takes to return to the same latitude.[5] Now unless one finds the period of its return in anomaly it is, necessarily, impossible to determine the period of the other motions [in longitude and latitude]. However, from individual observations it is apparent that the moon's mean speed can occur in any part of the ecliptic, as can its greatest speed and its least speed, and that it can reach its greatest northern or southern latitude, or appear exactly in the ecliptic, anywhere, too. Hence the ancient astronomers, with good reason, tried to find some period in which the moon's motion in longitude would always be the same, on the grounds that only such a period could produce a return in anomaly. So they compared observations of lunar eclipses (for the reasons mentioned above), and tried to see whether there was an interval, consisting of an integer number of months, such that, between whatever points one took that interval of months,[6] the length in time was always the same, and so was the motion [of the moon] in longitude, [i.e.] either the same number of integer revolutions, or the same number of revolutions plus the same arc. H270

The even more ancient [astronomers] used the somewhat crude estimate that such a period could be found in 6585⅓ days. For they saw that in that interval occurred approximately 223 lunations, 239 returns in anomaly, 242 returns in latitude, and 241 revolutions in longitude plus 10⅔°, which is the amount the sun travels beyond the 18 revolutions which it performs in the above time (that is when the motion of sun and moon is measured with respect to the fixed stars). They called this interval the 'Periodic', since it is the smallest single period which contains (approximately) an integer number of returns of the various motions.[7] In order to obtain a period with an integer number of days, they tripled the 6585⅓ days, obtaining 19756 days, which they called 'Exeligmos'. Similarly, by tripling the other numbers, they obtained 669 lunations, 717 returns in anomaly, 726 returns in latitude, and 723 revolutions in longitude plus 32°, which is the amount the sun travels beyond its 54 revolutions.[8]

However, Hipparchus already proved, by calculations from observations made by the Chaldaeans and in his time, that the above relationships were not accurate. For from the observations he set out he shows that the smallest constant interval defining an ecliptic period in which the number of months and the amount of [lunar] motion is always the same, is 126007 days plus 1 equinoctial hour. In this interval he finds comprised 4267 months, 4573 complete returns in anomaly, and 4612 revolutions on the ecliptic less about 7½°, which is the amount by which the sun's motion falls short of 345 revolutions (here too the revolution of sun and moon is taken with respect to the fixed stars). Hence, dividing the above number of days by the 4267 months, he finds the H271

[5] Reading κατὰ πλάτος (with D) for κατὰ τὸ πλάτος at H269,9.

[6] 'months' here means 'true synodic months'. This is generally true throughout the Almagest (except where the context makes it obvious that the reference is strictly calendaric). In the translation I usually make the meaning explicit.

[7] This period, generally, but wrongly, called 'Saros' in modern times (see Neugebauer[1]), was well-known in Babylonian astronomy. See *HAMA* 497 ff. We do not know to whom Ptolemy refers as 'the even more ancient people', except that they are earlier than Hipparchus.

[8] The ἐξελιγμός (meaning 'turn of the wheel') is also mentioned by Geminus (Cap. XVIII, ed. Manitius pp. 200–2), who gives exactly the same numbers as Ptolemy, including the excess in sidereal longitude of 32°.