

DIARIA BRITANNICA:
OR, THE
BRITISH DIARY:
A N
ALMANACK,

FOR THE
Year of **OUR LORD** 1794.

BEING THE SECOND AFTER
BISSEXTILE, or LEAP-YEAR,

CONTAINING,

A VARIETY of useful and entertaining MATTER in
ARTS and SCIENCES:

Calculated for the Improvement of the CURIOUS.

ALSO AN

EPHEMERIS,

Wherein are contained the Heliocentric and Geocentric Places
of the Planets, accurately calculated.

By **J. COTES** and **G. TAYLOR.**

The **Seventh Almanack** published of this Kind.

That d'vine mist'ry, and a hist'ry, written in ASIA,
Was finished (now to be read) in great BRITANNICA;
Sweet blessed life, where truth doth smile, tho' bound with reason's chains;
Yet BRITISH YOUTH, persist in truth, where true wisdom reigns;
For Sinai's Mount, that baneful fount, the source of all our woe.
Does rule the earth, and ev'ry breath, and will what time does flow.
This mighty mount, reason's great fount, of science, art, and skill,
All that delight in science bright, come here and drink your fill;
The mount is dry, don't satisfy, tho' reason drinks so sore,
At SION's mount, that flowing fount, drink once you'll thirst no more.
The first brought death upon the earth, great wars, wrath, jar, and strife,
But SION's MOUNT, that LOVING FOUNT, gives us eternal life.

Attain but this, you cannot miss, truly yourselves to know

Your origin, how born in sin—what fruits in EDEN grow.

BIRMINGHAM,

Printed and sold by **THOMAS PEARSON,**

AT THE WHOLESALE ALMANACK WAREHOUSE, AND BY CHAMPANTE
AND WHITROW, JEWRY-STREET, LONDON. (*Price One Shilling.*)

A TABLE of the MOON's southing, for Greenwich, for the Year 1794.

M	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
D	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.	h. m.
1	11 30	0 a 59	11 38	1 12	1 49	3 13	3 24	4 9	5 5	5 38	7 10	7 36
2	0 a 20	1 56	0 a 36	2 8	2 45	4 34	4 8	4 51	5 53	6 31	8 5	8 28
3	1 28	2 50	1 30	3 3	3 33	4 40	4 51	5 34	6 44	7 26	8 5	9 21
4	2 25	3 43	2 26	3 58	4 33	5 36	5 33	6 19	7 38	8 22	9 52	10 15
5	3 21	4 35	3 21	4 53	5 24	6 19	6 15	7 6	8 34	9 18	10 47	11 12
6	4 14	5 27	4 14	5 46	6 12	7 1	7 6	7 57	9 31	10 14	11 43	morn
7	5 6	6 19	5 7	6 36	6 58	7 43	7 41	8 5	10 29	11 10	morn	0 10
8	5 56	7 10	6 7	7 25	7 42	8 28	8 28	9 46	11 26	morn	0 40	1 8
9	6 46	8 16	6 52	8 12	8 25	9 9	9 18	10 44	morn	0 6	1 37	2 5
10	7 36	8 52	7 43	8 57	9 7	9 55	10 10	11 43	0 23	1 22	2 36	3 0
11	8 27	9 42	8 33	9 41	9 49	10 43	11 5	morn	1 19	1 5	3 34	3 52
12	9 18	10 31	9 20	10 23	10 32	11 34	morn	0 40	2 15	2 5	4 26	4 40
13	10 9	11 18	10 6	11 5	11 17	morn	0 2	1 35	3 10	3 5	5 21	5 25
14	11 0	morn	10 51	11 49	morn	0 27	0 59	2 3	4 5	4 4	6 16	6 8
15	11 50	0 3	11 34	morn	0 4	1 22	1 56	3 24	5 5	5 44	7 5	7 50
16	morn	0 47	morn	0 32	0 53	2 18	2 51	4 17	5 55	6 37	7 4	7 31
17	0 39	1 31	0 17	1 17	1 44	3 13	3 44	5 10	6 49	7 27	8 2	8 12
18	1 25	2 12	0 59	2 4	2 37	4 8	4 36	6 3	7 41	8 14	9 3	9 54
19	2 10	2 55	1 42	2 54	3 32	5 1	5 28	6 57	8 32	8 59	9 4	9 39
20	2 54	3 38	2 26	3 45	4 27	5 53	6 20	7 51	9 21	9 42	10 27	10 26
21	3 36	4 22	3 12	4 39	5 22	6 44	7 11	8 44	10 8	10 24	11 1	11 15
22	4 17	5 2	3 59	5 34	6 16	7 35	8 4	9 36	10 53	11 6	11 5	0 a 6
23	4 59	5 57	4 49	6 29	7 8	8 27	8 58	10 27	11 36	11 48	0 a 4	0 a 59
24	5 43	6 49	5 42	7 24	8 0	9 29	9 52	11 15	0 a 18	0 a 31	1 3	1 53
25	6 28	7 44	6 37	8 19	8 51	10 14	10 45	0 a 1	1 0	1 15	2 24	2 47
26	7 16	8 41	7 33	9 14	9 46	11 8	11 37	0 46	1 43	2 1	3 17	3 40
27	8 8	9 4	8 30	10 8	10 39	0 a 3	1 a 38	1 29	2 20	2 49	4 10	4 31
28	9 3	10 39	9 28	11 2	11 33	0 57	1 16	2 11	3 1	3 39	5 2	5 21
29	10 1		10 24	11 57	0 a 29	1 48	2 12	3 53	4 58	4 31	5 54	6 11
30	11 0		11 21	0 a 53	1 25	2 38	3 44	4 35	5 47	5 24	6 45	7 2
31	0 a 0		0 a 17	2 20		3 27	4 18		6 18		7 54	

A TABLE of the Seven Stars southing, or Times when they pass the Meridian.

D	A.	A.	A.	A.	A.	M.	M.	M.	M.	M.	M.	A.
1	8 45	6 33	4 44	2 52	1 10	10 58	8 55	6 50	4 55	3 7	1 10	11 2
7	8 19	6 9	4 22	2 30	0 38	10 33	8 30	6 27	4 33	2 40	0 47	10 36
13	7 5	5 45	4 2	2 8	0 14	10 8	8 5	6 4	4 12	2 23	0 22	10 10
19	7 27	5 22	3 38	1 46	11 50	9 43	7 41	5 42	3 50	2 0	11 54	9 43
25	7 2	4 59	3 16	1 23	11 26	9 19	7 17	5 19	3 29	1 38	11 28	9 17

Use of the Tables. To find the Time of High Water.

EXAM. On Jan. 1st Moon souths at - 11 30 m.
 Add for N. and F. Moon for London - 2 30
 Time of High Water at London 2 0 a.
 Add for next Low Water - - 5 49
 Time of Low Water at London, 7 49 a.

Ex. 1.) On Jan. 1. Seven Stars souths at 8 45 a.
 Semidiurnal arc. subtract and add - 8 17
 Seven Stars rises Jan. 1st at - - 0 28 a.
 Seven Stars sets next morning Jan. 2, - 5 2 m.

Ex. 2.) Seven Stars souths at - 8 45 a.
 Sirius souths after the Seven Stars - 3 1
 Sirius south Jan. 1st afternoon - - 11 46 a.
 Semidiurnal arc subtract and add - 4 37
 Sirius rises Jan. 1st afternoon - - 7 9 a.
 Sirius sets Jan. 2d morning - - 4 23 m.

Na. of Stars.	a	7'	d.	a.
Aldebaran	0	40	7	29
Capella	1	26		
Betelgeuse	2	8	6	41
Sirius	3	1	4	37
Alphard	5	42	5	24
Regulus	6	21	7	11
Upp. point.	7	15		
Virg. spike	9	39	5	12
Arcturus	10	2	7	55
Antarus	12	41	3	34
Algethi	13	30	7	21
Lyra	14	52		
Atair	16	4	6	46
Fomalhaut	19	8	2	52
Pole star	21	12		
Almach	22	16		
Algol	23	19		
Algenib	23	33		

Geocentric Latitude.

JANUARY hath **XXXI** Days.

	♈	♉	♊	♋	♌	♍	♎	♏	♐
1	04	22	27	02	27	15	54	02	28
13	04	26	23	02	27	15	58	01	37
25	04	72	20	02	20	20	31	05	56

New Moon 1 day, at midnight
First Quart. 8 day, 5 aftern.
Full Moon 16 day, 4 morning
Last Quart. 24 day, 9 morning
New Moon 31 day, 11 morn.

Heliocentric Longitude.

D	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
1	25	55	14	25	15	10	12	47	27	11	19	46
7	26	0	14	38	15	38	13	25	6	44	12	56
13	26	4	14	5	16	7	18	3	16	16	2	48
19	26	9	15	4	16	36	20	42	25	47	20	37
25	26	13	15	17	17	5	23	21	5	17	7	22

M	W	Festival Days.	Aspects & Wea	☉	♈	♉	♊	♋	♌	♍	♎	♏	D	D lat	D dec	D		
D	D			♈	♉	♊	♋	♌	♍	♎	♏	♐	♈	nor.	south	fets.		
1	W	Circumcif.	♄ ♃ ♀	11	8	8	19	18	22	18	4	57	4	6	19	17	D fets	
2	T	♄ fet 2.43m	* ♃ ♂	12	8	8	19	19	24	19	19	3	12	18	55	4355		
3	F	♄ ri. 0.41 m	Windy	13	28	8	19	19	25	20	3	53	2	4	17	17	6 5	
4	S	Sir Isaac N.	with	14	28	8	19	20	26	21	18	30	0	46	14	32	7 21	
5	E	2S. aft. Chr.	O.C.d.	15	28	8	20	20	27	22	3	X	5	0	13	10	51	8 39
6	M	Epiphany	rain or now.	16	28	8	20	21	29	23	17	33	1	47	6	34	9.56	
7	T	♄ fet 2.21m	Some	17	27	8	20	21	♄	24	1	♄	50	2	56	1	58	11 11
8	W	Lucian	Some	18	27	8	20	22	1	25	15	55	3	53	2	41	Morn	
9	T	♄ ri. 0.30 m	♄ ♃ ♀	19	27	8	20	22	2	26	29	47	4	36	7	6	0 26	
10	F	♄ ri. 6.20 m	Δ ♄ ♀	20	27	D	21	23	4	27	13	8	25	5	2	11	4	1 38
11	S	♄ ri. 5.45 m	showers of rain	21	27	8	21	23	5	28	26	50	5	11	14	25	2 49	
12	E	1S. aft. Eph.		22	27	8	21	23	6	♄	10	II	1	5	4	16	58	3 58
13	M	Hil.C. T.b.	Δ ♄ ♀	23	27	8	21	24	7	1	23	0	4	41	18	36	5 2	
14	T	Ox. T. beg.	with brisk gales of wind.	24	27	8	21	24	9	2	5	♄	46	4	4	19	17	5 59
15	W	Cl. fast 10 4	Prisca	25	27	8	22	25	10	3	18	20	3	16	18	59	6 50	
16	T	♄ fet 1.43m	Prisca	26	27	8	22	25	11	5	0	♄	41	2	19	17	46	D rif.
17	F	Old Twel. d.	Prisca	27	27	8	22	26	12	6	12	51	1	16	15	45	6 a 2	
18	S	Q. birth d.	Δ ♄ ♀	28	27	8	22	26	14	7	24	51	0	11	13	4	7 2	
19	E	2S. aft. Eph.	yet the	29	27	8	22	27	15	9	6	♄	44	on	54	9	53	8 3
20	M	Fabian Iret.	* ♄ ♂	30	27	8	23	27	16	10	18	32	1	56	6	19	9 5	
21	T	Agnes	month mild in	1	27	9	23	27	17	12	0	♄	19	2	54	2	32	10 7
22	W	Vincent	month mild in	2	27	9	23	28	19	13	12	10	3	44	1	22	11 10	
23	T	Hil. T. beg.	♄ ♃ ♂	3	27	9	23	28	20	15	24	10	4	26	5	15	Morn	
24	F	♄ fet 1.9 m.	general	4	27	9	23	29	21	16	6	♄	22	4	56	9	0	0 14
25	S	Co. St. Paul	Wind with	5	27	9	24	29	22	17	18	52	5	13	12	26	1 19	
26	E	3S. aft. Eph.	with	6	27	9	24	♄	24	19	1	♄	44	5	15	15	23	2 25
27	M	Pr. A. Fr. b.	♄ ♃ ♄	7	27	9	24	0	25	20	15	1	5	0	17	39	3 31	
28	T	[2 ret.	☉ ☉ ♄	8	27	9	24	0	26	22	28	45	4	29	18	59	4 36	
29	W	♄ ri. 11.53 n	* ♄ ♀	9	27	9	24	1	27	23	12	♄	56	3	40	19	11	5 38
30	T	K. Ch. I. M.	rain or snow.	10	27	9	25	1	20	25	27	20	2	35	18	8	D fets	
31	F	Pheaf. sh. e.		11	27	9	25	2	27	12	20	20	1	19	15	51	4a46	

D	D. L	Sun beg.	Sun rise	Sun set.	D. L.	leng. ends	Day of D.	Day inc.	Declination.																
									☉	♈	♉	♊	♋	♌	♍	♎	♏	♐							
1	5	56	8	2	358	6	4	7	56	0	6	22	58	12	51	12	10	22	34	5	35	22	48	20	37
7	5	51	7	57	4	3	6	9	8	6	16	22	19	12	54	12	11	22	40	6	39	23	15	21	46
13	5	46	7	51	4	9	6	14	8	18	28	21	24	12	58	12	13	22	46	7	39	23	17	22	51
19	5	40	7	43	4	17	6	20	8	34	42	20	13	13	2	12	16	22	50	8	35	22	52	23	21
25	5	34	7	35	4	25	6	25	8	50	1	0	18	5	13	6	12	21	22	54	9	27	22	2	11

Geocentric Latitude.

FEBRUARY hath XXVIII Days.

Heliocentric Longitude.

D	h	n	h	f.	h	n	h	f.	h	f.		
1	0	47	2	18	0	26	2	4	0	46	1	34
13	0	47	2	14	0	25	2	7	1	8	2	6
25	0	47	2	11	0	25	2	9	1	21	1	36

D	h	n	h	g	h	f.	h	n	h	f.	h	n	h	f.	h	n	h	f.
1	26	19	15	33	17	39	26	28	16	21	26	39	27	36				
7	26	23	15	40	18	7	29	8	25	50	13	49	27	17				
13	26	27	15	59	18	36	1	49	5	18	2	24	26	58				
19	26	32	16	12	19	5	4	31	14	47	23	26	26	39				
25	26	37	16	25	19	34	7	13	24	17	18	7	26	19				

First Quart. 7 day, 3 morn.
Full Moon 14 day, 10 night
 Last Quart. 23 day, 2 morn.

M	W	Festival Days.	Aspects & Wea.	☉	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	☽	☽	☽
D	D			☽	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	fou.	fouth	fets.
1	S	4 ri. 4.38 n	☐ ♂ ♀	12	27	9	25	2	1	28	27	20	0	3	12	27	6	27	6 a 5
2	E	4 S. aft. Ep.	Can. d.	13	27	9	25	2	2	☽	12	20	1	25	8	15	7	26	7 26
3	M	Blas. 3 ret.	Windy,	14	26	9	25	3	4	1	27	13	2	41	3	34	8	45	8 45
4	T	3 ri. 11.42 n	☐ ♂ ♀	16	26	9	26	3	5	3	11	52	3	45	1	15	10	5	10 5
5	W	Agatha	♂ ♀	17	26	9	26	3	6	4	26	12	4	34	5	53	11	21	11 21
6	T	Cl. f. 14' 33"	with rain or fleet,	18	26	9	26	4	7	6	10	8	11	5	4	10	4	Morn	
7	F	h f. o. 16 m		19	26	9	26	4	8	8	23	49	5	17	13	37	0	34	0 34
8	S	h fo. o. 13 m		20	26	9	26	4	10	9	7	11	5	13	16	22	1	45	1 45
9	E	5 S. aft. Ep.	♂ ♀ ♀	21	26	9	26	5	11	11	20	3	4	52	18	14	2	50	2 50
10	M	4 return	with	22	26	9	27	5	12	13	2	44	4	18	19	9	3	48	3 48
11	T	Cl. fast 14.40	variable	23	26	9	27	5	14	14	15	12	3	31	19	6	4	41	4 41
12	W	Hil. T. ends	♁ ♁ ♁	24	26	9	27	5	15	16	27	27	2	36	18	9	5	26	5 26
13	T	Valentine	weathe	25	26	9	27	6	16	18	9	33	1	34	16	22	6	7	6 7
14	F	4 ri. 3.57 m	♁ ☉ ♁	26	26	10	27	6	17	20	21	32	0	29	13	53	D	rife	
15	S	3 ri. 11.11 m	for the	27	26	10	28	7	19	21	3	25	0	37	10	50	5	50	5a 50
16	E	Sept. Sun.		28	26	10	28	7	20	23	15	14	1	41	7	22	6	53	6 53
17	M	h f. 11.40 n	♁ ♁ ♀	29	26	10	28	7	21	25	27	2	2	40	3	38	7	56	7 56
18	T	St. Simeon	moft	30	26	10	28	7	22	27	8	52	3	33	of 15	8	59	8 59	
19	W	3 ri. 11.9 n	part.	1	26	10	28	8	24	28	20	45	4	17	4	8	10	1	10 1
20	T	Cl. fast 14.3	♁ ♁ ♀	2	26	10	28	8	25	30	2	46	4	50	7	53	11	5	11 5
21	F	h fo. 11.33 n	♁ ☉ ♀	3	26	10	28	8	26	2	14	58	5	11	11	23	Morn		
22	S	4 ri. 3.32 m		4	26	10	29	0	27	4	27	25	5	18	14	27	0	9	0 9
23	E	Sex. Sunday	Pr. O. b	5	26	10	29	9	29	6	10	11	5	9	16	54	1	14	1 14
24	M	St. Mat. Pr.	A. F. b.	6	26	10	29	9	30	8	23	20	4	44	18	33	2	19	2 19
25	T	C. T. d. m.	* h ♀	7	26	10	29	9	1	10	6	54	4	3	19	14	3	20	3 20
26	W	Cl. fast 13.0	♁ ♀ ♀	8	25	10	29	9	2	12	20	56	3	6	18	46	4	17	4 17
27	T	Collop Th.	♁ ♀ ♀	9	25	11	29	10	4	13	5	23	1	56	17	4	5	8	5 8
28	F	Hare-h. en.		10	25	11	29	10	5	15	20	13	0	36	14	11	5	51	5 51

VENUS is a morning star till March 19, then an evening star to the year's end.
 JUPITER is a morning star till June 19, at which time he becomes an evening star to the end of the year.

D	D. L.	Sun. beg.	Sun. rise	Sun. fet.	D. L.	eng. ends	Day of D.	inc.	Declination.																	
									☉ f.	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓					
1	5	26	7	24	4	36	6	34	9	12	1	22	16	56	13	14	12	27	22	58	10	23	20	33	21	59
7	5	17	7	13	4	47	6	43	9	34	1	44	15	8	13	18	12	34	23	0	11	5	18	53	20	6
13	5	7	7	2	4	58	6	53	9	56	2	6	13	10	13	23	12	42	23	1	11	43	16	55	17	21
19	4	56	6	51	5	9	7	4	10	18	2	28	11	5	13	28	12	51	23	2	12	16	14	39	13	44
25	4	45	6	39	5	21	7	15	10	42	2	52	8	53	13	34	13	1	23	3	12	43	12	9	9	16

Geocentric Latitude.

MARCH hath XXXI Days.

D	h	n	h	l.	l.	n	δ	n	♀	♂	♁	
1	0	47	2	10	0	25	2	9	1	24	1	9
13	0	47	2	7	0	25	2	7	1	20	1	3
25	0	46	2	5	0	24	2	1	18	3	10	

Heliocentric Longitude.

D	h	Ω	h	γ	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	
1	26	41	16	34	19	54	9	2	0	37	7	13	20	7								
7	26	46	16	47	20	23	11	47	10	7	10	8	20	25	4							
13	25	50	17	0	20	52	14	31	19	38	17	Π	39	25	2							
19	25	54	17	13	21	21	17	17	29	10	24	8	28	25	10							
25	26	59	17	20	21	50	20	5	8	45	27	Π	24	24	51							

New Moon 1 day, 10 night
First Quarter 8 day, 3 aftern.
Full Moon 16 day, 5 afternoon
Last Quarter 24 day, 3 aftern.
New Moon 31 day, 7 morning.

M	W	Festival Days.	Aspect & Wea.	☉	♁	♂	♀	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	
D	D			♁	♂	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	
1	S	St. David	* ☉ ♀	11	25	11	0	10	6	17	5	20	0	47	10	18							D sets
2	E	Quinquag.	Sh.Su.	12	25	11	0	10	7	19	20	33	2	8	5	42							6a20
3	M	[Chad	Cold	13	25	11	0	10	9	21	5	44	3	19	0	46							7 3 ⁹
4	T	Shr. Tuefd.	Δ ♂ ♀	14	25	11	0	11	10	23	20	43	4	16	4	9							9 1
5	W	Ash Wedn.	* ♀ ♀	15	25	11	0	11	11	25	5	8	22	4	55	8	42						10 20
6	T	C.Co.B.A.	rain or	16	25	11	0	11	12	27	19	36	5	14	12	36							11 34
7	F	Perpetua	□ ♃ ♀	17	25	11	0	11	14	29	3	Π	22	5	14	15	42						Morn
8	S	♂ fet 10.37n	flect.	18	25	11	1	11	15	31	16	42	4	57	17	52							0 43
9	E	1 S. in Lent	with	19	25	11	1	11	16	2	29	38	4	25	19	3							1 4 ⁶
10	M	♂ ri. 2.42m	brisk	20	25	11	1	11	17	4	12	5	12	3	42	19	14						2 41
11	T	♂ ri. 10.8n	wind.	21	25	12	1	11	19	6	24	29	2	49	18	29							3 31
12	W	Greg. EmW	Rain or	22	25	12	1	11	20	8	6	Ω	34	1	49	16	53						4 12
13	T	Cl. fast 9'37"	♁ ♀	23	25	12	1	12	21	9	18	30	0	45	14	35							4 47
14	F	♂ fet 10.20n		24	25	12	1	12	22	11	0	Π	21	0	20	11	40						5 16
15	S	♂ fo. 10.7 n	flect	25	25	12	1	12	24	12	12	9	1	24	8	18							5 43
16	E	2 S. in Lent	about	26	25	12	1	12	25	14	23	57	2	24	4	36							D rif.
17	M	St. Patrick	the new moon.	27	25	12	2	R	26	15	5	47	3	18	0	44							6a56
18	T	Ed. K.W.S.		28	25	12	2	12	27	16	17	41	4	4	3	12							7 59
19	W	Jof. HVM.	♁ ☉ ♀	29	25	12	2	12	29	17	29	42	4	39	7	2							9 2
20	T	♂ ri. 9.44n	♁ ♀	30	25	13	2	12	30	18	11	49	5	2	10	37							10 7
21	F	Benedict	□ ♃ ♀	1	25	13	2	12	1	19	24	7	5	11	13	48							11 12
22	S	♂ fet 8.1n		2	25	13	2	12	2	20	6	1	38	5	7	16							Morn
23	E	3 S. in Lent		3	25	13	2	11	4	20	19	23	4	37	18	16							0 15
24	M	Cl. fast 6.19	♁ ♀	4	25	13	2	11	5	21	2	2	27	4	11	19							1 16
25	T	An.V.M. Lady D.		5	24	13	2	11	6	21	15	53	3	22	19	10							2 14
26	W	♂ fet 9.44 n		6	24	13	2	11	7	21	29	41	2	19	17	58							3 6
27	T	♂ ri. 1.47m	Show-	7	24	13	2	11	9	R	13	54	1	6	15	37							3 51
28	F	♂ ri. 9.22 n	ers to-	8	24	13	2	11	10	21	28	30	0	13	12	13							4 33
29	S	♂ fou. 9.16n	wards	9	24	13	3	11	11	21	13	25	1	32	7	57							5 6
30	E	4 S. in Lent	the	10	24	14	3	11	12	21	28	33	2	47	3	7							D sets
31	M	Cl. fast 4.9	end.	10	24	14	3	11	14	20	13	45	3	49	1	54							6a39

D	D.L.	Sun beg.	Sun rise	Sun fet.	D.L.	leng. ends	Day of D.	Day inc.	Declination.																
									☉	♁	♂	♀	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌			
1	4	36	631	529	7	24	10	58	3	8															
7	4	24	620	540	7	36	11	20	3	30	7	23	13	39	13	8	23	3	12	58	10	21	5	53	
13	4	12	6	552	7	48	11	44	3	54	5	4	13	44	13	19	23	3	13	16	7	33	0	27	
19	4	0	556	6	4	8	0	12	8	4	18	2	43	13	49	13	31	23	3	13	27	4	37	4	50
25	3	48	544	6	16	8	12	13	2	4	42	0	21	13	53	13	43	23	3	13	32	1	36	9	3
									2	n	1	13	57	13	56	23	2	13	30	1	25	11	19		

Geocentric Latitude.

APRIL hath XXX Days.

D	h	f	U	n	♂	n	♀	n
1	0	46	2	40	24	1	54	110
13	0	46	2	20	23	1	39	050
25	0	40	2	10	23	1	10	025

Heliocentric Longitude.

First Quart. 7 day, 5 mor.
Full Moon 15 day, 10 mor.
 Last Quart. 23 day, 1 mor
New Moon 20 day, 4 aft.

D	h	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂
1	27	5	17	41	22	24	23	21	19	52	8	4	24	28.
7	27	10	17	55	22	53	26	11	29	27	9	57	24	9
13	27	14	18	8	23	22	29	3	9	82	8	59	23	50
19	27	18	18	21	23	51	1	55	18	3	25	20	23	31
25	27	23	18	34	24	20	4	49	28	17	12	55	23	12

M	W	Festival Days.	Afp. & weath.	☉	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	
D	D			Υ	Ω	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	
1	T	All Fools d.	Windy	11	24	14	3	10	15	20	28	50	4	35	6	47	8a	0	
2	W	Tri. 1. 26m	♂ D h	12	24	14	3	10	16	19	13	838	5	2	11	9	9	18	
3	T	Cam. lat. aft	♂ ♀ ♀	13	24	14	3	10	17	10	28	3	5	8	14	45	10	33	
4	F	St. Ambrose	with showers	14	24	14	3	10	18	18	12	11	0	4	56	17	22	11	41
5	S	Old Lady d.		15	24	14	3	10	19	20	17	25	28	4	27	18	55	Morn	
6	E	5 S. in Lent	♂ ☉ ♀	16	24	14	3	0	21	17	8	28	3	40	19	26	0	43	
7	M	Cl. fast 2. 4"	of rain.	17	24	15	3	0	22	16	21	3	2	55	18	57	1	36	
8	T	h sets 9. 4n.	Δ ♀ ♀	18	24	15	3	9	25	15	3	Ω	19	1	57	17	33	2	20
9	W	U rif. 1. 2. m	♂ D ♀	19	24	15	3	9	25	14	15	21	0	54	15	23	2	57	
10	T	U fo. 8. 37. n	Pleasant	20	24	15	3	8	26	14	27	13	0	9	12	36	3	38	
11	F	Cam. te. en.	for the	21	24	15	3	8	27	13	9	12	1	12	9	10	3	57	
12	S	Oxf. te. en.		22	24	15	3	8	27	12	20	48	2	12	5	40	4	20	
13	E	6 S. in Lent	Δ ☉ ♀	23	24	15	3	7	8	12	2	37	3	5	1	48	4	48	
14	M	h set 8. 45n	most	24	24	15	3	7	1	11	14	32	3	51	2	11	5	5	
15	T	U ri. 0. 41m	Δ ♀ ♀	25	24	16	3	7	2	11	26	35	4	27	6	6	D	rif	
16	W	♂ ri. 7. 38. n	♂ D ♂	26	24	16	3	6	3	10	8	m	4	1	52	9	40	8a	
17	T	Maundy	part, with some	27	24	16	3	6	5	10	21	6	5	3	13	11	9	1	
18	F	Good Frid.		28	24	16	3	6	6	10	3	1	37	5	0	16	0	10	
19	S	Alphege		29	24	16	3	5	7	10	16	19	4	42	18	6	11	16	
20	E	Easter day	♂ D ♀	8	24	16	R	5	8	D	29	14	4	9	19	18	Morn		
21	M	Easter Mon	cooling showers	1	24	16	3	5	10	0	12	1	32	3	23	10	31	0	
22	T	Easter Tues		2	24	16	3	4	11	10	25	47	2	25	18	38	1	10	
23	W	St. George	Δ ☉ ♀	3	24	17	3	4	12	10	9	28	1	17	16	40	1	58	
24	T	Cl. flo. 2. 4"	of rain	4	24	17	3	4	13	11	23	28	0	4	13	40	2	36	
25	F	St. Mar. Prs.	* ♀ ♂	5	24	17	3	3	14	11	7	X	47	1	12	9	46	3	
26	S	Clet Mar. b	towards	6	24	17	3	3	16	11	22	23	2	24	5	14	3	43	
27	E	1 S. af. East.	♂ h ♀	7	24	17	3	2	17	12	7	Υ	12	3	28	0	10	4	
28	M	U r. 11. 51. n	the end.	8	24	17	3	2	8	13	22	8	4	17	4	n30	4	42	
29	T	♀ r. 4. 5. m		9	24	17	3	2	19	13	7	8	2	4	9	10	D	sets	
30	W	Ox. & Ca. t. b	♂ D ♀	10	24	17	3	1	21	14	21	44	5	1	13	22	8a	14	

D	D. L. beg.	Sun. rise	Sun. set.	D. L. ends	Day of D.	inc.	Declination.																		
							☉	n	♂	n	h	n	♂	f.	♂	f.	♀	n	♀	n					
1	3	30	530	630	8	30	13	0	5	10	4	44	14	0	14	11	23	2	13	19	4	57	10	58	
7	3	15	519	641	8	45	13	22	5	32	7	14	2	14	24	23	2	13	2	7	54	8	30		
13	2	58	5	7	6	53	9	2	13	46	9	14	14	4	14	37	23	2	12	39	10	45	5	26	
19	2	40	455	7	5	9	20	14	10	6	20	11	21	14	5	14	51	23	2	12	12	13	27	3	15
25	2	21	444	716	9	30	14	32	6	42	13	21	14	6	15	4	23	2	11	40	15	57	2	35	

Geocentric Latitude.

MAY hath XXXI Days.

D	h	i	n	♃	♄	♅	♆
1	0	45	2	10	22	0	55
13	0	45	2	0	22	0	23
25	0	44	2	0	20	0	18

First Quart. 6 day, 10 night
Full Moon 15 day, 1 morn.
 Last Quart. 22 day, 7 mor.
New Moon 29 day, 1 mor.

Heliocentric Longitude.

D	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐
1	27	28	18	47	24	50	7	45	7	56	29	30	22	53
7	27	32	19	0	25	19	10	43	17	36	16	51	22	34
13	27	37	19	13	25	48	13	42	27	18	5	46	22	15
19	27	42	19	27	25	17	16	42	7	50	27	20	21	56
25	27	47	19	40	26	47	19	45	16	43	22	46	21	37

M	W	Festival Days.	Aspects & Wea.	☉	♁	♂	♀	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐
1	T	St. Ph. & Jas.	Rain at	11	D	18	3	1	22	15	6	7	4	54	16	31	9a	27			
2	F	Cl. flo. 3.16"	☐ ☉ ♀	12	24	18	3	1	23	16	20	6	4	29	18	37	10	33			
3	S	In. of the C.	the be-	13	24	18	3	0	24	16	3	37	3	50	19	35	11	32			
4	E	2 S. aft. East.	ginning	14	24	18	3	0	20	17	16	40	2	59	19	27	Morn				
5	M	1 return		15	24	18	3	0	27	18	29	10	2	18	19	0	21				
6	T	St. John	A. PL.	16	24	18	3	☉	28	19	11	Ω	38	0	59	16	22	1	2		
7	W	Easter T. be.	♃ ♃	17	24	18	3	29	20	20	23	41	0	n	4	13	43	1	35		
8	T	4 ri. 11. 11n	Rain	18	24	18	3	29	11	22	5	34	1	7	10	31	2	5			
9	F	♃ fo. 10. 40n	Δ ☉ ♀	19	24	18	3	28	2	23	17	22	2	6	6	55	2	31			
10	S	♄ rif. 3. 48m	(☉ ☉)	10	24	18	3	28	3	24	29	11	3	0	3	4	2	54			
11	E	3 S. aft. East.	and	20	24	19	3	28	4	25	11	☉	4	3	47	of	55	3	14		
12	M	2 return	wind,	21	24	19	2	27	5	27	23	5	4	22	4	55	3	35			
13	T	Cl. flo. 3. 59	and	22	24	19	2	27	7	28	5	17	4	47	8	47	3	58			
14	W	4 ri. 10. 44n	♃ ♃	23	24	19	2	27	8	20	17	41	4	59	12	20	4	25			
15	T	♃ fo. 10. 19n	☐ ☉ ☉	24	24	19	2	27	9	8	0	4	4	57	15	23	D	rif.			
16	F	♄ rif. 3. 38m	perhaps	25	24	19	2	26	10	2	13	6	4	40	17	46	gale				
17	S	♀ fet 9. 17 n	thunder	26	24	20	2	26	11	4	26	7	4	8	19	16	10	16			
18	E	4 S. aft. East.	and hail	27	24	20	2	26	13	5	9	20	3	22	19	46	11	11			
19	M	3 ret. Qu.	Ch. b.	28	24	20	2	26	14	7	22	43	2	25	19	10	11	59			
20	T	[Dunstan]		10	24	20	2	25	15	8	6	17	1	18	17	27	Morn				
21	W	Cl. flo. 3. 47		11	24	20	2	25	16	10	20	3	0	6	14	43	0	40			
22	T	Prs. Eliz. b.	showers	1	24	20	2	25	18	12	4	17	0	11	7	11	6	1	16		
23	F	4 rif. 10. 6n	with	2	24	20	2	25	19	14	18	0	2	17	6	48	1	46			
24	S	♃ fo. 9. 27n	brisk	3	24	20	1	25	20	15	2	28	3	20	2	4	2	15			
25	E	5 S. aft. East.	gales of	4	24	21	1	25	21	17	16	56	4	10	2n	48	2	44			
26	M	4 ret. Au. I.	AB. C.	5	24	21	1	25	23	10	1	8	27	4	45	7	32	3	12		
27	T	Ven. Bede	Δ ♀ ♀	6	24	21	1	24	24	21	15	57	5	1	11	50	3	40			
28	W	Cl. flow 3. 8	☐ ☉ ♀	7	24	21	1	24	25	23	0	110	4	57	15	23	D	fets			
29	T	Af. d. H. Th.	wind	8	24	21	1	24	26	25	14	26	4	36	17	50	8a	15			
30	F	4 rif. 9. 36n	* ☉ ♀	9	24	21	1	24	27	27	28	14	3	59	19	28	9	17			
31	S	♃ fo. 8. 55n	to the	10	24	21	1	24	20	20	1	28	3	9	10	48	10	12			

D	D. L.	Sun beg.	Sun rise	Sun set.	D. L.	leng. of D.	Day inc.	Declination.																
								☉	n	h	n	h	n	ℓ	l.	♃	l.	♀	n	♀	l.			
1	2	1	434	726	9	50	14	52	7	2	15	13	14	7	15	17	23	3	11	9	18	12	3	21
7	1	41	424	736	10	10	15	12	7	22	16	57	14	7	1530	23	3	1040	20	11	5	17		
13	1	12	414	746	10	48	15	32	7	42	18	30	14	6	1543	23	4	1017	21	50	8	7		
19	0	38	4	5755	11	22	15	50	8	0	19	52	14	4	1555	23	5	10	0	23	7	11	3	
25	all	25	8	2	Day	16	4	8	14		21	2	14	1	16	8	23	7	9	53	24	0	15	27

Deocentric Latitude.

JUNE bath XXX Days.

D	n	h	l.	24 n	♂ f.	♀ n	♂ f.
1	0	44	2	0	20	0	24 1 3 0 31
13	0	44	2	1	0	18	0 47 1 24 1 n 24
25	0	43	2	1	0	17	1 6 1 37 1 54

Heliocentric Longitude.

D	♂	♀	h	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀
1	27	52	19	55	27	21	23	20	28	5	28	51	21 14
7	27	56	20	8	27	50	25	26	7	50	5	Π	1 20 55
13	28	1	20	21	28	20	29	35	17	36	12	Σ	37 20 56
19	28	6	20	35	28	49	27	45	27	21	16	Ω	57 20 17
25	28	11	20	48	29	19	15	58	7	7	15	Υ	46 19 56

First Quart. 5 day, 3 after.
 Full Moon 13 day, 1 after.
 Last Quart. 20 day, at noon
 New Moon 27 day, 10 mor.

V	W	Festival Days.	Aspects & Wca.	☉	♂	h	♀	♂	♀	♂	♀	D	lat	D de.	D
D	D			Π	Ω	♂	♀	♂	♀	♂	♀	♂	♀	north	fets.
1	E	S.a.Af.Nic.	♂ ♀ ♀	11	24	22	1	24	0	1	24	39	2-11	19 4	10 57
2	M	Easter T.en.	Mild at	12	24	22	1	24	1	3	7	Ω	18	1 7	17 24 11 35
3	T	Cl.flo. 2'16"	the be-	13	24	22	0	D	2	5	19	37	0 2	14 55	Morn
4	W	K.G.III.b.	ginning	13	24	22	0	24	4	7	1	Υ	41	1 n 2	11 51 0 7
5	T	P.Ern.A.b.	Bon.	14	24	22	0	24	5	9	13	36	2 2	8 20	0 33
6	F	24 rif. 9. 5 n	Wind,	15	24	22	0	24	6	11	25	26	2 57	4 31	0 56
7	S	♀ f. 9. 53 n	& show.	16	24	22	0	24	7	14	7	♂	17	3 45	0 32 1 19
8	E	Whit Sun.	♂ ♀ ♂	17	25	22	0	24	8	16	19	14	4 22	3 29	1 4
9	M	Whit Mon.	♂ ☉ ♀	18	25	23	0	24	10	18	1	♂	20	4 49	7 26 2 1
10	T	Wh. Tu. Prs	Am.b.	10	25	23	0	24	11	20	13	40	5 3	11 9	2 26
11	W	Ember W.	* ♀ ♂	20	25	23	♀	25	12	22	26	15	5 2	14 25	2 53
12	T	24 ri. 8. 37 n	♂ ♀ ♀	21	25	23	29	25	13	25	9	♂	7	4 47	17 6 3 24
13	F	♂ fo. 8. 4 n	[* ♀ ♀	22	25	23	29	25	14	27	22	14	4 16	18 59	D rif.
14	S	♀ fet 10. 2 n	♂ ♀ ♀	23	25	23	29	25	16	29	5	♂	37	3 31	19 50 9 a 3
15	E	Trin. Sun.		24	25	23	29	25	17	♂	19	12	2 32	19 34	9 55
16	M	1 ret.	* ☉ ♀	25	25	23	29	25	18	3	2	♂	58	1 25	13 8 10 37
17	T	St. Alban	[Δ ☉ ♂	26	25	23	29	25	19	5	16	53	0 11	15 37	11 15
18	W	♂ fo. 7. 46 n	of rain,	27	25	24	29	26	21	7	0	♂	54	1 f. 4	12 10 11 47
19	T	♀ fet 10. 2 n	♂ ☉ ♀	27	25	24	28	26	22	9	15	0	2 16	8 0	Morn
20	F	Trin. T. be.	& thun.	28	25	24	28	26	23	11	29	9	3 20	3 24	0 16
21	S	Longest da	Show-	28	25	24	28	26	24	13	13	Υ	20	4 11	in 25 0 43
22	E	1 S. aft. Tr.	ers of	1	25	24	28	26	25	15	27	32	4 47	6 8	1 10
23	M	2 return	♂ ♀ h	2	25	24	28	27	27	17	11	8	4 15	6 10	30 1 37
24	T	St. John b.	☐ ♂ ♀	3	25	24	28	27	28	19	25	45	5 6	14 16	2 10
25	W	St. J. Cal. E.	rain	4	25	24	28	27	29	21	9	Π	40	4 48	17 10 2 45
26	T	24 ri. 7. 31 n	with	4	25	24	28	27	Ω	23	23	22	4 13	19 5	3 24
27	F	♂ fet 2. 24 m	wind	5	25	25	27	28	1	24	6	♂	49	3 25	19 52 D fets
28	S	[P. & Paul	♂ ♀ ♀	6	25	25	27	28	3	26	19	57	2 27	19 33	8 46
29	E	2 S. af. T. St.	☐ ♂ ♀	7	25	25	27	28	4	28	2	Ω	47	1 23	18 12 9 27
30	M	3 ret. B. h. b.	to the	8	25	25	27	28	5	29	15	19	0 16	16 0	10 2
		1 Dog d. b.	end.												

D	D. L.	sun	Sun.	D. L.	leng.	Day	Declination.													
	beg.	rite	set.	ends	of D.	inc.	☉	n	♂	n	h	n	♀	f.	♂	f.	♀	n	♂	n
1		350	8 10		16 30	8 30	22	8	13	57	16	21	23	8	9	56	24	31	19	55
7		345	8 15		16 30	8 40	22	94	13	53	16	32	23	9	10	10	24	29	23	3
13	all	344	8 16	Day	16 32	8 42	23	15	13	49	16	43	23	10	10	31	24	1	24	50
19		343	8 17		16 34	8 44	23	27	13	44	16	53	23	10	11	2	23	8	24	58
25		242	3 17		16 34	8 44	23	24	13	39	17	2	23	10	11	40	21	51	23	39

Geocentric Latitude.

JULY hath XXXI Days.

D	h	l.	l.	n	l.	l.	l.	n				
1	o	43	2	o	16	1	15	1	40	1	33	
13	o	43	2	3	o	14	1	27	1	38	o	17
25	o	43	2	5	o	12	1	37	1	24	1	35

Heliocentric Longitude.

First Quart. 5 day, 8 mor.
 Full Moon 12 day, 11 night
 Last Quart. 19 day, 5 after.
 New Moon 26 day, 10 night

D	h	l.	l.	n	l.	l.	l.	n	l.	l.	l.	n
1	28	15	21	1	29	49	9	12	16	52	9	34
7	28	20	21	14	o	18	12	29	26	35	29	51
13	28	25	21	27	o	48	15	47	6	18	17	55
19	28	30	21	40	1	17	19	7	16	o	4	47
25	28	35	21	54	1	77	22	30	25	40	21	14

M	W	Festival Days.	Aspects & Wea.	☉	☽	☿	♁	♂	♀	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
D	D			☉	☽	☿	♁	♂	♀	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
1	T	Cam. Com.	Warm	9	25	25	27	20	6	1	27	35	0	51	13	7	10	29								
2	W	Visit. V.M.	and	10	21	25	27	20	8	2	9	38	1	54	9	44	10	55								
3	T	Cl. fast 3 46"	pleasant	11	26	25	27	20	0	4	21	33	2	52	5	59	11	17								
4	F	T. St. Mart.	C.T.e.	12	26	25	27	20	0	4	3	24	3	42	2	2	11	38								
5	S	O. Midf. d.	at the	13	26	25	26	0	11	7	15	16	4	22	1	59	Morn									
6	E	3 S. aft. Tr.	♄ ♃	14	26	20	26	0	12	8	27	13	4	52	5	57	0	0								
7	M	Ret. O. Act	♄ begin.	15	26	26	26	1	14	10	9	22	5	9	9	45	0	22								
8	T	[T. Beck.	Rain	16	26	26	26	1	15	11	21	45	5	12	13	12	0	47								
9	W	Tr. T. ends	♄ ♃	17	26	26	26	2	16	12	4	26	5	0	16	8	1	17								
10	T	2 fo. 10. 24 n	♄ ♃	18	26	26	26	2	17	14	17	27	4	33	18	21	1	52								
11	F	♄ fet 11. 32 n	for	19	26	26	26	2	18	15	0	49	3	50	19	38	2	34								
12	S	♀ fet 9. 39 n	some	20	26	26	26	3	20	16	14	30	2	53	19	49										
13	E	4 S. aft. Tr.	days,	21	26	26	26	3	21	17	28	29	1	44	18	47	8	29								
14	M	Cl. fast 5. 23	then to-	22	26	26	25	4	22	18	12	40	0	28	16	34	9	11								
15	T	Swithin	wards	23	26	26	25	4	23	19	27	1	0	50	13	19	9	45								
16	W	2 fo. 9. 56 n	♄ ♃	24	26	26	25	4	24	20	11	35	2	6	9	14	10	15								
17	T	♄ fet 11. 13 n	♄ ♃	24	26	27	25	5	26	21	25	49	3	14	4	38	10	43								
18	F	♀ fet 9. 0 n	♄ ♃	25	26	27	25	5	27	22	10	10	4	10	on	12	11	10								
19	S	Oxf. T. ends	the	26	26	27	25	6	28	23	24	24	4	49	4	59	11	38								
20	E	5 S. aft. Tr.	* ☉	27	26	27	25	6	29	24	8	20	5	11	9	26	Morn									
21	M	[Margaret	♄ ♃	28	27	27	25	7	30	25	22	23	5	14	13	12	0	7								
22	T	Magdalen	end	28	27	27	25	7	31	25	6	11	5	0	16	46	0	40								
23	W	Mag. Co. E.	wind	29	27	27	25	7	32	26	19	36	4	28	18	35	1	18								
24	T	Cl. fast 6. 3	♄ ♃	1	27	27	25	8	4	26	2	52	3	43	19	43	2	2								
25	F	St. James	and	2	27	27	24	8	5	27	15	54	2	47	19	45	2	52								
26	S	St.A.MVM.	♄ ♃	3	27	27	24	9	6	27	28	42	1	43	18	46										
27	E	6 S. aft. Tr.	show-	4	27	27	24	9	8	28	11	16	0	36	16	51	7	58								
28	M	2 fo. 9. 4 n	♄ ♃	5	27	27	24	10	9	28	23	36	on	33	14	11	8	29								
29	T	♄ fet 10. 35 n	* ♄ ♃	6	27	28	24	10	10	28	5	45	1	38	10	56	8	56								
30	W	♀ fet 9. 3 n	ers of	7	27	28	24	11	11	28	17	44	2	39	7	17	9	20								
31	T	♄ fet 8. 2 n	rain.	8	27	28	24	11	12	R	20	37	3	32	3	24	9	40								

D	D. L.	Sun beg.	Sun rise	Sun fet.	D. L.	eng. of D.	Day dec.	Declination.																	
								☉	n	♃	n	♄	n	♅	f.	♆	f.	♀	n	♁	n				
1			3 44	8 16		16 32	o 2																		
7		all	3 48	8 12	Day	16 24	o 10	23	6	13	34	17	10	23	11	12	24	20	13	21	22				
13			3 53	8 7		16 14	o 20	22	34	13	28	17	19	33	11	13	14	18	14	18	30				
19			3 50	8 1		16 2	o 32	21	48	13	22	17	26	23	11	14	6	15	59	15	25				
25	o 51	4 8	7 52	11 0		15 44	o 50	20	48	13	15	17	32	23	11	15	1	13	29	12	27				
								19	36	13	7	17	38	23	11	16	0	10	46	9	59				

Geocentric Latitude.

SEPTEMBER hath XXX Days.

Heliocentric Longitude.

D	h	f.	u	n	δ	f.	♀	♂	n			
1	0	43	2	12	0	6	1	52	0	28	0	16
13	0	43	2	14	0	5	1	53	1	17	1	48
25	0	43	2	16	0	3	1	53	2	8	1	22

D	♂	♀	h	♂	u	v	♂	v	♀	♂	♂	♂	♂	
1	29	4	23	17	4	54	14	40	26	15	22	46	16	22
7	29	8	23	30	5	24	18	17	5	44	0	25	16	3
13	29	13	23	44	5	53	21	55	15	13	6	15	15	44
19	29	18	23	57	6	23	25	35	24	42	6	53	15	25
25	29	22	24	10	6	53	29	17	4	11	2	11	15	6

First Quart. 2 day, 4 aftern.
Full Moon 9 day, 4 aftern.
 Last Quar. 16 day, 7 morn.
New Moon 24 day, 5 mor.

M	W	Festival Days.	Aspects & Wez.	☉	♂	h	u	♂	♀	♂	D	D lat	D dec	D					
D	D			♂	♂	♂	♂	♂	♂	♂	m	nor.	leuth	fets.					
1	M	Giles	♂ D ♂	9	20	29	24	0	20	21	25	41	5	12	14	9	9	52	
2	T	Lond. burnt	Fair for	10	20	29	24	0	21	22	8	♂	4	55	16	48	10	25	
3	W	h rif. 9.17n	Δ u ♀	11	29	29	24	1	22	23	20	36	4	24	18	44	11	5	
4	T	u fet 10.37n		12	29	29	24	2	23	25	3	33	3	39	19	46	11	57	
5	F	♂ fet 9.6n	some days,	13	29	29	24	2	24	26	16	55	2	41	19	44		Morn	
6	S	♀ fet 7.44n		14	29	29	24	3	26	28	0	45	1	31	18	31	0	56	
7	E	12 S. aft. Tr.	♂ ♀ ♀	15	29	29	24	3	27	29	15	1	0	14	16	7	2	5	
8	M	Na. B. V. M.	then wind	15	♂	29	24	4	2	♂	29	41	1	1	12	37	3	22	
9	T	Cl. flo. 2.58"		16	0	29	24	5	20	3	14	40	2	23	8	14		D rif.	
10	W	h rif. 8.52n	□ ♂ ♀	17	c	R	24	5	m	4	29	50	3	31	3	17	7	a22	
11	T	u fet 10.14n	& rain	18	c	29	24	6	1	6	15	v	1	4	24		in	52	
12	F	♂ fet 8.54n	about these	19	0	29	24	7	2	8	0	8	2	4	58	6	51	8	22
13	S	♀ fet 7.31n		20	0	29	24	7	4	10	14	40	5	12	11	10	8	54	
14	E	13 S. aft. Tr.	♂ D h	21	c	29	24	8	5	12	29	7	5	1	15	1	9	29	
15	M	[Hely Crois	days,	22	c	29	24	9	6	14	13	II	2	4	41	17	44	10	10
16	T	Cl. aft 5.25	with	23	c	29	25	9	7	15	20	31	4	2	19	23	10	56	
17	W	Lambert E.	mb. W.	24	c	29	25	10	8	17	0	37	3	11	19	50	11	48	
18	T	h rif. 8.22n	□ ♂ u	25	c	29	25	11	9	19	22	21	2	12	19	27		Morn	
19	F	u fet 9.48n	thunder and	26	0	29	25	11	10	21	4	Ω	4	1	7	18	c	0	45
20	S	♂ fet 8.42n	□ u ♀	27	c	29	25	12	11	23	17	3	0	1	15	43	1	43	
21	E	14 S. aft. Tr.	St. Mat.	28	c	29	25	13	13	25	20	7	1	n	4	12	47	2	48
22	M	K. G. III. cr.		29	c	29	25	13	14	27	11	♂	5	2	9	21	3	53	
23	T	h rif. 8.4n	♂ D ♀	30	0	29	25	14	15	28	22	58	3	1	5	34	4	57	
24	W	u fet 9.35n	brisk	1	1	29	25	15	16	30	4	♂	4	1	35			D fets	
25	T	♀ fet 7.12n	♂ ☉ ♀	2	1	29	25	15	17	2	16	39	4	2	21	27	6	48	
26	F	St. Cyprian	gales of	3	1	29	25	16	18	4	28	30	4	5	6	24	7	10	
27	S	Cl. flow 9.11	L. two.	4	1	29	26	17	19	6	10	m	24	5	10	7	7	34	
28	E	15 S. a. T.		5	1	29	26	18	20	7	22	23	5	13	28	8	2		
29	M	St. Mic. Prs.	R. bor.	6	1	29	26	18	21	9	4	♂	30	4	52	16	18	8	34
30	T	St. Jer.	♂ D ♂	7	1	29	26	19	23	11	16	48	4	25	18	25	9	12	
		Hare-h. b.	wind.																

D	D L.	Sun beg.	Sun rise	Sun set.	D. L.	Eng. ends	Day of D.	Dec.	Declination.																		
									☉	n	♂	n	h	n	u	f.	♂	f.	♀	f.	♂	n					
1	3	8	5	14	6	46	8	52	13	32	3	2	8	8	12	18	17	56	23	14	22	2	8	23	14	42	
7	3	23	5	25	6	35	8	37	13	10	3	24	5	55	12	10	17	56	23	15	22	49	11	19	12	51	
13	3	40	5	37	6	23	8	20	12	46	3	48	3	38	12	2	17	55	23	17	23	31	14	7	9	21	
19	3	54	5	40	6	11	8	6	12	22	4	12	1	19	11	55	17	53	23	19	24	7	16	44	4	59	
25	4	5	6	0	6	0	7	55	12	0	4	34	1	f.	2	11	48	17	51	23	21	24	36	19	8	0	16

Geocentric Latitude.

OCTOBER hath XXXI Days.

Heliocentric Longitude.

D	h	l	u	n	δ	f	♀	♂	n			
1	0	43	2	17	0	2	1	52	2	32	0	48
13	0	43	2	18	0	1	1	49	3	25	0	33
25	0	44	2	19	0	0	1	45	3	45	1	49

D	h	l	u	n	δ	f	♀	♂	n						
1	39	27	24	23	7	22	3	0	13	40	23	28	14	47	
7	29	32	24	36	7	52	6	44	23	9	12	11	8	28	
13	29	37	24	50	8	22	10	29	2	39	29	17	14	9	
19	29	42	25	3	8	52	14	15	12	9	15	7	45	13	50
25	29	46	25	16	9	22	18	3	21	41	12	5	29	13	31

First Quarter 2 day, 7 morn.
Full Moon 8 day, midnight
 Last Quarter 15 day, 7 night
New Moon 23 day, 11 night
 First Quarter 31 day, 7 night.

M	W	Festival Days.	Aspects & Wea.	☉	♁	♂	♀	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	
D	D			☉	♁	♂	♀	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓	
1	W	Remig. Ph.	th. be.	8	1	29	26	20	24	12	29	20	3	45	19	43	9	57							
2	T	h ri. 7.32 n		9	1	29	26	20	25	14	12	11	2	52	20	3	10	50							
3	F	u fet 9.4 n	Some showers	10	1	29	26	21	26	16	25	25	1	49	19	17	11	55							
4	S	♂ fet 8.28 n		11	1	29	26	22	27	16	9	4	0	38	17	23	Morn								
5	E	16 S. aft. Tr.	♂ h ♀	12	1	29	27	22	28	16	23	11	0	37	14	23	1	5							
6	M	Faith	about these	13	1	29	27	23	29	21	7	3	45	1	53	10	25	2	20						
7	T	Cl. fl. 12' 16"		14	1	29	27	24	30	22	22	43	3	2	5	41	3	40							
8	W	♀ fet 6.55 n	☐ ♁ ♀	15	1	28	27	25	1	24	7	5	4	0	0	31	5	4							
9	T	St. Denys	days.	16	1	28	27	25	2	26	23	16	4	41	4	41	Dri.								
10	F	O. & C. T. b.	* ♃ ♀	17	1	28	27	26	3	27	8	8	3	1	9	35	6	57							
11	S	Cl. flo. 13. 19	♂ ♃ h	18	1	28	27	27	4	29	23	29	5	1	13	48	7	32							
12	E	17 S. aft. Tr.	♂ ♃ ♀	19	1	28	28	27	5	30	8	30	4	4	17	3	8	13							
13	M	Tr. K. Ed. C.	[* ♁ ♀	20	1	28	28	28	7	2	22	10	4	4	19	10	8	58							
14	T	Calixt. PM.	Windy	21	2	28	28	29	8	4	5	26	4	3	14	20	9	49							
15	W	u fet 8.27 n	and turbu-	22	2	28	28	30	9	5	18	53	2	16	19	53	10	46							
16	T	♂ fet 8.22 n		23	2	28	28	31	10	7	1	56	1	12	18	30	11	47							
17	F	Ethel. Virg.	Δ ♁ ♀	24	2	28	28	32	11	11	13	50	0	7	16	32	Morn								
18	S	St. Luke	♂ ♃ ♁	25	2	28	28	33	12	12	10	26	7	0	13	43	0	49							
19	E	18 S. aft. Tr.	St. Frid.	26	2	28	29	34	13	11	8	3	1	50	10	22	1	53							
20	M	h ri. 6. 24 n	lent.	27	2	28	29	35	14	12	19	57	2	53	6	38	2	56							
21	T	u fet 8.9 n		28	2	28	29	36	15	13	1	47	3	40	2	30	3	59							
22	W	♂ fet 8.19 n	Fair for some days.	29	2	28	29	37	16	14	13	36	4	17	1	12	5	1							
23	T	♀ fet 6.42 n		30	2	28	29	38	17	15	25	20	5	44	5	27	D sets								
24	F	♂ fet 5.32 n		1	2	28	29	39	18	16	7	3	6	58	9	18	5	44							
25	S	K. G. III. ac.	Crisp.	2	2	27	30	40	19	17	19	26	7	50	12	48	6	8							
26	E	19 S. a. T. K. G. III. pr.		3	2	27	30	41	20	18	1	33	8	46	15	40	6	40							
27	M	Cl. flo. 16. 0	Wind at the	4	2	27	30	42	21	19	13	48	9	21	18	10	7	15							
28	T	St. Si. & Ju.		5	2	27	30	43	22	20	26	12	3	42	19	42	7	58							
29	W	h ri. 5. 44 n	♂ ♃ ♀	6	2	27	30	44	23	21	8	48	4	52	20	18	8	48							
30	T	u fet 7.40 n	8 h ♀	7	2	27	30	45	24	22	21	30	1	53	19	52	9	46							
31	F	♂ fet 8.16 n	end.	8	2	27	30	46	25	23	4	38	0	46	18	20	10	53							

D	D. L.	Sun rise	Sun sets	D. L. leng.	Day of D.	Dec.	Declination.																		
	beg.			ends			☉	♁	♂	♀	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐	
1	4	16	6	12	5	48	3	22	11	41	17	47	23	23	24	57	21	18	4	22					
7	4	20	6	24	5	30	5	41	11	35	17	43	23	25	25	11	23	10	8	47					
13	4	41	6	35	5	25	7	58	11	29	17	39	23	26	25	16	24	43	12	51					
19	4	53	6	45	7	7	10	10	11	23	17	34	23	27	25	12	25	56	16	29					
25	5	4	6	50	10	2	12	17	11	17	17	28	23	28	25	00	26	47	19	37					

Geocentric Latitude.

NOVEMBER hath XXX Days.

D	M	n	h	l	♂	♀	♃	♄
1	o	44	2	20	1	1	42	3 56 2 23
13	o	45	2	20	0	2	35	3 52 2 30
25	o	45	2	19	0	3	1	28 3 14 0 36

Heliocentric Longitude.

D	M	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂	♂
1	29	51	25	32	9	57	22	28	2	48	23	6	13 8
7	29	56	25	45	10	27	26	16	12	21	12	46	12 49
13	o	♄	25	58	10	57	o	♄	21	56	5	♄	12 30
19	o	5	26	11	11	27	3	54	1	8	31	2	12 11
25	o	10	26	25	11	57	7	42	11	7	4	8	11 53

Full Moon 7 day, 10 mor.

Last Quart. 14 day, 11 mor.

New Moon 22 day, 4 after.

First Quart. 30 day, 5 mor.

M	W	Festival Days.	Asp.& weath.	♈	♉	♊	♋	♌	♍	♎	♏	D	lat	de.	D		
D	D			m	♄	♅	♆	♇	♈	♉	♊	☾	fou.	fouth	fets.		
1	S	All Saints.	Mild	9	2	27	1	12	25	o	18	18	o	25	15 46	Morn	
2	E	20 Su.af.T.	Ai So.	10	2	27	1	13	20	1	2	♄	12	1	37	12 13	o 5
3	M	All Sou.col.	el. i re	11	2	27	1	14	27	2	16	30	2	45	7 51	1 20	
4	T	Revo. 1688	for the	12	2	27	1	14	28	3	1	♄	12	3	43	2 56	2 38
5	T	Powd. Plot	season,	13	2	27	2	15	29	5	16	12	4	28	2n	15	3 58
6	W	Mic.T.beg.	with	14	2	27	2	16	♄	6	1	8	23	4	54	7 22	5 21
7	F	Cl.flo.16'5"	♄ D h	15	2	27	2	17	1	7	16	33	4	50	12 1	D rif.	
8	S	Prs.Au.S.b	♄ ♀ ♀	16	2	26	2	17	2	8	1	II	33	4	44	15 51	6a 2
9	E	21 Su.af.T.	♄ ♄ ♄	17	2	26	2	18	2	9	16	13	4	10	13 36	6 47	
10	M	[L.M.D.L.	some	18	2	26	3	19	3	10	o	27	3	22	20 6	7 38	
11	T	St. Martin.	showers	19	3	26	3	20	4	11	14	10	2	23	20 21	8 34	
12	W	2 return	of rain.	20	3	26	3	20	5	12	27	24	1	18	19 26	9 34	
13	T	Britius	Pleasant	21	3	26	3	21	6	13	10	♄	12	o	11	17 32	10 37
14	F	Cl.fl.15'16"	* ☉ ♂	22	3	26	3	22	7	14	22	38	on	55	14 51	11 41	
15	S	Machutus		23	3	26	4	23	7	15	4	♄	47	1	56	11 34	Morn
16	E	22 Su.af.T.	for the	24	3	26	4	23	8	15	16	44	2	52	7 53	o 44	
17	M	Hu.Bi. Lin.	season,	25	3	26	4	24	9	16	28	35	3	39	3 55	1 47	
18	T	3 return	Δ h ♂	26	3	26	4	25	9	16	10	24	4	17	of 11	2 51	
19	W	♀ fet.5.5.n.		27	3	26	4	26	10	17	22	15	4	44	4 17	3 54	
20	T	Edm.K.M	ingeneral	28	3	25	5	26	11	17	4	m	11	1	58	8 15	4 57
21	F	♀ fet.6.36 n	all the	20	3	25	5	27	11	18	16	15	5	o	11 56	6 1	
22	S	Cecilia	month.	♀	3	25	5	28	12	17	28	20	4	48	15 10	D fets	
23	E	23 Su.af.T.		1	3	25	5	29	13	16	10	♄	46	4	22	17 46	5a 11
24	M	[St.Clem.	□ ☉ ☽	2	3	25	5	♄	13	16	23	16	3	43	19 35	5 52	
25	T	D.Gl.b. 4re	♄ D ♄	3	3	25	6	o	14	15	5	♄	56	2	53	20 27	6 39
26	W	[St.Cath.	Some	4	3	25	6	1	14	14	18	46	1	53	20 17	7 35	
27	T	Bal. Col. cl.	♄ D ♂	5	3	25	6	2	15	13	1	♄	47	o	46	19 2	8 37
28	F	Mic.Te.en.	rain.	♄	3	25	6	3	15	12	15	2	of	24	16 44	9 44	
29	S	Cl.fl. 11.13.		7	3	25	6	3	16	11	28	33	1	35	13 28	11 0	
30	E	Advent Su.	♄ ☉ ♀	8	3	25	7	4	16	10	12	♄	20	2	41	9 25	Morn
		[An.M.R.S	St.An.														

D	D.L.	Sun.	Sun	D.L.	ene.	Day
	beg.	rife	fet.	ends	of D.	dec.

Declination.

D	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	
1	5	15	7	11	4	40	6	45	9	38	6	56
7	5	24	7	21	4	39	6	36	9	18	7	16
13	5	31	7	31	4	29	6	29	8	58	7	36
19	5	37	7	40	4	20	6	23	8	46	7	54
25	5	44	7	49	4	11	6	16	8	32	8	12

Geocentric Latitude.

DECEMBER hath xxxi Days.

Heliocentric Longitude.

D	#	n	h	l.	4	l.	3	l.	♀	l.	♂	n
1	0	45	2	18	0	4	1	24	2	37	1	23
13	0	45	2	16	0	5	1	16	0	39	2	45
25	0	45	2	15	0	5	1	7	2	16	1	23

Full Moon 6 day, 9 night.
Last Quart. 14 day, 7 mor.
New Moon 22 day, 9 mor.
First Quart. 29 day, 1 after.

M	W	Festival Days.	Afp. & weath.	☉	♁	♂	♀	♃	♄	♅	♆	♇	♈	♉	♊	♋	♌	♍	♎	♏	♐	♑	♒	♓
1	M	h fo. 10. 53 n	Fair at the begin.	9	3	25	7	5	17	8	26	26	3	40	4	47	0	15						
2	T	4 f. 5. 53. n		10	3	24	7	6	17	7	10	43	4	25	0	13	1	30						
3	W	♂ f. 8. 21. n		11	3	24	7	6	18	6	25	26	4	55	5	16	2	43						
4	T	Barbary	♂ ♀ ♂	12	3	24	8	7	18	4	10	8	12	5	5	10	4	4	9					
5	F	Cl. 10. 8. 51	☐ ☐ ☐	13	3	24	8	8	18	3	25	1	4	54	14	16	5	29						
6	S	Nicholas	♂ ♀ ♀	14	3	24	8	9	19	2	9	11	44	4	25	17	34							
7	E	Su. in Adv	then rain or fleet for some days.	15	3	24	8	10	19	2	24	13	3	38	19	42	5	14						
8	M	Con. BVM.		16	R	24	8	10	19	1	8	20	2	40	20	33	6	8						
9	T	h fo. 10 22 n		17	3	24	9	11	19	1	22	4	1	33	20	8	7	7						
10	W	♂ f. 8. 16. n		18	3	24	9	12	19	1	5	21	0	23	18	35	8	11						
11	T	♀ fet 6. 37 n		19	3	24	9	13	19	D	18	13	0	47	16	7	9	15						
12	F	♂ ri. 6. 6. m	♂ ♀ ☐	20	3	24	9	13	R	1	0	13	1	52	12	58	10	20						
13	S	Lucy		21	3	24	10	14	19	1	12	56	2	50	9	19	11	25						
14	E	3 Su. in Adv	Wind,	22	3	24	10	15	19	2	24	57	3	40	5	22								
15	M	Clock flow	☐ ☐ ☐	23	3	24	10	16	19	2	6	50	4	20	1	16	0	28						
16	T	O.S. C.T.e	with	24	3	24	10	16	19	3	13	40	4	49	2	52	1	31						
17	W	OxT.e. Emb	b. week	25	3	23	10	17	19	4	0	34	5	5	6	55	2	34						
18	T	h fo. 9. 40 n	♂ ♂ ♀	26	3	23	11	18	18	5	12	33	5	8	10	43	3	37						
19	F	♂ fe. 8. 18 n	fnov	27	3	23	11	19	18	6	24	42	4	58	14	9	4	40						
20	S	♀ fe. 5. 33 n	♂ ♀ ♀	28	3	23	11	20	18	7	7	8	4	33	17	1	5	44						
21	E	4 Su. in Adv	St. Th.	29	3	23	11	20	18	8	19	37	3	55	19	9	6	47						
22	M	Shortest da.	♂ ♀ ♀	♂	3	23	12	21	17	9	2	24	3	5	20	22								
23	T	h fo. 9. 16 n	♂ ♀ ♀	1	3	23	12	22	17	10	15	25	2	4	20	32	5	15						
24	W	♂ fe. 8. 17 n	♂ ♀ ♀	3	3	23	12	23	16	11	23	37	0	55	19	34	6	17						
25	T	Christm. da	☐ ♀ ♂	4	3	23	12	23	16	12	12	3	0	18	17	29	7	26						
26	F	St. Stephen	or cold rain to	5	3	23	13	24	15	14	25	36	1	31	14	26	8	37						
27	S	St. John		6	3	23	13	25	15	15	9	21	2	40	10	32	9	50						
28	E	1 Su. af. Ch.	Innoc.	7	3	23	13	26	14	16	23	16	3	40	6	2	11	6						
29	M	h fo. 8. 48 n	the end.	8	3	23	13	27	14	18	7	19	4	27	1	11								
30	T	Cl. fast 3. 11		9	3	23	13	27	13	19	21	31	4	59	3	16	0	22						
31	W	Silvester		10	3	23	14	28	12	20	5	48	5	13	8	33	1	30						

D	D. L. beg.	Sun rise	Sun fet.	D. L. ends	eng. of D.	Day dec.	Declination.													
1	5 49	7 55	4 5	6 11	8 10	8 24	☉	f.	♁	n	h	n	4	f.	♂	f.	♀	f.	♃	f.
7	5 54	8 0	4 0	6 6	8 0	8 34	21	55	11	0	16	49	23	19	20	18	24	5	20	24
13	5 57	8 3	3 57	6 3	7 54	8 40	22	42	11	0	16	43	23	15	19	2	23	51	18	0
19	5 58	3 5	3 55	6 2	7 50	8 44	23	13	11	1	16	38	23	10	17	40	22	40	17	50
25	5 58	3 5	3 55	6 2	7 50	8 44	23	27	11	2	15	34	23	4	16	11	21	27	19	13
							23	24	11	4	16	31	22	57	14	36	20	13	21	0

A TABLE of minutes, or the residue of the Planets' places.

		January.					February.					March.					April.					May.					June.															
⊙	☾	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀	♂	♀											
1	10	57	11	24	43	49	57	58	4	22	32	26	48	57	11	51	11	11	7	34	44	58	49	47	20	15	56	23	23	33	30	10	31	9	34	20	15					
2	26	8	56	24	12	20	38	58	4	25	43	26	47	58	11	46	16	15	15	35	44	59	48	46	21	16	57	24	23	34	31	10	35	9	34	20	15					
3	27	6	56	37	41	20	38	58	4	25	43	26	47	58	11	46	16	15	15	35	44	59	48	46	21	16	57	24	23	34	31	10	35	9	34	20	15					
4	28	4	55	50	10	35	18	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
5	29	3	55	3	39	51	13	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
6	30	1	54	16	6	13	16	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
7	31	59	54	42	37	21	16	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
8	32	59	54	29	37	21	16	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
9	33	57	54	42	5	37	21	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
10	34	55	54	55	5	37	21	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
11	35	54	54	7	1	7	39	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
12	36	52	54	20	29	22	51	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
13	38	50	54	33	57	37	5	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
14	39	48	54	45	25	52	20	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
15	41	44	55	58	52	7	36	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
16	42	42	56	22	46	38	15	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
17	43	40	56	35	13	53	36	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
18	44	38	57	47	4	8	58	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
19	45	36	58	59	6	24	20	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
20	46	34	59	11	32	39	44	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
21	47	31	59	23	58	54	4	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
22	48	29	1	35	24	9	35	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
23	49	27	3	47	50	24	2	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
24	50	24	5	59	15	39	29	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
25	51	22	7	11	40	55	27	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
26	52	19	9	23	5	10	26	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
27	53	17	11	34	29	25	56	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
28	54	15	13	34	46	53	41	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
29	55	12	15	38	17	58	17	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
30	56	10	17	39	41	56	57	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27
31	57	7	19	41	21	43	26	59	59	30	53	28	21	12	44	26	31	3	28	54	13	40	57	44	43	22	17	58	28	28	38	26	27	2	49	58	54	23	48	39	47	27

Chronological Notes for the Year 1794.

Julian Period	6507	Dominical Letter	E	Easter Day	April 20
World's Creation	5750	Epact	—	Whit Sunday	June 8
Roman Indiction	12	Numb. of Direction	30	Trinity Sund.	June 15
Solar Cycle	—	Septuagesima S.	Feb. 16	Advent Sund.	Nov. 30
Golden Number	9	Shrove Sund.	March 2	Millennium Years	143

Astronomical Characters used in this Diary.

Aries	♈	Virgo	♍	Aquarius	♒	Mars	♂	N. Node	♊
Taurus	♉	Libra	♎	Pisces	♓	Venus	♀	S. Node	♋
Gemini	♊	Scorpio	♏	G. Sidus	♁	Mercury	♃	Earth	♁
Cancer	♋	Sagittary	♐	Saturn	♄	Sun	☉	Part. For.	♁
Leo	♌	Capricorn	♑	Jupiter	♃	Moon	☾		

- ♄ Conjunction, when Planets are in the same sign, degree, and minutes.
- * Sextile, when 2 signs distant
- Quartile, when 3 signs distant
- Δ Trine, when 4 signs distant
- 8 Opposition, when 6 signs distant.

Of the Four Quarters of the Year.

Spring Qu. begins	March 20, 9h. 5m.	Autumn Q. be.	Sept. 22, 8h. 40m. n.
Summer Qu. beg.	June 21, 7h. 6m.	Winter Qu. be.	Dec. 21, 1h. 23m. af.

ECLIPSES.

In the course of this year there will happen, to the earth's inhabitants, six Eclipses. four of the Sun, and two of the Moon, whereof one of each luminary will be visible in our isle of Great Britain, according to the following computations.

I. A visible Eclipse of the Sun on Friday the 31st of January, in the morning, according to the following calculation :

	<i>b.</i>	<i>m.</i>	
Beginning	—	—	10 56
Greatest Obscuration	—	—	11 45
The End	—	—	12 34
Duration	—	—	1 38
Digits eclipsed	—	—	2 49

The moon makes her first impression on the sun's limb at 41° 30 from the sun's vertex, on the right.

II. A visible Eclipse of the Moon on Valentine-day, being Friday the 14th day of February, total, and nearly central.

	<i>b.</i>	<i>m.</i>		<i>b.</i>	<i>m.</i>	<i>s.</i>
Beginning of the Eclipse	8	7		8	5	31
Beginning of total Darknes	9	13		9	9	6
Middle	—	—	10 6	The same	10	6 5
End of total Darknes	—	—	10 59	from my	41	3 4
End of the Eclipse	—	—	12 4	MS. Ta-	12	6 30
Duration of total Darknes	—	—	1 46	bles.	1	53 58
Duration of the Eclipse	—	—	3 57		4	1 8
Digits eclipsed	—	—	21 12		23	23 39

III. March 1, the Sun is eclipsed invisible, the conjunction 9h. 54m. at night, in longitude ♋ 11 deg. 36 m. latitude 1 deg. 21 m. 15 s. south.

IV. July 26, the Sun is again eclipsed invisible, the conjunction at 10h. 3m. at night, in longitude ♏ 3 de. 57 m. latitude 1 de. 15 m. 16 s. south.

V. August 11, at 7h. 24m. in the morning, the Moon is eclipsed total, and nearly central, but invisible, the moon being under the earth.

VI. August 25, at 23 minutes past noon, the Sun is eclipsed invisible, the conjunction is in longitude ♍ 2 de. 25 m. moon's lat. 1 de. 21 m. north.

An Example for December 1st, to find the places of the ☉ and Planets.

Look into the calendar, and table of minutes for Dec. 1, and you will find the ☉ in ♏ 9 de. 35 m. ♁ in ♋ 3 de. 19 m. ♃ in ♌ 23 de. 4 m. ♄ in ♌ 7 de. 22 m. &c.

Answers to the Enigmas, Rebuses, Charades, &c.

Enigmas.		Rebuses.	Charades.
I. Door	V. First of May	I. Germany	I. Blockhead
II. Wealth	VI. Reason	II. Cuckold	II. Horsehair
III. Chain	VII. Bull	III. Rebus	III. Lapwing
IV. Song	VIII. or Prize Bar	IV. Sheridan	IV. Landgrave

ANSWERS to the PRIZE ENIGMA.

1. By Mr. John Cairns, Monkton.

THE sacred tree that grew on Eden's plain,
 Contain'd the *bar* of death's eternal pain;
 The tree of life the flaming sword did *bar*,
 When divine justice usher'd forth a war.
 The woman's feed the *bar* came to remove,
 To shew the fruit of God's elective love:
 Has pav'd the way to the celestial place;
 No *bar* can stop the progress of his grace.

2. By Mr. John Fildes, Schoolmaster, in Liverpool.

Alas! vain man, how frail thy state!	Wou'dst thou enjoy true peace, whilst here,
What vice and folly thee await; How short thy life's career!	Keep God's commands, & him revere; And fervently him serve;
Why art thou prone to earthly things, Which naught but strife and sorrow brings	And when he's pleas'd to call thee hence,
Each day thou meets some <i>bar</i> :	Thy deeds will gain just recompence, In bliss, where naught can swerve.

3. By Mr. Thomas Fox, Norton.

Ingen'ous youths who wish for fame,	No <i>bar</i> prevents your bold design,
In British Diary shew your name;	In arts and sciences to shine.

4. By Miss Pelly S——, of Norton, Northamptonshire.

With thought profound, I sought the prize,	By Fildes, witty <i>bar</i> d of fame;
So well conceal'd in dark disguise,	When straight into my mind it came;
And if the prize should be my lot, The favor ne'er will be forgot.	

5. By Mr. John Rimmer, Liverpool.

The mystic prize I willingly would solve,
And to posterity transmit my name;
But still some bar obstructs my late resolve,
And blocks up ev'ry avenue of fame.

Other separate and ingenious answers were given by Messrs. Autodidastus, John Brown, Pat. Hall, John Richardson, John Savage, John Taylor, Jonathan Wood, Jos. Woollin, and X.Y.Z.

The ingenious answers by Messrs. Olinthus Gregory and James Stevenson, were too long for our narrow limits.

GENERAL ANSWERS to the ENIGMAS.

1. Alfred and Ella. By Mr. John Fildes, Schoolmaster, in Liverpool.

<p>On May-day eve as Ella sat, Beneath an elm-tree's shade, One like a pilgrim clad drew near, And thus address'd the maid: Why, fair one, dost thou sit and weep, And droop thy lovely head? Does some relation, or kind friend, Lie number'd with the dead? Or has thy lover, hapless maid, Prov'd faithless and unkind? To whom the nymph with reason sound, But trembling tongue rejoined: 'Tis love alone that is the cause, Of this my present grief; And friendly stranger, nothing now, Can give my soul relief. Young Alfred was a gallant youth, A soldier of high fame; And for each other he and I Soon felt a mutual flame.</p>	<p>This golden chain to me he gave, When we were doom'd to part; And from the door I after him Look'd out with heavy heart. For five long years I have not heard His pleasing song nor voice; Nor seen his manly form that oft Has made my heart rejoice. But, oh! this day a neighbour came, The dismal news to tell, That by a bullet wing'd with death, The youth last summer fell! Debarr'd of ev'ry earthly joy, I now shall sigh and weep, Till I within the peaceful tomb Of my forefathers sleep. The news is false, he cry'd, which fo Thy tender breast alarms; For I thy faithful Alfred am! Then clasp'd her in his arms.</p>
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2. On the Death of a young Lady. By Mr. Daniel Sheridan, Bilston.

Beneath yon sable yew-tree's baleful shade,
That o'er the graves diffuse an awful gloom;
A maid, untimely number'd with the dead,
Now lies at rest in death's cold earthy room. L.

That lovely form was once the pride of May, 5.
The warblers strove to imitate her song; 4.
Her manners gentle, affable and gay,
And truth's divine came mended from her tongue.

The British Diary.

Her mind was lovely, as her face was fair,
 Each spoke the language of seraphic love.
 Her *wealth* oft dry'd the mournful widow's tear, 2.
 And smooth'd her passage to the realms above.

The *chains* of poverty she oft remov'd, 3.
 That bow'd the worthy lower than the grave;
 She was by all the great and wise belov'd,
 Rever'd, and honour'd by the good and brave.

Her morn of life was gentle, calm, and clear,
 In genial sunshine rose her early noon;
 But death's cold icy hand barr'd her career, Pr.
 And nipt this fragrant blossom in her bloom.

The fairest flower soonest fades away,
 Too soon, alas! you claim'd your kindred home,
 And left me to corroding grief a prey;
 O'er your cold grave to weep my woes alone.

But when relentless death directs the blow
 Against this poor afflicted heart of mine,
 And in earth's cold embraces lays me low,
 Your heavenly sweet seraphic choir I'll join:

There midst surrounding glorious Angels share,
 The god-like bliss that souls immortal prove;
 Where we shall freely taste devoid of care,
 Returning years of never fading love.

Note, 6th Reason, and 7th a Bull.

3. Address to a Friend. *By Mr. William Shipfides, Normanton on the Wolds.*

Since it pleas'd dame Fortune to give you a wife,
 May *reason* and virtue conduct you through life; 5. 6.
 May no *brutal* passion your breast ever move, Alluding to 7th.
 As true as the swan to its mate may you prove. 3.
 May th' *chain* of contentment e'er twine round your cot;
 Fell discord and strife may they ne'er be your lot;
 Fair rosy fac'd health may you ever enjoy,
 May pallid hu'd sickness your peace ne'er destroy, 1.
 May meager pale poverty e'er flee your door, 4. Prize.
 And wander, like *echo*, on some barren shore.
 May your purse a sufficiency ne'er once lack,
 To buy requisites fit for belly and back;
 To *store* in your cellar a cask of strong beer, 2.
 To banish dull sorrow and sooth rugged care;

As life on her journey doth rapidly fly,
 May you learn to live, as you wish for to die,
 And use the portion of time, to you given,
 With praises to God and the Lamb, who's in heav'n;
 And when of this world life a finis shall prove,
 To the regions of blifs may your soul calmly rove;
 Join with angels and faints (where mortal ne'er trod)
 In sweet hallelujahs to Saviour and God.
 May I too remember that God gave me breath,
 That mortal I am, and but dust of the earth;
 That God an account of man's deeds will require,
 And the wicked reward with unquenchable fire;
 That death is most certain, the time not known when:
 Give me grace to prepare, O Lord God. Amen.

4. Address to British Youth. *By Autodidactus, Ramptoniensis.*

Fair sons of Britain's isle attend,
 And listen to my *song*;
 Come hear the dictates of a friend,
 Which may your life prolong.
Bull-baitings, and all gaming shun,
 Nor spend your youth in vain;
 Unto cock-fightings never run,
 Nor wear sin's slavish chain.

Fix not your *thoughts* on golden ore,
 For riches fly away;
 E'er long you'll part to meet no more,
 Unless in earth or clay.
 Strive in your post useful to be,
 Let nought block or bar th' road
 Which leads to true felicity,
 To heaven and to God.

5. *By Mr. Thomas Fox, Norton.*

The spring returns, all things are gay,
 To welcome in the first of *May*;
 And sol with his resurgent train,
 All nature brings to life again.
 Now lads and lasses may be seen,
 In antic gambols on the green;
 In *tbains* and links extended far,
 At longduck, crookhorn, prison-bar.

Bull-baitings, puppet-shows, and ball,
 Engage the minds of great and small.
 Fatigu'd with toil, each takes his lass,
 And gently pulls her on the grass;
 In pleasing notes and faltering tongue,
 Regales his fair one with a *song*.
 The sports and pastimes being o'er,
 Each one goes home and shuts the door.

6. On Spring. *By Mr. John Rimmer, Liverpool.*

Now in the circling round sweet *May* resumes 5.
 Her flowery garb and fragrant perfumes,
 Disperses black'ning clouds which stain the sky,
 And wakes the silent groves to harmony.
 How cheerfully the feather'd *songs*sters sing, 4.
 And hail, in their own tongue, returning spring.
 The farmer now with spirits quite elate,
 This scene with ardent joy does contemplate;
 When first *Aurora* in the morning peeps,
 Soon from the sloth-creating bed he leaps,
 Unbars his cottage door, and hastes away, Pr. 1.
 Ere sol can usher in approaching day;
 Eager after *wealth*, he his work pursues, 2.
 For now the time is suited to his views.

In yon neighbouring fields the cattle see,
 Wherein the raging *bull*, from *chains* fet free, 7. 3.
 In foaming passion, with majestic strides,
 Stalks o'er the land, and nothing *reason* guides. 6.
 His mates more gentle seem to graze at peace,
 And he at length his horrid noise doth cease.

7. To the Editors of the British Diary. By Mr. Philip Norris,
 Liverpool.

May the door of your Di'ry be ever unbarr'd, 5. 1. Pr.
 To merit, deserving such *treasure* immense; 2.
 With *reason* and judgment good language reward, 6.
 And *bulls* down to *chains*, as a just recompence. 7. 3.

Room will not admit of the ingenious answers by Messrs. Samuel
 Braffar, John Brown, John Cairns, John Savage, John Taylor, and
 X. Y. Z.

ANSWERS to the REBUSES and CHARADES.

i. By Mr. J. Fildes, Schoolmaster, Liverpool.

Ah, why did *Sheridan*, the tuneful bard,
 Last year his wonted friendly aid deny;
 Whole polish'd verses justly claim'd regard,
 For few in pœtry could him outvie.

In *Germany*, but low the *lapwing* flies,
 When *Landgraves*, or when *cuckolds* are in fight;
 But his bold muse could eagle-like arise,
 Whene'er his fancy took poetic flight.

The mystic *rebus* and enigma too,
 He could with ease and elegance compose;
 And those of others he could at one view,
 With matchless penetration soon disclose.

In mathematics too, it is well known
 He was no *blockhead*; for with plastic art,
 To solve each problem he has clearly shown,
 He to a *horsehair* could a scheme impart.

If yet alive, I hope that soon again,
 He to the British Diary will send,
 Some choice production of his active pen;
 And shew he still is *Cotes* and *Taylor's* friend.

But

But if the hand of death hath laid him low,
 And caus'd his learn'd career so soon to cease;
 For him, alas, the friendly tear shall flow,
 And may his soul enjoy eternal peace!

2. By Mr. Philip Norris, Liverpool,

Dear Di your secrets I'll disclose,
 And quick your *rebus*' all expose,
 Nor fear your fatal frown;
 As sure as *lapwings* skim the plain,
 And *blockhead* is an empty name,
 Abroad they shall be known.

Again, I say, if *Landgrave* be
 A title known in *Germany*,
 And *cuckold* be a noun;
 And *Sheridan* a bard sublime,
 And *horsehair* serve to play true time,
 The whole I now have shewn.

3. The Invitation. By Mr. John Savage, Smithalong-Grove.

Come my fair one, let us rove,
 Round the plain, or thro' the grove,
 By the gentle murmur'ing rill,
 Or ascend the tow'ring hill,
 Or to yonder gay alcove,
 To renew our vows of love;
 Where the gentle soft'ning breeze,
 Softly whispers thro' the trees,
 Where around our gay retreat,
 Twine the *honeysuckle* sweet;
 And the flow'rets deck the ground,
 Shedding sweetest odours round;
 While the rich luxuriant vales,
 Wave as zephyrs fan the gales.
 But, alas, if thou art gone,
 Soon a gloomy cloud comes on;
 Come then, let us join our hands,
 And our hearts, in Hymen's bands,
 Then how happy shall I be,

When for life I'm blest'd with thee,
 May it be our happy lot,
 In some peaceful rural cot,
 There in blest'd retirement,
 To abide in soft content.
 To amuse the winter's night,
 When the groves no more delight,
 British Di, each eve should cheer,
 Find a *German Landgrave* there;
Blockhead, *cuckold*, *lapwing* too,
 Curiously conceal'd from view;
 Ev'ry *rebus* we'd assay,
 To unfold without delay;
 Daniel *Sheridan*'s sweet muse,
 We with rapture would peruse;
 Thus in love our days we'd spend,
 Till our time on earth should end;
 Then we'd trust thro' *Jesus*'s love,
 To be blest'd in heav'n above.

4. By Autodidactus, Ramptoniensis.

Shou'd sublime Mr. *Sheridan* e'er wed,
 Heav'n grant him a virtuous wife,
 Who never will corrupt his manly head;
 And may they live a happy life,
 For *German Tiles* then they will not long,
 To which the *blockhead* oft lays claim;
 A solemn tune, a *rebus*, or a song,
 Will more than *honey-fall* inflame
 Their youthful minds with love true and sincere,
 Which shall increase with each revolving year.

Horsehair,
Paradox.

5. By Mr. James Stevenson, Heath, near Chesterfield.

Germany, and *cuckold*, will define,
 The *rebuses*, if *Sheridan* you join.
Blockhead, *horsehair*, *lapwing*, and *Landgrave*,
 Will completely answer each charade.

Other general answers by Mess. *Blackburn*, *Brassar*, *Brown*, *Cairns*,
Fox, *Rimmer*, *Miss Polly S—*, *Sheridan*, *Taylor*, *Wood*, *Woollin*,
 and *X.Y.Z.* are reluctantly omitted for want of room.

ANSWERS to the QUERIES.

Query 1, answered by Mr. John Fildes, Schoolmaster, Liverpool.

In the first chapter of Numbers, and the 51st verse, God declared to Moses, that if any person, except a Levite, touched the ark, that person should suffer death; which I take to be the reason why the Almighty smote Uzzah. See also chap. 3, v. 18 and 38; chap. 4, v. 15, and chap. 18, v. 22.

Answers were also given by Messrs. Autodidactus, Brassar, Cairns, and Carwithen.

Query 2, answered by Mr. John Cairns, Monkton.

There may be some truth in the assertion of the Free Mason's Society, being the most noble institution in the world; because they claim an alliance to the Temple of Jerusalem, and in a manner derived the mystery of their art from that magnificent fabric, that never had its equal in the world for grandeur and beauty. But what relation masonry has to astrology, I cannot learn; unless it be by way of figure and analogy. Then in this respect, it is truly the most honourable calling under heaven; for they have in a manner taken a draught of their architecture from the Founder and Maker of the Universe. For every house, says the Apostle, is builded by some man; but he that built all things is God.

Query 3, answered by Mr. William Eaton, jun. Sutton-o'-th'-Hill, Derbyshire.

By calculation for the given lat. ($53^{\circ}.8'$) and the given time (Jan. 14th, at 8h. 12m. P. M. 1755) the degrees on the horoscope are $8^{\circ}.56'.\text{m}$. And the \square of δ falls in $1^{\circ}.25'$ of Δ , whose Ob. As. is =

	$182^{\circ} 2'$
From which take the Ob. As. of the horoscope	$140 \quad 22$

and there remains the arch of direction	-- $32 \quad 40$
which according to Najbod's measure of time is	$33y. 53d.$

And the β falls in $6^{\circ} 21'$ of Δ , whose Ob. As. is	$188^{\circ} 36'$
From which take the Ob. As. of the horoscope	$149^{\circ} 22'$

	$y. d.$
And there remains the arch of direction	- $39 \quad 14 = 39 \quad 295$

Therefore the horoscope comes to the \square of δ in $33y. 53d.$

And the body of the \oplus in $39y. 295d.$ W. W. R.

The Paradox answered by Mr. J. Stevenson, Heath, near Chesterfield.

The paradox I soon found out;

The answer's honey without doubt.

Thus was the answer given by Mess. Blackburn, Savage, and Wood.
Otherwise,

Otherwise, by Mr. John Cairns, Monkton.

Five letters in a *drone* you'll clearly see,
When *one's* remov'd, two left behind there be ;
And *D* and *R* does to their names agree.

And thus was the answer given by Mess. Brassar, Brown, and Taylor.

NEW ENIGMAS.

I. ENIGMA (61) *by Mr. John Cairns, Monkton.*

I all things dormant as a door do turn,
Who feels my pow'r does not for riches burn.
I puny mortals wonderfully chain,
Tho' with no song do I disturb their brain ;
But I with dreams uncommon do them vex,
And I their judgment may sometimes perplex.
I game-cocks too, engage in silent war ;
All things that live I fummons to my bar.

II. ENIGMA (62) *by X. Y. Z. Sheffield.*

From mother earth my various parts arise,
Part hidden deep, part tow'ring t'wards the skies,
Ingen'us Vulcan forms my inward part,
Yet strange reverse, my outside oft is heart.
My services, kind Gents, should I relate,
Of such importance am I to the State,
That writings, cash, or bills, whate'er they be,
Are undistinguish'd, guarded all by me.
Not to the State alone confin'd my lot,
I constantly attend the meanest cot ;
The rich man's friend, a guard unto the poor,
Yet cruel fate—I'm plac'd behind the door.

III. ENIGMA (63) *by Mr. Jonathan Wood, Schoolmaster, Rushton, Northamptonshire.*

Diarians, pray give a stranger room,
For my appearance oft disperses gloom ;
Yet I am made of such peculiar parts,
That I strike terror into guilty hearts ;
'Tis I that give the pris'ner leave to dwell,
Within the darksome, solitary cell ;
But here alone, my worth is not confin'd,
For I'm of gen'ral use to all mankind.

When

When pitchy darkness o'er the world has spread
 Her sable mantle, and repos'd each head;
 Then by my aid mankind securely lies,
 Enjoying soft repose, till morn arise;
 Till the great chearer of the opening day,
 Awakes all nature with his golden ray;
 Then with my leave some to the fields repair,
 And some (as fate's ordain'd) sigh with despair;
 In short, to mention my extensive sway,
 Wou'd need a traverse o'er both land and sea;
 For I am useful on the raging main;
 Alike I serve Love's empire to maintain.
 But one hint more, and then my theme I'll end,
 At night you'll find in me a trusty friend.

IV. ENIGMA (64) by Mr. Philip Norris, Liverpool.

Kind and indulgent friends, may I presume,
 In mean and humble garb, your aid to crave;
 Whilst I display to you my use and doom,
 And shew the world where I my station have.
 Sometimes perchance in fields I'm plac'd aloft,
 Lash'd to some pole, expos'd to rain and wind;
 As bad as scarecrow I am call'd full oft,
 'Tis true, to 'fright the birds I am consign'd:
 Oft in more state my wings are seen to spread,
 And cut the wind as by great force compell'd;
 'Tis then I'm chewing what is call'd my bread:
 Sometimes of hunger my career's withheld.
 Oft in a kitchen am I seen confin'd,
 Safe in a box, or to a post secur'd;
 To rivers often is my fate consign'd,
 To prey on water not to be endur'd.
 Sometimes I feast on malt, by turns on wheat,
 Pepper, or coffee, chocolate, or wood;
 Sometimes on paint, or snuff, or sugar sweet,
 E'en paper, silk, and iron, are my food.
 My appetite is said so keen to be,
 'Tis seldom pall'd, my meat I freely pass;
 'Tis said, that even man can be by me,
 From age restor'd to youth in shortest space.
 As to my form, I'm silent on that head,
 It so much varies, my frame oft's the same;
 No doubt the hints which are already made,
 Will shew the world my wond'rous make and frame.

V. ENIGMA (65) by Mr. John Rimmer, Liverpool.

Ye enigmatic bards I pray attend,
 To the history of a humble friend;
 When learned senators, in close debate,
 With profound arguments investigate
 Some abstruse theory, and regulate
 The internal wheels which affect the state,
 I oft amongst the orators abound,
 Though sometimes begrim'd with dirt am found.
 If e'er without a brother you see me,
 I surely denote some infirmity;
 And then, alas! a heavy load I bear,
 Without a friend my tortur'd frame to cheer.
 If Romeo within a shady grove,
 Should stray with Juliet to declare his love,
 I always do attend the faithful pair,
 And do support them even in despair.
 The valiant hero will my use allow,
 However dignified with wreaths his brow;
 Yet th' ambitious tyrant, with haughty rage,
 Whose horrid acts disgrace th' historic page,
 Me under foot he treads with fierce disdain,
 Yet, patient as a lamb, I ne'er complain.
 But I am not to man alone confin'd,
 For with some quadrupedes you may me find;
 But they oft most cruelly abuse me,
 In storms, and rain, frost, and snow, they use me.
 But, friend, as your patience is tir'd, I fear,
 Je suis votre très humble serviteur.

VI. ENIGMA (66) by Mr. Wm. Shippides, Normanton on the Wolds.

When winter stern has wing'd her way
 To distant climes, and nature gay
 Displays around a lovely hue,
 And animates the fields anew,
 I rest within the leafy grove,
 The seat of bliss and tranquil love;
 Or seek the meads and verdant lawns,
 Where dew-drops fall and Phœbus fawns.
 But soon, alas, a hardy tribe,
 Whose rage no one could ever bribe,
 Seek my abode, make me a prey,
 And, in triumph, bear me away
 To some proud spot, the boast of art,
 Well fortified in every part.

Where,

Where, culprit like, sad grief to tell,
 I'm close confin'd in dreary cell,
 Not night more dark, more grim not hell;
 And there remain till fate's decree,
 Nor pine at th' fortune of the free.

VII. ENIGMA (67) by Mr. Daniel Sheridan, Bilston.

Miltonic muse! my rural notes inspire,
 Elate my soul with all your heav'nly fire;
 With sweet harmonious lays, inform my tongue,
 And pour your softest numbers through my song.
 When heav'n's high King, from night's terrific womb,
 Bade those stupenduous glitt'ring orbes to come,
 And that thrice glorious orb that rules the day,
 And this fair verdant globe that round him stray.
 "With gay variety of hill and dale,"
 And flow'rs that sweetly scent the passing gale.
 I was created—such my adverse doom,
 I never know the sweets of youthful bloom;
 But thro' my long, and weary pilgrimage,
 My hoary looks proclaim my feeble age;
 Yet strongest forts, and castles I o'ercome;
 So frail are all things 'neath the crescent moon.
 'Tis I that give spring's soft refreshing showers,
 And Flora decks in all her pomp of flow'rs,
 That lays the sage among the peaceful dead,
 And Phœbus brings to Thetis pearly bed;
 I send fair Delia's lover o'er the main,
 And bring him to her longing arms again.
 From mamma's lap the lisping babe I raise,
 And deck his brows with manhood and with bays.
 Man always I attend, yet strange to tell,
 Tho's friend and slave he ne'er does use me well.
 From me experience, sense, and wisdom flow,
 And all mysterious knowledge here below;
 But, as all mortal beings pass away,
 I 'mongst the rest must feel the swift decay;
 But O! that dreadful day when from on high,
 My doom eternal shrinks the vaulted sky;
 Like the strong basis of a mighty tow'r,
 When 'tis remov'd by winds convulsive pow'r,
 It's airy turrets with explosion vast,
 Surrounding streets and tenements lay waste;
 So I this firm-set earth, that lucid sun,
 These sparkling stars, and yon revolving moon,
 Upon one wide-spread flaming pile make share,
 The last dire pangs of elemental war.

VIII. ENIGMA (68) by *Autodidactus, Ramptoniensis.*

Before man's fall I into being came,
 And with the Deity did dwell ;
 His haughty foes pursu'd with raging flame,
 And drove the godless crew to hell.
 The golden age my beauty much admir'd,
 They dress'd me in a flowing robe,
 And ev'ry one my company requir'd,
 From East to West, throughout the globe.
 But in this iron age few friends I find,
 Alas ! few that well to me mean ;
 And fewer still, who my dictates mind,
 Though in heav'n's arch my emblem's seen.
 A severe enemy to some I prove ;
 Am made to inflict woe and pain ;
 Nor can their bitter cries my pity move,
 Who, my precepts to keep, disdain.
 To others I'm a sincere friend indeed,
 Rescue them from the cruel foe ;
 They are made happy—bless me for the deed,
 And grateful at my altar bow.
 Sometimes I'm gaily dress'd in cloth of gold,
 Rich velvets they for me prepare ;
 Like a king paramount, my seat I hold,
 And look as grave as a Lord Mayor ;
 One while I'm all for right—naught bad can pass ;
 Sometimes I countenance what's wrong ;
 Of late I've gain'd the title of an ass,
 Which must be whipp'd and flogg'd along.
 But at the end of time—O it is then
 That I shall shine with splendour bright ;
 My clouded honours all, I shall regain,
 And dwell with everlasting light.

IX. OF PRIZE ENIGMA (69) by *Mr. John Fildes, Schoolmaster, in Liverpool.*

Ere your first parents into life were brought,
 Whose dreadful downfall satan quickly wrought,
 By leading them aside from virtue's road ;
 I on the mountain made my bleak abode ;
 Where I have reign'd supreme through ages past,
 And shall do so as long as mountains last.
 In towns behold me in the crowded street,
 Attending each fine lady that you meet ;
 And any stately edifice you see,
 Is thought but weakly guarded without me.

When

When at the ball the well-bred beaux advance,
 And lead the sprightly fair ones to the dance ;
 You then would think me to be doubly blest,
 For there by ev'ry couple I'm caref'd ;
 And you will own when you have found my name,
 That o'er all men pre-eminence I claim.
 If in a nation *civil* wars appear,
 Or lawless mobs spread terror far and near,
 I in them both am always at the head,
 For neither laws nor punishments I dread ;
 And though from pride and curst ambition free,
 I in exalted stations love to be ;
 Nay, in some kingdoms such is my renown,
 I often have been honour'd with a crown.
 Whene'er you find me in a servile state,
 My wrongs, alas, are shocking to relate.
 I from my master many a drubbing get,
 Yet I at his ill-usage never fret ;
 But without once complaining condescend,
 Both on his door and table to attend ;
 Still am no better treated than before,
 But forc'd to sleep upon the ground or floor ;
 And when I can no longer serve his turn,
 He then regards not if I starve or burn.
 My noble parent too was slay'd alive,
 Such cruel punishments some men contrive.
 Survey the trees that in yon forest grow,
 Kind heaven on them all did me bestow ;
 And in the fields quite pleasing 'tis to see,
 The birds in spring construct their nests near me.
 When for amusement reads the hoary sage,
 He always meets with me in ev'ry page.
 I'm not to scenes at land alone confin'd,
 At sea I'm known to fly before the wind ;
 There when rude blasts with blust'rous fury sweep,
 The troubled surface of the mighty deep ;
 When foaming billows curl their heads on high,
 Loud thunders roar, and forked lightnings fly ;
 Though dangers round me rise in ev'ry form,
 I ride aloft, and dauntless brave the storm.

 NEW REBUSES, CHARADES, & QUERIES.

I. REBUS, by *Mr. Thomas Fox, Norton.*

The strongest of giants that heaven would scale ;
 The youth (for conceit) that now grows in the vale ;

The mountain, where judgment for beauty was given,
 The river in India where gold is down driven;
 The goddess of wisdom, of arts, and of war;
 The goddess of morning, who rides in her car;
 The initials, when join'd, will bring to your view,
 A subject, though ancient, is ev'ry year new.

2. REBUS, by *Mr. Philip Norris, Liverpool.*

A river in Egypt, when sever'd in twain;
 Two-fifths of a tree, and the head of a dame;
 When rightly connected, will shew at one view,
 The name of a poet, out-rival'd by few.

3. REBUS, by *Mr. Jonathan Wood, Schoolmaster, of Rushton, Northamptonshire.*

Two-sixths of a musical instrument take,
 That's frequently used at a country wake,
 And next subjoin fifty; then afterwards add,
 Three-fourths of a thing, that for writers is made;
 'Twill bring to your view a Diarian bard,
 Whose kind compositions deserve our regard.

4. REBUS, by *Mr. J. Fildes, Schoolmaster, in Liverpool.*

To a place and a number, an insect unite;
 And a post in the navy you'll then have in sight.

1. CHARADE, by *Mr. Jonathan Wood.*

In marshy places, and in wat'ry ground,
 A worthless plant, my first is often found;
 A certain weight my second will appear,
 My whole's a village in Northamptonshire.

2. CHARADE, by *Mr. Wm. Blackburn, Fryup, near Whitby.*

My first has oft unruly been,
 My next's a useful friend;
 My whole is of no service seen,
 Unless my first attend.

3. CHARADE, by *Mr. German Burton, London.*

My first is a place of abode for the poor,
 My second stands for hundreds twice ten;
 My whole by the British fair ladies is wore;
 It is too in great vogue with the men.

4. CHARADE, by *Mr. Wm. Shippides, Normanton on the Walls.*

My ample first old Gripus will explore,
 Who oft unto its care intrusts his store;

The spotless beauty of my next behold,
 Whose charms oft captivate the young and old ;
 Tho' you, ye fair, enjoy sweet liberty,
 A captive held, alas! my whole must be.

5. CHARADE, by *Mr. Olinthus Gregory, Assistant at Mr. Weston's Boarding School, Yaxley, Hants.*

My first is found of gen'ral use,
 And 'tis no trifle reckon'd ;
 And many a maid, neat and spruce,
 Is courted by my second.
 Oft in my third my second goes,
 To some far distant land ;
 'Tis oft the seat of human woes,
 As you may understand ;
 My whole will shew an useful art,
 Well known throughout the nation ;
 In which I fain would do my part ;
 'Tis proper in my station.

1. QUERY, by *Mr. John Fildes, Liverpool.*

Does not the granting of patents for particular inventions retard the progress of the mechanic arts ?

2. QUERY, by *Mr. Wm. Marsden, Netherburst.*

What most probably was the dispute concerning the body of Moses, mentioned St. Jude, ver. 9th ?

3. QUERY, by *Mr. John Cairns, Monkton.*

What is the criterion of a divine mission ; and whether or not those preachers called Methodists have any right to that claim ?

4. QUERY, by *Mr. Richard Elliott, Liverpool.*

It is recorded in the gospel of St. Matthew, chap. 27, ver. 52, 53, that the graves were opened, and many bodies of the saints which slept arose, and came out of the graves after his resurrection, and went into the holy city, and appeared unto many : whether those bodies were united to their souls, and lived as beforetime, or were they only visionary ?

N. B. *Mr. Fox's Enigma will have a place in our next.*

☞ The Prizes have been determined by Lot, as follow—For the Prize Question, to Mr. J. Brookes, 12 Diaries; 2d, for the Prize Enigma, to Mr. Jonathan Wood, 6 Diaries; 3d, for the General Answer to the Enigmas, to Mr. J. Fildes, and Mr. Joseph Gelltrap, 6 Diaries each; 4th, for the General Answers to the Rebuses, Charades, &c. to Mr. Thomas Moore, 6 Diaries—all of whom will please to send for them to Mr. PEARSON, Printer, in BIRMINGHAM.

ANSWERS to the MATHEMATICAL QUESTIONS.

I. QUESTION (80) answered by Mr. Richard Elliott, Liverpool.

It is plain from the first equation, that x , y , and z are the sides of a right angled triangle, and are as the numbers 3, 4, and 5; therefore as $3 : 4 :: x : y = \frac{4x}{3}$, and as $3 : 5 :: x : z = \frac{5x}{3}$, these values substituted in the equation $xyz = 480$, we have $\frac{20x^3}{9} = 480$, or $x = \sqrt[3]{\frac{4320}{20}} = \sqrt[3]{216} = 6$; $\therefore y = 8$, and $z = 10$; then the diameter of the inscribed circle being equal to the difference of hypotenuse and sum of the 2 legs of all right \angle 'd triangles, we have $14 - 10 = 4$, and $4^2 \times .7854 = 12.5664$, the required area.

The same by Mr. Wm. Eaton, jun. Sutton-o'th'-Hill, Derbyshire.

It is evident from the first equation, that the triangle is right-angled; therefore, put $3n = x$, $4n = y$, and $5n = z$; which values put in the last equation is $60n^3 = 480$; $\therefore n = \sqrt[3]{\frac{480}{60}} = 2$; hence $x = 6$, $y = 8$, and $z = 10$, and the area of the inscribed circle $= \frac{6+8-10}{2}^2 \times .7854 = 12.5664$.

Solutions to this Question were also given by Messrs. Ashton, Booth, Brookes, Burton, Fox, Gregory, Hall, Salt, Stevenson, Travis, and Wcollin.

II. QUESTION (81) answered by Mr. Wm. Travis, Shaw, near Rochdale, Lancashire.

It is plain by the second equation, that x and y are square numbers; also, that they are whole numbers, and that the greater cannot be above 49; then, by making trial of the square numbers under, I find $x = 16$, and $y = 9$.

The same by Mr. German Burton, the proposer,

Assume $s = x + y$ $\left\{ \begin{array}{l} \text{then the given eq. } x^2 + y\sqrt{xy} + x\sqrt{xy} + y^2 = a - s, \\ \text{will stand thus; } \end{array} \right.$ and $x\sqrt{y} + y\sqrt{x} = b - s$;

divide the 1st equation by the 2d, and you have $\sqrt{x} + y^{\frac{1}{2}} = \frac{a-s}{b-s}$;

or $s + 2\sqrt{s} = \frac{a^2 - 2as + s^2}{b^2 - 2bs + s^2}$, by sq. both sides of the eq. and sub. s for $x + y$: by this last eq. $s(x + y)$ is found $= 25$; hence $\sqrt{s} = (\sqrt{x + y}) = 5$, each of these two last eq. being brought to a quadratic, x will be found $= 16$, and $y = 9$.

Answers were given by Messrs. Brookes, Eaton, jun. Sheridan, and Steveson.

III. QUESTION (82) answered by Mr. James Stevenson, the proposer.

Put x = the length, and y = the breadth of the glass; then by the quest. $2x + 2y = 160$, and $x^2 - y^2 = 1280$; by solving these equations, we obtain $x = 48$, and $y = 32$; therefore $24 : 11 :: 48 \times 32 : 704$ the area of the frame. Put z = the breadth of the frame, then per the nature of the quest. we have $160z + 3.1416z^2 = 704$, solved, $z = 4.074$ inches.

The same by Mr. M. T. Sadler, Doveridge.

Put x for the length, and y for the breadth of the glass, and we shall have the two following equations, viz. $x + y = 80$, and $x^2 + y^2 = 1280$, the second divided by the first gives $x - y = 16$, this added to the first gives $2x = 96$, whence $x = 48$ inches the length of the glass; and by substitution, $y = 32$ the breadth; therefore $xy = 1536$ the area of the glass; then as $24 : 11 :: 1536 : 704$ the area of the frame; and if z be put for the width of the frame, and taking the length, and the breadth of the frame on the inside, equal to the length and breadth of the glass; then $160z + 4z^2 = 704$ (supposing the frame to be square on the outside edge) whence $z = 4$ inches: but if the corners on the outside of the frame be circular, then $160z + 4z^2 \times .7854 = 704$, whence $z = 4.074$ inches for the width of the frame.

Messrs. Ashton, Blackburn, Booth, Burton, Eaton, jun. Elliott, Brookes, Gregory, G. F. Hall, Sheridan, Saul, Travis, and Woollin, also gave answers:

IV. QUESTION (83) answered by Mr. J. Brookes, of Leeds.

Construction. Upon AB the given base, describe a segment of a circle to contain the given vertical angle; make BD equal to, and \perp to AB: upon BD as a diameter describe a circle, and to the point of intersection C, draw AC and BC, and ABC will be the triangle required.

Demonstration. Draw CE \parallel AB; then by construction, and the known properties of the figure $AB \times BE = BB \times BE = BE^2 + EC^2 = BC^2 =$ twice the area of the triangle.

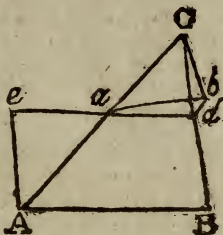
Calcu. Join CD and BF; then because the angles BDC, BFC are equal, and BCD a right angle; rad. (1) : DB :: sine L BCF : BF = 23.4342585. Again, in the triangle ABF, because the $\angle ABF = \angle ACB$; two sides and the included angle are given to find AF = 27.8142992. Now by the property



perty of the circle $AC \times AF = AB^2$; therefore $AC = 72.8042903$; and by similar triangles $AF : AB :: BF : BC = 37.91365$: therefore $\frac{1}{2} BC^2 = 4A. 1R. 38.72P.$ the area.

The same by Ferdinando.

Analysis. Let ABC be the Δ , AB the given base, and LC the given vertical L . It is well known that the double of the ΔABC is $AC \cdot BC$. $S. \angle C$, and which being also $= BC^2$ by the question, $\therefore AC \cdot S. \angle C = BC$, or $AC : BC :: 1$ (radius) : $S. \angle C$. Hence the following



Conf. Take any line Ca , make the $\angle Cab =$ the given one, and demit the $\perp Cb$ to meet ab in b ; make $aCd =$ the given vertical L , and with rad. Cb describe an arc to cut Cd in d ; through d, a draw dae , till $de =$ the given base; lastly, draw $eA \parallel$ to Cd to cut Ca produced (if necessary) in A , and draw $AB \parallel$ to ad to cut Cd produced in B , and the thing will be done.—For $aC : Cb (cd) :: 1$ (rad.) : $S. \angle Cab (aCd) ::$, by sim. Δ 's $AC : CB$.

Cal. Assume aC at pleasure, then Cb or Cd will be known, and conf. ad ; and, by sim. Δ 's BC and AC , &c.

Geometrical answers are also given by Messrs. Ashton and Saul.

Algebraical solution by Mr. Wm. Hulland, the proposer.

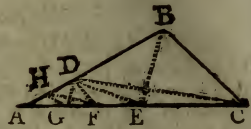
Let CL be perpen. to the base AB produced, and put $b =$ tang. $BCA = 31^{\circ} 23'$, $c = BA = 45$, $x = CL$, and $y = BL^*$; then per trig. $x : y :: 1 : \frac{y}{x} =$ tang. BCL , $x : c + y :: 1 : \frac{c + y}{x} =$ tang. LCA , and the tang. of their difference $BCA = \frac{c - y}{x}$, and by the quest. $x^2 + y^2 = cx$, and $\frac{c - y}{x} = \frac{c - y}{x^2 + cy + y^2} = b$, by the second equation $\frac{c - y}{b} = x^2 + cy + y^2$; the first taken from the last $\frac{c - y}{b} - cx = cy$, and $y = \frac{x - bx}{b}$; substitute this in the first $x^2 - 2bx^2 + 2b^2x^2 = b^2cx$, and $x = \frac{b^2c}{2b^2 - 2b + 1} = 31.94 = CL$, $y = 20.42 = BL$, $\sqrt{cx} = 37.91 = CB$, and $72.8 = CA$.

Solutions were given by Messrs. Eaton, jun. Elliott, G. F. Gregory, Hall, and Travis.

* See Mr. Brookes' figure.

V. QUESTION (84) answered by Mr. J. Saul, of Rochdale.

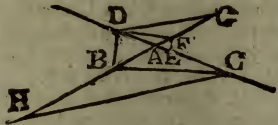
Let $\angle BAC$ be the given angle, on AB take $AD =$ the common difference of the sides, and on AC take $AE = 2 AD$; draw DF such that $FE = DF$; also take $DH = EF$, draw HF , and parallel thereto draw DC , draw CB parallel to FD , so will $\triangle ACB$ be the triangle required.



Demon. Take $GF = FE$, draw GD and EB , so will GD and EB be parallel, and triangle HDF is similar to $\triangle DBC$, and HD being $= DF$ by construction, DB is equal to BC ; also $\triangle DFG$ is similar to $\triangle BCE$, and $DF = FG$, $\therefore BC = EC$, hence AD is the common difference, AE being $= 2 AD$.

Algebraically by Mr. J. Brookes, of Leeds.

This question is the same as the 169th question in Carnan's Diary, which was not answered, as that work was discontinued; where there is 'given the vertical angle $134^\circ 39'$, and the common difference 18 chains; to find the sides and area.'



Put $s =$ sine $\angle BAC$, $t =$ tang. of half the said angle, $a = 18$, and $BA = x$; then per question $AC = x + a$, and $BC = x + 2a$. Now rad. (1) : $t :: \frac{3}{4} \cdot \overline{x+a} \cdot \overline{x-a} : \frac{3^t}{4} \cdot \overline{x^2 - a^2} =$ the

area of the triangle: likewise rad. (1) : $s :: \frac{x}{2} \cdot \overline{x+a} : \frac{s \cdot x}{2} \cdot \overline{x+a}$

$=$ the area of the triangle also, consequently $\frac{3^t}{4} \cdot \overline{x^2 - a^2} = \frac{s \cdot x}{2} \cdot \overline{x+a}$

by division $3^t \cdot \overline{x-a} = 2 s x$; hence $x = \frac{3^t a}{3^t - 2s} = 22.448$ chains; $\therefore AC = 40.448$, $BC = 58.448$, and the area (found by either of the above expressions) $= 32 a \cdot 1 r. 7.56 p$.

Geometrically. Const. Produce indefinitely the legs containing the given angle: along one of them take $AD =$ the common difference, and along the other $AG = 2 AD$. In AG take the point F such, that DF and DE may be each equal to FG . Draw $BD \parallel EF$, and $BC \parallel DF$; so shall $\triangle ABC$ be the triangle sought.

Demonstration. Draw $CH \parallel DG$; then because of the similar triangles ADG , ACH ; $2 AC = AH = AB + BH =$ (because

cause the triangles FDG, BCH are similar) $AB + BC$. Hence the sides AB, AC, BC are in arithmetical progression, the common difference of which is $DC (= BC) - AC = AD$.

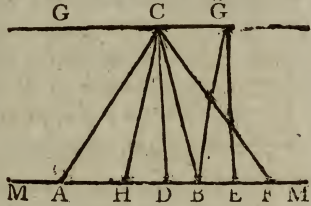
Calculation. In the triangle ADG, the sides AD, AG, and the included angle are given to find the angles $G = 14^{\circ}.44'.48''$. Hence by addition and subtraction only, the following angles are found, viz. $ADG = 30^{\circ}.36'.12''$. $ADF = ACB = 15^{\circ}.51'.24''$. $DFE = DEF = CDB = CBD = 82^{\circ}.4'.18''$. and $ABD = 52^{\circ}.34'.42''$. Hence $AB = 22.448$, $AC = 40.448$, $BC = 58.448$, and the area $32a.1r.7.56p$. the same as before.

Note. This method is general, whether E falls on the same or contrary side of A with respect to D.

Elegant geometrical answers are also given by Ferdinando, and Mr. Hall; algebraical ones by Messrs. Ashton, and Eaton, jun.

VI. QUESTION (85) answered by Ferdinando.

Const. In any indefinite line MM take $BF =$ the given difference of the segments; on E the middle thereof erect the $\perp EG$, and draw $BG =$ the given bisecting line; draw $GG \parallel$ to MM , and by Prob. XV. Simpson's Geom. determine $CF - CB =$ the given diff. of the sides; make $CA = CF$, then will the $\triangle ABC$ be that required.



For, if CH, CD be drawn \parallel to GB, GE respectively, it is evident $CH = GB$, $HD = BE$, and $AD = DF$; conf. $AD - DB = DF - DB = BF$, and $HB = DE = DF (AD) - FE (HD) = AH$; the rest is evident by construction.

Elegant geometrical answers are also given by Messrs. Brookes, Hall, and Sheridan; algebraical ones by Messrs. Ashton, and Eaton, jun.

VII. QUESTION (86) answered by Mr. James Ashton.

Let AEB be the least, or required arc, BGC one of the equal arcs. By Wilson's Rule, put $a = 57.29578$, $c = 10000$, the ratio of the chords as 1 to r , $x =$ the degrees in the arc BG, $y =$ degrees in the arc BE to the radius r ; then we shall have $\frac{ac+3x^2}{cx} : 1 :: 1$ (the hypotenuse) $:\frac{cx}{ac+3x^2}$
 $= BF$; whence by the question, $\frac{rcx}{ac+3x^2}$



C_3

$= BD$;

= BD; but $\frac{ey}{ac+3y^2} = BD$; therefore $\frac{rcx}{ac+3x^2} = \frac{ey}{ac+3y^2}$.

Let the number of equal arcs be n , then $nx+y = 180^\circ = s$, and $y = s - nx$, which substituted gives $\frac{rcx}{ac+3x^2} =$

$$\frac{cs - cns}{ac+3s^2 - 6nsx + 3n^2x^2}, \text{ and } \frac{3rcn^2 + 3cn \cdot x^3 - 6rcsn + 3cs \cdot x^2 + ac^2r + 3crs^2 + ac^2n \cdot x = ac^2s. \text{ If } n = 4, \text{ and } r = .896,$$

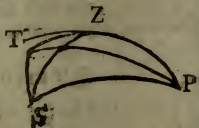
then $x = 36.86988$ degrees = $36^\circ. 52'. 11.6''$, the sine of which is $.6 = BF$, and $.6r = .5376 = BD$ which is the sine of $32^\circ. 31'. 13.75''$. then the required arc = $65^\circ. 2'. 27''. 9m$. one of the equal arcs $73^\circ. 54'. 23''. 12m$. the least chord 1.0752, one of the equal chords 1.2, and the diam. 2; which, in the least whole numbers are, least chord 336, equal chord 375, and diam. 500. But the latter part of the question may be solved thus; when the number of equal arcs are four, the arc $CGB + \frac{1}{2}BE = \frac{1}{4}$ of the circum. = 90° . Put $\sqrt{x} =$ sine of $BG (= BF)$ to the radius 1; then $.896 \sqrt{x} = b \sqrt{x} = DB$; then $2 \sqrt{x} \sqrt{1-x}$, or $\sqrt{4x-4x^2} =$ sine of the arc $BGC = \text{cos. of } \frac{1}{2}BE$; whence $\sqrt{1-4x+4x^2} =$ sine of $\frac{1}{2}BE$; then will $2 \sqrt{4x-4x^2} \times \sqrt{1-4x+4x^2} = b \sqrt{x}$, which reduces to $x^3 - 2x^2 + 1\frac{1}{4}x = \frac{4-\frac{1}{3}b^2}{16} = .237456$, which solved, gives $x = .36$, and $x = .6$;

therefore $b \sqrt{x} = .5376$, and diam. = 2, then as above.

Mr. Waters, the proposer's diam. is 1250. We wish Messrs. Waters and Ashton to examine their solutions, for they will take more time than we have to spare at present. Mr. Brookes's form was general.

VIII. QUESTION (87) *ans. by Mr. James Ashton, the proposer.*

Let P be the pole, Z the zenith, S and T the places of the sun at the times of the two observations; then SZ and TZ will be the two zenith distances, $\angle TPS$ the L of time ($2\frac{1}{2}$ hours) = $37\frac{1}{2}$ degrees, $SP = TP$, and $\angle TZS =$ the difference of the azimuths, being the L included between the two shadows, 89.44 and 33.5 ; the other side of the plain triangle being 64.92 , this \angle is found = $35^\circ. 1'. 36''$. To find the altitudes, $12 \div 89.44 = .1341631 = \text{tang. of } 7^\circ. 38\frac{1}{2}'$, and $12 \div 33.5 = .358209 = \text{tang. of } 19^\circ. 42\frac{1}{2}'$; the corrections for refraction will be $7^\circ. 38\frac{1}{2}' - 6\frac{1}{2}' = 7^\circ. 32' =$ the true altitude at the first observation, and $19^\circ. 42'. 30'' - 2'. 35'' = 19^\circ. 39'. 55'' =$ the true altitude at the second; then the zenith distance $SZ =$



$82^{\circ}.28'$. and $TZ = 70^{\circ}.20'.5''$. Put a and $b =$ sine and cosine TZ , m and $n =$ sine and cosine SZ , $c =$ cosine $TZS =$ diff. of the azimuths, $t =$ cot. of $TPS =$ the time, and $x =$ the sine of $TP = SP$; then (by prop. 38, book 3d, Emerson's Trig.) in the triangle TZS , $acm + bn = .80858698 =$ cof. $ST = 36^{\circ}.2'.30''$. and, in the triangle SPT , $tx^2 + 1 - x^2 =$ cof. ST ; whence $tx^2 + 1 - x^2 = acm + bn$, and $x =$

$$\sqrt{\frac{1-acm-bn}{1-t}} = .9624352 = \text{fine of co-declination} = 74^{\circ}.$$

$14'.45''$. which must be greater than a quadrant, because the sun's declination is known to be south; therefore $180^{\circ} - 74^{\circ}.14'.45'' = 105^{\circ}.45'.15'' = SP = TP$, and 90° . subtracted leaves $15^{\circ}.45'.15''$. the declination, which answers to the 5th of November. Now, by logs. in the triangle SPT , fine $TS : \text{fine } \angle P :: \text{fine } SP : \text{fine } \angle STP = 84^{\circ}.44'.12''$. greater than a quad. because its opposite side is to; then $\angle STP = 95^{\circ}.15'.48''$. also in the $\triangle SZT$, fine $TS : \text{fine } \angle Z :: \text{fine } SZ : \text{fine } \angle STZ = 75^{\circ}.15'.27''$. also greater than a quadrant; $\therefore \angle STZ = 104^{\circ}.44'.33''$. and $\angle STZ - \angle STP = 9^{\circ}.28'.45'' = \angle PTZ$. In the triangle PTZ , there are given two sides and their included angle, to find the third side; then by common rules in spherics, the cosine of the complement of the lat. $PZ = 9.9044957$ the sine of the lat. required $= 53^{\circ}.22'.42''$. the lat. of Liverpool. To find the times of the observations, we have $PZ = 36^{\circ}.37'.18''$. $PS = 105^{\circ}.45'.15''$. $SZ = 82^{\circ}.28'$.

then fine $PZ \times$ fine $PS : 1^2$ (rad. square) $::$ fine $\frac{SZ+PZ-PS}{2}$

$$\times \frac{SZ+PS-PZ}{2} : \text{to the square of } \frac{1}{2} \angle ZPS = .19604701314341,$$

its root $= .4427719 =$ fine of $26^{\circ}.16'.51''$. which $\times 2 = 52^{\circ}.33'.42''$; this reduced to time gives 3h. 30m. 25s. before noon; whence the respective times were half after eight, and at 11 o'clock in the forenoon, on the 5th of November.

The same by Mr. Richard Elliott, of Liverpool.

From the quest. the sun's altitudes are found to be $7^{\circ}.38'.30''$. and $19^{\circ}.42'.30''$. from which subtracting the sun's semidiameter, and allowing for refraction, we have $7^{\circ}.14'$. and $19^{\circ}.23''$. for the altitudes of his center. Then, in the triangle PST (see the preceding figure) we have $SZ = 82^{\circ}.46'$. and $ZT = 70^{\circ}.37'$. Angle $Z = 35^{\circ}.3'.30''$. from which ST is found $36^{\circ}.4'$. the angle $ZTS = 104^{\circ}.33'$. and as $37^{\circ}.30' : 1$ (rad.) $:: 36^{\circ}.4' :: .96177 =$ cosine of distance from equator, answering to $15^{\circ}.54'$. the declination, south. Again, in triangle SPT , we have $\angle P = (2\frac{1}{2}$ hours) $= 37^{\circ}.30'$. and $SP = TP = 105^{\circ}.54'$. given,

from which the angle P T S is found = $96^{\circ}. 1'$. This taken from $\angle T S$, found as above, gives the $\angle Z T P = 8^{\circ}. 32'$. then in the triangle Z T P is given two sides, and included angle to find the opposite side P Z = $36^{\circ}. 16'$. the colatitude, and angle Z P T = $13^{\circ}. 42' = 57 \text{ min. and } 48 \text{ sec.}$ the time from noon. Then the lat. = $53^{\circ}. 44'$. decl. = $15^{\circ}. 54'$. answering to Nov. 5. The hours are 5 min. 12 sec. past 11, and 35. 12. past 8 o'clock.

Mr. J. Brookes, and Mr. Wm. Eaton, jun. also gave answers to this question.

IX. QUESTION (88) answered by Musicus.

D. Smith in his Treatise on Harmonics, page 204, finds by experiment, that the organ pipe D *la. sol. re.* made 262 whole vibrations in a second of time; whence A *la. mi. re.* a 4th below D will be found to make 196.5 whole, or 393 semivibrations in the same time. Put A = 20 inches the length of the string, B = 40 grains its weight, $n = 393$ semivibrations, and P = the tension; then page 262 we have $n^2 = \log. \frac{P}{B \times A} + 2.586765$, whence $\log. P = \log. B \times A \times n^2 - 2.586765$ which gives P = 319971 grains the tension required. Now put $x =$ the tension of the string when made to found a sharp; then $\sqrt{319971} : \sqrt{x} :: 15 : 16$, whence $15 \sqrt{x} = 16 \sqrt{319971}$, and $x = 364055.9$, from which take 319971, and we have 44084.9 grains, or 6.2973 pounds avoirdupois, the weight to be added to found a sharp.

The same by Mr. Olinthus Gregory, Assistant at Mr. Weston's Boarding School, Yaxley, Hants.

In Emerson's Fluxions, page 265, it is said that "a string founding E—*la* in the bass, made 300 vibrations in one second;" but A—*la-mi-re* is a diatessaron, or perfect fourth above E—*la*, which is $\frac{3}{2}$ of the monochord, and will vibrate $300 \times \frac{4}{3} = 400$ times in a second: also A sharpened, is a semidiapente, or imperfect fifth above E—*la*, which is $\frac{5}{7}$ of the monochord, and will vibrate $300 \times \frac{7}{5} = 420$ times in a second; for each of which numbers of vibrations put v , also put $2f = 32\frac{1}{6} = 386$ inches, $n = 40$ grains, $a = 20$ inches, and $p =$ required tension: then by cor. 2, same page, same book, $\sqrt{\frac{2fp}{na}} = v$, which equation solved gives $p = \frac{nav^2}{2f}$, in the first case = 331606.2 grains, or 47.3723 lbs. avoirdupois, and in the second case $p = 365595.8$ grains, or 52.2279 lbs. which is 4.8556 more than in the first case.

Remark

Remark I. If instead of taking A sharped as a semidiapente above E-la, we had taken it as a semitone above A-la-mi-re, a semitone being $\frac{1}{2}$ of the monochord, we should have had $400 \times \frac{1}{2} = 200$ for the number of vibration of A sharped; this considerably alters the conclusion, and by the bye shew the imperfection of the common diatonic division of the monochord.

Remark II. The true division of the monochord will be by finding eleven geometrical means between unison and octave; for, from such a division, no such imperfection as that mentioned above will arise.

The same by Mr. Tim. Simpson, Papplewick, near Nottingham.

Put $l = 20$ inches, the length of the string, $w = 40$ grains, its weight, $t =$ its tension in grains, and $v =$ the number of semivibrations made in one second; then (per Cor. 1, page 240, 2. ed. Smith's Harmoniacs) we have $\frac{355}{113} \sqrt{\frac{t}{w}} \times \frac{39.126}{l} =$

v ; hence $t = \frac{b^2 v^2 w}{15109}$. But before we can find the values of t in numbers, the numeral values of v for the notes A-la-mi-re natural, and A-la-mi-re sharp, must be ascertained; but the value of v , for the note D next above the cliff of C, is 524.16 (Schol. 1, page 242 of the above book); therefore (per diatonic scale) the values of v , for the notes A-la-mi-re natural, and A-la-mi-re sharp, will be respectively $= 393.12$ and 419.33 ; which being severally substituted for v , in the above value of t , gives its numeral values, for the notes A-la-mi-re natural, and A-la-mi-re sharp, respectively $= 164034$ grains ($= 28 \text{ lb. } 5 \text{ oz. } 14 \text{ dwt. } 18 \text{ grs.}$) and 186636 grains ($= 32 \text{ lb. } 4 \text{ oz. } 16 \text{ dwt. } 12 \text{ grs.}$)

Mr. Marsden, the proposer, also answered it.

Errata in last year's Diary by Mr. T. Simpson.—Page 38, line 13, for $\frac{3}{4}$, read $\frac{x}{4}$, and in line 18, insert the third term of the analogy, $\sqrt{\frac{x}{4b}}$.

X. QUESTION (89) answered by Mr. Patrick Hall, of Denby.

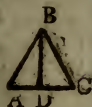
It is evident from Simpson's Geometry, on max. and min. that the rectangle of the legs of a right angled Δ , will be the greatest when equal to each other; therefore, in this case, the half diff. of the two diameters, equal to the perp. altitude of

the frustum $= \sqrt{\frac{50^2}{2}} = \sqrt{1250} = 35.3553$: then the area of the frustum $= 169248.696$.

Solutions to this question were also given by Messrs: Ashton, Blackburn, Booth, Brookes, Eaton, jun. Elliott, Ferdinando, Gregory, Holland, Saul, Stevenson, and Youart, the proposer.

XI. QUESTION (90) answered by Mr. Hall, the proposer.

Put $x = \text{perp. BD}$, $CB = AB = 3 = a$; $3.14159 = c$, $16\frac{1}{2} = s$ the descent of a ball in 1", $y = \text{periodic time}$, and $F = 1$; then $AC = 2\sqrt{a^2 - x^2}$, and $DB : CB :: r$ to tension of the string compared with the weight of the body; but $(BD) x : (CD) \sqrt{a^2 - x^2} :: 1 : \frac{c^2 \times 2\sqrt{a^2 - x^2}}{s y^2}$ the central force $\therefore y = c \sqrt{\frac{2x}{s}}$, and the central force in terms of $x = \frac{\sqrt{a^2 - x^2}}{x}$; where-



fore by the question $\sqrt{\frac{2c^2 x}{s}} \times \frac{\sqrt{a^2 - x^2}}{x} = a$ maximum, or $\frac{a^2 - x^2}{x} = a$ max. in fluxions $-\frac{2x \dot{x}}{a^2 - x^2} - \dot{x} \times \frac{1}{\sqrt{a^2 - x^2}} = 0$;

hence $x^4 + 16x^2 = 81$, and $x = \sqrt{\sqrt{145} - 8} = 2.0104$ feet; then by mensuration the area of the cone is 2.984.

The same by Mr. J. Brookes, of Leeds.

Put $n = 3.1416$, $p = 16\frac{1}{2}$ feet, the space descended by gravity in the time t , 3 feet $= a$, and $BD = x$ (see the preceding fig.) then $CD = \sqrt{a^2 - x^2}$; and by prop. IX. Emerson's Forces, $n t \sqrt{\frac{2x}{p}}$ = the periodic time, and $\sqrt{a^2 - x^2}$ the force tending to the center (which is, I suppose, what the proposer means by central force) therefore per question $n t \sqrt{\frac{2x}{p}} \times \sqrt{a^2 - x^2}$; or $a^2 x - x^3$ is a maximum; hence $x = \frac{a}{\sqrt{3}} = \sqrt{3}$ in the present case, and the curve superficies $= 3 \times 3.1416 \times \sqrt{6} = 9.4248 \sqrt{6}$.

The same by Mr. James Ashton, of Harrington.

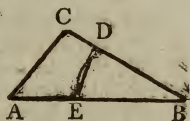
Let BC be the string $= 36$ inches long, then ABC will represent the cone, see the preceding fig. Put $AB = a = 36$, and $x = DB$; then $\sqrt{a^2 - x^2} = DC$ will be an expression for the central force. Now the time of oscillation of a pendulum being as the square root of its length, \sqrt{x} will express the time of one vibration of BD , and its equal the semiperiodic time of revolution of BC ; whence we have $\sqrt{x} \times \sqrt{a^2 - x^2}$, or $a^2 x - x^3$ = a max. then $a^2 \dot{x} - 3x^2 \dot{x} = 0$, and $x = \sqrt{\frac{a^2}{3}} = \sqrt{432} =$

20.7846; $\therefore \sqrt{a^2-x^2} = 29.7877538$; hence the circumference = 184.687607, the surface 23.08595, and area of the bottom 18.8496 sq. feet.

Corol. The expression of the maximum (a^2x-x^3) is precisely the same as when BC is an inclined plane, and a heavy body moving freely down it, shall strike an object erected at C, perpendicular to the horizon, with the greatest force possible; whence the $\angle DCB$ is the same, = $35^\circ. 16'$. nearly; therefore the problem may be constructed:

XII. QUESTION (91) answered by Mr. J. Brookes, of Leeds.

Mr. Simpson has proved at prop. 7th on the maxima and minima of geometrical quantities, that the dividing line must cut off an isosceles triangle: now as the triangle is to be divided into two equal parts, it is evident that $\frac{BA \times BC}{2} = BE \times BD = BE^2$;



therefore $BE = \sqrt{600} = 24.4948974$, and $DE = \sqrt{\frac{AC^2 - BA - BC}{2}}$
 $= \sqrt{150} = 5\sqrt{6} = 12.2474487$. Remark. $EB = 2ED$ in this case.

The same otherwise, by Mr. J. Ashton, of Harrington.

It is evident, from the maxima and minima of geometrical quantities, that the shortest line will be the arc of a circle, as containing the greatest area. Put p = the degrees in the angle $B = 28.955^\circ$. $m = .05236$, and x = the radius $BD = BE$ (see the preceding fig.) then $3 : p :: mx : \frac{p mx}{3}$ = the length of the arc DE ; whence $\frac{p mx^2}{6} = a$; then $x = \sqrt{\frac{6a}{pm}} = 23.9746$, and

$\frac{p mx}{3} = 12.11553$, the length required.

Messrs. Brown, Eaton, jun. Ferdinando, Hall, Hulland, Saul, Sheridan, and Travis, also gave ingenious answers.

XIII. QUESTION (92) answered by Mr. J. Saul, Rochdale.

Put $W = 4$ lb. the greater weight, and $w = 3$ lb. the less, $a = 16\frac{1}{2}$ the distance a heavy body will descend freely, the first second of time; then per mechanics, as $W + w : W - w :: a :$
 $\frac{W-w}{W+w} \times a = \frac{16\frac{1}{2}}{7} = \frac{193}{84} = 2\frac{25}{84}$ feet, the space descended in the first second of time.

Messrs. Brookes, Elliott, Ferdinando (the Proposer) Gregory and Hall, also gave answers.

XIV. QUESTION (93) answered by Mr. J. Brookes, Leeds.

Let QN and PM be parallel to AL, see the proposer's figure. Then by similar triangles AQ : QN :: LE = AF : AL, and AN : QN :: AE : AL. Again, AF : AN :: AF + EM = LM : AE; hence by multiplication AF : QN :: LM : AE, and AQ : QN² :: LM = AP : AL² = PM²; which is a known property of the parabola.

Mr. Whiting, the Proposer, also answered it.

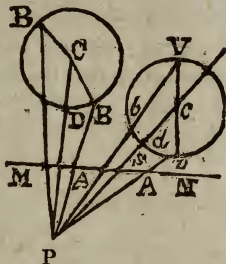
XV. QUESTION (94) answered by Mr. Jof. Waters, the Proposer.

Conceive the motion of the swiftest body so regulated as to go over any assignable distance in a given particle of time, and let both these be denoted by unity; so that if the body itself be supposed to move through any indefinite space, the time elapsed from its first setting out to its arrival at any proposed position, shall be truly measured by the distance gone over. Put radius = r , $2.08 = n$, $.75 = a$, and $BE = y$ (see the figure annexed to the question); then by uniform motion $n : 1 :: AE \frac{AE}{n} =$ the space which the latter body is capable of generating with its relative celerity, while the former goes over the plane AE, which space : its time AE :: DB : n DB = the whole time of N's motion: but the sum of these times = $AE + n$ DB = $\sqrt{2r^2 + 2ry + y^2} + n \sqrt{r^2 + a^2 - 2ay + y^2} = a$ minimum; consequently its fluxion = $\frac{r\dot{y} + y\dot{y}}{\sqrt{2r^2 + 2ry + y^2}} + \frac{-any + ny\dot{y}}{\sqrt{r^2 + a^2 - 2ay + y^2}} =$

$\frac{r\dot{y} + y\dot{y}}{\sqrt{2r^2 + 2ry + y^2}} - \frac{n \times ay - y\dot{y}}{\sqrt{r^2 + a^2 - 2ay + y^2}} = 0$; in which equation we have $r + y \times \sqrt{r^2 + a^2 - 2ay} : a - y \times \sqrt{2r^2 + 2ry + y^2} :: n : 1$, or $CE \times DB : CD \times AE$ in the ratio of the given celerities; from which proportion $BE = y$ is found = $\frac{1}{3}$, and $CD = a - y = \frac{5}{6}$. If instead of the sum ($DE + BE$) there be given the sum of any powers, as $DE^p + BE^q = a$, it will be found more convenient to make $CD = x$, so that the fluxion of $AE + n$ BD may be denoted by $\frac{r\dot{y} + y\dot{y}}{\sqrt{2r^2 + 2ry + y^2}} + \frac{n\dot{x}x}{\sqrt{r^2 + x^2}}$, since the relation of the fluxions will be easier derived from that of their fluents, by means of the equation $x = a - y^p$, which may also be extended to different exponents, as $CD^p + BE^q$, where p and q denote any given quantities whatever.

XVI. or PRIZE QUESTION (95) answered by Ferdinando.

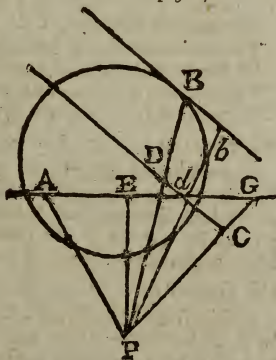
Const. Let BDB be the given circle, C its center, MN the line, and P the given point. Join P, C, and make the $\angle CPS =$ the given one; make $CP = CP$, and with $cd = CD$ describe the circle dbv ; then, by Prob. III. page 42, Burrow's Diary, 1776, determine the points Vv , so that the ratio of PA to PV or Pv may be the least or greatest possible; then making the \angle 's BPA, BPA = the given one, and drawing PB, PB, the thing will be done.



Demonf. The \angle 's BPA, BPA are = the given one by const. = CPS; by taking away the common \angle 's CPA, BPS, there remain the $\angle BPC = VPc$, and the $\angle CPB = cPv$. Hence, PC being = Pc , and $BC = cV$ or cv by const. PB is evidently = PV in the one case, and = Pv in the other, and \therefore when the ratio of PA to Pv or PV is a minimum or maximum that of PA to their respective equals PB, PB must be so too.

The same answered by Mr. J. Brookes, the Proposer.

Const. Draw PE perpendicular to AG (the line given in position) and make the angle EPG = the given angle; take $PC = PE$; erect the perpendicular CD, and parallel thereto draw a line to touch the circle in B; then drawing PB and PA to make the given angle, they will be the lines required.



Demon. Because $PC = PE$, and the angle $CPD =$ the angle EPA; PA will therefore always be = PD; but the ratio of PD (= PA) to PB is evidently less than that of Pd to Pb .—In like manner the ratio will be the greatest when the tangent is drawn on the contrary side of the circle.

XV. QUESTION (94) answered by Mr. Robert Carlisle.

Let $x = DC$, then $.75 - x = BE$, and $1.75 - x = CE$ (see the figure annexed to the question); put $b = 1.75$, and $r = 2.08$; then by (Euc. 47.1) $\sqrt{x^2 + 1} = DB$, $\sqrt{b-x^2 + 1} = \sqrt{AC^2 + CE^2} = AE$. Let t or 1 be the time of describing the space 1 and 2.08 respec-

respectively; and $1 : 1^2 :: DB \text{ or } \sqrt{x^2+1} : \sqrt{x^2+1}$ = the square of the time of describing DB (by mec.) because the spaces described by a body down any inclined plane, are as the squares of the times.: also $r : 1^2 :: \sqrt{b-x^2}^2+1 : \sqrt{b-x^2}^2+1$ = the square of the time in describing AE; hence by the question $\sqrt{x^2+1}^{\frac{1}{4}}$

$+ \sqrt{b-x^2}^2+1^{\frac{1}{4}} \times \frac{1}{\sqrt{r}} = \text{a max. and } \frac{\frac{1}{4} \times 2xx}{x^2+1} + \frac{\frac{1}{4}}{\sqrt{r}} \times \frac{2xx-2bx}{b-x^2+1}$
 $= 0$; but $1 : r :: \sqrt{x^2+1} : \sqrt{b-x^2+1}$ by the quest. substitute for $\sqrt{b-x^2+1}^{\frac{3}{4}} = \sqrt{x^2+1} \times r^{\frac{3}{4}}$ in the above equation, and dividing by x &c. we have $\frac{1}{\sqrt{r}} \times \frac{x-b}{r^{\frac{3}{4}}} + x = 0$, or $x-b+r^2 x = 0 = \sqrt{r^2+1} \times x - b$; therefore $x = \frac{b}{r^2+1} = .3285$.

NEW QUESTIONS.

I. QUESTION (96) by Mr. Wm. Marsden, Netherhurst.

It happen'd one morning I went to survey,
 A triangular meadow, right angled at E;
 Twelve chains eighty links did the longest side bound,
 Of the other two sides were two chains difference found;
 The angles and sides, with the area also,
 From what is here given, be pleased to shew?

II. QUESTION (97) by Mr. Jas. Woollin, Smalley, near Derby.

A gentleman having a garden, in form a parallelogram, containing two statute acres, whose length to the breadth is as 7 to 3, which he wishes to have divided into two parts, in the ratio of 3 to 4, by a walk drawn from one of the angles to the opposite side: required the length of the walk?

III. QUESTION (98) by Mr. John Fildes, Schoolmaster, Liverpool.

A ship from latitude 40° . N. and longitude 20° . W. sails S. W. by S. till her distance run, and meridional diff. of lat. become equal to each other: required her latitude and longitude come to?

IV. QUESTION (99) by M. James Ashton, of Harrington.

In a plain triangle ABC, the base of which is AB, and vertical angle C, there are given the two segments of the base made by a perpendicular from the vertical angle, viz, AP = 35, and PB = 80: required the other two sides such, that a circle being described with the center A, and radius AC, shall cut off just $\frac{2}{3}$ of the area of the triangle?

V. QUESTION (100) by *the same*.

Two ships A and B lying in the channel, bearing E. S. E. and W. S. W. of each other, at the distance of 26 miles, the ship A (being that to the westward) being in lat. $53^{\circ}.30'$. and longitude $2^{\circ}.45'$. W. the ship B sets sail, and steers at the rate of 5 miles an hour N. N. E. and just one hour after the ship A sets out, and, having the wind more in her favour, can make good 6 miles an hour: it is required to find the course and distance A must steer to overtake B in the least time; and also the latitude and longitude then arrived in?

VI. QUESTION (101) by *M. J. Stevenson, Heath, near Chesterfield*.

A wine-merchant bought three sorts of wine, at different prices, viz. Claret at 5s. Sherry at 6s. and Canary at 8s. per gallon; for which he gave 360l. now, if the cube of the number of gallons of Claret, the square of the number of gallons of Sherry, and the number of gallons of Canary are multiplied together, the product will be a maximum: required how many gallons he bought of each sort?

VII. QUESTION (102) by *Mr. Olinthus Gregory, Yaxley, Hants*.

I have a cone whose whole surface is 452.389392 inches, and its solidity the greatest possible; now if it was hollow, and filled with water, how long would it be in exhausting through an aperture in the base, whose area is one inch?

VIII. QUESTION (103) by *Mr. P. Hall, Schoolmaster, Denby*.

Given the angles of an oblique triangle, and the nearest distance between either angle at the base to the circumference of the inscribed circle; to construct the triangle?

IX. QUESTION (104) by *Mr. Joseph Waters, Graves-Lane*.

A person has 32 acres of land lying in the form of a triangle, within a circular meadow whose diameter is an English mile; the base of the triangle as a chord cuts 90° . from the circle, and its vertex is at a point in the included arch: the position of which it is proposed to determine?

X. QUESTION (105) by *Mr. J. Brookes, Leeds*.

Between the Radii CA, CB, of a given sector of a circle produced, it is required to draw a tangent of a given length?

XI. QUESTION (106) by *Honestiensis*.

Given the ratio of two sides of a triangle inscribed in a given circle, to determine the triangle when its area is a maximum?

XII. QUESTION (107) by *Ferdinando*.

In two similar right-angled plane triangles, the longer leg of the one, and the shorter leg of the other, being given, together with the difference between the perpendiculars falling from the right angles upon the hypotenuse of each triangle; it is required to determine the triangle?

N. B. This Question is taken from the British Oracle, but has never (to my knowledge) been publicly answered.

XIII. QUESTION (108) *by the same.*

To determine, geometrically, two lines in a given ratio, so that if a given line (L) be added to each, the rectangle of the compound lines shall be of a given magnitude?

XIV. QUESTION (109) *by Muscus.*

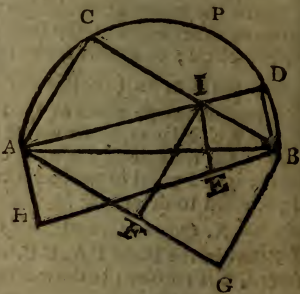
Two musical strings are unison, the one with the pipe of an organ sounds C on the cliff line; and the other sounds A, the sixth above (concert pitch); what is the breadth of each pulse, or wave of the air of the strings? And this consonance of a sixth being tempered flat by $\frac{1}{5}$ of a comma; what is the difference of time between each beat of this tempered consonance? what is the length of a cycle of the pulses? and of a period of the least imperfections? and what is the temperament of such 6th tempered sharp, making the cycle, and periods of the same length as when tempered flat as aforesaid?

XV. QUESTION (110) *by Mr. Robert Carlisle.*

If $\frac{x}{1.4} + \frac{x}{2.5} + \frac{x}{3.6} + \frac{x}{4.7} \&c. \text{ ad infinitum} = 1 + n + n \cdot \frac{n-1}{2}$
 $+ n \cdot \frac{n-1}{2} \cdot \frac{n-2}{3} + n \cdot \frac{n-1 \dots n-3}{2.3.4}$ continued to n terms: required the value of x expressed in finite terms?

XVI. PRIZE QUESTION (111) *by Mr. J. Waters, of Graves-Lane.*

Admit, the arc of a semicircle APB, to be divided into any two parts, as AP, BP; if those parts are bisected at C and D, and the points AC, AD, BC, BD, joined; the sum of the squares of the areas of the triangles ACB, and ADB, is equal to the fourth power of the radius: and if from I (the point of intersection of the supplemental chords) there be drawn IF, and IE, respectively equal and parallel to CA and DB, and the rectangles ACBG, ADBH are completed, the parts ACIF, and BDIE are perfect squares, and the remaining spaces IBFG, and IAHE include equal magnitudes: a demonstration is required?



☞ All Letters for the use of this Diary are desired to be directed thus; COTES and TAYLOR, to be left with Mr. PAGE, near the Hen-Cross, Nottingham (*post paid*) to come to hand before the first of May.

F I N I S.