III. *A Catalogue of* Eclipſes *of the four* Satellites of Jupiter, *for the Year* 1732. *By* James Hodgſon, *F. R. S. and Maſter of the Royal Mathematical School at* Chriſt's Hoſpital, London.

I HAVE been long importuned by ſeveral of my Friends to publiſh a Catalogue of *Eclipſes* of *Jupiter*'s *Satellites*, to the Intent that ſuch Perſons as are furniſhed with proper Inſtruments, and want neither Leiſure nor Inclination to obſerve them, may no longer neglect the frequent Opportunities that offer, for want of timely Notice.

The great Number of *Eclipſes* that happen in a Year, as appears by the following Catalogue, amounting to 352; notwithſtanding the fourth *Satellite* will paſs wide of the Shadow, after the middle of *January* next; the Eaſe with which they are obſerved, eſpecially ſince the great Improvement made to the reflecting Teleſcope by Mr. *Hadley*; the little Skill that is required to make the Obſervations, ſince the Difference of Times, when obſerved by the largeſt Glaſſes, and the ſmalleſt through which they may be ſeen, amounts to ſcarce one quarter of a Minute; render theſe Obſervations the moſt proper of any that the Heavens afford us, at preſent, for determining the Longitude of Places; and I may venture to aſſert, that there are very few Places of Note upon the Surface of our habitable Globe, whoſe Longitudes are already known, that have not either been abſolutely deter-

mined or, at leaſt, have been rectified and confirmed by them.

How near theſe Calculations will anſwer to the Heavens, muſt be left to Time to diſcover; but as the Tables that I have made uſe of had received no Correction for fifty Years paſt, I have endeavoured, during the ſmall Time ſince I ſet myſelf about this Work, to correct them as much as the Time would allow me; and, I hope, before the Year comes about, to bring ſome of the *Satellites* to anſwer nearer than they do at preſent, and in the mean time, if thoſe Gentlemen who ſhall have an Opportunity of obſerving them, will tranſmit their Obſervations to the Royal Society, it will contribute towards a farther Rectification of the Tables.

I have by me the Times of the Appulſes of the Moon to the fixed Stars, and their Occultations, by the Interpoſition of her Body, for the ſucceeding Year; which I had ſome Thoughts of communicating: But as the long-expected Lunar Tables of Dr. *Halley* will very ſoon be publiſhed (as I am informed) I have deferred that Affair for another Year.

For the Benefit of thoſe Perſons who have not been accuſtomed to make Obſervations of this Kind, I had determined with myſelf to have given the Configurations of the *Satellites*, at the Times when thoſe that are viſible in our Hemiſphere, which are marked with a Star, will happen; but as it would have taken me up much Time in doing, as well as Expence in graving, I have choſe rather to give ſuch People ſome Inſtructions, which, if well obſerved, will not only point out the exact Spot in the Heavens, where the Appear-

Appearance will be viſible (for want of knowing which, the *Satellite* may be Immerged ſome time before it is miſſed, and Emerged before it is diſcovered) but will prevent them from taking one *Satellite* for another.

And firſt, the Obſerver muſt take Notice, that from the Time of the Conjunction of *Jupiter* with the Sun, which happened the beginning of *September* laſt to the Time of the Oppoſition which will happen in the middle of *March* next, the *Eclipſes* in general will be viſible on the Weſtern Side, or on the Right Hand of *Jupiter*, when viewed in the Heavens, and at the Time of the firſt Quadrature, which will happen about the middle of next *December*, the firſt *Satellite* will immerge into the Shadow of *Jupiter*'s Body at the Diſtance of two Semidiameters of *Jupiter*, nearly from the Center of his Body: The ſecond *Satellite* will immerge at the Diſtance of two Semidiameters and an half, the third *Satellite* at the Diſtance of three Semidiameters and a quarter. And as the Earth haſtens to the Oppoſition, which will happen in the middle of next *March*, the Diſtance of each *Satellite*, at the Time of the *Eclipſe* from the Body of *Jupiter*, will grow leſs and leſs, till when the Earth arrives at the Oppoſition, the *Satellite* will immerge cloſe to the Limb of *Jupiter*; and this Diminution or Decreaſe of Diſtance will be ſo regular, that the Spectator, by allowing for the proportionable Part of Time between the Quadrature and the Oppoſition or Conjunction (the Diſtances of the *Satellites* from the Body of *Jupiter* at equal Diſtances from theſe Points being the ſame) I ſay, by theſe

Means the Spectator will be at no Loſs to find the exact Point where the *Satellite* will appear or diſappear. And on the contrary, during the Space of Time that the Earth is moving from the Oppoſition through the ſecond Quadrature to the Conjunction, which is from the Middle of *March* to the Beginning of *October*, the *Eclipſes* will be ſeen on the Eaſt Side, or on the Left Hand of *Jupiter*, viewed from the Earth, and at the ſame Diſtances, as in the former Caſe, according as ſhe approaches to the Quadrature from the Oppoſition, or recedes from it in going to the Conjunction.

By reaſon of the great Diſtance of the third *Satellite* from *Jupiter*, for about ſix Weeks before and after the Quadratures, the Immerſions and Emerſions become viſible on the ſame Side of the Body of *Jupiter*; and this, without any other Proof, is an ocular Demonſtration, that neither *Jupiter* nor any of his *Satellites* have any Light of their own, and none but what they borrow from the Sun. And the ſame happens to the fourth *Satellite*, of which we have but two *Eclipſes* in the whole Year; which, according to this Calculation, will happen on the 15th of *January* next, when, if the Air be clear, it will be ſeen to enter into the Shadow about Twelve at Night, on the Right Hand of *Jupiter*, at the Diſtance of four Semidiameters and a quarter from his Center, and will emerge on the ſame Side thirty Minutes after One in the Morning, at the Diſtance of almoſt four Semidiameters on the ſame Side.

After this manner will the *Satellites* appear, if they could be ſeen with the naked Eye; but if they are ſeen thro' a Teleſcope compoſed of two Convex Glaſſes, they

they will be inverted, that is, from the Time of the Conjunction to the Time of the Oppoſition, they will appear on the Left Hand of *Jupiter*; and from the Oppoſition back again to the Conjunction, they will be viſible on the Left Hand of his Body.

If theſe Predictions ſhould prove inſtrumental in exciting the Curious to improve this moſt uſeful Branch of the Aſtronomical Science, it will be a ſufficient Recompence for the Pains I have taken.

ECLIPSES.

ECLIPSES *of the firſt* Satellite *of* Jupiter *for the Year* 1732.

January. Immerſions.				*February.* Immerſions.				*March.* Immerſions.			
D.	H.	M.	S.	D.	H.	M.	S.	D.	M.	H.	S.
01	18	42	21*	02	15	07	16*	01	22	46	15
03	13	10	16*	04	09	35	37*	03	17	15	19*
05	07	37	59	06	04	04	04	05	11	44	25*
07	02	5	37	07	22	32	38	07	06	13	30*
08	20	33	27	09	17	01	10*	09	00	42	35
10	15	01	18*	11	11	29	42	10	19	11	42
12	09	29	11*	13	05	58	10	12	13	40	47*
14	03	57	06	15	00	26	52	Emerſions			
15	22	25	05	16	18	55	32*	14	10	21	41
16	16	53	06*	18	13	24	16*	16	04	50	48
19	11	21	09*	20	07	53	02	17	23	19	53
21	05	49	15	22	02	21	50	19	17	49	01*
23	00	17	22	23	20	50	39	21	12	18	09*
24	18	45	32*	25	15	19	29*	23	06	47	17*
26	13	13	46*	27	09	48	23*	25	01	16	27
28	07	42	13	29	04	17	18	26	19	45	34
30	02	10	27					28	14	14	39
31	20	38	52					30	08	43	42

ECLIPSES *of the firſt* Satellite.

April. Emerſions.				*May.* Emerſions.				*June.* Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.	D.	H.	M.	S.
01	03	12	45	01	05	23	36	02	01	55	31
02	21	41	47	02	23	52	14	03	20	23	44
04	16	10	49*	04	18	20	48	05	14	51	56
06	10	39	51*	06	12	49	21*	07	09	20	13
08	05	08	48	08	07	17	53	09	03	48	29
09	23	37	44	10	01	46	27	10	22	16	47
11	18	06	39	11	20	14	59	12	16	45	04
13	12	35	33*	13	14	43	30*	14	11	13	22*
15	07	04	27	15	09	12	01*	16	05	41	42
17	01	33	19	17	03	38	31	18	00	10	01
18	20	02	09	18	22	09	00	19	18	38	21
20	14	31	00*	20	16	37	28	21	13	06	43
22	08	59	52*	22	11.	05	55*	23	07	35	08
24	03	28	42	24	05	34	10	25	02	03	34
25	21	57	31	26	00	01	27	26	20	32	01
27	16	26	15	27	18	30	50	28	15	00	29
29	10	54	57	29	12	59	02*	30	09	28	58*
				31	07	27	21				

ECLIPSES *of the first* Satellite.

July. Emerſions.				*Auguſt.* Emerſions.				*September.* Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.	D.	H.	M.	S.
02	03	57	27	01	06	05	53	02	02	49	29
03	22	25	58	03	00	34	47	03	21	18	42
05	16	54	29	04	19	03	43	05	15	47	54
07	11	23	01	06	13	32	41	07	10	17	05
09	05	51	32	08	08	01	40*	09	04	46	14
11	00	20	06	10	02	30	40				
12	18	48	46	11	20	59	40				
14	13	17	28	13	15	18	24				
16	07	46	13	15	09	57	46				
18	02	15	00	17	04	26	52				
19	20	43	45	18	22	56	00				
21	15	12	31	20	17	25	18				
23	09	41	19	22	11	54	21				
25	04	10	15	24	06	23	33				
26	22	39	10	26	00	52	43				
28	17	08	06	27	19	21	53				
30	11	36	59	29	13	51	06				
				31	08	20	17				

Jupiter and the Sun in Conjunction.

ECLIPSES

ECLIPSES *of the first* Satellite.

October.				*November.*				*December.*			
Immerſions.				Immerſions.				Immerſions.			
D.	H.	M.	S.	D.	H.	M.	S.	D.	H.	M.	S.
				01	04	59	34	01	06	52	14
				02	23	27	42	03	01	19	45
				04	17	55	47*	04	19	47	17*
				06	12	23	47	06	14	14	48*
				08	06	51	48	08	08	42	18
				10	01	19	49	10	03	09	48
				11	19	47	49*	11	21	37	19
				13	14	15	43	13	16	04	45*
				15	08	43	32	15	10	32	51
Immerſions.				17	03	11	17	17	04	59	41
21	14	09	52	18	21	39	00	18	23	27	10
23	08	38	17	20	16	06	38	20	17	54	38*
25	03	06	37	22	10	34	15	22	12	22	09
26	21	34	51	24	05	01	51	24	06	49	42
28	16	03	07*	25	23	29	27	26	01	17	18
30	10	31	21	27	17	57	03*	27	19	44	56
				29	12	24	40	29	14	12	35*
								31	08	40	12

ECLIPSES *of the ſecond* Satellite *for the Year* 1732.

January.

Immerſions.

D.	H.	M.	S.	
*1	10	21	28	A. M.
04	02	54	18	
07	16	10	16*	
11	05	26	25	
14	18	42	45*	
18	07	59	17	
21	21	16	01	
25	10	32	52	
28	23	49	59	

February.

Immerſions.

D.	H.	M.	S.
01	13	07	15*
05	02	24	44
08	15	42	23
12	05	00	04
15	18	17	55*
19	07	35	58
22	20	54	11
26	10	12	29*
29	23	30	57

March.

Immerſions.

D.	H.	M.	S.	
04	12	49	34	*
08	02	08	13	
11	15	26	52	*
Emerſions.				
15	07	31	59	*
18	20	50	32	
22	10	09	08	*
25	23	27	48	
29	12	46	18	

April.

Emerſions.

D.	H.	M.	S.
02	02	04	46
05	15	23	21*
09	04	41	47
12	18	00	09
16	07	18	26*
19	20	36	42
23	09	54	55*
26	23	13	02
30	12	30	54

May.

Emerſions.

D.	M.	H.	S.
04	01	08	40
07	15	06	20
11	04	23	59
14	17	41	36
18	06	59	07
21	20	16	34
25	09	33	45*
28	22	50	53

June.

Emerſions.

D.	H.	M.	S.
01	12	07	59*
05	01	24	52
08	14	41	53
12	03	58	57
15	17	16	04
19	06	33	13
22	19	50	26
26	09	07	49*
29	22	25	15

ECLIPSES

ECLIPSES *of the ſecond* Satellite.

July.				*Auguſt.*				*September.*			
Emerſions.				Emerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.	D.	H.	M.	S.
03	10	42	40	04	11	24	13	01	21	53	54
07	01	00	09	08	00	42	39	05	11	12	50
10	14	17	41	11	14	01	09	09	00	31	38
14	03	35	27	15	03	19	45				
17	16	53	24	18	16	38	27				
21	06	11	22	22	05	57	17				
24	19	29	30	25	19	16	10				
28	08	47	47*	29	08	35	02*				
31	22	06	01								

October.				*November.*				*December.*			
Immerſions.				Immerſions.				Immerſions.			
D.	H.	M.	S.	D.	H.	M.	S.	D.	H.	M.	S.
				01	05	20	50	03	04	45	40
				04	18	37	35*	06	18	01	09*
				08	07	54	06	10	07	16	39
				11	21	10	39	13	20	32	05
				15	10	26	53	17	09	47	29
Immerſions.				18	23	42	48	20	23	02	53
21	13	29	31	22	12	58	38	24	12	18	28
25	02	46	48	26	02	14	21	28	01	34	11
28	16	03	49	29	15	30	04*	31	14	49	57

ECLIPSES *of the third* Satellite *for the Year* 1732.

January.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.
07	02	34	47	07	05	33	07
14	06	30	30	14	09	28	02
21	10	26	59*	21	13	23	45
28	14	24	12*	28	17	20	10

February.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.
04	18	22	09	04	21	17	21
11	22	20	46				
19	02	19	57				
26	06	19	47				

March.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M	S.
04	10	20	10*				
11	14	20	50*				
				28	21	12	05
				26	01	12	06

April.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.
				02	05	11	49
				09	09	11	34*
				16	13	10	56*
23	14	23	30	23	17	10	10
30	18	22	58	30	21	08	52

ECLIPSES

ECLIPSES *of the third* Satellite.

May.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.
07	22	21	51	08	01	07	01
15	02	20	34	15	05	04	58
22	06	19	01	22	09	02	39*
29	10	16	46	29	12	59	38

June.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.
05	14	14	12	05	16	56	18
12	18	11	47	12	20	53	07
19	22	09	31	20	00	50	05
27	02	07	39	27	08	45	02*

July.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.
04	06	06	02	04	08	45	02*
11	10	04	34*	11	12	42	48
18	14	03	47	18	16	41	17
25	18	03	27	18	20	40	11

Auguſt.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.
01	22	03	23	02	00	39	23
				09	04	38	57
				16	08	38	52*
				23	12	39	13
				30	16	39	42

ECLIPSES *of the third* Satellite.

September.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.
				06	20	40	15
				14	00	40	33

October.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.
19	18	08	42				
26	22	06	33				

November.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.
03	02	03	43				
10	06	00	11				
17	09	55	54				
24	13	50	43	24	16	15	45

December.

Immerſions.				Emerſions.			
D.	H.	M.	S.	D.	H.	M.	S.
01	17	45	25*	10	20	09	49
08	21	39	40	09	00	03	38
16	01	33	45	16	03	56	57
23	05	27	51	23	07	50	29
30	09	22	31	30	11	44	35

ECLIPSES *of the fourth* Satellite *for the Year* 1732.

	D.	H.	M.	S.	
January	15 at	11	59	52*	an Immerſion.
	at	13	59	54*	an Emerſion.

After which Time the *Satellite* will paſs wide of the Shadow of *Jupiter*; and there will be no more *Eclipſes* till the Beginning of the Year 1734.

IV. *A Letter to the Preſident of the Royal Society, from* Frank Nicholls, *M. D. F. R. S. giving an Account of a* Polypus, *reſembling a Branch of the* Pulmonary Vein, *coughed up by an* aſthmatic Perſon.

SIR,

Nicholas Tulpius, in the 7th Obſervation of his ſecond Book, preſents us with the Caſe of a Man who, with a large Effuſion of Blood, threw up, by coughing, two Branches of the *Pulmonary Vein*, ſix Inches long, with their ſeveral Ramifications, freed from the *Trachæa* and Subſtance of the Lungs, as if diſſected by the moſt accurate Anatomiſt. This Caſe he obſerves to be very extraordinary, and not to be parallell'd in the Writings of phyſical Authors.

A little Acquaintance with the Structure of the Lungs ſufficiently evinces the Impoſſibility of the Fact,

as