

being brought nearer to the distinct Base of the Object Glass; and an Eye less Convex, the office of a less Convex Eye-Glass: but with this difference, that the more Convex the Eye is, the easier may any part of the Object be found, and the larger and more lucid it will appear.

I have seen *Saturn's* Ring very plain with an Object-Glass of little more than six Foot *Radius*, without an Eye-Glass.

I have also found out a way for the *Presbyta* to make use of an Object-Glass, by placing their Eye nearer the *Lens* than its *Focus*, by so much as their Eye is flatter than a common Eye, so as to make (as it were) the Telescope of *Galileo*; the flat Eye serving as a common Eye arm'd with a Concave *Lens*. I have so fixed the Telescope, as to make a *Presbyta* read at a great distance a small Print. The truth of this may be easily demonstrated, if it be requir'd.

If this Experiment be made at Sea with a very large Tube, big enough to put in the Head and move it about, and the Object-Glass be also large, it may not perhaps be difficult to observe the Eclipses of the *Satellites* of *Jupiter*, which I would recommend to the Consideration of those that would try for the Longitude by such like Observations.

VI. *New and accurate Tables for the ready Computing of the Eclipses of the first Satellite of Jupiter, by Addition only.* By the Reverend Mr James Pound, R. S. S.

**I**N Numb. 214. of these *Transactions*, for the Months of *Novem* and *Decem.* 1694. we exhibited an Epitomy of Mr. *Cassini's* curious Tables then newly published.

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lished. for computing the Eclipses of the *first Satellite of Jupiter*, without the help of any other Numbers. The ease of this *Calculus* gave great satisfaction to those that delight in Telescope observations; and has been of good use to encourage Astronomers to ascertain the Geographical Longitudes of many places, by help of these Eclipses; whose frequency seems to afford us the properest means for that purpose.

But it being now 26 Years since those Tables were published, length of Time has discovered that this *Satellites* motion is a small matter swifter than *M. Cassini* had supposed it; and the Reverend Mr. *Pound* being provided with all the Qualifications requisite for such a Work, has of late apply'd himself to rectify by frequent Observation what he found amiss in the aforesaid *Calculus*; and withal has put it into another Form yet much more easy and compendious, by bringing what *M. Cassini* had given us in odd Numbers, to the Millefimals of a Circle, both as to *Numb. I.* which he calls *Numb. A.* being the mean Anomalie of *Jupiter* in such parts; as also to *Numb. II.* or our *Numb. B.* which is the distance of the mean place of *Jupiter*, from the true place of the *Sun*, and which with the addition of the Equation of *Numb. B.* gives the true angle of *Commutation* in the same Millefimals of a Circle. And having deducted from the *Epoches* the greatest Equations both of *Numb. A.* and *B.* he restores them by adding as much to the Equations themselves, by which means they all become Affirmative, so that the whole computation is performed by Addition only.

The Reader is supposed to be acquainted with the Method of *M. Cassini's Calculus*, which is at large explain'd in the aforesaid *Transaction*, *Num. 214.* For which reason this shorter Description may suffice at present.

*Epoche Conjunctionum Primi Satellitis Cum Jove.*

An. Jul. Curr.	Conjun&			Num. A.	Num. B.	An. Jul. Curr.	Conjun&			Num. A.	Num. B.		
	D.	H.	..				D.	H.	..				
1719	I	6	11	13	872	396	1749	0	11	9	34	400	866
1720	0	20	22	40	956	310	1750	0	1	21	1	485	780
21	I	5	2	44	40	229	51	I	10	1	5	569	698
22	0	19	14	11	125	143	52	I	0	12	33	653	612
23	0	9	25	38	209	57	53	I	8	52	37	738	531
1724	I	18	5	42	293	371	1754	0	23	4	4	822	445
1725	0	8	17	10	377	889	1755	0	13	15	32	906	359
26	I	16	57	13	462	808	56	0	3	27	0	990	273
27	I	7	8	41	546	722	57	0	12	7	3	75	191
28	0	21	20	8	630	636	58	0	2	18	30	159	110
3729	I	6	0	12	715	554	1759	I	10	58	34	243	24
1730	0	20	11	39	799	468	1760	I	1	10	1	328	938
31	0	10	23	7	883	382	61	I	9	50	35	412	856
32	0	0	34	34	967	296	62	I	0	1	2	496	770
33	0	9	14	38	52	215	63	0	14	13	0	580	684
1734	I	17	54	41	136	133	1764	0	4	24	27	665	598
1735	I	8	6	9	220	47	1765	0	13	4	31	749	517
36	0	22	17	36	305	961	66	0	3	15	58	833	431
27	I	6	57	40	389	880	67	I	11	56	2	918	349
38	0	21	9	7	473	794	68	I	2	7	29	2	263
1739	0	11	20	35	557	708	1769	I	10	47	33	86	182
1740	0	1	32	2	642	622	1770	I	0	59	0	171	96
41	0	10	12	6	726	540	71	0	15	10	28	255	10
42	0	0	23	33	810	454	72	0	5	21	56	329	924
43	I	9	3	37	895	373	73	0	14	2	0	423	842
1744	0	23	15	4	979	287	1774	0	4	13	27	508	761
1745	I	7	55	8	63	205	1775	I	12	53	31	592	675
46	0	22	6	35	148	119	76	I	3	4	58	676	589
47	0	12	18	3	232	33	77	I	11	45	1	761	507
48	0	2	29	30	316	947	78	I	1	56	28	845	421
1749	0	11	9	34	400	866	1779	0	16	7	56	929	335

*Revoluciones Primi Satellitis Jovis in mensibus.*

<i>Fanuarii.</i>				N.	Nu.	<i>Februarii.</i>				N.	Nu.
D. h.				A.	B.	D. h.				A.	B.
1	18	28	36	0	5	15	0	23	35	11	118
3	12	57	12	1	9	16	18	52	11	11	123
5	7	25	48	1	14	18	13	20	47	11	128
7	1	54	24	2	18	20	7	49	23	12	132
8	20	23	0	2	23	22	2	17	59	12	137
10	14	51	36	2	27	23	20	46	35	13	141
12	9	20	12	3	32	25	15	15	11	13	146
14	3	48	48	3	37	27	9	43	47	13	150
15	22	17	24	4	41	<i>Martii.</i>					
17	16	46	0	4	46	1	4	12	23	14	155
19	11	14	36	4	51	2	22	40	59	14	159
21	5	43	12	5	55	4	17	9	35	15	164
23	0	11	47	5	60	6	11	38	10	15	168
24	18	40	23	6	64	8	6	6	46	16	173
26	13	8	59	6	69	10	0	35	22	16	177
28	7	37	35	7	73	11	19	3	58	16	182
30	2	6	11	7	78	13	13	32	34	17	186
31	20	34	47	7	82	15	8	1	10	17	190
<i>Februarii</i>						17	2	29	46	18	195
0	20	34	47	7	82	18	20	58	22	18	199
2	15	3	23	8	87	20	15	26	58	18	204
4	9	31	59	8	92	22	9	55	34	19	208
6	4	0	35	9	96	24	4	24	10	19	213
7	22	29	11	9	101	25	22	52	46	20	217
9	16	57	47	9	105	27	17	21	22	20	221
11	11	26	23	10	110	29	11	49	58	20	225
13	5	54	59	10	114	31	6	18	34	21	230

*Aprilis.*

*Revoluciones Primi Satellitis Jovis in mensibus.*

<i>Aprilis.</i>				N.	Nu.	<i>Maii.</i>				N.	Nu.
<u>D. h. , "</u>				<u>A.</u>	<u>B.</u>	<u>D. h. , "</u>				<u>A.</u>	<u>B.</u>
0	6	8	34	21	230	16	6	42	9	31	343
2	0	47	10	21	235	18	1	10	45	32	348
3	19	15	46	22	239	19	19	39	21	32	352
5	13	44	22	22	244	21	14	7	57	33	356
7	8	12	58	22	248	23	8	36	33	33	361
9	2	41	34	23	252	25	3	5	9	33	365
10	21	10	10	23	257	26	21	33	45	34	369
12	15	38	46	24	261	28	16	2	21	34	373
14	10	7	22	24	265	30	10	30	57	35	378
16	4	35	58	25	270	<i>Junii</i>					
17	23	4	33	25	274	0	10	30	57	35	378
19	17	33	25	279	1	4	59	32	35	382	
21	12	1	45	26	283	2	23	28	8	36	386
23	6	30	21	26	287	4	17	56	44	36	391
25	0	58	57	27	292	6	12	25	20	36	395
26	19	27	33	27	296	8	6	53	56	37	399
28	13	56	9	27	300	10	1	22	32	37	403
30	8	24	45	28	304	11	19	51	8	38	408
<i>Maii.</i>						13	14	19	44	38	412
0	8	24	45	28	304	15	8	48	20	38	416
2	2	53	21	28	309	17	3	16	56	39	420
3	21	21	57	29	313	18	21	45	32	39	425
5	15	50	33	29	317	20	16	14	8	40	429
7	10	19	9	29	322	22	10	42	44	40	433
9	4	47	45	30	326	24	5	11	20	40	438
10	23	16	21	30	330	25	23	39	56	41	442
12	17	44	57	31	335	27	18	8	32	41	446
14	12	13	33	31	339	29	12	37	8	42	450

*Julii*

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Revoluciones Primi Satellitis Jovis in mensibus.

<i>Julii</i>				N.	Nu.	<i>Augusti.</i>				N.	Nu.
D. h. <small>    </small> <small>    </small> <small>    </small> <small>    </small>				A.	B.	D. h. <small>    </small> <small>    </small> <small>    </small> <small>    </small>				A.	B.
1	7	5	44	42	455	16	7	29	19	53	567
3	1	34	20	42	459	18	1	57	55	53	571
4	20	2	56	43	463	19	20	26	31	54	575
6	14	31	32	43	468	21	14	55	7	54	580
8	9	0	8	44	472	23	9	23	43	54	584
10	3	28	44	44	476	25	3	52	18	55	588
11	21	57	20	45	480	26	22	20	54	55	593
13	16	25	55	45	485	28	16	49	30	56	597
15	10	54	31	45	489	30	11	18	6	56	602
17	5	23	7	46	493	<i>Septembris.</i>					
18	23	51	43	46	498	1	5	46	42	56	606
20	18	20	19	47	502	3	0	15	18	57	610
22	12	48	55	47	506	4	18	43	54	57	615
24	7	17	31	47	510	6	13	12	30	58	619
26	1	46	7	48	515	8	7	41	6	58	624
27	20	14	43	48	519	10	2	9	42	58	628
29	14	43	19	49	523	11	20	38	18	59	632
31	9	11	55	49	528	13	15	6	54	59	637
<i>Augusti.</i>						15	9	35	30	60	641
0	9	11	55	49	528	17	4	4	6	60	646
2	3	40	31	49	532	18	22	32	42	60	650
3	22	9	7	50	536	20	17	1	18	61	655
5	16	37	43	50	541	22	11	29	54	61	659
7	11	6	19	51	545	24	5	58	30	62	663
9	5	34	55	51	549	26	0	27	6	62	668
11	0	3	31	51	554	27	18	55	42	62	672
12	18	32	7	52	558	29	13	24	18	63	677
14	13	0	43	52	562						

*Revoluciones Primi Satellitis Jovis in mensibus.*

<i>Octobris.</i>				N.	Nu.	<i>Novembris.</i>				N.	Nu.
D. h. ' "				A.	B.	D. h. ' "				A.	B.
1	7	52	54	63	681	16	8	16	29	74	799
3	2	21	30	64	686	18	2	45	5	74	804
4	20	50	6	64	690	19	21	13	40	75	808
6	15	18	41	65	695	21	15	42	16	75	813
8	9	47	17	65	699	23	10	10	52	76	817
10	4	15	53	65	704	25	4	39	28	76	822
11	22	44	29	66	708	26	23	8	4	76	827
13	17	13	5	66	713	28	17	36	40	77	831
15	11	41	41	67	717	30	12	5	16	77	836
17	6	10	17	67	721	<i>Decembris.</i>					
19	0	38	53	67	726	0	12	5	16	77	836
20	19	7	29	68	730	2	6	33	52	78	840
22	13	36	5	68	735	4	1	2	28	78	845
24	8	4	41	69	739	5	19	31	4	78	849
26	2	33	17	69	744	7	13	59	40	79	854
27	21	1	53	69	749	9	8	28	16	79	859
29	15	30	29	70	753	11	2	56	52	80	863
31	9	59	5	70	758	13	21	25	28	80	868
<i>Novembris.</i>						14	15	54	4	80	873
0	9	59	5	70	758	16	10	22	40	81	877
2	4	27	41	71	762	18	4	51	16	81	882
3	22	56	17	71	767	19	23	19	52	82	886
5	17	24	53	71	772	21	17	48	28	82	891
7	11	53	29	72	776	23	12	17	4	82	897
9	6	22	5	72	781	25	6	45	40	83	900
11	0	50	41	73	785	27	1	14	16	83	905
12	19	19	17	73	790	28	19	42	52	84	909
14	13	47	53	74	794	30	14	11	28	84	914

*Prima Equationes Conjunctionum Primi Satellitis  
cum Jove.*

Num. A.	Equat. Conjun. Adde.	Eq. Nu. B	Num. A.	A quat. Conjun. Adde.	Eq. Nu. B	Num. A.	Equat. Conjun. Adde.	Eq. Nu. B.	Num. A.	Equat. Conjun. Adde.	Eq. Nu. B.
0	39 8	15	128	12 7	26	256	0 1 31		384	11 52	26
4	38 12	16	132	11 27	26	260	0 0 31		388	12 37	26
8	37 16	16	136	10 47	26	264	0 1 31		392	13 23	25
12	36 21	16	140	10 9	27	268	0 3 31		396	14 11	25
16	35 26	17	144	9 31	27	272	0 7 31		400	14 59	25
20	34 30	17	148	8 45	27	276	0 12 31		404	15 48	24
24	33 35	17	152	8 19	27	280	0 19 31		408	16 38	24
28	32 40	18	156	7 44	28	284	0 28 30		412	17 30	24
32	31 45	18	160	7 10	28	288	0 38 30		416	18 22	23
36	30 50	19	164	6 38	28	292	0 50 30		420	19 15	23
40	29 56	19	168	6 7	28	296	1 3 30		424	20 9	23
44	29 3	19	172	5 37	28	300	1 17 30		428	21 4	22
48	28 10	20	176	5 8	29	304	1 33 30		432	22 59	22
52	27 16	20	180	4 41	29	308	1 50 30		436	22 55	22
56	26 23	20	184	4 15	29	312	2 8 30		440	23 53	21
60	25 30	21	188	3 49	29	316	2 28 30		444	24 51	21
64	24 38	21	192	3 24	29	320	2 51 30		448	25 49	21
68	23 47	21	196	3 1	29	324	3 15 29		452	26 8	20
72	22 56	22	200	2 40	30	328	3 40 29		456	27 48	20
76	22 5	22	204	2 20	30	332	4 6 29		460	28 48	19
80	21 15	22	208	2 1	30	336	4 34 29		464	29 49	19
84	20 26	23	212	1 42	30	340	5 3 29		468	30 50	19
88	19 37	23	216	1 25	30	344	5 34 29		472	31 51	18
92	18 48	23	220	1 10	30	348	6 5 28		476	32 53	18
96	18 0	24	224	0 58	30	352	6 38 28		480	33 55	17
100	17 14	24	228	0 47	30	356	7 13 28		484	34 57	17
104	16 28	24	232	0 36	30	360	7 50 28		488	35 59	17
108	15 42	24	236	0 26	30	364	8 27 27		492	37 1	16
112	14 57	25	240	0 18	30	368	9 6 27		496	38 5	16
116	14 13	25	244	0 12	31	372	9 46 27		500	39 8	15
120	13 30	25	248	0 7	31	376	10 27 27		504	40 11	15
124	12 48	26	252	0 4	31	380	11 9 26		508	41 15	14
128	12 7	26	256	0 1	31	384	11 52 26		512	42 17	14



( 1029 )

*Primæ Aequationes Conjunctionum Primi Satellitis cum Jove.*

Num. A.	Æquat. Conjunct. Adde.	Æq. Nu. B.	Num. A.	Æquat. Conjun. Adde.	Æq. Nu. B.	Num. A.	Æquat. Conjun. Adde.	Æq. Nu. B.	Num. A.	Æquat. Conjun. Adde.	Æq. Nu. B.
512	42 17	14	640	70 26	3	768	77 40	0	896	61 48	6
516	43 19	14	644	71 3	3	772	77 29	0	900	61 2	7
520	44 21	13	648	71 38	3	776	77 18	0	904	60 15	7
524	45 23	13	652	72 11	2	780	77 6	0	908	59 28	7
528	46 25	13	656	72 42	2	784	76 51	1	912	58 39	8
532	47 26	12	660	73 13	2	788	76 34	1	916	57 50	8
536	48 27	12	664	73 42	2	792	76 15	1	920	57 1	8
540	49 28	11	668	74 10	2	796	75 56	1	924	56 11	9
544	50 28	11	672	74 36	1	800	75 36	1	928	55 20	9
548	51 28	11	676	75 1	1	804	75 15	1	932	54 29	9
552	52 27	10	680	75 25	1	808	74 52	1	936	53 38	10
556	53 25	10	684	75 48	1	812	74 27	1	940	52 46	10
560	54 23	9	688	76 8	1	816	74 1	2	944	51 53	10
564	55 21	9	692	76 26	1	820	73 35	2	948	51 0	11
568	56 17	9	696	76 43	0	824	73 8	2	952	50 6	11
572	57 12	8	700	76 59	0	828	72 39	2	956	49 13	11
576	58 7	8	704	77 13	0	832	72 9	2	960	48 20	12
580	59 1	8	708	77 26	0	836	71 38	3	964	47 26	12
584	59 54	7	712	77 38	0	840	71 6	3	968	46 31	12
588	60 46	7	716	77 48	0	844	70 32	3	972	45 36	13
592	61 38	6	720	77 57	0	848	69 57	3	976	44 41	13
596	62 28	6	724	78 4	0	852	69 21	3	980	43 46	13
600	63 17	6	728	78 9	0	856	58 45	4	984	42 50	14
604	64 5	5	732	78 13	0	860	68 7	4	988	41 55	14
608	64 53	5	736	78 15	0	864	67 29	4	992	41 0	14
612	65 39	5	740	78 16	0	868	66 49	4	996	40 4	15
616	66 24	5	744	78 15	0	872	66 9	5	1000	39 8	15
620	67 7	4	748	78 12	0	876	65 28	5	1004	38 12	16
624	67 49	4	752	78 9	0	880	64 46	5	1008	37 16	16
628	68 30	4	756	78 4	0	884	54 3	5	1012	36 21	15
632	69 10	4	760	77 58	0	888	53 19	6	1016	35 26	17
636	69 49	3	764	77 50	0	892	62 34	6	1020	34 30	17
640	70 26	3	768	77 40	0	896	61 48	6	1024	33 35	17

*Secundæ*

Secunda *Æquationes* Conjunctionum Primi Satellitis cum Jove.

Addendæ.

Num. B. Æqu.	0	100	200	300	400	500	600	700	800	900
	<i>Æqu.</i>	<i>Æqu.</i>	<i>Æq.</i>	<i>Æq.</i>	<i>Æq.</i>	<i>Æq.</i>	<i>Æq.</i>	<i>Æq.</i>	<i>Æqu.</i>	<i>Æqu.</i>
	"	"	"	"	"	"	"	"	"	"
0	14 0	12 52	9 45	5 30	1 37	0 0	1 37	5 30	9 45	12 52
4	14 0	12 46	9 36	5 20	1 30	0 0	1 44	5 40	9 54	12 58
8	13 59	12 40	9 26	5 9	1 23	0 1	1 52	5 51	10 3	13 2
12	13 59	12 35	9 17	4 59	1 16	0 2	1 59	6 1	10 12	13 7
16	13 58	12 29	9 7	4 48	1 9	0 3	2 7	6 11	10 21	13 11
20	13 57	12 23	8 58	4 38	1 3	0 4	2 15	6 22	10 31	13 16
24	13 56	12 17	8 48	4 28	0 57	0 5	2 24	6 33	10 40	13 20
28	13 54	12 11	8 38	4 18	0 52	0 7	2 32	6 44	10 49	13 25
32	13 53	12 4	8 28	4 8	0 46	0 10	2 41	6 55	10 57	13 29
36	13 51	11 56	8 17	3 58	0 40	0 13	2 50	7 5	11 5	13 33
40	13 49	11 49	8 7	3 58	0 35	0 16	2 59	7 16	11 13	13 36
44	13 47	11 42	7 57	3 38	0 31	0 19	3 9	7 26	11 20	13 38
48	13 44	11 34	7 47	3 29	0 27	0 23	3 19	7 36	11 27	13 41
52	13 41	11 27	7 36	3 19	0 23	0 27	3 29	7 47	11 34	13 44
56	13 38	11 20	7 26	3 9	0 19	0 31	3 38	7 57	11 42	13 47
60	13 36	11 13	7 16	2 59	0 16	0 35	3 48	8 7	11 49	13 49
64	13 33	11 5	7 5	2 50	0 13	0 40	3 58	8 17	11 56	13 51
68	13 29	10 57	6 55	2 41	0 10	0 46	4 8	8 28	12 4	13 53
72	13 25	10 49	6 44	2 32	0 7	0 52	4 18	8 38	12 11	13 54
76	13 20	10 40	6 33	2 24	0 5	0 57	4 28	8 48	12 17	13 56
80	13 16	10 31	6 22	2 15	0 4	1 3	4 38	8 58	12 23	13 57
84	13 11	10 21	6 11	2 7	0 3	1 9	4 48	9 7	12 29	13 58
88	13 7	10 12	6 1	1 59	0 2	1 16	4 59	9 17	12 35	13 59
92	13 2	10 3	5 51	1 52	0 1	1 23	5 9	9 26	12 40	13 59
96	12 58	9 54	5 40	1 44	0 0	1 30	5 20	9 36	12 46	14 0
100	12 52	9 45	5 30	1 37	0 0	1 37	5 30	9 45	12 52	14 0

*Tertia*

*Tertia Equationes Ad-  
denda.*

*Semidurationes Eclipsium Primi Satellitis  
Jovis.*

Nu. A.	Equa- tiones.	Num. A.	Nu. A.	Semidu- rationes.	Nu. A.	Semidu- rationes.	Nu. A.	Semidu- rationes.	Nu. A.	Semidu- rationes.
	"			H. "		H. "		H. "		H. "
0	3 30	1000	0	1 5 9	250	1 7 0	500	1 5 9	750	1 7 46
20	3 29	980	10	1 4 56	260	1 7 15	510	1 4 53	760	1 7 57
40	3 28	960	20	1 4 44	270	1 7 31	520	1 4 39	770	1 8 7
60	3 25	940	30	1 4 33	280	1 7 45	530	1 4 26	780	1 8 15
80	3 19	920	40	1 4 23	290	1 7 57	540	1 4 15	790	1 8 22
100	3 12	900	50	1 4 13	300	1 8 7	550	1 4 7	800	1 8 26
120	3 4	880	60	1 4 7	310	1 8 15	560	1 4 3	810	1 8 28
140	2 56	860	70	1 4 4	320	1 8 22	570	1 4 1	820	1 8 30
160	2 46	840	80	1 4 2	330	1 8 27	580	1 4 0	830	1 8 28
180	2 34	820	90	1 4 0	340	1 8 28	590	1 4 3	840	1 8 26
200	2 22	800	100	1 4 2	350	1 8 29	600	1 4 7	850	1 8 22
220	2 10	780	110	1 4 3	360	1 8 27	610	1 4 13	860	1 8 16
240	1 57	760	120	1 4 6	370	1 8 24	620	1 4 23	870	1 8 8
260	1 44	740	130	1 4 12	380	1 8 17	630	1 4 35	880	1 8 0
280	1 30	720	140	1 4 21	390	1 8 9	640	1 4 49	890	1 7 50
300	1 17	700	150	1 4 31	400	1 7 58	650	1 5 4	900	1 7 37
320	1 5	680	160	1 4 42	410	1 7 46	660	1 5 19	910	1 7 22
340	0 53	660	170	1 4 55	420	1 7 31	670	1 5 36	920	1 7 8
360	0 41	640	180	1 5 9	430	1 7 14	680	1 5 54	930	1 6 55
380	0 31	620	190	1 5 23	440	1 6 58	690	1 6 10	940	1 6 40
400	0 22	600	200	1 5 39	450	1 6 40	700	1 6 28	950	1 6 23
420	0 14	580	210	1 5 55	460	1 6 20	710	1 6 46	960	1 6 8
440	0 8	560	220	1 6 11	470	1 6 2	720	1 7 2	970	1 5 54
460	0 4	540	230	1 6 26	480	1 5 45	730	1 7 17	980	1 5 37
480	0 2	520	240	1 6 43	490	1 5 26	740	1 7 33	990	1 5 22
500	0 0	500	250	1 7 0	500	1 5 9	750	1 7 46	1000	1 5 9

## The Use of the foregoing T A B L E S.

**T**H E Eclipses of the first Satellite of *Jupiter*, as has been already said, afford the best means of determining the Longitude of places on the Land, where Telescopes of a convenient length may be used; thirteen of these Eclipses happening every 23 Days; but it is requisite that the Observer know near the matter when these opportunities offer themselves, least on the one hand he let them slip, or else grow weary by a too long attendance on them.

Those therefore who are curious to observe them, may readily compute the times of the Immersions or Emerisions of this Satellite, and that with great exactness, by the following very short Precepts, which admit of no Exception or Caution, *viz.*

Out of the first Table take the *Epoche* for the Year, with its corresponding *Numb. A* and *Numb. B*; and to them add, out of the Tables of Months, the Day, Hour, Minute and Second, nearest less than the time of the Eclipse you seek for, together with its *Num. A* and *B*: the Sum of the times is the mean time of the middle of the Eclipse. 2. With *Num. A* thus collected take out the first *Æquation* of the Conjunctions; as also the *Æquation* of *Num. B*. always to be added to *Num. B*. before found. 3. With *Num. B* so equated, take out the second *Æquation* of the Conjunctions; and in the last Table, the third *Æquation*, as also the Semi-duration of the Eclipse answering to *Num. A*. 4. To the mean time of the middle of the Eclipse, add all those three *Æquations*; the sum shall be the true equated time of the middle of the Eclipse sought. 5. If *Num. B*. equated be less than 500, subtract the

the Semiduration, and you will have the time of the Im-  
mersion, or if it be more than 500, adding the same,  
it will give the time of the Emerision

But Note, the times thus found are equal time, still  
to be reduced to the Apparent: and that in the *Bissex-*  
*tile* Year, after *February*, one Day is to be deducted  
from the Day of the Month.

The less skilful may perhaps be pleas'd with an  
Example or two, which may serve them to imitate.  
Let it be required to find the time of the Immersion  
of this Satellite into *Jupiter's* shadow, *November* the  
*9th* 1719. in the Morning. The Work stands thus,

	D. h. ' "	Nu. A.	Nu. B.
1719.	1. 6. 11. 13	872	396
<i>Novemb.</i>	7. 11. 53. 29	72	776
<i>Conj. Med.</i>	8. 18. 4. 42	944	172
<i>Æquat. I.</i>	51. 53		10 <i>Æq. B.</i>
<i>Æquat. II.</i>	10. 26		182 <i>B. Æquat.</i>
<i>Æquat. III.</i>	3. 26		
	8. 19. 10. 27		
	1. 6. 33	<i>Semidur. Subst.</i>	
<i>Novemb.</i>	8. 18. 3. 54		

So that by this *Calculus*, on the ninth of *Novemb.*  
at 4 Minutes after 6 in the Morning, equal Time,  
may be seen the *Immersion* of this Satellite into *Jupi-*  
*ter's* shadow.

Another Example shall be of the *Emerision* on the  
fifth of *April* 1720. *viz.*

( 1034 )

	D. h. ' "	Nu. A.	Nu. B.
1720.	0. 20. 22. 40	956	310
<i>April</i>	<u>4. 13. 44. 22</u>	<u>Bis. 22</u>	<u>244</u>
Conj. Med.	5. 10. 07. 02	978	554
Æquat. I.	44. 13		<u>13</u> Æq. B.
Æquat. II.	0. 45		567 B. Æquat.
Æquat. III.	3. 29		
	<u>I. 5. 40</u>	<i>Semidur. Add.</i>	
<i>April</i>	5. 12. 01. 09		

Hence it appears that at one Minute after Midnight following the fifth of *April*, equal Time, will happen the Emerfion required. Nor do we doubt but that the Event will very nearly answer.

Laftly, it may not be amifs here to inform the Reader, that we have learnt, by the experience of many Years Obfervation, that the fecond inequality of this Satellite proceeds from the progrefive Propagation of Light, and is common to all the reft of the Satellites: Light, being found to proceed in about feven Minutes of time as far as from the Sun to the Earth, whether with an equable motion or otherwife is ftill a queftion. For this reafon we have added a *Third Æquation*, whereby to account for the greater diftance of *Jupiter* from the *Earth* in *Aphelio* than in *Perihelio*, as the *Second Æquation* answers to the greater diftance of the Planet when near the Conjunction of the Sun, than when near his Oppofition.

F I N I S.

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