

XXIX. *An Account of the Transit of Venus: In a Letter to Charles Morton, M. D. Secret. R. S. from Christian Mayer, S. J. Translated from the Latin by James Parsons, M. D.*

Read Feb. 4,
1762.

I Return you many thanks for the great trouble you have taken in procuring Mr. Dollond's telescope for me; which, happening to arrive very opportunely the day before the observation, gave great pleasure to our Serene Elector: a very happy invention which England alone was capable of producing! but at it's coming to my hands I had no small concern, for fear all our apparatus should be rendered vain, as it was constant rainy weather.

A square mount of solid stone which had been made into an arch, in the Electoral garden at Schwefinga by his Highness's order, afforded us a basis; in the middle of which another mount of like form was raised five feet high, which supported the astronomical quadrant: both were covered with a moveable covering, the building being carried round them.

Two other small buildings of the same construction stood near this; in one of which Mr. Dollond's telescope was placed, and in the other the clock; having so easy a communication with one another, that a glance of the eye commanded them all.

The astronomical quadrant, which was $2\frac{1}{2}$ feet radius Paris measure, was made in the year 1758, at Paris by M. Carinivet mechanical operator to the

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Royal Academy, and has an English micrometer ; having a moveable wheel, and divided into minutes ; and by means of a screw to the index of the quadrant, together with the division of the nonnius plate fastened to it, was so applied, that during the whole time of the observation, while the wire of the plummet constantly glided upon the same point of the limb, it might be moved in the limb by a vertical motion in either direction by the alidad alone. This most excellent invention of your's I first brought into Germany, to the best of my knowlege, after I had seen it's power at Paris in the hands of the ingenious M. Le Monier.

Besides the quadrant, Dollond's telescope, and several other astronomical tubes of 6, 8, 13, and 22 feet ; we had a Newtonian telescope of 4 feet Austrian measure, with an eye glass of $\frac{1}{3}$ of an inch.

We had a clock made by M. le Paute, a Parisian, very well defended from the rays of the Sun and from the wind, which I accommodated to this business for a month before, in many celestial observations with as much accuracy as I could, and with more success than we could well expect.

| | |
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| The interior contact of the western limb of Venus, with the western limb of the Sun, observed with Dollond's telescope — — | } True time. h 20 53 8' |
|--|-------------------------------|

| | |
|--|------------|
| The moment of the egress, wherein the same limb of the Sun after the interior contact first appeared cornicated, most accurately observed with the same telescope, was — — | } 20 53 35 |
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| Whence I conclude, that the interior contact happened — — | } 20 53 33 $\frac{1}{2}$ |
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As to the instant of the exterior contact, I send only two observations made by me with certainty, because of the intervening clouds: the first shews the time wherein I distinctly saw through the clouds the certain emerfion of Venus, $\frac{1}{12}$ part of the diameter of Venus, as nearly as I could judge, excavating the limb of the Sun; the other wherein, from the unlucky clouds, I could no more observe the least vestige either of the emerfion, or exterior contact, or of Venus.

| | | True time. | | |
|--|---|--------------|----|----|
| | | ^h | ' | '' |
| The first outer contact | — | 21 | 9 | 4 |
| The other time of the certain emerfion | — | 24 | 17 | 27 |

The time which I use, and to which I am still attentive, was obtained by a great number of corresponding altitudes of the Sun, both before and after the day of the transit. But in order to the rendering my calculation perfect one thing is to be desired, that the longitude and latitude of the observatory at Schwezinga might be precisely determined, if possible, in the space of a few months.

The Serene Elector, although he was not well the day before, yet from his great love for astronomy was not only present himself, which other kings and princes usually are; but being of an excellent and ready genius, he instituted several observations with the astronomical quadrant two hours before the egress, having marked the appulses of the four limbs of the Sun and Venus at each immovable wire, in

order to find out the difference of the right ascension and declinations ; the weather being serene from about half an hour after five to half after eight in the morning. Which positions, good Sir, if they may be acceptable, I will immediately send you ; and likewise some observations upon a total eclipse of the Moon at which his Serene Highness and his whole court were present, together with two very respectable persons of the court, the illustrious Messrs. Holrinhausen and de Stanger, both well skilled in astronomical matters, who were appointed to be my assistants in all these observations.

Hence you will easily perceive, that I am attached to the most earnest endeavour of pleasing so great a Prince ; who, taking into his protection all kinds of learning, was the first that introduced astronomy into his country, the name thereof being unknown here for so many ages.

It will be a great satisfaction to me if this our observation may obtain a place among the immortal monuments of your Society ; that the future class of astronomers may retain a grateful remembrance of the most serene Charles Theodore Elector Palatine : and while I am, learned Sir, in expectation of this favour from the Royal Society, I humbly commend myself to your regard, being,

Your most humble servant,

Dated at Schwezinga,
23 June, 1761.

Christianus Mayer, S. J.