

Observations of the Eclipse of the Sun on the 12 of July last (new style) made at the Observatory at Paris 1684. in the lower apartment, by Messieurs Cassini and Sedileau; in the upper, By Messieurs de la Hire and Pothenot. At the College of Lewis the Great, in the presence of Montaigneur the Duke of Bourbon, by R.P. Fontenay; at Aix in Province; at Lyons; at the Bay of Roses; at Honfleur and at Pau; by divers other learned Persons.

In the lower apartment, by Messieurs Cassini and Sedileau.

For observing this *Eclipse*, beside the *Instruments* which were made use of for observing that of the *Moon*, at the *Focus* of the *Glass* of 40 foot, was placed circle of Paper equal to the *Sun's* Image, divided into 12 digits, by concentrick circles; and, to another *Glass* of 6 foot, was applied, on the *Parallatick* Engine, another circle equal to that at the *Focus* of the *Glass* of 40 foot.

The *Sun*, at the beginning of the *Eclipse*, was clouded; so that it could not be observed: but observations were taken of the following *Phases*, so as from thence divers others of the principal *Phases* might be collected according to the measures thereof, taken at such times as the *Sun* was free. The greatest obscuration was seen, and the end of the *Eclipse*, which was exactly marked. And having adjusted the computation of time for the several observations, and compared them together; they were found in this manner,

| The beginning of the <i>Eclipse</i> . | ho | ' | " | Differences |
|--|----|----|----|-------------|
| | 2 | 25 | 55 | 6' 55" |
| One Digit | 2 | 32 | 50 | 7 10 |
| 2 Digits | 2 | 40 | 0 | 7 40 |
| 3 Digits | 2 | 47 | 40 | |
| | | | | 4 Digits |

| | | | | | |
|--|---|----|-----|----|----|
| 4 Digits | 2 | 54 | 10 | 6 | 30 |
| 5 Digits | 3 | 2 | 0 | 7 | 50 |
| 6 Digits | 3 | 10 | 5 | 8 | 5 |
| 7 Digits | 3 | 20 | 10 | 10 | 5 |
| 7 $\frac{1}{8}$ Dig. the great- est occultation } | 3 | 35 | | . | " |
| 7 | 3 | 55 | 50 | | |
| 6 | 4 | 4 | 10 | 9 | 20 |
| 5 | 4 | 12 | 25 | 8 | 15 |
| 4 | 4 | 19 | 15 | 6 | 50 |
| 3 | 4 | 25 | 50 | 6 | 35 |
| 2 | 4 | 32 | 15 | 6 | 25 |
| 1 | 4 | 37 | 40 | 5 | 25 |
| End | 4 | 43 | 23. | 5 | 43 |

The apparent *Diameter* of the *Moon* appeared less than that of the *Sun*. It was judged that the Dilatation of the *Sun's* light, might make the *Moons* Diameter seem less. The *Horns* or *Points* of the *Sun* Eclipsed seem'd sometimes a little blunted by the *Glass*.

*In the upper apartment, by Messieurs de la Hire
and Pothenot.*

The conclusions following we deduced from a great number of observations of the *Sun's* obscuration, which were measured very carefully with a *Micrometer*. The beginning was not immediately observed, by reason of *Clouds*; but is concluded from many observations made soon after it. Wherefore this observation may be reputed as just as the rest. The *Sun's* greatest obscuration was observed very exactly; but the just time when it happened cannot be determined with the like preciseness, because there then happened no considerable alteration for the space of near two minutes. The end was observed with the greatest exactness possible.

The

| | h | ' | " | Differences | |
|------------------------|---|----|----|-------------|----|
| The beginning. | 2 | 25 | 24 | | |
| 1 Digit | 2 | 33 | 2 | 7 | 38 |
| 2 Digits | 2 | 40 | 30 | 7 | 28 |
| 3 | 2 | 47 | 47 | 6 | 17 |
| 4 | 2 | 54 | 41 | 8 | 54 |
| 5 | 3 | 2 | 41 | 9 | 0 |
| 6 | 3 | 12 | 6 | 8 | 25 |
| 7 | 3 | 20 | 54 | 8 | 48 |
| The greatest obscur. } | 3 | 20 | 54 | | |
| 7 dig. 5' } | 3 | 36 | 27 | | |
| 7 | 3 | 53 | 34 | 10 | 19 |
| 6 | 4 | 3 | 53 | 7 | 10 |
| 5 | 4 | 11 | 3 | 6 | 39 |
| 4 | 4 | 17 | 42 | 7 | 32 |
| 3 | 4 | 25 | 14 | 6 | 42 |
| 2 | 4 | 31 | 56 | 6 | 15 |
| 1 | 4 | 38 | 11 | 5 | 16 |
| End | 4 | 43 | 27 | | |

There were made also many observations of the distance between the seeming Horns of the Sun, which being compared with the Sun's lightfome part at the same time, and with the distances between the lines which joyned the Horns and the Sun's farthest border, the Moon's Diameter appear'd then not to be more than about 30 minutes; though by the observations of her Diameter made some days before and after, it was judged to be 31. 30". but the being somewhat agitated, permitted not to observe exactly the extremities of the Horns, which appeared somewhat blunted; on which depended the exactness of that determination.

*At the College of Lewis the Great, in the presence of
Montaigne the Duke of Bourbon, by R. P.
Fontenay, Professor of the Mathematicks.*

At hour 2. 29'. 30". the Sun which had been covered with clouds, being now a little uncovered, the Eclipse appeared

peared sensibly begun ; but not yet half a Digit, nor a third part.

| | h | ' | " |
|----------|---|----|-----------|
| 1½ Digit | 2 | 57 | 40 |
| 2 | 2 | 40 | 25 |
| 3 | 2 | 40 | 34 |
| 4 | 2 | 54 | 30 |
| 5 | 3 | 3 | 0 |
| 6 | 3 | 12 | 40 |
| 7 | 3 | 22 | 18 |
| 7¾ | 3 | 38 | and more. |
| 7 | 3 | 51 | 20 |
| 6 | 4 | 2 | 25 |
| 5 | 4 | 10 | 50 |
| 3 | 4 | 24 | 31 |
| 2 | 4 | 29 | 54 |
| 0⅓ fere. | 4 | 41 | |

The Sun withdrawing behind the Clouds, hindred the observing of the end.

An Abridgment of diverse other Observations, sent to M. Cassini ; at Aix in Province by M. the Priour Gautier.

The beginning at 2b. 54'. 30". The end at 5h. 9'. 9'
The greatness of the Eclipse 8½ Digits. The Height of the Pole 43d. 30'.

At Lyons, in the great College of Jesuits, by R. P. Paul Hofte.

| | By the Fix'd Stars | | | By the Sun. | | |
|-----------|--------------------|----|----|--|----|----|
| | h | ' | " | h | ' | " |
| 1. Digit. | 2 | 45 | 3 | 2 | 50 | 3 |
| 8½ Dig. | 3 | 53 | 52 | 3 | 58 | 52 |
| 1. Digit. | 4 | 59 | 20 | 5 | 4 | 20 |
| | 3 | 26 | 14 | <i>The Diameter of Sun and Moon. 30' 58"</i> | | |
| | 4 | 20 | 34 | <i>The Diameter of the Sun 30'. 58.</i> | | |
| | | | | <i>of the Moon 30'. 5.</i> | | |

The

The time of the greatness of the Eclipse at every of the Digits, was observed, but is not put into this Abbridgment

At the Bay de Roses, by M. Chaffelles.

| | h | | |
|---|---|----|-----|
| The beginning of the Eclipse | 2 | 40 | |
| The edge of the Moon at the Suns Center | 3 | 25 | |
| The Horns Horizontal | 3 | 40 | |
| The Horns Vertical | 4 | 15 | |
| The End of the Eclipse | 5 | 1 | 30' |

The greatness of the Eclipse, about $\frac{3}{4}$ of the Suns Diameter. During the Eclipse, all the world saw Venus without pain. The place is 3 Miles in the Sea, before *Roses* 42d. 10' Latitude.

At Honfleur, by M. de Glos, Profeffor of Mathematicks.

| | h | ' | " |
|-------------------|---|----|----|
| The Beginning, at | 2 | 15 | 2 |
| The End, at | 4 | 34 | 35 |

The Greatness ; more than 8 Digits, but less than 9.

Other Observations communicated by R. P. Fontenay.

At Pau, by P. Richaud, Prof. of Math. and Theol.

At hour $1\frac{3}{4}$. The Eclipse not begun. At hour $3\frac{1}{4}$, at 10 Digits. The end at $4\frac{3}{4}$. Height of the Pole 43. d. 30.

At Avignon, by R. P. Bonfa.

| | h | ' | " |
|---------------------|---|----|----|
| The Beginning | 2 | 43 | 27 |
| 1. Digit | 2 | 51 | 58 |
| 2. Digits | 4 | 2 | |
| The Horns Vertical | 4 | 24 | 32 |
| $1\frac{1}{2}$ Dig. | 5 | 1 | 16 |
| The End | 5 | 4 | 37 |

The
R

| | | |
|--------------------|----|------|
| The Suns Diameter. | 31 | 38'' |
| The Moons | 30 | 6 |

M. *Cassini*, having compared together these Observations, and made such reductions as the *Parallax* requires, doth thence take these *Differences of Meridians* between the places of observation.

| | | |
|--------------------------------------|-----|----------------------|
| From <i>Paris</i> to <i>Aix</i> | 14' | to the <i>East</i> . |
| to <i>Avignon</i> | 8½ | |
| to <i>Lyons</i> | 8 | or 13 |
| to <i>Rosés</i> | 4 | |
| From <i>Paris</i> to <i>Honfleur</i> | 7 | to the <i>West</i> . |
| to <i>Pau</i> | 11. | |
