

*An Extract of a Letter from Mr. J. Flamsteed Astr. Reg. and Reg. Soc. S. giving his calculation of the Eclipses of Jupiters Satellites for the Year 1687. Together with a Table of the Parallaxes of the Orb, and the Ephemeris of Jupiters Geocentric Place for the same Year; to which is added an Observation of the Eclipse of the Moon, Novemb. 30, 1695. made at Lisbon, and Mr. Flamsteed's own Observation of the Eclipse of Jupiter by the Moon on March 31th. past.*

I Give you here a Catalogue of all the Eclipses of 4 Satellites, for the ensuing year 1687. and together with it 2 Tables, one of his Geocentrick places, the other of the Parallaxes of his Orbit to every day in the said Year. This is the 4th. Catalogue I have got published in the Transactions. With the 1st. printed Dec. 1683. Num. 154. I shewed their uses, and how by their help the difference of Longitude, betwixt any two places on the Earth, where they should be observed, might be determined. And I Taught a Method of finding out within what space on our Globe any of them would be observable: This was done in English for the use of our Country-men. Next Year in December 1684. I repeated those Directions in Latin Num. 165. pag. 760. for the benefit of Forreigners. In the two Transactions of Decem. 85. Num. 177 and 178, with the Catalogue of Eclipses I described a small Instrument, and shewed by the help of it, the said Catalogue, and the Tables of 4 Geocentrick places and Parallaxes, the appearances of the Satellites at any time within the compass of that Year might be discovered and delineated; if therefore the Reader desire to be informed concerning the use of the Catalogue and Tables herewith printed,

ed, he may repair to the above-mentioned Transactions. I shall only add.

That whereas for the two Years last past, the *4th*. Satellit has not been Eclipsed. As this Year enters, it begins to fall into  $\mu$ 's shadow, and that its Eclipse will again be observable for the 4 next Years. The first that happens *Feb.* 2. in the Morning will be well worth the attention of the Curious; in that its duration is the shortest of any that follow it this Year; both the Ingress and Emerfion are Visible with us, as are all those in the Catalogue which are alike marked with an Asterick (\*) which if they shall be exactly obserued, may serue to determine the place of the Node of the orbit of  $\mu$ 's Satellits, and its Inclination to the orbit of  $\mu$ , by comparing the obseruation either with such as wee haue already obtained, or as may be made hereafter.

In my last obseruations, the Eclipses of the *2d* and *3d* Satellit have anticipated my Calculations something more than I expected in so short a time; of which I thought it conuenient to acquaint the Reader, that hee may attend them one quarter of an hour earlyer than the times noted in the Catalogue. In 2 or 3 Years more we may expect opportunity of obseruations, which will afford us such a correction for the error, that the Numbers shall fail no more in them, than in the *1st*. whose Eclipses have not yet differed aboue 3 minutes from the Calculation.

I giue you further herewith an obseruation of the Lunar Eclipse *November* 30, 1685. made at *Lisbon* by my kind Friend Mr. *Henry Jacobs*: and another of my own of the Occultation of  $\mu$  by the Moon, *March* the *31th*. this Year 1686: of which you haue published feueral forreign obseruations already.

Tabula Parallaxiom <i>Jovis</i>												
<i>Janua.</i>		<i>Febru.</i>		<i>Martii.</i>		<i>April.</i>		<i>Maii.</i>		<i>Junii.</i>		
<i>D</i>	<i>A</i>	<i>A</i>		<i>A</i>		<i>A</i>		<i>A</i>		<i>S</i>		<i>D</i>
	<i>G. M.</i>	<i>G.</i>	<i>M.</i>	<i>G.</i>	<i>M.</i>	<i>G. M.</i>	<i>G. M.</i>	<i>G. M.</i>	<i>G. M.</i>	<i>G. M.</i>	<i>G. M.</i>	
1	6 30	9	36	10	49	9	41	5	43	0	16	1
2	6 38	9	41	10	49	9	36	5	38	0	29	2
3	6 44	9	45	10	50	9	31	5	27	0	41	3
4	6 52	9	49	10	50	9	25	5	17	0	54	4
5	6 59	9	53	10	50	9	19	5	06	1	06	5
6	7 06	9	57	10	49	9	13	4	55	1	19	6
7	7 13	10	01	10	49	9	07	4	44	1	31	7
8	7 20	10	04	10	48	9	01	4	33	1	44	8
9	7 26	10	08	10	48	8	55	4	22	1	56	9
10	7 33	10	11	10	47	8	48	4	11	2	08	10
11	7 40	10	14	10	46	8	41	3	59	2	21	11
12	7 46	10	18	10	44	8	34	3	48	2	33	12
13	7 53	10	21	10	42	8	27	3	36	2	45	13
14	7 59	10	24	10	41	8	19	3	24	2	57	14
15	8 06	10	26	10	40	8	12	3	12	3	09	15
16	8 11	10	29	10	38	8	04	3	00	3	21	16
17	8 17	10	31	10	36	7	56	2	48	3	33	17
18	8 23	10	34	10	33	7	48	2	37	3	44	18
19	8 29	10	36	10	31	7	40	2	25	3	56	19
20	8 35	10	38	10	28	7	32	2	12	4	08	20
21	8 41	10	40	10	25	7	23	2	00	4	19	21
22	8 46	10	41	10	22	7	14	1	48	4	30	22
23	8 52	10	43	10	19	7	05	1	35	4	42	23
24	8 57	10	44	10	15	6	56	1	23	4	53	24
25	9 02	10	45	10	12	6	47	1	11	5	04	25
26	9 08	10	46	10	08	6	37	0	58	5	15	26
27	9 13	10	47	10	04	6	28	0	45	5	25	27
28	9 17	10	48	10	00	6	18	0	33	5	36	28
29	9 22			9	55	6	08	0	21	5	46	29
30	9 27			9	51	5	58	0	A 08	5	57	30
31	9 31			9	46			0	S 04			31

ad diem quemlibet Anni 1687.

		<i>Julii.</i>		<i>Augu.</i>		<i>Sept.</i>		<i>Octob.</i>		<i>Novem.</i>		<i>Dec.</i>		
<i>D</i>	<i>S</i>	<i>S</i>		<i>S</i>		<i>S</i>		<i>S</i>		<i>S</i>		<i>S</i>		<i>D</i>
	<i>G. M.</i>	<i>G.</i>	<i>M.</i>	<i>G.</i>	<i>M.</i>	<i>G.</i>	<i>M.</i>	<i>G.</i>	<i>M.</i>	<i>G.</i>	<i>M.</i>	<i>G.</i>	<i>M.</i>	
1	6	07	10	02	11	02	9	37	6	24	2	18	1	
2	6	17	10	06	11	02	9	33	6	17	2	09	2	
3	6	27	10	11	11	01	9	28	6	09	2	00	3	
4	6	37	10	15	11	00	9	23	6	02	1	52	4	
5	6	47	10	19	10	59	9	18	5	54	1	42	5	
6	6	56	10	23	10	57	9	12	5	46	1	34	6	
7	7	05	10	27	10	56	9	07	5	38	1	25	7	
8	7	14	10	31	10	54	9	01	5	31	1	16	8	
9	7	23	10	34	10	52	8	56	5	23	1	07	9	
10	7	32	10	37	10	50	8	50	5	15	0	58	10	
11	7	41	10	40	10	48	8	45	5	07	0	50	11	
12	7	49	10	43	10	46	8	39	4	59	0	41	12	
13	7	57	10	46	10	43	8	33	4	51	0	32	13	
14	8	05	10	48	10	41	8	27	4	42	0	23	14	
15	8	14	10	50	10	38	8	21	4	34	0	14	15	
16	8	21	10	52	10	35	8	15	4	26	0	05	16	
17	8	29	10	54	10	32	8	08	4	18	0	A 04	17	
18	8	36	10	56	10	29	8	02	4	09	0	13	18	
19	8	44	10	57	10	26	7	55	4	01	0	22	19	
20	8	51	10	59	10	23	7	49	3	53	0	31	20	
21	8	58	11	00	10	19	7	42	3	44	0	40	21	
22	9	05	11	01	10	15	7	36	3	36	0	48	22	
23	9	11	11	02	10	11	7	29	3	27	0	50	23	
24	9	28	11	03	10	08	7	22	3	19	1	00	24	
25	9	24	11	03	10	04	7	15	3	10	1	15	25	
26	9	30	11	04	10	00	7	08	3	00	1	24	26	
27	9	35	11	04	9	56	7	01	2	53	1	33	27	
28	9	4	11	0	9	51	6	54	2	44	1	40	28	
29	9	46	11	0	9	47	6	46	2	35	1	51	29	
30	9	5	11	04	9	42	6	39	2	27	1	59	30	
31	9	57	11	03			6	32		2	08	31		

Catalogus Eclipsium Comitum Jovialium ubique Terrarum Anno in-

Januarii.				Februarii.				Martii.			
D.	H.	M.		D.	H.	M.		D.	H.	M.	
1	01	27	I	1	02	10	3	1	15	04	*
2	09	34	2	17	20		*	18	06	3	*
	19	55	I	18	20		4	2	05	27	I
3	07	23	3	21	51	I	i	3	19	25	2
4	14	22	I	3	09	04	2		23	56	I
5	22	50	2	16	19	I	*	5	18	26	I
6	08	50	I	5	10	47	I	7	05	05	4
8	03	17	I	6	22	21	2		6	43	4
9	12	06	2	7	05	16	I	8	44	2	2
	21	45	I	8	03	08	3		12	54	I
10	11	18	3	6	08	08	3	8	19	01	3
11	16	13	I	23	44	I	i		22	06	3
13	01	23	2	10	11	39	2	9	07	22	I
	10	41	I	18	13	I	*	10	22	02	2
15	05	09	I	12	12	41	I	11	01	52	I
	23	53	<i>Apert</i>	14	00	56	2	12	20	20	I
16	14	39	2	7	10	I	i	14	11	40	2
	23	37	I	15	7	06	3		14	49	I
17	15	15	3	10	07		3	15	23	03	3
	18	14	3	16	01	38	I	16	02	06	3
18	18	05	i	17	14	14	2		9	18	I
20	03	56	i	20	20	07	I	18	00	39	2
22	07	01	I	18	11	11	4		3	47	2
23	17	12	2	12	32		4	19	22	16	I
24	01	29	I	19	14	35	I	21	13	57	2
	19	12	3	21	03	32	2		16	44	I
	22	11	3	9	04	I	i	23	03	03	3
25	19	57	I	22	11	05	3		6	07	3
27	06	29	2	14	06		3		11	13	I
	14	25	I	23	03	33	I		23	02	4
29	08	54	I	24	16	50	2	24	0	54	4
30	19	47	2	22	22	01	I	25	3	15	2
31	03	22	I	26	16	30	1		5	42	I
	23	10	3	28	06	07	2	27	00	11	I
				10	59	I	i	28	16	34	2
									18	39	I
								30	07	02	3
									10	08	3
									13	09	I



Julii.				Augusti.				Septemb.			
D.	H.	M.		D.	H.	M.		D.	H.	M.	
1	13	53	3 e	1	12	42	1 e	1	04	33	2 e
2	10	32	1 e	3	07	11	1 e	2	09	29	1 * e
	10	38	4 * i		17	58	2 e	3	22	48	3 i
	13	32	4 e	4	22	40	4 i	4	02	07	3 e
	18	13	2 e	5	1	40	1 e		3	59	1 e
4	05	00	1 e		1	52	4 e		17	53	2 e
5	23	29	1 e	6	06	40	3 i	5	22	28	1 e
6	07	32	2 e		9	56	3 * e	7	10	55	4 i
7	17	57	1 e		20	09	1 e		14	21	4 e
8	17	52	3 e	7	07	17	2 e		16	58	1 e
9	12	26	1 * e	8	14	38	1 e	8	07	13	2 * e
	20	59	2 e	10	09	07	1 * e	9	11	27	1 e
11	06	55	1 e		20	37	2 e	11	02	51	3 i
13	01	23	1 e	12	03	37	1 e		5	57	1 e
	10	07	2 * e	13	10	42	3 i		6	10	3 * e
14	19	52	1 e		13	58	3 i		20	32	2 e
15	18	38	3 i		22	06	1 e	13	00	26	1 e
	21	52	3 e	14	09	56	2 * e	14	18	56	1 e
16	14	21	1 e	15	16	35	1 e	15	09	52	2 e
	23	25	2 e	17	11	05	1 e	16	13	25	1 e
18	08	50	1 e		23	15	2 e	18	06	54	3 * i
19	04	38	4 i	19	05	34	1 e		7	54	1 * e
	7	40	4 e	20	41	44	3 i		10	13	3 e
20	03	19	1 e		18	01	3 e		23	12	2 e
	12	43	2 e	21	00	03	1 e	20	02	24	1 e
21	21	47	1 e		12	35	2 e	21	20	54	1 e
22	22	38	3 i		16	47	4 i	22	12	31	2 e
23	01	53	3 e		20	05	4 e	23	15	23	1 e
	16	16	1 e	22	18	33	1 e	24	05	03	4 i
24	02	02	2 e	24	13	02	1 e		8	37	4 e
25	10	45	1 * e	25	01	54	2 e	25	09	52	1 e
27	05	14	1 e	26	07	32	1 * e		10	56	3 i
	15	21	2 e	27	18	46	3 i		14	16	3 e
28	23	43	1 e		22	03	3 e	26	01	51	2 e
30	02	39	3 i	28	02	01	1 e	27	04	22	1 e
	05	54	3 e		15	14	2 e	28	22	51	1 e
	18	12	1 e	29	20	30	1 e	29	15	10	2 e
31	04	39	2 e	31	15	00	1 e	30	17	20	1 e

Octobris.			Novembr.			Decembre.		
D.	H.	M.	D.	H.	M.	D.	H.	M.
2	11	49	1	14	01	1		
	14	58	3	08	26	1		
	18	18	3	04	15	2	*	e
3	04	29	2	02	58	1		e
4	06	19	1	21	26	1		e
6	00	48	1	14	21	3		e
	17	48	2	17	32	2		e
7	19	17	1	8	15	54	1	e
9	13	46	1	10	10	23	1	e
	18	59	3	11	06	50	2	e
	22	20	3	12	04	51	1	e
10	07	07	2	13	11	15	4	i
	23	11	4		15	04	4	e
11	02	49	4		23	19	1	e
	8	15	1	14	20	07	2	e
13	02	44	1		18	20	3	e
	20	26	2	15	17	47	1	e
14	21	13	1	17	12	15	1	e
16	15	42	1	18	09	24	2	e
	23	00	3	19	06	43	1	e
17	02	22	3	21	01	12	1	e
	9	45	2		22	17	3	e
18	10	11	1		22	40	2	e
20	04	40	1	22	19	39	1	e
	23	03	2	24	14	07	1	e
21	23	09	1	25	11	57	2	e
23	17	37	1	26	08	35	1	e
24	06	23	3	28	03	03	1	e
	12	21	2	29	01	13	2	e
25	12	06	1		2	14	3	e
27	06	35	1		21	30	1	e
	17	13	4	30	05	04	4	i
	20	59	4		9	00	4	e
28	01	39	2					e
29	01	03	1					e
30	19	32	1					e
31	10	22	3					e
	14	57	2					e

*Toto Decembre  
Jupiter latet  
sub Radiis  
Solis.*



## Jovis loca Geocentrica

	Janu.		Febru.		March.		April.		May.		June.		
	‡		‡		‡		‡		‡		‡		
	G.	M.	G.	M.	G.	M.	G.	M.	G.	M.	G.	M.	
1	13	46	19	19	22	46	24 <sup>k</sup>	07	22	39	19	05	1
2	13	58	19	29	22	51	24	07	22	34	18	57	2
3	14	10	19	38	22	57	24	07	22	28	18	49	3
4	14	22	19	47	23	02	24	06	22	22	18	42	4
5	14	34	19	55	23	06	24	05	22	16	18	34	5
6	14	45	20	04	23	11	24	04	22	10	18	27	6
7	14	57	20	12	23	15	24	03	22	04	18	19	7
8	15	09	20	21	23	20	24	01	21	58	18	11	8
9	15	20	20	29	23	24	23	59	21	52	18	04	9
10	15	32	20	38	23	27	23	58	21	45	17	56	10
11	15	43	20	46	23	31	23	56	21	39	17	48	11
12	15	54	20	54	23	35	23	54	21	32	17	41	12
13	16	06	21	01	23	38	23	51	21	25	17	34	13
14	16	16	21	09	23	41	23	49	21	18	17	27	14
15	16	27	21	17	23	44	23	46	21	11	17	20	15
16	16	38	21	24	23	47	23	43	21	04	17	13	16
17	16	49	21	3	23	50	23	40	20	57	17	06	17
18	17	00	21	38	23	52	23	37	20	50	16	59	18
19	17	10	21	45	23	55	23	33	20	43	16	52	19
20	17	21	21	52	23	57	23	30	20	35	16	46	20
21	17	32	21	59	23	59	23	26	20	28	16	39	21
22	17	42	22	05	24	00	23	22	20	20	16	33	22
23	17	52	22	12	24	02	23	18	20	14	16	26	23
24	18	02	22	18	24	03	23	14	20	06	16	20	24
25	18	12	22	24	24	04	23	09	19	58	16	14	25
26	18	23	22	30	24	05	23	04	19	50	16	08	26
27	18	33	22	35	24	06	23	00	19	43	16	02	27
28	18	42	22	41	24	07	22	56	19	35	15	56	28
29	18	51			24	07	22	50	19	28	15	51	29
30	19	00			24	08	22	45	19	20	15	44	30
31	19	10			24	08			19	12			31

in diem quemlibet Anni. 1687.

Julii.		August.		Septem.		Octob.		Novem.		Dece.			
D	†	†	†	†	†	†	†	†	†	†	D		
	G. M.	G. M.	G. M.	G. M.	G. M.	G. M.	G. M.	G. M.	G. M.	G. M.			
1	15	40	14	D 17	15	47	19	40	25	27	2	02	1
2	15	34	14	17	15	53	19	50	25	39	2	16	2
3	15	29	14	17	15	59	19	59	25	51	2	29	3
4	15	24	14	17	16	05	20	10	26	04	2	43	4
5	15	20	14	18	16	11	20	20	26	17	2	57	5
6	15	15	14	19	16	17	20	30	26	29	3	11	6
7	15	11	14	21	16	24	20	40	26	42	3	25	7
8	15	07	14	22	16	30	20	51	26	55	3	38	8
9	15	03	14	23	16	37	21	01	27	08	3	52	9
10	14	59	14	25	16	44	21	12	27	21	4	06	10
11	14	55	14	27	16	50	21	23	27	34	4	20	11
12	14	51	14	29	16	58	21	34	27	47	4	34	12
13	14	48	14	31	17	07	21	44	28	00	4	48	13
14	14	45	14	34	17	14	22	55	28	13	5	02	14
15	14	42	14	36	17	21	22	06	28	26	5	16	15
16	14	39	14	39	17	28	22	17	28	39	5	29	16
17	14	36	14	42	17	36	22	28	28	53	5	42	17
18	14	33	14	45	17	44	22	40	29	06	5	57	18
19	14	31	14	49	17	53	22	52	29	19	6	11	19
20	14	28	14	52	18	01	23	03	29	33	6	25	20
21	14	26	14	56	18	09	23	14	29	46	6	39	21
22	14	25	15	00	18	18	23	26	29	59	6	53	22
23	14	23	15	04	18	27	23	37	C 13	7	07	23	23
24	14	21	15	08	18	35	23	49	0	26	7	21	24
25	14	20	15	12	18	44	24	01	0	40	7	35	25
26	14	19	15	17	18	53	24	13	0	53	7	48	26
27	14	18	15	21	19	02	24	25	1	07	8	02	27
28	14	17	15	26	19	12	24	37	1	21	8	18	28
29	14	17	15	31	19	21	24	50	1	34	8	30	29
30	14	17	15	37	19	31	25	02	1	48	8	44	30
31	14	17	15	42			25	14			8	58	31

*Defectus Lunaris Uliffipponæ a Do. Jacobeo Obser-  
vatus Nov. 30. 1686.*

	H. M.
<i>Initium</i>	8 02
<i>Immersio</i>	9 06
<i>Emerfio</i>	10 50
<i>Finis</i>	11 57

*Jovis a Luna teſti Observationes Grenovici habitæ a Jo. Flam-  
ſtedio Math. Reg. Martii 31. 1686.*

	Temp. corr. per hor. oscil.	
	H. M. S.	
Martii 31 8	9. 32. 30	4 s limbus tangebatur limbum Lunæ lucidum, Mæotidis diametrum a termino ejus boreo.
	33. 42	4 Totus teſtus erat. Quantum per vapores horizontis & undulationem limbi valde turbidam, licuit conjicere.
	10. 11. 12	Differentia declinationem limbi Lunæ vere Austrini & loci Ingreſſus, Tubo ped. 3 & Micrometro 1546 = 12 m. 42 ſec.
	30. 30	Jovis particula emerſerat, e regione realis limbi Mæotidis.
	31. 36	Jupiter totus liber.
	35. 50	Differentia declinationum centri Jovis, & limbi Lunæ Austrini 3436 = 28 m. 5 ſ.
	41. 40	Repet. 3585 = 29 m. 28 ſ.
	44. 00	Lunæ Diameter 3906 = 32 m. 07 ſ.
	45. 44	Repet. 3915 = 32 m. 11 ſ.