

LVII. *Extract of a Letter to the Reverend Nevil Maskelyne, Astronomer Royal, from Mr. Benedict Ferner, F. R. S. Dated Stockholm, June 9, 1769. Translated from the French.*

S I R,

Read Dec. 21, 1769. **I** AM more surprized that the times of the contacts of Venus and the Sun's limbs, observed here, by different observers, with different instruments, agree so near together, than I am at their difference; for the nearness to the horizon, and the extraordinary quantity of vapours with which the atmosphere was then loaded, not only caused the limb of the Sun to tremble and undulate, but also gave it, if I may so express myself, the form of a large saw, the eminences being luminous and the cavities black, which shifted places like the waves of a tempestuous sea.

There was no reason for fixing the moment of the ingress of Venus sooner than she had made a greater cavity in the limb of the Sun than the depth of the waves or black notches; and then one might be very sure of the fact: but certainly at that time some seconds must have been passed from the beginning of the ingress. Therefore, I
am

am very well persuaded, that $8^{\text{h}} 24' 9''$ apparent time, which I took for the beginning of the ingress, is four, five, or seven seconds too late. I hoped to see the internal contact with more certainty; but I was mistaken; for I found as great difficulties there, though of another kind. When I judged, by means of the circular figure of the Sun's disc, that Venus should be intirely within the Sun, I could not yet see the luminous cusps of the Sun join together behind Venus, who, on the contrary, appeared to carry the limb of the Sun along with her, which appeared to bend towards Venus, leaving a black cavity in his limb; and a moment after, when I thought I saw the whole body of Venus in the Sun, a little black column appeared to proceed from Venus towards the imaginary limb of the Sun. The whole of this phenomenon was certainly, in my opinion, the effect of the tremors of the limbs of the Sun and Venus; but I took $8^{\text{h}} 41' 48''$ for the moment of the internal contact, when the thread of the Sun's light closed behind Venus.

The limbs of Venus were, at least, as tremulous and ill defined as those of the Sun. Sometimes Venus had black eminences, which projected so much that they were not unlike a pointed truffle. The first notch made by Venus in the Sun was not round, but resembled an obtuse angle. The diameter of Venus, which was perpendicular to the Sun's limb, appeared the greatest while Venus was passing over the Sun's limb; but after Venus had passed the Sun's limb, the same diameter appeared the smallest; so that Venus presented herself in both these cases under an oval form, but in contrary directions.

Clouds

Clouds hindered us from observing the beginning of the eclipse of the Sun ; but I observed the end of the eclipse, at $10^{\text{h}} 4' 53''$ apparent time, with an achromatic telescope of Dollond, of 10 feet, magnifying 96 times ; the same telescope which I used in observing the transit of Venus. The difference of meridians between Stockholm and Upsal is $1' 40''$ of time.

I have the honour to be,

with the greatest friendship and esteem,

S I R,

Your most obedient,

humble servant,

B. Ferner.