

Tab. 2. F. *A Spider hanging on the Branch of a Tree, with its Head turned against the Wind, and spinning out its Thread, 'till it finds that it adheres to some Body, (as to the Wall here represented) by which kind of Bridge it passes over Rivers, &c.*

G. *A Spider having broke the first Thread, by which it hung, and let out several others, is carried by the Wind, and floats in the Air with its Legs extended.*

II. *An Account of the Moon's Eclipse, February 2. 1701². observed at Streatham near London, and compared with the Calculation. By the Rev. Mr H. Cressener, M. A. Fellow of the Royal Society.*

IN the last Lunar Eclipse, on the second of *February* 1709-10. the time of the end (which was what alone the want of a proper *Apparatus* and a favourable Skie would give me leave exactly to determine) I found to be the same (with but a very inconsiderable Difference) which the Calculation, according to our most Learned *Presidents* admirable Theory, promis'd me to expect.

There being therefore no Examples of any Calculation (that I know of) according to that Theory, nor of the Theory's Agreement with Observation yet made Publick; I thought it proper to offer this one to this Learned Society's Perusal, that the exact consent with Observation in this, may prompt some of them to try the like in others. I have added the Calculation from the famous Mr. *Flamsteed's* Tables, according to *Horrox's* Theory,

Theory, as I find them publish'd in the Ingenious Mr. *Whiston's* Astronomical Lectures, with the *Radix's* of the Mean Motions, corrected according to their first Authors later Observations, which are the same with those assum'd in Sir *Isaac Newton's* Theory,

By comparing these two Calculations we may observe, that tho' most of the additional Equations in Sir *Isaac Newton's* Theory be very small in this Situation of the Moon, yet they all conspire so as to make its Place considerably more agreeable to Observation, than those of *Horrox's* System.

The Observation was made at *Streatham*, about six Miles near direct South of *London*, with a very good Eight foot Telescope. To correct the Clock, (for want of an Instrument,) I carried with me next Day two Watches, that were before adjusted to the Clock, and compar'd them with Mr. *Flamsteed's* at the Royal Observatory, having first noted its Error by an Observation of the Sun's Transit of the Meridian his Assistant communicated to me: Upon my return, I found my Watches still to agree together, and to my Clock, which prov'd them to have gone true, and gave me the exact Error of my Clock, and the true time at Observation.

Mr. *Flamsteed* has since been pleas'd to acquaint me, that by his Observation of the Meridional Transit of the *Lyons Heart* during the Eclipse, his Clock needed a yet further Correction of one Minute, which I have here accounted for.

	17 th Feb.	D.	H.	M.	Sec.
The Mean Time of the Mean Opposition	2	4	9	42	
The Mean Time of the True Opposition	2	10	54	48	
At which the True Place of the Sun is	10	24	55	50	
And its Equation to be added.					

*The Place of the Moon at this Time, from Sir Isaac
Newton's Theory.*

	S.	D.	'	"
Mean Motion of the Moon	4	26	57	37
Annual Æquation Subtr.			8	34
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The Correct Mean Motion	4	26	49	03
Mean Motion of Apog.	11	18	13	54
Annual Æquation of Apog. Ad.			14	31
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Correct Mean Motion of Apog.	11	18	28	25
Second Æq. from the dist. of Ap. from Sun Ad.			2	57
Place of the Moon the 2d time Æquat.	4	26	52	00
Mean Motion of Node	11	01	34	25
Æquation of Node Subtr.			06	54
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Correct Mean Motion of Node	11	01	27	31
The 3d Æquat. of the Moon from Nodes } Aspect with the Sun Subtr. }				10
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Place of the Moon the 3d time Æquated	4	26	51	50
Second Æquation of Apog. Subtr.			7	45
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True Place of Apog.	11	10	42	44
Mean Anomaly	05	16	09	06
Æquation of Center Sub.			1	53
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Moons Place the 4th time Æquated	4	24	58	19
The Variation. Ad.				11
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Moons Place the 5th time Æquated	4	24	58	30
The 6th Æquation from the distance of } the Luminaries and Apog. Ad. }			1	20
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Moons Place 6th time Æquated	4	24	59	50
The 7th Æquation Ad.				34
True place of the Moon in its Orbit	4	25	00	24
True Place of the Sun	10	24	55	50
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Moon beyond the Opposition			4	34
Which divided by the Horary Motion of } Moon from Sun gives }			7	42
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The Mean Time therefore of Opposit. Feb. 2	10	47	06	
And the true Time	2	10	32	20

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The Place of the Moon at the same time from the Tables in Mr. Whiston's Astronomy, according to Horrox's Theory.

Mean Motion of the Moon	4	26	57	37
Physical Parts Sub.			8	21
Correct Mean Motion	4	26	49	16
Mean Motion of Apog.	11	18	13	54
Æquation of Apog. Sub.		7	25	00
Mean Anomaly	5	16	00	22
Æquation of the Center Sub.		1	53	53
Place of Moon in its Orbit	4	24	55	23
Distance from the Opposition				27
That is in time to be added				45½
The Mean time therefore of true Opposition is exactly	} D. H.		2	10 55 33
The Apparent time	2	10	40	41
Place of Moon in Ecliptick	4	24	57	27
Reduction between the true Opposition and middle of Eclipse Ad.	} D. H.		2	47
Middle of Eclipse	2	10	43	34
Continuance of Eclipse		2	55	06
Digits Eclips'd		9	55	
Beginning of Eclipse	2	9	16	01
End of Eclipse		12	11	07
End of Eclipse by the Moons Place from Sir <i>Isaac Newton's</i> Theory.	} D. H.		12	02 00
End by Observation		12	01	30
End by Calculation from <i>Horrox's</i> Theory		12	11	08

The Error therefore of Sir *Isaac Newton's* Theory is by this Observation but half a Minute, or none; of *Horrox's* System, Nine Minutes and a half.