(CLAUDIUS)PTOLEMY

Claudius Ptolemy (c. AD 100 – c. 170) was a Greco-Roman mathematician, astronomer, geographer, astrologer, and poet of a single epigram in the Greek Anthology. He lived in the city of Alexandria in the Roman province of Egypt, wrote in Koine Greek, and held Roman citizenship.

Ptolemy wrote several scientific treatises, three of which were of importance to later Byzantine, Islamic and European science. The first is the astronomical treatise now known as the Almagest, although it was originally entitled the Mathematical Treatise (Μαθηματική Σύνταξις, Mathēmatikē Syntaxis) and then known as the Great Treatise (Μεγάλη Σύνταξις, Hē Megálē Syntaxis). The second is the Geography, which is a thorough discussion of the geographic knowledge of the Greco-Roman world. The third is the astrological treatise in which he attempted to adapt horoscopic astrology to the Aristotelian natural philosophy of his day. This is sometimes known as the Apotelesmatika (Αποτελεσματικά) but more commonly known as the Tetrabiblos from the Greek (Τετράβιβλος) meaning "Four Books" or by the Latin Quadripartitum.

PTOLEMY AND ASTRONOMY

The most significant ancient treatise called"Almagest"Ptolemy's Almagest is the only surviving comprehensive ancient treatise on astronomy. Ptolemy, claimed to have derived his geometrical models from selected astronomical observations by his predecessors spanning more than 800 years, though astronomers have for centuries suspected that his models' parameters were adopted independently of observations. Ptolemy presented his astronomical models in convenient tables, which could be used to compute the future or past position of the planets. The Almagest also contains a star catalogue, which is a version of a catalogue created by Hipparchus. Its list of forty-eight constellations is ancestral to the modern system of constellations, but unlike the modern system they

did not cover the whole sky (only the sky Hipparchus could see). Across Europe, the Middle East and North Africa in the Medieval period, it was the authoritative text on astronomy, with its author becoming an almost mythical figure, called Ptolemy, King of Alexandria.

Ptolemy's model, like those of his predecessors, was geocentric and was almost universally accepted until the appearance of simpler heliocentric models during the scientific revolution.

His Planetary Hypotheses went beyond the mathematical model of the Almagest to present a physical realization of the universe as a set of nested spheres, in which he used the epicycles of his planetary model to compute the dimensions of the universe. He estimated the Sun was at an average distance of 1,210 Earth radii, while the radius of the sphere of the fixed stars was 20,000 times the radius of the Earth.


Ptolemy presented a useful tool for astronomical calculations in his Handy Tables, which tabulated all the data needed to compute the positions of the Sun, Moon and planets, the rising and setting of the stars, and eclipses of the Sun and Moon. Ptolemy's Handy Tables provided the model for later astronomical tables or zījes. In the Phaseis (Risings of the Fixed Stars), Ptolemy gave a parapegma, a star calendar or almanac, based on the appearances and disappearances of stars over the course of the solar year.

HIS WORK ON EUROPEAN GEOGRAPHY

Ptolemy's other main work is his Geography (also called the Geographia), a compilation of geographical coordinates of the part of the world known to the Roman Empire during his time.

The first part of the Geography is a discussion of the data and of the methods he used. As with the model of the solar system in the Almagest, Ptolemy put all this information into a grand scheme. Following Marinos,
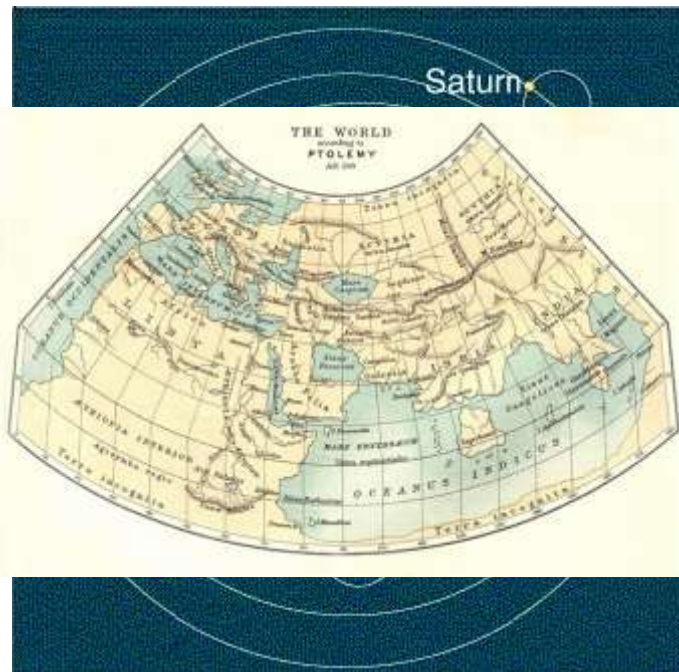
he assigned coordinates to all the places and geographic features he knew, in a grid that spanned the globe. Latitude was measured from the equator, as it is today, but Ptolemy preferred to express it as climata, the length of the longest day rather than degrees of arc: the length of the midsummer day increases from 12h to 24h as one goes from the equator to the polar circle. In books 2 through 7, he used degrees and put the meridian of 0 longitude at the most western land he knew, the "Blessed Islands", often identified as the Canary Islands, as suggested by the location of the six dots labelled the "FORTUNATA" islands near the left extreme of the blue sea of Ptolemy's map here reproduced.