



used, the work of future generations might be easier. The retrieved data should also be fit for use, i.e. clearly identified and adequately documented.

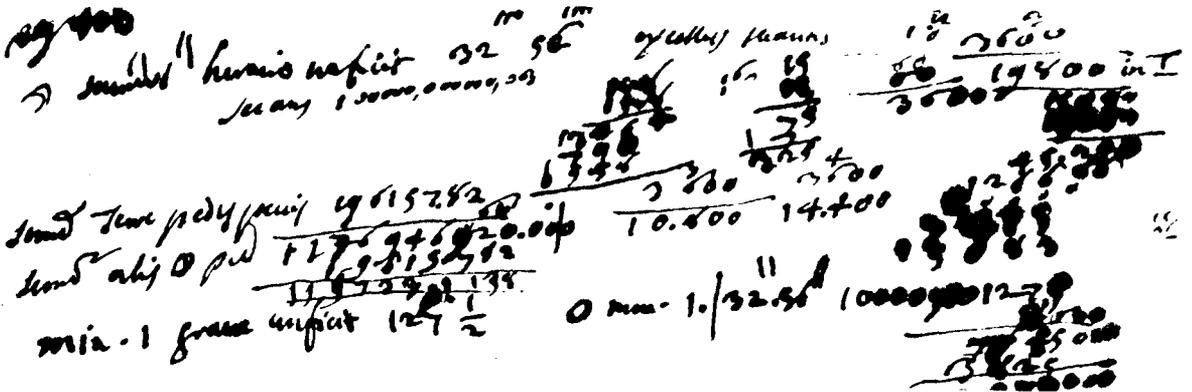


Figure 2. Extrait d'un manuscrit de Cassini. Bibliothèque Observatoire de Paris

In the best cases data are self-sufficient. Such are Cassini's and Picard's observations of the galilean satellites of Jupiter given in true solar time or in mean solar time with the exact location. Thanks to this, their accuracy for the 17th century was first calculated in 1976 (Débarbat 1978) and later, the whole unpublished data from Paris Observatory archives was utilized to test the validity of the J.P.L. ephemerides (Lieske, 1986) used for the spacecraft program : ephemerides errors were proved to have the same order of magnitude (Figure 3).

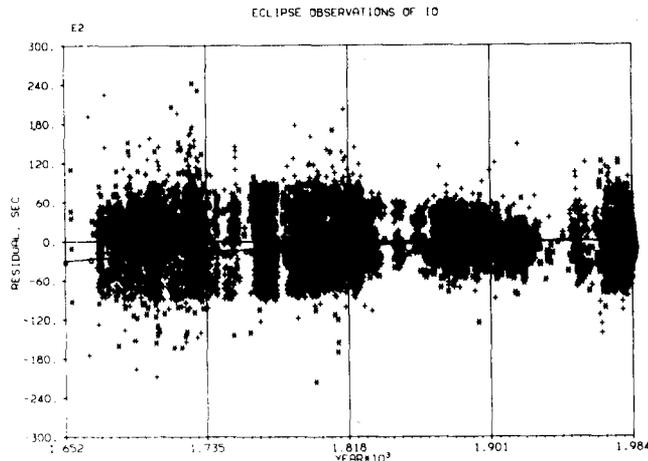


Figure 3. Plot of Observed minus Calculated times of eclipse (in sec) using Ephemeris E-2 for Io from 1652 to 1983. Residuals in sec may be converted to longitude residuals in km by multiplication by -18 km/s. No adjustments to the E-2 ephemeris have been made. The x-axis for zero-residuals for Morrison's values of  $\Delta T$  and his  $\dot{n}_{Moon} = -26.0$  are depicted by the solid curve. Extrait de Lieske 1986

Sometimes, lack of informations relating to observational data may prevent from using them. Such is the case for the observations of the diameter of the sun reported in Picard's notebooks. No doubt since 1982, they are true observational informations (Débarbat 1987) but are they rough data or smoothed data ? Up to now, it has been impossible to know it, so it is impossible to use them properly.

In all cases, observations are unique, not repeatable. Therefore, the use of old data requires the same informations as modern use of recent ones : rough data preferably and, if not possible, processed data with the exact processing method.

### 3. THE CASE OF SUBORDINATE DOCUMENTS

Subordinate documents are documents which have not been used for publication or documents the purpose of which is not to be published: notes, drawings, letters concerning organisation, instruments, funds raising, correspondences,...

As an example, the responsible person of a new project has much more informations than there will be in published documents. His (her) records contain details which may be of great importance later, so it is a pity that, very often, they are destroyed. This is what happened, at Paris Observatory, to the mid-19th century records of the construction of the dome installed on the upper level. They would yet have been very useful for the actual restoration work.

Development of science always depends on political decisions through allocation of funds and of positions to specific domains. Informations relating to this point are useful to a better understanding evolution of research and also, perhaps, to a better participation to actual decision processes.

As for the past, such informations are mainly found through what may be called every day life, personal and biographical details. As an example, it is only one sentence in one letter that enables us to understand why there are so few financial documents in the Paris Observatory archives of the "Carte du Ciel" : Admiral Mouchez has personally supported the hospitality expenses of the first meeting in 1887.

In our days, such informations are included in reports, minutes of commissions, meetings, rules, financial statements, decisions by councils. Furthermore, the corresponding papers contain more and more scientific argumentation. The importance of these subordinate documents must not be ignored when planning archives organization.

### 4. THE CASE OF PUBLISHED INFORMATION

One may think that published informations are well preserved and therefore, that it is of no use to keep the corresponding rough documents. It is true that, if Cassini's observations, for instance, had been completely published, we would not suffer so much from the lack of several years of valuable observations, as astronomers do,

in fact, since corresponding notebooks disappeared a long time ago and will be probably missing for ever.

On the other hand, and apart from misprints which can give birth to false results when they deal with figures, very often, there are differences between the published texts and the original ones.

As an example, an article on the improvement of the astrolabe, written in 1955 by Danjon himself, includes a correspondence to him on the subject. Comparison with the original letter, kept in Paris Observatory, shows that the publication is not comprehensive, one sentence missing without any clue to know it.

Very often, published informations give but the final results of a specific program and, in this case, published informations are not convenient for other utilizations concerning other programs. As an example, satellite observations, as mentioned above, which have been used for the checking of modern ephemerides were initially made for longitude determination. If nothing else but the published results (i.e. longitude) have been left, the rough data being destroyed, this recent use would have been impossible.

## 5. CONCLUSION

From actual examples of current research on documents of the past, we can acquire a certain knowledge of the required conditions of future astronomers' works on our present data and informations.

In some way, we can anticipate some of their needs and also some of the difficulties they will meet. Furthermore, we may be sure that it is impossible to know their real motivations. On the other hand, from unsuccessful searches of important informations which might have been deliberately destroyed, we are aware of the present question : what to keep ?

Concerning the archives, the question of selection is not a comfortable one, neither are the others. Before taking decisions on peculiar points, a global study of organization is necessary. This is the view presented by A.M. de Narbonne.

## REFERENCES

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