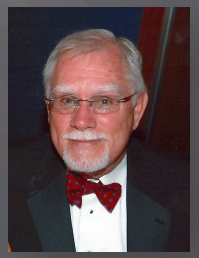
THE EVOLUTION OF THE WORLD MAP



Presented by Jim Siebold
www.myoldmaps.com



The Art of Making Maps

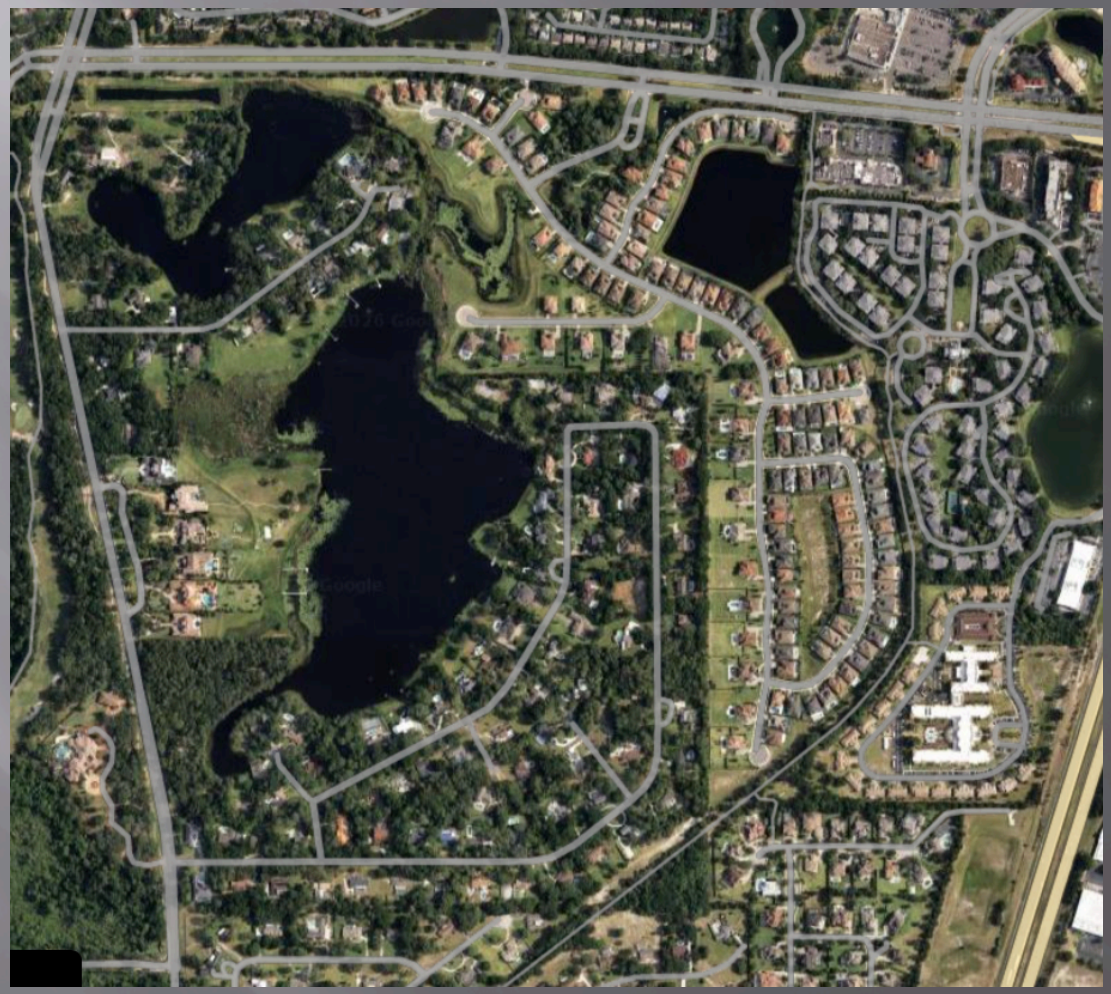
Try drawing a map – from memory – of the WORLD, the state of Florida or even your neighborhood,

No Google, no aerial photography, no satellite imagery, no examples to which to refer

That's what the Ancients faced in their attempts to picture their world

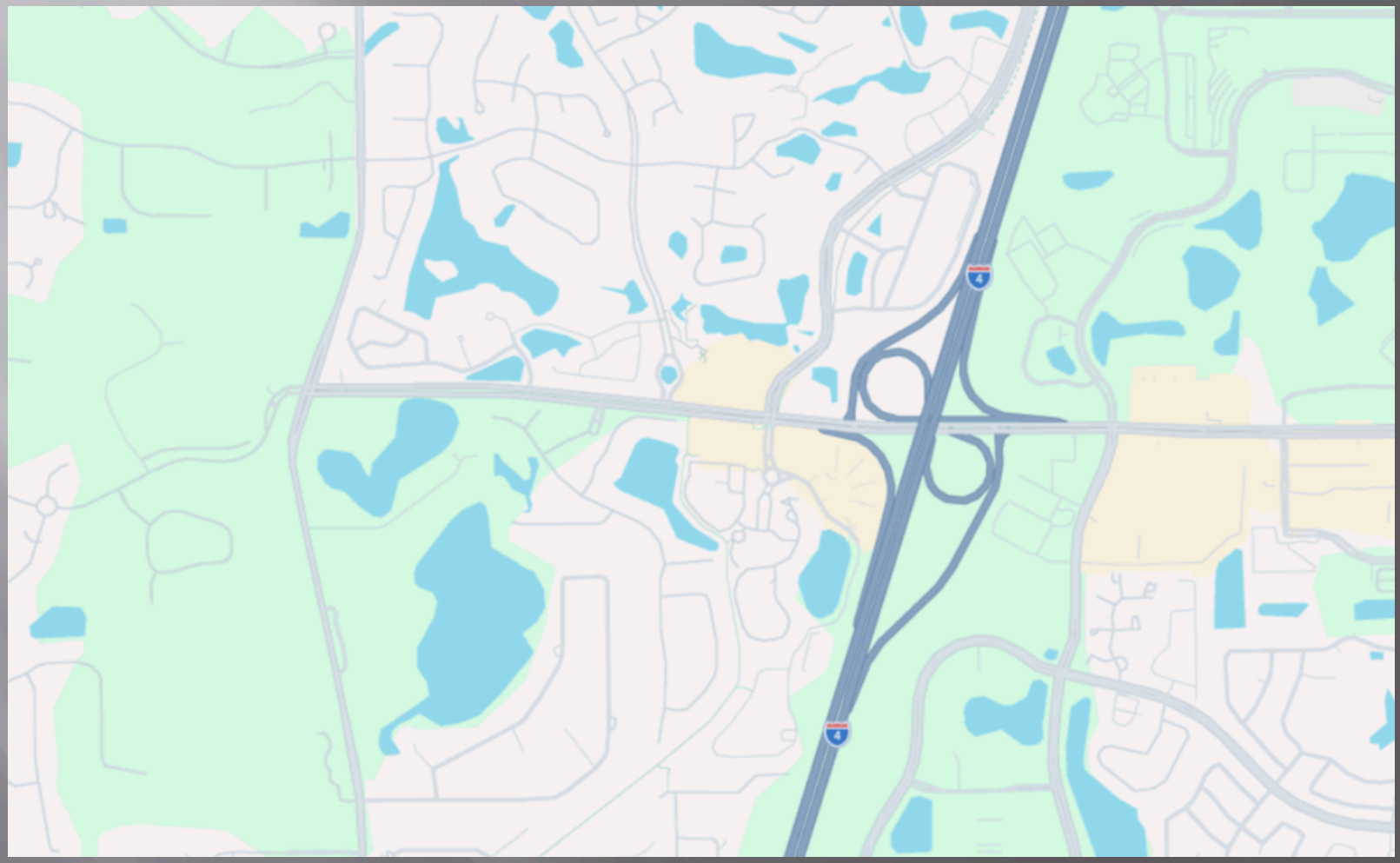
What would you select to include: just the terrain, or possibly coastlines, mountains, hills, rivers, lakes, houses, trees, roads, labels ???

Grand Living at Lake Mary



Even an aerial photograph doesn't help you find your way if you have never been there before

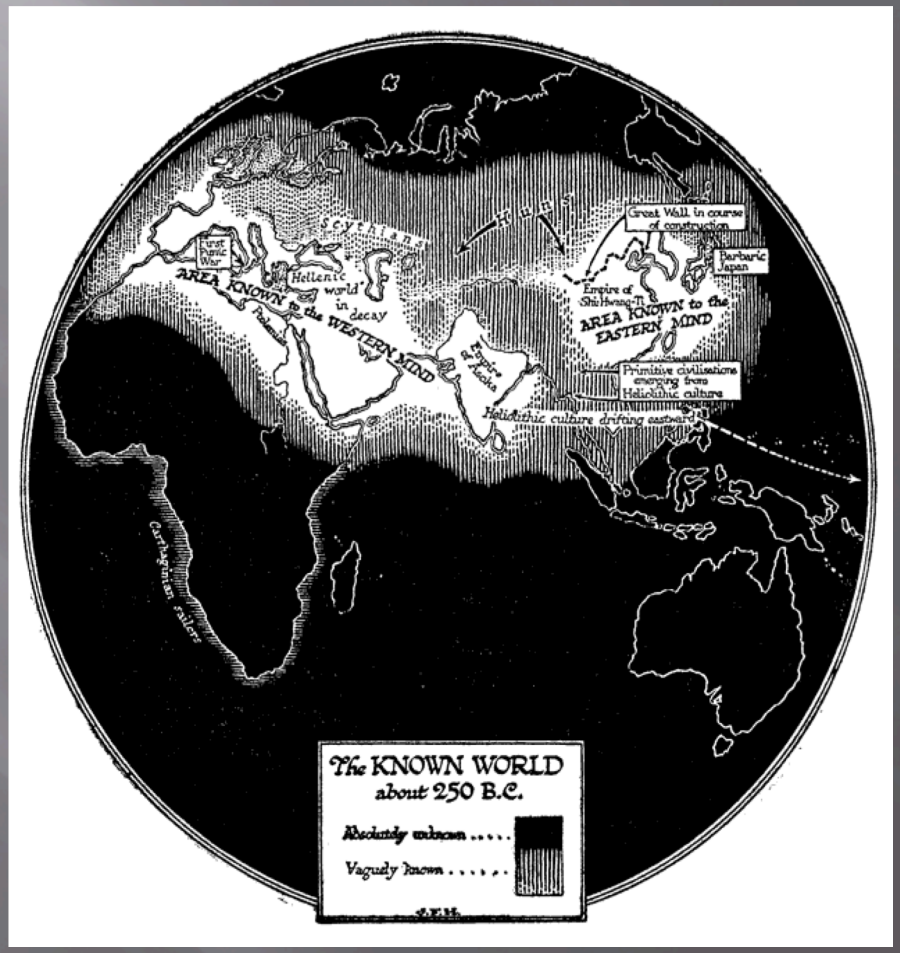
“The map of your home”



What do include? Label all the roads? Include all the stores and businesses?

The First Attempt to Map the World

Who is first recorded as attempting to map <u>their</u> entire <u>known</u> world?



Historical Evidence

- Modern geography relies on aerial photography (roughly since the First World War), satellite imagery and geographical information systems (GIS), and emphasizes precise quantitative methodology conveyed through maps and statistics. The Babylonians Greeks and Romans relied primarily on sensory impressions and logical argumentation, and occasionally conveyed their understandings in elaborate verbal reports. Their methods and instruments were simple,' but this did not prevent them from achieving impressive scientific breakthroughs. The history of ancient geography is thus, in part, a survey of scientific methodologies, showing how elaborate calculations were carried out using primitive tools.
- The study of geographical concepts and practices in antiquity is important for several reasons. The simplest is the linguistic and toponymic contribution of antiquity to modern terminology: the terms 'Europe', 'Atlantic' and 'climate', for example, all have Greek origins.

The World Map

- Regardless of the time period, what is the purpose of the world map? It has no practical use for the traveler, for example, since it does not show detail of any part of the world. One could not sail the Mediterranean or explore the Florida with a world map. It is no use even to the cartographer as detailed maps of all the regions of the world precede and underlie the world map itself. The world map is essentially the answer to an intellectual problem. It allows us to locate ourselves in space as the calendar does in time. The need to inhabit an ordered space creates the impulse to represent the entire world in a manageable form. The world map is thus a conceptual model that satisfies the mind and underlies other knowledge.

The World Map

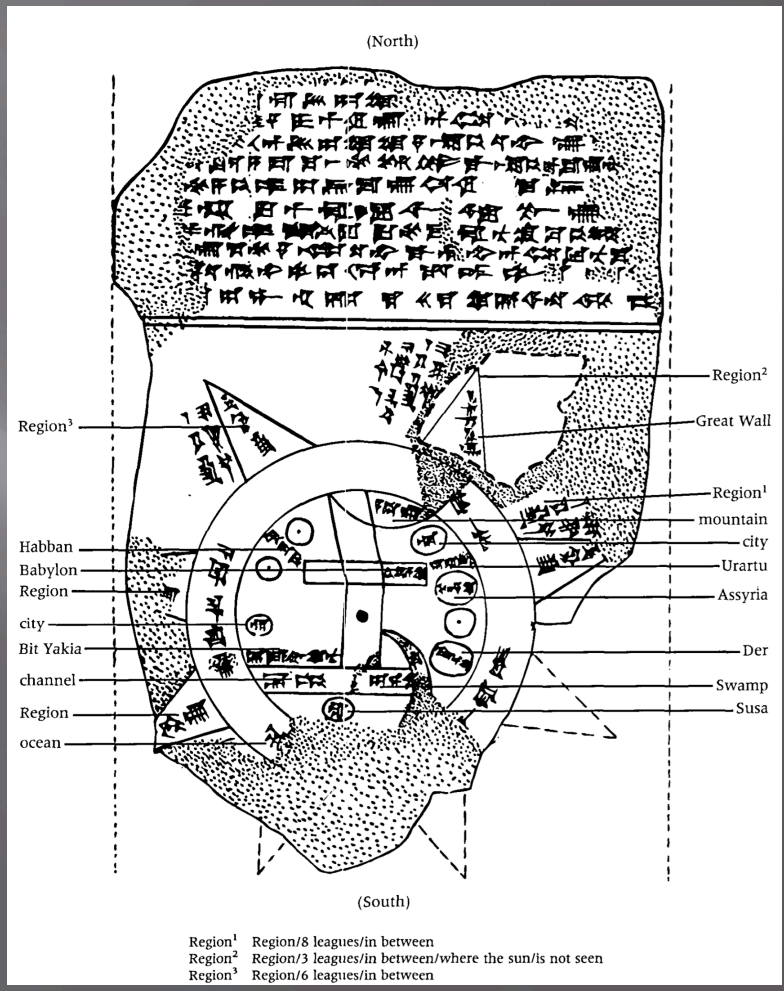
- The world map is thus a conceptual model that satisfies the mind and underlies other knowledge. As the mind hovers over the world map it is satisfying some deep desire to survey the world and to travel across it at will. The makers of world maps through the ages have had the same desire; some knew that the earth is a sphere but in addition to making model globes they persisted in drawing the world on vellum or paper in two dimensions. Why? Partly for practical reasons: a flat map is more practical than a globe in many situations. But there is also a deeper reason. The globe conceals half the world and in order to locate ourselves, and in the quest for a complete perspective on the world, we must see all the world spread out before us.

Babylonian World Map, 600-500 BCE (#103)

This is the oldest known world map.
It depicts the **known** world from far above as a disc surrounded by a ring of water called *marratu* in Akkadian.
Two concentric circles were drawn in with some cuneiform precursor of a pair of compasses whose point was actually inserted south of Babylon, perhaps at the city of Nippur, the '*Bond of Heaven and Earth*'. Within the circle the heartland of Mesopotamia is depicted in schematic form. The broad Euphrates River runs from top to bottom, originating in the northern mountainous areas and losing itself in canals and marshes in the south.

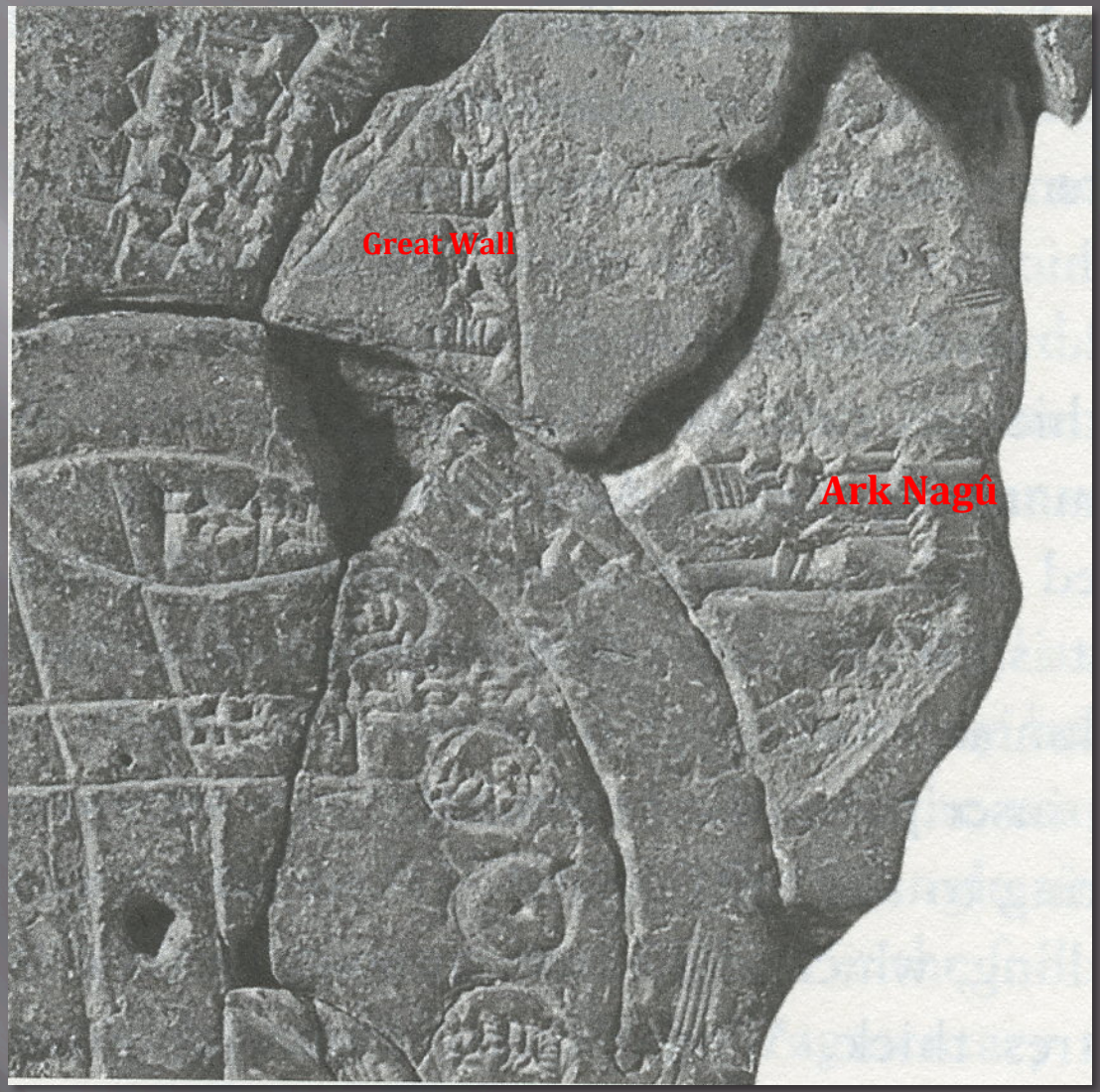



Region
6 leagues
in between
Great Wall
6 leagues
in between
where the sun
is not seen
Mountain
Ocean
HABBAN
City
BABYLON
URARTU
ASSYRIA
Euphrates
Region
Ocean
Region
6 leagues
in between
City
BIT YAKIN
Der
Channel
Swamp
Susa
Region
Ocean
Ocean


(North)
Region³
Habban
Babylon
Region
city
Bit Yakia
channel
Region
ocean
Region²
Great Wall
Region¹
mountain
city
Urartu
Assyria
Der
Swamp
Susa
(South)
Region¹ Region/8 leagues/in between
Region² Region/3 leagues/in between/where the sun/is not seen
Region³ Region/6 leagues/in between

Babylonian World Map, 600-500 BCE

- Close-up of Babylonian Map of the World, front view, showing Urartu, the Ocean, the Great Wall of China and *Nagû IV*, the original home of Noah's Ark
- The written and illustrated tradition of the *Babylonian Map of the World* is the oldest information we have; it encapsulates old Babylonian ideas of the early second millennium BCE which are a thousand years older than the tablet on which it is preserved. According to this the Ark came to rest on a very remote, gigantic mountain, located far beyond *Urartu* on the other side of the world-encircling Ocean, far indeed beyond the knowlege of man.



Initial Considerations

- Ancient Greek thinkers addressed the three most fundamental questions of geography:
  - *What is the form and magnitude of the earth?*
  - *What are the shape and size of its landmasses and oceans?*
  - *What is the nature and extent of human habitation on the earth?*
- There is considerable fragmentary evidence that many ancient civilizations had regarded 'The World' as synonymous with 'Our World'. Egyptians, Babylonians, Indians and Chinese have all left 'World Maps' which are essentially maps of their own territory, surrounded by ocean. This was a natural concept, and the same thought is traceable in a number of ancient texts, such as the Homeric poems. These peoples plainly did not possess a world map – literally, mentally or psychologically in which certain blank spaces were waiting to be filled; rather, what they knew filled the whole world. It was the achievement of certain Greek thinkers to break free from such subjective intuitions and to raise geography to the level of objective science.

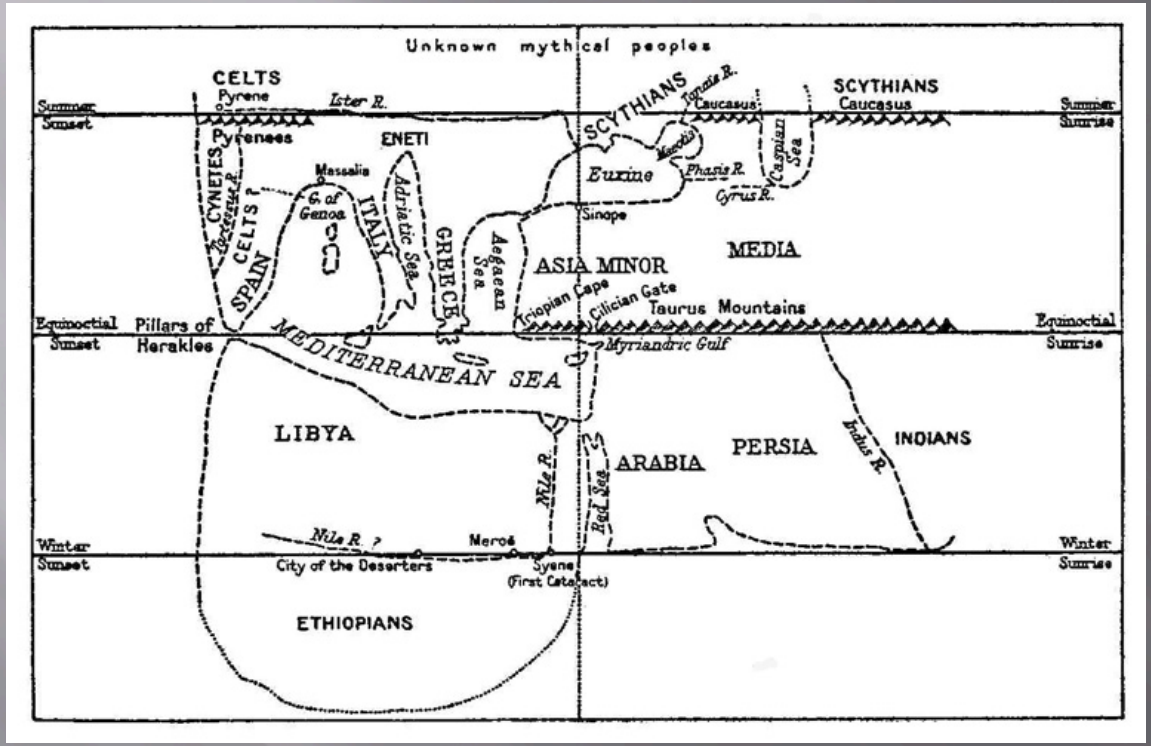
The Greeks

The Milesian philosophers of the 5th and 4th centuries BCE - Thales, Anaximander and Hecataeus - were convinced that the earth was a sphere, and they are reported to be the first to have made globes and maps of the world.

Spherical geometry and coordinate systems were first used by astronomers in relation to the heavenly sphere, and their subsequent transfer to terrestrial geography enabled estimates to be made of the size of the earth. The most famous of these, by Eratosthenes of Cyrene in the 3rd century BCE, was accurate to within 5% of its true value.

The inescapable conclusion of such theoretical work was that the known, inhabited world - the Mediterranean and western Asia - represented only one small part of the globe; there remained vast areas of the world that were unknown and out of reach, and where other men and other civilizations might possibly exist.

Ancient Greek World View



To the Greeks, maps were never primarily intended just to show precise spatial relationships between places. Early Greek maps, in particular, had no practical application, but they stimulated the imagination and enriched Greek ideas about humans' relationship to the natural world; they also reflected the Greek zest for adventure and exploration

A reconstruction by Heidel of the conceptual frame of the Greeks' view of the *oikumene* [inhabited world]. This sketch map illustrates the probable Greek concept of the general relationships of the *oikumene* to the frame at the time of Eratosthenes, and embodying a Persian map at the time of Darius. This is not strictly a reconstruction, since no definite information is available with regards either to the manner in which details of the coastlines appeared on the Greek maps, or to the relative distances separating the various features indicated.

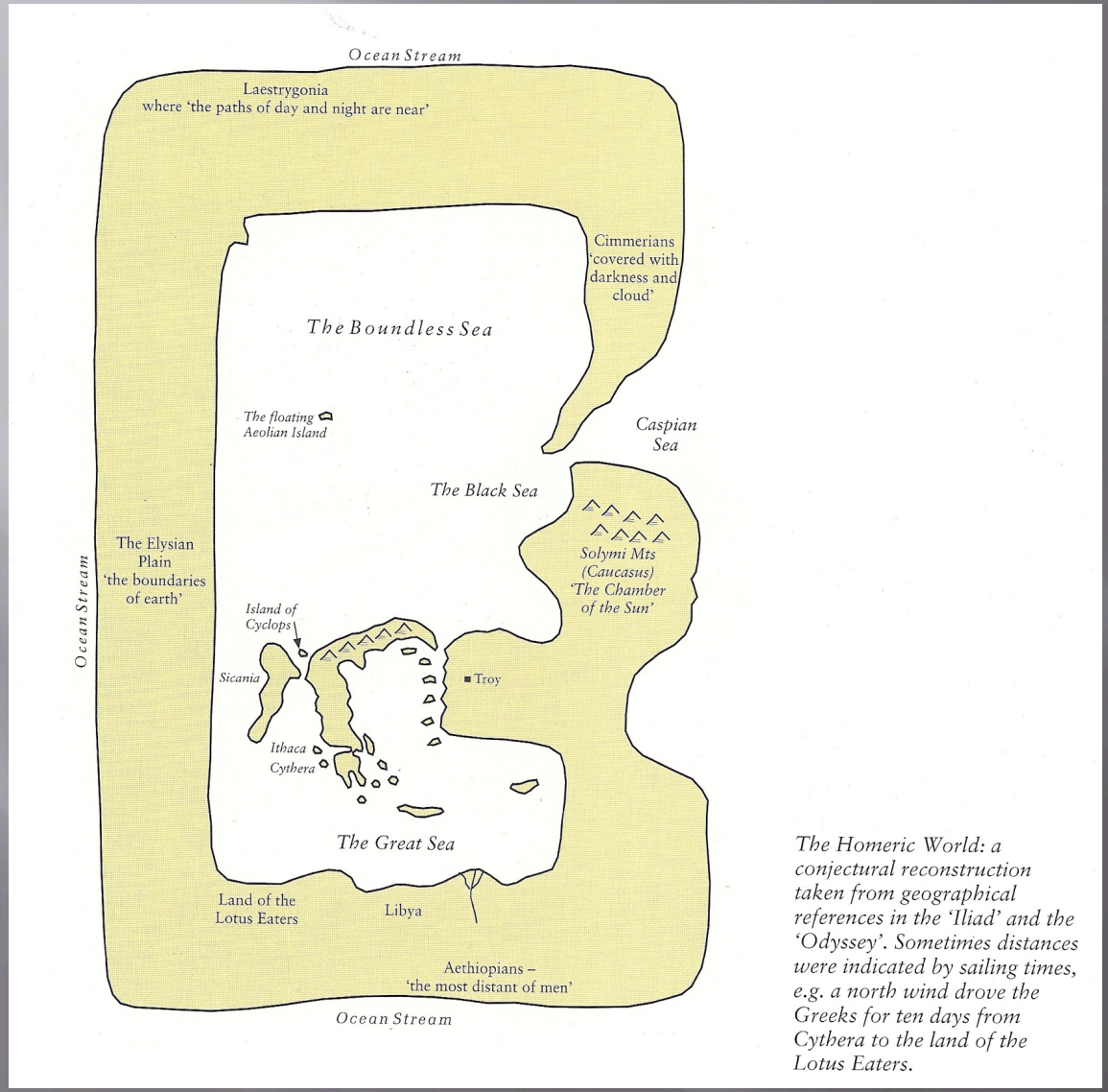
Reconstructions of Homer's World View, ~900 BCE (#105)





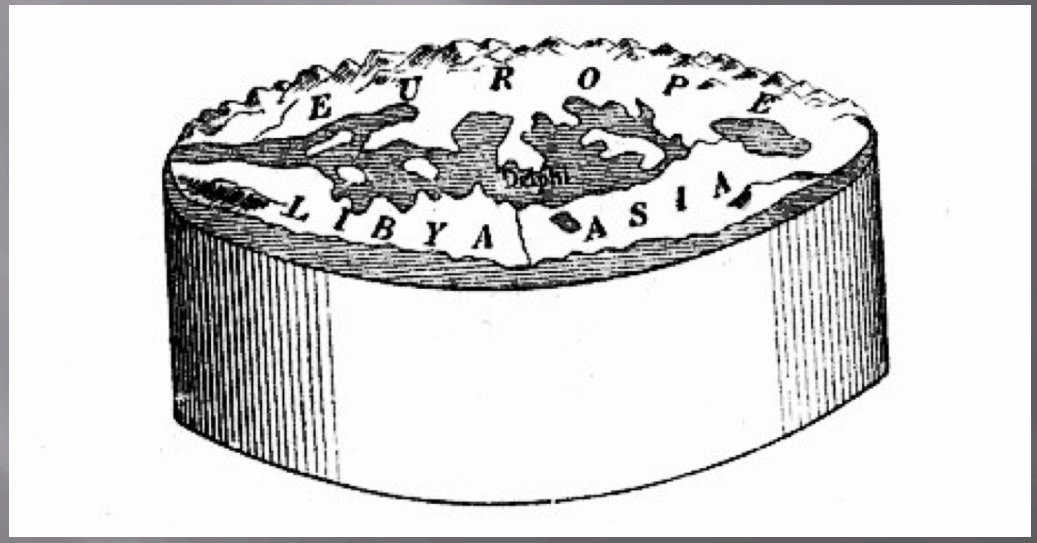
The Homeric conception of the world represented as a flat, circular disc of land surrounded by a continuous ocean-stream remained a popular notion in the Greek world even after many philosophers and scientists had accepted the theory of the sphericity

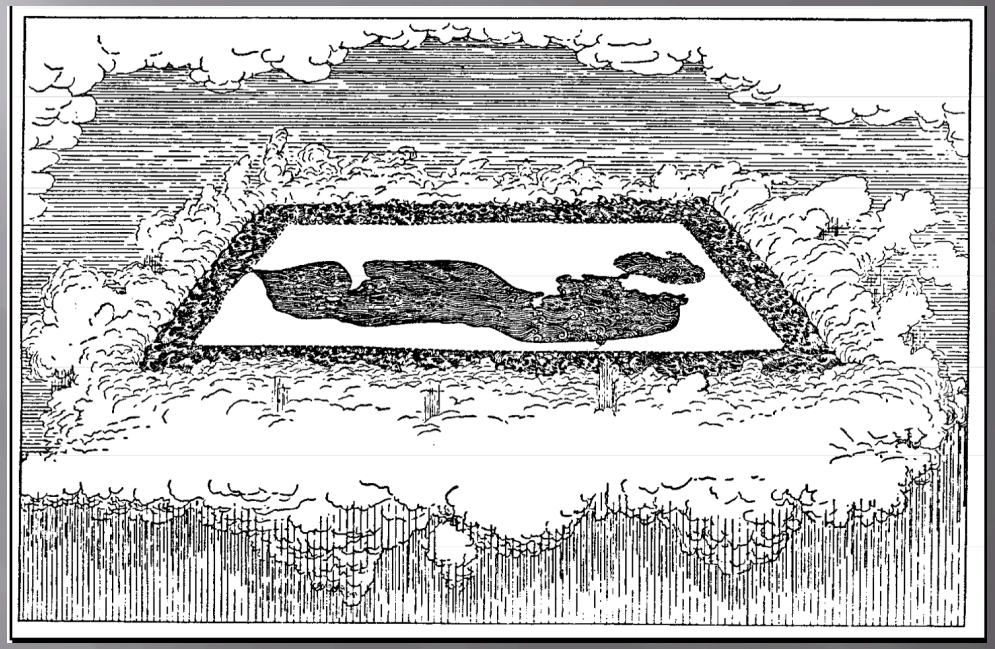
Homer's World View (#105)



The Homeric World: a conjectural reconstruction taken from geographical references in the 'Iliad' and the 'Odyssey'. Sometimes distances were indicated by sailing times, e.g. a north wind drove the Greeks for ten days from Cythera to the land of the Lotus Eaters.

Both the Greek historians/geographers Strabo and Agathemerus claim that, according to the geographer Eratosthenes, Anaximander was the first to publish a map of the world. The map probably inspired the Greek historian Hecataeus of Miletus to draw a more accurate version. Strabo viewed both as the first geographers after Homer. *(#107)*





The rectangular world of Anaximenes ca. 500 BCE, (see #107) was watery yet supported in space by compressed air. The Mediterranean washed its nearer shores while beyond the horizon flowed the great circumfluent Ocean Sea. (#107)

A Reconstruction of Hecaetus' World Map
550-480 BCE (#108)

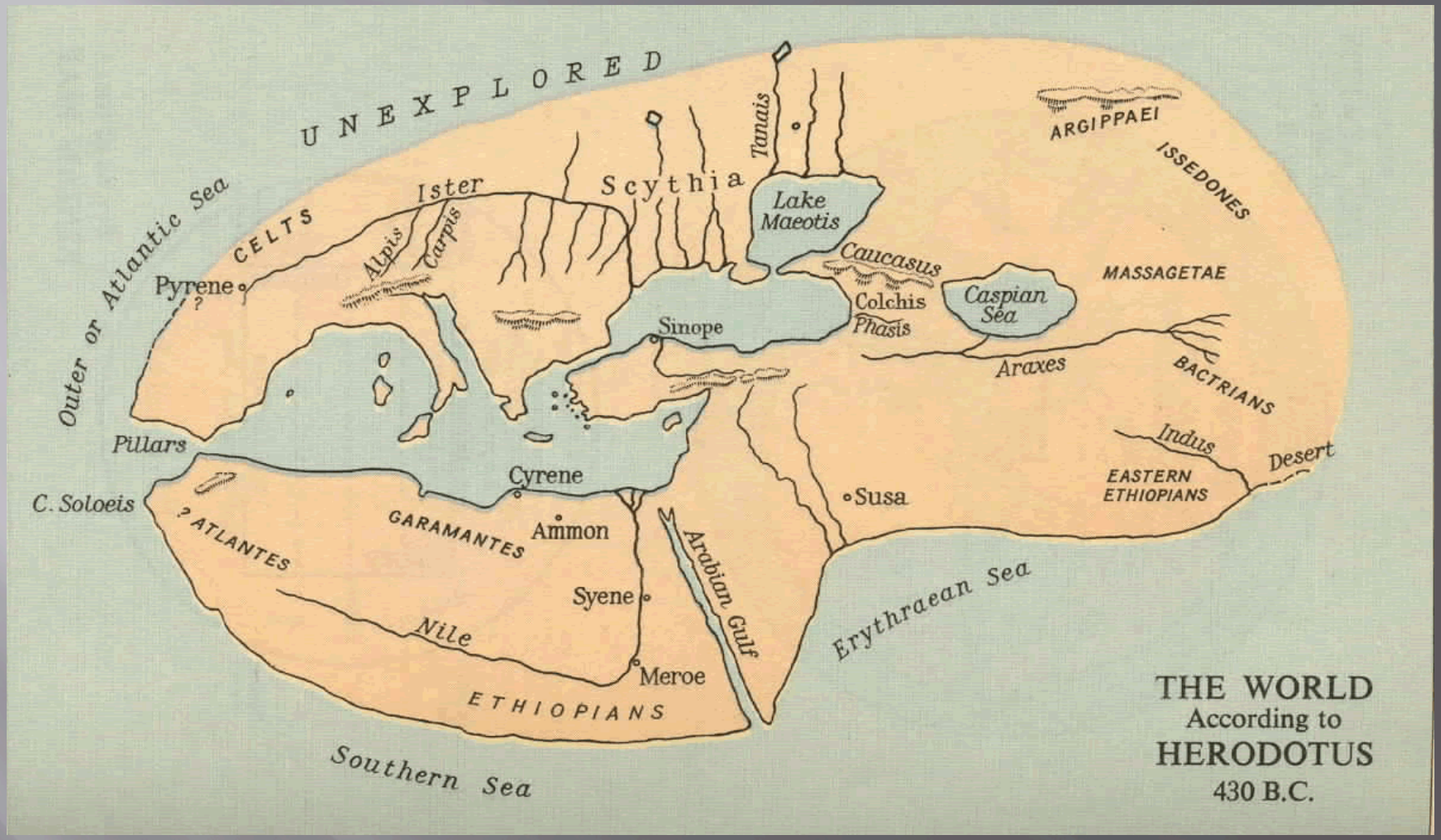




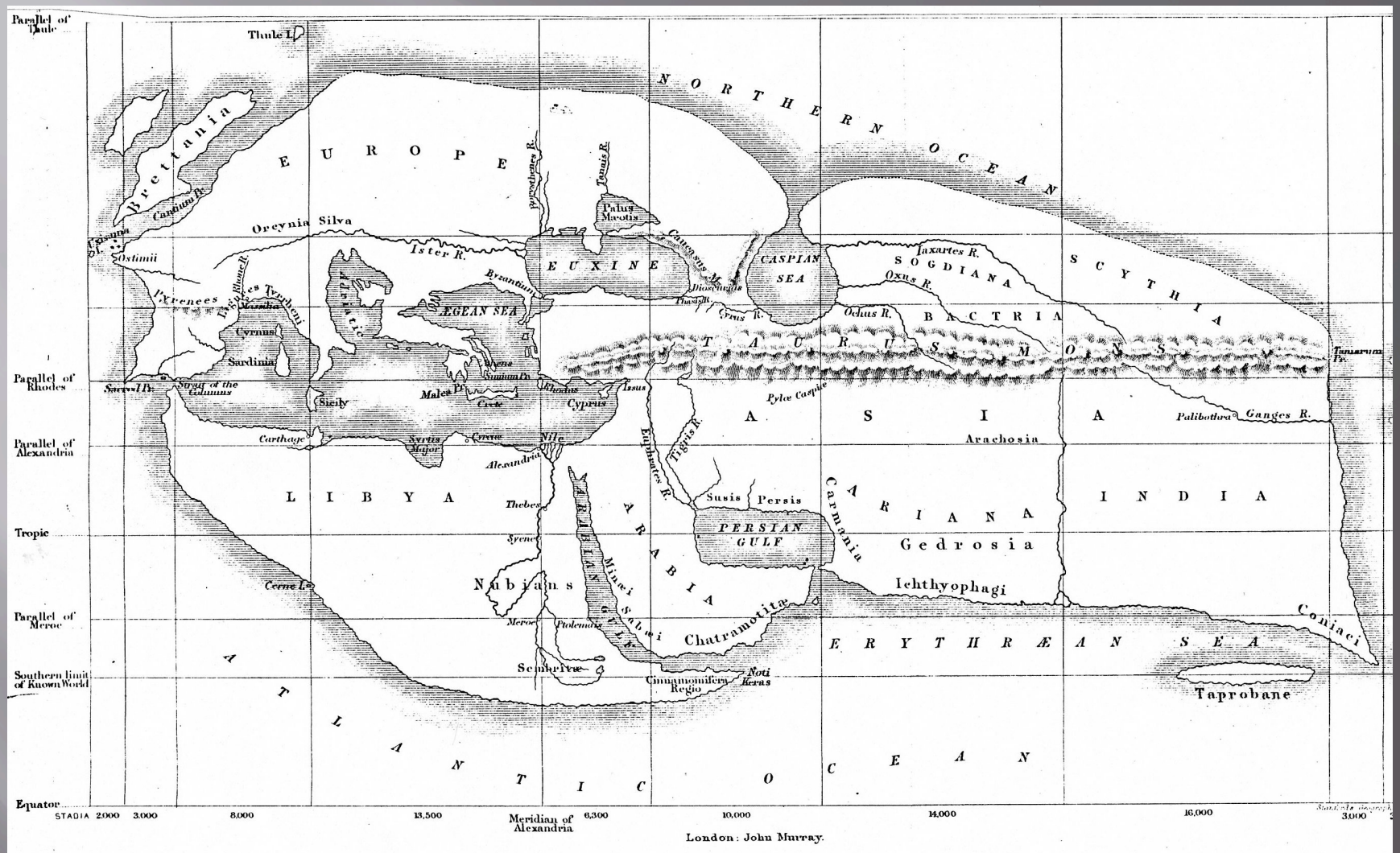

OCEANUS
OCEANUS
EUROPA
ASIA
LIBYA
Scythia
Issedones
Celtae
Istri
Ister Fl.
Borysthenes
Tanais
P. Maeotis
Caucasus M.
Caspian Sea
Euxine
Plasis
Hæmus M.
Adria
Narbo
Tartessus
Columns of Hercules
Tagus
Carthage
Thebes
Nile
Euphrates
Tigris
Indus
ARABICUS SINUS



19th century reconstruction of
Herodotus' World map of 430 BCE
(#109)



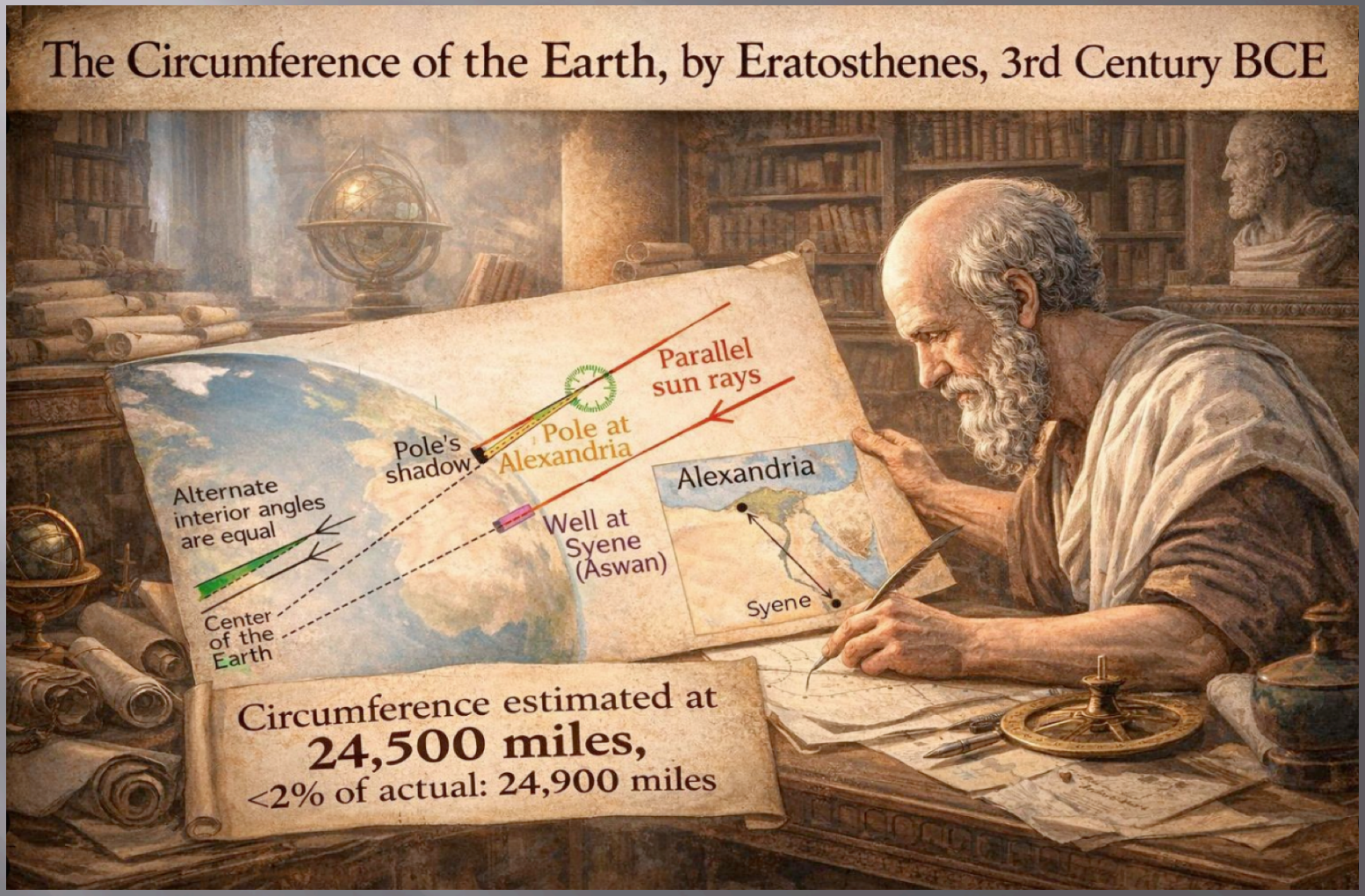
Another reconstruction of
Herodotus' World map of 430 BCE
(#109)



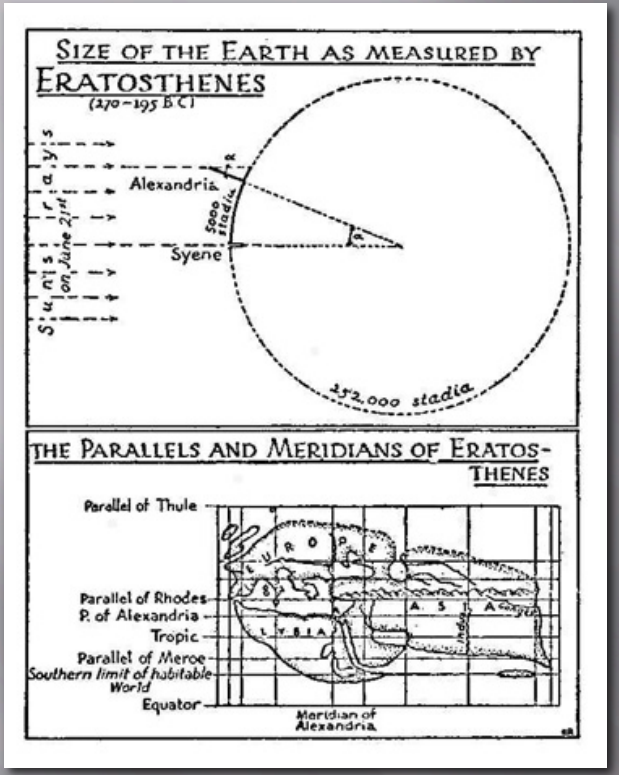
A map of the known world according to the writings of Eratosthenes, as reconstructed by John Murray in Bunbury

Reconstructed world view of Eratosthenes of Cyrene, 194 BCE #112

It should be noted that the Greeks were primarily only interested in the *oikoumene* and not in what they considered the uninhabited parts of the world. Thus Eratosthenes did not speculate on the antipodian regions of the earth sphere.

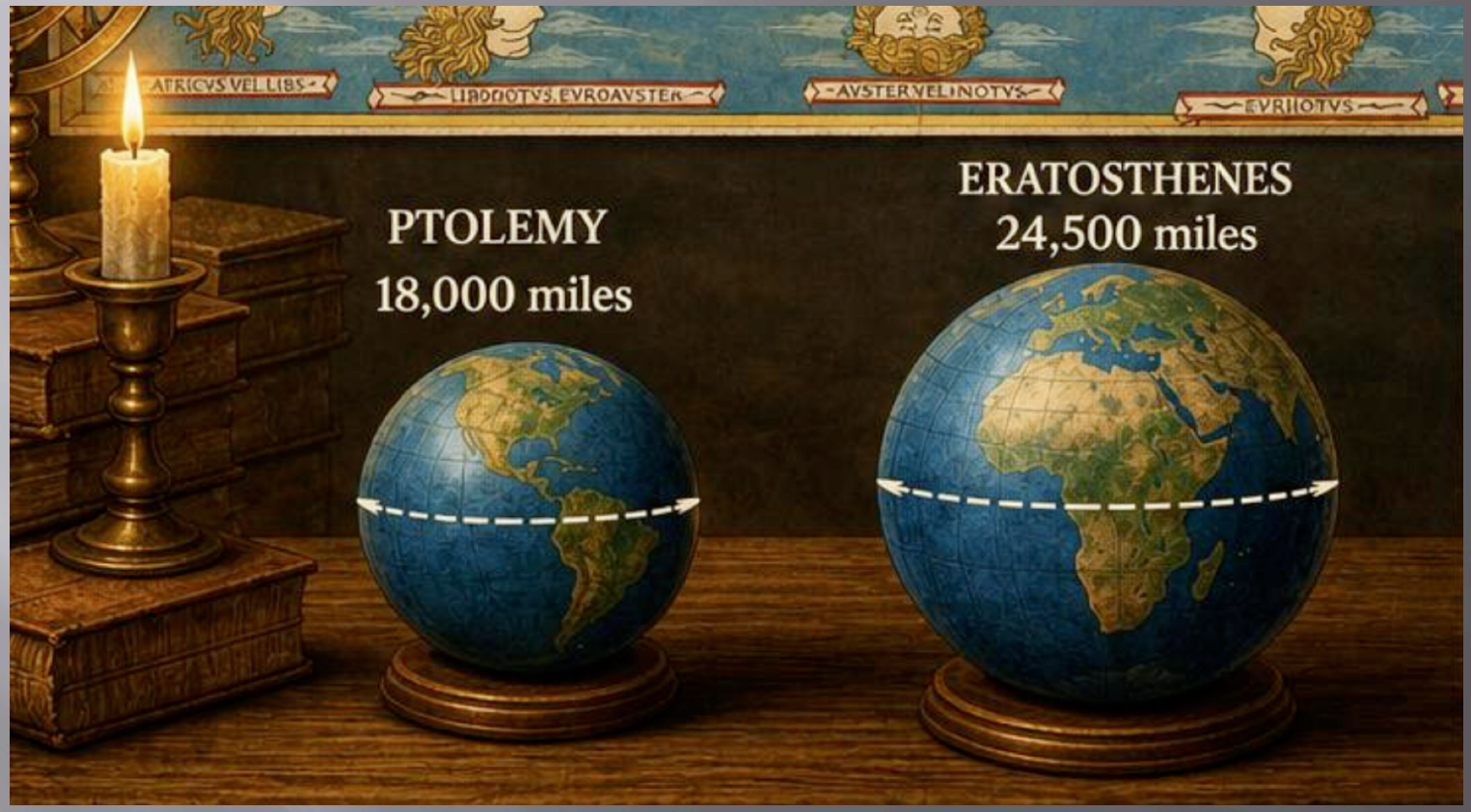

The Circumference of the Earth, by Eratosthenes, 3rd Century BCE
Parallel sun rays
Pole's shadow
Pole at Alexandria
Alexandria
Alternate interior angles are equal
Well at Syene (Aswan)
Syene
Center of the Earth
Circumference estimated at
24,500 miles,
<2% of actual: 24,900 miles

Measuring the size of the World



The only theoretical error in this mode of calculation was in the assumption - which was inevitable in the days of Eratosthenes - that the earth was exactly spherical, instead of being as it really is, a slightly oblate spheroid, and that therefore a meridian great circle was equal to that of the equator. And the error proceeding from this cause, which would not exceed 1/300th part of the whole, is wholly unimportant as compared with the practical errors arising from the defective means of observation.

252,000 *stades*. A conversion to modern units of measure finds Eratosthenes' calculation to be somewhere between 45,007 km (27,967 miles) to 39,690 km (24,663 miles), as compared to actual equatorial circumference of 40,075 km (24,902 miles), there has always been some controversy over the equivalent modern length of a *stade* as used by Eratosthenes.



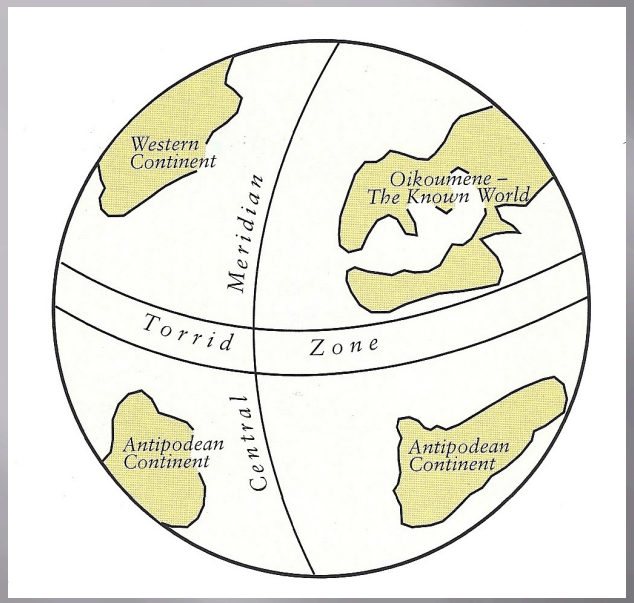
The significance of this discrepancy is that Columbus assumed that Ptolemy's measurement was accurate

Crates of Mallos , 180-156 BCE #113

- Crates made the first attempt to construct a terrestrial globe
- It was Crates' idea that the earth's surface, when represented on a sphere, should appear as divided into four island-like habitable regions. On the one hemisphere, which is formed by a meridional plane cutting the sphere, lies our own *oikoumene,* or known habitable world, and that of the *Antoecians* in corresponding longitude and in opposite latitude; on the other hemisphere lies the *oikoumene* of the *Perioecians* in our latitude and in opposite longitude, and that of the *Antipodes* in latitude and longitude opposite to us.

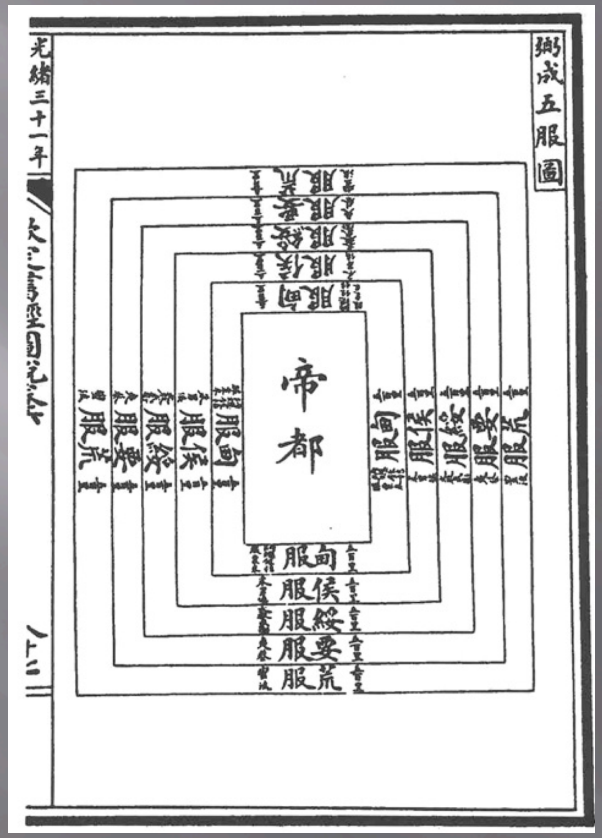


Crates' Globe #113



New entry in Archimedes museum in Olympia Greece. Archaeologists reconstructed Crates of Mallus (2 BCE) earth globe according to Eratosthenes measurements





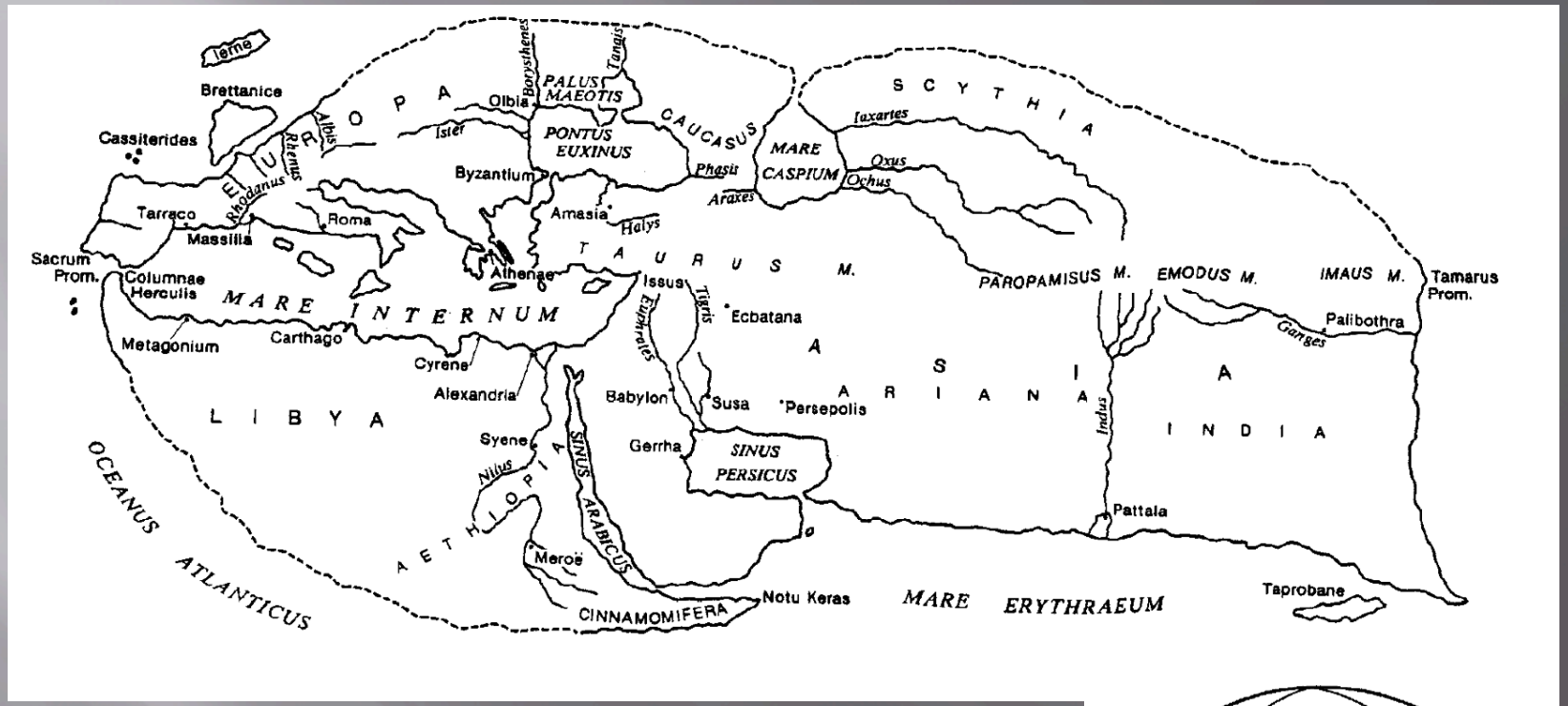
Ancient Chinese World View, 138 BCE

From the *Chhin-Ting Shu Ching T'u Shuo*

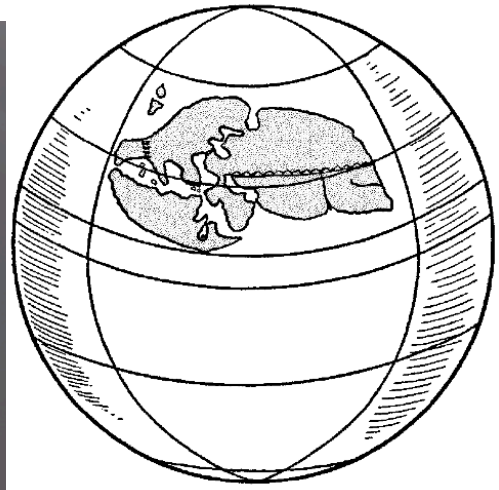
[imperial illustrated edition of the *Historical Classic* chapter 6, *Yü Kung*]

The traditional conception of the radiation of ancient Chinese culture from its imperial center. Proceeding outwards from the metropolitan area we have, in concentric rectangles, (a) the royal domains; (b) the lands of the tributary feudal princes and lords; (c) the 'zone of pacification', i.e. the marches where Chinese civilization was in course of adoption, (d) the zone of allied barbarians; (e) the zone of cultureless savagery. The systemization can never have been more than schematic but Egypt and Rome might have used a similar image, all unconscious of the equally civilized empire at the eastern end of the Old World.

Strabo's World View 18 CE #115



Strabo's world is smaller than that described by Eratosthenes, his predecessor by two centuries. The earth's width is reduced to 30,000 *stades* (compared with Eratosthenes' 38,000), while its length is 70,000 *stades* compared to Eratosthenes' 78,000. Or that at least is his inhabited world, which Strabo describes as 'an island' floating in a sea in the northern hemisphere. He believed that the world he knew and described took up about a quarter of the earth.



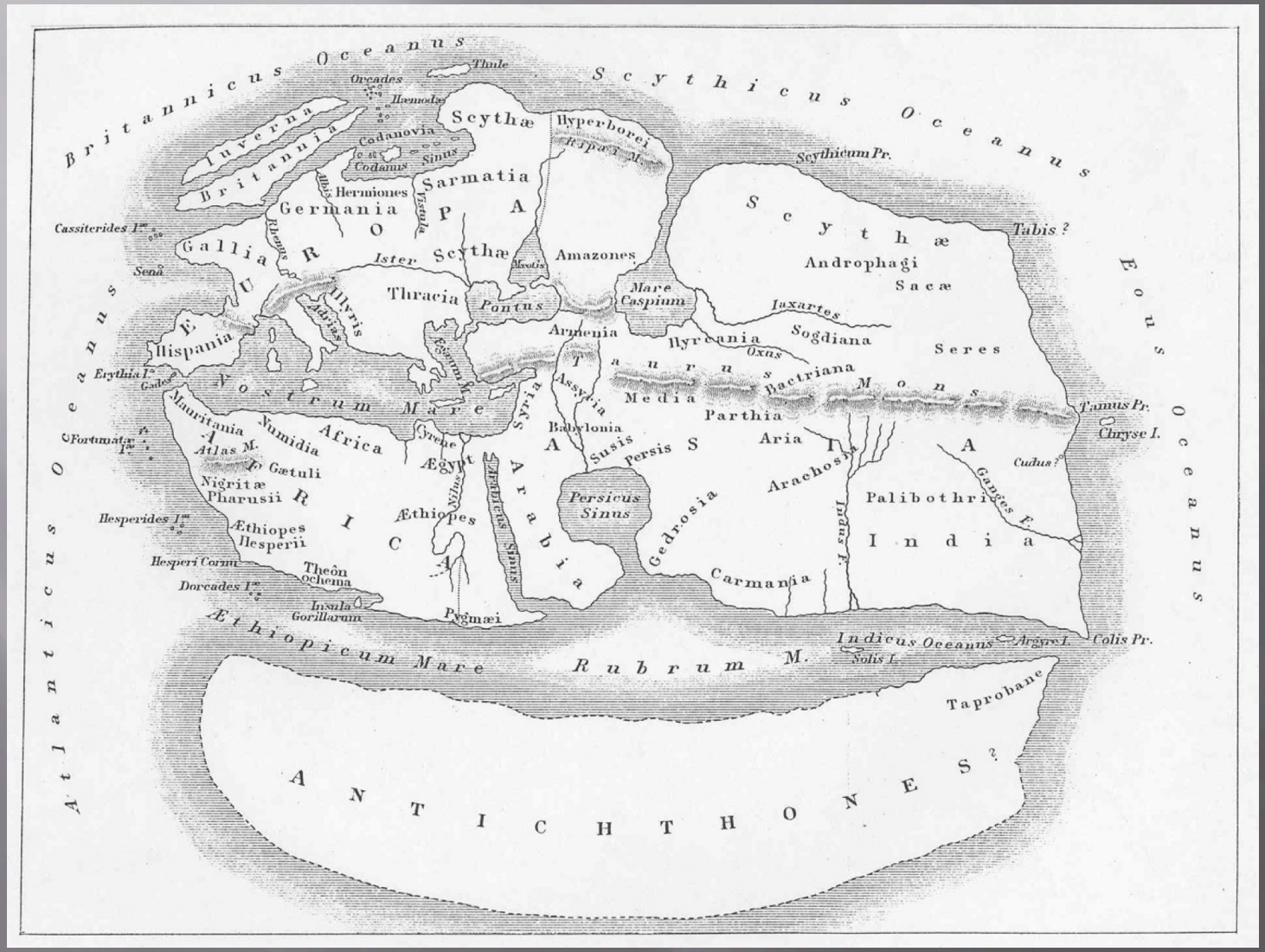
Marcus Vipsanius Agrippa 20 CE #118



A "reconstruction" of Agrippa's Map.
Note that most scholars, however, believe that due to its placement on the column in a portico or stoa open to the public, the Porticus Vipsani, it was probably rectangular, not circular.

Pomponius Mela's World Map 37 CE #116

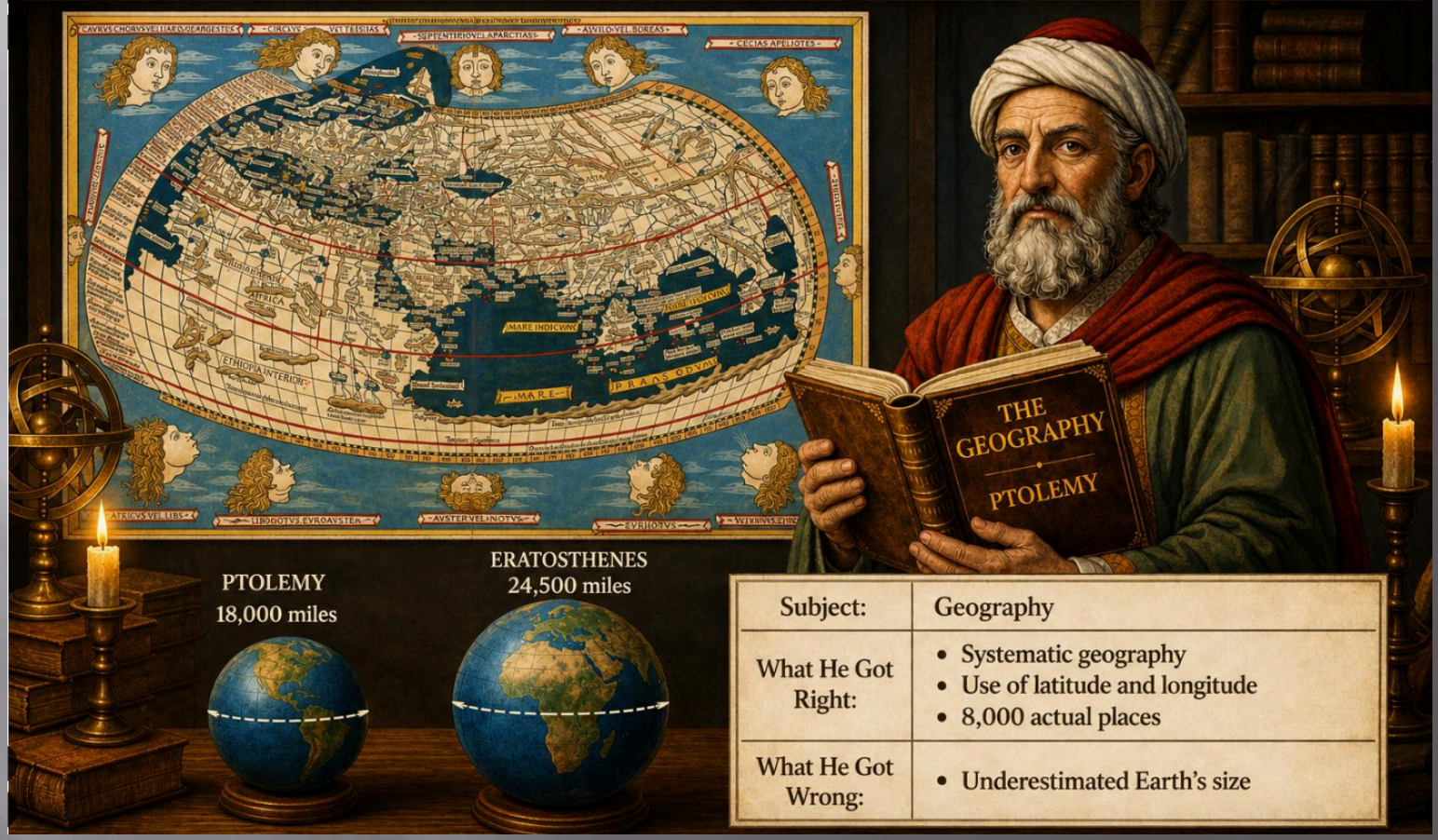
the earliest Roman geographer



Mela departs from the traditional ancient concept by asserting that in the southern temperate zone dwelt inhabitants who were inaccessible to Europeans because of the *Torrid Zone* that intervened. His knowledge of the characters of Western Europe and the British Isles was clearer than that of the Greek writers, and he was the first to name the *Orcades* [Orkney Islands]. The great Roman historian Pliny quoted Mela as an authority.

Claudius Ptolemy, 150 CE #119

The Geography, by Ptolemy, 2nd Century CE

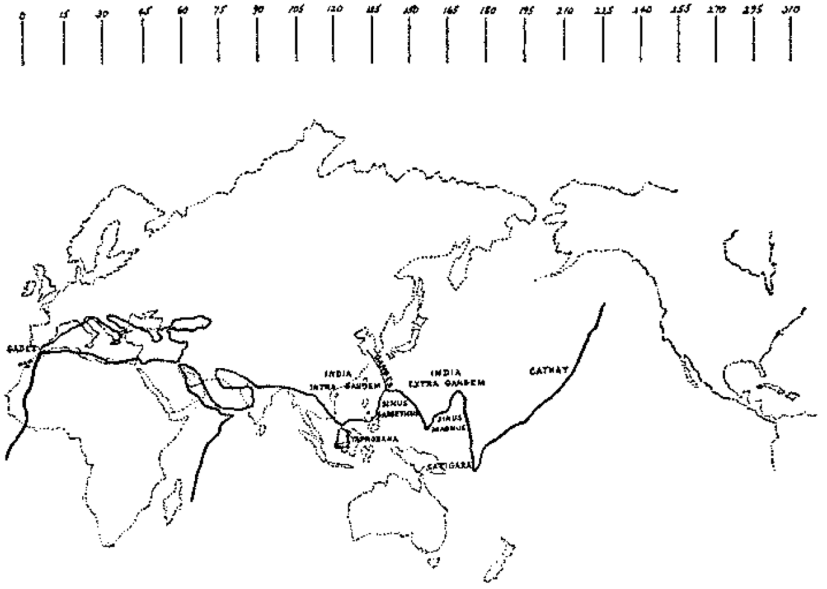


Subject:	Geography
What He Got Right:	• Systematic geography • Use of latitude and longitude • 8,000 actual places
What He Got Wrong:	• Underestimated Earth's size

Ptolemy's eastward extension of Asia, reducing the length of the unknown part of the world, coupled with his estimate of the circumference of the earth, was his greatest contribution to history if not cartography. The earth was only 18,000 miles around at the equator; Poseidonius had stated it, Strabo substantiated it, and Ptolemy perpetuated it on his maps. This "shorter distance" that a mariner would have to travel west from the shores of Spain in order to reach the rich trading centers of Asia may have contributed to Columbus' belief



The area covered by Ptolemy's world map superimposed on an outline of a modern map. While Ptolemy's map is based upon the theory that the earth is round, it bares repeating that it is to his credit that he depicts only that half of its surface which was then known, with very little attempt to speculate on or "fill-in" the unknown parts with his imagination.

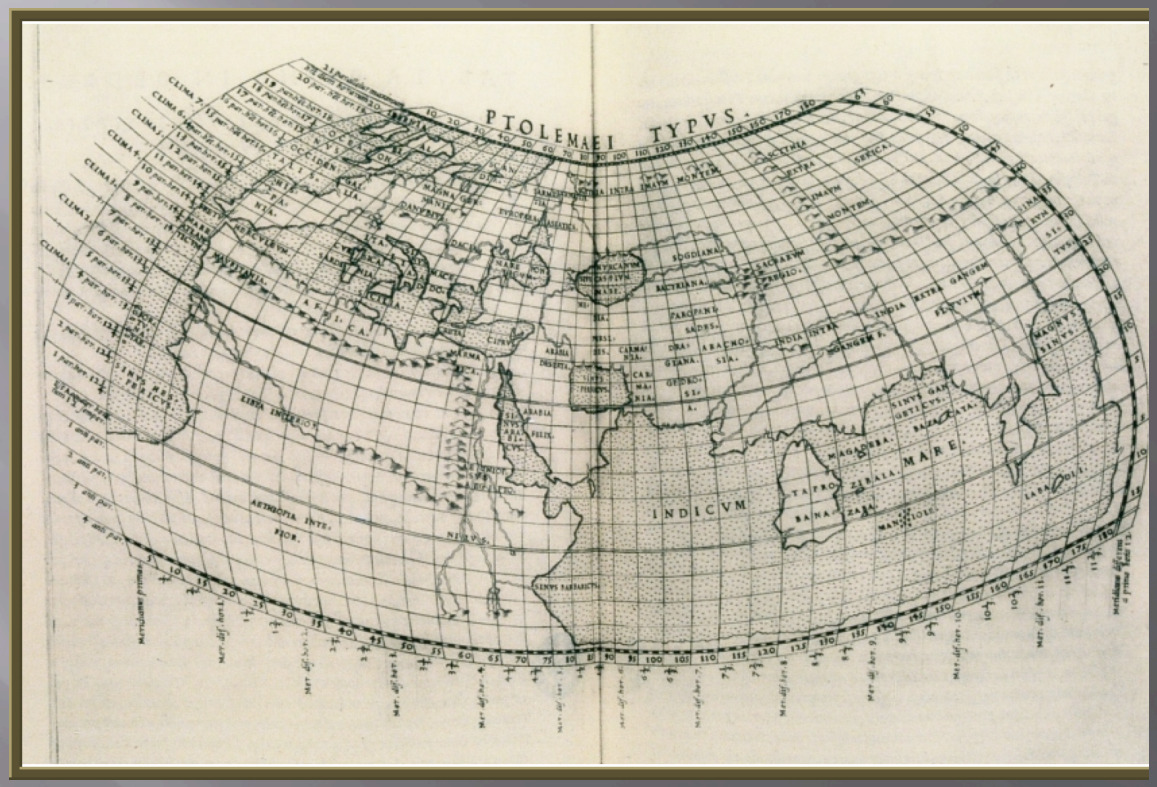


Ptolemy's Conic Projection



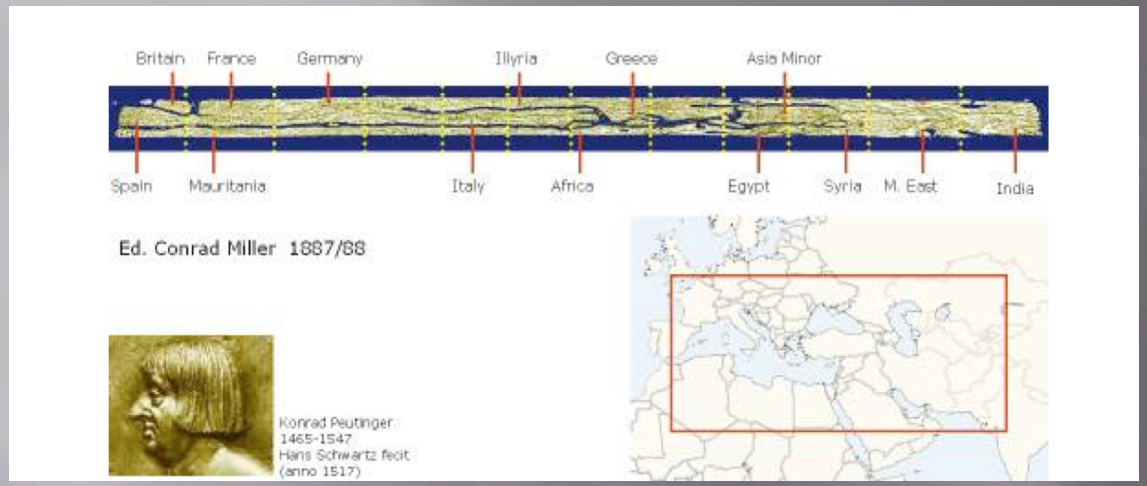
Ptolemaic world map using a conical projection A Byzantine Greek world map according to Ptolemy's first (conic) projection. From Codex Vaticanus Urbinas Graecus 82, Constantinople c. 1300. Probably assembled by Maximus Planoudes

Ptolemy's 2nd Projection



A reconstruction of a map on grid system, in Ptolemy, La geographia, 1561-64

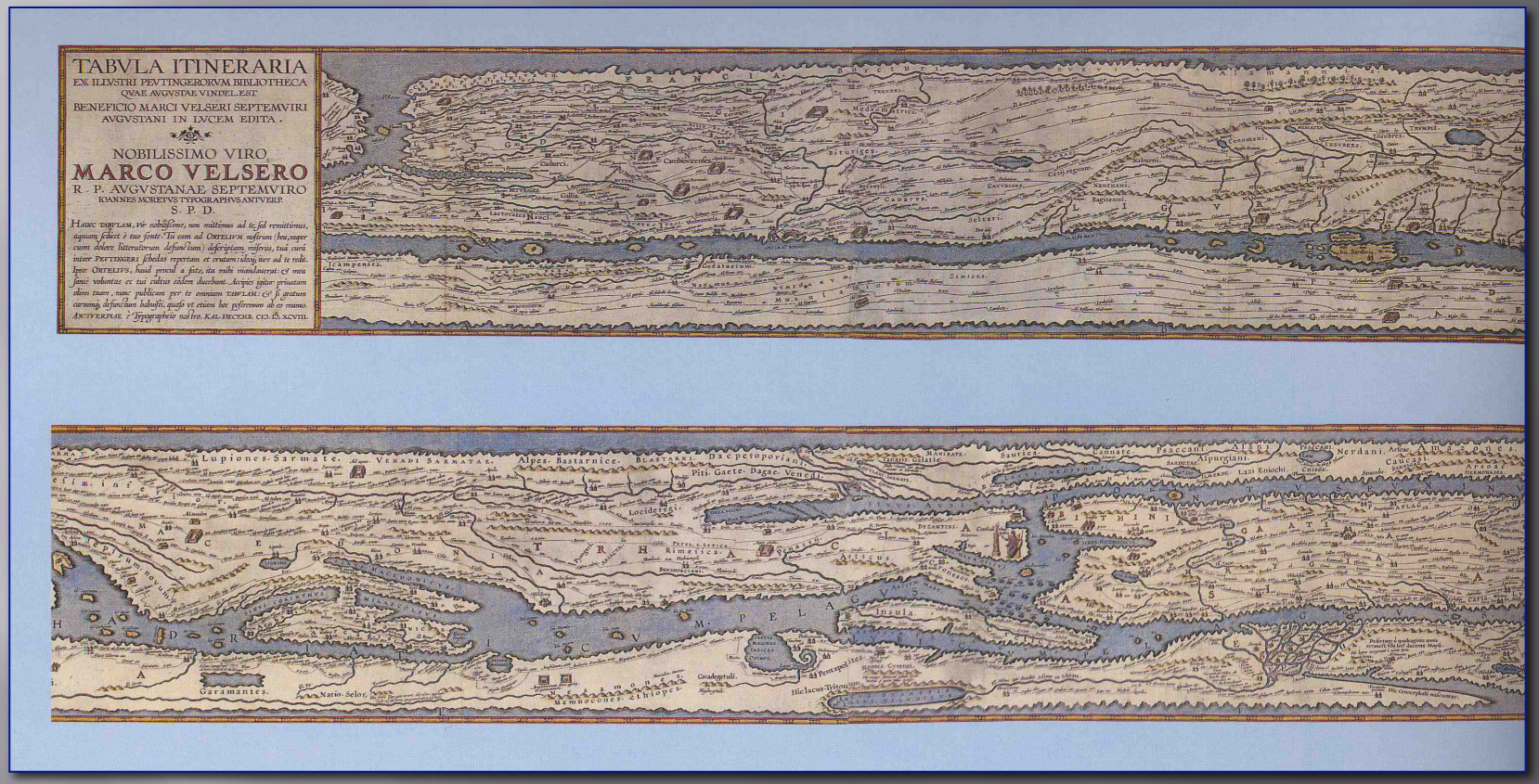
Tabula Peutingeriana, 100 CE #120



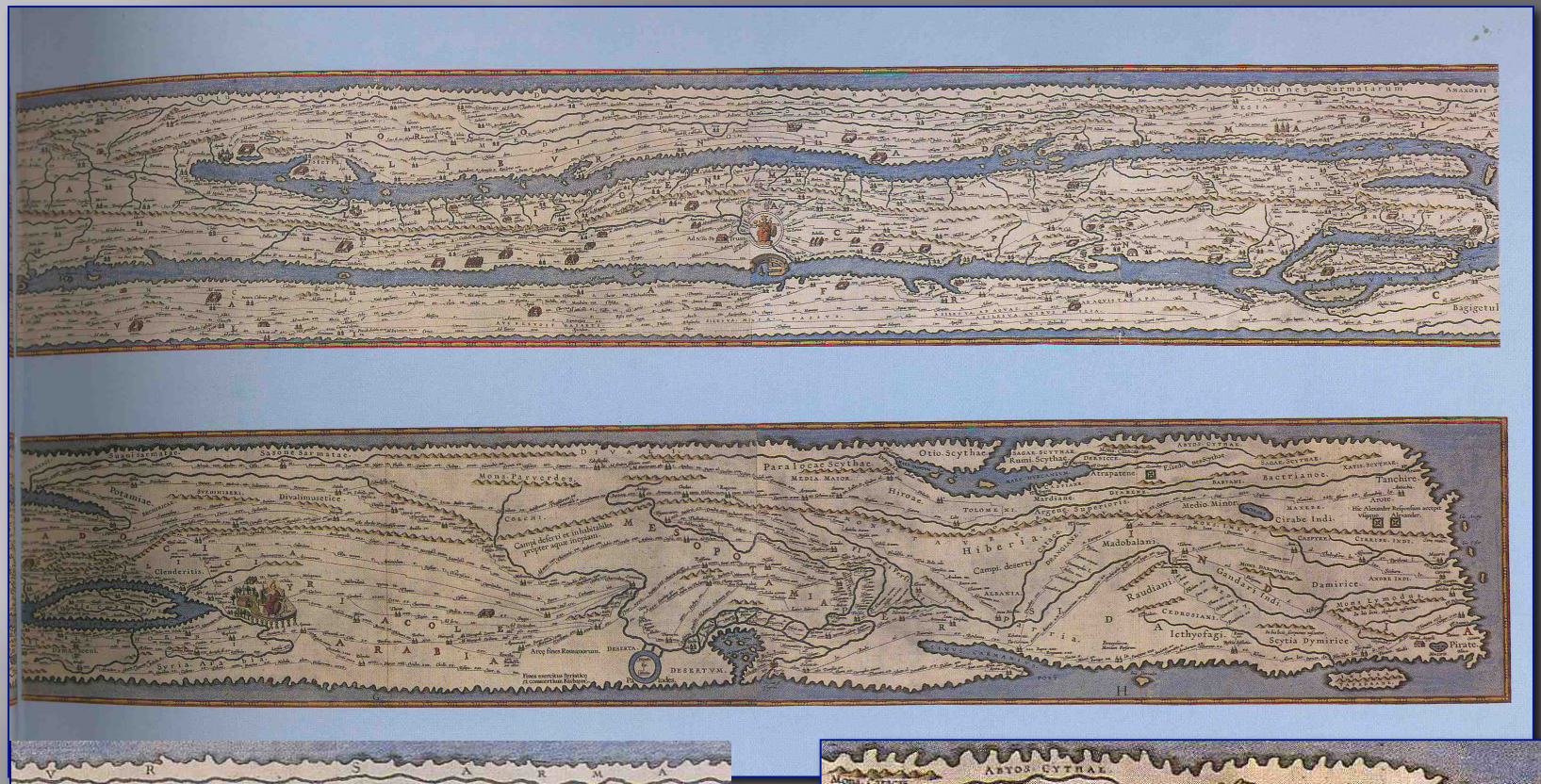
the only surviving example of an *itinerarium pictum,* a visual guide to the Roman road system. The assumption is that the map was drawn during the reign of Emperor Theodosius.

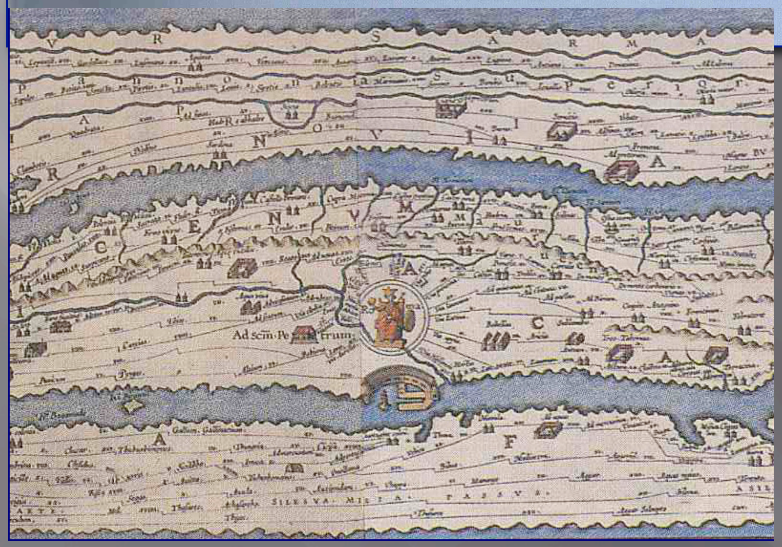
Peutinger Table contents overlaid on a modern map with GIS routes & places

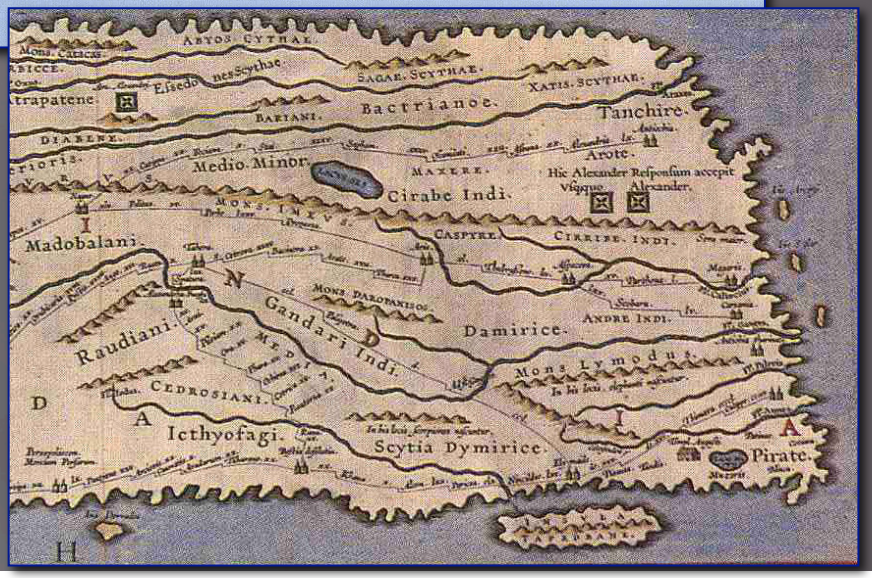




Segments from a copy of the *Tabula Peutingeriana*, engraved and printed at "half-size" by Johannes Moerentorf (Moretus) in 1598


Sarmatae
Saxone Sarmatae
Mons Paryoedes
Paraloeae Scythae
Otio. Scythae
Sagae. Scythae
Xatis. Scythae
Bactrianae
Tanchire
Medio. Minor
Cirabe Indi
Madobalani
Raudiani
Gandari Indi
Damirice
Cedrosiani
Ichthyofagi
Scytia Dymirice
Pirate
Hiberia
Colchi
Clenderitis
Arabia
Desertum
Ad scin Pe Frum


Ad scin Pe Frum


Abyos. Cythae.
Sagae. Scythae.
Xatis. Scythae.
Bactrianoe.
Tanchire.
Medio. Minor.
Cirabe Indi.
Hic Alexander Responsum accepit
Madobalani.
Caspyre.
Cirrabe. Indi.
Raudiani.
Gandari Indi.
Damirice.
Andre Indi.
Cedrosiani.
Ichthyofagi.
Scytia Dymirice.
Pirate.

Medieval Period

Ambrosius Aurelius Theodosius Macrobius, 395-423 CE #201



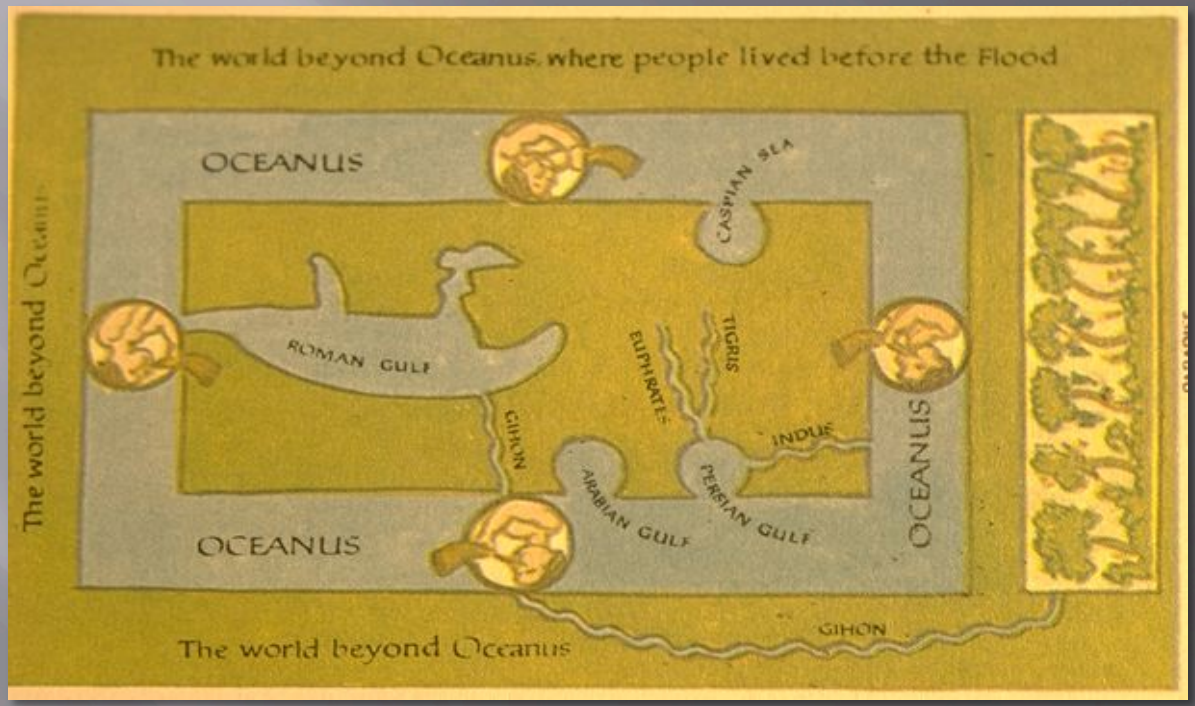
Macrobius wrote a *Commentary on the Dream of Scipio,* and many medieval manuscripts of this work contain zonal *mappaemundi,* or maps that indicate the earth's climatic zones

Cosmas Indicopleustes World Map, 9th century (#202)



Cosmas Indicopleustes World Map, 9th century, predicated upon the concept of a "flat earth" and oriented with North at the top and Paradise in the East (right) where the human race dwelt until the Flood when they were transported across the now impassable Ocean.

Cosmas Indicopleustes



St. Isidore of Seville, 600 - 636 CE

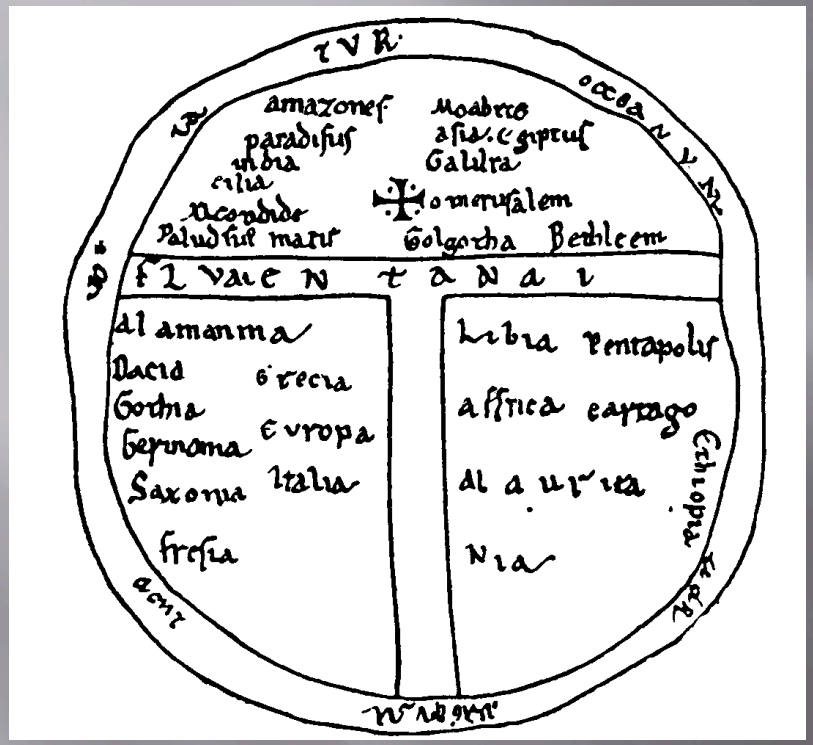
(#205)

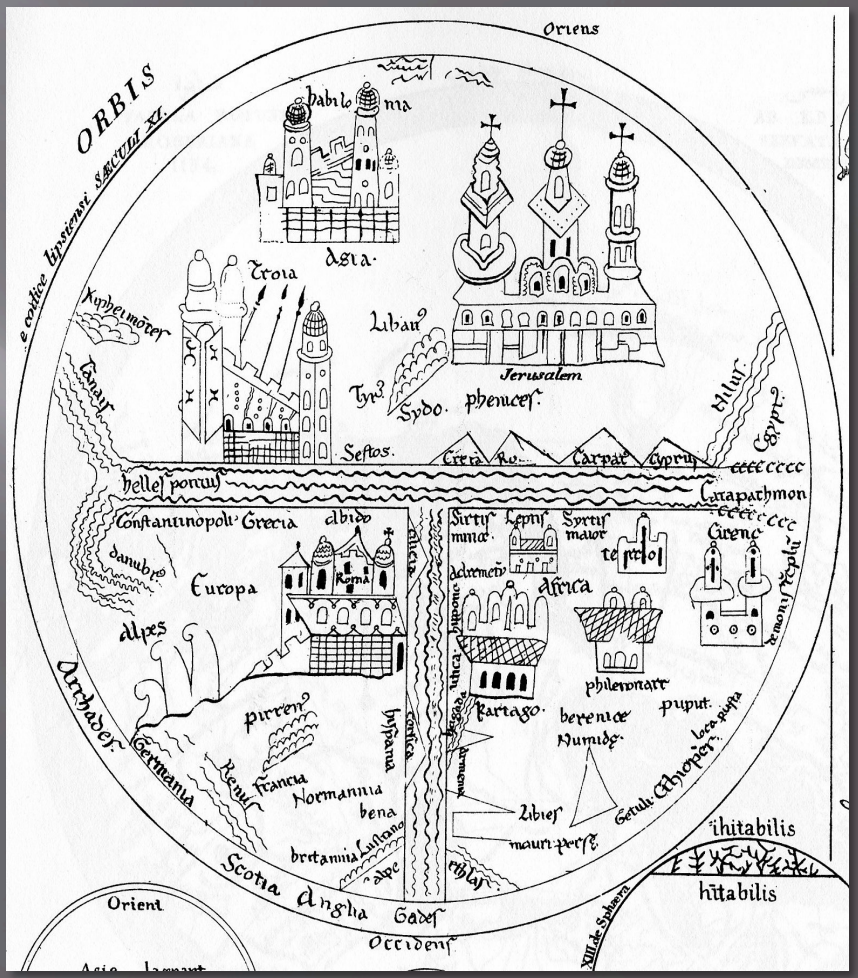
- *Etymologiarum sive Originum libri XX*
- This seminal work was initially compiled in manuscript form on vellum, with drawings in red and black. The *Etymologiarum* consists of 20 books on 175 leaves, including a T-O *mappamundi*, and was meant to be an encyclopedia that summed up the knowledge accumulated by early seventh century Europe.
- Ultimately became the FIRST PRINTED map (1472), after centuries of hand-drawn manuscript versions

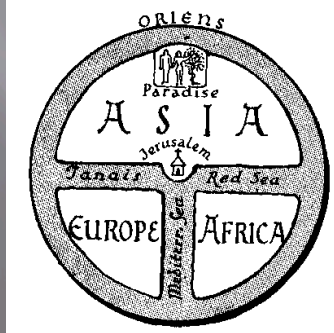


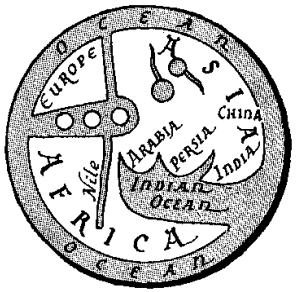
So significant was its impact that during the following centuries it served as a model of style and composition, as well as a primary source for many medieval writers.

Examples of T-O maps



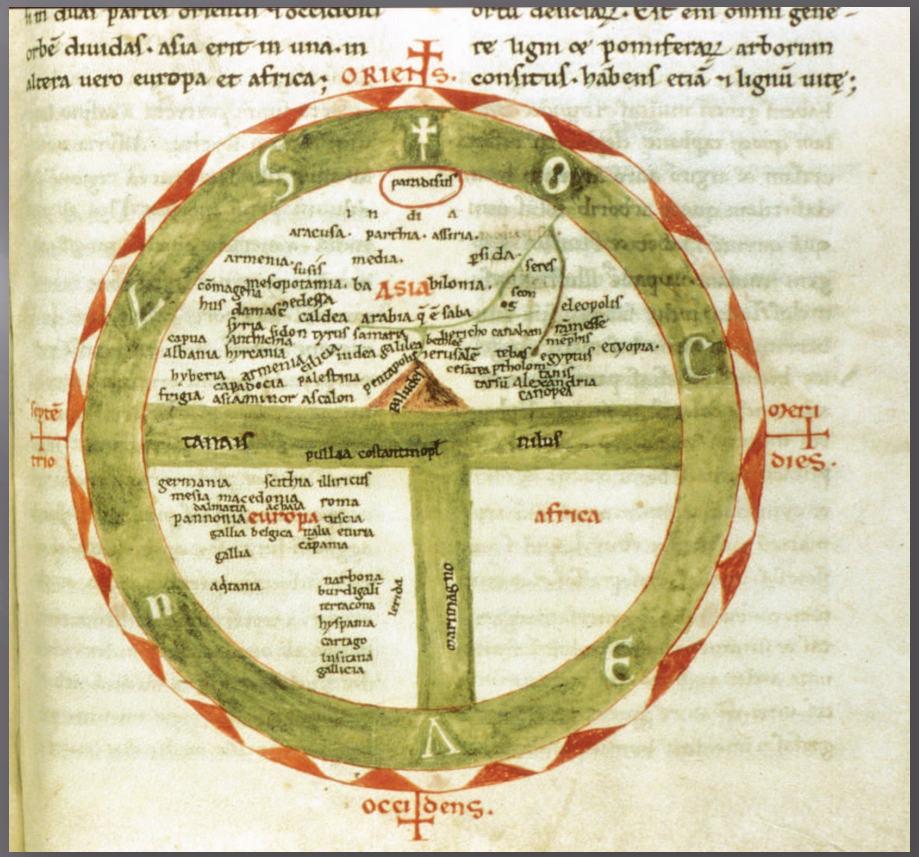






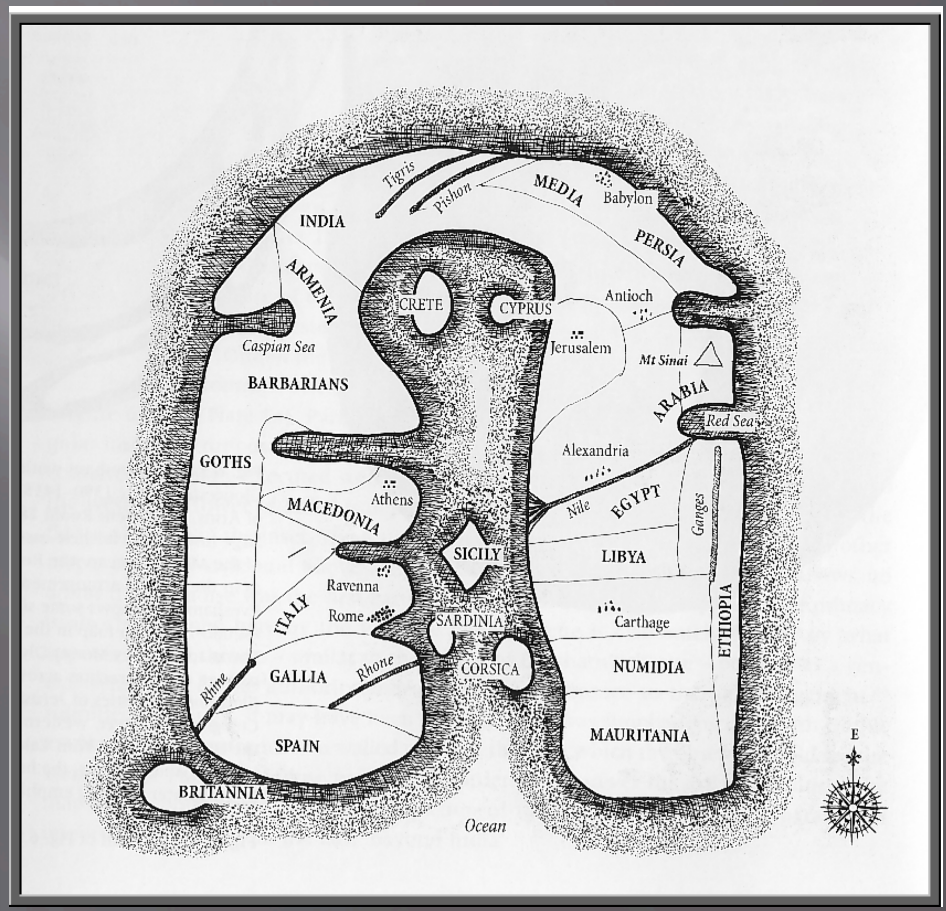
Examples of T-O maps



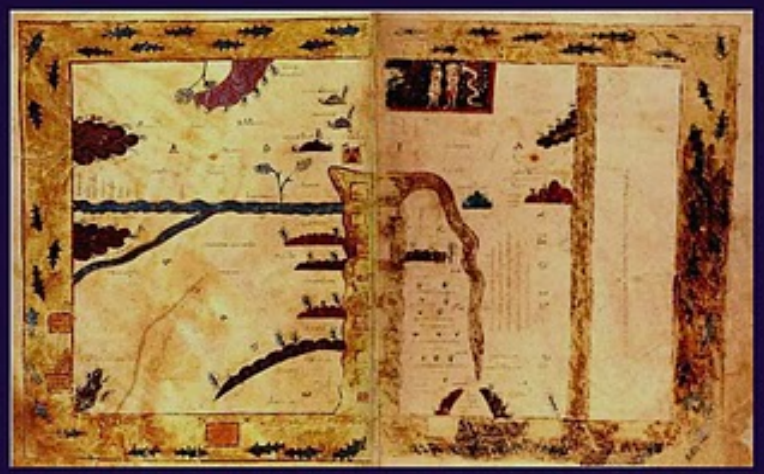


Map of Albi, 750 CE (#206)





Beatus of Liébana ca.776 (#207)



926 - Beato de San Miguel de Escalada



Beato de Turín. Siglo XII



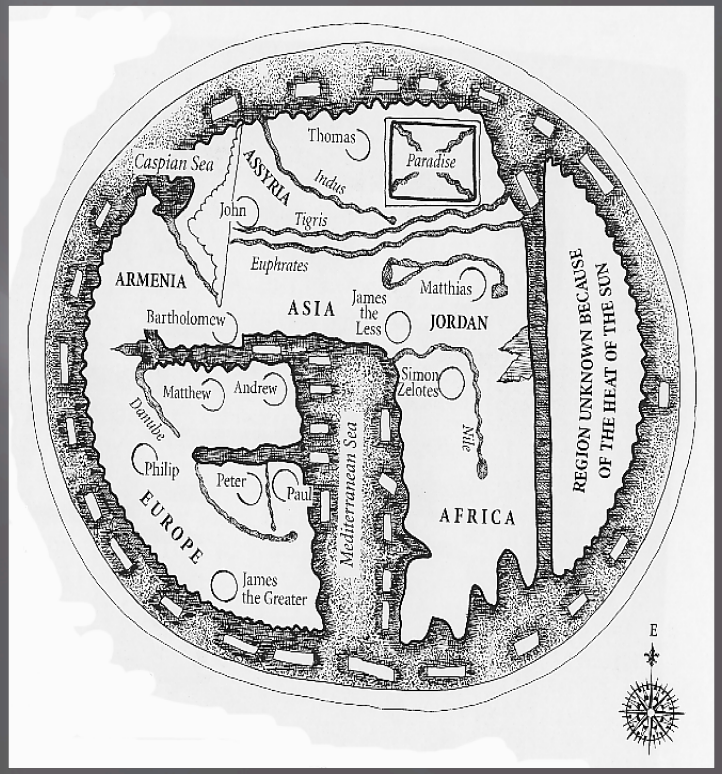
Beato de Manchester. Siglo XII



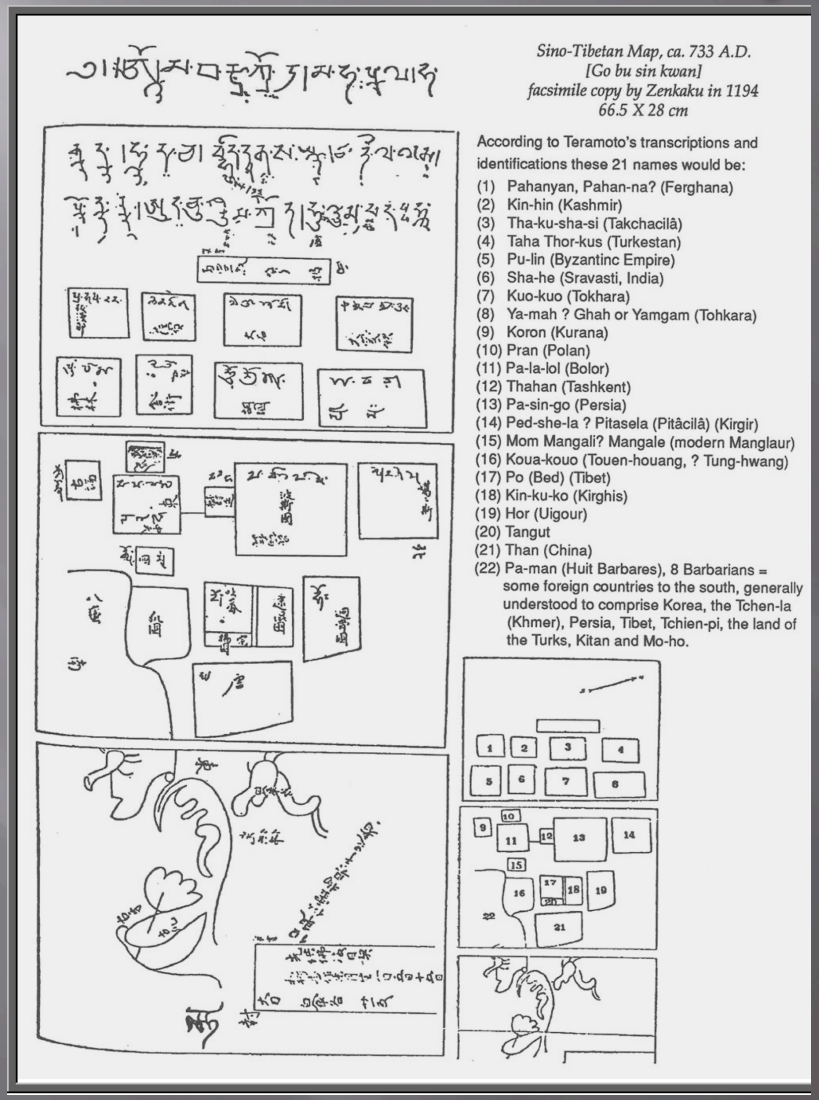
1220 Beato de las Huelgas

Beatus of Liébana ca.776 (#207)





Go bu sin kwan [Sino-Tibetan World Map] 733 (#208)

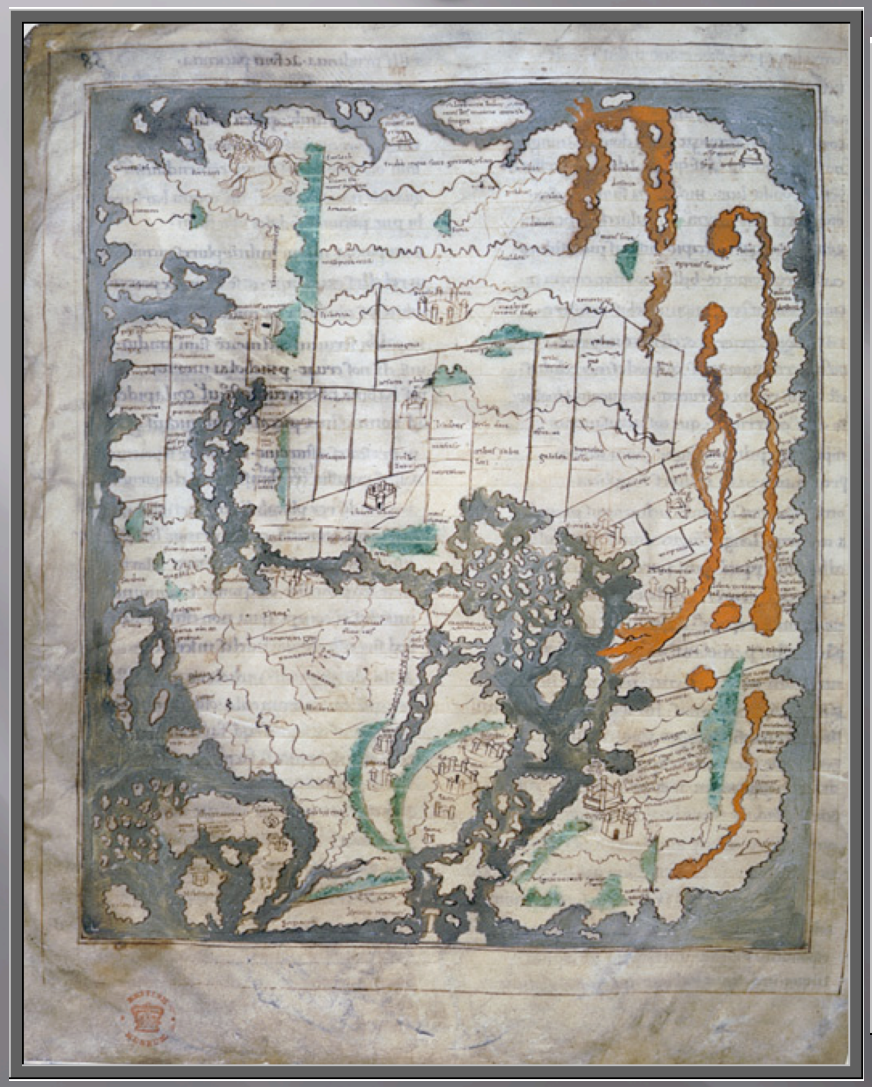


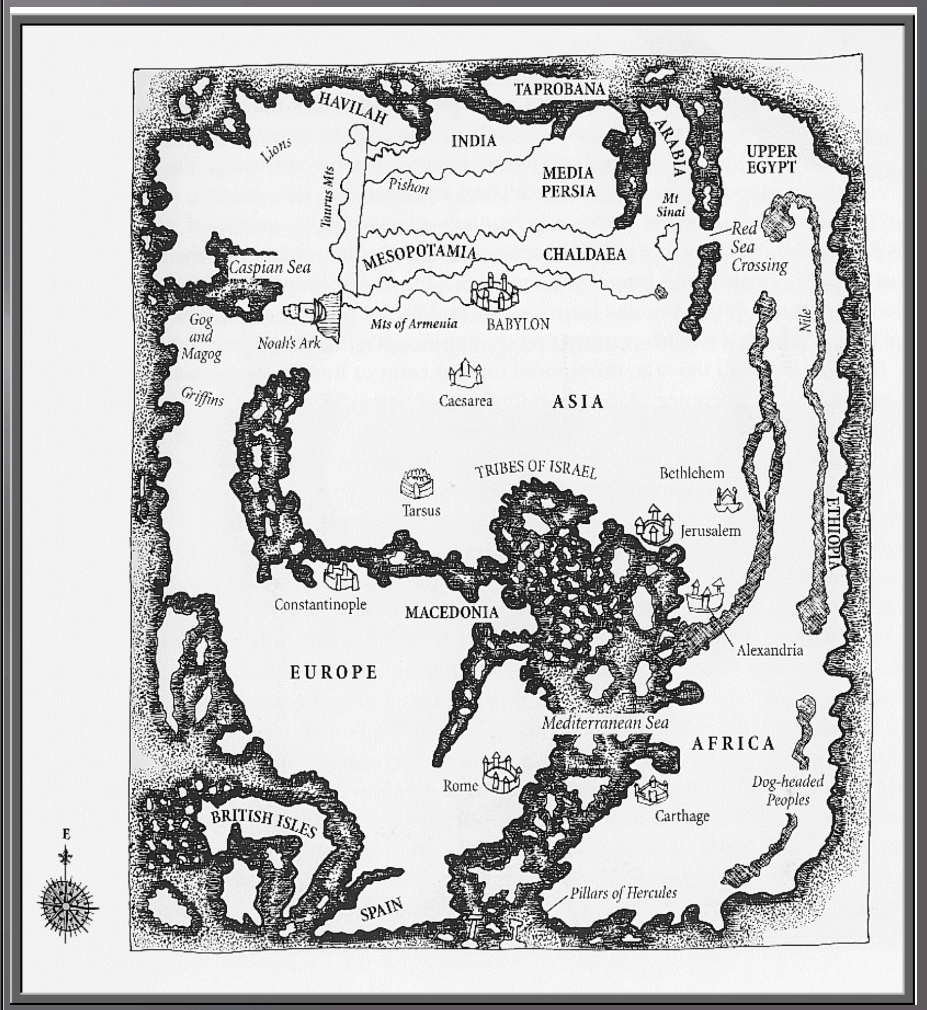
Sino-Tibetan Map, ca. 733 A.D.
[Go bu sin kwan]
facsimile copy by Zenkaku in 1194
66.5 X 28 cm

According to Teramoto's transcriptions and identifications these 21 names would be:

(1) Pahanyan, Pahan-na? (Ferghana)
(2) Kin-hin (Kashmir)
(3) Tha-ku-sha-si (Takchacilâ)
(4) Taha Thor-kus (Turkestan)
(5) Pu-lin (Byzantinc Empire)
(6) Sha-he (Sravasti, India)
(7) Kuo-kuo (Tokhara)
(8) Ya-mah ? Ghah or Yamgam (Tohkara)
(9) Koron (Kurana)
(10) Pran (Polan)
(11) Pa-la-lol (Bolor)
(12) Thahan (Tashkent)
(13) Pa-sin-go (Persia)
(14) Ped-she-la ? Pitasela (Pitâcilâ) (Kirgir)
(15) Mom Mangali? Mangale (modern Manglaur)
(16) Koua-kouo (Touen-houang, ? Tung-hwang)
(17) Po (Bed) (Tibet)
(18) Kin-ku-ko (Kirghis)
(19) Hor (Uigour)
(20) Tangut
(21) Than (China)
(22) Pa-man (Huit Barbares), 8 Barbarians = some foreign countries to the south, generally understood to comprise Korea, the Tchen-la (Khmer), Persia, Tibet, Tchien-pi, the land of the Turks, Kitan and Mo-ho.

The Cottoniana or Anglo-Saxon Map, 995 (#210)

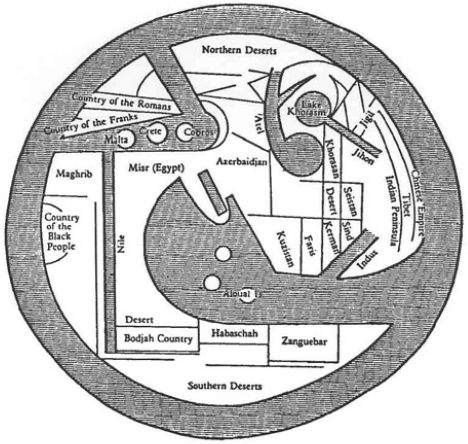




Ibn Hawqal's world map, Arabic, 980 (#213) oriented with South at the top

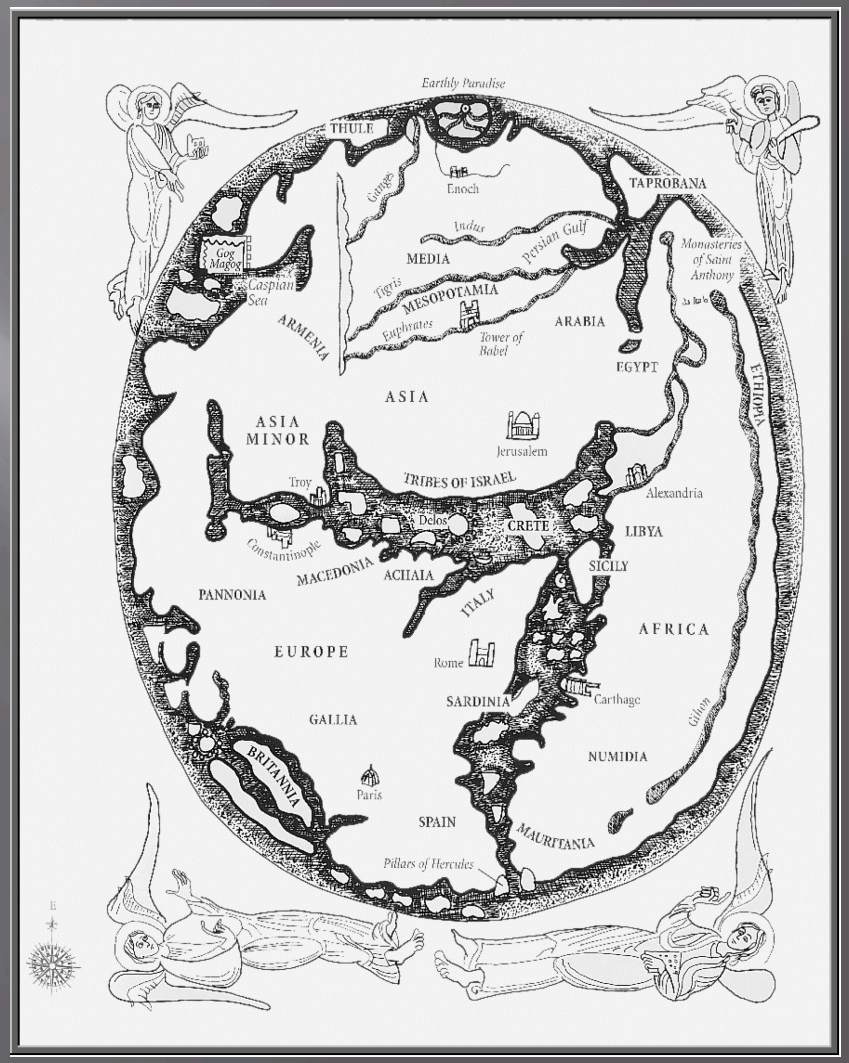






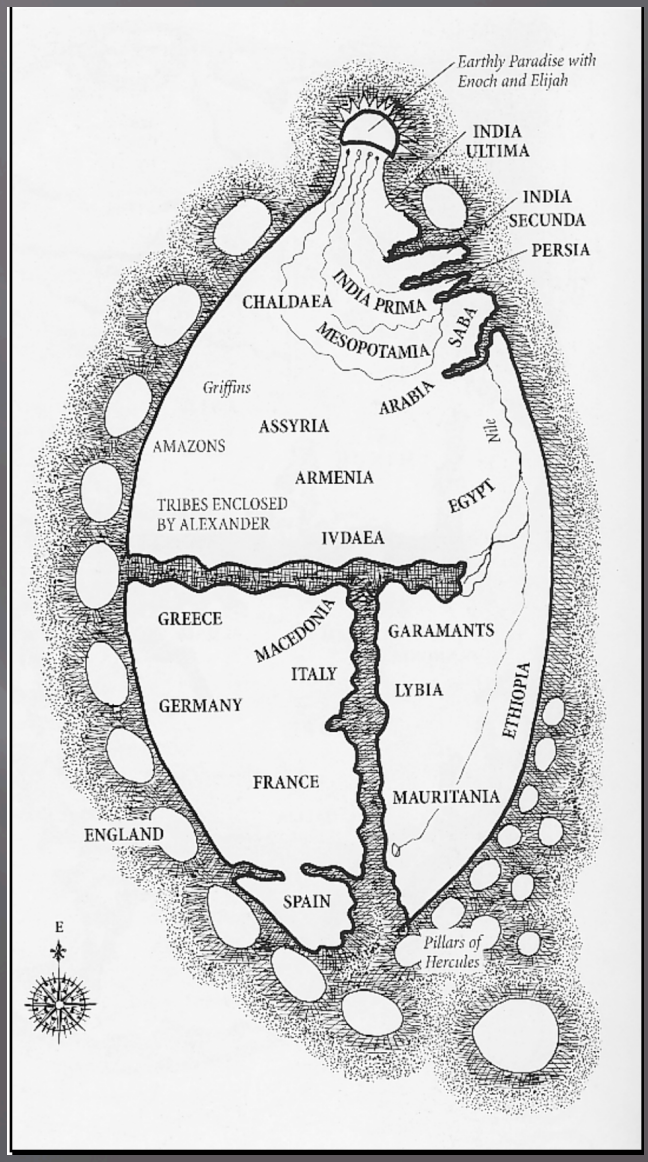
The Sawley Map, a.k.a. World Map of Henry of Mainz 1188 (#215)





Zonal world map from Liber Floridus, 12th century (#217)







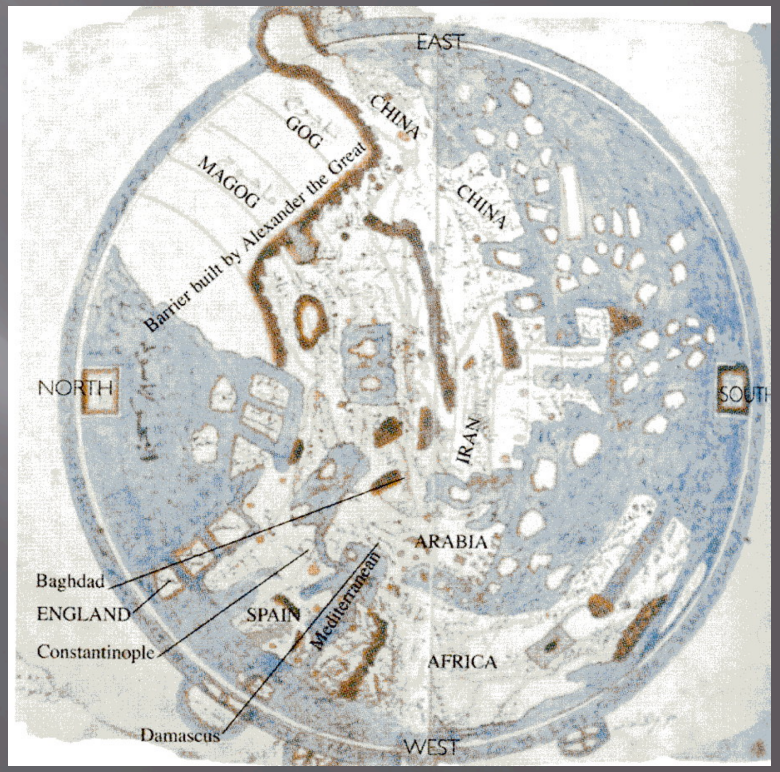
A copy of Al-Idrisi world maps from the Nuzhat al-Mushtāq fi'khtirāq al-āfāq a.k.a Tabula Rogeriana, originally oriented with South at the top, 1154 (#219)



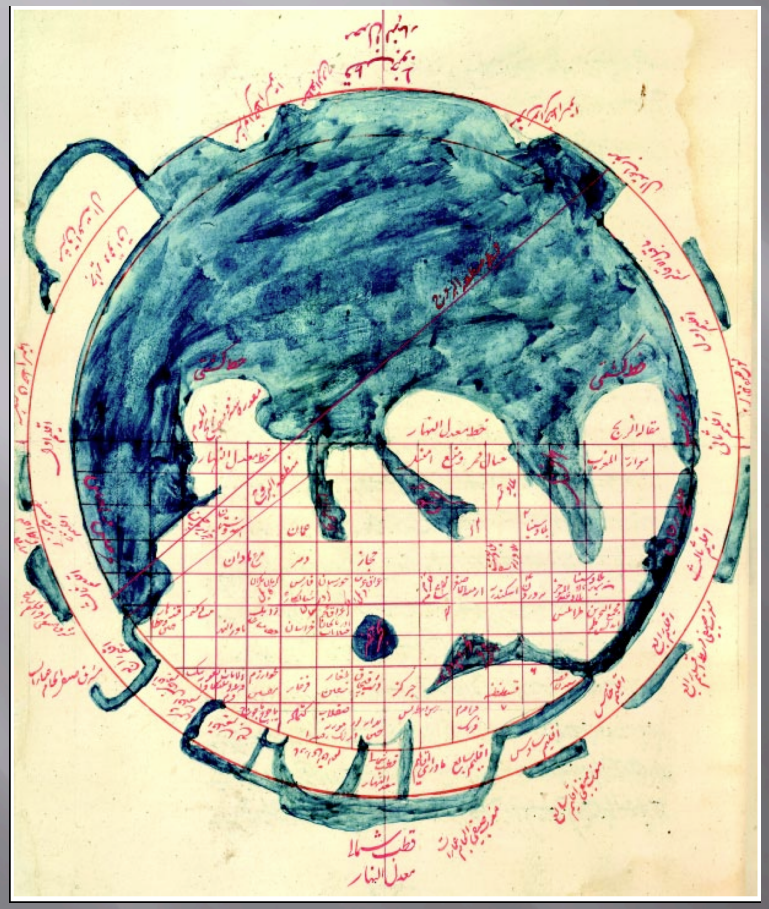
Ibn Sa'id's world map from the *Kitab al-bad' wa-al-ta'rikh*, 13th century

(oriented with East at the top) #221

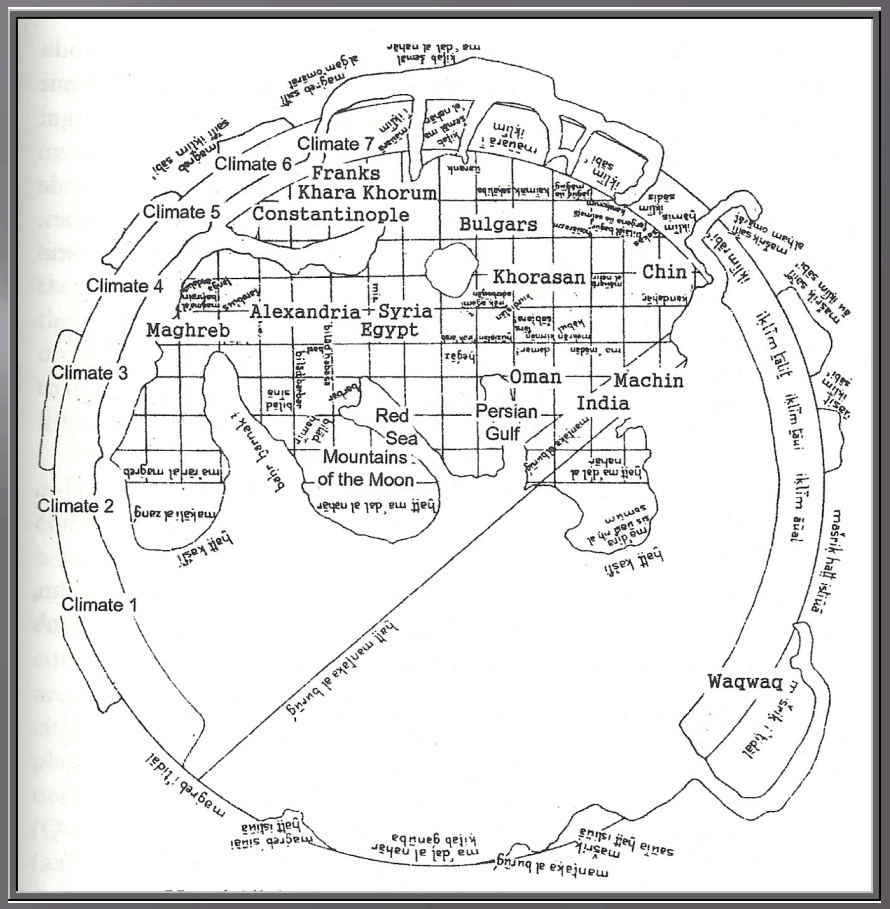




World map of Hamd Allah Mustawfi/al-Qazwini, 1258 (#222)



Oriented with South at the top



Re-oriented & translated with North at the top

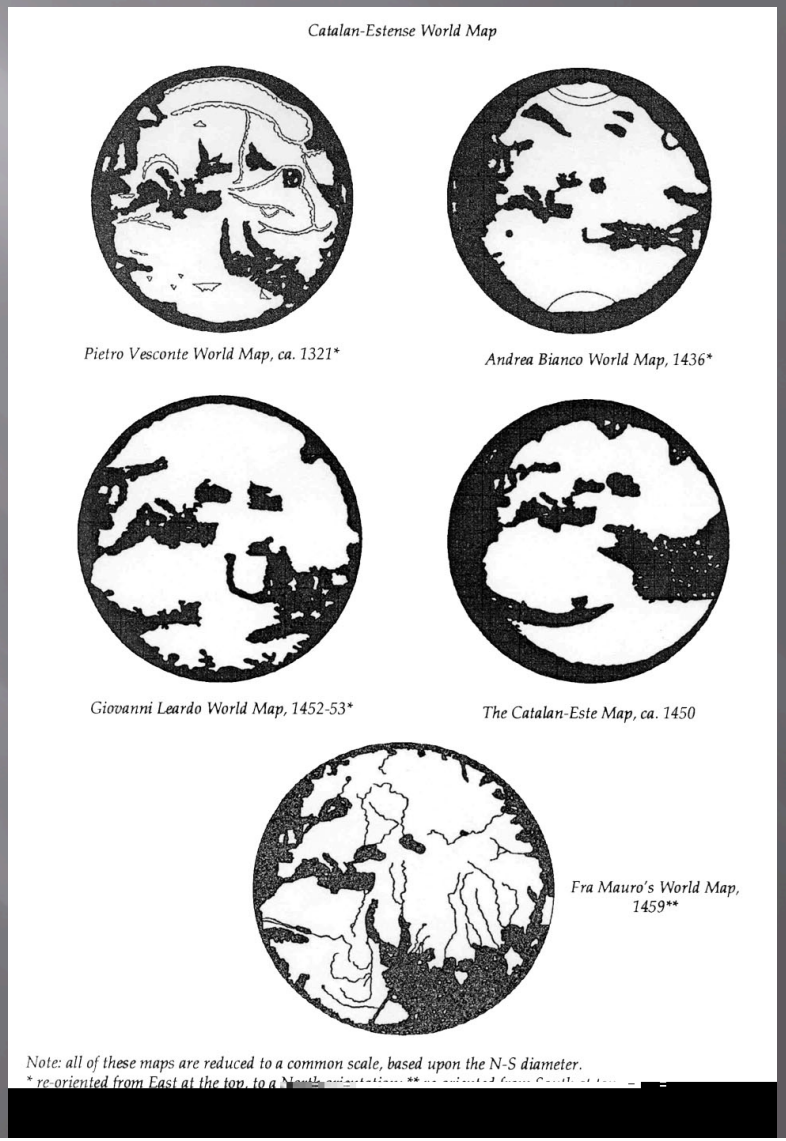
Pietro Vesconte, 1320 (#223)







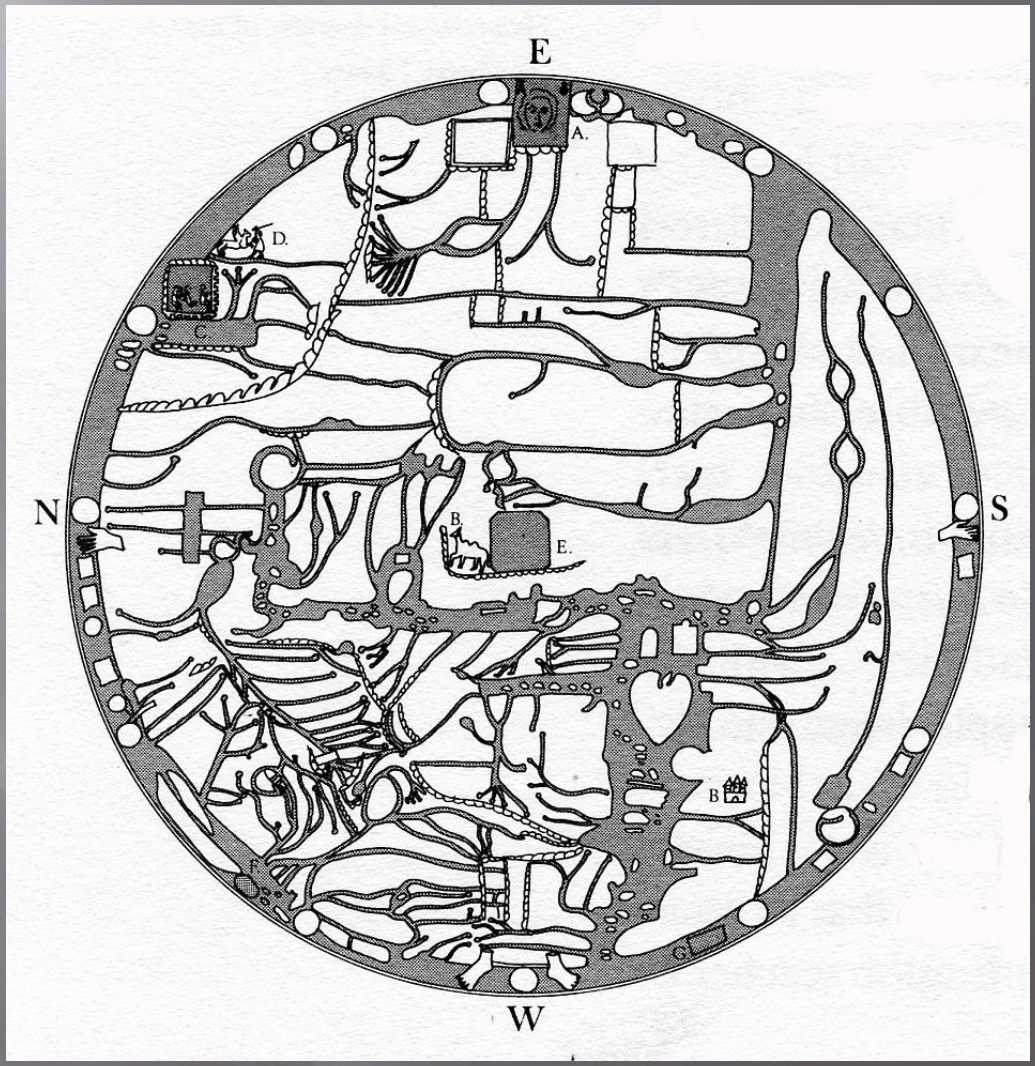
Late Medieval World Maps



The Ebsorf Mapamundi, 1234 (#224)



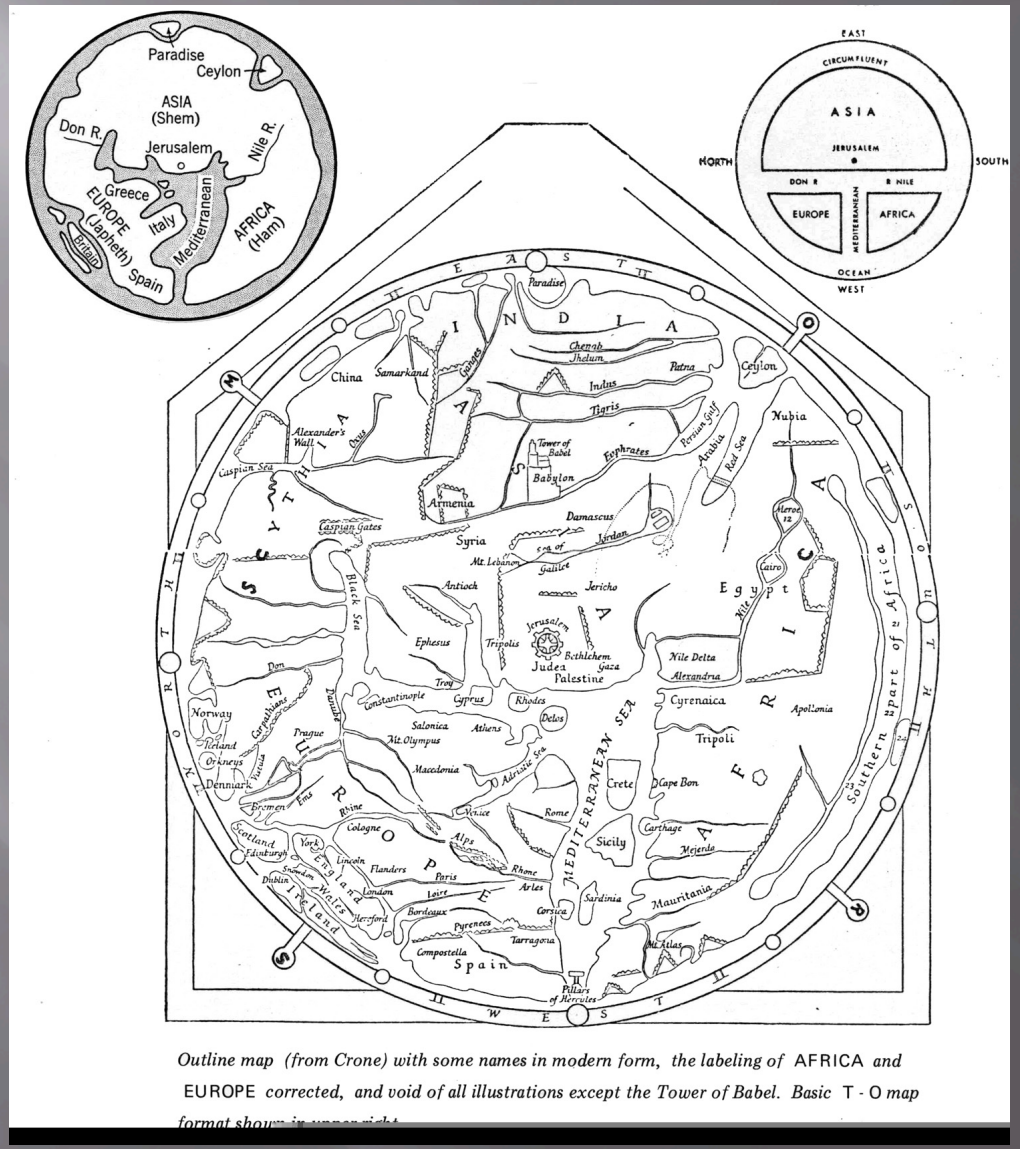
The Ebstorf in Outline



The Hereford Mappamundi, 1290 (#226)



Hereford in Outline



Outline map (from Crone) with some names in modern form, the labeling of AFRICA *and* EUROPE *corrected, and void of all illustrations except the Tower of Babel. Basic* T - O *map format shown in upper right.*





The Catalan Atlas, 1375 (#235)

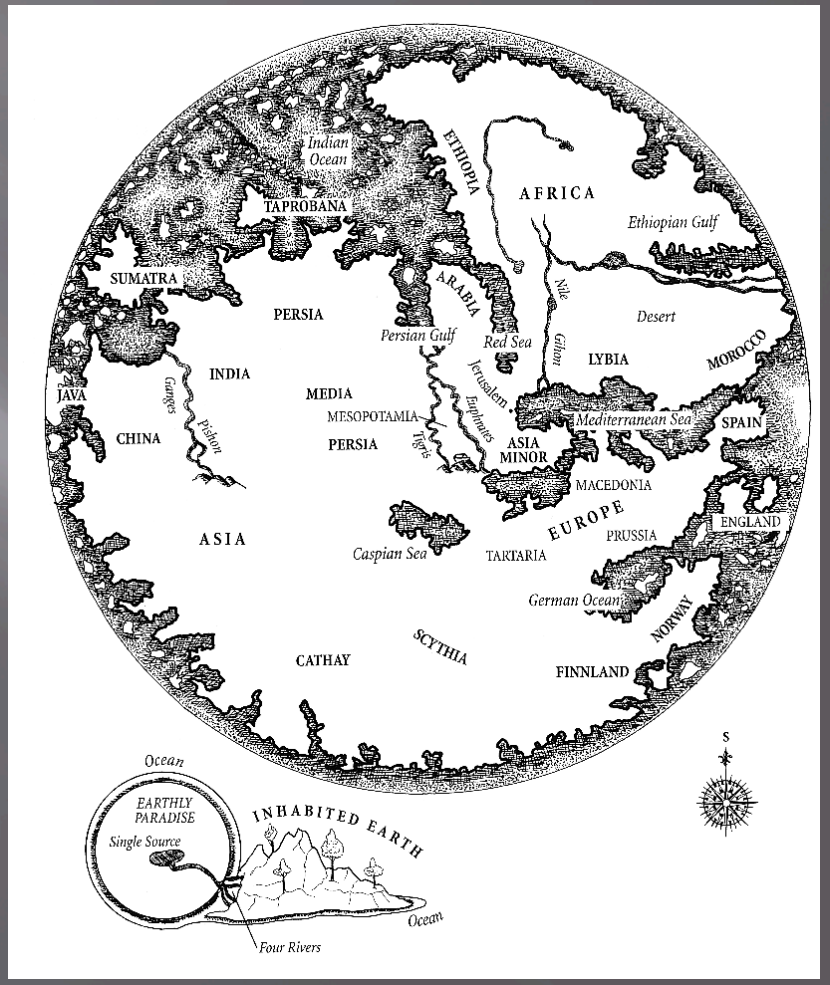


/_____116° _____/

Fra Mauro 1459 *mappamundi*

oriented with South at the top (#249)





/_____125°_____/

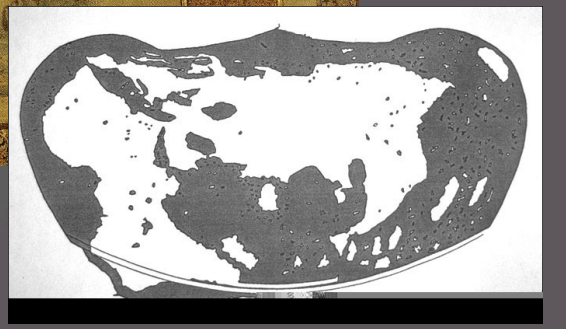
Wieder-Woldan Map 1485 (#255)



Henricus Martellus [Germanus], 1490

(#256)

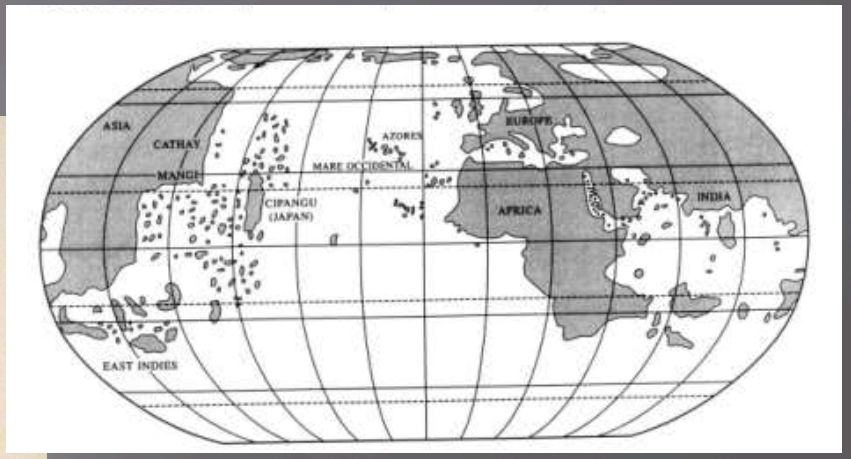


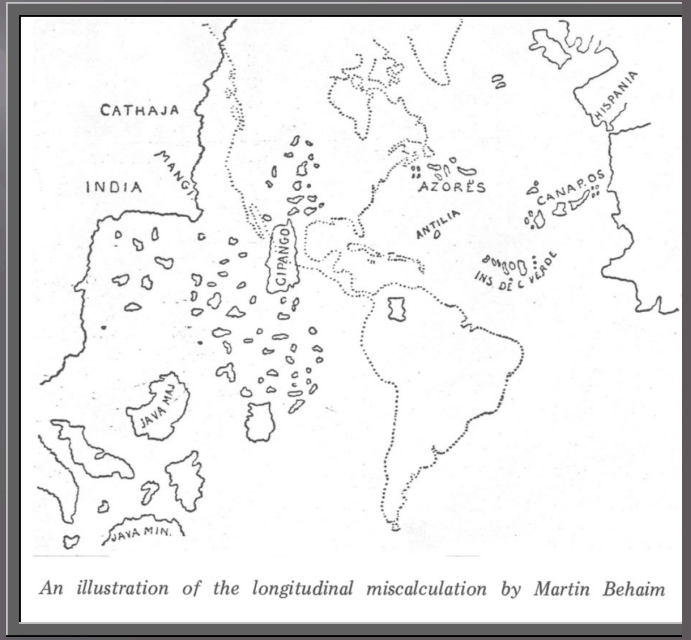


The Behaim Globe, 1492 (#258)



Oldest existing globe but covers only 234°





An illustration of the longitudinal miscalculation by Martin Behaim

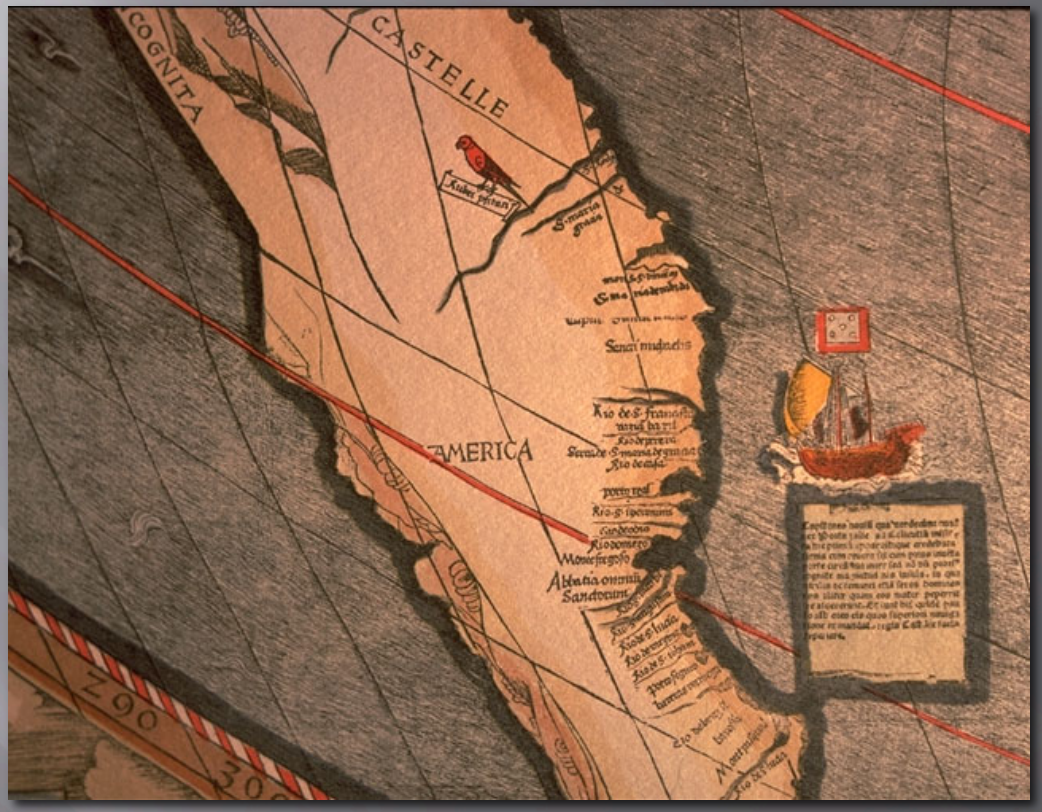
Martin Waldseemüller, 1507

(#310)



230° (real world longitudinal distance 131°)

America

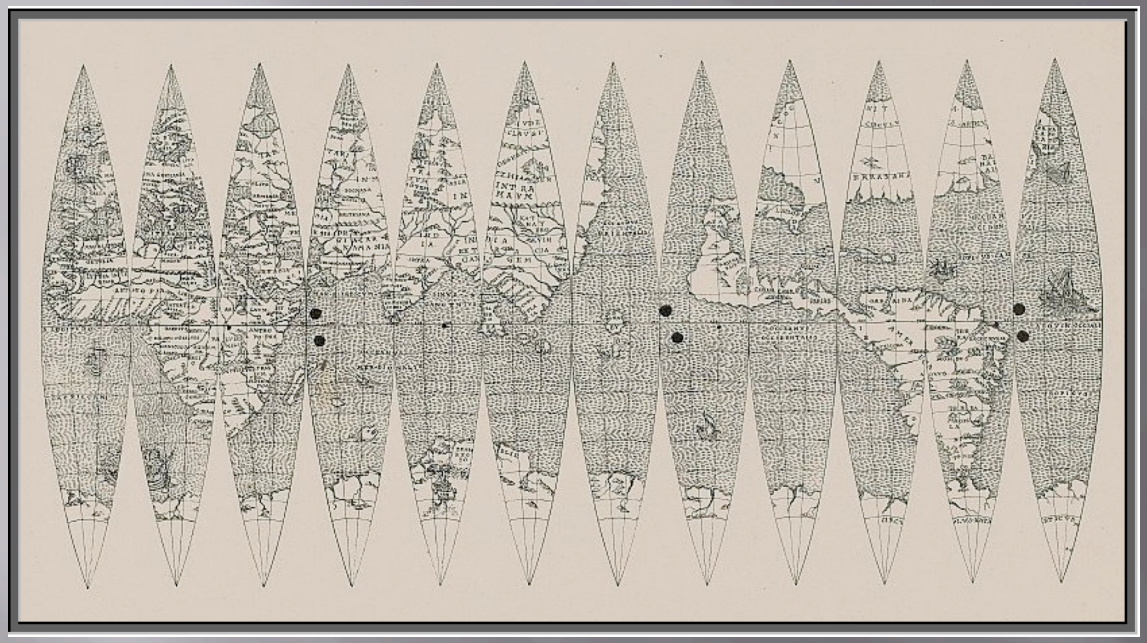


The first use of the name "AMERICA" placed on what is now South America

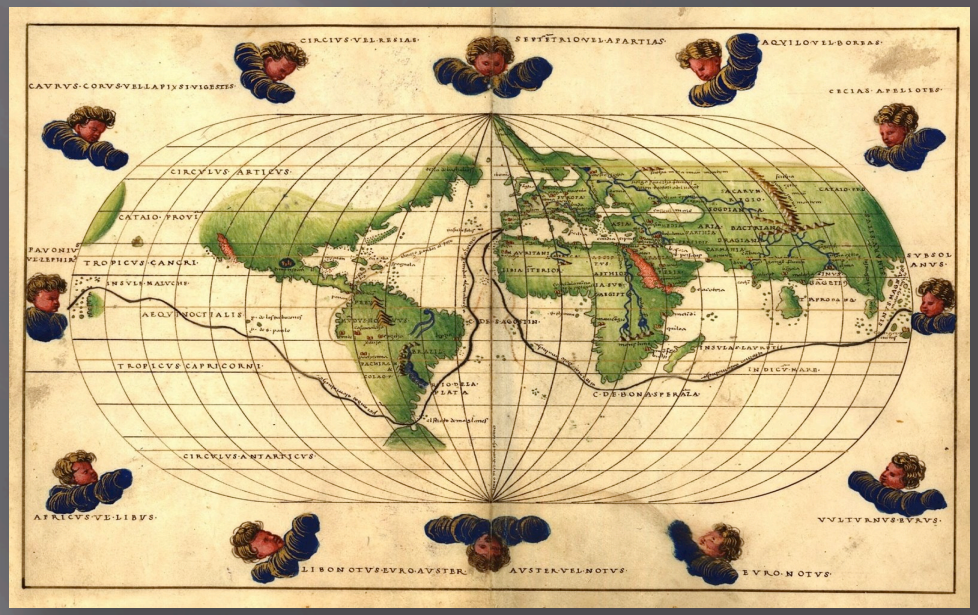
, Universale Descrittione Di Tutta la Terra Conosciuta Fin Qui, by Donato Bertelli, 1568



Note that North America is shown as attached to Asia

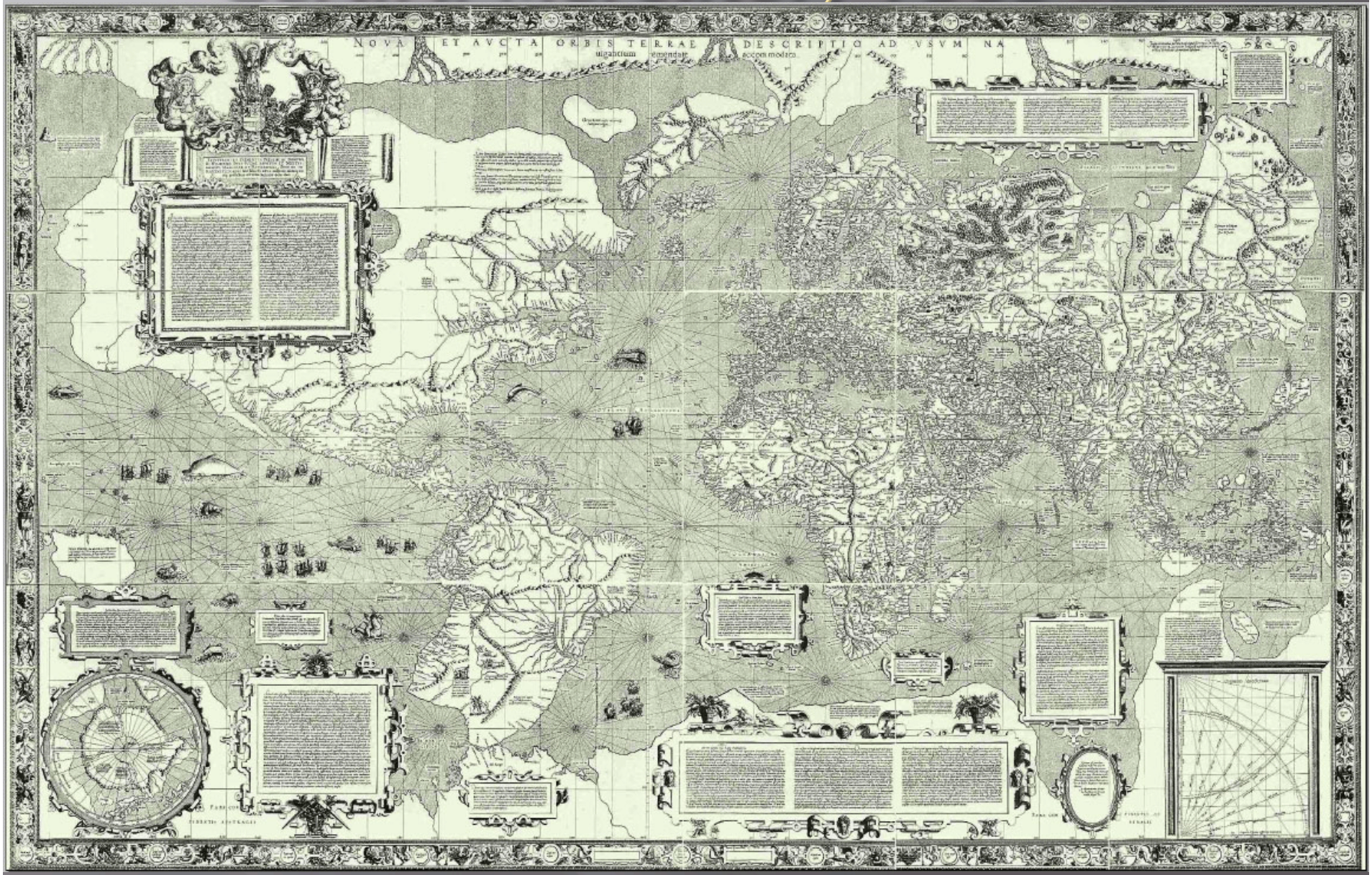


Bailly's Globe [Verrazano Globe] 1530 (#351)

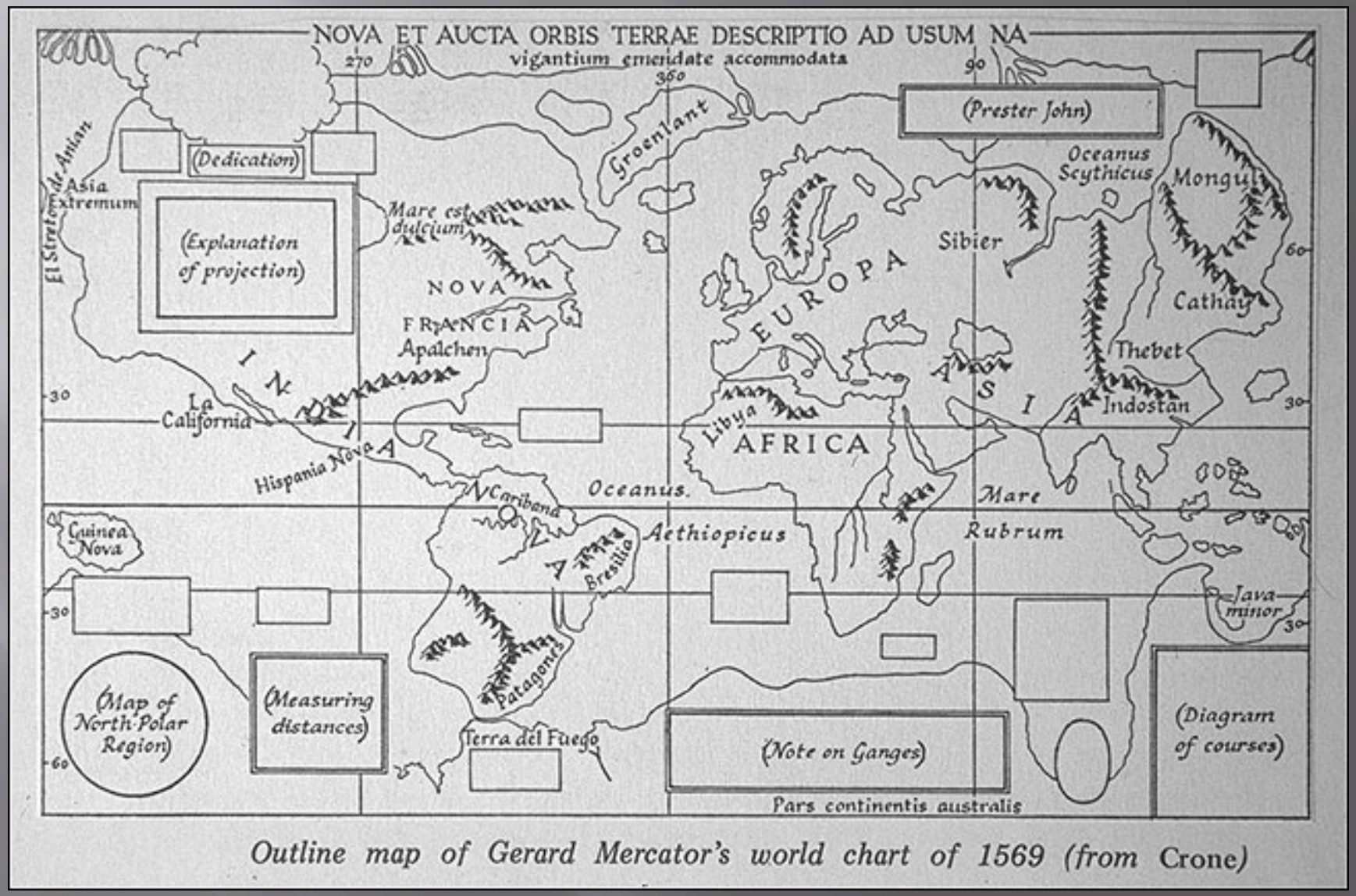


Battista Agnese World Map, 1544 (#371)
Showing Magellan's circumnavigation

Gerard Mercator, 1569 (#406)

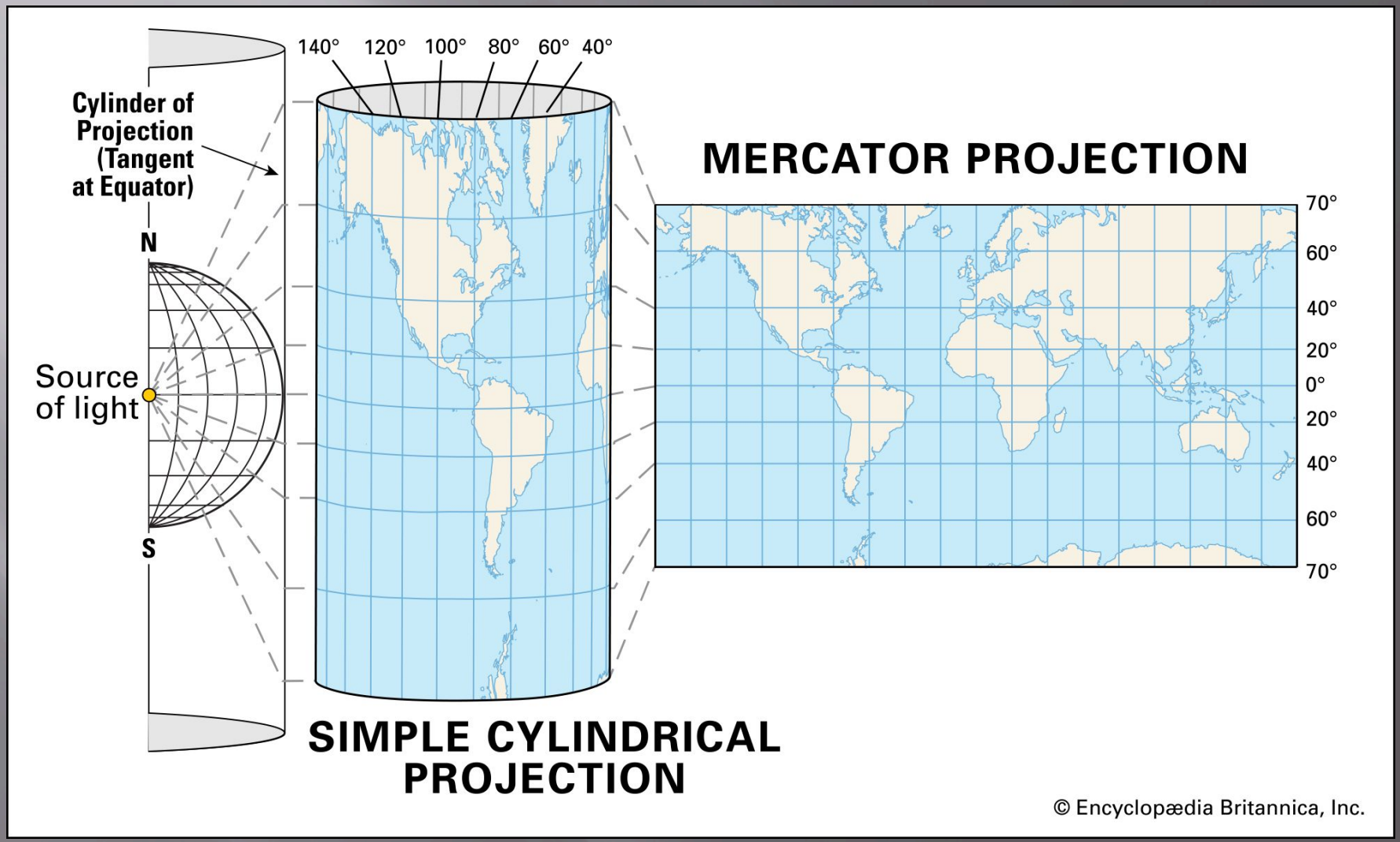


Mercator



Outline map of Gerard Mercator's world chart of 1569 (from Crone)

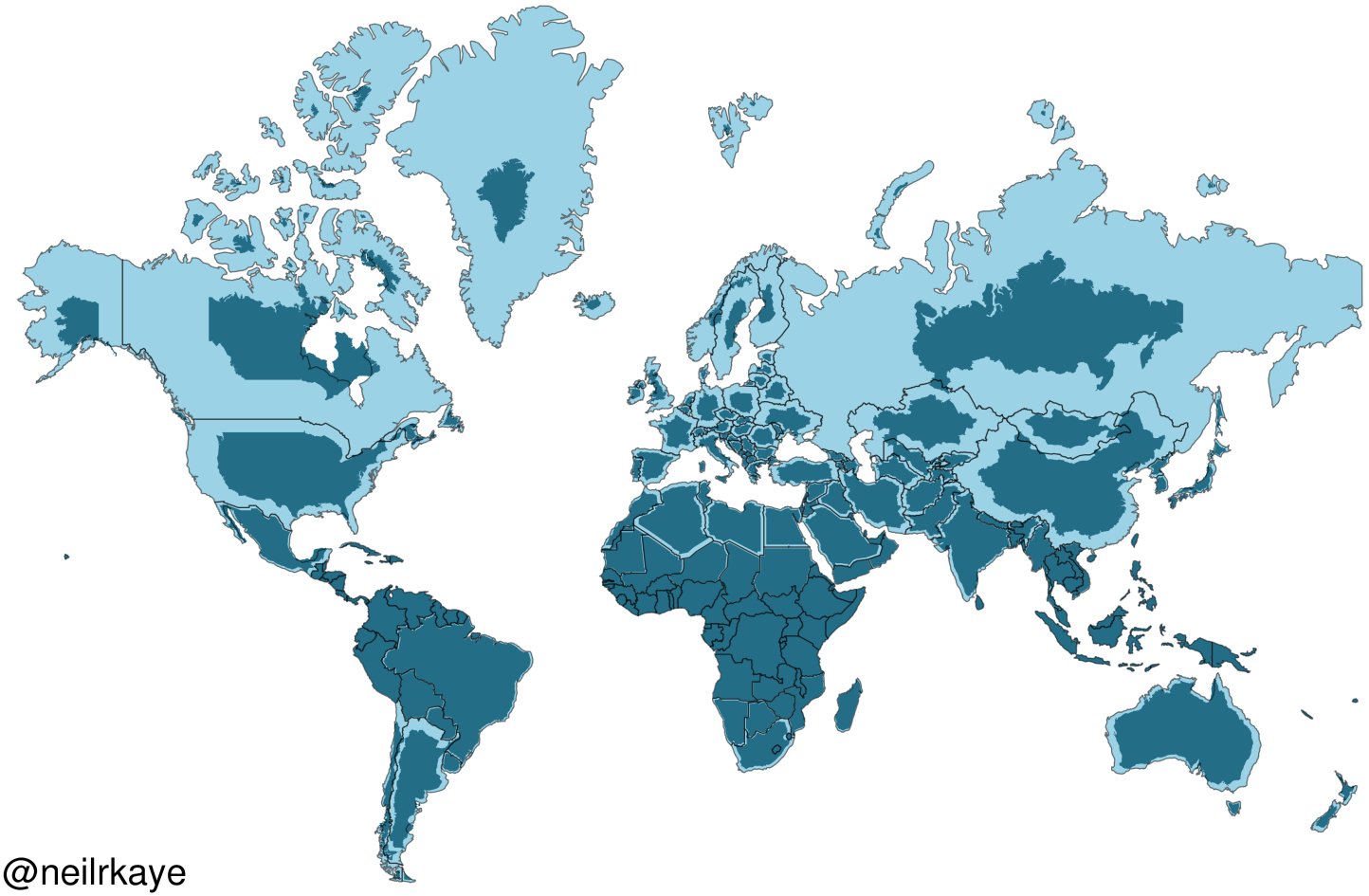
Mercator Projection



© Encyclopædia Britannica, Inc.

Use of the Mercator projection

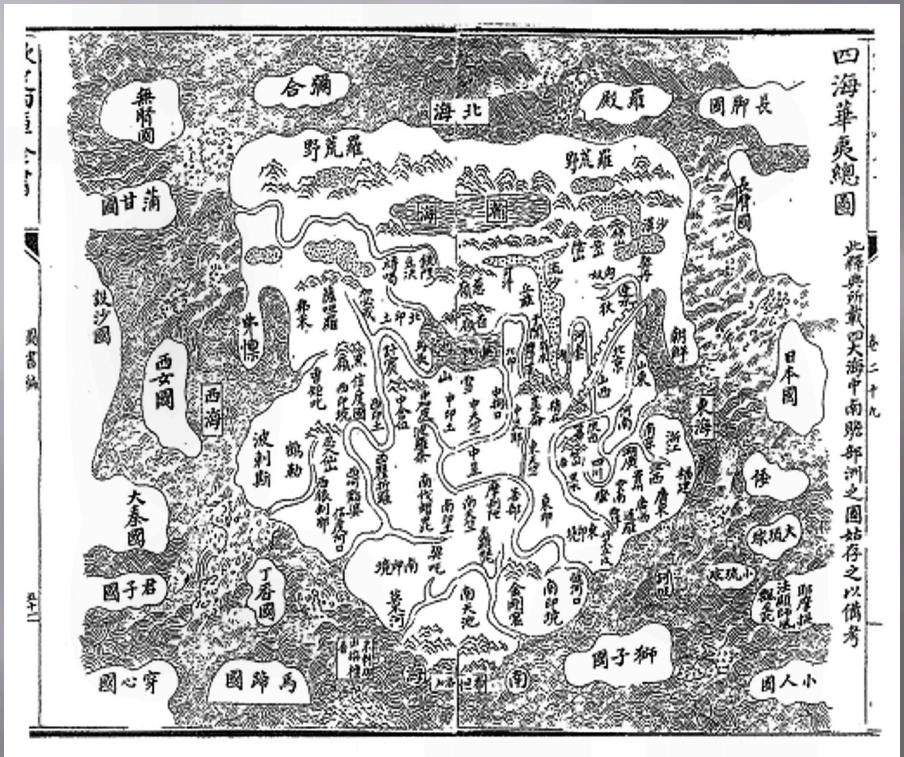
World Mercator projection with true country size added

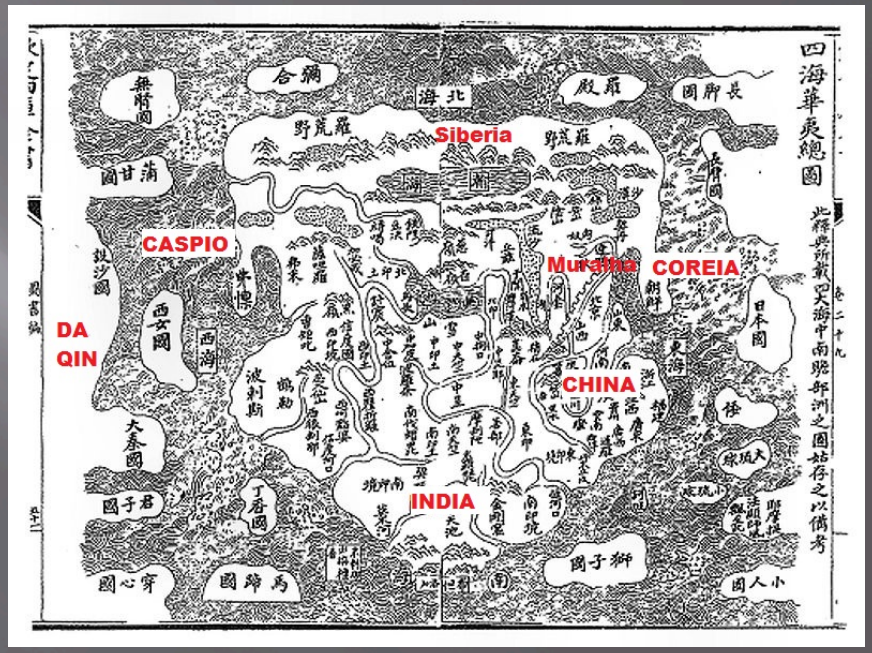


@neilrkaye

The Sihai Huayi Zongtu

[General Map of Chinese and Non-Chinese Territories within the Four seas], 1532





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





One of the first maps to show that reasonable shape of Africa almost 90 years before the Europeans knew

Ch'onhado from Chonha Chido
[Map All Under Heaven] (#231)







1 - China; 2 - The Mountain of Man's Origin;
3 - The Land of Superior Men; 4 - The Land of Women;
5 - Land Where It Is Hard To Live;
6 - Mountain of Fire Spirits [who control all fire];
7 - Great Circumference Mountain;
8 - All White Mountain; 9 - Pusang [America ?];
10 - Land of White People; 11 - India;
from H.B. Hulbert.

Complete Map of the Nine Border Towns of the Great Ming and of the Human Presence and Travel Routes of the Ten Thousand Countries, 1663



Nansenbushu Bankoku Shoka no Zu, 1710 (#510)



TIMECHARTS OF HISTORICAL CARTOGRAPHY

I. ANTIQUITY.

Chaldean Influence

600

Hanno. Circumnavigation of Africa



Scylax of Caryanda in India

500

Travels of Herodotus
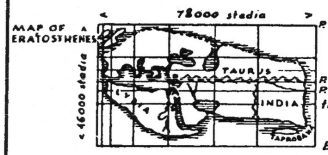
The idea of **SPHERICAL EARTH** AND THE **ZONES**
Pythagoreans, c.470 — Aristotle, (384-322) Eudemus, tropics at 24°



400

Pytheas: *measures the latitude of Massilia, reaches British Isles, records Thule*

Alexander the Great



300

Hypocrates – seven **climates** *(Eudoxus?)*

HIPPARCHUS cc. 150
- 360° system of lat + long. -es
- Determ of longitude
- Conic projection
- Astrolabe



200

Survey of Italy. Julius Cæsar





Pei Hsiu, 224-273
- *map of Chinese Empire (lost)*
- *principles of cartography*

100

DEVELOPMENT OF Lat.+Long. SYSTEM

IONIAN GEOGRAPHERS

Anaximander 611-546 *credited with first map*

DISK-SHAPED EARTH



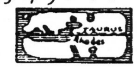
Hecatæus. *Geography*



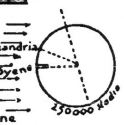
Democritus 450-360



Dicæarchus 326-296
- *Measurement of mountains*
- *Geography of Greece*



ERATOSTHENES 276-196 *measurement of Earth*





Crates. *Globe*

Posidonius, *measurement of Earth* 130-50



B.C. / A.D.

Agrippa. *Map of the Empire*
Strabo. *Geographia – main source-book* completed 19 A.D.

Pomponius Mela. *Cosmography*

CARTOGRAPHY

Pynax of Dionysius Periegetes

100

MARINUS of Tyre, *System of geography - plain chart* cc. 120

PTOLEMY (cc. 90-168)
- *Geography with 8000 place names*
- *Atlas of 28 maps*
- *Geocentric system of planets*
- *Projections*

200

Severus tablet of Rome

ROMAN

Solinus, *Memorabilia*

300

PEUTINGER TABLES

TIME CHARTS OF HISTORICAL CARTOGRAPHY

II. MIDDLE AGES

400 — St. Hieronymus, maps
Julius Honorius, Excerpta (map lost)
Paulus Orosius, Historiæ adv. Paganos (map lost)

Macrobius, Zone maps
Stadiasmus, Sailing directions
Marcianus, List of cartographers

500 — Cosmas Indicopleustes

DARK AGES OF CARTOGRAPHY

Mosaic map of Madaba

600 — Isidorus de Sevilla, Origines small maps

Ravennatus, Cosmographia (map lost)

700 — Albi map

Chia Tan, Map of China 30° square (lost)

St. Beatus, Commentarii in Apocalypsin

800 — Dicuil, Silver plates (lost)

Alkhwarizmi, Tables of lat. & longitudes
Abu Jafar of Khiva, Map of World (lost)

900 — T maps

Jacubi, Book of Countries, maps
Istakhri, Map of the World
Masudi, Meadows of Gold
Zarkala, Toledo–Bagdad "51°30'
Islam School atlases, geometric maps
Celestial globes

ARABIC MAPS

Cottoniana
Henricus of Mainz, Imago mundi

1000 — CHRISTIAN MAPS

1100 — Guido of Brussels
Lambert of St. Omer, Map with zones 1120

EDRISI MAP 1154

ROMANESQUE MAPS

1200 — MATTHEW PARIS 1200–59 { World map / Maps of England / Road maps to Jerusalem

COMPASS IN GENERAL USE

MARCO POLO'S TRAVELS

Hereford map by Richard de Haldingham
Ebstorf map, 1280

Pisan chart, 1280
Carignano, 1300
Pietro Vesconte 1311–27
Dulcert 1339

1300 — REVIVAL OF PTOLEMAIC CHARTS excellent delineation of Mediterranean

Catalan Atlas Deccan penins. 1375
Atlante Mediceo

Vesconte 1320

Buondelmonte, Isolario Aegean.
Andrea Bianco Atlas 1436

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Latin translation of Ptolemy, (J. Angelo) Par. mer. 1427
Claudius Clavus (Swartho), Map of Scandinavia
Benedictine maps, and "Cusa" map, Central Europe
Leardo map, 1448
Fra Mauro map, 1459 } circular World maps

PORTUGUESE TRAVELS

RAISZ

GERMANY, NETHERLANDS

PTOLEMY EDITIONS

over 60 editions mostly with addition of "Tabulae Modernae"

Nicolaus Germanus *introduces trapezoidal (Donis) projection and adds modern maps to his Ptolemy ms. (Italy) 1466–82.*

Ulm Ptolemy. *N Germanus. Woodcuts. 1482–86*

Eichstätt and Martellus version of "Cusa" map of Central Europe, 1490

Martellus Germanus, *World showing Portuguese discoveries*

BEHAIM GLOBE, *first detailed terrestrial globe based on Ptolemy*

Etzlaub map *of Germany, showing roads, 1492+1501, etc.*

Stabius-Werner, *projection*

J. Ruysch, World 1508

WALDSEEMÜLLER *San Dié 1470–1527*
- *1507 WORLD MAP*
- *Wall map of Europe 1511*
- *STRASBOURG PTOLEMY 1513, 20 modern maps*
- *Carta marina 1516, 12 sheets*

J. Schöner, *Globes of 1515+1529 showing Terra Australis*

Petrus APIANUS. *Cosmographia 1524* *proj.*

Jacob of Deventer, *Netherlands 1536–39*

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Sebastian Münster *Cosmographia 1544*

Joh. Honter, *Rudimenta cosmogr. 1546*

Caspar Vopel, *Cologne, Globes, etc.*

Mercator, *Europe 1554*

Diego Gutierrez, *America. Antwerp 1562*

Philip Apianus: *Bayerische Landtafeln, 1568. 1:144,000*

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Hogenberg-Hofnagl, *Civitates Orbis Terrarum*

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Bertius. *Atlases* *1600–1630*

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W. Janszon BLAEU. *Atlas Novus. 6 v. 1631+45*

J. JANSZOON. *Nieuwe Atlas. 3 v. 1638+53, etc.*

LATER DUTCH MAPMAKERS

Visscher family. 1631–1709. succ. by Peter. Schenck. 1660–1715. De Wit family. Goos family 1616–91. Danckerts. Allard and others all in Amsterdam

Jan + Cornel. BLAEU. *Atlas Magnus 12 v. 1554+'62 etc*

SEA ATLASES

Doncker 1559, '66, 76, 97, 1712
Van Loon, 1661, etc.
P. Goos, 1666, 92, etc.
All showing American charts

"
Van Keulen, 1681, etc.
De Hooge, 1693, etc.

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Homan house founded Nuremb^g 1692

Allard's Atlas, 1693

CHARTS

Robt Dudley. *Arcano del Mare. Firenze, 1647*

Survey of Ireland. *ms.*

ROAD MAP

Seller's. *Charts* 71+75+87

Ogilby's *Britannia* 70

R. Blome 73

Se^ller; 1671, 75, 87, etc. Collins

E. Halley. *Magnetic chart* '83

English Pilot. 1687 etc.

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Sheldon's *tapestry maps*

Morden. *Geography. maps, 1700*

OTHERS

1470

1480

1490

Conrad. Türst; *Helvetia*

1500

Piri Reis. *Chart of Atlantic 1513*

1510

Nic. Claudianus, *Bohemia '18*

1520

B. Wapowski, *Poland*

Ziegler: *Scandinavia 1532.*

1530

Tschudi, *Helvetia 1538*

OLAUS MAGNUS, *Scand.* '39

Anton Wied. *Muscovy '42*

1540

ENGLAND

Lily, *England 1546*

Herberstein, *Russia '49*

1550

Indian Ocean, *Arab chart* '54

Lhuyd, *England '69*

1560

Lazius, *Austria + Hungary* '61

Jenkinson, *Russia 1562*

J. Le Moyne, *Florida, 1565*

1570

Fabricius, *Moravia '69*

Chr. SAXTON *County* c. 1542–1611, *maps* '74–78

1580

John White. *Virginia, manusc. '85*

C. Molyneux. *Globes, table*

J. Norden. *Estate surveys*

1590

Oeder, *Saxonia* 1:144000 1586–1607

Edward WRIGHT. *World in Mercator proj. 1600*

1600

A. Bureus, *Sweden*

Timothy Pont *Scott'd '08*

J. Speed, *Theatre of Great Britaine, 1611*

Simancas (Spain) map. N.Am.: 10

Smith-Powell { *Virginia 1612, New England, 1616*

CHAMPLAIN { *Acadia 1607, St. Lawrence 1612, New France 1632*

1610

1620

Schickhart. *Württemberg (triangulated) 1:130000 1624–31*

1630

W^m Woods, *Massachusetts 1635*

1640

Beauplan. *Ukraine 1648*

J. Mejer of Husum, *Denmark* 1650

1650

M. Martini S.J. *China all. '55*

I. Voss, *De Nili '5*

1660

Godunov, *Russia + Siberia*

A. Hermann, *Survey of Md + Va.*

1670

Jesuit map of *L. Superior '72*

L. Joliet, *Mississippi R.* '74

1680

Hennepin, *North America '83*

1690

Remezov: Atlas of Siberia

1700

INVENTIONS & DISCOVERIES

1470 ENGRAVING AND PRINTING

1480

1490 Discovery of AMERICA

Way to INDIA

1500

1510 Albuquerque *in India*

1520 MAGELLAN'S *voyage*

GEMMA FRISIUS *triangulation*

1530 J. Fernel, *Length of arc*

1540 Cartier *on St Lawrence R*

Orellana, *on Amazon R*

Copernicus, *Solar system*

1550

1560

1570 Digges, *theodolite 1570*

DRAKE'S *voyages*

1580 Frobisher } N.W. Passage

Davis

1590 Plane table

Barents3; *NE. Passage*

1600

1610 Hudson's *voyages*

Champlain's *voyages*

Snellius, TRIANGULATION

1620

1630

1640 Tasman's *voyage*

Barometer (Torricelli)

1650 Cossacks reach Irkutsk

1660 *Pendulum clock*

1670 PICARD { *length of arc, longitudes, use of telescope*

Joliet + Marquette, *Mississippi R.*

1680 Newton, ◯ *spheroid*

1690

1700 *Kamchatka, 1696*

ITALY, SPAIN, PORTUGAL

PORTOLAN CHARTS

Benincasa house *in Ancona fl. 1435–1508. P. Roselli of Majorca fl. 1460*

Freducci House *in Ancona 1497–1556. MAIOLO house in Genoa 1504–86*

G. Calapoda *in Crete c. 1550. BATTISTA AGNESE in Venice 1527–1564.*

Olives House *in Majorca 1532–88. Diego HOMEN in Portugal c. 1560.*

J. Martines *in Messina 1566. Mohammed Raus and others...*

Toscanelli, *chart of the World, lost*

Barth. da li Sonetti, *Isolario in verse, woodcuts '77*

F. Berlinghieri, *Italian Ptolemy in verse '78*

Bologna Ptolemy, copper '77

PTOLEMEVS ROMÆ '78 copper engr.

Ptolemeus Romæ 1590

JUAN DE LA COSA-1500

Cantino, *World* 1502

Canerio, -

Contarini, - 1506

Pedro Reinel, *charts*

DIEGO RIBERO —1527

H. Verrazano, *World* '30

João de Castro, *Harbor charts*

ALONSO DE STª CRUZ, *maps of America 1541 etc.*

Venice Ptolemy *with* GASTALDI's *Asia 1548*

Nicolaus, *Atlantic O. engr. by* Forlani, *Verona, 1560*

PEDRO de MEDINA, *Maps of Spain. 1560*

Secco + Alvares, *Maps of Portugal. 1560*

Bertelli, *fl 1560, map of Gr. Britain* { Gastaldi, Zaltieri, Bertelli etc.

LAFRERI ATLAS, *Rome, 1556–72*

Cr. Sorte, *Brescia. Superb delineation of mts*

Ant. Millo, *Venice. Allases 1557–90*

J. F. Camocio, *Atlas of 88 maps (Turkish wars) Venice 1571–76*

G. B. Ramusio, *Voyages + maps, Venice 1583 + 1596 + 1608, etc*

Rosaccio, *Il mondo, 1595*

Antoninus Magini, *Atlas of Italy engr. by Arnoldi*

B. Crescentio, *Books on navigation, tides, etc. maps, 1602*

A. Arnoldi, *World 1600*

Lavanha + Baretto. *Portuguese East Indies '15*

Mario Cartaro, *Naples 13 charts of Southern Italy*

Matteo Ricci, *China 6 sheets '13*

O. Pisani, *Globes*

Oliva house, *Messina fl. 1587–1673*

Mat. Greuter, *Rome Globes, map of Italy*

Cavallini house, *Leghorn. fl. 1640*

A. Kircher { *Chart of magnetic variation. Rome. '43*, *Mundus subterraneus; currents. etc. '68*

Nicolosi { *Globular projection (1610–1670) maps, globes, Del Hercole Atlas*

Faria y Sousa, *Asia Portuguesa 1666+75*

T. Borgonia, *Savoy + Piedmont 2¼ m/i '80*

P. VINCENZO CORONELLI, *Venice 1650–1718 Globes, maps, etc. Atlante Veneto 1690*

G. Rossi, *Mercurio Geografico '92–94*

Moroncelli. *Globes*

LA NEPTUNE FRANÇOIS *publ. by Mortier, Amsterd '93*

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FRANCE

Oronces Finæus, *Cosmographia. World*

Vallard, *Atlas, 1547*

ARQUES SCHOOL *near Dieppe. Decorative, portolan style*

Desliens, *World 1541*

P. de Descelliers, *Mappemonde de Henri II 1546*

F. de Mongenet, *Globes*

G. Symeone. *Survey of Auvergne*

ENLUMINEURS & DUTCH INFLUENCE

(decorative maps)

Guillotiere, *France*

Bougueau, *Théatre Français, 1591*

J. Boisseau, *maps*

Jean Le Clerk, *father + son*

Le Théatre Géographique 1620

H. Tavernier, *Siège de la Rochelle*

Le Théatre Géogr. '34

NICOLAS SANSON, 1600–'67

Théatre de France, 1650, Paris

Cartes Générales, 1658

P. Du Val, *(son in law of Sanson) Cartes de Géog. 1662*

La Hire, *C. de France 1668–99*

LONGITUDES, *measured by the Academy*

J. D. CASSINI, *map on floor of the Paris Obs^e*

Adrien + Guill. Sanson

H.A. JAILLOT } succ. of Sanson's

Pierre Duval }

J. B. Nolin

J + D. Cassini

De Fer, *etc.*

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fl = florished v. = volumes succ. = successor of m/i = miles per one inch

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