Ptolemy's ALMAGEST

Translated and Annotated by

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It remains to establish the epoch of the sun's mean motion, in order to be able to compute the particular position for any given time. In making our exposition of that matter, we shall again use[58] those positions of the body which we ourselves have observed most accurately (this is our general rule both for the sun and for the other planets), but we use the mean motions we have derived to compute back to the beginning of the reign of Nabonassar for the epochs we establish. For that is the era beginning from which the ancient observations are, on the whole, preserved down to our own time.[59]

[See Fig. 3.20.] Let the circle concentric with the ecliptic be ABG on centre D, and the sun's eccentre EZH on centre Θ, and let the diameter through both centres and the apogee E be EAHG. Let B represent the autumnal equinox on the ecliptic. Join BZD and ZΘ, and drop perpendicular ΘK from Θ on to ZD produced.

H255 Then since B, the autumnal equinox, is located at the beginning of Libra, and G, the perigee, at ♐ 5½°,

$$\text{arc BG} = 65;30°.$$

$$\therefore \angle \text{BDG} = \angle \Theta\text{DK} = \begin{cases} 65;30° \text{ where 4 right angles} = 360° \\ 131°° \text{ where 2 right angles} = 360°°. \end{cases}$$

Therefore in the circle about right-angled triangle DΘK,

$$\text{arc } \Theta\text{K} = 131°,$$

$$\text{and its chord } \Theta\text{K} = 109;12^{p} \text{ where the diameter D}\Theta = 120^{p}.$$

[57] See *HAMA* 58–60, Pedersen 151–3.

[58] Reading ποιησόμεθα (with D) for ἐποιησάμεθα ('we used') at H254,5. It is unclear what reading(s) lie behind the Arabic translations.

[59] This statement is borne out not only by the Babylonian observations preserved in the Almagest (the earliest of which is the lunar eclipse of −720 Mar. 19, in the 1st year of Mardokempad, or the 27th year of the era Nabonassar, IV 6 p. 191, but also by the extant cuneiform records: the earliest surviving astronomical observations (apart from the special case of the Venus tablets of Ammisaduqa) are from −651 (Sachs[1] 44).