the top, ***#207.13***



An interpretive drawing of the St Sever Beatus mappamundi showing Africa, ***#207.13***



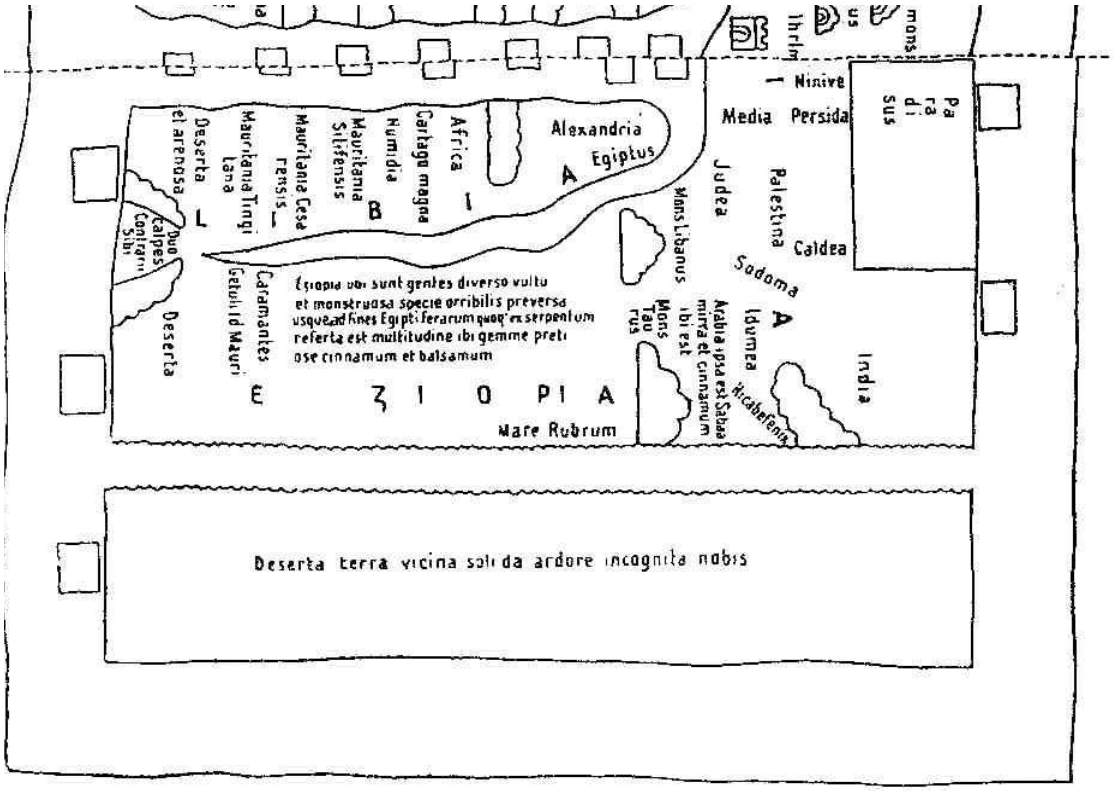
*The Escalada***,** *a.k.a. Ashburnham, Morgan 644, New York I, and/or Magius, Beatus mappamundi, 926 A.D., oriented with East at the top,* **#207.2**

In the *Escalada* edition of the Beatus *mappamundi* shown above, the river Nile follows a single route towards the west of Africa. *LIBIA* [Africa, which is subdivided to include the label of *EZIOPIA*) is the area depicted on the right and *EUROPA* [Europe] is to the left, separated by a strip representing the Mediterranean Sea and its islands; and ASIA is labeled across the top. Province-boundaries of Africa, as they were understood, are marked by ornamental trees. All the *mappaemundi* of the Beatus *Family*, as well as those of *Milan, Saint-Sever* and *Lorvão* of *Family I IIa (see monograph* **#207***)*, conceive of Ethiopia as a land where precious stones, cinnamon and balsam abound, but one finds lurking natural dangers in this region, specifically serpents and the inhabitants, horrible monstrous beings with different faces. Although the maps of the Beatus codices only allude in writing to these dangers, the depiction of the serpents in the Ethiopian region is relatively common in mediaeval cartography. These maps of the Beatus codices repeat the textual information on Ethiopia in an almost identical form, with some orthographic differences: *Eziopia ubi suntgentes diuerso uultu et monstruosa specie orribilis precensa est usque ad fines Egipti ferarum quoque et serpentium, referta est multitudine ibi gemme pretiose, cinnamum et balsamum.* [In Ethiopia there are fearsome people with their different faces and monstrous appearance. It extends to the frontier of Egypt. It is full of a quantity of wild beasts and serpents. Here there are precious stones, cinnamon and balsam.]

One of the most unusual feature of this map, and this is a characteristic of all Beatus maps, is the existence of a southern continent, land representing the northern littoral of an austral continent. It is separated from Africa by a band of water, here labeled the *Mare Rubrum*. A legend upon that strip of land reads (in translation) as follows:

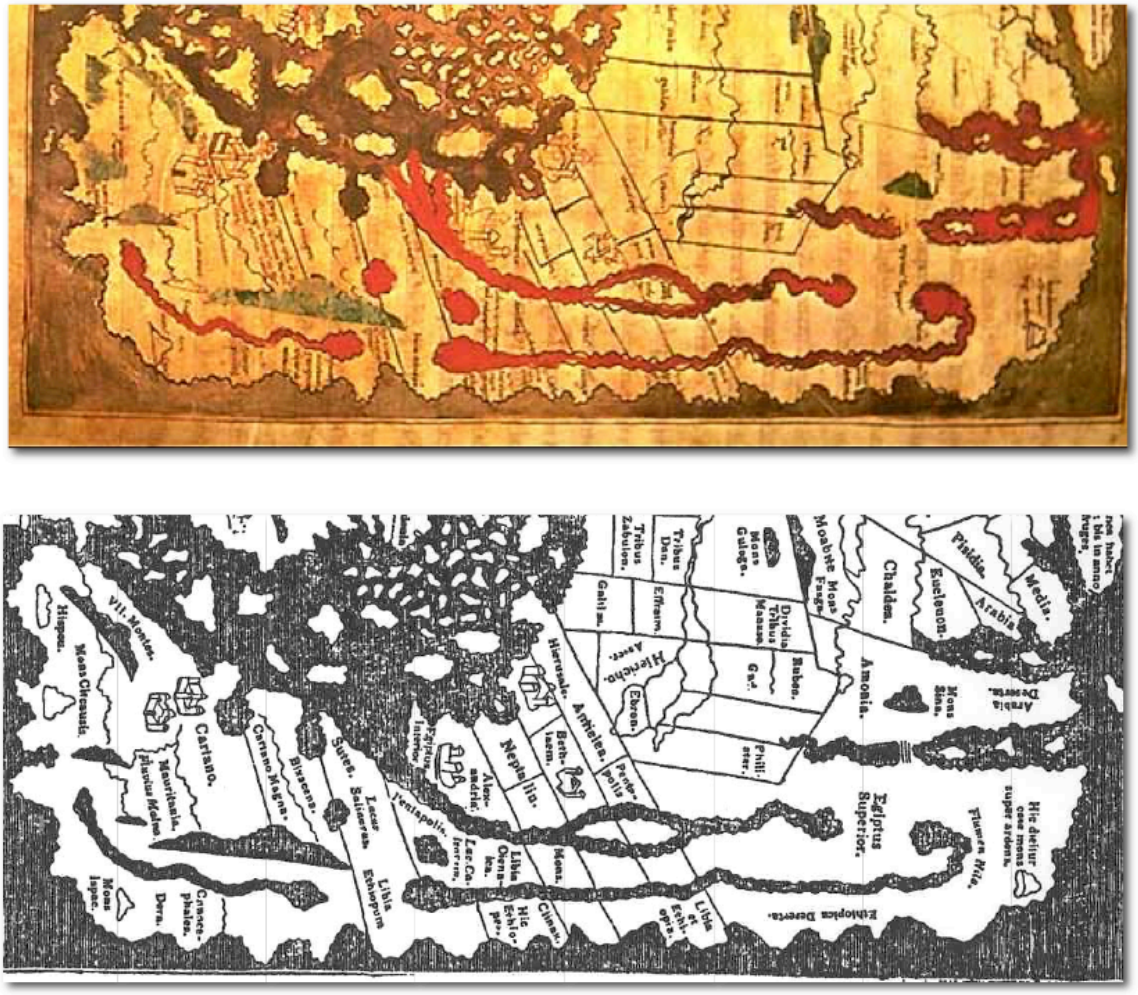
Deserta Terra vicina solida ardore incognita nobis.
Desert or wilderness land, neighboring [and] firm, unknown to us [because of] the burning heat.

Longer inscriptions appear on other versions of the Beatus map, and their variety reveals the confusion about the location of this fourth continent. The conventional interpretation is that it indicates the presence of a continent in the southern hemisphere, as was shown on zonal maps (see ***#201***, *Macrobius*). The confusion is heightened by reference to the *Antipodes*, which properly speaking should be located in the Western Hemisphere, not the Eastern. This feature has earned the Beatus maps a special category within the medieval map classification, that of "quadripartite maps".



A portion of an interpretative drawing of the Beatus Escalada mappamundi showing just LIBIA, reoriented with North at the top, ***#207***

*The Cottoniana or Anglo-Saxon Map, c. 995, (**#210**)*
British Library, Cotton MS Tiberius BV, f.56v, oriented with East at the top



A portion of the Cottonian map, reoriented with North at the top showing just Africa

Cottonian (Anglo-Saxon) Mappamund, 995, ***#210***

On the *Cottoniana* map shown above, the lakes east and west of the *Lacus Salinarum* near the north coast in Africa are noteworthy. *Mons Clinax [-max]* in the middle of the South African coast, is perhaps a misty reference to the "Chariot of the Gods", as described by Hanno and the Greek and Latin geographers who copied him; while the two small unnamed isles, west of Mount Atlas (in green), are probably intended for the *Insulae Fortunatae.* The Nile is shown in two red sections. Flowing eastward from Upper Egypt, it turns west and somehow disappears underground to emerge further down and continue its flow towards Alexandria and the Mediterranean Sea.

Islamic Contribution:

It is surprising that the diffusion of Islam and therefore of literacy throughout much of the western Sudan by the end of the 13th century seemingly did not result in a legacy of Arabic cartography in Africa. However, in sub-Saharan Africa, Islam was grafted on to pre-existing societies, rather than subsuming them. Arab geographies were mainly

concerned with North Africa, but the east coast of Africa was known and recorded by the Arabs. It is shown in a 16th century Ottoman maritime atlas. However, Arab navigational techniques did not require charts based on rhumb lines or grids of latitude and longitude, so that there were no pre-Portuguese navigational charts of the Indian Ocean that might have been expected to provide source material for improvements in the depiction of the coastline in early maps of East Africa. Nevertheless, Arab travelers compiled their own pilots and recorded coastal settlements as far south as the Limpopo River. The 11th century scholar, al-Biruni corrected the convention of an eastward extension of Africa south of the Equator. Also by the 11th century, Idrisi had mapped the East African coast. Inland, travelers such as Ibn Battuta seem to have had little use for maps, but from the 12th to the 14th centuries, written records were compiled by Arab travelers into the interior. These records were translated much later, mostly into French, eventually becoming rather unreliable sources for nineteenth-century European cartographers.

By the end of the 15th century, knowledge of Africa had reached China and was incorporated into their concept of a Sino-centric world, but no major changes to the map of Africa are credited to the Chinese, who may have utilized Arab sources in part.

World Map of al-Istakhri, 1193, ***#211***

The Islamic author Al-Istakhri was virtually unknown apart from his work entitled his work *Kitab al-masalik wa-al-mamalik*. He does not appear in any of the standard Arab biographies, and all we know about him personally was his meeting with the more renown Ibn Hawqal *(**#213**),* which is related in the latter's own book. Even his work can be dated only from internal evidence, to the middle of the 10th century A.D. Al-Istakhri's work was a commentary on the maps, and he states that "*our plan is to describe, and to delineate on maps, the various seas, ... affixing the name of each, so that it may be known in the maps,*" thus showing the importance he placed on the maps. The cartography, therefore, was still the essential element in the work.

It soon became popular, however, for there are many early editions, abridgments, and translations into Persian, often differing considerably from each other. The maps accompanying the geographical texts from what is termed the "Balkhi School" of geography seem at first sight to be an unnecessary supplement to the texts, the text being so complete in itself.

The world maps *(known as al-Istakhri I/II)* and the map of the Indian Ocean, which is enlarged from it and always referred to as the *Persian Sea*, are a different proposition. These two maps are built up by what might be called "academic conjecture"—an armchair attempt to see all the provinces set down relative to each other. The whole has to fit into a stereotyped idea of what the whole world should look like. According to Arab geographical theory, based entirely on Ptolemy, this would be a sphere. Since the far side of a world sphere (an upside-down world) was practically inconceivable, only a hemisphere was thought to be inhabitable. This could easily be "projected" onto a flat area and represented by a circle. That Ptolemy represented the inhabitable world as occupying 180 degrees of the earth supported this idea. Thus al-Istakhri represented the world as a circle surrounded by the *Encompassing Sea*, with the two main seas reaching in from the east and the west toward the center, where they would join except for a small, narrow, land barrier—the *barzakh* of the *Qur'an*. In his text, al-Istakhri gives a simple description of the world to explain his map. "*The earth is divided into two by the two seas, so that we have a north or cold half and a south or hot half. People in these two halves*

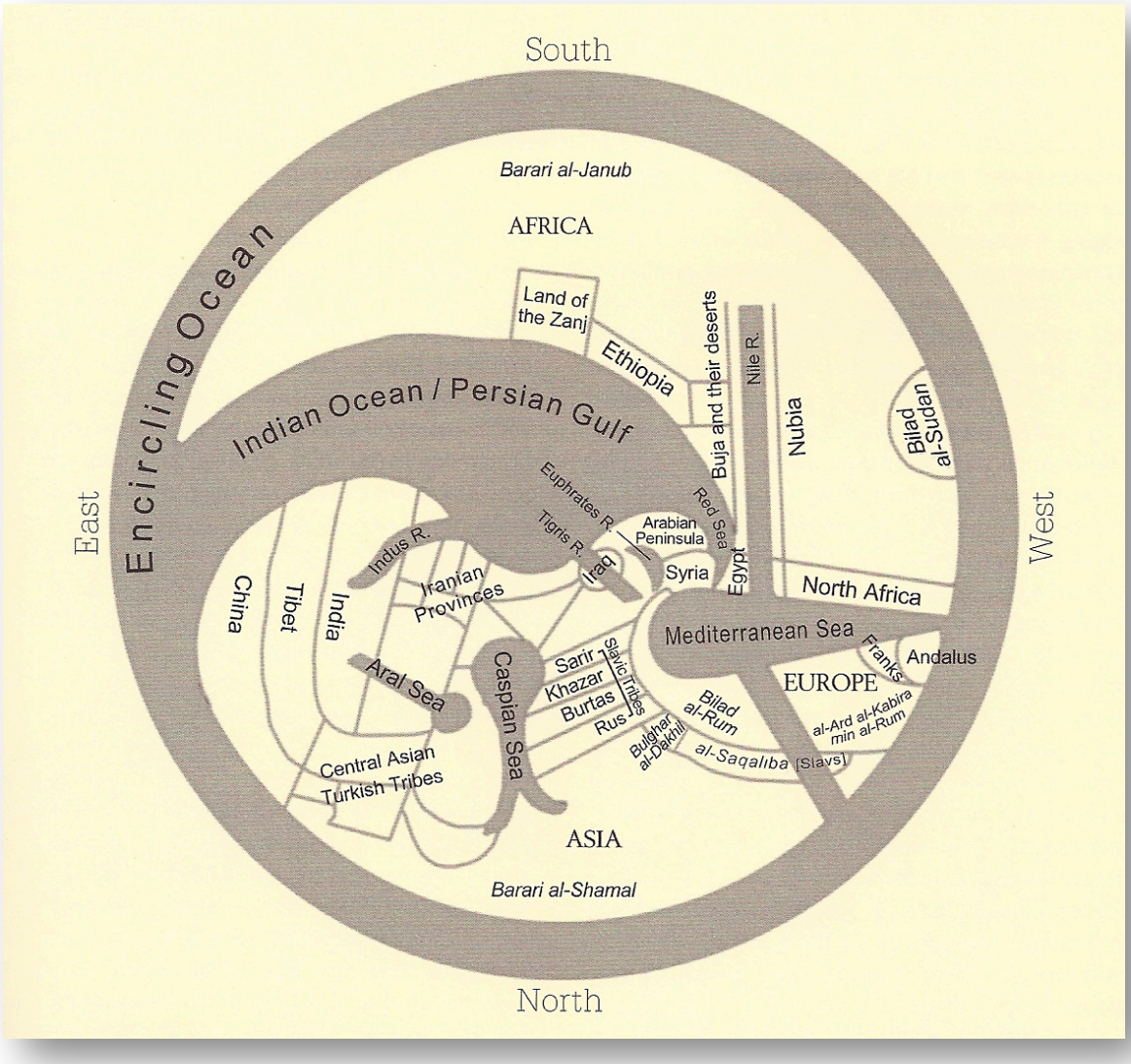
get blacker as you go south and whiter as you go north etc."

Each al-Istakhri map consists of a set of geometric configurations. Though some are more geometric than others, most lines are straight or arced, rivers are wide parallel lines, and lakes are often perfect circles. Towns are sometimes squares, circles, or four-pointed stars or, if they are stopping places on a straight route, resemble small tents or perhaps doors to caravansaries. Thus much of the drafting is ruled with either a straight or a curved edge. The only exceptions are mountains, which are drawn as a collection of peaks or perhaps piles of rocks, though even here the base, which probably represents the position of the range on the map, is a straight line or a regular curve.

The historian Karen Pinto points out that every medieval Islamic cartograph of the world contains a curious anomaly. Consistently located on the eastern flank of Africa is a double-territorial ethnonym for an obscure East African tribe: the *Buja* (marked on the map below with a red circle). Mention of them in medieval Middle Eastern historiography is rare and, at best, superficial, yet no Islamic *mappamundi* from the 11th to the 19th century leaves them out. Not only are the *Buja* privileged with a permanent berth on the Islamic world map, they are also the only place on the map signified with a double territorial marking.

An al-Istakhri world map is characterized by distinctive shapes, especially for the seas and rivers. In the northwestern quadrant (lower right) of each world map, is an elongated, tear-shaped Mediterranean Sea, with two outstretched arms representing the Nile (at right angles to the Mediterranean) and the Bosphorus (at 45 degrees). The two arms together give the Mediterranean a bulging cruciform appearance. At the other, left or eastern, end of the map, the combined Persian Gulf-Indian Ocean sweeps in as if threatening to hook onto the Mediterranean, a distinctive characteristic of this group of maps. Africa, which always sweeps across the top of these world maps, has a pronounced pointed dagger or crescent-like shape. Below, as if sheltered by Africa, is a double-humped Asia. In the lower right corner of the image, between the Mediterranean Sea and the *Encircling Ocean*, is a triangular European land mass. The stark, unadorned stylistic simplicity of the maps and the dramatic shapes of the lands and seas are among the most visually striking features of the world maps in this group.

Map of the world from Istakhri, 878/1473, oriented with South is at the top.
*In the red circle, the words "al-Buja" marked prominently astride the upper reaches of the Nile between al-Habasha [Abyssinia] and the Bilad al-Nuba [Land/Territory of Nubia]; and "Mafaza al-Buja" [deserts of the Buja] as a strip of land between the Red Sea and the Nile. (**#211**)*

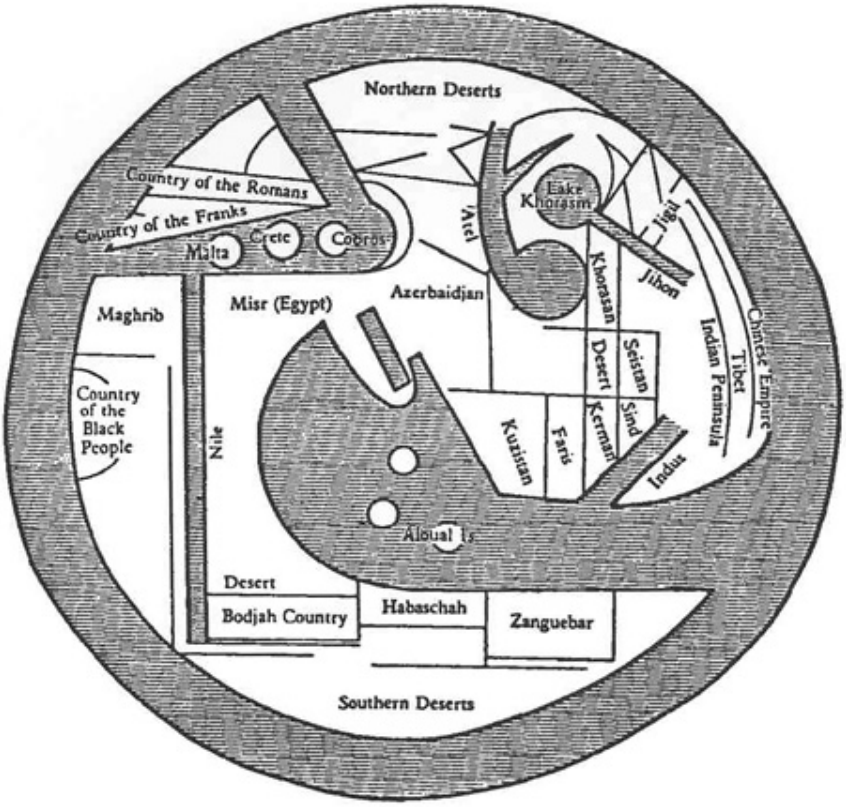


*Interpretive drawing of Istakhri's world map (**#211**)*

Maghrib, Egypt and the *Saharo-Sahelian* sector lying to their south and to the Iranian territories in the east are visibly reduced, whereas the area accorded to *Abyssinia* has been increased. The bulbous head of the Arabian peninsula has become smaller, significantly reducing assigned to the Arab tribes as well assigned to Iraq. The areas along the edges of the map have expanded so that the expanse around the northern and southern extremities (appropriately termed *Barari* meaning open-country/steepe/ desert) have ballooned. In the territory of Africa countries specified include *Misr* [Egypt], *Maghrib, Land of the Blacks, Sehhe, Habashe* [Ethiopia] and *Zangbar* [Zanzibar]. The Nile is the vertical blue strip descending from *Habashe* to the Mediterranean, where it arrives between *Misr* and *Maghrib*.

In his text, al-Istakhri gives a simple description of the world to explain his map. "*The earth is divided into two by the two seas, so that we have a north or cold half and a south or hot half. People in these two halves get blacker as you go south and whiter as you go north etc.*"

The main kingdoms are listed together with the kingdoms that adjoin them. This is the only place where non-Islamic areas are given any mention. Measurements are attempted; thus the width from the *Encircling Ocean* in northwestern Africa to the ocean in China was 400 days' journey. However, the distance north to south was not measurable. There were 210 days' journey through inhabitable lands, but the extreme north was uninhabited because of intense cold and the extreme south because of intense heat.



An Arabic wheel-map, that of Abu Ishaq al-Farisi al-Istakhri and Abu al-Qasim Muhammad idn Hawqal (950-970). Re-oriented with North at the top, it clearly shows the strong tendency to geometrical stylization characteristic of the second period of Arab cartography. In the originals (shown above), South was normally at the top. Note also the curved, eastward extension of the southern part of Africa, a mistake that the Chinese were the first to correct (from Needham after Reinaud) ***#211***

Ibn Hawqal World Maps, 470/1085, ***#213***

Abu al-Qasim Muhammad ibn Hawqal was another Islamic geographer from the 10th century that produced maps alongside al-Istakhri *(see monograph* ***#213****)*. Ibn Hawqal goes one stage further than al-Istakhri. In addition to his text on a particular region, he also inserts a section that describes the map literally in the simplest terms. Whether this is meant to be an aid for the cartographer is difficult to say. This description can be understood only in conjunction with the map itself and does not add to the information in the main text. The section can easily be deleted without affecting the rest of the text.

The era of Arab cartography during which Ibn Hawqal worked is characterized by collections of distinctive maps accompanying geographical treatises, although these treatises are mostly alike in both the number of maps and the information they contain. During this time they no longer show any trace of the influence of European cartography and represent somewhat of a decline also in the influence of Claudius Ptolemy (***#119***). The maps produced during this time were primarily artistic and ingenious schematic drawings. Compasses, ruler, and set-square produced the necessary geometrical figures. Some of the maps were skillfully constructed and stylized itineraries, showing roads and towns, but without any indication of distances; while some were highly schematic world pictures. Because of the peculiar character of these groups of maps and their overall similarity, they have been called the *Atlas of Islam*.

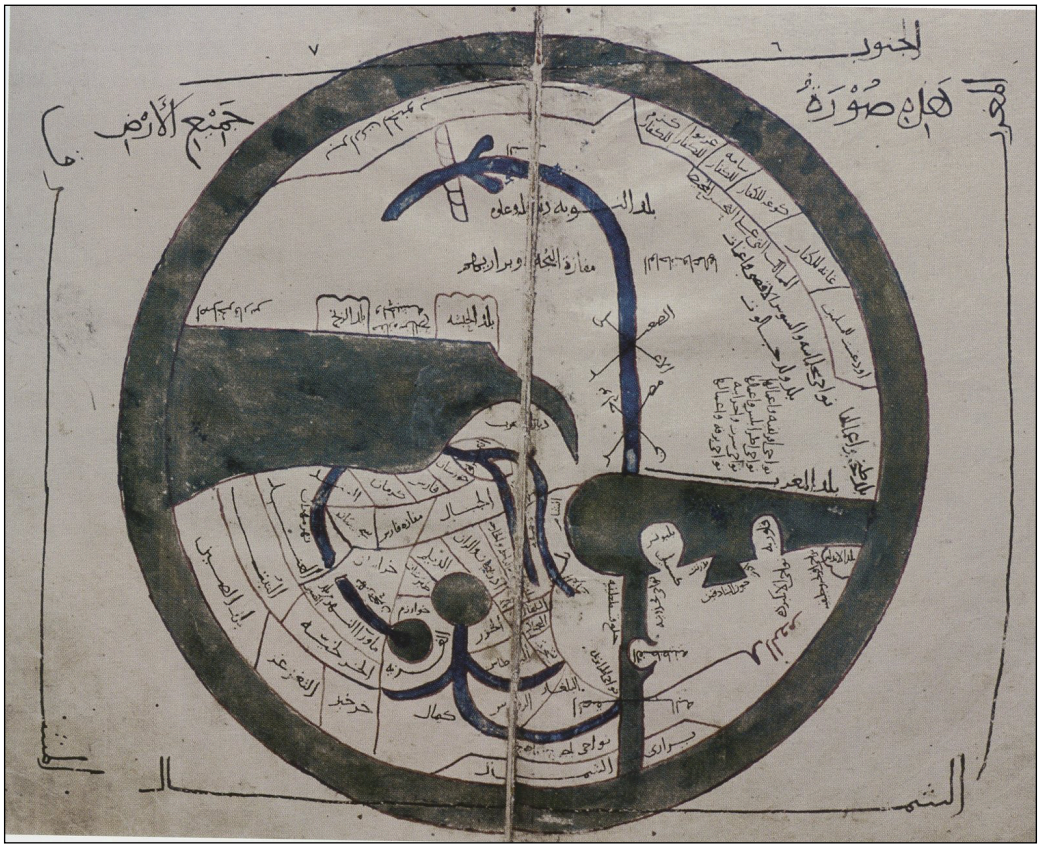
Ibn Hawqal's world map, Arabic, 980 CE oriented with South at the top
*Note the Nile River is the only feature displayed in Africa, and the long east-west block of antipodean land attached to Africa that somewhat mirrors the "land-bridge" of Ptolemy enclosing the Indian Ocean (**#213**)*

One map of Ibn Hawqal's (shown above) illustrates a much less stylized picture of the world, but does include a circumfluent ocean, an almost land-locked Indian Ocean (after Ptolemy), and an interesting and speculative West African coastline, hinting at the Gulf of Guinea. The Nile River seems to be the only river system deemed worthy of illustration. Distortion of Europe is great with Italy laying east-west. Particularly of interest here is the inclusion of the *Antipodes* or *Southern Continent*. In the beginning of his work, Ibn Hawqal outlines the scope of his objective:

> I have described the earth in its length and breath; I have given a view of the Moslem provinces, but I have taken no account of the division of climates, in order to avoid confusion. I have illustrated every region by a map. I have indicated the position of each, relative to other countries. The boundaries of all these lands, their cities and cantons, the rivers that water them, the lakes and pools that vary their surface, the routes that traverse them, the trades that flourish in them - all these I have enumerated: in a word, I have collected all that has ever made geography of interest either to princes or to people.

However, there are certain exceptions, Ibn Hawqal tells us later, which he felt it necessary to make.

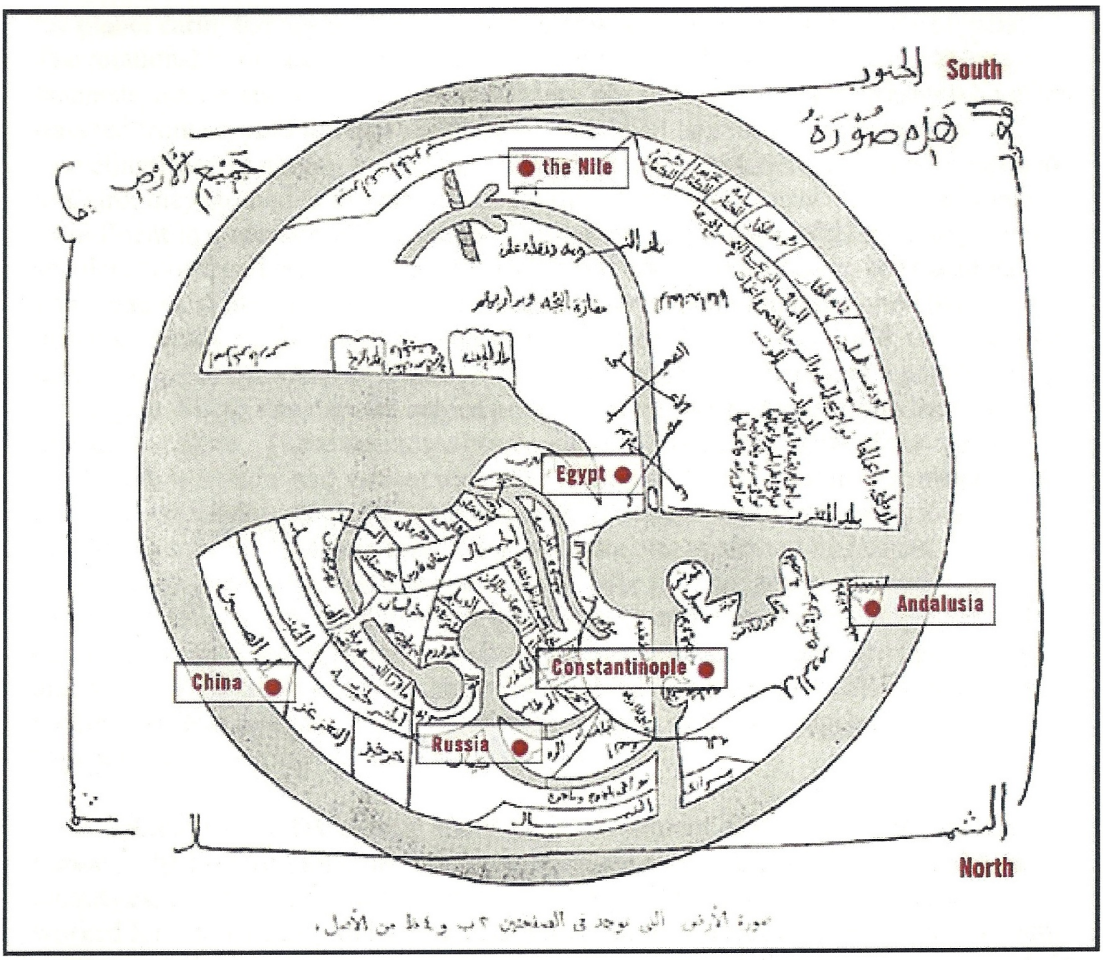
> I have not described the country of the African blacks and the other peoples of the torrid zone because, naturally loving wisdom, ingenuity, religion, justice, and regular government how could I notice such people as these, or magnify them by inserting an account of their countries?



*Earliest extant world map from Ibn Hawqal's Kitab surat al-ard [Book of the Image of the World], 470/1085, oriented with South at the top (**#213**)*

The world depicted above is a more typical world map by Ibn Hawqal showing the world as a disc-shaped earth surrounded by ocean, with two deep bays cutting into it - from the east, the Persian Gulf with the Red Sea and the Arabian Sea, and from the

west, the Mediterranean Sea. Again, it can be seen that the lines of the map are very stylized and geometrical as those found on Istakhri's world map. The Nile is again the dominate feature in Africa with the *Mountains of the Moon* near its source.



One of Ibn Hawqal's travels brought him twenty degrees south of the equator (*Sofala*) along the African coast. One of the things he noted was that there were large numbers of people living in areas that the Greek said were uninhabitable.

> I don't mention the countries of the blacks in the Maghreb, nor the Buja, nor the Zendjs, not the other groups living in their neighborhood, because the good organization of the empires comes with religious convictions, good morals, and wise institutions, and the conservation of wealth depends on a just method of government. Or those ones neglect those qualities or they do not participate in them and so need a different place from the viewpoint of the development of the other empires.
>
> As to the largeness of the land-area, from the extreme north to the southern limit, it starts beginning from the coast of the Ocean to come to the territory of *Gog and Magog*, passing through the territory of the Slaves, passing the region of the interior slaves Bulgares, and the Slaves, further on the country of the Byzantins, the land of Egypt, and Nubia, stretches through the deserts between the lands of the Blacks and the Zendjs, to finish up at the Ocean....

There are Gulfs in the region of the Zendjs, as well as in the neighborhood of the lands of the Byzantins, where one also has seas, but we will not mention them because they are small in comparison with the other seas, and also because there are so many....

Abyssinie stretches along the Red Sea, which is in reality the Persian Sea, and which goes up to the land of the Zendjs. From the other side it is limited by the desert situated between Nubia and the Red sea, and an other frontier goes along the Buja and the un-passable desert. The territory of the Zendjs is the longest of all the Black countries, it borders the Abyssinians.... (All this he textually copied from Istakhri)

The Indian empire is situated opposite the land of the Zendjs, in the eastern part of the Persian Sea.... Then this sea stretches along the Abyssinian sea, arrives at the end of the land of Nubia to get to the regions of the Zendjs, which are the biggest ones in these areas. After that the sea continues among the countries of Islam.....

The land of Abyssinia.... After that the territory continues to the land of the Zendjs, situated opposite Aden.....Those gold mines extend (from Abyssinia) up to the land of the Zendjs along the sea.... Following certain sayings there are in the land of the Zendjs cold regions, in which white Zendjs live. I already said that this country is miserable, with few people, and few little cultivated lands, except for the area around the residence of the king....

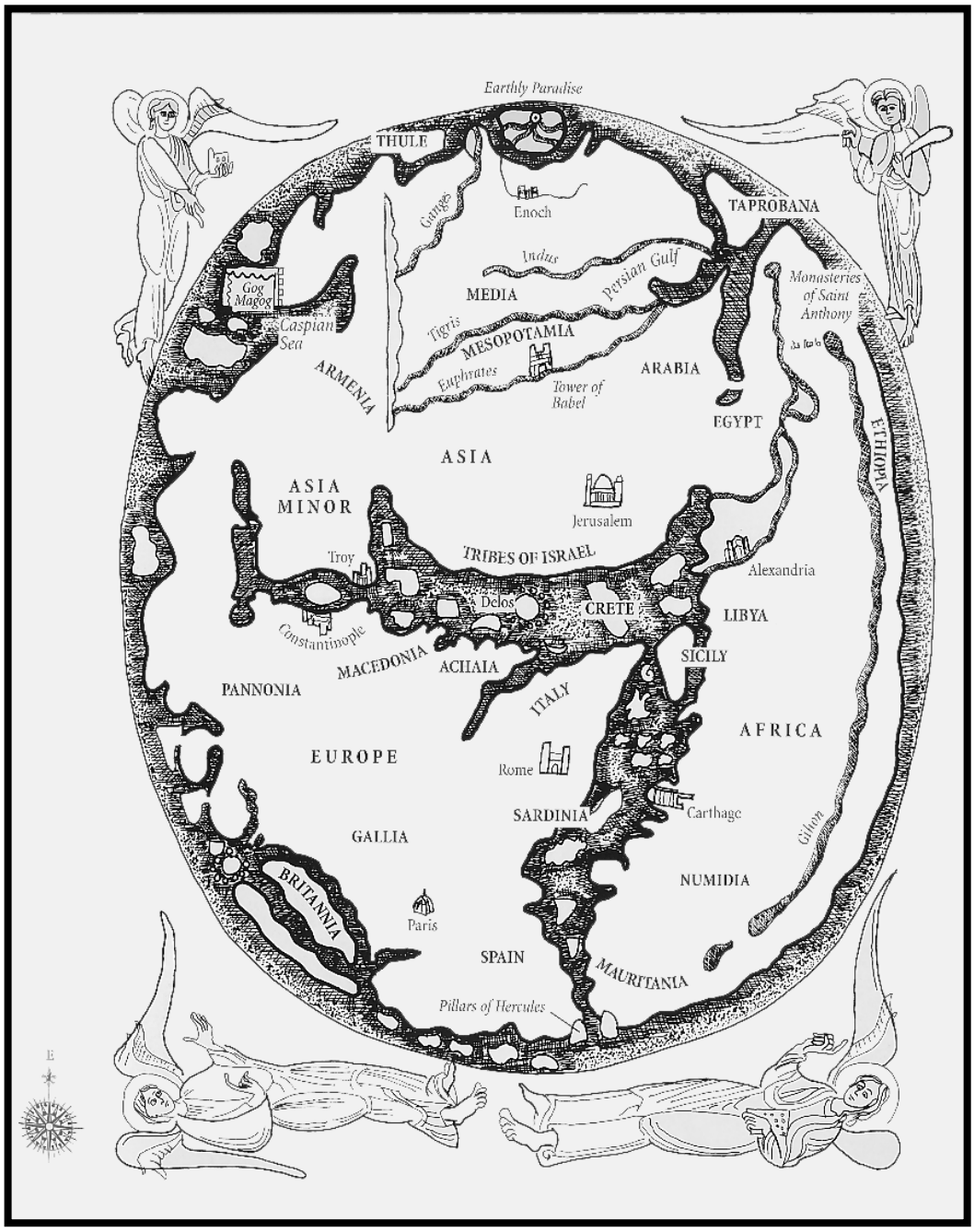
The southern ocean...passes to the southeast of Sama and Ghariwa, in a country with innumerable inhabitants, until it reaches the desert which no one has yet crossed. Between the hinterland and the regions of the Zendjs, there are big sand wastes, who formerly were passable, that was the route from Egypt to Ghana....

Nobody knows the sources of the Nil, in fact the Nil comes out of an impassable desert, from beyond the land of the Zendjs, and penetrates the region of the Zendjs, goes through the deserted and cultivated parties of the Nubia, then waters the fields uninterrupted till its arrival in Egypt.

I have seen in a geographical treatise that the sources of the Nil are situated in two circular lakes, fed by five rivers coming from the mountain Qumr. Each of those two lakes gives birth to four rivers that throw themselves in a circular lake in the first climate. Its diameter is divided in two parts, of which the center is at 53 degrees longitude and at 2 degrees 31 minutes latitude of the first climate. From this last lake a river leaves, which is the Nil of Egypt made bigger by a river starting at the equator at longitude 59 degrees 31 minutes. It runs till close by Nubia....

Where then is that land of the blacks, of which the length is seven years, in the sky or under the ground? Or the totality of their countries is situated in the second climate. Starting from Ghana at the Ocean, passing Kugha, Sama, Gharayu, Kazam, traversing the steppe that separates the Zendjs of the Ocean, Nubia, Abyssinie, the Zendjs, to arrive with the rest of their regions in the Indian regions, at the Sea of Persia and of India. This whole space is not more then a 250 days long walk and in those territories the wide is never more then one month of walking. Between the land of the blacks and the (surrounding) ocean in the south is a desert where the enormous heat destroys all life. Just like the cold has destroyed all life between the Northern Ocean and the lands of Yadjoudj and Madjoudj (Gog and Magog).

*The Sawley Map, a.k.a. World Map of Henry of Mainz, 1110, by Honorius Augustodunensis/ Henry of Mainz [Mayence], oriented with East at the top (**#215**)*



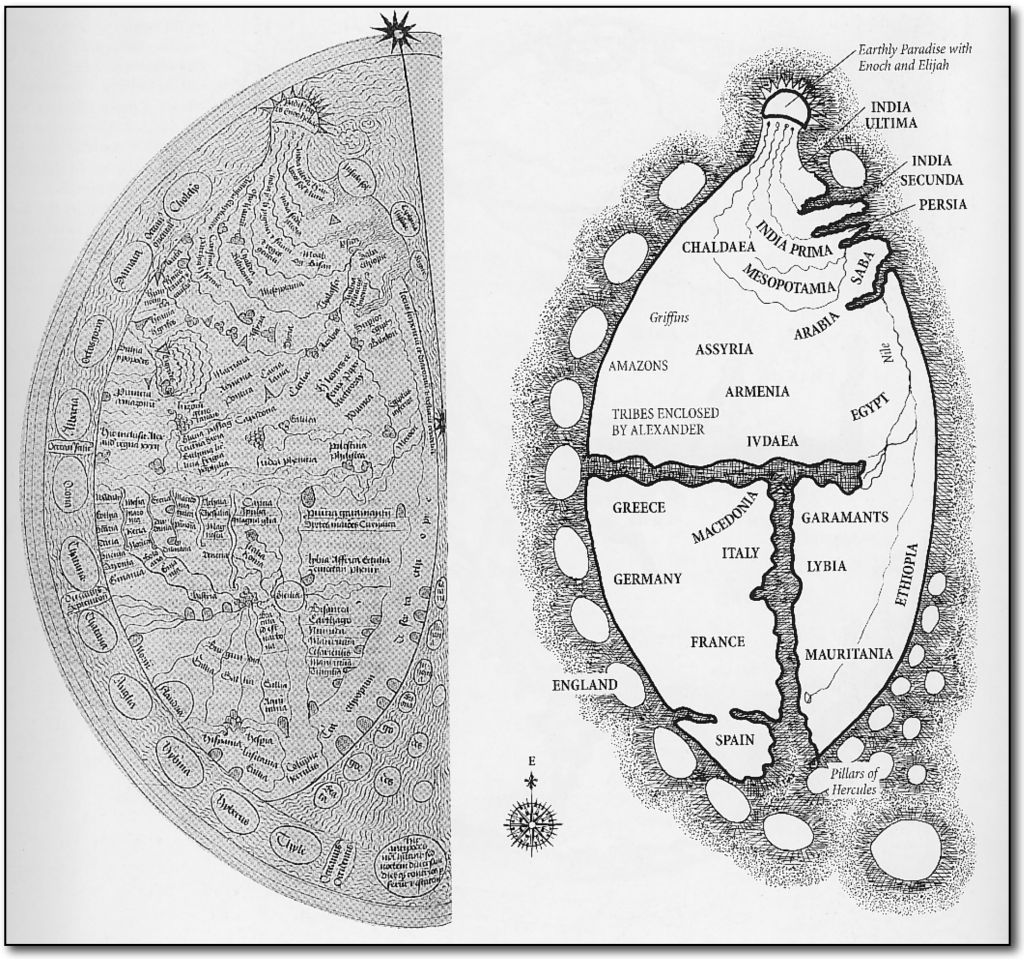
The Sawley Mappamundi, 1110, ***#215***

The *Sawley* map shown above *(see monograph* ***#215****)* places the Mediterranean Sea at its center, *Paradise* at the top, and Africa and the British Isles at its edges. Contemporary cities and places appear alongside biblical ones; standing landmarks share terrain with creatures and peoples from ancient legends and popular adventure tales. In Central Africa Orosius is probably the source of the *Sawley* map (and *Hereford's*) *Euzareae Montes*. To the east of these are the *Montes Ethiopiae, Mount Atlas* being near the Atlantic, and *Mons Hesperus* further south. Included on this map in Africa are the

Burning Mountain and the *Seven Mountains* (here also reference the *Cottoniana* map #210); the *Troglodytes* near the Middle Nile; the *River Lethon* near Cyrene; *St. Augustine's Hippo*; the *Basilisk* between Triton and the Nile; the horseshoe-formed *Temple of Jupiter-Ammon*; the *Monasteries of St. Antony*, near the end of the Middle Nile [*Gihon*]; and the *Pepper Wood* near the Red Sea; together with other oddities which are common in medieval cartography, i.e., the Pyramids as barns, etc.

In Asia the map shows the cities of *Bethlehem, Jerusalem, Jericho, Persepolis, Babel, Damascus, Troy* and others. *Mount Sinai* is shown in southern Asia near the route taken by the children of Israel through the parted Red Sea. Below it the three section tent-like structure is named *Joseph's Barn*, which is referring to the Egyptian Pyramids. *Egyptus Superior* is located next to the Red Sea, with the monastery of *St. Antony* across the Nile. On the African side of the Nile the open horseshoe-shaped structure is the temple of *tempius Jovis* [Amon Jupiter] located south of the mountain of *Catabathmon*.

*Zonal world map from Liber Floridus (***#217***)*
Lambert St Omer, 12th century. Oriented with East at the top.
Note the large southern antipodean continent south of Africa (on the right)



Lambert St Omer mappamundi, 1120, **#217**

As regards the *oikoumene* [inhabited earth], this Lambert of St Omer *mappamundi* shown above displays a system of aqueous channels in the form of a "T", a throwback to the T-O maps, separates the three continents: Asia, Europe and Africa. A legend in southeastern Africa reads *Locus draconum et serpentium et bestiarum crudelium* [Place of dragons and serpents and cruel beasts]. Also, in the extreme southwest of the *oikoumene* there appears a world in the form of an island of large dimensions in which there is once again an allusion to the antipodeans: *Hic antipodes nostri habitant sed noctem diversam diesque contrarios perferunt et estatem* [Here our antipodes live, but they experience different nights and contrary days, and summer].

Al-Idrisi, World maps, 1154-1192, **#219**

Another Islamic-based map is one produced by the Muslim scholar Abu Abdullah Mohammed Ibn al-Sharif al-Idrisi [Edrisi] under the auspices of Roger, King of Sicily in his *Book of Roger (see monograph* **#219***)*. Al-Idrisi pictured the habitable world as occupying 180 of the 360 degrees of the world's longitude, from the Atlantic in the West to China in the East, and 64 degrees of its latitude, from the Arctic Ocean to the Equator. The *planisphere* showed the sources of the Nile—not explored by Europeans until the 19th century, but evidently known to 12th century Muslim travelers—and the cities of central Sudan.

Distortions, omissions, and misconceptions notwithstanding, the superiority of al-Idrisi's map over the world maps of medieval Europe is striking. Contrasted with the quaint and picturesque, but almost totally uninformative maps of the Christian scholars, the features of Europe, North Africa and the Middle East are easily recognizable in al-Idrisi's representation—Britain, Ireland, Spain, Italy, the Red Sea and the Nile.

The first division of the first climate commences to the west of the *Western Sea*, which Idrisi called the *Sea of Darkness*. *"In this sea are two islands named Al-Khalibat [Fortunate Isles] where Ptolemy began to count longitudes and latitudes (sic)...nobody knows of habitable land beyond that."* In this southern most section he places a number of important towns including the problematical *Oulil* [Cape Timiris?] that, he tells us, *" is situated in the sea not far from the shore and is renowned for salt"*. Much of the trade in this commodity with the Sudan was done with the help of ships that carried it from the town of *Oulil*

> …a days journey to the mouth of the Nile [i.e., Senegal River, or Nile of the Negroes] and mounted the river as far as Silla, Tacrour, Barisa, Ghana . . . [and] to all the Sudanese towns. The greater part of the country is only habitable on the borders of the Nile for the rest of the country . . . is desert and uninhabited. There are arid wastes where one must walk two, four, five, or twelve days before finding water . . . The people of Barisa, Silla, Tacrour and Ghana make excursions into Lamlam [probably identified with the hinterland of the Ivory/Liberian coasts] bringing natives into captivity, transporting them to their own country and selling them to merchants.

In the second section of this first climate, Idrisi describes, among others, the lost city of *Ghana*, farther to the east,

> ...the most considerable, the most densely peopled and the largest trading center of the Negro countries…From the town of Ghana, the borders of Wangara are eight day's journey. This country is renowned for the quantity and the abundance of the gold it produces. It forms an island 300 miles long by 150 miles wide: this is surrounded by the Nile on all sides and at all seasons…The greater part [of the gold] is bought by the people of Wargalan [i.e., Wargla] and by those of Western Maghrib [i.e., Morocco].

Following the Nile, still eastward, *we find the nomadic Berbers who pasture their flock on the borders of a river flowing from the east, debouching into the Nile stream.* Beyond, in the fourth section of his first climate, we come to

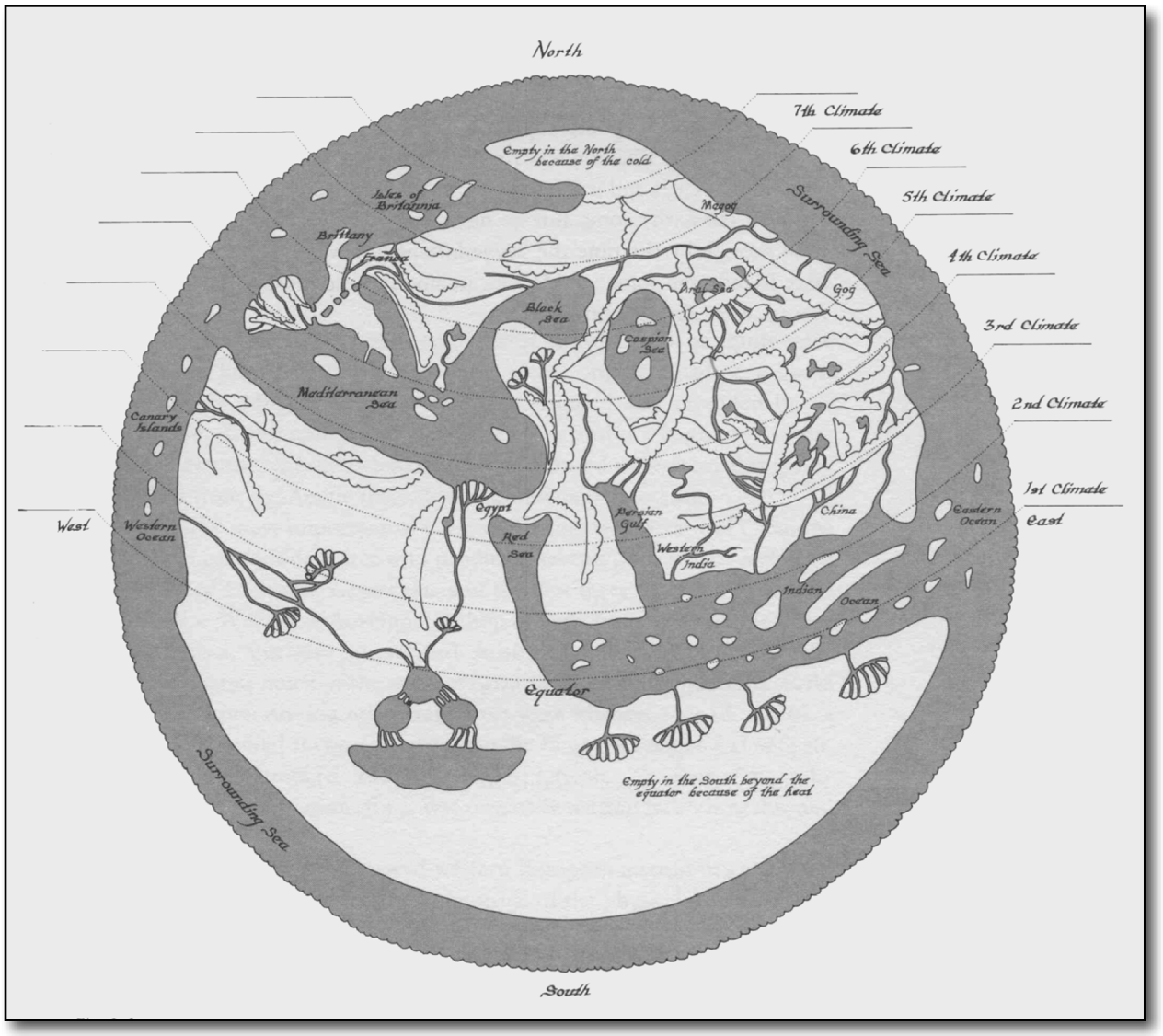
> …the place where the two Niles separate, that is to say, first, the Nile of Egypt which crosses the country from the north to south, and second, the branch which flows from the east towards the western extremity of the continent. It is on this branch of the Nile that most of the large towns of the Sudan are situated.

It is clear that the part of southern Africa which is extended far to the east is a legacy from Ptolemy, but Arabian seafarers had taught Idrisi that the sea was open in the east, and in his own commentaries he writes: *"The Sea of Sin [China] is an arm of the ocean which is called the Dark Sea [the Atlantic]".*

These few extracts are characteristic of Idrisi's method and his content. From them we see, for instance, that Ptolemy's authority no longer commanded unreserved adherence; Ptolemy placed the Nile River's source south of the equator, in the *Mountains of the Moon,* and had no sympathy with the idea of a dual Nile. We see further that there was already, by the 12th century, a regular commercial exchange between the Mediterranean Sea and the Sudan, and that reliable information concerning these southern lands was beginning to filter through to the European centers of learning. When we recall that exact hydrography of the land of the *Western Nile* was not discovered until the 19th century, Idrisi's narrative assumes a profound importance. The authenticity of many of the places that he mentions is indisputable. Thus *Ghana* (situated near Timbuktu), *Silla* [possibly *Ysilgam* of the *Valseccha portolan chart* of 1434] and *Tacrour* [Tekrour on the Senegal] were, for a time, flourishing centers of Muslim culture. The reference to *Wangara* implies a knowledge of the flood region of the Niger, above Timbuktu; and the mention of the salt trade of *Oulil* suggests that there were, in Europe, faint glimmerings of knowledge about the Senegalese coast, even as early as the mid-12th century.

To the south al-Idrisi pictured a great river, the *Nile of the Negroes*, a composite of the Senegal and the Niger Rivers that flowed from Central Africa west to the Atlantic. Via this river the salt trade was carried on with the Sudan. Al-Idrisi described the lost city of *Ghana* (near Timbuktu, on the Niger) as *the most considerable, the most densely peopled, and the largest trading center of the Negro countries*. In the fourth section of the first climate, al-Idrisi located the sources of the Nile in their approximately correct position, though he pictured the *Nile of the Negroes* as joining the *Egyptian Nile* at that point.

*al-Idrisi's world map, oriented with South at the top, 1154 (**#219**)*



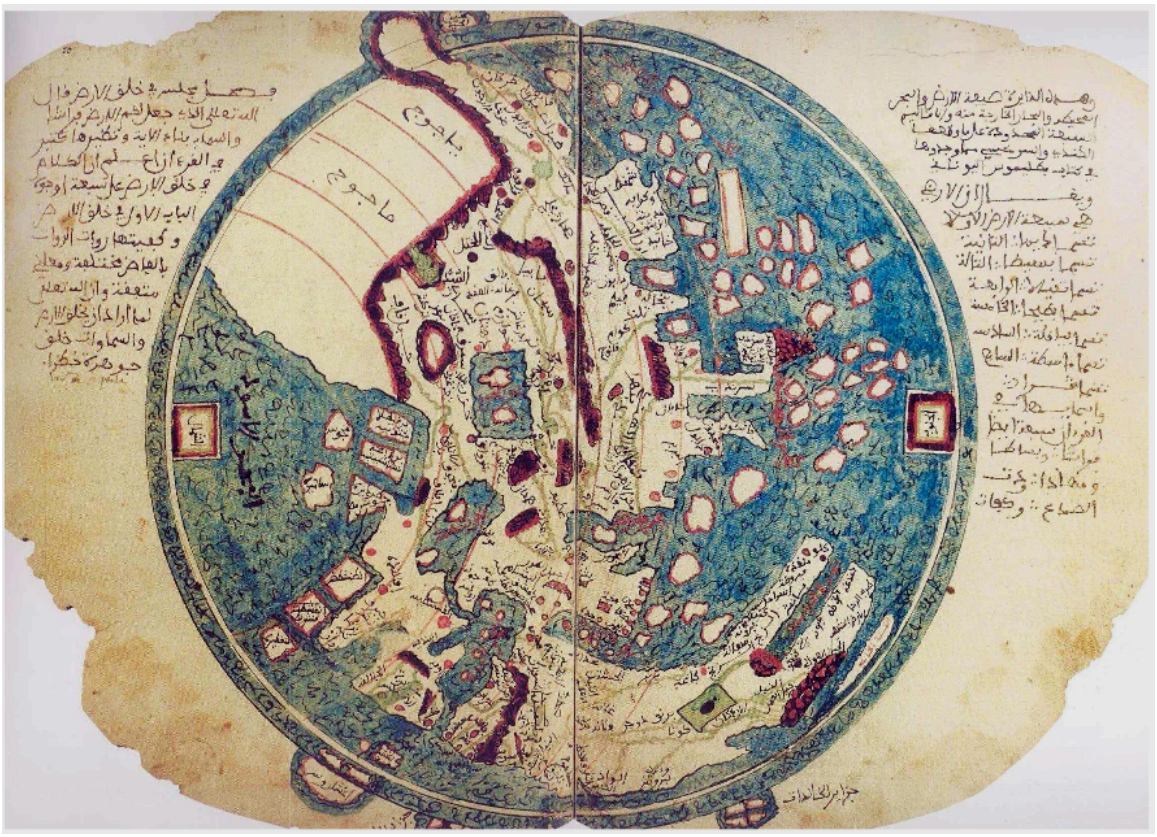
*Reproduction and re-orientation of an Idrisi map of the world adapted from the Muqaddimah [Introduction] to Ibn Khaldun's monumental work, The History of the World, 1381; derived from the 1154 al-Idrisi map. Displays a Ptolemaic construction with an arrangement of horizontal divisions into seven parallel climate zones, originally oriented with South at the top. Place names removed from Ibn KhaldUn's map: Lamlam Country; Maghzawah Country; Kanem; Zaghay; Gawgaw; Bornu; Nubia; at-Tajuwin; Abyssinia; Ghanah; Lamtah; as-Sils; Morocco; Tangier; Sinhajah; Dartah; Ifriqiyah; Desert of Berenice; Inner Oases; Fezzan; Jarid; Kawar; Beja; Hijaz; Syria; Yemen; Yamamah (Alamaniyah); Mukran; al-Basrah; Iraq; ash-Shihr; Oman; Kirman; Fars; al-BahlUs; Azerbaijan; Desert; Khuwarizm; Khurasan; Eastern India; Tashkent; Soghd; Tughuzghuz; Gascogne; Calabria; Venice; Germany; Macedonia; Bohemia; Jathnliyah; Jarmaniyah; al-Baylaqan; Armenia; Tabaristan; Alans; Bashqirs; Bulgars; Pechenegs; Stinking Land; Waste Country; Ghuzz; Turgish; Adhkish; Khallukh; Kimak. (**#219**)*

*A modern copy of Al-Idrisi world map from the Nuzhat al-mushtāq fiʿkhtirāq al-āfāq, a.k.a Tabula Rogeriana, oriented with South at the top, 1154, Bibliotheque nationale de France (MSO Arabe 2221) as reconstructed by the German cartographer Konrad Miller in 1927 and published in Stuttgart in 1928, better known as "The large Idrisi Map", Size 195 x 92 cm. (**#219**)*

*Ibn Sa'id, World Maps, 1250, **#221***

Abū al-Ḥasan ʿAlī ibn Mūsā ibn Saʿīd al-Maghribī (Arabic: علي بن موسى بن سعيد المغربي) (1213–1286), also known as Ibn Saʿīd al-Andalusī, was a geographer, historian, poet, and the most important collector of poetry from al-Andalus in the 12th and 13th centuries *(see monograph **#221**)*. Ibn Said was an indefatigable traveler, profoundly interested in geography. In 1250 he wrote his *Kitab bast al-ard fi't-t ul wa-'l-'ard* [The Book of the Extension of the Land on Longitudes and Latitudes]. His *Kitab al-Jughrafiya* [Geography] embodies the experience of his extensive travels through the Muslim world and on the shores of the Indian Ocean.

Unusually for an Islamic map, this one (shown below) is oriented with East at the top, more in line with the Christian traditions of the time. This is a later version of the Balkhi School of Islamic cartography and is a detailed and faithful representation of the eastern hemisphere, possibly due to the source material used. Here the depiction of the seas and landmasses are near-accurate reflection of their relative positions. The mountains are colored brown, seas are dark green, and rivers light green. The seven climatic zones are also indicated with curved red lines, Armenia is shown falling manly in the Fifth and partly in the Fourth Climate Zones, which is similar to its location shown on Idrisi's maps. In the map the shape of the eastern hemisphere is the most accurate in medieval Islamic cartography. Africa is shown as a continent surrounded by the oceans and the western (Atlantic) ocean is connected to the eastern (Pacific) oceans by the southern passage. All of the continents are filled with the legends of important provinces and cities.



Ibn Sa'id's world map from the Kitab al-bad' wa-al-ta'rikh, 13th century
(oriented with East at the top)
Note the shape of Africa and the open ocean to the South and East (**#221**)

Mountains of the Moon

The *Mountains of the Moon* are one of the most consistent and enduring apocryphal elements in the history of cartography. European cartographers mapped the *Mountains of the Moon* and two or three associated lakes as the source of the Nile River from the 14th to the early 19th century. It is remarkable that this one feature was consistently mapped in the otherwise blank or speculative interior of Africa.

The source of the Nile River has been a matter of speculation for thousands of years. The ancient Greek historian Herodotus was probably the first to compile and record the various theories of the river's origins. According to Herodotus, the Ancient Egyptians believed that the Nile had its source in two great mountains within which were eternal springs. From here one branch was said to flow north, dividing Egypt, and another south into Nubia and Ethiopia. The priests of Sais, from whom Herodotus extracted this theory, believe the mountains to lie somewhere between Thebes and Elephantine (Aswan). Cleary, even in Herodotus' day, the Nile had been explored well into Nubia and this was generally known to be false.

It was believed by some that the Nile River's annual inundation was caused by snowfall at its source. Herodotus spurned this theory based upon the well-known fact that, as one travels south towards the equator it becomes excessively hot. In Herodotus' day it was believed that the temperatures in the Torrid Zone, as it was called, where so severe and the beasts that dwelt there so ferocious, that the region was all but

impassable. How, Herodotus asked, could there be snows in such a place? Despite being wholeheartedly dismissed by Herodotus, this theory is very close to the truth.

The next major compiler of information on the interior of Africa was the 2nd century Alexandrian geographer Claudius Ptolemy. The influence of Ptolemy on the cartographic tradition cannot be understated and lasted well into the modern era. Ptolemy's *Geographica* consisted of several books accompanied by maps. Unfortunately Ptolemy's original maps are lost to us today though mediaeval copies do exist. Ptolemy compiled his geography of Africa based on the writings of Marinus of Tyre. Marinus recorded that around 50 CE the Greek trader Diogenes traveled inland from *Rhapta* (coastal city in what is today Tanzania) for 25 days before encountering two great lakes and a snowy range of mountains where the Nile draws its source.

Though there is some debate on this subject, it seems very clear that Diogenes, traveling directly west from the coast, came upon either Lake Nyassa or Lake Victoria (or both). The nearby snowcapped mountains could only be the Rwenzori range. Others have suggested that Diogenes may have spotted Kilimanjaro, however, this is unlikely given the absence of a major lake in the region as well as that that Diogenes described a range rather than a solitary mountain. In any case, via Marinus' writings, the travels of the Greek merchant Diogenes found their way into to Ptolemy's canonical *Geographica* and we see the first appearance of the *Mountains of the Moon*.

With such a provocative name, the "*Mountains of the Moon*", one must wonder from whence it was derived. There is some speculation (in fact the only we've come across) that this is a transliteration into Greek of the Amharic name for the mountains near Lake Tana at the source of the Blue Nile, called to this day, the *Simians*. In Amharic, "Simian Mountains" translates as "Northern Mountains". However, a liberal transliteration of the word "Simian" into Greek might come up with "Selene" – the Moon Goddess.

How, one wonders, did the Simian Mountains get confused with the Rwenzori Mountains thousands of miles away? One must remember that Ptolemy was piecing together very sparse second and third hand accounts of merchant voyages, military campaigns, ancient Egyptian records, etc. The southernmost inland city in Africa in Ptolemy's *Geography* is Axum in Ethiopia. Lake Tana and the Simien Mountains were still a significant distance further south. Nor are Ptolemy's coordinates necessarily accurate with regard to latitude. Nor would Ptolemy, more familiar with the great mountain ranges of Europe and Asia, have been familiar with the small but dramatic mountain ranges of Africa. It is not hard to imagine how, from this perspective, two mountain ranges, relatively close, both associated with lakes, and both associated with the source of the Nile, might be assumed to be one and the same. It is thus likely the he simply applied the known name, *Simian-Selene*, to all mountains associated with the Nile's source.

In the 4th century CE, Ethiopia converted to Coptic Christianity. From this critical point onward, regular communication between the Ethiopian Orthodox church and the Coptic centers in Egypt provided the first accurate maps of Ethiopia. Consequently, by the time cartographers in the Middle Ages began translating Ptolemy's surviving texts and interpreting them into maps, the source of the Blue Nile was known. Though Ptolemy does not specifically note the presence of Lake Tana, it is mapped in even the earliest medieval interpretations of Ptolemy's work. Thus by the time the first European maps of Africa were being drawn, the mystery of the Blue Nile's source been solved.

Which left the more mysterious White Nile. Drawing from Ptolemy, cartographers repositioned the *Mountains of the Moon* and their lakes further south – where they remained until the 19th century. In the late 18th century many cartographers, including such luminaries as Anville and De L'Isle, chose to remove either the *Mountains of the Moon*, the *Lakes of the Nile*, or both from their maps of the region. It was not until the exploration of John Speke and Henry Morton Stanley in the mid 19th century until these lakes ultimately reappeared and Ptolemy's not so apocryphal geography of the Nile was proven eerily correct.

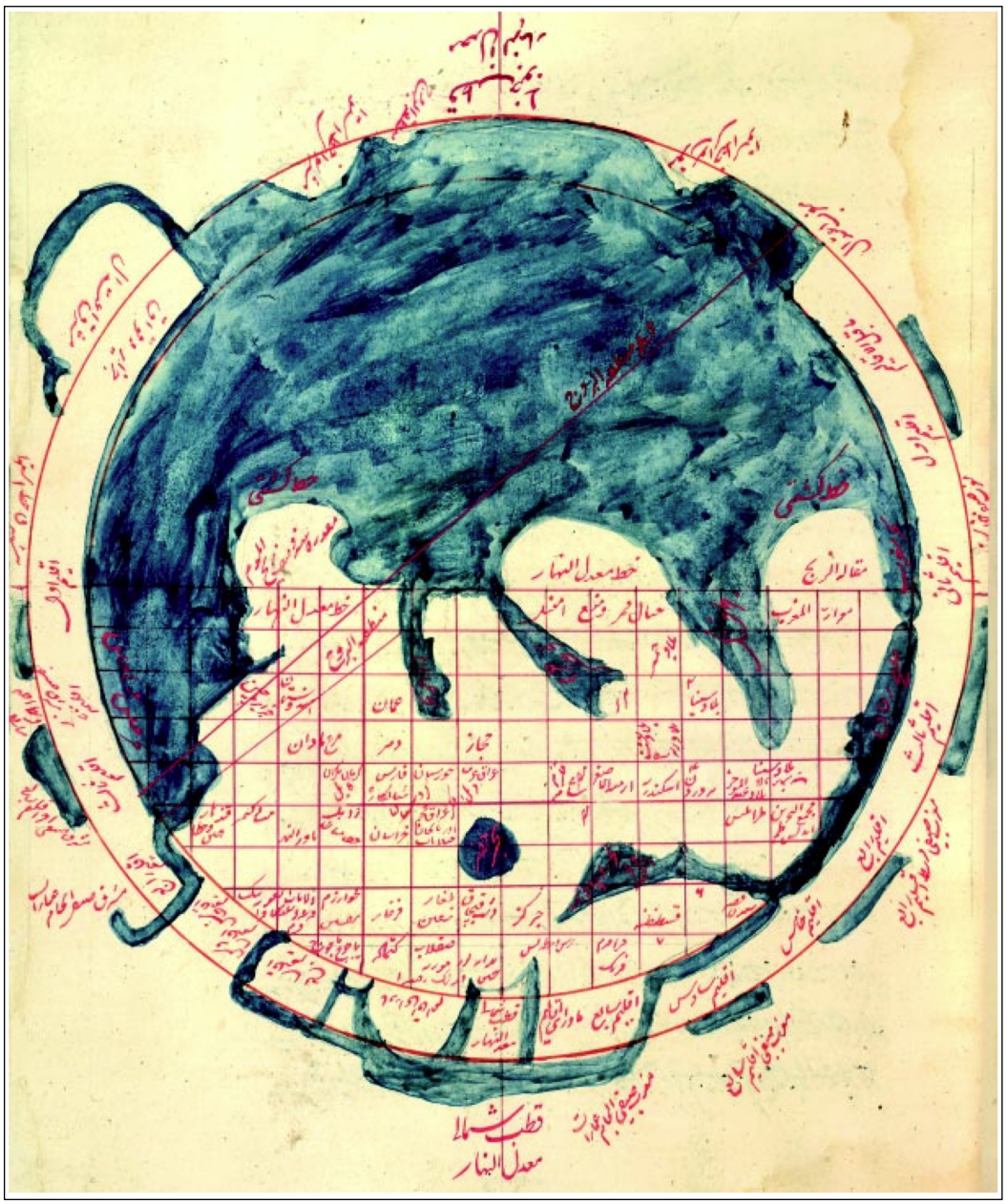
Al-Qazwini world map from his Monuments of Places*, copy dated 1580, oriented with South at the top (***#222***)*

Al-Qazwini World Maps, 13th century, **#222**

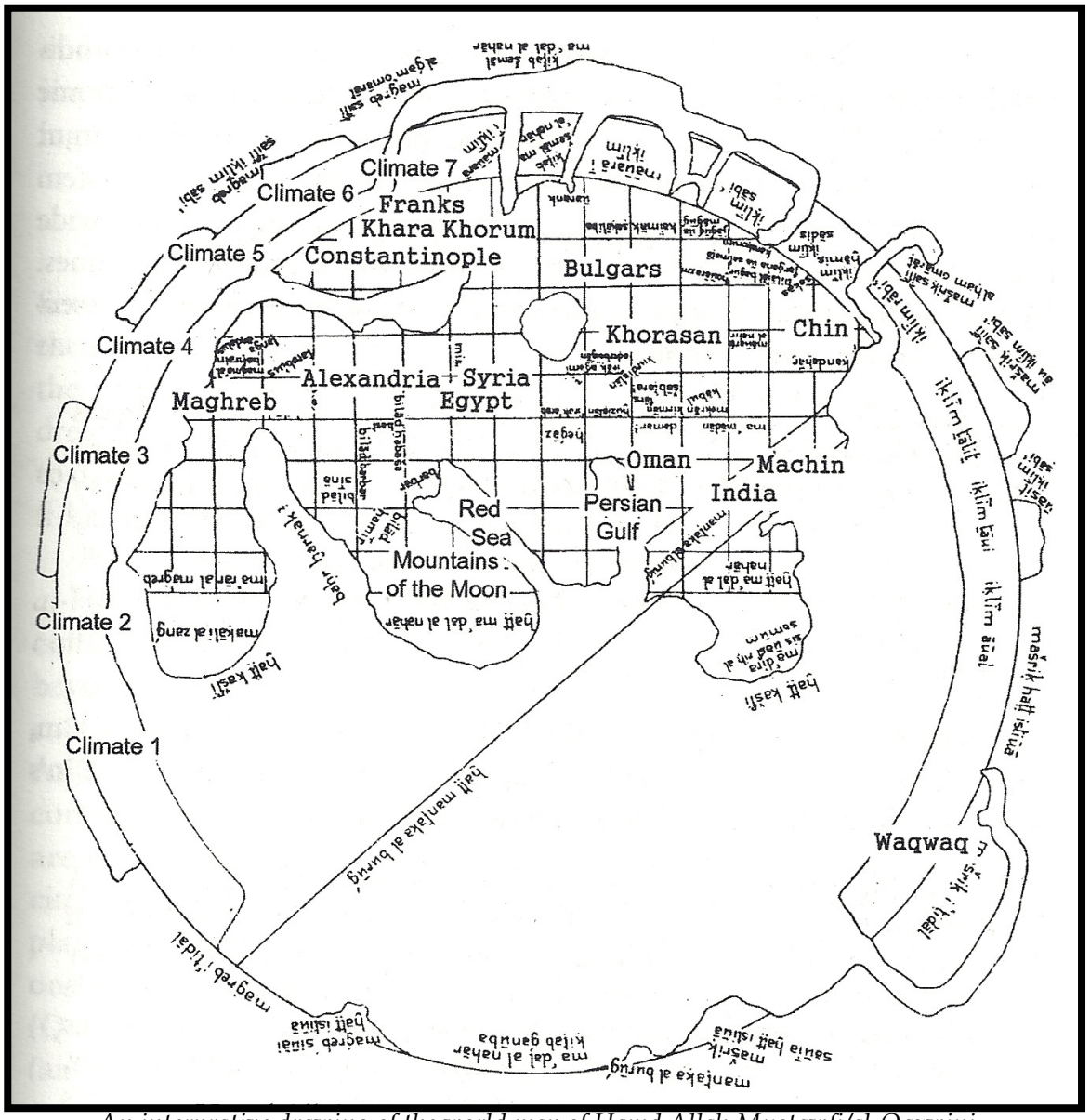
The map shown above *(see monograph* **#222***)* indicates the extent of Islamic cartographers' knowledge regarding the solar day cycles at extreme latitudes, though there is the possibility that these legends may have been added to the 13th century original map by latter-date copiers.

Most of the map is occupied by Africa and the unknown southern lands, while Europe and Asia occupy most of the lower half at the map. The seven inscriptions in the left specify the zones and give their dimensions. The River Nile is shown with eight tributaries, which join together to flow into another lake and thence to the Mediterranean, which is the unevenly shaped sea connected at the right to the surrounding ocean and named *Bahr-i-Misr* [Sea of Egypt].

Another map attributed to al-Qazwini is shown below but is in a completely different style. This circular map is from Hamd al-Mustawfi's book *Nuzhat ul Gulub* and is kept in the British Library. The original manuscript dates from around 1339/40 CE but the copy was made only in the 17th century. The map is not typical of the Balkhi School of Islamic world maps *(**#214.2**)*, but has more in common with al-Biruni's map *(**#214.3**)* in its depiction of land-sea relationship. His attempts to incorporate some sort of grid lines is another major difference.



*World map of Hamd Allah Mustawfi/al-Qazwini, 1258/1330 (**#222**)*
oriented with South at the top 17th century copy of original dated 1339/40.



*An interprative drawing of the world map of Hamd Allah Mustawfi/al-Qazwini re-oriented with North at the top and labeled (***#222***)*

The map is oriented with south at the top, but in the manuscript it has been drawn upside down, resulting in most of the legends also appearing inverted (rotated by 180 degrees). The reproduction shows the map in the corrected orientation, with south at the top.

The horizontal divisions correspond to the climatic zones, dividing the inhabited provinces into seven climates (*eghlim* - in Farsi) plus two additional zones below and above them, which are not inhabited. To these horizontal divisions some vertical lines have been added, supposedly mirroring the function of the meridians, and spaced at ten degree intervals, but which continue running straight, extending out of the circular earth forming a grid which covers the inhabited world. It must be said that with the exception of Ptolemaic maps, the convergence of meridians in the poles appeared on medieval

maps in a much later date. In the texts the names of the provinces are listed according to their appearance in the climatic zones. The numbers of the zones are also shown in the inside rim of the map, starting with before the climate zones, the width of which extends almost from the south of the Equator to the South Pole. Listed downward from the equator are zones one through seven and then finally we come to the zone beyond and the North Pole at the centre bottom centre of the page. Each division of the grid represents ten degrees of latitude and longitude.

The blue mass is the Indian and Pacific oceans connected to the *Sea of Maghreb* (West), depicted positioned west of Africa, with the inhabited world starting north of the Equator, from what here is called the *Temperate Line*. The two westernmost (right) landmasses protruding into the ocean represent Africa. The first landmass from the west is northwest Africa and the bay in-between the two is named *Bahri farang* a name usually given to the Mediterranean Sea, though here is the distorted representation of the Gulf of Guinea in West Africa. The next landmass to that is North Africa followed by *Bahr-i Kulzum*. This is the Arabic name given to the Red Sea, based on the name of the ancient port city of *Kulzum* on the Red Sea.

As described above this Hamd Allah Mustawfi world map, as discussed by the historian Hyunhee Park in her *Mapping Chinese and Islamic Worlds*, uses a grid, although it does not display longitude and latitude. The map resembles the earlier sketch of land and sea that al-Qazwini drew in the 13th century, including its separation of Africa into two peninsulas. His division of Africa that situates the *Mountain of the Moon* (the source of the Nile) in the eastern half of the continent and the *Maghreb* (i.e., Northeast Africa) in the western half resembles the earlier anonymous map in the *Treasury of Tabriz*. At the same time, Hamd Allah Mustawfi portrays the Eurasian and African landmasses more realistically, and not simply as a diagram with fixed geographic shapes. Clearly, Hamd Allah Mustawfi attempted to represent the world in a new way, rather than simply borrow earlier ideas.

*Al-Qazwini world map from his "*Marvels of Regions*", 1582*
*Oriented with South at the top. The mountain called "mountain of the moon", and the sources of the Nile are displayed in the extreme south (***#222***)*

*Psalter mappamundi, 1225-1265 A.D. (**#223**)*
(oriented with East at the top)

*The African portion of the Psalter mappamundi showing the monstrous creatures thought to inhabit that region, re-oriented with North at the top (**#223**)*

The Psalter Mappamundi, 1225-1265, **#223**

The *Psater mappamundi* shown above *(see monograph* **#223***)* displays a zone of monstrous races runs along the southern coast of Africa; 14 monstrous races are illustrated in southern Africa. Among the monsters of this region are *Dog-headed Folk* and people with heads in various stages of aggressiveness, having either descended between their shoulders or else absorbed the entire trunk of the body. Besides these there are *cannibals, a race with six fingers, Troglodytes, Serpent-eaters, Skiapodes, and a nation that obtained shadow from the hugeness not of their foot but of their lip; tribes also without tongues, without ears, or without noses; others who, having only a little hole for mouths, were forced to suck their food through a reed; Maritime Aethiops with four eyes; and beings who never walked, but crawled on hands and feet.* These races, fourteen in all, come mostly from Solinus; many of them occur also on *Ebstorf*, on *Hereford*, or on both *mappaemundi*.

The most luxurious medieval Psalters contain full-page illuminations before the text, and a series of illuminated initials within it; this Psalter has both. In addition, its map is a unique representation of the world, in an age when foreign travel was difficult and hazardous, and the art of map-making - in the modern sense - in its infancy.

Northwest Africa is marked off, like the northeast of Asia, by a belt, which was perhaps intended for mountains, as in the other case, but remains as a mere linear mark with the legend, *Sandy and Desert Land*. Of the Nile River only the Egyptian portion is given. Africa stretches round very close to the neighborhood of India.

The Ebstorf Mappamundi, 1274, **#224**

Another European *mappamundi* that features the monstrous creatures is the *Ebstorf mappamundi* from 1234 *(see monograph* **#224***)*. Its name stems from the fact that it was preserved in a Benedictine monastery in Ebstorf, Germany near Illzen on the

Lüneburg Heath, until its discovery in 1830. Originally, the map consisted of thirty sheets of vellum that had an overall measurement of 3.58 x 3.56 meters. The *Ebstorf* world map is the second largest medieval *mappamundi* that we know about measuring 3.57 meters [12 feet] in diameter. The map today exists only in a post-war reconstruction based on various 19th and early 20th century reproductions of it.

*The Ebstorf mappamundi, 1274, 12 feet in diameter, oriented with East at the top (**#224**)*

The African continent is depicted as little more than a segment of a circle, its north and west coasts extending in an almost straight line from the Indian Ocean to the Atlantic, while its south and east coasts describe a shallow curve. Its principal features are the Nile River, bordered by famous ancient cities, strange beasts and even stranger men. The Nile flows out of a lake, in the vicinity of Morocco and near the spot where

lies the *Garden of the Hesperides* - included as a heathen anti-thesis to the Christian *Paradise* - within the protecting coils of the feathered serpent, its guardian. The river's course runs at first from west to east, through regions inhabited by panthers, ostriches, giant reptiles and so forth; in all, the artist has generously scattered about sixty different animals over his map. Other animals identified by Wilma George include an elephant, leopard, hyena, mirmicaleon, monkeys, camelopardalis, scarp, deer and tarandrius the reindeer with many types of snake, crocodiles, lizard and flying lizard, ibis and other birds which inhabit what she calls the *Ethiopian Region* for zoological analysi

*The African portion of the Ebstorf mappamundi, re-oriented with North at the top (**#224**)*

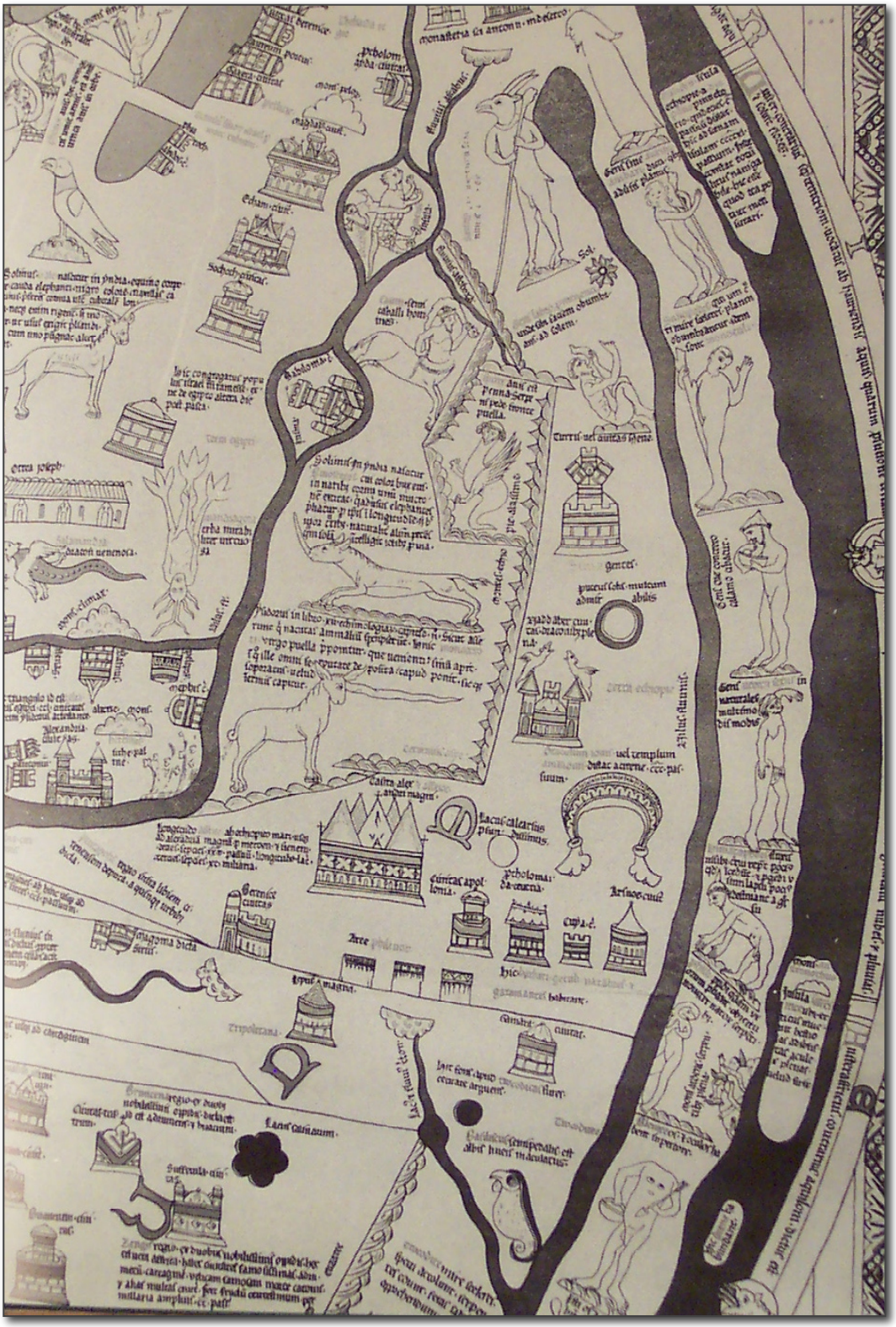
Approaching the eastern tip of the continent, the Nile disappears into the sand; but it emerges to flow in the opposite direction through Egypt, first skirting the region of *Meroë* (inhabited by dwarfs who ride on crocodiles). At its mouth stands the cities such as *Berenice, Leptis Magna* and *Ocea* lie here and there along the northern and Atlantic coasts of the continent. Off the west coast the cartographer has placed an empty rectangle to mark the position of the *insula perdita* [lost island] where the seafaring St. Brandan discovered what he called *Paradise.* But rubbing shoulders, as it were, in the southern portion of Africa we find the most weird and wonderful assortment of 24 creatures: the race that does not know the use of fire; the race that has neither nose nor mouth and can converse only by gestures; giants; people with four eyes; people whose upper lips are so huge that they can pull them up over their heads to serve as sunshades; *troglodytes* riding like the wind on stags (these are level with Christ's hand); *Artobatites* who constantly fall on their faces as they walk along; four-footed men; snake-charmers on whom poison has no effect; dog-headed men; the centaur *Chiron*; cave-dwelling giants; and so forth. These striking images may have contributed to a tendency for modern scholars to think of Africa as the primary location of the monstrous races, even though the traditions locating them in Asia are just as strong.

Another very large *mappamundi* from this era that resembles both the *Psalter* and *Ebstorf mappaemundi* is the *Hereford mappamundi (shown below),* dated 1290 and purported to be created by Richard de Bello *(see monograph* ***#226****)*. This is the largest map of its kind to have survived in tact and in good condition from such an early period of cartography. It has been preserved in the Hereford Cathedral (England) for over 700 years, and, besides its antiquity, it is notable for the quality of its workmanship and for the variety of the drawings that adorn it. For this map the entire skin of a calf had to be properly treated to make writing and coloring possible. Calfskin prepared in this manner is called *vellum* (from the Latin word *vitulus*, a calf). The vellum, measuring 1.65 x 1.35 m, is attached to a framework of oak, the actual map being set in a 1.32 m diameter circle. The geographical form and content of the *Hereford* map is derived from the writings of Pliny, Solinus, Augustine, Strabo, Jerome, the *Antonine Itinerary*, St. Isidore, and Orosius. However, the overriding theme, like the *Psalter* and *Ebstorf mappaemundi*, is that of a religious one, as can be seen from the description of the map itself. In design, the *Hereford* map can be labeled a modified and extremely elaborate T-O plan *(***#205***)*.

On this map, Africa is located in the lower portion of the map on the right. Strangely the name *EUROPE* in great gold letters stretches down the length of Africa, similarly Europe is labeled *AFRICA*. It should be noted that the extremities of Africa and Europe are correctly given in small writing, *terminus Africe* and *terminus Europe*. The most conspicuous feature in Africa is the blue band of the Nile running parallel with the ocean. The river begins as a lake near *Mount Hesperus* and apparently ends as a lake, but it submerges to reappear as the Lower Nile, forming Africa's eastern boundary. Behind the blue band of the river is a grim array of 20 grotesque figures to indicate the existence of primitive peoples, comparable to those displayed on the *Vercelli, Psalter* and *Ebstorf* maps *(a glossary of these creatures is provided in monograph* ***#226****)*. On the north the continent is bounded by the Mediterranean, with cities along the coastline, notably Carthage facing its rival Rome across Sicily. *Mons Mercurii* opposite Crete is Cape Bon. It is clear that Africa has been drawn from information collected from maps and itineraries of the Roman Empire prior to 600 CE Consequently the Roman provinces are delineated, *Libya, Tripolitania, Numidia,* and *Mauritania*. The Atlas Mountains are shown forming a single peak. There are also many non-human monsters illustrated in Africa, for example, a phoenix, a crocodile, a poisonous salamander, and a monocerus that is probably intended for a rhinoceros. The ocean is dotted with islands, including the Canaries, Madeira and Tenerife are called the *Fortunate Islands*, an allusion to their temperate climate.

The large medieval *mappaemundi* also have many non-human monsters in Africa. The *Hereford mappamundi*, for example, illustrates a phoenix, a crocodile, a poisonous salamander, and a *monocerus* which is probably intended for a rhinoceros. The *Ebstorf mappamundi* has a leopard, a hyena, a *mirmicaleon*, monkeys, a *camelopardalis*, many types of snake, crocodiles, a flying lizard and an elephant. When we think of monsters and maps of Africa, following its appearance on the *Hereford mappamundi,* the elephant had a long and distinguished career on maps.

A modern reproduction of the Hereford mappamundi, oriented with East at the top (**#226**)



Hereford Detail: a portion of Africa showing the Nile River and "monstrous races" (**#226**)

Bibliothèque de Bordeaux, ms. 1130, f. 69 Qazwînî, Adjâ'ib al-makhlûqât wa gharâ'ib al mawdjûdât [Marvels of Creatures and the Strange Things Existing] in Persian and an important work of cosmography by Zakariya Qazwini 1283.
Oriented with South at the top

The al-Umari World Map, 1340, ***#226.1***

This map is the Mamunic world map from 1340 by Ahmad ibn Yahya ibn Fadlallah al-'Umari *(see monograph* ***#226.1****)*. The world map shown below is reproduced in the manuscript of the work of Ahmad ibn Yahya Ibn Fadlallah al-'Umari. The same manuscript also has maps of the first three climates. Although the climates are not divided into sections, the general impression is that the maps are derived from those of al-Idrisi *(****#219****)*. However, from its appearance it seems to have been compiled from the text of the *Kitab bast al-ard fi tuliha wa-al-'ard* [Exposition of the earth in length and breadth] by Ibn Sa'id *(****#221****)*. Al-'Umari's text does mention a map and gives a few examples of longitude and latitude, but on the whole they do not correspond with positions given on the map. As mentioned in Part I of this monograph, Ptolemaic maps portray the Indian Ocean as a great lake. In contrast, the *Mamunic* world map follows the pre-Ptolemy conception, showing the Indian Ocean as an open sea, reflecting an improvement in world geography. The Indian Ocean is depicted as an open sea connected to the western ocean round the south of Africa. A very large and long island can be seen east of Africa and south of the equator, called "The Island of Moon," which may represent the Greek *Terra Incognita*.

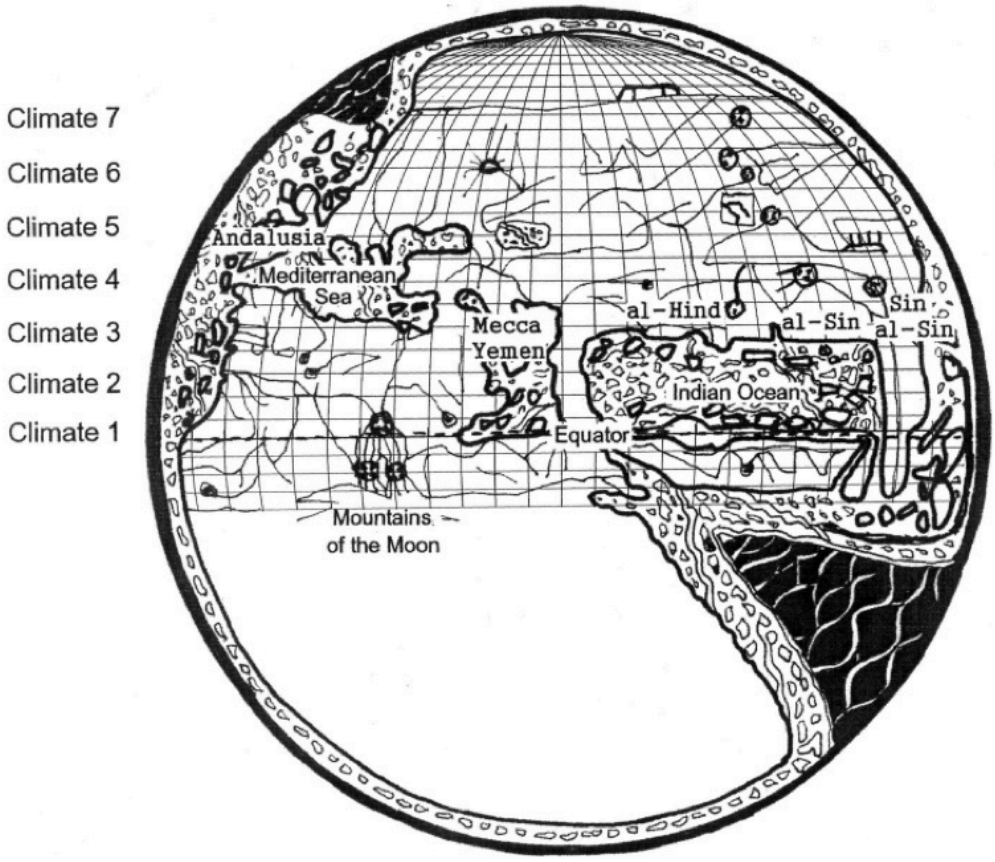
The illustration of Africa marks a distinctive feature of al-Umari's map. Although the map presents Africa as flat at the bottom and diffuse where it meets the edges of the globe, it does not stretch all the way to the east as it does in the maps by the Balkhi School and al-Idrisi *(****#219****)*. The possible source of this adaptation is intriguing, because al-Umari hints in his narrative that Muslims attempted to discover the actual contour of Africa through exploration. He reports that the Sultan of Mali dispatched fleets to sail around the continent, although he does not say exactly when:

> Ibn Amir Hajib said: I asked the Sultan Musah how the kingdom fell to him. He said, "we are a dynasty and pass down the rule among us, and he [the former king], who was before me, did not believe that it was not possible to know the end of the Encompassing Sea. He wanted to know this and was fascinated by it, so he prepared two hundred ships, equipped with people, and the like number, equipped with gold, water and supplies that would be sufficient for years. He said to the travelers [in the ships]: do not return until you arrive at the end [of the ocean], or until you have used up your food and water. They sailed out, and their absence lasted, with none of them returning, then a single ship of them returned. We interrogated the captain about their case and their news, and he replied: 'Know, O Sultan, that we navigated for a long time until [when we reached] in the open sea, a valley appeared with a strong current, when I was the last one of the ships. Those ships sailed ahead of us, and when they arrived at that place, they did not return and reappear, and we did not know what had happened to them. I myself retreated from this place and did not enter that valley.' He (Ibn Amir Hajib) continued: He was reprimanded. He said: "After that, this sultan equipped two thousand ships, a thousand for himself and men he took as company, and a thousand for provisions and water. Then he made me his deputy and sailed out to the Encompassing Sea with his company. And this was the last time he was seen and all of those who were with him; and the rule fell to me alone."

Al-Umari's report about the ruler of Mali resembles Herodotus' story about the Phoenicians. Very likely, al-Umari referred to a similar legend about failing to sail south along the west coast of Africa. The first geographers to depict the correct triangular shape of Africa were Chinese working sometime during the latter part of the Yuan

dynasty. No Islamic maps before this time display a triangular Africa. Fuat Sezgin thinks that Muslim seafarers traveled to West Africa before Bartolomeu Dias went to South Africa and found the Cape of Good Hope. He even argues that "[when Portugal was still under Muslim protection, many Islamic explorers attempted to reach China from Lisbon on the western route across the Atlantic." Yet we could expect Islamic maps to show Africa more accurately if they had frequently traveled along the west coast of Africa. However, if the Muslims who conducted the most vigorous activities in this region did not know the shape of Africa, how could Chinese cartographers draw the continent so exactly? Some other small pieces of evidence show that credit goes to North African merchants who sailed as far as the southern tip of Africa. The best evidence, however, still comes from the series of Portuguese fleets that first successfully explored the West African coast during the 15th century and reached the southern tip of Africa in 1488, marking a turning point in world history. In order to achieve this feat, the Portuguese heavily utilized the geographic knowledge and navigational experiences that Muslim mariners had accumulated for centuries.

The world map of Caliph al-Ma'mun from Ibn Fadlallah al-Umari's (1301-1349) Masalik al-absar fi mamalik al-amsar [Ways of Perception Concerning the Most Populous[Civilized] Provinces}, oriented with South at the top
*The longitude and latitudinal graticle, which is most uncharacteristic for manuscripts from the 14th or even 15th century, appears to have been modified by a copyist at the time the map was drafted, perhaps in the 16th century. (**#226.1**)*



*Ibn Fadl Allah al-'Umari world map, re-oriented with North at the top and translated, from Fuat Sezgin (**#226.1**)*

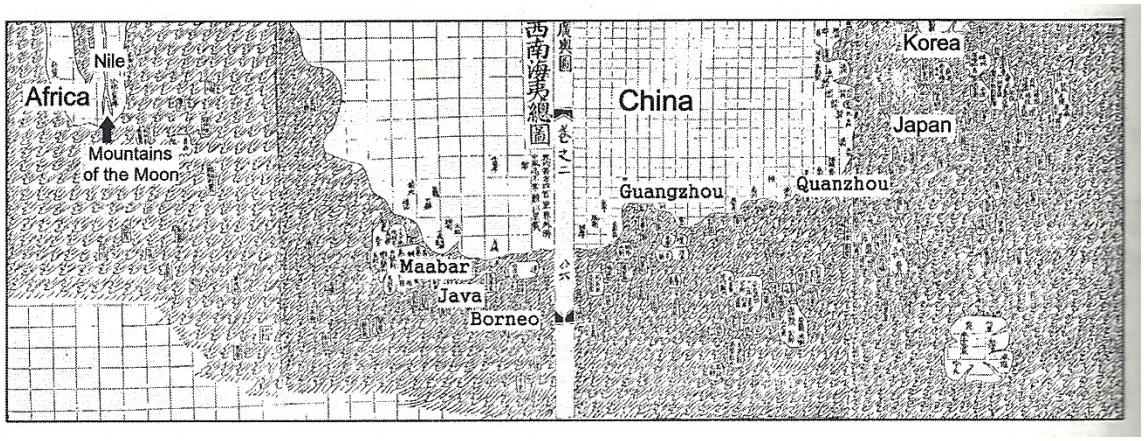
Chinese Contributions to Africa's Depiction on Early Maps

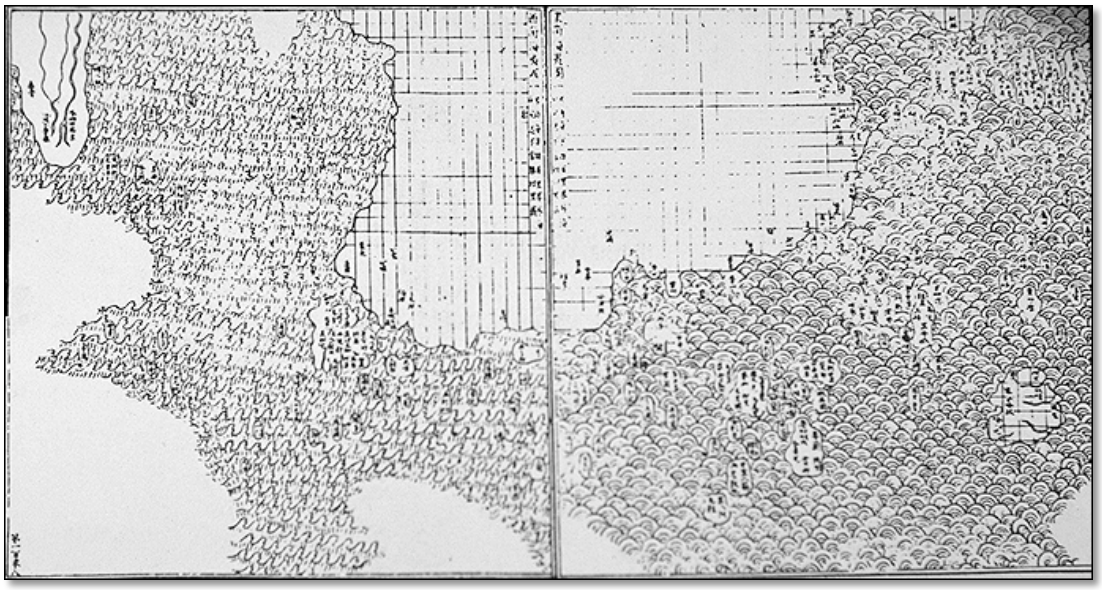
In the late medieval period the Chinese became more adventurous and began exploring farther afield. The culmination of indigenous Chinese cartography is found in the contributions of Chu Ssu-Pen and his successors who, beginning in the Mongol Yuan Dynasty (1260 -1368), established a mapping tradition that provided the basis of China's cartographic knowledge which was not seriously challenged until the early 19th century *(see monograph* **#227***)*. From what we know of the original map of Chu's, which was simply titled *Yü T'u* [Earth Vehicle (i.e., Terrestrial) Map], it was so large as to be difficult to handle, not dissected, and probably was in manuscript roll form. For about two centuries this great map remained only in manuscript or epigraphic form (rare copies in manuscript and the *Kuang Yü T'u* inscribed on stone in a Taoist temple lasted until the 19th century). In 1541 the *Yü T'u* was enlarged, dissected and revised by the Ming scholar, Lo Hung-hsien (1504-1564) and published in the form of a printed atlas in about 1555, under the title *Kuang Yü T'u* [Enlarged Terrestrial Atlas]. This is the earliest copy, albeit derivative, of Chu Ssu-Pen's work to have survived.

In spite of Chu Ssu-Pen's caution about far-distant regions, it is remarkable that, as historian Walter Fuchs has pointed out, Chu and his contemporaries had already recognized the triangular shape of Africa. Among the map sheets of Lo Hung-hsien's atlas, one is entitled *The Countries in the Southwestern Sea* that covers a considerable

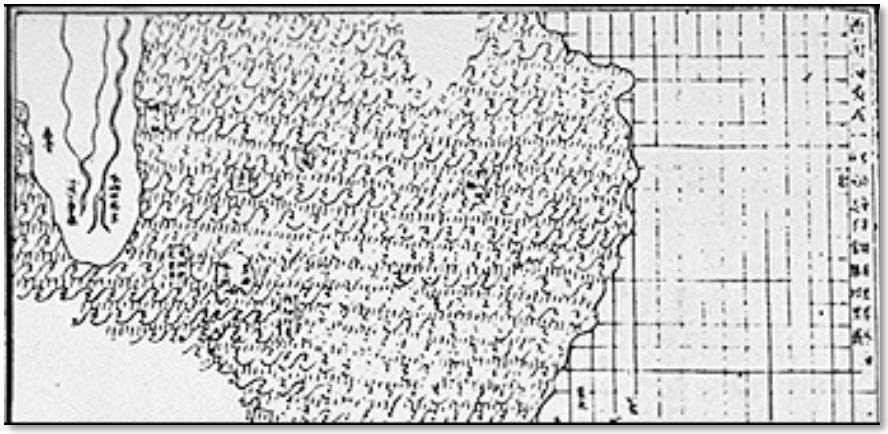
portion of the Indian Ocean and a large part of Africa. In European and Arabic maps of the 14th century the tip of Africa is always represented as pointing eastwards *(**#246**, **#247** and **#249**)*, and this is not corrected until the middle of the 15th century; the atlas revised by Lo Hung-hsien, however, has it pointing south, and other evidence shows that Chu Ssu- Pen must have drawn Africa in this way as early as 1315. Furthermore, in the interior of the continent, two rivers are shown flowing north, one emptying into a large body of water and the other leading further north but terminated by the margin of the map. The name of the latter river was rendered as *Ha-na-i-ssu-chin*, which is a possible corruption of the Arabic words *Al-Nil-Azrak*, meaning the *Blue Nile*. The island off the east coast is called *San-pa Nu*, apparently designating the source of the *Zanzibar Slaves*. On the upper left corner of the map, the coastline turns sharply westward, suggesting the orientation of what appears to be the Guinea coast. Between the west coast and the inland water body, one sees an area named *Sang-ku*, a Chinese transliteration of the Arabic term *Zangue*, or the *Black People*, hence the Congo. Below the inland water area and to the southwest of the river discharging into the lake is a name pronounced as *Che-pu-lu-ma*. The first three syllables combined are recognizable as a corruption of the Arabic word *djebel*, meaning "mountains". An obvious conjecture is that it is an elevated area that the Arabs called the *Ma Mountains*, corresponding closely to the titled plateau of the Drakensberg, and evidenced by a later map produced in 1402 by the Ming cartographer named Ch'üan Chin *(**#236**)*.

Note that this indicates that the Chinese had knowledge of the southern cape of Africa at least 80 years before it was confirmed in Europe by the Portuguese expedition by Vasco da Gama in 1498.



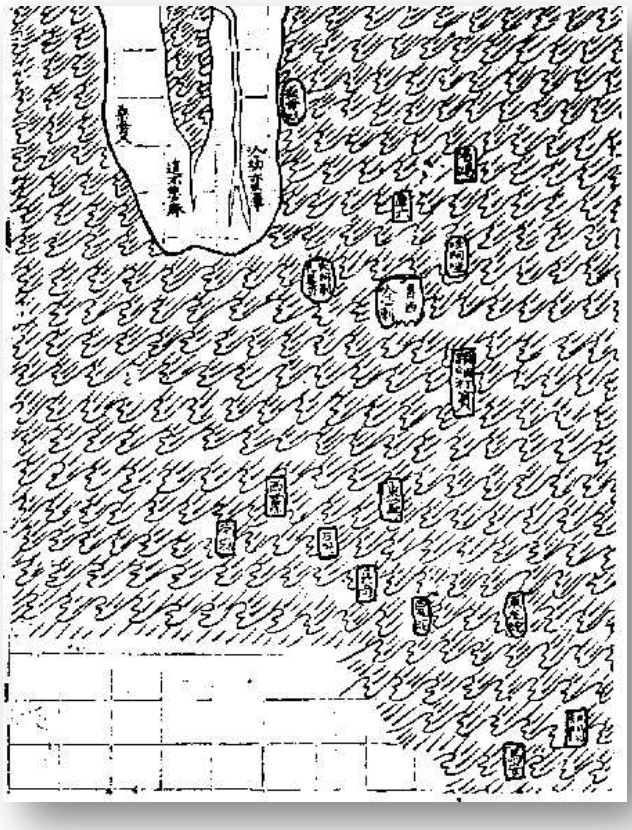


The Countries of the Southwestern Sea



Detail: Africa

A map based on the work of two other Chinese cartographers which appeared in Korea (Ch'uan Chin and Li Hui) in 1402 (*see discussion of this map, the Kangnido, below*) even adds a stream emerging on the continent's southwest coast in the approximate position of the Orange River. Both maps place the southern part of Africa immediately opposite the Indonesian islands, with a string of smaller islands in between, and the tip of India tucked far away to the north. This could suggest that whoever supplied the data on Southern Africa did not get there from the Persian Gulf, by the established Muslim sailing route. But crossed from Sumatra and followed the chain of southerly islands, Maldives, Chagos and Mascarene, which stretch across the western Indian ocean at conveniently short intervals all the way to Madagascar. There is really a good chance that this information came from Malay sailors going to their settlements in Madagascar and Africa.



A small island to the south east of Africa is rendered as Ha-pi-la [Kerguelen island?]. Note: the coast of South Africa is rounded, slightly indented in the middle.

Meanwhile, back in Europe the shape of Africa on maps had begun to evolve as evidenced by the following examples.

Pietro Vesconte world map, ca.1321, oriented with East at the top, see monograph **#228**

Outline redrawing, re-oriented with North at the top

Detail of Africa, re-oriented with North at the top, showing Africa occupying most of the southern hemisphere and bearing the basic geographical features such as the Gulf of Guinea and the Cape despite its inaccurate shape. The Nile River has its source in unspecified mountains and flows northwards to the Mediterranean flowing through Egyprus, past numerous castellated towns located on its shores. Other provinces of Africa are Libie, Pentapolis, Sarmatia and *Siirtes Maiores. The indentation in the west coast of Africa that suggests the Gulf of Guinea, however this may be "accidental", as it predates any other recorded evidence of European travelers there. In Africa and Egypt the place-names are classical (Libia cirenensis, Pentapolis, Garamantia), possibly reflecting the author's reluctance to use Arabic names, which surely must have been known to Vesconte. His conventionalization of Africa, with its south-east projection after the style of the Arab cartographer Ibn Idrisi (#219), so as to face India/Asia, and with a western Nile River traversing the continent, from the region around the Mountains of the Moon and the sources of the river of Egypt to the Atlantic.* **#228**

*Portolano Laurenziano Gaddiano from the Laurentian Sea Atlas, Medicean Atlas, 1351, originally oriented with South at the top (***#233***)*

Laurentian Sea Atlas, 1351, **#233**

Among the most startling features of the map shown above is the recognizable shape of the continent of Africa with remarkable prescience *(see monograph #233)*. Nearly a century before the Portuguese age of discovery, the *Medici Atlas* draws the bend of the Gulf of Guinea and shows that Africa has a southern end, i.e. that the Atlantic and Indian Oceans are connected to each other below the African continent, a delineation that has given rise to a variety of inferences. At one extreme comes the view of Alexander von Humboldt that this work, in conjunction with others, offers clear proof of a medieval acquaintance with the southern part of Africa. "*A long time before Bartholomew Dias and Vasco da Gama we find,*" he asserts, "*the triangular extremity of Africa represented in the Portolano della Medico Laurenziana*". Historian A.E. Nordenskiold endorses this opinion when he declares that the Africa of the *Medicean Atlas* is "*more correct than the map drawing of Africa.... on Behaim's Globe and on the map by Martellus Germanus" (#256* and *#258)*. At the other extreme Santarem, the Portuguese savant, declares that this document and all of the same century (i.e., 14th century in his view) "*constatent l'indubitable priorite de nos decouvertes et prouvent qu'avant ces decouvertes la cate occidentale de l'Afrique qui s'etend audela du dit Cap (Bojador) etait absolument inconnue aux cosmographes.*" [find the undoubted priority of our discoveries and prove that prior to these discoveries the Western coast of Africa that stretches from audela to Cape (Bojador) was absolutely unknown to cosmographers]. Between these opposed theories

come those of more recent scholars. De la Ronciere, for instance, speaks of the map with its *"prescience de la forme reelle de l'Afrique avant le periple Portuguais"* [foreknowledge of the actual shape of Africa before the Portuguese exploration]. Wieser takes a similar view. C.R. Beazley is inclined to credit the author with knowledge of the southeastern extension of the continent, but concerning the west coast he says: *"We require names of bays and headlands, we look for more definite proof of knowledge of the shoreline ... If its merits (between Sierra Leone and the end of the continent) are not accidental, they are probably due to information of the vast southward extension of Africa brought to Europe by men who had visited the Moslem settlements of the East Coasts or who had conversed with others who came from that region."*

Nearly a century before the Portuguese age of discovery, the *Medici Atlas* draws the bend of the Gulf of Guinea and shows that Africa has a southern end, i.e. that the Atlantic and Indian Oceans are connected to each other below the African continent. While the remarkable shape of Africa has given rise to speculative theories about ancient sailing and secret voyages, the explanation could be more mundane. The probable source of the "Guinea bend" is the legend of the *Sinus Aethiopicus*, the rumor of a gulf that lay somewhere south of Cape Bojador that was said to penetrate deeply into the African continent. This gulf is described in the fantastical travelogue of the *Libro del Conoscimiento* (possibly as early as 1350) and finds itself again in the 1459 *Fra Mauro* map *(#249)*, well before it was discovered by Portuguese explorers. The notion that the West African coast did not extend straight south but took a sharp eastward bend, could be a hazy reference to the actual Gulf of Guinea. The historian Peter Russell notes that the Portuguese Prince Henry the Navigator was entranced by the legend of the *Sinus Aethiopicus*, as it held out the prospect of a direct sea route around West Africa to the Christian kingdom of Prester John's Ethiopian Empire, avoiding the complications of travelling through the Muslim lands of Egypt to reach it. In the *Medici Atlas*, the depth of the penetration of the *Sinus* indeed almost reaches Ethiopia.

A study of the African portion reveals at least three significant facts. First, all details, physical features, pictorial embellishments and legends, stop short of the latitude of the *Mos Lune.* Second, there is a palpable difference of brushwork and of color between the areas to the north and south of this latitude. Third, the portion of the map to the south carries two versions of the shape of the continent: in addition to the obvious, colored drawing, there is an ink outline that gives an entirely different conception of Africa; one, indeed, that is more nearly in agreement with medieval map practice, as exhibited in the *Sanuto* and *Fra Mauro* planispheres *(**#228** and **#249**)*. It is difficult, from mere inspection, to decide which rendering is prior in point of execution.

Now it is well known that the province of the normal *portolan* chart of the late 14th and early 15th centuries did not extend farther south than Sierra Leone (= *Montes Lunae),* a region about which the merchants of Genoa and other Mediterranean seaports were beginning to hear as a result of their growing trade with the Sudan. Is it possible, therefore, that the draughtsman of the *Laurentian* chart only drew the part of Africa north of the latitude of Sierra Leone and that the southern portion of the continent was drawn subsequently?

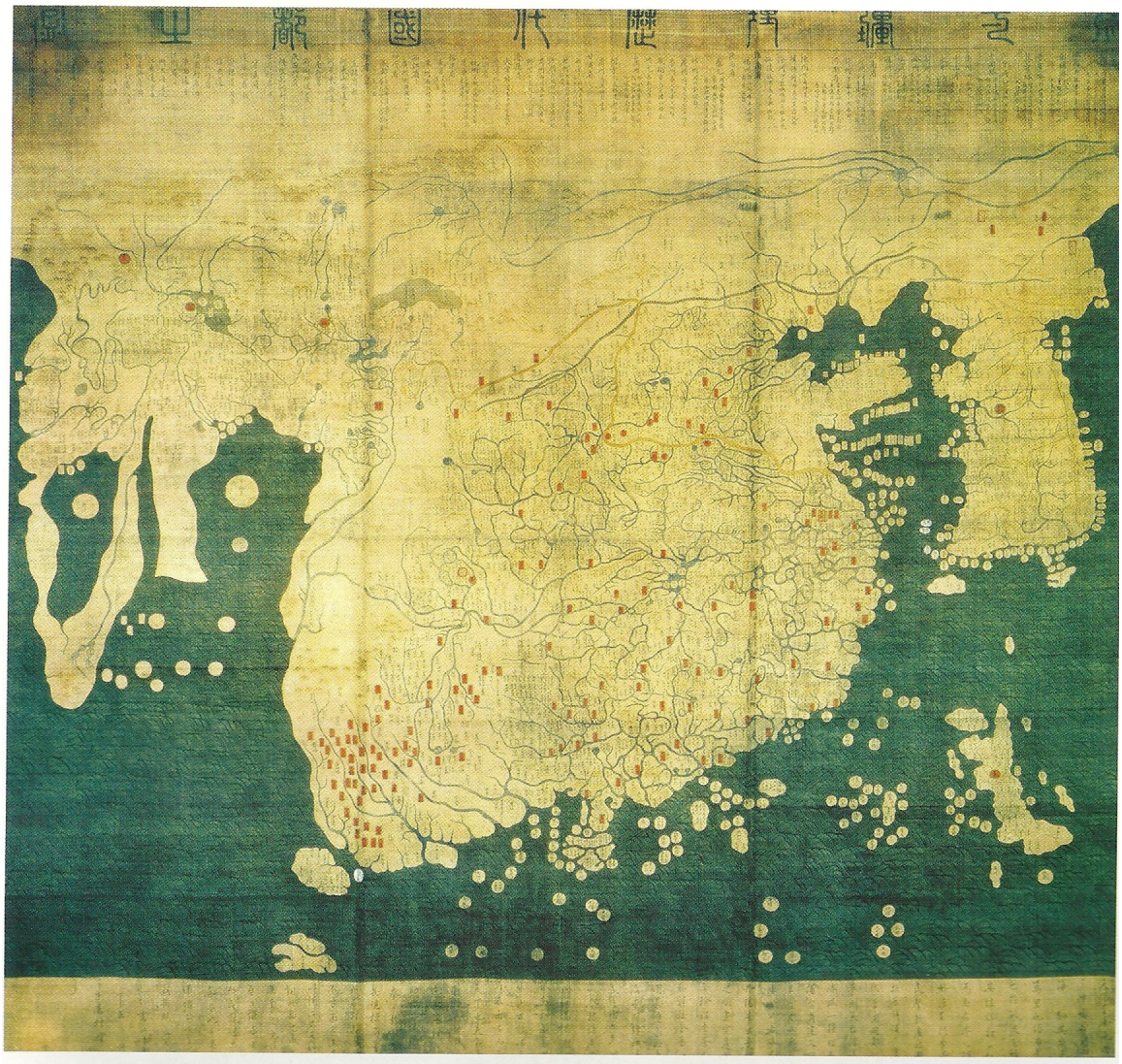
Yoktae chewang honil kangnid, the "*Kangnido*", *1402,* **#236**

The Chinese enter the picture again in 1402 with the *Yoktae chewang honil kangnid*, the "*Kangnido*" [Map of Historical Emperors and Kings and of Integrated Borders and Terrain] by Ch'üan Chin [Kwon Kun] and Li Hui [Yi Hoe] *(see monograph* **#236***)*. Although few ancient Chinese maps are extant, it is evident from various descriptions in early geographical literature and Korean copies and imitations of old Chinese maps that the *Terrestrial Continent* was centered around China, encircled by a large ring of water quite similar to Homer's *Oceanus*, and further enclosed by an imaginary outer continent. Takahashi Tadashi has shown that the *Kangnido's* Chinese transcriptions of place-names in southwest Asia, Africa, and Europe come from Persianized Arabic originals. While some of Takahashi's matches do not command credence in early-modern Chinese phonological terms, according to historian Gari Ledyard he generally makes a convincing case. One of the more interesting correspondences is the name placed by the mountains near the Ptolemaic twin lakes that are the source of the Nile. Though not on the *Ryukoku* copy of the *Kangnido*, the Tenri University copy shows the Chinese transcription *Zhebulu hama*, which Takahashi identifies with Persianized Arabic *Djebel alqamar* [Mountains of the Moon]. All in all, there are about thirty-five names indicated on or near the African continent, most of them in the Mediterranean area.

The northeastern coast of Africa, as well as Arabia, Asia Minor and the Mediterranean Sea with Italy and Spain were, as a whole, known to the Chinese from the 12th century, either by description, or, in the case of the African and Arabian coasts, from their own experience. But there exists no Chinese cartographic material from this time that covers Africa or Europe, and if there actually had been any, it obviously must have been based upon alien foreign sources, i.e., Arabic-Persian maps. As a matter of fact, the first terrestrial globe ever manufactured in China (1267) owes its existence to the Arabic scholar Djamal-ud-Din. The same holds true for the western half of one of the previously mentioned sources, Li Tse-min's map of ca. 1325/30. It too must go back to an Islamic prototype that, like the globe, belonged to the later 13th century. This being the case, the picture of Africa as given on the lower left of the reproduction is of particular interest.

Prior to the Age of Great Discoveries, the African world below the Sahara, by all indications, was essentially an enigma to geographers in Europe. Aside from the effect of the inhospitable barriers surrounding the region, two great retarding factors that hindered the Europeans from crossing the immense waste, or from sailing into the tropical waters, was their belief in the *Ocean of Darkness* [Atlantic] and the fear of extreme heat on land and in the water further south. In spite of the dangers, real and imagined, adventurers from the Greco-Roman days down to the time of Henry the Navigator persisted in probing the unknown beyond the Canaries, some passing by

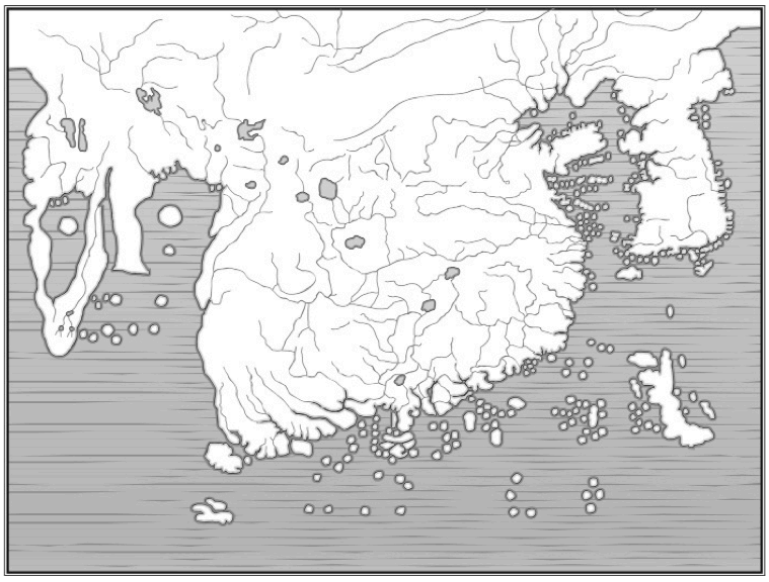
Cape Verde and others reaching as far as the coast of Sierre Leone. The source of the Nile and the actual shape of the African continent, however, remained largely subject to speculation among the Europeans.



The Ryukoku Kangnido: Honil kangni yoktae kukyo chi to 混一疆理歷 代國都之圖
[Map of Integrated Lands and Regions of Historical Countries and Capitals]
Painted on silk, 164 x 171.8 cm, 1402
*The title is written across the top, above a summary list of historical Chinese capitals and administrative centers in Yuan China, and a commemoration fills most of the bottom margin, all to be read right-to-left. (**#236**)*

Through the ensuing long period of Sino-Arab trade and intellectual exchange, the Chinese, on their part, were able to accumulate a good deal of this valuable information concerning the Indian Ocean and the continent of Africa. That China was indeed a beneficiary of this Arab monopoly can be evidenced by several Chinese world maps such as those previously mentioned by Chu Ssu-pen ca. 1320 *(**#227**)*, the nautical

charts from Cheng Ho's [Zheng He's] expedition of 1405-1433, preserved in the *Wu-pei-chih* (1621), and, of course, the present map under consideration, Ch'üan Chin's. These cartographic portrayals of the continent of Africa pre-date the Portuguese exploratory efforts by nearly a century. They also represent the culmination of an era of Sino-Arab exchange of geographical information long before the Jesuit scholars, beginning with Matteo Ricci, ushered in another era in the late 16th century. Thus the cartographic expression manifested in this map of Chin's reflects the last phase of traditional Chinese cartography that, again, was conceptually based upon the idea of one single *Terrestrial Continent* of which Africa became considered as an arm. This knowledge, presumably acquired from first-hand experience and Arab contact, not only manifested itself in the emerging world concept of Chinese cartography, but also served to facilitate the spurt of maritime activities in the Indian Ocean and along the coast of East Africa in the early Ming Dynasty (late 14th, early 15th centuries).



Returning to Ch'üan Chin and Li Hui's map, the delineation of the southern half of Africa is of particular interest. In the first place, the shape of the continent, which is basically triangular, and its general orientation, south, are clearly recognizable. This presentation is in obvious contrast to relatively contemporary European counterparts, such as the maps of Petrus Vesconte (c.1321), Pirrus de Noha (1414), Andrea Bianco (1436) and Giovanni Leardo (1453), or the *Catalan-Estense* map (1450), the *Vinland* map (c.1440) and Fra Mauro's world map (1459), on all of which the southern half of Africa was drawn far eastward and shown in such a way as to portray either a Ptolemaic enclosed Indian Ocean *(**#239**),* or a larger southern Africa than the northern portion *(**#228**, **#241**, **#242**, **#243**, **#246** and **#249**)*. The only European exceptions seem to be the world map of Albertinus de Virga (1415, ***#240***) and the one in the so-called *Medicean* or *Laurentian Sea Atlas (**#233**)*, the latter's presumptive date of 1351 being subject to controversy primarily because of its remarkable depiction of the continent of Africa. The *Kangnido* map, however, proves that the Chinese, via their Arab sources, at least as early as the end of the 13th century, had a more or less correct view of the southern extension of Africa, whereas its northwestern bulge had not been as yet recognized. It is hardly believable that such a representation should be casual or the result of mere speculation. Most scholars such as Walter Fuchs, Gari Ledyard and Park Hyunhee are inclined to assume that the cartographic heritage of the Arabs had been transmitted to the Chinese, albeit incompletely and probably did not always reflect the actual experiences of their seafarers. This north-south extension and shape of Africa can be seen in the cartography of the Arabs as early as the 13th century on Ibn Sa'id's world map *(**#216**)*. It should also be

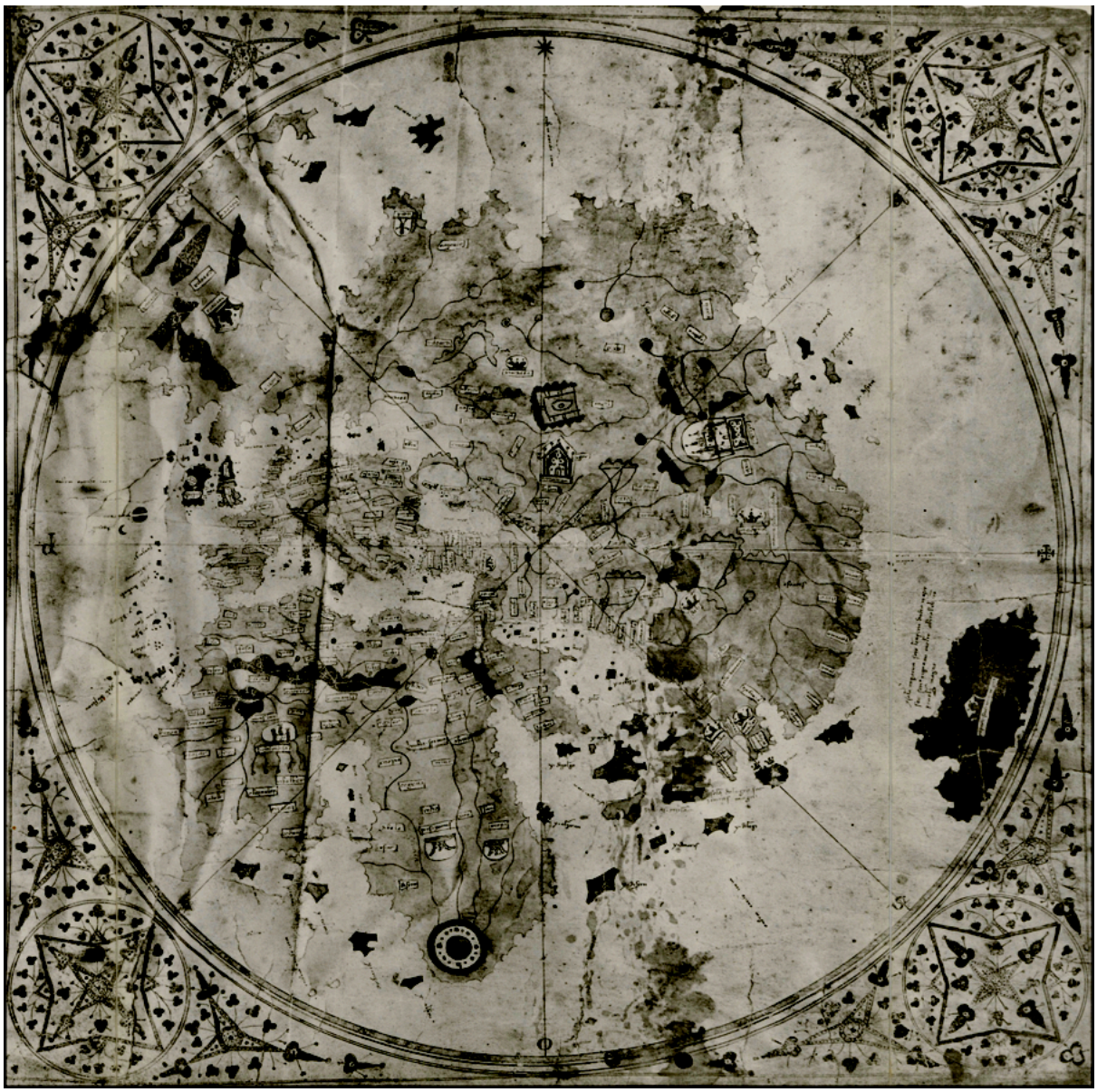
mentioned that the southern tip of Africa is shown in almost the same form in Chu Ssu-pen's atlas *Kuang Yu¸ T'u*, preserved in a copy dated 1541 - 1555 *(#227)* the original edition of which, the *Yu¸-T'u*, again, is dated 1320, i.e. about the time of Li Tse-min's map.

The fact that the names of the Chinese cities on Chin's map are all the same as on the maps from 1320, further substantiates that the basic content of the map, as a whole, must date back to the famous Chinese cartographer Chu Ssu-pen's own time. However, the *Kangnido* map of the world presents a totally different emphasis from that of Chu Ssu-pen. As the map title suggests, it aims at showing the locations of "all the countries and major cities in history in a comprehensive coverage". Hence, no names are given for the southern half of Africa and the Indian Ocean, except for the area around Zanzibar that was already the key trading-center in East Africa. On the other hand, its broader coverage of Africa and the rest of the known world in the same scale provides a very valuable supplement to Chu Ssu-pen's map of southern Africa *(#227)*. The relief features and an additional stream flowing westward in South Africa roughly corresponding to the Orange River, indicates that Ch'üan Chin was not entirely negligent on the least inhabited part of that continent.

In the *Kangnido* the treatment of the western regions is also very interesting in that it includes about 100 place-names for Europe and about 35 for Africa (unfortunately, though, it has not been possible for scholars to identify many of them). For those areas that are identifiable, in the northern part of Africa the Sahara is colored in black, like the Gobi in so many Chinese maps, and the position of Alexandria is indicated by the placement of a prominent pagoda-like object representing the famous Pharos. The interior of the continent is filled in by a body of water surrounding an island that is designated as *Huang-sha* [desert]. In contrast, the Mediterranean Sea is almost entirely shown as terra firma failing to blacken it in as he has other water areas, perhaps because he was not quite sure that it was indeed an ordinary sea. Instead, its coastline is marked like the course of rivers.

The deVirga Mappamundi, 1411-1415, ***#240***

The next example of a medieval map from Europe is the *de Virga* world map from the early 15th century shown below (1411-1415, *see monograph* ***#240***). The three known continents, *Europa, Africa*, and *Axia*, are underlined on the map for emphasis, and are harmoniously placed (in part) around the Mediterranean Sea, drawn tolerably with exactness like the European *portolan* [nautical] charts, and (on the other hand) around the Indian Ocean, which is decorated with multi-colored archipelagos similar to the Arab maps. Africa is decorated with the common representation of the Atlas Mountains, which spread over the northern part of Africa like a serpent, and by the *Mountains of the Moon* towards the south which surrounds twice the region where the *Ylon* [the river Nile] and several other rivers flow. A large gulf that opens into the ocean carries the notation *Dara Four Asiner close to some islands*. Some crowns in Africa are accompanied by the mention of *Pre. Yoanes* [Prester John of Ethiopia], *Muya*, and a castle of *Icalmcsa* [Sidjilmassa, from the Sahara]. Surprisingly, the *Garden of Eden* is depicted at the southernmost tip of Africa with the symbol of two concentric rings, from which emerge the four rivers mentioned in *Genesis.* The delineation of Africa is unusual given that most European medieval world maps show southern Africa as extending strongly eastward (see monographs ***#242, #245, #246***), or, as with those based upon Ptolemy, showing an enclosed Indian Ocean (***#239***). Like the maps from China, the outline of *de Virga's* Africa is quite intriguing given that the Portuguese Bartolomeu Dias was still over 70 years way from rounding the Cape of Good Hope.



*The de Virga map from 1411-1415 by Albertinus de Virga, oriented with North at the top (**#240**)*

*Pirrus de Noha World Map, 1414, **#239***

The world map by Pirrus de Noha from 1414, shown below, returns to the Ptolemaic concept of an enclosed Indian Ocean *(see monograph **#239**)*. It was a text with maps that was translated into Latin by Jacobus Angelus in about 1406 that first introduced Ptolemy's *Geographia* into Western Europe. Its impact is shown by the number of surviving 15th century manuscripts of the Latin version and by the succession of early printed editions. The first, at Vicenza in 1475, had no maps, but it was then published with maps at Bologna in 1477, Rome in 1478 (40) and 1490, Ulm in 1482 and 1486, and so on. It is shown too by the way that other world maps quickly assimilated elements from Ptolemy's. Thus the map shown herein that was copied by Pirrus de Noha in about 1414 to illustrate a quite different geographical text of the Roman period, the *Chorography* of the first century author Pomponius Mela *(**#116**)*, takes from Ptolemy

the following: its land-locked Indian Ocean, the shapes of Malaya and Sri Lanka *(Taprobana)*, the Mediterranean Sea 20 degrees too long, the *Mons Lune* [Mountains of the Moon] as the source of the river Nile, no clear indication of the shape of central-southern Africa or the Far East, etc. This is an attempt to display only the *oikoumene* or known world, not an attempt to display those parts still unexplored.

World Map of de Noha, 1414, oriented with North at the top. This map reverts back to the Ptolemaic feature of an enclosed Indian Ocean **#239**

*Andrea Bianco World Map, 1436 (**#241**)*

In its general character the circular world map faithfully reproduces the pattern introduced by Fra Paolino and Petrus Vesconte *(**#228**)* over a century earlier, augmented only by the representation of northwest Africa and the Atlantic islands borrowed from Bianco's charts. Neither in design nor in content does its author seem to have sought novelty; there is no attempt at originality of design as in Pirrus de Noha's world map *(**#239**)*, or at conscientious scrutiny of sources, as in the maps of Leardo and Fra Mauro. The circular world map is oriented to the East, surrounded by a blue rim representing not the ocean (which is green) but the heavens, as we can see from the stars painted on it. The landmass of the earth is shrunk considerably within its frame in order to increase the size of the ocean and to include the polar regions. Even so, a bit of land in East Asia protrudes into the frame. To the south of this promontory lies a long gulf, and on the peninsula nearby is the *Garden of Eden*, with Adam and Eve standing on either side of the tree, and the four rivers flowing to the west. Below is another garden, where God is instructing Adam, alas, to no avail. Near the center we find the Virgin Mary and child being adored by the Magi and at the River Jordan the baptism of Christ. Noah's Ark is

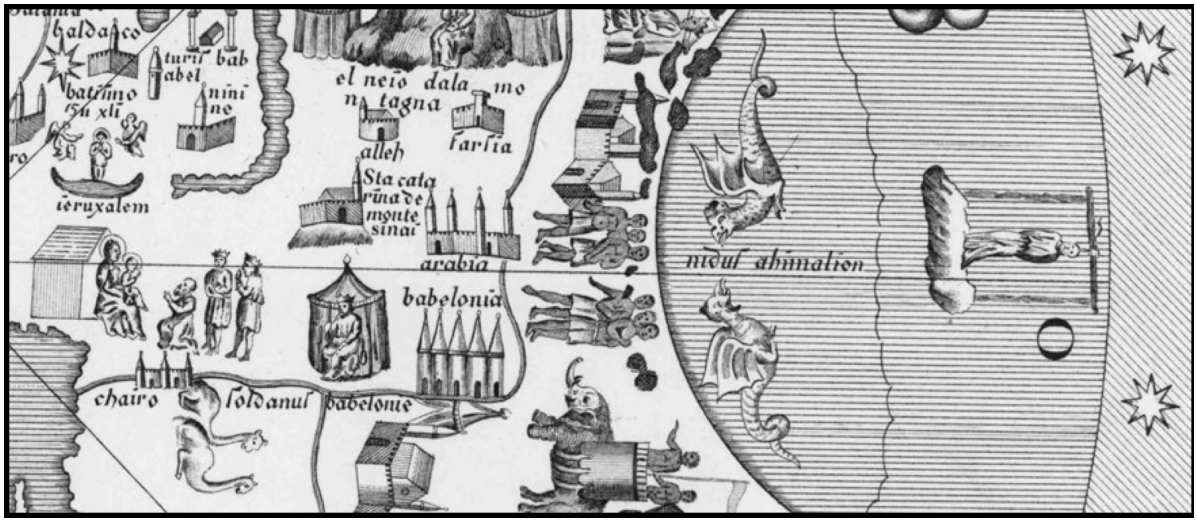
shown in Armenia and Mt. Sinai in Arabia. Despite dire warnings, a fully caparisoned ship sails down the coast of West Africa toward the south, where a tribe of dog-faced men march under a banner. In the far eastern extension of Africa can be found legendary Christian king Prester John. The Indian Ocean is open to the east and crowded with islands, while Africa extends far to the east, bounding the ocean on the south. Because of this map's early date, there is no record of the Portuguese voyages, but in Bianco's 1448 chart, their progress in west Africa is duly noted. An unusual feature of this map is the large number of human figures on it. Real animals such as elephants and camels are displayed along with mythical beasts.

The *mappamundi* depicts a number of sea monsters, and they are all in the southern ocean, at the edge of the world far from Europe: there we see a two-tailed siren and two winged dragons. The dragons are in what looks initially like a bay, but the feature is actually intended to represent an underwater abyss at the southern end of Africa: the wave pattern at the southern edge of this feature indicates that the dragons are underwater.

*A facsimile of the 1436 Bianco world map: Planisfero Antico di Andrea Bianco Che si conserva in Venezia nella Biblioteca di S. Marco., copper engraved version (1783) from the first Italian edition by Vincenzio Antonio Formaleoni's (1752-1797) "Saggio sulla nautica antica de' Veneziani ". Oriented with East at the top. (**#241**)*

This map shows Paradise with Adam and Eve and the four sacred rivers that flow from it. The Indian Ocean is open to the east, and is dotted with islands. Africa extends to form its southern shore and includes kings, dog-headed men and dragons. The two poles are marked with semi-circles and the Atlantic Ocean is greatly enlarged to show the recently discovered islands of the Azores. All the oceans and seas are colored in green, the Red Sea is colored appropriately and the surrounding blue band is dotted with stars representing the heavens.

Detail of Bianco's Africa, re-oriented with North at the top.
Note the extreme eastward extension and the numerous images throughout the African continent.



Detail showing (on the left) Mary of the Christ child, and (on the right) the southern portion of Africa with hanging man and sea monsters.

*Giovanni Leardo World Maps, 1442-1453 (**#242**)*

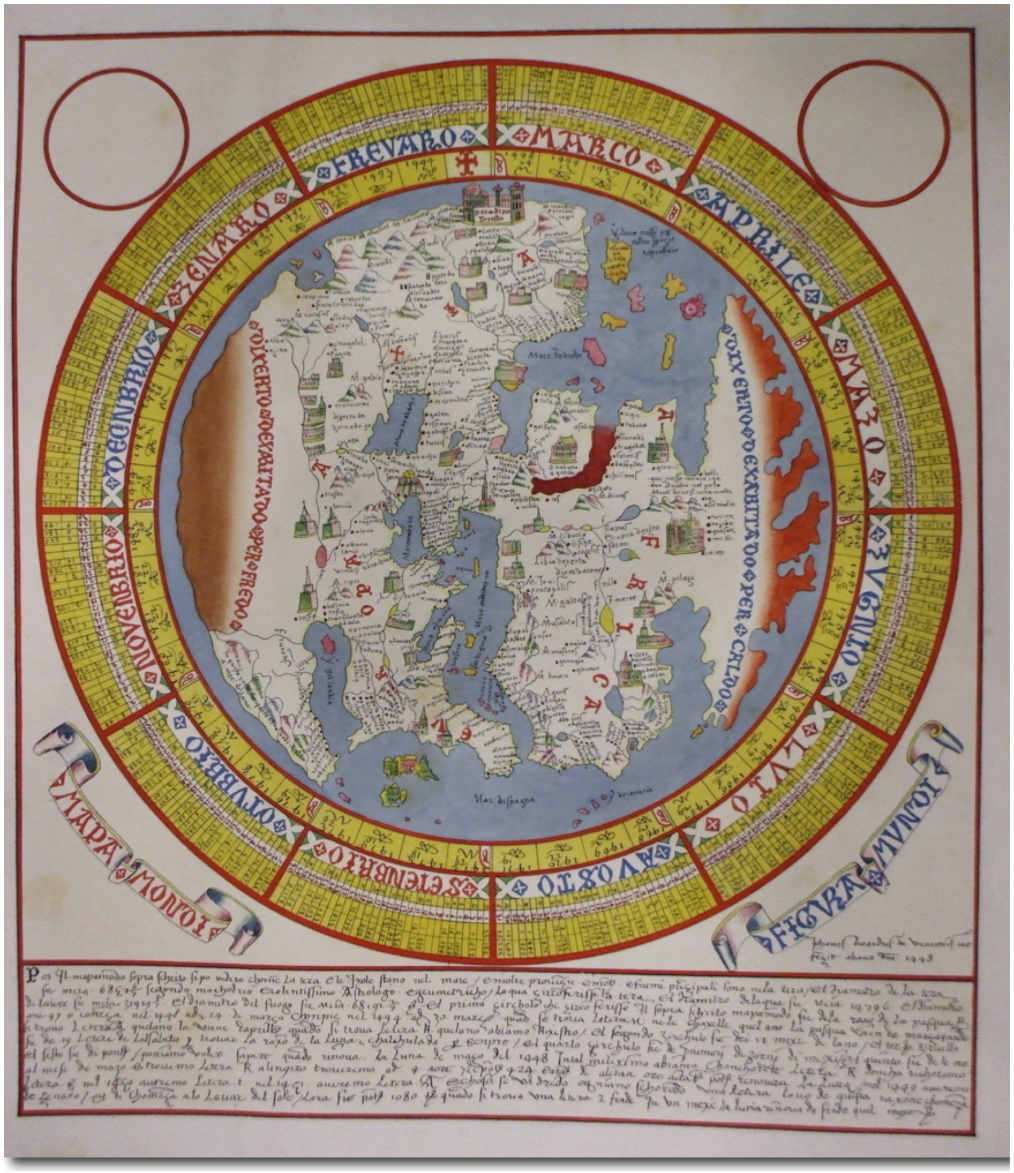
On Leardo's world map, the African continent, like that of the *Catalan-Estense* map, has a very unusual shape *(see outline map comparisons below).* Two gulfs reach inland from the Indian Ocean and from the Atlantic, partially cutting off the southern extremity of the African continent. On the *Estense* map the eastern gulf is not as prominent as that of Leardo's map, but the western gulf is even deeper. The historian Konrad Kretschmer suggests that these features have sprung from a combination of the ancient doctrine of a vast austral continent with Ptolemy's theory that the Indian Ocean is surrounded by land. Certain Arabic maps show an eastward projection of Africa like those of the *Estense* map and *Leardo*, although they do not indicate anything corresponding to the western gulf.

Prester John's castle looms large in the interior of Africa. In the 12th century, reports spread through Europe of the vast realm of a fabulous Christian monarch in the heart of Asia. By the 14th century, however, Prester John's empire had been transferred to Africa, where it became associated with the Christian kingdom of *Abyssinia*. The elaborate edifice with which Leardo represents Prester John's empire may be intended for the sumptuous palace described in the 13th century *Letter of Prester John*.

Detail of Africa continent on Leardo's world map, <u>re-oriented</u> with North at the top

Like many medieval cartographers, Leardo makes the Nile rise in West Africa. In this he follows Herodotus, Pliny, Mela and other ancient authorities. Ptolemy, however, seems to have had a more correct view, placing the sources of the river in the *Mountains of the Moon* in eastern Africa. Nothing daunted, most of the 15th century cartographers who used the writings of Ptolemy boldly transferred the *Mountains of the Moon* to West Africa to suit their theory of the river's course. Thus, on the *Leardo* map

the *Montes Lunae* are located on the north coast of the West African gulf. Thence four streams flow north into a lake, out of which the Nile makes its way eastward and another stream flows westward into the Atlantic. The latter stream represents, perhaps, a combination of the Niger and Senegal, of which some faint knowledge may have been gained through traders who had crossed the Sahara. The lower Nile is joined by the *River Stapus,* doubtless the *Astapus* of Ptolemy or the modern Blue Nile. On the *Catalan-Estense* map this tributary rises in the *Terrestrial Paradise*, there placed in East Africa. To the mountain range of North Africa, the *Carena* of the Catalan maps, Leardo has added Ptolemaic names.



*Facsimile of Giovanni Leardo world map, 1448, (oriented with East at the top) "Mappemonde dresse en 1448 par Johanes Leardus de Venise, conservee a Vicenza dans la Biblioteque Trento, publicee pour la premiere fois et donnee en facsimile", in Vicomte de Santarem, Atlas compose de Mappe-mondes, 1849 (***#242***)*

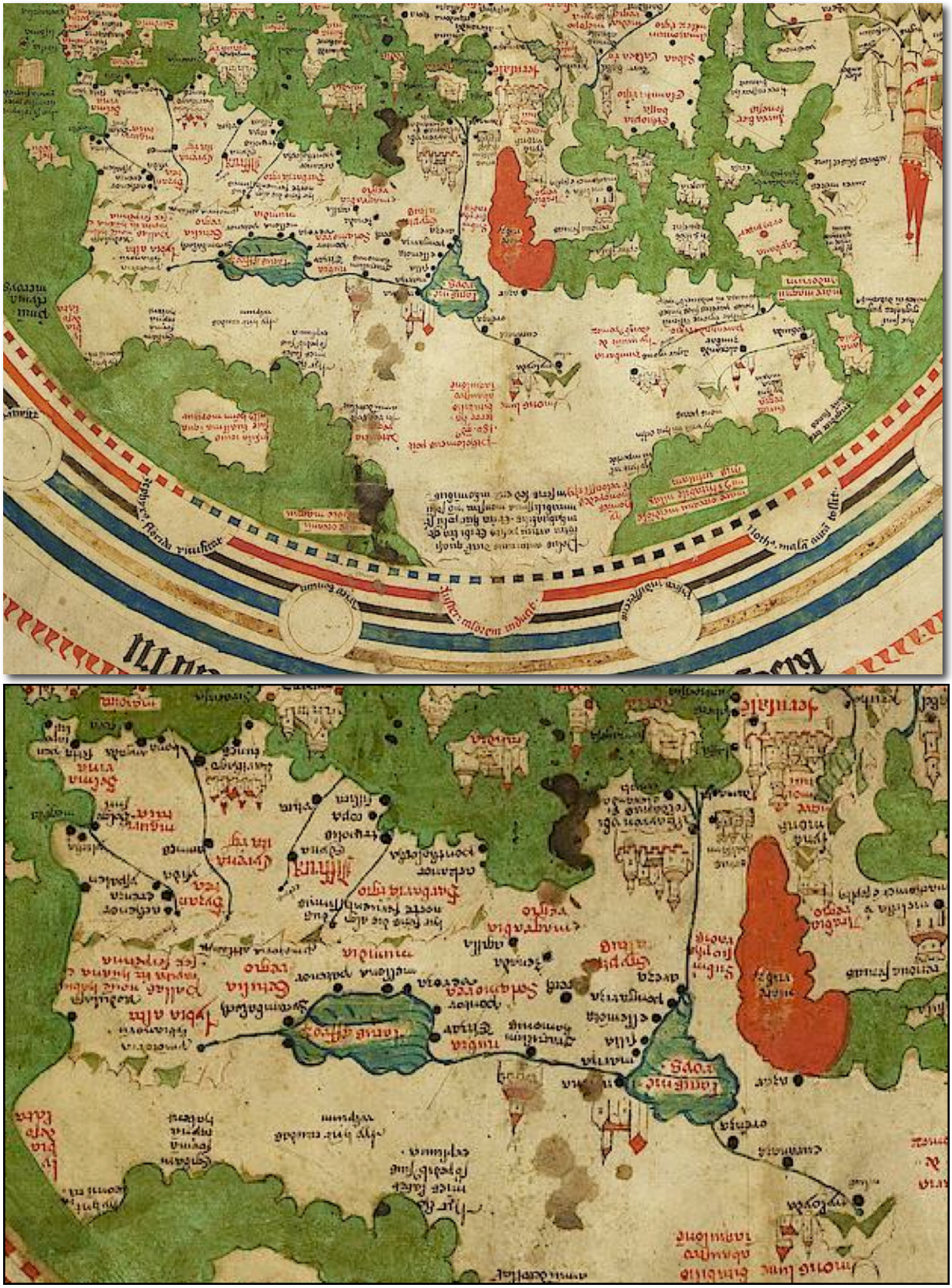
Andreas Walsperger Mappamundi, 1448, ***#245***

Like the Islamic maps of the medieval; period, this world map is oriented with the South at the top. The earth is surrounded by an ocean except at the far South, at the top of the map, where Africa stretches to the edge of the circle. Africa and Asia are so close that they are separated only by a forked strait. The map mentions curiosities allegedly only occurring in Africa: Amazons, Pygmies, one-footed beings, long-eared beings and humans with tails. Among the rivers, the Nile is noteworthy as its source is in the *Mountains of the Moon*.

On his map Walsperger explicitly cites Ptolemy's *Geographia* in his representation of the southernmost part of the earth, noting Ptolemy's estimate of the extent of habitable land. Walsperger, however, extends the land beyond this inscription to the frame of the map. The historian Alfred Hiatt observes that although the southern *plaga* is thus incomplete, Walsperger locates the Antarctic pole there, recording that "*there land is uninhabitable. And around this pole are most marvelous monsters not only beasts but even men*". The Arctic pole is similarly described as uninhabitable, because of the cold that causes "*perpetual congelations*". The extension of the southernmost part of the earth to the Antarctic pole makes the standard association of the southern Africa with extreme heat difficult to maintain. Nevertheless, Walsperger perpetuated the traditional associations of southern Africa with monstrous races, expressly noting the presence of "*extremely fast monopods*" near to the south polar region. There is a kind of mingling, then, between the tradition of the location of monstrous races in southernmost Africa on *mappaemundi* (such as the *Hereford* and *Ebstorf* world maps, *see monographs* **#224** *and* **#226**). Ptolemy's description of Africa, bounded to the south by *terra incognita*, and the frigid Antarctic region represented on zonal maps. The proximity of southern Africa to the southern polar region on Walsperger's map provides a visual counterpart to the statement of Nicholas V's pontificate: Eugenius IV's papal *Bull of 1436*, *Romanus pontifex,* that the Portuguese had searched the sea and maritime provinces in their fast boats "towards the southern parts and the Antarctic pole". Both texts dispense with the representation of the southern hemisphere as irrevocably separated from the north by an intervening and impenetrable zone. On the contrary, northern and southern hemispheres are represented as contiguous, and the implication follows that both poles are within European reach.

Considering Africa, the western littoral starts off with a plainly Ptolemaic trend past *Hesperidum* as far as *primum clyma Meroys* (one of Ptolemy's seven *Climata*). Here it turns east, past the country of the *Egibani,* who boast the form of goats, and that of the *Sciapodæ*, conspicuous for the size of their feet. These are the Plinian in parentage. At this point the coast turns southwards again to the edge of the map, near which we read the most un-Ptolemaic observation that *Around this pole there are most wonderful creatures, not only beasts, but men* indicating that he has exiled the monstrous races found in Africa on earlier maps to Antarctica. The eastern prolongation of the continent, extending as far as *Java Insula*, and separated from Asia only by a narrow strait, once again brings us back to the true Ptolemaic tradition of an enclosed Indian Ocean, as does the placement of the Nile River in the heart of Africa.

Andreas Walsperger's World Map, 1448, **#245**
(oriented with South at the top)



Detail of Africa in the Walsperger map, re-oriented with North at the top (above)
Below is detail of the westward flowing Nile River and Red Sea

The Catalan-Estense World Map, 1450-1460, ***#246***

In this somewhat "transitional map (between the medieval and Renaissance periods), the central point is not Jerusalem but near the abode of the mythical Christian king *Prester John* [*Presta Iohan*], placed in *Nubia* between the two branches of the river Nile. The abandonment of Jerusalem as a central point is found on several other European *mappaemundi* of the 14th and 15th centuries. Africa, to which the cartographer's attention was clearly directed as new discoveries were incorporated, is enlarged, crosses the equator, and reaches a southern coast. Asia is largely confined to the northern hemisphere. The Atlantic occupies a larger space than is usual. However, on one matter the mapmaker could hardly refrain from speculating, for this reason: land exploration had for a long time now outrun oceanic discovery, and so, concerning Africa, for example, much more was known of the Sudan by the end of the 14th century than was known of the oceanic fringe in the same latitudes. The earlier draftsmen insisted upon cutting the continent short just beyond the limit of coastal knowledge, that is, in the vicinity of Cape Bojador. By so doing, however, they found themselves reducing the vast extent of the Sahara almost to a vanishing point. Thus, in the *Catalan Atlas* of 1375 ***(#235)***, *Sigilmesa* and the *Rio del Oro* [i.e., the Senegal-Niger River system] are placed in closer proximity than *Ceuta* and *Cape Non*. Later draftsmen, in order to escape the embarrassment caused by indicating the great trans-Saharan caravan routes within these narrow limits, began to speculate on the course of the African coast, south of Bojador. By general agreement it was made to tend south-south-east. Speculation of this sort did at least have the merit of enabling the mapmaker to draw the Sahara with greater accuracy. It should be noted that all of the Catalan maps, with the exception of this *Catalan-Estense* world map, which was the last of its line, stop short of their southern side in the latitude of Sierra Leone approximately, that is, where knowledge gave place to ignorance.

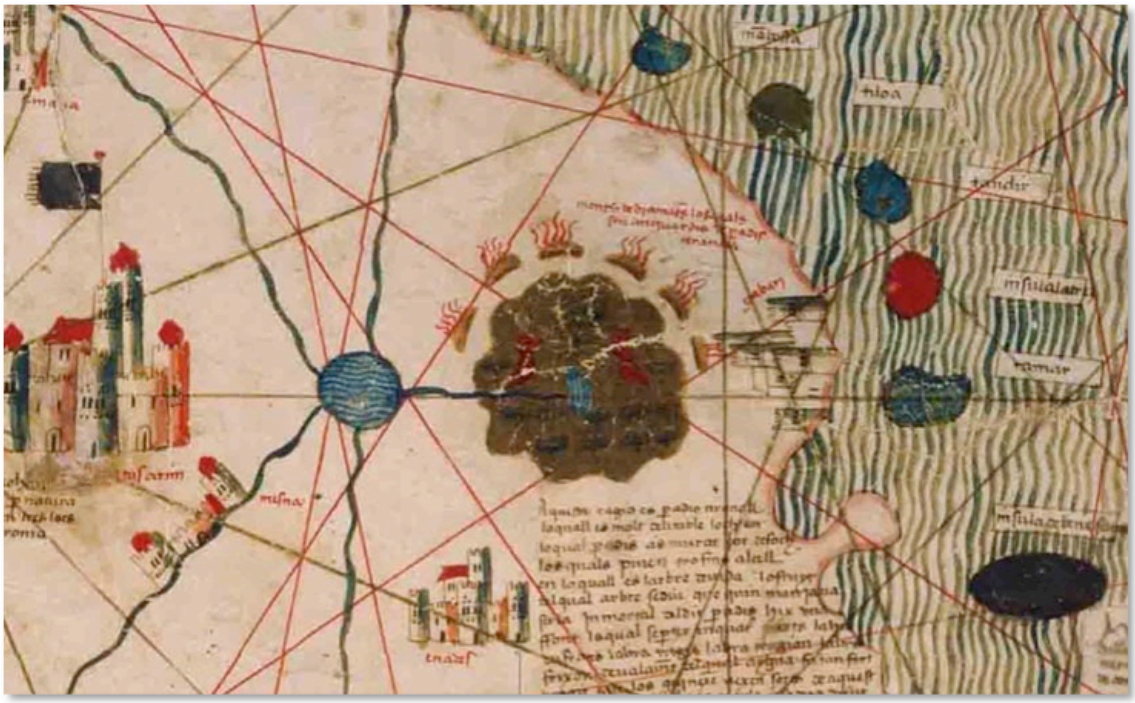
The shape of Africa on this map is unique, and it is much enlarged in relation to Europe and Asia. Below the Gulf of Guinea, which nearly cuts the continent in two, is a large crescent-shaped appendage extending to the east and forming a southern shore for the Indian Ocean. A thin canal across its narrow waist implies a passage between the Atlantic and Indian Oceans. The southern landmass, which may be intended for a separate continent, has no place-names or pictures, demonstrating remarkable restraint on the part of the artist.

Africa occupies most of the southern half of the map. The continent ends in a great arc, conforming to the circular frame of the map, and extending eastwards to form the southern boundary of the Indian Ocean. On the west, a long narrow gulf from the circumfluent ocean almost severs this southerly projection from northern Africa. The southern interior is blank save for the legend *Africa begins at the river Nile in Egypt and ends at Gutzola in the west: it includes the whole land of Barbaria, and the land in the south.* This outline and legend have been interpreted to imply some knowledge of the southern extremity of Africa, and perhaps of a practicable route from the west to the Indian Ocean.

That the great western gulf reflects some knowledge of the Gulf of Guinea is more probable. The design of the northern half of the continent in general resembles that of the other Catalan charts, but the northwestern coast embodies some details of contemporary Portuguese voyages as far as *C. ude* (Cape Verde) and *C. groso*. From this evidence, the map is usually dated about 1450. Near the gulf is the *Mountains of the Moon*, from which five rivers flow northwards to a lake on the *western Nile*. This lake

probably represents the area around the Upper Niger liable to inundation; the historian George Kimble has pointed out that these rivers may well represent the five main sources of the Niger. These *Mountains of the Moon* are stated to be on the Equator, and the streams are called the *riu de lor*. We may therefore assume that the headwaters of the Niger marked the approximate limit of contemporary knowledge in this region, and it is not improbable that reports of the sea to the south had been received. These may have induced the cartographer to accept the western gulf of Ptolemy, but to enlarge it considerably. Again, the name *Rio del Oro* [River of Gold] recalls the inscription on the *Catalan Atlas* and the classical tradition. The portrayal of the interior thus goes back at least to 1375. Therefore, apart from a small portion of the coastline, the map owes nothing to Portuguese exploration.

Taking into consideration the lack of details and names in the southern regions of Africa, we may plausibly conjecture that, as an exception to the usual conservatism, the draftsman, in Africa at least, had removed all the detail for which he had no evidence, to obtain a framework on which to insert the latest Portuguese discoveries. It must remain debatable whether the outline of the southern extremity represents some knowledge of the Cape.



Catalan-Estense detail: The Early Paradise
Located near the territory of Prester John between Nubia and the city of Arin [Civitasarim], the latter prominently marked and centrally placed in the Horn of Africa, not far from the Indian Ocean in which six islands of various sixes and colors are depicted. Paradise is guarded by five high "Diamond Mountains" surmounted by flames. Within Paradise Adam and Eve are shown standing on either side of the Tree of Life. The single river originates in the middle of the Garden before flowing out of it into a lake, there after to separate into four streams. One legend, near Cape Verde, explains the equal duration of night and day at the equator and, another, close to Paradise, emphasizes that the delights of the Garden of Eden are incomparable with the features of any other earthly region.

The merit of the Catalan cartographers lay in the skill with which they employed the best contemporary sources to modify the traditional world picture, rarely proceeding further than the evidence warranted. In the same spirit they removed from the map most of the traditional fables which had been accepted for centuries, and preferred, for example, to omit the northern and southern regions entirely, or to leave southern Africa a blank rather than to fill it with the *Anthropagi* and other monsters which adorn so many medieval maps. Though drawings of men and animals still figure on their works they are in the main those for which there was some contemporary, or nearly contemporary, warrant; for example, *Mansa Musa*, the lord of Guinea, whose pilgrimage to Mecca created a sensation in 1324, or *Olub bein*, the ruler of the Tatars. In this spirit of critical realism, the Catalan cartographers of the 14th century threw off the bonds of tradition, and anticipated the achievements of the Renaissance.

In the case of the *Catalan-Estense* map, whose date was earlier conjectured to be 14th century, the determining area would appear to be the west coast of Africa. The map names Cape Verde, which was discovered by Dias in 1444 and whose first recorded mapping is by Andrea Bianco in 1448 ***(#241)***. The Cape Verde islands, which although discovered in 1444 also appear cartographically in Benincasa's map of 1468, are not featured on the *Catalan-Estense* map. This coastline looks in the Modena map rather similar in its outline to Bianco's 1448 chart. So that would suggest a date soon after for the *Catalan-Estense* map. Differences in ink and supposed linguistic variants caused earlier scholars to wonder if two different periods of composition were involved, but George Kimble (1934) pointed out that the handwriting had been judged the same throughout.

Further south, no discoveries are evident in the Gulf of Guinea later than a friar's journey, ca. 1350, recorded in a book called *Libro del conoscimiento de todos los reynos y tierras* [Book of knowledge of all kingdoms and lands]. Nevertheless it is interesting that his islands *Gropis* and *Quible* reappear on the *Catalan-Estense* map in the west-east order of the friar's navigation (the cartographer does not change the order to east-west as Kimble implies). Nor can we prove a date from the legend to a mountain near the same gulf, which may be translated as *This mountain is called by the Saracens Mt Gibel Camar, which in our language means Mountain of the Moon; this mountain is on the equator*. Five rivers are shown flowing north from it, one of them a river of gold, flowing through a lake not connected with the Nile. This river of gold is different from the *Rio del Or* reported in the *Catalan Atlas* of 1375 ***(#235)*** as having been discovered in 1346; that is an inlet in the former Spanish protectorate of Rio de Oro. A *Mons Lune* [Mountain of the Moon] is also found by the Gulf of Guinea on the *Medici Atlas* ***(#233)***, whose world map is now thought to be 15th century. In the interior the *Catalan-Estense* map has the land of King of Melli said, as on the Paris and Florence maps, to be rich in gold, to which the Modena map adds that it is poor in salt, which comes to be worth its weight in gold. Both salt and gold in West Africa are mentioned by al-Idrisi (1099-1164, ***#219***).

*The Catalan-Estense World Map, 1450-1460 (**#246**)*

A prominent feature of this map is the very long extension of the Gulf of Guinea eastwards, linked apparently by a river to the Indian Ocean, which is given a gulf south of the Horn of Africa. A waterway linking east and west Africa is reminiscent of the tradition going back to Crates of Mallos (168 BCE, ***#113***) and Macrobius (400 CE, ***#201***), according to whom northern and southern Africa were separated near the equator by a body of water. South of the narrowest point, rather irrelevantly, is a legend which may be translated: *Africa begins at the R. Nile in Egypt and ends at Gutzola [i.e. the land of the Gaetuli, near the Atlas Mountains] to the West; it encompasses all Barbary and the land of the South." Gutzola* is shown on the Moroccan coast just south of Safi. Near Cape Verde we are told, "*At this cape is the end of the land of the west part of Africa. This line is at the equator on which the sun stays continually, making twelve hours of night and twelve of day.*" Nearby is

an island labeled *Illa de eades: Here Hercules placed his two columns.* So the *Pillars of Hercules* have slipped down the coast and will eventually disappear completely.

Africa contains half a dozen reigning monarchs, from Musamelli to Prester John, sitting in splendor in their royal tents. The mapmaker omits the usual array of monsters in Africa, and the only animal depicted is a camel with a rider, sedately proceeding along the caravan route to the sea. The Saharan cities that appeared on the *Catalan Atlas* also appear here; among them are *Siguilmese, Tenduch, Tagort, Buda*, and *Melli*. It is likely that the southern extension reflects an Arab tradition. The continent widens out again enormously, and the peninsula presents a curved south coast roughly parallel to a surrounding sea. The eastern part of this peninsula resembles that of al-Idrisi *(**#219**).*

The course of the Atlas Mountains is very similar to that on the *Catalan Atlas* of 1375, even including a curved northern prong in the central area. There is more detailed information on the interior than is usual on *portolan* charts. Clearly the pass in Morocco leads from Marrakesh to the Wadi Draa: the legend begins: *This pass is called Dra valley and Sus valley; through this pass travel the merchants who want to go to Melli*. A pass in the eastern part of the range is called a route of Islamic pilgrims, another piece of evidence of Arab sources. The eastern end of the Atlas range is extended too far east, ending in *Cyrenaica*.

Compare, for instance, this *Catalan-Estense* map, the *Walsperger* world map *(**#245**)* and the *Genoese* world map *(**#248**)*, all of approximately the same date, ca. 1450. According to Kimble, there are at least three distinct influences, in addition to the *portolan* chart tradition, that can be detected. These influences are Classical, Christian and Arab. Of these only the Arab influence is strong, while it is improbable that the Classical influence was direct. Thus, in the case of the *Catalan-Estense* map, it owes nothing to the Ptolemaic tradition, and it is less likely that its author should have taken his idea of a southern continent direct from Crates, the originator of the concept (150 BCE, ***#113***), than that he should have taken it from Arab or Christian cosmographers, such as Abu'l Fida or Isidore (***#205***), who revived it. The influence of the medieval Christian tradition on the *Catalan-Estense* map is betrayed in such elements as the legend relating to *Prester John* and the portrayal of the *Terrestrial Paradise*. There can be no mistaking the Arab influence. We have only to compare the delineation of the southern half of Africa on the map with the description given by the 11th century writer, Al-Biruni (***#214.3***), of the shores of the *Southern Ocean* to be convinced of the kinship. Thus, the *Catalan-Estense* map, although embellished with castellated towns, ships and portraits of African princes, attempts to furnish an up-to-date picture of the world and to resolve the ancient riddle of *Africa nondum cognita* [not yet identified].

The Genoese Map, 1457, ***#248***

With the development of Portuguese seafaring in the 15th century and the subsequent widening if the southern horizon, the problem of 'harmonizing' or reconciling the traditional world views laid down by Pliny, Ptolemy, Aristotle and Ambrose with that of the new discoveries became increasingly acute. This Genoese world map represents a "hybrid" or "transitional" map of the period. Practically all the features of the African Sahara are similar to their territorial relationships and outlines to those on a Ptolemy manuscript of 1400 in the Laurentian Library at Florence. The same influence, though not the same slavish adherence, is apparent to the area south of the Sahara, where the author places a great gulf, containing an island and a legend, now barely visible, which reads: *Preter tolemei tradicionem hic est guffus sed pomponius eum*

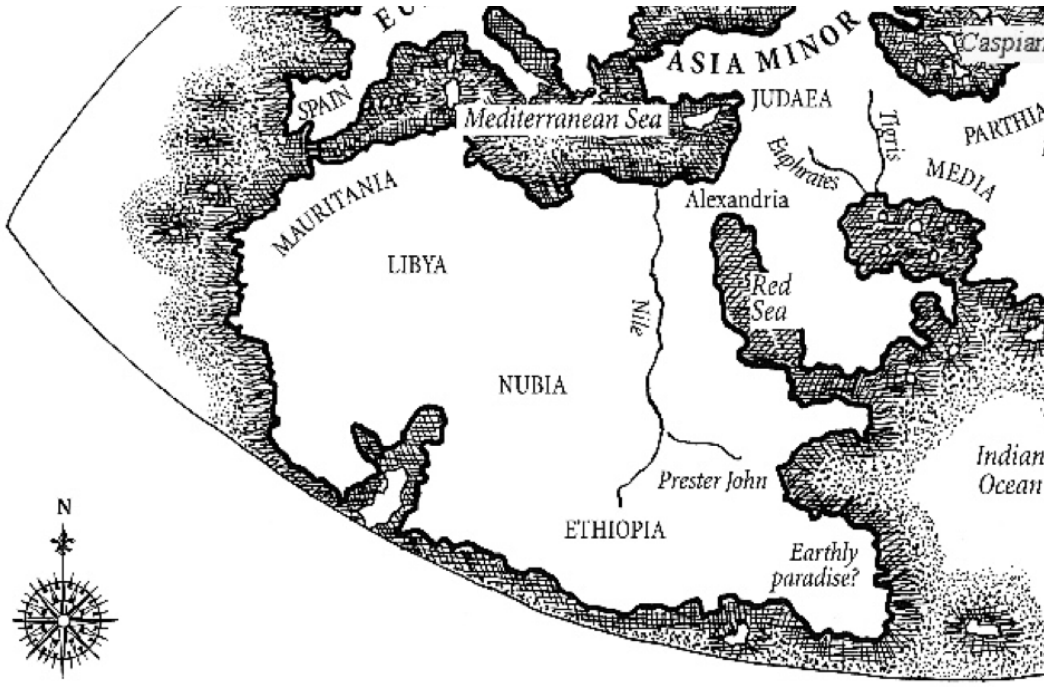
tradit cun eius insula [contrary to the opinion of Ptolemy, this is a gulf, but Pomponius [Mela] speaks of it with its islands]. Or again, in another rubric:

> Beyond the equinoctial line Ptolemy records an unknown land, but Pomponius [Mela] and many others as well raise a doubt whether a voyage is possible from this place to India; [nevertheless] they say that many have passed through these parts from India to Spain . . . especially Pomponius in his last chapter.

This rather refreshing disposition towards agnosticism is exemplified again in the configuration of South Africa. Here the author does not follow the Alexandrine scholar in attributing to it an eastern prolongation and enclosing the Indian Ocean, but contents himself with rounding it off in the conventional medieval way, namely, in the form of a half moon. This opening of the Indian Ocean would provide additional incentive for countries like Portugal to increase its exploration of a sea-route to the Far East. The division of geographical loyalties at this period is further illustrated in the placing, side-by-side, of the Nile sources, located in the *Montes Lunæ* [Mountains of the Moon], after Ptolemy, and this typically medieval legend: *Some have represented the Paradise of Delights in this region, while others have said that it is beyond the Indies to the East.*

The *Genoese* map is one of the first European medieval *mappamundi* not to depict the location of Paradise. Ptolemy is cited by name in several inscriptions, and there is evidence of his influence in the representation of Africa (Ethiopia, the source of the Nile), an enclosed Caspian Sea *(Mar de Sara),* the southern coast of Asia, and the *Golden Chersonese*, not named but identified by a legend noting that it is particularly rich in gold and precious stones.

*Genoese World Map, 1457, oriented with North at the top, the map is elliptical in shape, having a major axis measuring 81 cm and a minor axis measuring 42 cm. (**#248**)*



Detail drawing of the Genoese map showing the outline of Africa

It is interesting that the maker of the *Genoese* map mentions peculiar customs (cannibalism, people who have no names) but no "monstrous races," that is, people with aberrant physical characteristics, other than the pygmies. On the other hand, he is happy to include pictures of bizarre animals. In the Indian Ocean are shown a mermaid and a fish with a devil's head, while on land nearby is a snake with a human head. In northern Asia is a very large griffin, while a couple of dragons appear in Ethiopia. These fantastic creatures join other wonderful but real animals, such as a giraffe, a leopard, a crocodile, two monkeys, and a swordfish.

Africa's Mediterranean coast, as on the *portolan* charts, is well represented; likewise the Atlantic coast as far as Cape Bojador, which had recently been reached by the Portuguese. The Genoese cartographer appears to have known the trend of the coast even to Cape Verde, although his representation of the coast southward of Cape Bojador is far from correct in its details. The southern coast of Africa is made to extend in a flattened curve toward the east, which representation is similar to that on the world maps of Sanudo, Leardo, and Fra Mauro ***(#228, #242, #249)***. The southern continental boundary of the Indian Ocean that appears on Ptolemy's world maps, is reduced to a long and narrow peninsula by Sanudo and Fra Mauro, and is still further reduced by the Genoese cartographer.

On the west coast, in about the position where one should look for the Gulf of Guinea, a gulf having one large and two small islands extends into the mainland, as is also represented by Sanudo, Leardo and Fra Mauro. These last-named cartographers call this gulf *Sinus Aethiopicus*, while the Genoese cartographer, the name being repeated many times, designates the mainland as *Ethiopia*, and his legend here reads: *Contrary to the tradition of Ptolemy, this is a gulf, but Pomponius speaks of it with its islands.*

In about the latitude of this gulf on the west coast we also find one indicated on the east coast that appears to be the Bay of Zanzibar. Before this bay, that is, in the open waters of the Indian Ocean, is represented a fish with a swine's head. A legend here reads: *This animal, called the sea hog, gathers its food with its snout like the land hog.*

The Canary, the Madeira and the Azore Islands are well represented. Legends are here inscribed on either side of a broad scroll, wherein the author refers to his work and gives the date of its composition, which legends are almost illegible. One of them seems to read: *This sea is called the ocean which, according to cosmographers, stretches out infinitely in every direction, covering the earth except about a fourth part here laid down. This sea, disturbed by the force of the moon, ebbs and flows around the earth every lunar day, as Albertus says in his Natural History.* It appears from this that Albertus Magnus was one of the Genoese cartographer's authorities. The other legend for which Professor Fischer failed to get an intelligible reading asserts that: *Beyond this equinoctial line Ptolemy records an unknown land, but Pomponius, and in addition many others, raising a doubt whether a voyage is possible from this place to India [the Indians], say that many have passed through these parts from India to the Spains, and . . . especially Pomponius in his last chapter.*

In the representation of mountains of Africa we find the Atlas range, which stretches along the north coast eastward to the *Great Syrtus*, and a second range west of Egypt, stretching in a southerly direction. In the extreme south of the continent the *Mountains of the Moon* are represented as snow-covered, with the following explanatory legend: *These are the Mountains of the Moon, which, in the Egyptian language, are called Gebelcan, in which mountains the river Nile rises, and from which, in the summer-time, when the snows melt, a very large stream flows.* This legend gives us the Arabic name for the *Mountains of the Moon* as *Gebelcan*, which is doubtless the same as *Gebel Camr*. The name *Djihal-alqamar* [Mountains of the Moon], according to a conjecture of Kiepert, was derived in Ptolemy's time erroneously from *Djibal-qomr* [Blue Mountains]. This seems to refer to the snow-peaks of the Kilimanjaro and Kenya, as seen from a great distance, which mountains send their waters toward the interior of the continent. It was doubtless through Arabic merchantmen that the Alexandrian geographer derived his information, on a visit to the east coast of Africa. Late even in the 19th century the *Mountains of the Moon* continue to appear on maps.

The hydrography of Africa is likewise Ptolemaic, especially that which pertains to the Nile. The *Mountains of the Moon* is the source out of which its two branches flow. The Blue Nile, however, is represented according to Genoese's most recent information from *Abyssinia*; this river, uniting with the Atbara, forms one river that flows out of a large lake, in which an island is represented. *Meroe*, however, does not, as with Ptolemy, lie on a river island, but on a river peninsula. Even the irrigation canals, which lead out from the Nile in *Nubia* and Egypt, are represented by the Genoese cartographer. On an island in a lake of *Abyssinia* there appears to be a floating house, and near it the legend: *In this lake there is an island, Tana by name, which contains forests and groves and a great temple of Apollo. This island floats and is driven in whatever direction the winds blow.* This legend appears to be taken almost verbatim from Pomponius Mela ***(#116).***

A monastery, or a city, with numerous towers over which a cross is drawn, is located in the lake and bears the name *Maria of Nazareth*. The lake is undoubtedly Tana, Strabo's *Psebo* and Ptolemy's *Coloe*. It may be noted that even today the banks of this lake, as well as its islands, are the site of numerous churches and monasteries. The large island Dek, or the Holy Daga Island, dedicated to Saint Stephen, is now inhabited by hermit monks, and to it the outside world is not admitted. About the time that the

Genoese cartographer produced his map he could well have received excellent information concerning *Abyssinia*. In 1439 Pope Eugenius IV named an apostolic delegate to that region, and sent a letter to *Prester John*, the ruler of *Abyssinia*; and we also learn that an Abyssinian ambassador appeared at the Council of Florence in the year 1441. In support of the statement that the Genoese cosmographer was well informed concerning *Abyssinia* that may be found in the representation of a war elephant carrying a tower filled with armed men. A legend here reads: *These people fight in a battle-line of castled beasts*.

That the Christian Abyssinians made use of the elephant in war during the Middle Ages, Marco Polo relates, who, in his travels, had gathered considerable information concerning that region of Africa. It was the Abyssinian Christians whom the cosmographers, at the close of the 14th century, had to thank for information concerning their country.

On the *Catalan world map of 1375 (**#235**)* a war elephant is also represented in *Nubia*, and the same picture appears again in India with the addition of a driver. Marco Polo ascribes the use of war elephants to the inhabitants of Zanzibar, while Mas'udi *(**#212**)* expressly states that their land was rich in elephants, which, however, were neither tamed, nor were they used in any manner. There can be no doubt that in the lands on the west side of the Red Sea elephants were captured by the Ptolemies in great numbers, tamed and made use of in war, as Ptolemy Euergetes testifies in the inscription from Adulis that he employed Troglodytic and Ethiopian elephants against those from India.

Not only does there appear to be some confusion relative to the representation of the Nile River, but the hydrography of other parts of Africa is very confusing. A river empties in the *Syrtus* west of Masrata, which comes from a lake in the neighborhood of Wadam, and which is called by Idrisi *(**#219**) Palmenoase*, a river five days' journey south of the *Great Syrtus*. It is difficult to determine whether by this *Wadi Schegea* or *Wadi um el Cheil* is to be understood. In Tunis a river is made to empty into the Mediterranean, which is probably the Medscherda, with one branch emptying on the north side of the Gulf of Tunis, and with another into the Gulf of Hammamet. A similar river, dividing into two branches near its source, empties into the sea in Algeria east and west of Algiers, and a smaller one east of Ceuta. If the Genoese cosmographer, in the well-known regions, represents somewhat arbitrarily his watercourses, we can certainly expect to find this in the less known regions. It appears impossible to identify the rivers emptying on the west side of Africa. With some degree of certainty we may identify the *Wadi Draa*, represented as flowing through many lakes and emptying south of Cape Bojador. Whether the rivers emptying still further southward represent the numerous rivers that empty south of Senegal and Cape Verde, it is not possible to determine. Perhaps the author intended the more northern and the larger one as the Senegal.

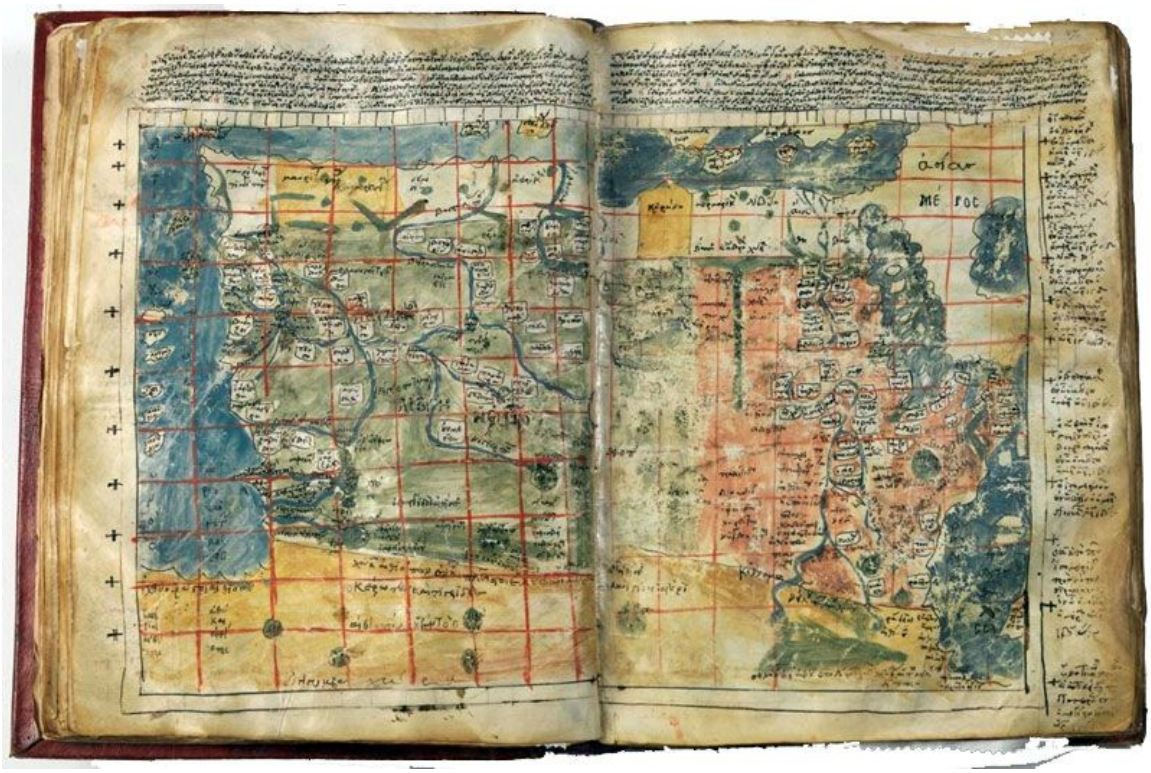
The reference to the character of the land in Africa and its different products is very full, attention being drawn particularly to the animals. In addition to the elephant and the crocodile, a camel is represented in the southwest, and near it a mythical animal, which may be a dragon or a *basilisk*, and which, according to tradition, inhabited Africa in antiquity and in the Middle Ages. One here recalls the description that Idrisi *(**#219**)* gives of a dragon living on an oasis to the east of Sahara, so enormous in size that it was often mistaken for a mountain. It had the form of a snake in that it crawled on the ground, but had large ears extending forward. In the Atlas Mountains region there are also represented a giraffe, a lion and two monkeys. Three human figures are introduced

to represent the political and ethnographical situation, one a turbaned Mohammedan ruler of Egypt, with the inscription *Dominus*; the other a crowned head with black hair, carrying a banner, on which is a cross with the inscription, *Presbyter Johannes Rex*, denoting the Christian ruler of *Abyssinia.* A third figure, unmistakably a negro, in the southwest, holds a ball (?) in his hand, and is described in the following legend: *These are the people who live degenerate lives, among whom there is no distinguishing name, who behold the rising and the setting sun with direful imprecations.*

The extreme southeastern part of Africa has the following legend: *In this region certain ones have depicted the paradise of delights. Others, indeed, have said that it is beyond the Indies to the east. But since that is a representation of cosmographers who have given no description of it, therefore an account of it is here omitted*. Professor Fischer thinks this is to be understood as signifying that the Genoese cosmographer based his information on pre-Christian authors, that is, Pliny and Ptolemy, while omitting his own view concerning the position of the earthly paradise. Medieval cosmographers placed the *Earthly Paradise* in East Africa, and in East Asia, but more frequently in the latter.

The regional names of the map, for the most part, are taken from antiquity. For instance, the name *Ethiopia* appears six times, and in addition, in Western Europe, *Ethiopia interior*, and in the east, *Ethiopia Egypti. Ethiopia* also embraces the entire southern section. Adjoining this is the Nile land, *Egyptus*; further west, *Nubia*; and to the west of *Nubia* is the entire Sahara region, designated as *Libia*. The *Regio arenosa*, that is, the desert region of *Igidi*, is especially distinguished. The north coast of Africa embraces *Mauretania*, to which *Regnum fesse* and, in part, *Regnum Trenecen* belong. Adjoining this are *Regnum Tunisi*, *Barbaria* and *Cirenaica*. The more important place-names are distinguished through towers and castles. On the Mediterranean, from east to west, we find *Larissa, Alexandria, Senara* (in the *Medicean* atlas *(#233), Zunara*, and Vesconte *(#228)* also gives *Zunara*). On the *portolan* charts there is always represented a large bay in the southeast corner of the *Great Syrtus*, which must have been an important harbor. It owes its origin as a harbor to a high, rocky headland, perhaps formerly an island, which extends from the southwest to the northeast and continues in a long chain of rocks.

There follows, farther to the west, *Tripoli barbaria; Rasamebes*, designated as a headland visible from a distance, the present Ras Makhahes, with a good bay in its protection east of Descherba; *Capis, Tunes,* and an unreadable name, perhaps *Biserta; Taberca*, which, on account of its Italian coral-fishery, is famous as the island of Tabarca; *Bona, Bugea*; an unreadable name, perhaps *Titelis; Alcer, Tenes, Oran, Melila, Septa* (Ceuta). On the ocean side we find only the names *Sale, Saphi, Gozola* and *Buder* (Bojador). In the interior of the Atlas territory the Atlas range reaches far to the south. Here we find the following names: *Albara* (south of Algiers), perhaps *Albuhe* of the ancients, known for its warm baths; *Tremecen, Fessa, Marroco*; farther south, a city with an undecipherable name, perhaps *Tarudant*; in Libya, that is, in the Sahara region, south of Fez, *Pataxio, Tueto, Mecara, Calata, Bescara, Uadan*, the last two perhaps Biskra and Fez, far from their proper place. *Calata* is probably Idrisi's *Al Cal*, near Msila in the highlands of the Schotts, a significant city before the rise of Bougie, the capital city of the kingdom of the Hammaditen. *Mecara* may be Idrisi's *Maggara* in Zab. In Egypt is *Cairo*; in *Nubia* are *Meroe, Ati* (?), *Talam* (?), and an unreadable name. These places, for the most part, are inserted from world maps of other cartographers.



An early Ptolemaic map of Africa, 15th century

Fra Mauro's Mappamundi, 1459, ***#249***

This large circular planisphere (6 feet 4 inches in diameter), drawn on parchment and mounted on wood in a square frame, is preserved in the Biblioteca Nazionale Marciana, Venice. Unusual for medieval European maps, it is oriented with South at the top (Indian Ocean, top left; Mediterranean, right center) and so meticulously drawn and full of detail and legends that it has been described as a *"medieval cosmography of no small extent, a conspectus of 15th century geographical knowledge cast in medieval form."* Though the coasts are drawn in a style recalling that of the *portolan* [nautical] charts, loxodromes and compass roses are absent, and the effect is definitely that of a *mappamundi*, not a nautical chart.

Fra Mauro's map was in many ways a more up-to-date map than the printed versions of Ptolemy that succeeded it two decades later. Ptolemy's *Geographia* was 'rediscovered' in Western Europe and had been circulating in Latin manuscript form since 1406, coming to Italy fresh from the Byzantine conquests. It is clear from numerous legends on his map that Fra Mauro was very much aware of the great deference then paid to the cosmographical conceptions of Ptolemy, and the likelihood of severe criticism for any map that ignored them. Nevertheless, in general, Mauro stands by contemporary ideas and forestalls criticism by stating the following:

> I do not think it derogatory to Ptolemy if I do not follow his *Cosmografia*, because, to have observed his meridians or parallels or degrees, it would be necessary in respect to the setting out of the known parts of this circumference, to leave out many provinces not mentioned by Ptolemy. But principally in latitude, that is from south to north, he has much 'terra incognita', because in his time it was unknown.

Like the Greek geographers before Ptolemy and like the Arab cartographers, Fra Mauro shows all of the continents of the eastern hemisphere as being surrounded on all sides by the great ocean. He did not see the earth as simply a disk, the circular form of the map was his way of depicting a sphere. However he had not been able to arrive at an opinion on the overall size of the globe.

Putting aside for the moment questions of interpretation, it is impossible not to be struck by the illusion of accuracy that the general shape of the continent produces here, especially when compared with most of the previous medieval European representations. Africa, in outline, resembles the representations on the *Catalan-Estense* map of 1450-1460 *(**#246**)* and Pietro Vesconte's world map of 1321 *(**#228**)*, save the fact that the *Estense* map is almost severed in two by the prolongation of the *Sinus Ethiopicus*. Details of Abyssinian topography have been expanded to cover most of the center and south, except for the southernmost extremity, which is separated by a river or channel, from the mainland and named *Diab.*

By 1459, the year of the map's construction, the Portuguese had sailed some 2,000 miles beyond the Straits of Gibraltar, that is, as far as *Rio Grande* (i.e., the Jeba River, 12 degrees north, or probably not beyond Sierra Leone - it is disputed whether at that date the Cape Verde Islands had been discovered). Mauro apparently had knowledge of this exploration for he tells us as much in a rubric near the west coast of Africa and adds, circumstantially, that… everywhere they found the coast not dangerous, with the soundings good, convenient for navigation and with no risk from storms . . . they have framed new charts of these regions and given names to the rivers, bays, capes, and ports. I have many of these charts in my possession . . .

Fra Mauro's Mappamundi, 1459, 190.5 cm diameter, **#249**
(oriented with South at the top)

Since very little of the coastline beyond Cape Roxo shows a linear correspondence with the actual coastline, these charts may have been worthless counterfeits, the latest official Portuguese findings having been suppressed even at this early stage of exploration to protect the competitive advantage that such knowledge bestowed. Actually the only contemporary names that Mauro has included are *C. Virde* and *C. Rosso,* immediately north of the great gulf; and the small river in the vicinity may be the Rio Grande. Mauro portrays the sea outside the recently discovered Guinea coast merely as a large gulf, the *Sinus Ethiopicus*, cutting deep into the long coastline. The delineation of this great gulf can scarcely rest on first-hand knowledge possessed by the Portuguese, but rather it probably represents a feature derived from earlier medieval maps and perhaps is the result of rumors of the actual Gulf of Guinea. According to some accounts, the Portuguese are stated to have reached the meridian of Tunis (10

degrees East) and perhaps even that of Alexandria. Curiously enough, on Fra Mauro's map the eastern end of the gulf may be said to be on the meridian of Tunis, as in fact the eastern terminus of the Gulf of Guinea is. As to the latter speculation, to have crossed the meridian of Alexandria would have entailed rounding the Cape of Good Hope.

The lack of tangible examples displaying the latest information on the map has been criticized, especially as Mauro's assistant, Bianco, was employed in its production, but it is scarcely justifiable to argue from this that information was deliberately withheld from the cartographer by the Portuguese authorities. According to G.R. Crone, the principal cartographers were well informed on the progress of the navigators. However, it has also been pointed out by researchers such as Portuguese scholar Professor A. Cortesão that, in pursuance of their ambition to hold a monopoly of the trade of West Africa, successive kings of Portugal decided on the suppression of all information calculated to excite the interest and jealousy of other powers. This Portuguese colonial policy in the 'conspiracy of silence', as it has been called, reached formality with John II (reigned 1481-1495), using his energies to prevent leakages of the news of discoveries at a time when foreigners were seeking by every means to acquire it. In the reign of his successor, Manuel I, the vigilance of the government was even more intensified, especially after the return of Cabral from India. "*It is impossible to get a chart of the voyage,*" wrote an Italian agent concerning Cabral's expedition, "*because the King has decreed the death penalty for anyone sending one abroad.*" It is also said that charts were sometimes only lent to navigators by the Portuguese India House and at the end of a voyage the chart had to be returned to that institution. But even if such a view was prevalent earlier in the 15th century, what could have been the motive or objective of King Alfonso in withholding from Mauro information which would have enhanced the value of his planisphere and substituting for it presumably worthless caricature of charts? In attempting to solve this riddle historian George Kimble states that the chief cartographical need of the Portuguese at this time was not so much a map of the world that would merely portray with precision what they already knew, as a map that would give the opinion of learned geographers on the extent of Africa and on the possibility of a sea-route to the East. Mauro's planisphere fully met this need. At the same time, by its allusions to navigators in the southern seas, the map was calculated to spur on the Portuguese to renewed effort to reach their goal.

It is, however, evident that Fra Mauro's map depicts the coasts of Africa as far as Senegal and Cape Verde, which were explored by the Portuguese expeditions of 1441, as well as giving evidence of that country's penetration as far as the Congo. The coasts charted by Diaz have been fitted into the limiting circular outline of Mauro's world picture, presenting such a marked trend to the southeast that the 'Cape of Good Hope' (?) seems to be positioned due south of the Persian Gulf, whereas it is in reality due south of the Adriatic. More than one student of cartography has shared Alexander von Humbolt's conviction that the southernmost point, called *Cavo de Diab*, is none other than the Cape of Good Hope made known to Mauro by some daring expedition similar to that which Mauro himself speaks of as having taken place in 1420. One of the many legends on his map, near the southern extremity of Africa says:

> About the year of Our Lord 1420 a ship, what is called an Indian junk *[Zoncho de India]*, on a crossing of the Sea of India towards the Isle of Men and Women, was driven by a storm beyond the Cape of Diab, through the Green Isles, out into the Sea of Darkness on their way west and southwest, in the direction of Algarve.

> Nothing but air and water was seen for forty days and by their reckoning they ran 2,000 miles and fortune deserted them. When the stress of the weather had subsided they made the return to the said Cavo de Diab in seventy days and drawing near to the shore to supply their wants the sailors saw the egg of a bird called *roc*, the egg being as big as a seven gallon cask, and the size of the bird is such that from the point of one wing to another was sixty paces and it can quite easily lift an elephant or any other large animal. It does great damage to the inhabitants and is very fast in its flight.

Fra Mauro's *Indian* must be taken to mean 'Arab'. The Arabs had established regular trade connections with places far to the south in East Africa, and it is not unlikely that a vessel may have rounded the Cape of Good Hope and sailed into the Atlantic, which the Arabs had long been calling the *Sea of Darkness*. Elsewhere Mauro says that he had spoken to persons who had been driven forty days beyond the *Cavo de Soffala*. The *roc* is, of course, an allusion to the fabulous bird of the *Arabian Nights*. An interesting point is that 500 years before Fra Mauro's time an Arab chronicler writing about Soffala has a very similar story of a vessel not only being driven by storm but also encountering the *roc*. Fra Mauro, then, was probably drawing ultimately on Arabic sources, and the doubt arises whether any significance should be attached to the date of 1420. There is other evidence of eastern sources in this quarter; for instance the names of the two islands *Negila* [beautiful, Sanskrit] and *Mangula* [fortunate, Arabic].

Another interpretation is that the large island at the extreme southern end of Africa, named *Diab*, is probably based upon reports of the existence of the great island of Madagascar. There would be no improbability in a vessel being driven down to the latitude of the Cape of Good Hope, or of Arabs at Soffala having some inkling of the trend of the coast to the south. In fact there are a number of place names on *Diab* that are of Arab origin: *Xegiba* [Zanzibar], *Soffala, Chelue* [Kilwa] and *Maabase* [Mombasa]. It is extremely unlikely, as has been argued, that the *Cape of Diab* is nothing more southerly than Cape Guadafui. But an analysis of most of the features of the hinterland by G. Kimble makes it clear that they do not refer to 'South Africa', for the *Mareb* and *Tagas Rivers* with their affluents *Mana, Lare* and *Abavi,* can be none other than the Abyssinian rivers *Mareb, Takkazye, Menna, Tellare* and *Abbai*; while *flumen Xebi* and *flumen Avasi* are traced with such extraordinary fidelity that they can be readily identified with the *Ghibie* and *Hawash Rivers* of southern *Abyssinia* - a region not thoroughly explored until modern times, but such accuracy could have been the result of information received from an Ethiopian mission to Florence in 1441. The fact that these rivers are the southernmost feature of the map (they are placed at the same latitude as *Cavo de Diab*) makes it almost impossible to believe that Mauro knew anything of Africa south of the equator. How then, says Kimble, are we to interpret *Diab*, the hinterland of the Cape described by the mapmaker as *a very fertile region that was recently conquered by the great King of Abyssinia, ca.1430?* The only region with which it is at all comparable, within the limits imposed by Mauro's apparent knowledge of the interior, is the Somali peninsula. It is significant that in a contemporary document in the Library of S. Michele at Murano we are told that *Diab is a great province in parts of which there is an abundance of very good things, its principal town being called Mogadis,* which can be none other than *Magadoxo* of the Somali coast. *Cavo de Diab*, in that case, becomes *Cape Guardafui,* or *Madagascar* according to R.A. Skelton. Consequently, the degree of verisimilitude possessed by the southern portion of the African coastline is due, in part at least, to the exigencies of the map's circular form and, in extenuation of this, it may be urged that Mauro's purpose

throughout seems to have been to harmonize conflicting theories, except of course where they were mutually exclusive. Fra Mauro himself certainly accepted the possibility of circumnavigating southern Africa. On this and other evidence, the discriminating cartographer reached an important conclusion:

> Some authors state of the Sea of India that it is enclosed like a lake, and that the ocean sea does not enter it. But Solinus holds that it is the ocean, and that its southern and southwestern parts are navigable. And I affirm that some ships have sailed and returned by this route.

South Africa, Cape of Diab (oriented with the South at the top)

The detailed knowledge of the northeast African interior extends as far as the river *Zebe* [?Webi Shebeli]. The *Nile* [Blue Nile] is shown rising near a lake, undoubtedly *Lake Tana*, in the *Fountain of Geneth*, a name for the source which was still in use more than three hundred years later. Fra Mauro states that he obtained this information from natives of the country

> . . . who with their own hands had drawn for me all these provinces and cities, rivers and mountains, with their names all of which I have not been able to set down in proper order from lack of space.

It has been shown that two main causes of the confused representations of northeast Africa are the ignorance of the cartographer about the existence of the eastern Sudan, so that he telescoped Egypt and *Abyssinia* together, and the failure to realize that much of the hydrographic detail available applied to one river only, the *Abbai*, and not to a number of distinct streams.

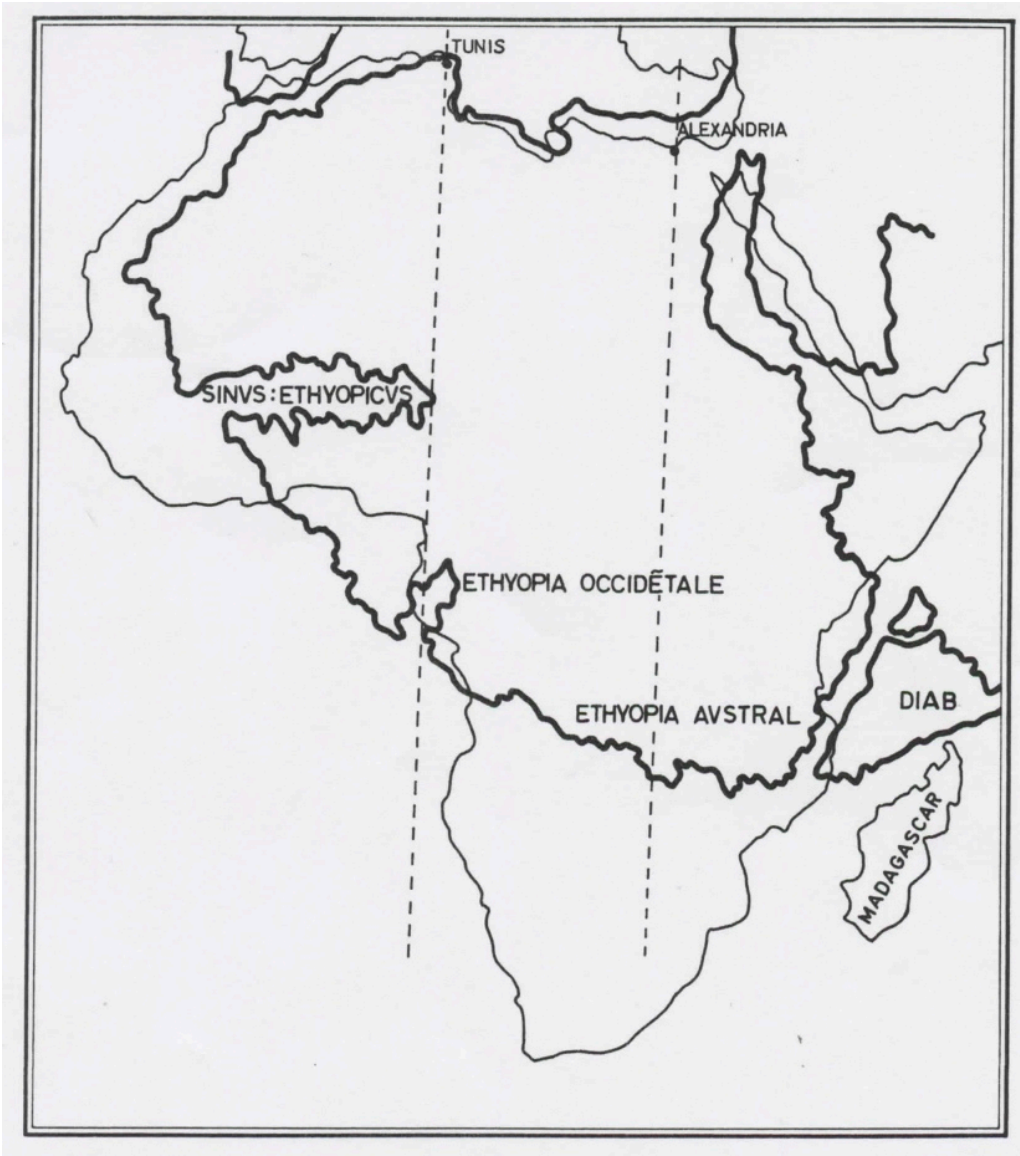
The Coptic Church of Abyssinia was in touch with Cairo and Jerusalem, and it was doubtless from emissaries of this Church that Fra Mauro obtained some of his

information. Near Lake Tana he has the name *Ciebel gamar*, literally *Mountain of the Moon*. Mr. O.G.S. Crawford suggests that this was the origin of the legend about the source of the Nile, and that it was only later that the site was transferred to the Equator.

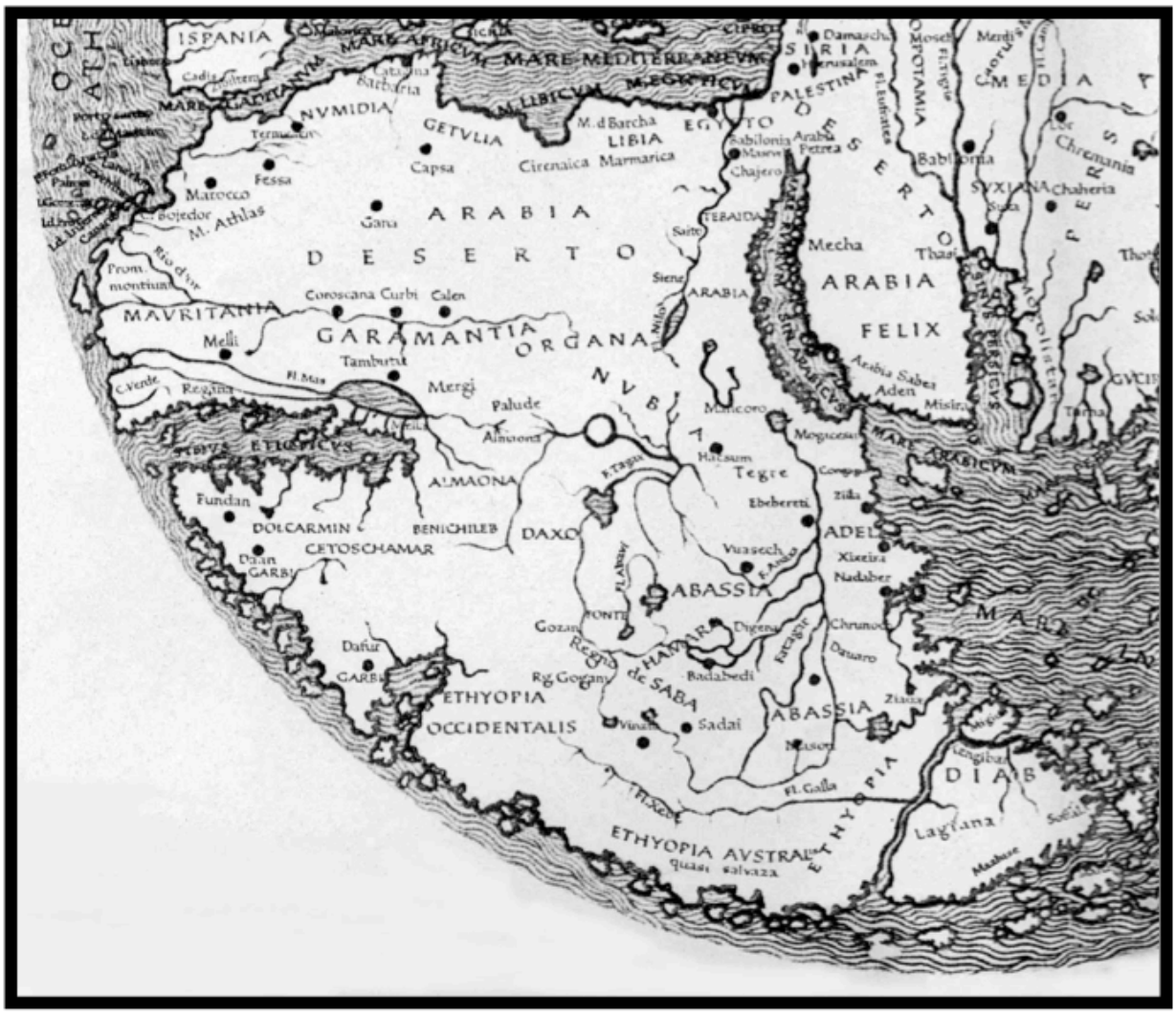
The suggestion is partly retained of a 'western Nile' flowing from a great marsh, no doubt Lake Chad; beyond this marsh a river flows westwards to enter the ocean by two branches to the north of Cape Verde, no doubt the Senegal River and perhaps the Gambia. Fra Mauro tells us that he was supplied with Portuguese charts and had spoken with those who had navigated in these waters.

The draftsman places the legendary and fabulously wealthy Christian ruler, *Prester John* and his kingdom of *Abassia* at the source of the Nile. *Ethyopia* extends to the west and south coasts of the continent. Thus Mauro weaves Marco Polo's narrative into Arab theory and makes these theories fit together with the cartographic notions of *Abyssinia* which he had obtained from 'first-hand sources'.

Detail of North Africa, oriented with South at the top
Notice the Nile River both on the left (south-north) and two branches of the river across the top in a westerly direction just north of Cape Verde



Fra Mauro's Africa super-imposed on a modern map of the continent.



Detail drawing of Africa from the Fra Mauro mappamundi, re-oriented with North at the top

The Wieder-Woldan World Map, 1485, **#255**

The Weider-Woldan map-picture presents the eastern hemisphere of the world as it was then known in Europe, in our present-day conception (i.e., North at the top). Its basis is the representation of Ptolemy's world map, although the author does not slavishly adhere to it. Rather he has in mind the medieval Christian belief in an earthly *Paradise* with four rivers flowing from it; but he takes special account of advances in knowledge of the three parts of the world made since Ptolemy. From *Paradise* in the Far East stream the four rivers, the Nile following a southern course through an eastward extension of the African continent, to flow through its delta into the Mediterranean. The river is joined by tributaries, which flow, Ptolemy-style, from mountains in central Africa.

The continents, with the islands pertaining to them, almost reach the edges of the map, so that the ocean, as in most of the medieval manuscript maps, is limited to a narrow circle; there is however a large patch of ocean, but without any name, in the Gulf of Guinea.

Places identified in Africa (in larger type) include the following:

a) on the Continent: *Mauritania Tingitana, Mauritania Cesarensis* [indicated in its correct place and not, as M. Destombes says, in the wrong one, Algeria of today], *Africa* [as a Roman Province - Tunis of today], *Cartago* [as a town], *Marmarica, Egyptus, Alexandria* and *Thebe* [as towns], *Getusia* [Getulia], *Libya Interior, Aethiopia, Nilus Fl.* [named three times at the length of its course], *Meroe Insula, Trogloditica Regio*;

b) Seas and Islands: *Sircis* [Little Syrte], *Sirtis Magna, Rubrum Mare, Indicum Mare; Fortunate Insule.*

In Africa mountains are depicted south of the present-day Tunis, from which a river takes its sources and flows to the Mediterranean, southeast of these some other mountains connected with the former by the river *Gir*; in central Africa *Lunae Montes* [Mountains of the Moon] with the sources of the Nile, three of which are quickly united, mountains in eastern Africa *(Garbato Mons?)* with one more source of the Nile, and three mountains in the southern, elongated toward Asia, part of Africa, from the western-most of which run two sources of the Nile which soon unite, while from the central mountain, through which runs the upper course of the main branch of the Nile, a river flows southward to the Ocean.

An obvious and retrograde feature of the map, when compared to earlier maps, is that, in the representation of Africa, the author was evidently guided by two leading principles: on the one hand, adherence to Ptolemy's viewpoint as regards the land connection of South Africa and East Asia, and on the other hand, consideration of the recent discoveries made by the Portuguese on the west coast of Africa, which, however, in no way contradicts Ptolemy's conception. The effort to compare separate bays and points of the West African coast on the map with the actual ones in order to find out how much of the Portuguese discoveries were known to our author would be in vain. The general impression can be gathered, however, that the navigation round the Bay of Biafra (1475: *Cabo de Catarina* 15ºN was reached by Ruy Sequeira) was the last achievement in the exploration of the west coast of Africa recorded by the map. Later discoveries, made by Diogo Cão (1482-85) as far as Cape Cross (approximately 22º S) were certainly unknown to the author of the map. Regarding the sources of the Nile, the author tries to connect Ptolemy's point of view with the medieval one based on a certain interpretation of the Bible (the four rivers of *Paradise*: the *Pison* [*Fison* = Ganges] the *Gihon* [Nile], the *Hiddekce* [Tigris] and the Euphrates), and shows one of them, flowing from the *Lake of Paradise*, running through the whole length of Africa and uniting the other sources coming from the mountains only in the middle of the continent.

The author did not share the view of some of the medieval cartographers, as known to us, that Africa was separated from Asia by a more or less wide and open ocean, because he probably regarded Ptolemy as more trustworthy than Herodotus or Idrisi; for the rest, the difference between his representation of Africa and that of Idrisi and his adherents, regarding the southern extremity of Africa protruding far out to the east and the chain of islands adjacent to it stretching out in the direction of southeastern Asia, is not so great.

From the latest data recorded on the map, in particular the representation of Guinea, bearing in mind that a certain interval in time had to elapse between the date of a discovery and its recording on a map, and from the technique of the copper-engraving and quality of the paper, the date of the appearance of the map can be fixed at the

middle eighties of the 15th century. It can be said that this map, in spite of many discrepancies, represents an important milestone in the history of cartography. It is the first (and perhaps the only 15th century) printed world map showing a part of the New World (Greenland), though somewhat incorrectly drawn, and the discoveries of the Portuguese on the west coast of Africa. Deviating from the ordinary type of map with the hardly understandable Ptolemaic projection and from the Gothic map of the monastic type overcrowded with ornaments, this map gives us, on a small scale, an idea of the outline of the world, as it presented itself in the last phase of the Middle Ages.

Wieder-Woldan world map, 1485, oriented with North at the top **#255**

We can also see that the south of Africa is connected to Asia via an unknown continent, while the Indian Ocean is portrayed as an inland sea. The area south along the west coast of Africa was thought by Europeans to include a dangerous stretch of ocean that was home to lurking monsters and boiling waters among other things, and prior to the Age of Discovery there were no European navigators capable of overcoming their fears

and leading their vessels into this region. In the 15th century, however, developments in the art of navigation and shipbuilding techniques made extended voyages a possibility, and Prince Henry of Portugal, who later became known as Henry the Navigator, began making plans for a voyage to explore the south of Africa. Over a period of some 40 years, Henry's navigators undertook a series of voyages into these perilous waters, edging further south on each occasion. Eventually, in 1488, nearly 30 years after the death of Henry the Navigator, the Portuguese navigator Bartolomeu Dias reached the southernmost point of Africa. John II, the king of Portugal at the time, named the headland discovered by Dias the Cape of Good Hope. Later, Columbus and Magellan embarked on further voyages as the Age of Discovery continued.

Maps of Africa produced in the 16th century relied on Ptolemy for their representation of the unknown heart of the continent. However, another cartographic model, which challenged the classical authority in several respects, became available for the depiction of the African interior. This was the map attributed to Duarte Lopes (Odoardo Lopez) and published by Filippo Pigafetta in 1591. Since contemporary cartographers had no way of verifying which model presented the African interior most realistically, other facts must explain the pre-eminence of one model over the other.

Henricus Martellus' World Map, 1489/1490. **#256**

After Bartholomew Diaz's rounding of the Cape of Good Hope in 1488, Henricus Martellus produced several world maps (c.1489/1490) in which he adapted Ptolemy's map by opening up the Indian Ocean to the west, south of the Cape of Good Hope. The Martellus map in the British Library's manuscript *Insularium illustratum* (Add MS. 15760, fols. 68~69r) measures 46.5 x 30 cm/18.3"x11.8" and displays a geography that extends from the Canaries to the east coast of China. Martellus revised the Ptolemaic world map based on Marco Polo's information on Asia, and he incorporated the recent Portuguese voyages to Africa. His is the earliest known existing European map to show the African continent as described by Bartholomew Diaz who rounded the Cape of Good Hope on his voyage of 1487-88. In the example of *Martellus* from the British Library the Mediterranean, Western Europe and the west cost of Africa all derive from *portolan* [nautical] charts, extended to take in the recent discoveries.

As far as 13° S, the nomenclature of West African coasts bears no relation to the nomenclature of any other map of the period. South of that limit, however, the *Martellus* map gives the outlines and nomenclature of the voyage of Bartholomew Diaz in 1487-88. On the 1489 *Martellus* map there is an inscription next to the Congo that mentions the commemorative stone *(Padrão)* that Diogo Cão erected at *Cape Negro* during his second voyage (1485-87) when he reached as far as *Cape Cross*.

Martellus World Map, 1489, from his Insularium illustratum
*British Library, Add MS. 15760, fols. 68~69r,London, England (***#256***)*

*The world map in the Florence manuscript of Martellus' Insularium illustratum (1489). It shows considerable signs of revision, indicating that it was one of his earliest world maps. Especially noteworthy is his depiction of southern Africa, which does not extend beyond the map's frame. Florence, Biblioteca Medicea Laurenziana, Pluteo 29.25, ff. 66v-67r, 29x43 cm (**#256**)*

It is difficult to avoid the conclusion that he copied a map that was originally designed to support the ideas of Christopher Columbus. Yet that map could not have been completed until early in 1489 for it had complete details of the discoveries of Bartholomew Diaz in his voyage of 1487-88, when he circumnavigated the Cape of Good Hope *(capo d' esperanza)* and reached the Indian Ocean. He returned from this voyage in December 1488 and, within a year, full details, including rich nomenclature, had appeared on the map of Martellus made in Italy; this despite the utmost secrecy on the part of King John of Portugal. The furthest point reached by Diaz, the *Rio de Infante* [the great Fish River], is duly recorded as *ilha de fonti*. Even today, the best source for information on the voyage of Diaz is the *Martellus* map of 1489. The policy of secrecy of King John was shattered in one great leakage by someone in a unique position to know all the details.

It is difficult to avoid the conclusion that Martellus copied a map by Bartholomew Columbus that was originally designed to support the ideas of Columbus. Bartholomew Columbus alone maintained that Africa reached to 45° S, as on the *Martellus* map. No one in Lisbon knew of this 45° assertion. Two unusual features of the *Martellus* map reveal this late alteration:

(a) Africa has been extended to 45° S only by showing it as breaking through the frame of the map. It seems that the prototype originally showed the Cape at 35° S, well clear of the frame at about 41° S, as one would expect of a competent cartographer.

Detail of the African continent on the British Library's copy of the 1489 Martellus map showing Africa extending to 45°S, beyond the maps' frame

(b) The second peculiarity is a legend off the east coast of Africa that reads: *ultima navigatio Portug. A.D. 1489.* This dates the legend as 1489, probably in January of that year, just before Bartholomew went to Seville. This legend has baffled scholars. On the face of it, seeing it on the *Martellus* map, it asserts that Diaz had proceeded north along the east coast of South Africa to beyond *Natal.* His furthest point, in fact, was the *Rio de Infante* [Great Fish River] on the south coast, at 34° S. The legend is also at 33° S to 34° S. It appears to be north of *Natal* only because Africa is shown as extending to 45° S. According to the historian Arthur Davies, this is conclusive evidence that the prototype originally terminated at 35° S, with the legend correctly placed near it. When Bartholomew Columbus altered the prototype map to 45° S, he was unable to remove the legend.

On the world map in his *Insularium* at the British Library, he shows the results of Bartholomew Dias' rounding of the Cape of Good Hope in 1488, listing the names of the

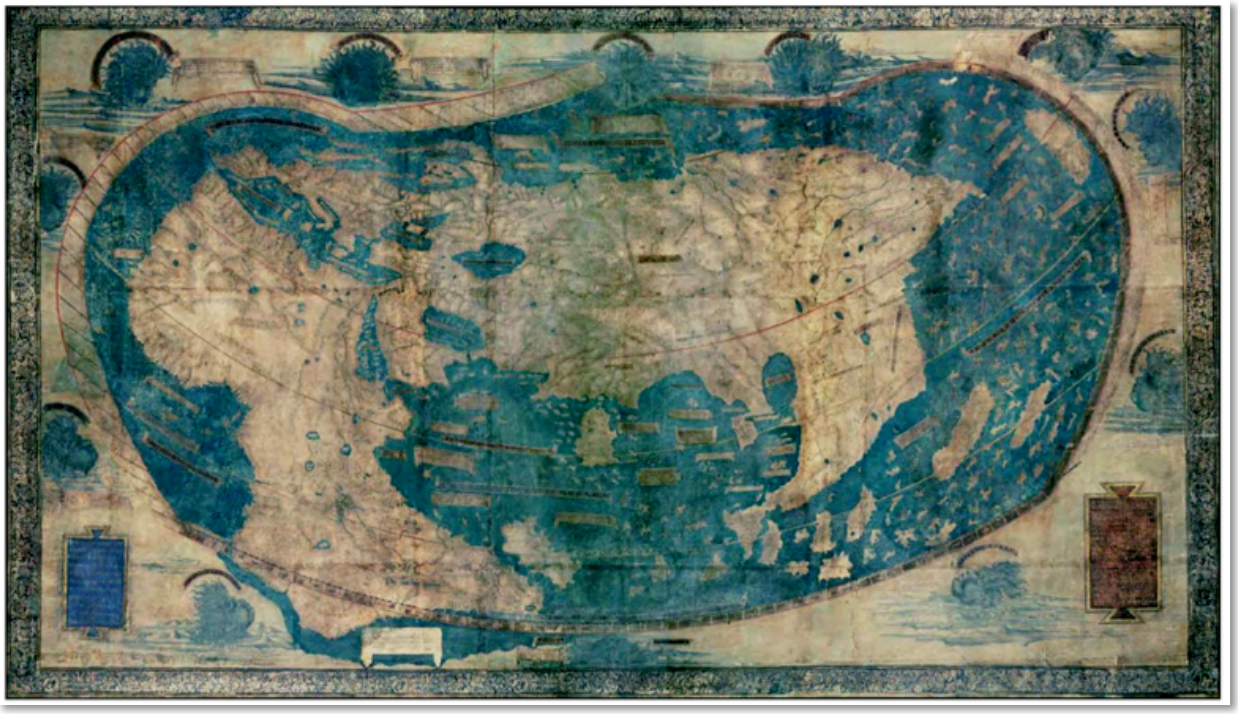
various ports and landmarks along the way. "*Here is the true modern form of Africa between the Mediterranean Sea and the southern Ocean, according to the Portuguese description,*" says an inscription. Modern Africa is so long, however, that it breaks through the frame at the lower edge of the map.

What purpose was served by extending Africa to 45° S? It was not to influence King John, who knew that the Cape was at 34.5° S. It was to influence the Catholic Sovereigns who were in the dark owing to the intense secrecy by Portugal regarding discovery. This suggests that the alteration was made in Seville. It suited Columbus admirably and it is likely that Bartholomew made the change at his direction.

The largest version of the *Martellus* world maps is at Yale University (43" x 76"). The *Martellus* map in the British Library is less than 20 inches (50 cm) from west to east, and is on a scale one-quarter that of the *Yale* map. The Cape of Good Hope is at 45° S on the Yale *Martellus* map and Africa breaks through the frame of the map in both. One map has been copied from the other, at one-quarter the scale. The *Yale* map was the original, or prototype, and was the joint product, according to Arthur Davies, of the Columbus brothers. As such, it is of enormous value, academic and financial.

The Martellus map is a relic of the *Fra Mauro (**#249**)* map, which had Africa extending eastward to this extent, but in a great curve from the equator. It indicates that, in 1485, Columbus used *Fra Mauro* for Africa south of the equator in the map he submitted to the Portuguese monarch. The *Martellus* map of 1489 shows that Columbus and his brother Bartholomew relied on authority in their 1485 map, on Donus Nicolaus and Fra Mauro. But they altered authority in three ways even at that stage. First, by extending Asia eastwards to 240° from the Canaries. Second, by inventing the great obstruction of *Tiger-leg*. Third, by placing *Cipangu* [Japan] as only 90° west of Lisbon. In 1489, they extended Africa to 45° S. Such alterations were all to the advantage of Columbus, unscrupulous no doubt, but they earn our admiration for the sheer audacity of the great discoverer.

Martellus's depiction of rivers and mountains in the interior of southern Africa, along with place names there, appear to be based on African sources. It's likely that this information came from an African delegation that visited the Council of Florence in 1441 and interacted with European geographers. Three other surviving maps contain some of this same information, but the *Martellus* map covers more territory than any of them, making it the most complete surviving representation of Africans' geographic knowledge of their continent in the 15th century.



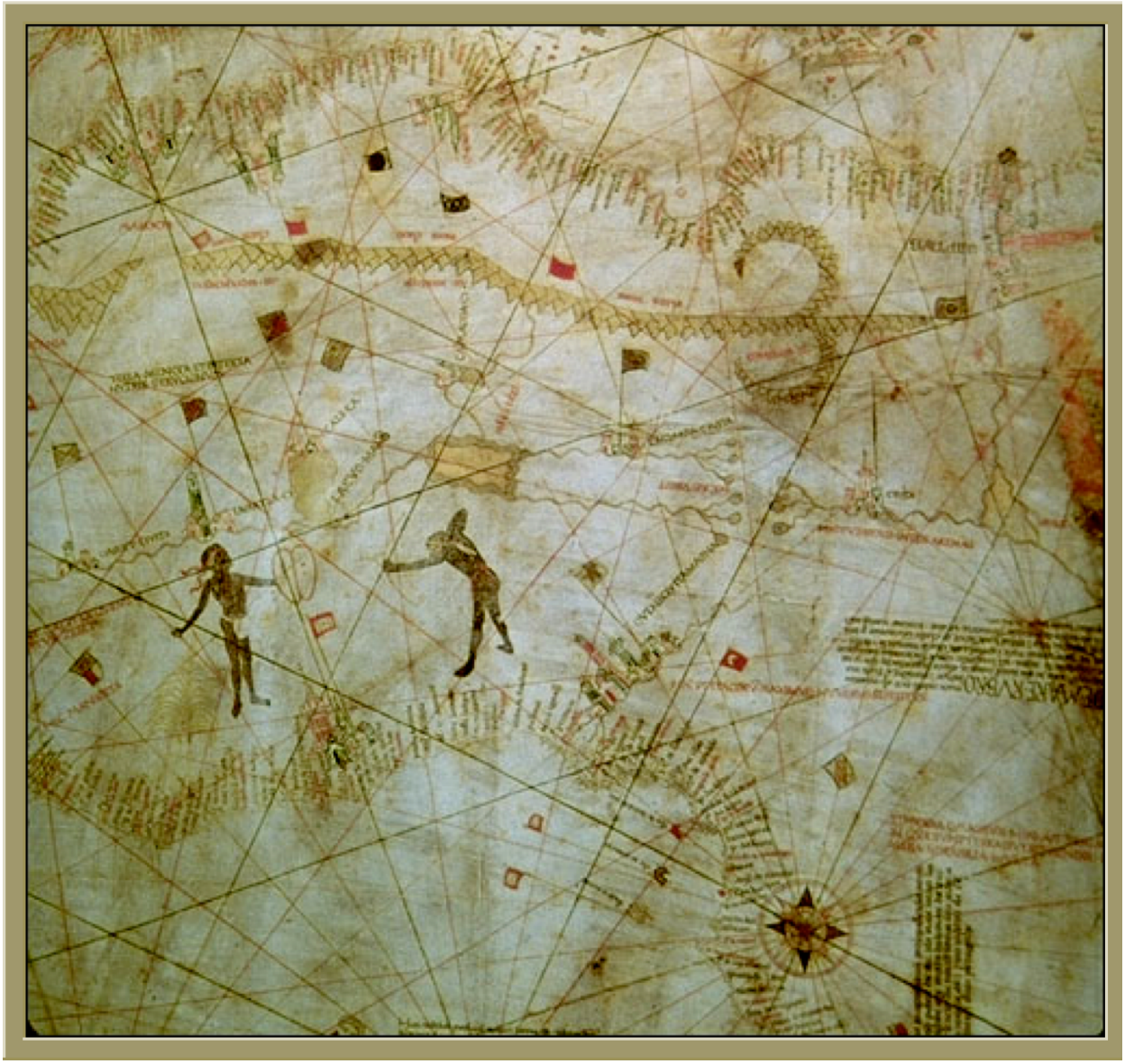
*Martellus World Map, 1490, 79 x 48 inches/201 x 122 cm, (**#256**)*
Yale University Beinecke Library, New Haven, Connecticut

Detail from the 1490 Martellus world map showing the latest discoveries of the African continent

The Columbus World Map, 1490, **#257**

In 1924, Charles de La Ronciere, the renowned French historian of exploration and cartography, attributed to Christopher Columbus a *portolan* [nautical] sea chart that has been discussed and debated ever since. Although Columbus and his brother Bartholomew were accomplished mapmakers, scholars have been frustrated in their attempts to confirm who actually created this unsigned document, originally acquired by the French national library in the 19th century. The small (20 cm in diameter, or eight inches) world map displays some 250 place-names, and unlike the sea chart, shows all of Africa, including the results of Dias' voyage - the discovery of the Cape of Good Hope and the premise that one could sail around Africa into the Indian Ocean. These details indicate that the map was drawn after 1488 and presumably before 1493.

This circular *mappamundi* is also noteworthy for showing southern and eastern Africa more accurately than does either the *Martellus* map or the *Behaim* globe *(***#256** and **#258***)*. It implies that information is included from Vasco da Gama, the Portuguese navigator who discovered a route to India, even though he did not return to Europe until 1499. The treatment of the west, south, and east coasts of Africa suggests the map's Portuguese origin. Latin is used for the numerous lengthy annotations. It has particularly rich nomenclature down the African coast, where Columbus is thought to have made at least one voyage with the Portuguese. The 250 place-names, however, appear in their Portuguese form, and many Portuguese-controlled areas display the Lusitanian flag. A reference at the Cape Verde Islands mentions their discovery by the Genoese, an intriguing fact considering Columbus' birthplace.



Detail of the "Columbus" map showing northern Africa

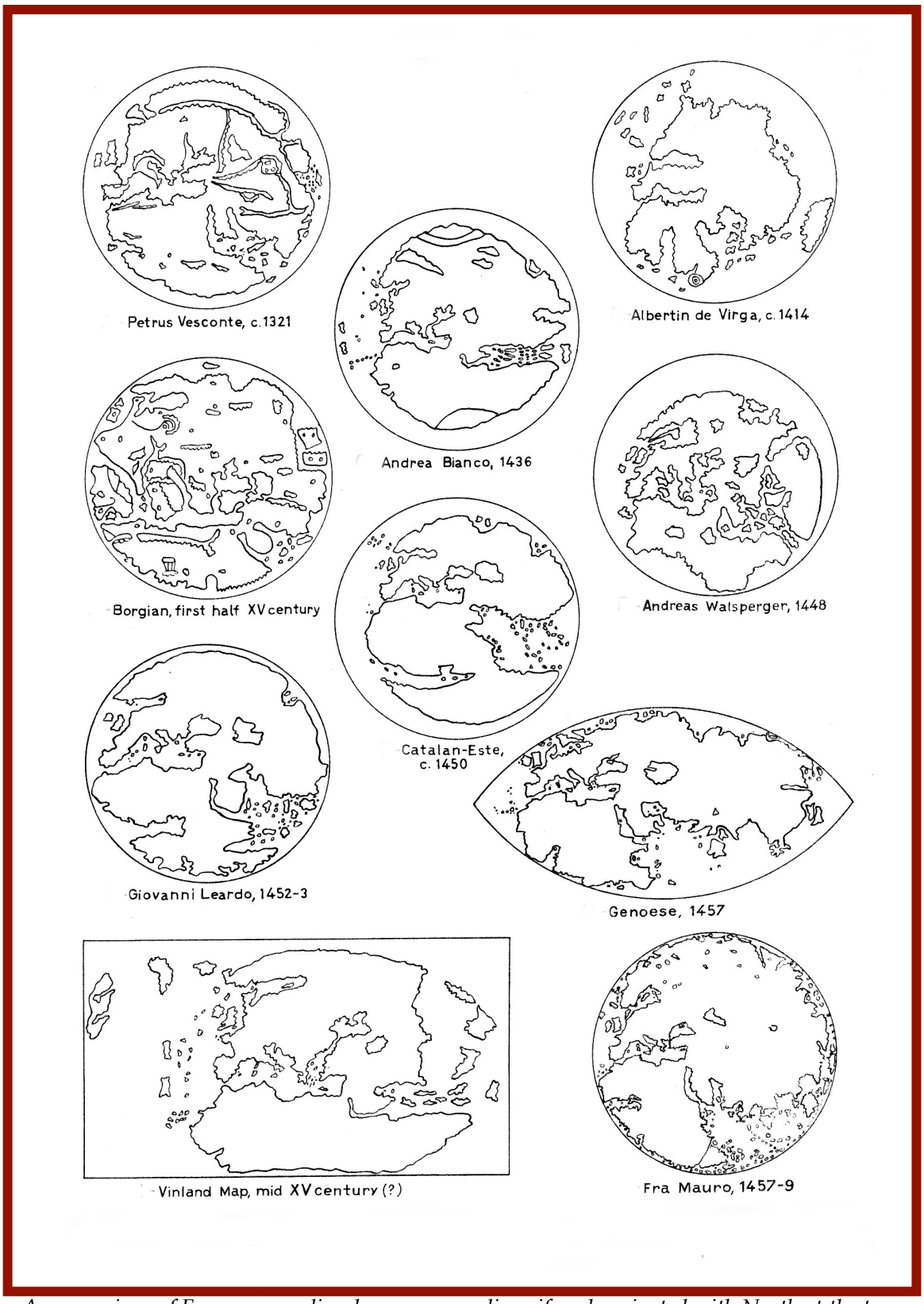
Redrawing of the world map insert on the "Columbus" map, **#257**

The Martin Behaim Globe, 1492, **#258**

The new geographical knowledge displayed on the famous Behaim globe (the oldest known surviving terrestrial globe) is confined to Africa, or rather to the western African coast for the names on the east coast, save for those taken from Ptolemy, are fanciful. The main features of the west coast are more or less recognizable, though Cape Verde is greatly over-emphasized. To *Cape Formoso*, on the Guinea coast, the nomenclature differs little from contemporary usage. Beyond it, though a good deal can be paralleled in the two other contemporary sources, Soligo and Martellus ***(#256)***, there are elements peculiar to Behaim, e.g. the *Rio de Behemo*, near *Cape Formoso*, and the *Insule Martini*, identified by Ravenstein with Anobom, with others of a less personal character. The coast swings abruptly to the east at *Monte Negro,* placed by Behaim at 38° S latitude. This is the point reached by Cão in 1483, (its true position is 15° 40′ S); a Portuguese standard marks the spot. On the eastward trending coast, there are names that seem to be related to those bestowed by Diaz, and the sea is named *oceanus maris asperi meridionalis* [rough seas of the southern ocean], a phrase which doubtless refers to the storms encountered by him. Owing to the exaggeration of the latitudes, *Monte Negro* falls fairly near the position that the Cape of Good Hope should occupy (34.5º S). It is noticeable that the 1485 Soligo chart ends at 14° S, which is near the limit of Behaim's detailed knowledge. We might conclude, therefore, that Behaim's contribution was to reproduce this coast from a similar chart, and to add some gleanings from the Diaz voyage round the Cape. The two personal names are not to be found on any other map: in conjunction with the attempt made to associate Behaim's own voyage with the discovery of the Cape, we are justified in assuming that this portion of the globe at least was designed in a spirit of self-glorification. It seems doubtful if Behaim had sailed much further than the Guinea Coast.

Africa on the facsimile globe produced by Greaves & Thomas (author's copy) ***#258***

Africa from the Facsimile Globe Gores by E.G. Ravenstein. **#258**
Off the southern extremity of Africa, below a huge fish, is written oceanus maris asperi meridionalis [rough seas of the southern ocean], perhaps with reference to the experience of Bartholomeu Diaz when within the influence of the "brave forties."



A comparison of European medieval mappaemundi, uniformly oriented with North at the top
Showing the variety of configurations for the African continent during the medieval period

Summary

This period, beginning roughly in the fourth century CE, is characterized, in Europe, by an emphasis on religious history in their maps, along with an orientation of their maps with East at the top and Jerusalem in the center, a continuation of the "climate zone" division of the earth, maps that displayed the gradual extension of the African continent southward and the opening of the Indian Ocean; the rise of the Arab Islamic culture that had preserved the writing of Ptolemy and produced maps oriented with South at the top and very stylized geometric designs showing southern Africa extending eastwards; and the Chinese producing a surprisingly accurate outline of Africa on their maps many years before the Portuguese had circumnavigated the continent.

The Islamic maps consisted of a set of geometric configurations. Though some are more geometric than others, most lines are straight or arced, rivers are wide parallel lines, and lakes are often perfect circles. Towns are sometimes squares, circles, or four-pointed stars or, if they are stopping places on a straight route, resemble small tents or perhaps doors to caravansaries. Later European medieval mapmakers began incorporation of the Portuguese African discoveries.

Monographs Referenced *(see related monographs on this website)*:

#201 Macrobius
#205 Isidore of Seville
#207.2 Beatus Escalada
#207.13 Beatus St. Sever
#210 Cottonian/Anglo-Saxon
#211 Istakhri
#213 Ibn Hawqal
#215 Sawley
#217 Lambert St Omer
#219 al-Idrisi
#221 Ibn Sa'id
#222 al-Qazwini
#223 Psalter
#224 Ebstorf
#226 Hereford
#226.1 al-Umari
#226.2 Eclectic Indian
#227 Kuang Yü T'u
#228 Vesconte
#232 Higden
#233 Laurentian
#236 Kangnido
#239 Pirrus de Noha
#240 de Virga
#241 Andrea Bianco
#242 Giovanni Leardo
#245 Andreas Walsperger
#246 Catalan-Estense
#248 Genoese
#249 Fra Mauro
#255 Wieder-Woldan
#256 Henricus Martellus
#257 Christopher Columbus
#258 Martin Behaim Globe