

An Abstract of a Letter from Mr. J. Flamsteed, Math. Reg. & F. of the R. S. giving an account of the Eclipses of 7^s Satellites, anno 1686; and containing a Table of the Parallaxes of 7^s Orb, and an Ephemeris of 7^s Geocentric Places for the same year.

Sir,

I Give you here the Eclipses of *Jupiters Satellites* for the next year 1686, deduced from the same numbers by which I calculated those of the years 1684, and 1685, printed in the *Transactions*. I shall not need to shew here again, how to find within what limits on our Earth any of them, not visible with us, will be observable; having done it already both in *English* and *Latin* in those Tracts; I shall therefore only tell you that all my observations of them since made, (which have not been many by reason of our much cloudy weather and my frequent avocations,) have fully made good my assertions concerning them, and that I have not found my numbers at any time since to err above one minute in the *Eclipses* of the first or innermost *Satellit*; so that if a way were found of managing a Tube of 8, 10, or 12 foot long at *Sea*, and Observing the time as exactly as we can at land, Observations of these *Eclipses* would certainly give us the difference of Longitude, as exactly as the Latitudes are pretended to be Observed by our more knowing *Sea-Men*, and certainly much better then the Observations of *Lunar Eclipses*. How the differences of Longitude are gained by them, you will see by the following Examples, the latter of which I have purposely produced to

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shew the good agreement of my numbers with the heavens.

Anno 1680, *October* 23, old *Stile*, Signior *Joseph Ponthia*, and *Marco Antonio Cellio* with a Telescope of 25 *Palms* long, Observed the totall Immersion of the first *Satellit* into Υ^s shadow at *Rome* at 10^h. 07'. 53". p. m, which in our Observatory here I noted at 9. 15. 41, whose difference is the difference of our Meridians = 52'-12", or 13°. 0'3.

Again, *January* the 28 1685, Signior *Francis Blanchini*, having received my Catalogue of the *Eclipses* of the *Satellites* for that year, observed the totall Immersion of the 1st at *Rome*, at 11^h. 19³/₄ which I saw not here, but my numbers give at 10. 27¹/₄. Therefore the difference of *Meridians* is 0 52¹/₂; and *Rome* lies so much more Easterly then the Observato-ry at *Greenwich*, agreeing with the former observation, and shewing the error of the Tables to be insensible.

The noble *Tycho* judged therefore not much amiss, when he placed *Uraniburg* and *Rome* under the same *Meridian*; for by severall observations of *Satellit Eclipses*, it is evident, that the difference of *Meridians* betwixt *Uraniburg* and our Observatory is 51'. 10". of time, so that *Rome* lies only one minute of time or $\frac{1}{4}$ of a degree to the East of *Uraniburg*.

Some Ingenuous persons having often wished that such Tables of the *Satellites* motions were published, as might serve to find their appearances at any given time, tho I think it not fit (by reason they are capable of much Correction and great improvement) to publish mine at present: yet for the sake of the diligent observer, I have contrived a small Instrument, whereby with the sole help of the following Catalogue, and the Table of the *Parallaxes* of Υ^s orb, their distances from the *Axis* of Υ may be found to any given time within the compass of the next year, and for any future year by the like Tables.

To

To make the Catalogue of *Eclipses*, as also the Table of the *Parallaxes* of Ψ , it was necessary first to make a Table of Ψ^s *Heliocentrick* places, to which the *Parallaxes* being applied, give the *Geocentrick*. The vulgar Ephemerides are very faulty in this Planet, and no good one being extant this year, I here give you a copy of mine deduced from my own corrected Tables, which I am perswaded will be of good use and very acceptable to the Ingenuous Student of *Astronomy*.

[1218]

Tabula Parallaxium Orbitæ Jovialis Anno. 1686.

D	Janu.		Febr.		Martii		Apr.		Maii		Junii	
	Parallax. Adde.		Parall. Adde.		Parall. Adde.		Parall. Adde.		Parall. Sub.		Parall. Sub.	
	o	'	o	'	o	'	o	'	o	'	o	'
1	9	22	10	32	9	18	5	11	0	41	6	29
2	9	26	10	31	9	13	5	00	0	53	6	39
3	9	31	10	31	9	07	4	49	1	05	6	48
4	9	35	10	30	9	01	4	39	1	18	6	58
5	9	39	10	30	8	55	4	28	1	30	7	06
6	9	42	10	29	8	49	4	17	1	42	7	15
7	9	46	19	28	8	43	4	06	1	54	7	24
8	9	50	10	27	8	37	3	55	2	06	7	32
9	9	53	10	26	8	30	3	44	2	18	7	41
10	9	56	10	24	8	24	3	32	2	30	7	49
11	9	59	10	22	8	17	3	21	2	42	7	57
12	10	02	10	20	8	09	3	09	2	54	8	05
13	10	05	10	18	8	02	2	57	3	06	8	12
14	10	08	10	15	7	54	2	45	3	17	8	20
15	10	10	10	13	7	47	2	33	3	29	8	27
16	10	13	10	10	7	39	2	22	3	40	8	34
17	10	15	10	07	7	31	2	10	3	52	8	41
18	10	17	10	04	7	23	1	58	4	03	8	48
19	10	19	10	01	7	14	1	46	4	14	8	55
20	10	21	9	57	7	06	1	34	4	25	9	01
21	10	23	9	54	6	57	1	22	4	36	9	07
22	10	25	9	50	6	48	1	09	4	47	9	13
23	10	26	9	46	6	39	0	57	4	58	9	19
24	10	27	9	42	6	29	0	45	5	09	9	25
25	10	29	9	37	6	20	0	32	5	19	9	31
26	10	30	9	33	6	11	0	21	5	30	9	36
27	10	31	9	28	6	01	0	09	5	40	9	41
28	10	32	9	23	5	51	Sub.	04	5	50	9	46
29	10	32			5	42	0	16	6	00	9	51
30	10	32			5	31	0	28	6	10	9	55
31	10	32			5	21			6	19		

Julii

[1219]

D	Julii	Augu.	Sept.	Octob.	Nov.	Decem.
	Parall. Sub.	Parall. Sub.	Parall. Sub.	Parall. Sub.	Parall. Sub.	Parall. Adde.
1	10 00	10 51	9 17	6 10	2 00	2 21
2	10 04	10 49	9 12	6 03	1 51	2 30
3	10 08	10 48	9 07	5 55	1 43	2 38
4	10 12	10 47	9 02	5 48	1 34	2 47
5	10 16	10 46	8 57	5 41	1 25	2 55
6	10 19	10 44	8 52	5 33	1 17	3 04
7	10 23	19 42	8 46	5 25	1 08	3 12
8	10 26	10 41	8 40	5 17	0 59	3 21
9	10 29	10 39	8 35	5 09	0 51	3 29
10	10 32	10 36	8 29	5 02	0 42	3 38
11	10 34	10 34	8 23	4 53	0 33	3 46
12	10 37	10 32	8 17	4 46	0 24	3 54
13	10 39	10 29	8 12	4 38	0 16	4 02
14	10 41	10 26	8 06	4 29	0 07	4 10
15	10 43	10 24	7 59	4 21	Add: 2	4 18
16	10 45	10 21	7 53	4 13	0 11	4 26
17	10 46	10 18	7 47	4 06	0 20	4 35
18	10 48	10 15	7 40	3 57	0 28	4 43
19	10 49	10 11	7 34	3 49	0 37	4 51
20	10 50	10 08	7 27	3 41	0 46	4 59
21	10 51	10 04	7 21	3 32	0 55	5 07
22	10 51	10 00	7 14	3 24	1 03	5 15
23	10 52	9 56	7 07	3 16	1 12	5 22
24	10 52	9 53	7 00	3 08	1 21	5 30
25	10 53	9 49	6 53	2 59	1 29	5 38
26	10 53	9 45	6 46	2 51	1 38	5 46
27	10 53	9 40	6 39	2 43	1 47	5 52
28	10 53	9 36	6 32	2 34	1 55	6 00
29	10 53	6 31	6 25	2 25	2 04	6 08
30	10 52	9 27	6 18	2 17	2 13	6 15
31	10 51	9 22		2 08		6 23

Catalogus Eclipsium Comitum Jovialium ubique terrarum Anno 1686
 visibilibus, tempora apparentia Ingressuum illorum in Jovis Umbram &
 ab ea Emerfionum, ad Meridianum Observatorii Grenovifani fupputata
 exhibens, à Johanne, Flamfteedio Math. Reg. & R. S. S.

Januarii			Februarii			Martii		
d.	b.		d.	b.		d.	b.	
1	08 18	2 i	2	07 45	2 i	1	4 23	3 i
	11 27	1 i		7 49	1 i	2	15 26	1 * i
2	20 47	3 { e	4	02 18	1 i		18 07	2 * i
	23 23	3 { e	5	20 46	1 i	4	09 55	1 i
3	05 55	1 i		21 03	2 i	6	04 24	1 i
4	21 35	2 i	7	15 14	1 * i		7 25	2 i
5	00 22	1 i		16 27	1 * i	7	22 53	1 i
6	18 50	1 * i		19 04	3 * e	8	08 22	3 i
8	10 50	2 i	9	09 43	1 i	9	17 22	1 * i
	13 18	1 i		10 20	2 i		20 43	2 i
10	00 42	3 { e	11	04 11	1 i	11	11 50	1 * i
	3 18	3 { e	12	22 40	1 i	13	06 19	1 i
	7 45	1 i		23 38	2 i		9 52	2 i
12	0 07	2 i	14	17 08	1 * i	15	00 48	1 i
	2 13	1 i		20 24	3 { e		12 22	3 * i
13	20 41	1 i		23 01	3 { e	16	19 17	1 i
15	13 22	2 i	16	11 37	1 i		23 20	2 i
	15 09	1 * i		12 55	2 * i	18	13 46	1 * i
17	05 37	3 { e	18	06 06	1 i	20	08 15	1 i
	08 13	3 { e		20 00 34	1 i		12 38	2 * i
	09 37	1 i		2 13	2 i	22	02 44	1 i
19	02 39	2 i	21	19 03	1 i		16 22	3 * i
	4 04	1 i		22 00 24	3 i	23	21 13	1 i
20	22 32	1 i	22	03 01	3 e	24	01 54	2 i
22	15 55	2 * i	23	13 31	1 * i	25	15 50	1 * i
	17 00	1 * i		15 31	2 * i	27	10 10	1 * i
24	08 33	3 { e	25	8 00	1 i		15 15	2 * i
	11 09	3 { e		27 02 34	1 i	29	04 39	1 i
	11 28	1 i		4 49	2 i		20 21	3 i
26	05 12	2 i	28	20 57	1 i	30	23 08	1 i
	5 57	1 i				31	04 33	2 i
28	0 25	1 i						
29	18 29	2 * i						
	18 53	1 * i						
31	12 30	3 i						
	13 21	1 i						
	15 06	3 * e						

Apr.

<i>Aprilis</i>			<i>Maii</i>			<i>Junii</i>		
<i>d.</i>	<i>h.</i>	<i>'</i>	<i>d.</i>	<i>h.</i>	<i>'</i>	<i>d.</i>	<i>h.</i>	<i>'</i>
1	17	37	1	21	59	1	00	03
3	12	05	2	06	54	2	10	49
	17	51	3	16	28		18	30
5	06	35	4	18	57	3	06	31
6	00	21	5	10	56	4	13	00
7	01	03		20	12	6	07	28
	7	09	7	05	25		19	48
8	19	32	8	23	53	8	01	55
10	14	01	9	09	30	9	14	47
	20	28	10	18	22		20	25
12	08	10	11	22	55	10	09	06
13	04	20	12	12	50	11	14	53
14	02	58		22	47	13	09	21
	9	46	14	07	19		22	23
15	21	27	16	01	47	15	03	49
17	15	57		12	06	16	18	45
	23	04	17	20	15		22	18
19	10	25	19	02	53	17	11	40
20	08	20	19	14	44	18	16	46
21	04	54	20	01	22	20	11	15
	12	22	21	09	12	21	00	58
22	23	22	23	03	41	22	05	43
24	17	51		14	39	23	22	43
25	01	40	24	22	09	24	00	12
26	12	19	20	06	51		14	15
27	12	18		16	37	25	18	40
♁	⊙	♃	27	03	57	27	13	09
28	09	02	28	11	05	28	03	33
	17	37	30	05	34	29	07	37
30	03	31		16	14	30	23	58

Julii

Julii			Augusti			Septemb.		
d.	b.		d.	b.		d.	b.	
I	02 06	I e	I	22 44	I e	I	01 02	I e
	2 42	3 e e	2	16 35	2 e e	2	19 31	I e
	16 50	2 e e	3	17 14	I e e	3	12 02	3 { i e
2	20 34	I e e	5	11 43	I e e		13 50	2 { e e
4	15 03	I e e		19 57	3 { i e e		16 27	I e e
5	06 08	2 e e		22 43	2 { e e e	4	14 00	I e e
6	09 31	I * e	6	05 53	I e e	6	08 30	I e e
8	03 59	3 i e	7	06 12	I e e	7	05 46	2 e e
	3 59	I e e	9	00 41	I e e	8	02 59	I e e
	6 41	3 e e		18 12	2 e e	9	21 29	I e e
	19 26	2 e e	10	19 10	I i i	10	16 04	3 { i e e
9	22 29	I e e	12	13 39	I i i		18 52	2 { e e e
11	16 57	I e e		23 58	3 { i e e	11	19 05	I e e
12	08 44	2 * e	13	02 44	2 { * e e	13	10 27	I e e
13	11 26	I e e		8 51	I * e	14	08 25	2 e e
15	05 55	I * i	14	8 09	I * e	15	04 57	I e e
	7 57	3 * e	16	02 38	I e e	16	23 26	I e e
	10 40	2 e e		21 51	2 e e	17	21 44	2 e e
	22 02	I e e	17	21 07	I e e		22 54	3 e e
17	00 24	I e e	19	15 36	I e e	18	17 55	I e e
18	18 53	I e e	20	03 59	3 { i e e	20	12 25	2 e e
19	11 21	2 e e		6 45	2 e e	21	11 03	I * e
20	13 21	I e e	21	11 10	I e e	22	06 44	I e e
22	07 51	I * e		10 05	I e e	24	01 23	2 e e
	11 56	3 { i e e	23	04 35	I e e	25	00 23	3 e e
	14 41	2 e e	24	00 29	I e e		2 56	I e e
23	00 39	I e e		23 04	I e e		19 52	I e e
24	02 19	I e e	26	17 33	I e e	27	14 22	I e e
25	20 49	I e e	27	08 01	3 * { i e e	28	13 42	2 e e
27	13 57	2 e e		10 48	2 e e	29	08 51	I e e
	15 17	I e e	28	12 03	I e e			
29	09 47	I * e	30	06 32	I e e			
	15 56	3 { i e e	31	03 08	2 e e			
	18 41	2 e e						
30	03 16	I e e						
31	04 15	I e e						

Octobris			Decemb.			
d.	b.		d.	b.		
1	02 20	1 e	1	10 12	2 i	<i>Quartus hoc Anno Umbram non in- greditur, sed ☿ e sole emergente, in penum- bram solummodo in- cidit. Interea plan- num ad Axem Um- brae & Jovis orbi- tam perpendiculare pertransit temporibus infra notatis. 1686.</i>
2	03 01	2 e		23 38	1 i	
	4 58	3 e	3	18 06	1 i	
	21 49	1 e	4	23 28	2 i	
4	16 18	1 e	5	12 33	1 i	
5	16 19	2 e		15 45	3 i	
6	10 47	1 e	7	07 00	1 i	
8	05 16	1 * e	8	12 15	2 i	
9	05 38	2 * e	9	01 29	1 i	
	10 58	3 e	10	19 56	1 * i	
	23 45	1 e	12	02 00	2 i	
11	18 14	1 e		14 24	1 i	
12	18 56	2 e		19 40	3 * i	
13	12 43	1 e	14	08 51	1 i	
15	07 12	1 e	15	15 15	2 i	
16	8 15	2 e	16	03 18	1 i	
	14 58	3 e	17	21 46	1 i	
17	01 41	1 e	19	04 31	2 i	
18	20 09	1 e		16 14	1 i	
19	21 33	2 e		23 34	3 i	
20	14 38	1 e	21	10 42	1 i	
22	09 07	1 e	22	17 46	2 * i	
23	10 51	2 e	23	05 09	1 i	
	18 58	3 e	24	23 37	1 i	
24	03 35	1 e	26	07 03	2 i	
25	02 04	1 e		18 04	1 * i	
27	00 08	2 e	27	02 29	3 i	
	16 32	1 e	28	12 32	1 i	
29	11 01	1 e	20	20 18	2 * i	
30	13 26	2 e	30	07 00	1 i	
	22 57	3 e				
31	05 29	1 * e				
<i>Novembre toto ☿ latet sub Radiis solis</i>						
						<i>Janua. d. b.</i> 12 12 07 29 6 0 <i>Februa.</i> 15 0 0 <i>Martii</i> 3 17 56 20 11 * 57 <i>Aprilis</i> 6 5 59 23 0 00 <i>Maii</i> 9 17 59 26 11 * 57 <i>Junii</i> 12 5 54 28 23 52 <i>Julii</i> 15 17 52 <i>Augusti</i> 1 11 55 18 6 00 <i>Septemb.</i> 4 0 08 20 18 15 <i>Octob.</i> 7 12 21 24 6 23 <i>Decemb.</i> 13 12 8 30 5 39 2 ^a post. in penumbra.

Jovis Loca Geocentrica Anno 1686.

D	Janu.		Feb.		Martii.		April.		Maii.		Junii	
	°	ᵐ	°	ᵐ	°	ᵐ	°	ᵐ	°	ᵐ	°	ᵐ
1	18	12	21	45	22	40	20	56	17	23	13	59
2	18	21	21	49	22	39	20	50	17	16	13	54
3	18	30	21	53	22	38	20	44	17	08	13	49
4	18	38	21	57	22	37	20	38	17	1	13	45
5	18	47	22	01	22	36	20	32	16	53	13	41
6	18	55	22	04	22	34	20	25	16	48	13	37
7	19	03	22	08	22	33	20	19	16	38	13	33
8	19	12	22	12	22	31	20	12	16	31	13	29
9	19	20	22	15	22	29	20	06	16	24	13	25
10	19	27	22	18	22	27	19	59	16	16	13	22
11	19	35	22	21	22	25	19	52	16	9	13	18
12	19	43	22	24	22	22	19	45	16	2	13	15
13	19	50	22	26	22	19	19	38	15	54	13	12
14	19	51	22	28	22	17	19	31	15	47	13	9
15	20	05	22	30	22	13	19	24	15	40	13	7
16	20	12	22	32	22	10	19	16	15	34	13	4
17	20	19	22	34	22	06	19	9	15	27	13	2
18	20	25	22	35	22	03	19	2	15	20	13	0
19	20	32	22	37	21	59	18	55	15	14	12	58
20	20	38	22	38	21	55	18	47	15	07	12	56
21	20	45	22	39	21	51	18	40	15	1	12	54
22	20	51	22	40	21	47	18	32	14	55	12	53
23	20	57	22	40	21	43	18	25	14	48	12	52
24	21	03	22	41	21	38	18	17	14	42	12	51
25	21	09	22	41	21	33	18	9	14	36	12	50
26	21	15	22R	41	21	28	18	2	14	31	12	49
27	21	20	22	41	21	23	17	54	14	25	12	49
28	21	26	22	40	21	18	17	47	14	20	12	48
29	21	31			21	13	17	39	14	14	12	48
30	21	36			21	8	17	31	14	9	12D	48
31	21	40			21	2			14	4		

D	Julii		Aug.		Septem.		Octob.		Novem		Decem.	
	°	η	°	η	°	η	°	η	°	+→	°	+→
1	12	48	14	22	18	21	23	49	0	26	7	10
2	12	49	14	28	18	31	24	1	0	39	7	23
3	12	49	14	34	18	41	24	14	0	53	7	36
4	12	50	14	40	18	51	24	26	1	6	7	49
5	12	51	14	46	19	0	24	38	1	20	8	3
6	12	52	14	52	19	10	24	50	1	33	8	16
7	12	54	14	59	19	20	25	03	1	46	8	29
8	12	55	15	5	19	31	25	15	2	0	8	42
9	12	57	15	12	19	41	25	28	2	13	8	55
10	12	59	15	18	19	51	25	41	2	27	9	8
11	13	01	15	25	20	2	25	53	2	40	9	21
12	13	3	15	33	20	13	26	6	2	54	9	35
13	13	5	15	40	20	23	26	19	3	7	9	48
14	13	8	15	47	20	34	26	32	3	20	10	1
15	13	11	15	55	20	45	26	45	3	34	10	13
16	13	13	16	2	20	56	26	58	3	48	10	26
17	13	17	16	10	21	7	27	10	4	2	10	39
18	13	20	16	18	21	18	27	22	4	15	10	52
19	13	23	16	26	21	29	27	35	4	28	11	05
20	13	27	16	34	21	41	27	48	4	42	11	17
21	13	31	16	43	21	52	28	1	4	55	11	30
22	13	35	16	51	22	3	28	14	5	8	11	42
23	13	40	17	0	22	15	28	27	5	21	11	55
24	13	44	17	8	22	26	28	40	5	35	12	08
25	13	48	17	17	22	38	28	53	5	49	12	20
26	13	52	17	26	22	50	29	6	6	3	12	32
27	13	57	17	35	23	1	29	20	6	16	12	44
28	14	01	17	44	23	13	29	33	6	29	12	57
29	14	6	17	53	23	25	29	46	6	43	13	09
30	14	11	18	3	23	38	29	59	6	56	13	21
31	14	17	18	12			0 +→	13			13	34