

a degree. As a matter of fact, a precise timepiece is required for measuring the coordinates of heavenly bodies, and mere instruments for measuring angles are not enough. In order to obtain coordinates to the accuracy indicated by Ptolemy, a timepiece with a minute hand is required as a minimum! Meanwhile, while accurately describing the tools used, e.g., an armillary sphere, Ptolemy said nothing of a clock. The hypothesis regarding the existence of a timepiece with a minute hand in the 2nd c. A.D. contradicts the traditional information about the clock technology of that time [123]. Recall that a clock with a minute hand appeared in Europe only in the 15th c. A.D., and immediately uranometry, the art of determining star coordinates, started blooming. The third interesting feature is that, according to the modern astronomers, Ptolemy counted the longitudes of the point of the spring equinox where the ecliptic and equator meet; it is in Pisces, and there are no bright stars nearby. First, this point is imaginary and unrelated to any star; therefore, its visual observation is impossible, since it can only be calculated. But its computation cannot be done without a timepiece reckoning parts of a minute. The *Almagest* was analyzed in [13], V. 5. In particular, we made use of this investigation. It turns out that there exists a reliable technique to restore the time when it was made from the catalogue itself. Since star ecliptical coordinates (longitudes and latitudes) are indicated in the catalogue, and the longitudes increase annually by $50''^2$ due to precession, dividing by this value the difference between the modern longitudes and those listed by Ptolemy, we at once obtain the year when the catalogue was made. This elementary computation leads to a shocking result: All the longitudes of the stars listed in the first Latin edition of the *Almagest* were observed in the 16th c. A.D., when the book was published! Why did J. Bode, who subjected the *Almagest* to accurate analysis, not notice it? [122]. It turns out that he studied the second, Greek edition, allegedly the original, from which the "Latin translation" is said to be made. J. Bode's position is clear: Why analyze the "Latin translation" when the undoubtedly authentic Greek text is available? But the longitudes in the Greek edition of all the stars were decreased by $20^\circ \pm 10'$, compared with the Latin edition, which dates the position of the stars to the 2nd c. A.D. This may arouse suspicion that the Latin text was the original, and the Greek secondary, and not vice versa as regarded by tradition. It is possible that the 16th-c. author who was first to publish the "translation" did not care about taking precession into account. Being apprised of that, he introduced this correction and others into the Greek "original", moving it into the 2nd c. A.D. Furthermore, a point of view was widespread in the 16th c. A.D. that the value of precession was $51''$ a year. The division by this value of the difference between the longitudes of the Greek and the Latin edition leads to 139 A.D. (i.e., precisely the second year of Antoninus Pius' reign according to traditional chronology!) as indicated in the book. It is probable that the year when the book was written, compared in this way, was indicated in the text by the 16th-c. authors' hoping to hide the true time of observations. But the true value of precession was different! If we divide the difference between the longitudes by this more precise value (due to J. Lalande and J. Bode), then we obtain that the catalogue was made in 63 A.D. under Nero, and not under Antoninus Pius. This circumstance embarrassed the astronomers; it was suggested that Ptolemy had made use of some earlier observations (and not his own), though the *Almagest* clearly indicated that