tion, namely the classification of all identified pairs of modern stars (modern as well as from the Almagest) according to the values of the arc distances between them.

We also discovered several stars in modern catalogues (in particular o^2 Eridanus) which can be identified for different times t with different Almagest stars. In other words, the identification of such stars (and consequently the answer to the question "who is who") is a function of time t. For o^2 Eridanus, we get the following different stars: 778, 779, and 780 (in Baily's enumeration). Peters and Knobel also expressed doubts as to the identification of o^2 Eridanus. These facts refute the work of Efremov and Pavlovskaya [325], since the proper motion of o^2 Eridanus is the basic argument used by them to derive the date of compilation of the Almagest. Efremov and Pavlovskaya at first suppose that the Almagest was compiled in the second century A.D. and then "prove" that this is indeed true. In our opinion, stars such as o^2 Eridanus must be excluded from consideration because a change in their identification essentially changes the dating of the catalogue.

Having completed the computer identification of the stars, we obtained the list T of all the stars which have firm and unique identification with Almagest stars. This list T contains the following information about the identification of stars: (1) Baily's number i; (2) the ascent α_i and declination δ_i of the star from the modern catalogue at time $t = 0$; (3) the velocity components of the proper motion of the star on the celestial sphere; and (4) the ecliptical longitude l_i and the ecliptical latitude b_i of the corresponding Almagest star.

Let $\alpha_i(t)$ and $\delta_i(t)$ denote equatorial coordinates and $L_i(t)$ and $B_i(t)$ denote the ecliptical coordinates of the i-th star from the modern catalogue (more precisely, from list T) in the century t. These coordinates were calculated (by computer), taking into consideration the precession, the ecliptic oscillation, and the proper motion of the stars. The problem of dating the Almagest is then reduced to finding t_0 such that the set of coordinates $V(t_0) = \{L_i(t_0), B_i(t_0)\}$ is closest to the set of coordinates $V_A = \{l_i, b_i\}$ for the corresponding Almagest stars.

The simplicity of this idea is not consistent with the difficulty of solving the problem so formulated. Overcoming these difficulties is the content of the present work.

Usually such a problem can be solved by choosing some natural distance between the sets $V(t)$ and V_A. Then one can determine the moment t_0 when this distance is minimal. It appears in our case, however, that the possible error in the calculation of t_0 is very large. For example, let $a_i(t)$ be the arc distance between stars with the coordinates $(L_i(t), B_i(t))$ and (l_i, b_i) and let $t_i^* = \arg(\min a_i(t))$. It is easy to see that if the coordinates of some Almagest star S have an error Δ and if v_i is the velocity of the star K_i on the modern celestial sphere which is identified with S, then the error in the determination of t_0 (using star K_i) is about Δ/v_i. Consequently, we can state only that the desired date t_0 is in the time interval $(t_i^* - \Delta/v_i, t_i^* + \Delta/v_i)$. (More precisely, we must consider the projection of v_i on the straight line connecting the modern star K_i with the Almagest star S.) For example, in the case of the Almagest (using the most optimistic estimation), we have $\Delta \approx 15'$ and $v \approx 1.5''$/year. Here $14' \approx \sqrt{(10')^2 + (10')^2}$, where $10'$ is the claimed accuracy of the Almagest and $1.5''$/year is the velocity of a very fast star, namely Arcturus. Thus we see that the time interval of possible solutions t_0 for this case is equal to about 1200 years. (This