

# ASTRONOMICAL OBSERVATIONS IN ASIA FROM DELISLE'S MANUSCRIPT PRESERVED IN THE PARIS OBSERVATORY LIBRARY<sup>1</sup>

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Delisle, born in 1688 April 4, is well known as a collector of astronomical data from all over the world. Part of his manuscripts are preserved in the Paris Observatory Library. He is said to have collected all available astronomical data at the time he was in activity in France and in Russia where he spent more than twenty years. He had more correspondents and among them, in Asia, Father Gaubil, of which more than one hundred letters are in the Paris Observatory Archives, providing priceless informations to astronomical researchers, historians and others.

## Father Gaubil as a collector of data for Delisle

Antoine Gaubil was born 1689 July 4. His correspondence including the part mentioned above was compiled by Renée Simon and published in Switzerland in 1970 (XVIII + 1006 pages, in 8°). After having received his "Brevet de mathématicien" on 1721 March 17 signed by King Louis the XVth, he was sent to China where he spent all the rest of his life, mostly in Beijing. The very first letter collected by Simon, dated 1722 February 23, is written to Father Étienne Souciet (1685-1744) from Poulou Condor; it immediately concerns astronomical observations. Gaubil asks Father Souciet to give his notes on the subject to "Mrs Cassini et Maraldi" having worked with them at Paris Observatory before his departure. During many years he will send letters to these astronomers, mostly to the first one. On the other hand, Delisle had requested other possible data: "*Je sais bien aise que vous communiqués aussi à M.de l'Isle ce que je vous envoyai, mon R.P. Je ne saurois cette année lui envoyer ce qu'il souhaite; l'an prochain je ferai ce que je pourray et je vous prie de l'en assurer, en le remerciant de son honnêteté*".

## Gaubil's letters to Delisle in Russia

During his Russian period, Delisle will pursue the quest directly with Father Gaubil who is informed that Delisle is arrived in St. Petersburg: "*De Paris on me récrivit que vous étiez allé à St Pétersbourg... Il est inutile de vous dire ici les éloges qu'on faisoit de vous deux à Petersbourg, à Moscou et à la Cour de Russie*". This letter and many others are now in the Archives Nationales collections, while the first one preserved in the Paris Observatory (1743 November 9) is annotated "*reçue seulement le 19 février 1748 de ma soeur qui l'avait égarée...*" This letter concerns exchange of books, coins, but also recalls the type of astronomical data sent to France in the past.

## The mail difficulties between China and France

The exchanges of letters are indeed not easy: "*Peu s'en est fallu que cela ne soit égaré; [...]; Je suis surpris que vous n'ayés receu qu'une de mes lettres de 1737; je vous ai écrit exactement tous les ans par la voyce de la France. Je vous ai envoyé bien des observations, et en particulier celles des Comètes des années passées*" (letter dated 1746 June 11). In his answers (dated 1747 November 7) Delisle wrote: "*J'ai reçu [...] vos lettres de Pékin des 11 et 13 juin 1746. Elles ont été apportées*

<sup>1</sup>Abridged version of the poster presented at JD 17

*par les gens de la caravane russe; mais [...] Time is going so slowly that in 1748 November 29, Gaubil could write to Delisle (letter received in 1749 August 12): "J'ai des brouillons de tout, et vous pouvez compter que je ferai mon possible pour mettre tout en état, et vous être remis" and also: "J'espère que désormais il sera plus facile de vous faire tenir ce qu'on vous adressera d'ici, et de même vous pourrés plus seurement nous faire tenir vos lettres et vos instructions sur ce que vous souhaités de nous".*

### Chinese, Indian astronomical data and Father Gaubil

On 1749 November 6, having received a few days ago a letter from Delisle dated 1747 November 7, Gaubil sent him a letter received in Paris on October 5, 1750. He responds to inquiry about chronology, an important subject to give the exact date to the data: "[...]vous avés besoin d'être au fait sur la manière de réduire les jours chinois aux jours juliens. [...] mais il y a une diffulté bien grande dans certains cas. [...] Dans la 1<sup>re</sup> observation, on calcul de l'an 147 avant J.C. j'ai mis 2 dattes, je crois que celle de l'an 148 est la vraie, voici pourquoi [...]" Father Gaubil also provides Delisle with Indian astronomy as mentioned in a letter dated 1750 and received in 1752 January 31 and in the very long following one dated 1750 October 25, received on April 29, 1752. He also gives in great details measurements related to the latitude of the place from where he made the astronomical observations, recalls the instruments he has received (transit instrument, refractor and micrometer) and: "La pendule dont on s'est servi à Péking [qui] a été toujours réglée et les temps sont marqués après avoir pris, avant et après les observ. des hauteurs corresp. de soleil".

### The need of ephemerides and clocks

With the exchange of observations Gaubil could correct the local coordinates, but he needs ephemerides and he complains that he had nothing after 1725: "[...] de vos éphémérides de Mr de Lacaille; elles finissent à l'an 1754; il temps de penser à voir la suite [...]" (letter dated 1750 October 31, received 1752 April 29). A few days later (letter 1750 November 9, obtained 1751 August 5) to Mr. Guérin, Gaubil requests a quadrant and: "Un horloge d'observation ou pendule astronomique au choix de Mr De Lille, auquel on a écrit à cet effet. On est résolu d'y mettre le prix que cette pendule pourra coûter, pourvu qu'elle soit juste." But in november 1757, he is still waiting for the following ephemerides he needs. Among the three last letters from Gaubil to Delisle, preserved in the Paris Observatory Archives, dated 11 and 12 November 1752, one repeats his request: "[...] pour procurer à cette maison française (leur collègue) une bonne pendule d'observation. Celles que nous avons sont vieilles et usées [...]"

### The equipment in China, in India and the end.

Father Gaubil will write other letters to Delisle which are preserved at the Institute de France and in the Archives Nationales. Most of them are related to the transcription of Chinese, to Jesuit missionaries... But some still contain astronomical informations. As an example the one dated 1754 November 1st, received by Delisle in 1755 October 26: "Nos horloges ont fait une assez bonne pendule, j'ay ma vieille encore assez bonne apportée de France [...] On placera à l'Observatoire le nouveau 1/4 de cercle et les 2 pendules. Une pendule de Paris bien faite seroit bien utile, je ne sais si on nous l'envoyera. J'ai un assez bon réticule et des micromètres d'un assez bon usage, nous avons assez de lunettes et deux autres 1/4 de cercle, l'un de 26 pouces, l'autre de trois pieds. Celui-ci est un présent de feu Roi Louis le Grand à notre maison françoise". There is also the indication that, in India, in Pondichery a 10-"pied" was employed while Father Boudier, in Chandernagor, had at least three (11, 12 and 16 "pieds"). But, in 1755, Gaubil has some eye troubles (*les yeux étoient très fatigués*) and he died in Peking on the 24th of July 1759 having not yet received a letter sent by Delisle (1758 December 24) who survived him up to 1768 September 11th. French astronomers will be informed by Father Bousset (1699-1764): "L'Europe scavante regrettera la perte d'un scavant du premier ordre".

### Astronomical Observations in Asia

Hereafter are some examples of what was collected by Delisle and is nowadays in the Paris Observatory collections.

*CHINESE ASTRONOMY* - *Observations chinoises Depuis l'an 147 av. J.-C. jusqu'à la fin de la Dynastie des yuen en 1367 de J.-C. - Comètes Vues à la Chine depuis l'an 613 avant J.-C. jusqu'à l'an 1539.*

*OBSERVATIONS FROM LETTERS* - *Table des observations astronomiques (et autres) qui sont dans mon commerce de lettres* for the observations extracted from the correspondances he received and, among them, Father Gaubil.

*SOLAR AND LUNAR ECLIPSES* - Solar eclipses between 1718 and 1753. Lunar eclipses between 1690 September 18 and 1750 June 20, the last one by Father Gaubil (*dans la maison des Jésuites François*).

*ECLIPSES OF THE GALILEAN SATELITES OF JUPITER* - Observations from China, made by Father Koegler à *Pekin dans le Collège des Jésuites Portugais* from 1718 January 14 and later observations from Father Gaubil à *Pekin chez les Jésuites François*, from India in Pondichéry, Chandernagor), in Macao, ...

*OTHER OBSERVATIONS* - Under this title are found the altitude of the pole, sunspots, diameter of the sun and planets, "météore igné ou feu volant", borealis aurorae, Mercury transit on the sun (1753 May 6) and *Remarques Géographiques du P. Gaubil sur les pais situez à l'extrémité orientale de l'Asie.*