matrix) are concentrated on the principal diagonal. Then, the further off the principal diagonal, the less (monotonically) the numbers $K(T_0, T)$. Computational experiment (Fomenko, 1981b) has shown for real narrative texts that, with a chronologically correct ordering of chapters in a text $X$, the numbers $K(T_0, T)$ decrease, on the average, monotonically not only with respect to the rows of the matrix $K\{T\}$, but also with respect to its columns; see Fig. 2(b).

In other words, the frequency of names (persons) of prior origin, from the earlier chapters $X(T)$ mentioned in the fragment $X(T_0)$, gradually decreases as the generation $T$ creating them moves farther from the generation $T_0$ under investigation. An increase of the age of a historical character (name) almost always decreases the frequency of mentioning this person (name) in the subsequent chapters $X(T_0)$. To estimate the rate and character of a frequency damping graph for name mentioning, we can make use of the following averaged graph, namely, of

$$K_{av}(t) = \left\{ \sum_{i, i \neq t} K(T_0, i) \right\} / (n - t) \quad (t = 0, \ldots, n - 1).$$

It is clear that it is obtained by averaging the square matrix $K\{T\}$ with respect to all diagonals parallel to the principal diagonal.

Certainly, the experimental graphs $K(T_0, T)$ may turn out not to be coincident with the theoretical graph for a real text; see Fig. 3.

It is obvious that, on varying the original numbering of chapters $X(T)$, the matrix $K\{T\}$ and its entries also vary. As a matter of fact, there occurs a rather complicated redistribution of the names first appearing in a certain chapter $X(T_0)$. Let us change the order of chapters of the text $X$ by means of various permutations which we denote by $\sigma$. We also designate by $\sigma T$ the new chapter numeration corresponding to a permutation $\sigma$ having been performed. While calculating the new matrix $K\{\sigma T\}$ for each of these chapter permutations, we will seek such $\sigma$, i.e. such an order $\sigma$ of the text chapters, that all or almost all frequency graphs of occurrences of the names $K(T_0, T)$ will have almost the theoretical form shown in Fig. 1. In particular, we will seek to make the graph $K_{av}(t)$ maximally close to the ideal, monotonically damping graph in Fig. 1. The order to textual chapters, for which the deviation of the experimental matrix from the theoretical (damping) is the least, would be taken as chronologically correct and required.

This method of chapter ordering permits us to date ancient events. In fact, let a certain narrative text $Y$ be given, about which it is known only that it describes some events from an historical epoch ($A, B$). Assume that we already have another dated text $X$ describing the same epoch more or less completely. Let $X$ be separated into chapter-generations $X(T)$. How can we learn exactly which generation has been described in the text $Y$ in question? We shall make use of the text $X$. Add $Y$ to the collection of chapters $X(T)$ of $X$, for which it suffices to assume that $Y$ is a new chapter of $X$, and ascribe a certain number $T_0$ to it; i.e. insert the chapter $Y$ in place of $T_0$ in the text $X$. Then, employing the above method, we find the optimal, i.e. chronologically correct order of all the chapters of text $X$ with chapter $Y$ added. At the same time we shall, therefore, find a chronologically correct place for the new chapter $Y$. That relative position which the text $Y$ will occupy among other chapters of $X$ should be, evidently, taken as the solution of the dating problem: we date the text $Y$ (with respect to the chapters of the text $X$). We thereby date the ancient events described in $Y$ relative to the chapters of the text $X$.

This dating method has been checked against narrative texts with an a priori known dating of the events described. The efficiency of the method has been fully confirmed (Fomenko, 1981a,b,c; 1983a,b).