

IV. *Some late curious Astronomical Observations communicated by the Reverend and Learned Mr. James Pound, Rector of Wansted, and R. Soc. Soc.*

*The Occultation of Jupiter by the Moon observed at Wansted the 14th of July in the Morning, 1715.*

HAVING after Midnight carefully corrected the Clock by no less than ten Observations of the Altitude of the *Lucida Arietis*, the Error thereof was found 5'. 13". too fast, the extreams not differing above 6": And in the morning about 7<sup>h</sup>, by as many Altitudes of the *Sun*, with a like Agreement, the same Error was found 5'. 14", to be deducted from the Times shewn by the Clock.

Julii 13 <sup>o</sup> . P. M. N.	Time by the Clock.	Time cor- rect.
The Third Satellite of <i>Jupiter</i> was hid by the Moon	h. . . 13 27 33	h. . . 13 22 20
The first Satellite was hid	13 32 35	13 27 22
The Second Satellite was hid	13 34 25	13 29 11
The first Contact of the Limbs of $\alpha$ and $\epsilon$	13 34 54	13 29 41
<i>Jupiter</i> wholly hid	13 36 23	13 31 10
The Third Satellite came out from behind the dark side of the Moon	14 7 25	14 2 12
The first Satellite	14 12 25	14 7 12
The Second Satellite	14 14 38	14 9 25
The first Limb of <i>Jupiter</i> came out	14 14 45	14 9 32
The following Limb of <i>Jupiter</i> , or last Contact	14 16 15	14 11 2
The fourth Satellite emerged	14 18 49	14 13 36
R r r		<i>Jupiter</i>

*Jupiter* and the Satellites were to the Northward of the visible Way of the Moon's Center.

This Occultation was observed through a Telescope, in which the Focal Length of the Object Glass was  $14\frac{1}{2}$  Feet, and of the Eye Glass  $2\frac{1}{4}$  Inches. And the Aperture of the Object Glass was  $1\frac{1}{10}$  Inch.

I could perceive no Colours on *Jupiter's* Limb, either at his immersion or Emerision, when the Axis of the Tube was directed to him.

Obsev.	Apparent Time	<i>An Eclipse of the Moon observed at Wansted October 30. 1715.</i>	
	h. ' "		
1	15 09 00	The Eclipse had been for some time begun	' "
2	17 00	The Moons Diameter measured by a Micrometer was	34 04
3	22 25	The Chord connecting the Horns	30 28
4	35 45	The inlightned Part of the Diameter continued to the Chord between the Horns	19 58
5	43 24	The inlightned Part of the Diameter	13 52
6	49 50	The same repeated	12 02
7	52 43	The same repeated	11 44
8	56 51	The inlightned part of the Diameter continued to the Chord between theHorns	15 22
9	59 27	The inlightned Part of the Diameter	10 35
10	16 04 04	The same repeated	9 43
11	18 34	The same again repeated	9 07
12	23 45	The Chord between the Horns	32 35
13	26 30	The same repeated	33 07
			14

	h.	'	"		'	"
14	16	31	16	The same again At which time also the Shade passed thro' the middle of <i>Schikardus</i> .	33	19
15		37	15	The Chord between the Horns, agreeing with the D's Diameter	33	57
16		40	45	The inlightned part of the Diameter	11	56
17		43	40	The same produced to the Chord between the Horns	16	13
18		46	55	The same repeated	17	28
19		47	57	The inlightned part of the Diameter	13	38
20		52	57	The same	15	30
21		55	27	The Edge of the Shadow passed thro' the Middle of <i>Gassendus</i> .		
22		56	12	The inlightned part produced to the Chord between the Horns	19	58
23	17	02	45	The Chord between the Horns	32	12
24		8	20	The same repeated	30	28
25		10	39		29	56
26		13	00		28	31
27		15	29	The same again	27	33
28		17	37		26	35
29		19	35		25	36
30		21	47	The same again	24	38
31		23	24		23	39
32		24	54		22	40
33		26	27	The same again	21	41
34		27	57		20	42
35		29	08		19	43
36		30	20	The same again	18	44
37		31	07		17	45
38		32	04		16	46
39		32	50	The same again	15	47
40		34	12		13	48
41	17	35	20	The same again repeated	11	42

At 17<sup>h</sup>. 39' the Eclipse was thought to be ended ; and was visibly so at 17<sup>h</sup>. 41' : But by comparing the last Observations of the Chords between the Horns, it follows that the true End of the Eclipse was at 17<sup>h</sup>. 38'. 20". At 17<sup>h</sup>. 43 the Moon's Diameter was 33' 40'.

The Middle cannot be supposed to be very accurately determined by these Observations, which were not sufficiently distant from the time of the greatest Obscuration. However by comparing several of them together, the Middle will be obtained, *viz.*

	h.	'	"
By Obs. 3. compared with Obs. 24. at	16	15	21
By Obs. 4. compared with Obs. 22. at	16	15	58
By Obs. 5. compared with 19. and 20 at	16	16	00
By Obs. 6. and 7. compared with 16. at	16	15	48

By reason of Clouds I could not see the Beginning of the Eclipse, nor make such Observations of the Moon's immersing into the Shadow as I did of her emerging out of it.

By Observation 11. compared with Observation 15. the Digits Eclipsed were  $8\frac{3}{4}$ .

The Angles were measured by a *Micrometer* in a 15 Foot Telescope. I have not considered how far they are consistent with one another ; they being set down here exactly as they were first taken.

This Eclipse is the more considerable, as happening very near the Moon's *Perigee*, and therefore useful to verify her *Anomaly* ; as also to limit the greatest Diameter of the Shadow of the Earth, and consequently the *Parallax* of the Moon. This may very properly be compared with that of the 19<sup>th</sup> of *October*, 1697, whose middle was at 7<sup>h</sup>. 41'. P. M. at *London*, and Quantity the same as now.

The

The Times by the Clock were 17'. 45". sooner than the apparent time, as was found by the following Observations of *Cor Leonis* and *Arcturus*, which through the Clouds were but just discernible.

Apparent Zenith Distance	Time by the Clock	Apparent Time by Calculat.	The Difference	
<i>of Cor <math>\Sigma</math></i>				
$70^{\circ} 16' \frac{1}{2}$	h. 13 32 43	h. 13 50 35	17 52	Mean Diff. 17 50
69 38	36 50	54 44	17 54	
69 09	40 06	57 51	17 45	
68 40	43 09	14 00 59	17 50	
68 08	46 37	04 26	17 59	
<i>of Arctur.</i>				
65 19	17 37 40	17 55 24	17 44	17 40
65 06	39 12	56 48	17 36	
64 41	41 49	59 29	17 40	
63 47	47 40	18 05 17	17 37	
			Clock too slow	17 45

The Latitude of *Wansted* is  $51^{\circ} 34'$ . Its Longitude is  $8''$  in time Eastward from the *Observatory at Greenwich*.

*The Account given of this Eclipse by the Reverend Mr. William Derham, who observ'd it at Upminster, is agreeable to this, as far as Clouds would permit him to observe.*