

APPENDIX 3

Dating of the Almagest Based on the Occultation of the Stars by Planets and Lunar Eclipses

1. Introduction

This work was done by A. T. Fomenko, V. V. Kalashnikov, G. V. Nosovsky and is a natural extension and continuation of the authors' results in the astronomical dating problem of the Almagest (see Appendix 2).

The dating obtained above evidently contradicts the standard date of the creation of the Almagest, presumably 137 A.D. Thus, a serious problem arises: "Is the star catalogue of the Almagest "a late insertion" in the ancient and authentic text, or was the whole text of the Almagest (or its major part) written later than 600 A.D. and finally edited only in the late Middle Ages (1200-1300 A.D.)?"

The astronomical observations collected in the Almagest were recently studied (in detail and professionally) by Robert R. Newton [321]. The result of his analysis can be formulated briefly as follows:

1) The Almagest contains the theory of the moon's motion, the sun's motion, planetary motion, and precession theory.

2) A large part of the astronomical data (for example, many "observations") collected in the Almagest can be *theoretically calculated* on the basis of Ptolemy's theory.

3) A large part of these astronomical "observations" is indeed nothing more than the result of such "pure theoretical calculations", which were made (according to R. Newton's results and opinion) by Ptolemy himself.

Consequently, it is senseless to use these "data" for any independent astronomical dating of the Almagest, because it implies only a reconstruction of the opinion (or conjecture) of some late author (Ptolemy? or some medieval astronomer?) about the date of occurrences of these astronomical events. The medieval authors sometimes solved the following problems: in which month of some ancient year (epoch) did some concrete astronomical event take place?

But fortunately the Almagest contains some astronomical observations which can be calculated not only on the basis of Ptolemy's theory but also on the basis of the latest medieval astronomical theories. The first among them are the ecliptical latitudes of 1020 stars in the star catalogue of the Almagest (see above).

Later it turned out that the Almagest also contains some other "non-calculable" (in the Middle Ages) observation data.