THE LADIES' DIARY:

OR,

WOMAN'S ALMANACK,

FOR THE YEAR OF OUR LORD 1816.

Being the Bissextile, or Leap Year.

Containing New Improvements in ARTS and SCIENCES, and many entertaining PARTICULARS:

DESIGNED FOR THE USE AND DIVERSION OF THE

FAIR SEX.

The Hundred-&-thirteenth Almanack published of this Kind.

Virtue and Sense, with Female Softness join'd,
(All that subdues and captivates Mankind!)
In Britain's matchless Fair resplendent shine;
They rule Love's Empire by a Right Divine:
Justly their Charms th' astonish'd World admires,
Whom Royal Charlotte's bright example fires.

LONDON:
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[*Price, stitched, Two Shillings and Three Pence.*]

CHRONOLOGY OF REMARKABLE EVENTS.

A. of Christ.	Ys since.
1603 King Charles I. born	216
1603 Q. Eliz. died, K. J. succ.	213
1603 A Great Plague in Lond.	213
1605 Popish Gun-powder Plot	211
1616 Shakspeare the poet died	200
1625 K. Jam. died, Ch. I. suc.	191
1641 Bloody Irish Massacre	175
1642 Sir I. Newton b. Dec. 25	174
1649 K. Charles I. beheaded	167
1658 Oliver Cromwell died	158
1660 K. Charles II. restored	156
1662 Royal Society instituted	154
1665 Died of the Plag. 68,586	151
1666 Great Fire in London	150
1672 Halfpence & Farth. coined	144
1679 Habeas Corp. Act passed	137
1685 K. Ch. II. died, Ja. II. suc.	131
1688 Prince of Orange landed	128
1688 K. James II. abdicated	128
1689 Wm. and Mary crowned	127
1693 Hackney coaches estab.	123
1702 K. Wm. died, Q. Anne suc.	114
1707 England & Scotland unit.	109
1714 Q. An. died, K. Geo. I. suc.	102
1715 Rebellion in the North	101
1716 A very great Frost	100
1726 Sir Isaac Newton died	90
1727 K. Geo. I. died, Geo. II. suc.	89
1739 A very great Frost	77

A. of Christ.	Ys since.
1743 A great Comet appeared	75
1745 Rebellion in Scotland	71
1750 Westminst. Bridge finished	66
1752 Date and Calendar altered	64
1753 Lisbon destr. by an Earthq.	61
1760 K. Geo. II. died, G. III. suc.	56
1762 American Phil. Soc. instit.	54
1765 Otaheite discovered	51
1770 Blackfriars' Bridge finished	46
1772 A Revolution in Denmark	44
1772 A Revolution in Sweden	44
1775 War against America beg.	41
1776 America declared indep.	40
1778 French Treaty with Amer.	38
1778 War against France begun	38
1779 War against Spain begun	37
1780 War against Holland beg.	36
1781 Herschel's new Planet disc.	35
1783 A general Peace	33
1789 A Revolution in France	27
1792 K. Swe. shot by Ankerstrom	24
1792 France declared a Republic	24
1793 K. & Q. of Fra. beheaded	23
1799 Napoleon 1st Emp. France	17
1801 Ireland united to England	15
1801 The Planet Piazzi discov.	15
1802 The Planet Olbers discov.	14
1804 The Planet Harding disc.	12
1807 Olbers's 2d Planet discv.	9

BIRTH-DAYS [N.S.] and YEARS of the ROYAL FAMILY of GREAT BRITAIN.

K. GEORGE III. June 4,	1738
Prince of Wales, August 12,	1762
Duke of York, August 16,	1763
Duke of Clarence, August 21,	1765
Duchess of Wirtem. Sept. 29,	1766
Duke of Kent, Nov. 2,	1767
Prs. Augusta Sophia, Nov. 8,	1768
Prs. Elizabeth, May 22,	1770
Duke of Cumberland, June 5,	1771
Duke of Sussex, Jan. 27,	1773
Duke of Cambridge, Feb. 24,	1774
Princess Mary, April 25,	1776
Princess Sophia, Nov. 3,	1777
Queen Charlotte, May 19,	1744
Princess of Wales, May 17,	1768
Duchess of York, May 7,	1767
Prs. Charlotte of Wales, Jan. 7,	1796

YEARS of BIRTHS of the Principal SOVEREIGN PRINCES of EUROPE.

Vict. Eman., K. of Sardinia,	1759
Alexander, Emp. of Russia,	1777
Maria, Queen of Portugal,	1734
Frederic V. King of Prussia,	1770
Charles XIII. K. of Sweden,	1748
Francis II. Emp. of Austria,	1762
Ferdinand VII. K. of Spain,	1784
Frederic VI. K. of Denmark,	1768
Ferdinand IV. King of Sicily,	1751
Mahmud, Grand Seignor,	1785
Pius VII. Pope,	1742
Louis XVIII. K. of France,	1755

First Quarter..... 7th, 41m. past 6 After.
Full Moon..... 14th, 18m. past 1 Morn.
Last Quarter..... 21st, 13m. past 4 After.
New Moon..... 29th, 50m. past 8 Morn.

Sun enters ♒ 20d. 14h. 11m.

1	M	Circumcision		8	53	55	23	s 5	5 a	37	2
2	Tu				5	55		0	6	43	3
3	W				4	56	22	55	7	50	4
4	Th				3	57		49	8	58	5
5	F				3	57		43	10	6	6
6	S	Epiph.	*Old Chr: 12-d.*		2	58		36	11	13	7
7	G	1 S. af. Epi	Prs. Ch. W. b.		1	59		29	morn.		8
8	M	*Lucian: Plow Mond.*			0	4 0		22	0	21	9
9	Tu			7	59	1		14	1	30	10
10	W				58	2		5	2	42	11
11	Th				57	3	21	56	3	57	12
12	F				56	4		47	5	14	13
13	S	Hilary: Cam. T. beg.			55	5		37	6	28	14
14	G	2 S. af. Epiph.	Oxf. T. b.		54	6		27	rises		F
15	M				53	7		17	4 a	36	16
16	Tu				52	8		6	6	1	17
17	W				51	9	20	54	7	27	18
18	Th	Q. Ch. d.	*Prisca*		49	11		43	8	52	19
19	F				48	12		30	10	16	20
20	S	*Fabian*			47	13		18	11	38	21
21	G	3 S. af. Epiph:	*Agnes*		45	15		5	morn.		22
22	M	*Vincent*			44	16	19	52	0	57	23
23	Tu	Hilary Term begins			42	18		38	2	15	24
24	W				41	19		24	3	31	25
25	Th	Conversion of St. Paul			40	20		10	4	43	26
26	F				38	22	18	55	5	48	27
27	S	D. of Sussex born			37	23		40	6	44	28
28	G	4 S. after Epiphany			35	25		24	7	29	29
29	M				33	27		9	sets		N
30	T	K. Ch. I. mar. 1649.			32	28	17	53	5 a	30	1
31	W				30	30		36	6	39	2

Days	Length of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. bef. Sun	✶ Stars South
1	7 50	0 6	6 0	6 0	4 41	3′ 35″	8 a 45
6	56	12	5 58	2	43	5 54	23
11	8 6	22	54	6	46	8 2	1
16	16	32	49	11	49	9 51	7 40
21	30	46	44	16	53	11 30	29
26	44	1 0	38	22	58	12 47	6 57

First Quarter..... 6th, 29m. past 1 After.
Full Moon..... 13th, 9m. past 12 Noon.
East Quarter..... 20th, 42m. past 3 Morn.
New Moon ..... 28th, 31m. past 3 Morn.

Sun enters ♓ 19d. 4h. 54m.

M D	W D	Sundays, Holidays, &c.	Sun rises.	Sun sets.	Sun's decl.	☾ rises & sets.	☾'s Age
1	Th		7 29	4 31	17 s 19	7 a 47	3
2	F	Purif: Candlemas D.	27	33	2	8 53	4
3	S	*Blase*	25	35	16 45	9 59	5
4	●	5 S. after Epiphany	23	37	28	11 7	6
5	M	*Agatha*	22	38	10	morn.	7
6	Tu		20	40	15 51	0 17	8
7	W		18	42	33	1 30	9
8	Th		16	44	14	2 44	10
9	F		15	45	14 55	3 58	11
10	S		13	47	36	5 7	12
11	●	Septuagesima Sunday	11	49	17	6 7	13
12	M	Hilary Term ends	9	51	13 57	6 56	14
13	Tu		7	53	37	rises	F
14	W	*Valentine: Old Candl.*	5	55	17	6 a 21	16
15	Th		4	56	12 57	7 48	17
16	F		2	58	36	9 8	18
17	S		0	5 0	15	10 37	19
18	●	Sexagesima Sunday	6 58	2	11 54	11 59	20
19	M		56	4	33	morn.	21
20	Tu		54	6	12	1 19	22
21	W		52	8	10 51	2 34	23
22	Th		50	10	29	3 43	24
23	F	Camb. Term div. m.	48	12	7	4 42	25
24	S	St. Matthias: Duke of	46	14	9 45	5 29	26
25	●	Quin. or Shro. S. [Ca.b.	44	16	23	6 6	27
26	M		42	18	1	6 37	28
27	Tu	Shrove Tuesday	41	19	8 38	7 0	29
28	W	Ash Wednesday	39	21	16	sets	N
29	Th		37	23	7 53	6 a 43	1

Days	Length of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. bef. Sun	7 Stars South
1	9 2	1 18	5 32	6 28	5 3	13 54″	6 a 34
6	20	36	24	36	9	14 26	13
11	38	54	16	44	14	14 38	5 53
16	56	2 12	7	53	20	14 30	34
21	10 16	32	4 58	7 2	26	14 5	15
26	36	52	49	11	32	13 22	4 56

First Quarter ...	7th, 55m. past 4	Morn.	Sun enters ♈
Full Moon	13th, 47m. past 9	After.	20d. 5h. 9m.
Last Quarter	20th, 41m. past 5	After.	
New Moon	28th, 27m. past 9	After.	

1	F	*David*	6	35	5	25	7	s 30	7	a 52	1
2	S	*Chad*		33		27		7	9	0	3
3	S	3 Sunday in Lent		31		29	6	45	10	9	4
4	M			29		31		21	11	20	5
5	Tu			27		33	5	58	morn.		6
6	W	Ember Week		25		35		35	0	32	7
7	Th	*Perpetua*		23		37		12	1	45	8
8	F			21		39	4	48	2	56	9
9	S			19		41		25	3	59	10
10	S	4 Sunday in Lent		17		43		2	4	61	11
11	M			15		45	3	38	5	32	12
12	Tu	*Gregory*		13		47		14	6	3	13
13	W			11		49	2	51	rises		F
14	Th			9		51		27	6	a 48	15
15	F			7		53		4	8	14	16
16	S			5		55	1	40	9	41	17
17	S	5 S. in Lt. *St. Patrick*		3		57		16	11	6	18
18	M	*Edw. K. West Saxons*		1		59	0	52	morn.		19
19	Tu		5	59	6	1		29	0	26	20
20	W			57		3		5	1	40	21
21	Th	*Benedict*		55		5	0	19	2	43	22
22	F			53		7		42	3	36	23
23	S			51		9	1	6	4	18	24
24	S	Palm or Midlent Sunday		49		11		30	4	48	25
25	M	Annun. or Lady-Day		47		13		53	5	14	26
26	Tu			45		15	2	17	5	34	27
27	W			43		17		40	5	50	28
28	Th			41		19	3	4	sets		N
29	F			39		21		27	6	a 59	1
30	S			37		23		50	8	7	2
31	S	6 Sunday in Lent		35		25	4	14	9	19	3

Days	Length of D.		Day Inc.		D. breaks		Tw. ends		Sun East		Ch. fer. Sun		Sets before Sun	
1	10	50	3	6	4	43	7	18	5	37	12	38	4	a 41
6	11	10		26		31		29		45	11	32		23
11		30		46		20		40		49	10	15		5
16		50	4	6		10		53		56	8	50	3	46
21	12	10		26		0	8	6	6	2	7	20		28
26		30		46	3	48		12		8	5	48		10

First Quarter ..... 5th, 22m. past 4 After.
Full Moon ..... 12th, 43m. past 6 Morn.
Last Quarter ..... 19th, 38m. past 9 Morn.
New Moon ..... 27th, 31m. past 1 After.

Sun enters ♉ 19d. 17h. 42m.

1	M		5	33	6	27	4	n 37	10	a 31	4
2	Tu			31		29	5	0	11	44	5
3	W	*Rd. Bp. of Chich.*		29		31		23	morn.		6
4	Th	*St. Ambrose*		27		33		46	0	56	7
5	F	Camb. Term ends		25		35	6	8	2	0	8
6	S	Old Lady D: Oxf. T. e.		23		37		31	2	53	9
7		6 or Palm Sunday		21		39		54	3	38	10
8	M			20		40	7	16	4	11	11
9	Tu			18		42		38	4	38	12
10	W			16		44	8	1	5	0	13
11	Th	*Maundy Thursday*		14		46		23	5	20	14
12	F	Good Friday		12		48		45	rises		F
13	S			10		50	9	6	8	53	16
14		Easter Day		8		52		28	10	9	17
15	M	Easter Monday		6		54		50	11	28	18
16	Tu	Easter Tuesday		4		56	10	11	morn.		19
17	W			2		58		32	0	40	20
18	Th			0	7	0		53	1	40	21
19	F	*Alphege*	4	58		2	11	14	2	25	22
20	S			57		3		34	3	2	23
21		Low Sunday		55		5		55	3	27	24
22	M			53		7	12	15	3	49	25
23	Tu	St. George		51		9		35	4	5	26
24	W	Oxf. & Cam. T. beg.		49		11		55	4	21	27
25	Th	St. Mark: Prs. Mary b.		47		13	13	15	4	35	28
26	F			46		14		34	4	49	29
27	S			44		16		53	sets		N
28		2 S. after Easter		42		18	14	12	8	a 28	1
29	M			40		20		31	9	41	2
30	Tu			38		22		49	10	54	3

Days	Length of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. bef. Sun	7 Stars South
1	12 54	5 10	3 31	8 31	6 10	3′ 57″	2 a 48
6	13 14	30	19	43	22	2 28	30
11	32	48	4	58	28	1 3	11
16	52	6 8	2 52	9 11	34	0 a 15	1 53
21	14 10	26	38	25	39	1 23	34
26	28	44	23	40	48	2 20	15

First Quarter.....	4th,	8m. past 12 Night.
Full Moon	11th,	40m. past 3 After.
Last Quarter.....	19th,	35m. past 2 Morn.
New Moon	27th,	7m. past 3 Morn.

Sun enters ♊ 20d. 18h. 8m.

1	W	St. Phil. & Jam.	Term	4	37	7	23	15	n	8	12	a	0	4
2	Th		beg.		35		25			26	morn.			5
3	F	*Invent. of the Cross*			33		27			43	0		59	6
4	S				31		29	16		1	1		45	7
5	S	S. after Easter			30		30			18	2		20	8
6	M	*John Evang. a. P. L.*			28		32			35	2		46	9
7	Tu	Ds. of York bs			26		34			52	3		10	10
8	W				25		35	17		8	3		30	11
9	Th				23		37			24	3		48	12
10	F				22		38			40	4		6	13
11	S				20		40			55	rises			F
12	S	4 S. after Easter			18		42	18		11	9	a	4	15
13	M	Old May Day			17		43			25	10		24	16
14	Tu				15		45			40	11		32	17
15	W				14		46			54	morn.			18
16	Th				12		48	19		8	0		24	19
17	F	Pss. of Wales born			11		49			22	1		3	20
18	S				9		51			35	1		33	21
19	S	Rog. S. Q. Ch. b.	*Duns.*		8		52			48	1		56	22
20	M				7		53	20		1	2		15	23
21	Tu				5		55			13	2		31	24
22	W	Pss. Eliz. b.			4		56			25	2		45	25
23	Th	Ascens. Holy Thurs.			3		57			37	2		58	26
24	F				1		59			48	3		13	27
25	S				0	8	0			59	3		29	28
26	S	S. after Asc:	*Augustin*	3	59		1	21		10	3		49	29
27	M	*Venerab. Bede:*	Terme.		58		2			20	sets			N
28	Tu				57		3			30	9	a	48	1
29	W	K. Ch. 2. restored			56		4			39	10		54	2
30	Th				55		5			48	11		41	3
31	F				54		6			57	morn.			4

Days	Length of D.		Day Inc.		D. Breaks		T. W. ends		Sun East		Ch. afts. Sath		17 stars South		
1	14	46	7	2	2	5	9	59	6	50	3	4	0	a	56
6	15	4		20	1	51	10	15		56	3	36	1		37
11		20		36		29		35	7	0	3	53		a	18
16		36		52		6		50		5	3	57	11	m	58
21		50	8	6	0	20	11	36		9	3	45			39
26	16	2		18	No real Night.					12	3	20			10

First Quarter..... 3d, 18m. past 5 Morn.
Full Moon ..... 10th, 19m. past 1 Morn.
Last Quarter..... 17th, 48m. past 7 After.
New Moon ..... 25th, 7m. past 2 After.

Sun enters ♋ 21d. 2h. 45m.

1	S	*Nicomede:* Oxf. T. e.	3	53	8	7	22 n	5	0 m	24	5
2	S	Whit Sunday		52		8		13	0	52	6
3	M	Whit Monday		51		9		21	1	16	7
4	Tu	Whit Tues: K.Geo.3.b.		50		10		28	1	35	8
5	W	Em.W:D.Cu.b: *Bonif.*		49		11		35	1	53	9
6	Th	[Oxf.T. b.		49		11		41	2	10	10
7	F			48		12		47	2	28	11
8	S			47		13		52	2	51	12
9	S	Trin. Sunday: Moon		47		13		58	3	16	13
10	M	[ecl. visib.		46		14	23	2	rises		F
11	Tu	St. Barnabas		46		14		7	10 a	9	15
12	W			45		15		11	10	55	16
13	Th	Corpus Christi.		45		15		14	11	30	17
14	F	Trinity Term begins		44		16		17	11	57	18
15	S			44		16		20	morn.		19
16	S	1 S. after Trinity		44		16		22	0	16	20
17	M	*St. Alban*		43		17		24	0	32	21
18	Tu							26	0	47	22
19	W							27	1	0	23
20	Th	*Trans. Edw.K.W.Sax.*						28	1	14	24
21	F	Longest Day						28	1	29	25
22	S							28	1	46	26
23	S	2 S. after Trinity						27	2	9	27
24	M	Nat. of J. Bap: Midsum.						26	2	38	28
25	Tu							25	sets		N
26	W			44		16		23	9 a	34	1
27	Th			44		16		21	10	17	2
28	F			44		16		18	10	50	3
29	S	St. Peter		45		15		15	11	14	4
30	S	3 S. after Trinity		45		15		12	11	35	5

Longest Day at Lond. is 16h. 34m. 4sec. allowing 9m. 16sec. for refraction.

Days	Length of D.	Day Inc.	D. breaks	Tw. ends	Sun East	Cl. aft. Sun	Stars South
1	16 14	8 30			7 16	2 34	10 m 54
6	22	38	No real Night,		18	1 45	34
11	28	44	but constant		19	0 48	14
16	32	48	Day or Twi-		20	0 bef. 13	9 55
21	34	50	light.		21	1 18	38
26	32	0 dec. 2			20	2 23	12

First Quarter . . . . . 3d, 28m. past 9 Morn.
Full Moon . . . . . 9th, 21m. past 12 Noon.
Last Quarter . . . . . 17th, 46m. past 12 Noon.
New Moon . . . . . 24th, 9m. past 11 After.
First Quarter . . . . . 31st, 25m. past 2 After.

Sun enters ♌ 22d. 13h. 37m.

1	M	[Cam. Com.	3	45	8	15	23 n	8	11 a	54	6
2	Tu	*Visit. V. M:* Oxf. Act:		46		14		3	morn.		7
3	W	Trin. T. e: Dog D. beg.		46		14	22	59	0	11	8
4	Th	*Trans. of St. Martin*		47		13		54	0	29	9
5	F	Camb. Term ends		48		12		48	0	49	10
6	S	Oxf. T. e: Old Mids.		48		12		42	1	10	11
7	☽	4 S. af. Trin. *T. à Becket*		49		11		36	1	42	12
8	M			50		10		30	2	21	13
9	Tu			51		9		23	rises		F
10	W			52		8		15	9 a	26	15
11	Th			53		7		7	9	52	16
12	F			53		7	21	59	10	15	17
13	S			54		6		51	10	31	18
14	☽	5 S. after Trinity		55		5		42	10	48	19
15	M	*Swithin*		57		3		32	11	2	20
16	Tu			58		2		23	11	15	21
17	W			59		1		13	11	29	22
18	Th		4	0		0		2	11	46	23
19	F			1	17	59	20	51	morn.		24
20	S	*Margaret*		2		58		40	0	7	25
21	☽	6 S. af. Trinity		4		56		29	0	32	26
22	M	*Magdalen*		5		55		17	1	6	27
23	Tu			6		54		5	1	52	28
24	W			7		53	19	53	sets		N
25	Th	St. James		9		51		40	8 a	46	1
26	F	*St. Anne*		10		50		27	9	14	2
27	S			12		48		13	9	38	3
28	☽	7 S. after Trinity		13		47	18	59	9	57	4
29	M			15		45		45	10	14	5
30	Tu			16		44		31	10	31	6
31	W			18		42		16	10	51	7

Days	Length of D.		Day Dec.		D. breaks	Tw. ends		Sun East		Cl. bef. Sun		7 Stars South	
1	16	30	0	4				7	19	3	24	8m	51
6		24		10					17	4	18		31
11		14		20	No real Night.				15	5	3		10
16		4		30					12	5	37	7	50
21	15	52		42					9	5	59		30
26		40		51	0	46	11	11		5	6		10

Full Moon	6th, 18m. past	1 Morn.	
Last Quarter	16th, 58m. past	4 Morn.	Sun enters ♌
New Moon	23d, 6m. past	7 Morn.	22d, 20h, 5m.
First Quarter	29th, 43m. past	9 After.	

1	Th	Lammas Day	4	19	7	41	18	n	1	11	a 13	S
2	F			21		39	17		46	11	41	9
3	S			22		38			30	morn.		10
4	S	8 S. after Trinity		24		36			14	0	17	11
5	M			26		34	16		58	1	4	12
6	Tu	*Transfiguration*		27		33			42	2	3	13
7	W	*Name of Jesus*		29		31			25	3	9	14
8	Th			31		29			8	rises		F
9	F			32		28	15		51	S	a 38	16
10	S	*St. Lawrence*		34		26			34	8	54	17
11	S	9 S. af. Tr. Dog D.e.		36		24			16	9	8	18
12	M	Pr. of Wales b.		37		23	14		58	9	22	19
13	Tu	Old Lammas day		39		21			40	9	37	20
14	W			41		19			21	9	52	21
15	Th	*Assumption*		43		17			3	10	10	22
16	F	D. of York b.		45		15	13		44	10	32	23
17	S			46		14			25	11	1	24
18	S	10 S. after Trinity		48		12			5	11	40	25
19	M			50		10	12		46	morn.		26
20	Tu			52		8			26	0	35	27
21	W	D. of Clarence b.		54		6			6	1	46	28
22	Th			55		5	11		46	3	6	29
23	F			57		3			26	sets		N
24	S	St. Bartholomew		59		1			5	8	a 4	1
25	S	11 S. after Trnity	5	1	6	59	10		45	8	22	2
26	M			3		57			24	8	40	3
27	Tu			5		55			3	8	59	4
28	W	*St. Augustine*		7		53	9		42	9	21	5
29	Th	*J. Baptist beheaded*		9		51			20	9	49	6
30	F			10		50	8		59	10	23	7
31	S			12		48			37	11	5	8

Days	Length of D.	Day Dec.	D. break	Tw. ends	Sun East	Cl. bef. Sun	7 stars South
1	15 22	1 12	1 24	10 33	6 59	5′ 57″	6m40
6	6	28	44	13	54	5 32	27
11	14 48	46	2 2	9 56	46	4 52	8
16	30	2 4	20	38	44	3 58	5 49
21	12	22	35	23	38	2 52	30
26	13 54	40	50	10	33	1 34	12

Full Moon	6th, 22m. past	4 After.
Last Quarter	14th, 47m. past	7 After.
New Moon	21st, 3m. past	3 After.
First Quarter	28th, 25m. past	8 Morn.

Sun enters ♎ 22d. 16h. 43m.

1	F	12 S. af. Tr. *Giles*	5	14	6	46	8	n	15	12	a	0	9
2	M	London burnt 1666		16		44	7		54	morn.			10
3	Tu			18		42			31	1		5	11
4	W			20		40			9	2		14	12
5	Th			22		38	6		47	3		26	13
6	F			24		36			25	rises			F
7	S	*Enurchus*		26		34			2	7	a	22	15
8	S	13 S. af. Tr. *Nativ. V. M.*		28		32	5		40	7		36	16
9	M			30		30			17	7		50	17
10	Tu			32		28	4		54	8		5	18
11	W			34		26			32	8		22	19
12	Th			36		24			9	8		41	20
13	F			37		23	3		46	9		7	21
14	S	*Holy Cross*		39		21			23	9		42	22
15	S	14 S. after Trinity		41		19	2		59	10		29	23
16	M			43		17			36	11		29	24
17	Tu	*Lambert*		45		15			13	morn.			25
18	W	Ember Week		47		13	1		50	0		44	26
19	Th			49		11			26	2		9	27
20	F			51		9			3	3		37	28
21	S	St. Matthew		53		7	0		40	sets			N
22	S	15 S. af. Tr. K. Geo. 3. cr.		55		5			16	6	a	58	1
23	M			57		3	0	s	7	7		12	2
24	Tu			59		1			31	7		33	3
25	W		6	1	5	59			54	7		58	4
26	Th	*Cyprian: O. Holy Rood*		3		57	1		17	8		28	5
27	F			5		55			41	9		10	6
28	S			7		53	2		4	10		1	7
29	S	16 S. a. Tr. St. Mic. Q. ot.		9		51			28	11		5	8
30	M	*St. Jerome* [Wirt. b.		11		49			51	morn.			9

Days	Length of D.	Day Dec.	D. breaks	Tw. ends	Sun East	Cl. alt. Sun	7 Stars South
1	13 32	3 2	3 7	8 53	6 26	0′ 12″	4m 50
6	12	22	21	39	20	1 49	32
11	12 52	42	34	26	14	3 32	14
16	34	4 0	45	15	7	5 17	3 56
21	14	20	50	4	1	7 1	30
26	11 54	40	4 7	7 53	5 55	8 44	21

Full Moon	6th,	19m. past 9 Morn.
Last Quarter	14th,	35m. past 8 Morn.
New Moon	20th,	56m. past 11 After.
First Quarter	27th,	58m. past 10 After.

Sun enters ♏ 23d. 0h. 49m.

			☉	☽	☽	☽	
1	Tu	*Remigius*	6 13	5 47	3 s 14	0 m 14	10
2	W		15	45	38	1 24	11
3	Th		17	43	4 1	2 34	12
4	F		19	41	24	3 45	13
5	S		21	39	47	4 55	14
6	S	17 S. af. Trinity *Faith*	23	37	5 10	rises	F
7	M		24	36	33	6 a 21	16
8	Tu		26	34	56	6 35	17
9	W	*St. Denys*	28	32	6 19	6 53	18
10	Th	Ox. & Cam. T. b.	30	30	42	7 18	19
11	F	Old Michaelmas D.	32	28	7 5	7 49	20
12	S		34	26	27	8 30	21
13	S	18 S. af. Trin. *Trans. Ed.*	36	24	50	9 24	22
14	M	[*Conf.*	38	22	8 12	10 20	23
15	Tu		40	20	35	11 49	24
16	W		42	18	57	morn.	25
17	Th	*Etheldred*	44	16	9 19	1 14	26
18	F	St. Luke	46	14	41	2 41	27
19	S		48	12	10 3	4 10	28
20	S	19 S. af. Trinity	50	10	24	sets	N
21	M		52	8	46	5 a 89	1
22	Tu		53	7	11 7	6 2	2
23	W		55	5	28	6 30	3
24	Th		57	3	49	7 8	4
25	F	St. Crisp. S. part *Crispin*	59	1	12 10	7 58	5
26	S	St. Crisp. S. part	7 1	1 59	31	8 58	6
27	S	20 S. after Trinity	3	57	51	10 6	7
28	M	St. Simon & St. Jude	5	55	13 11	11 18	8
29	Tu		7	53	31	morn.	9
30	W		8	52	51	0 29	10
31	Th		10	50	14 11	1 40	11

Days	Length of D.	Day Dec.	D. breaks	Twi. ends	Sun East	Cl. aft. Sun	7 stars South
1	11 34	5 0	4 19	7 41	5 49	10 22	3 m 3
6	14	20	30	30	43	11 53	2 45
11	10 56	38	40	20	36	13 14	26
16	36	58	50	10	30	14 23	7
21	16	6 18	59	1	24	15 17	1 49
26	9 58	36	5 8	6 52	18	15 54	30

Full Moon	5th, 18m. past 3 Morn.		
Last Quarter	12th, 8m. past 7 After.	Sun enters ♐	
New Moon	19th, 23m. past 10 Morn.	21d. 21h. 9m.	
First Quarter	26th, 6m. past 5 After.		

01	F	All Saints	7	12	4	48	14	s	30	2	m	50	12
02	S	D. of Kent b. *All Souls*		14		46			49	3		57	13
03	✠	21S. af. Tr. Prs. Soph. b.		16		44	15		8	5		5	14
04	M	K. William landed		17		43			27	6		13	15
05	Tu	Powder Plot		19		41			45	rises			F
06	W	*Leonard:* Mich. T. beg.		21		39	16		3	5	a	24	17
07	Th			23		37			21	5		52	18
08	F	Prs. Aug. Sophia b.		24		36			39	6		30	19
09	S	Lord Mayor's Day		26		34			56	7		18	20
10	✠	22 S. af. Trinity		28		32	17		13	8		21	21
11	M	*St. Martin*		30		31			29	9		34	22
12	Tu	Camb. Term div. m.		31		29			46	10		53	23
13	W	*Britius*		33		27	18		2	morn.			24
14	Th			34		26			18	0		17	25
15	F	*Machutus*		36		24			33	1		41	26
16	S			37		23			48	3		6	27
17	✠	23S. af. Tr. *Hugh Bp.*		39		21	19		3	4		33	28
18	M			40		20			18	5		57	29
19	Tu	Sun eclipsed visib.		42		18			32	sets			N
20	W	*Edm. K. and M.*		43		17			45	4	a	57	1
21	Th			45		15			59	5		42	2
22	F	*Cecilia*		46		14	20		12	6		37	3
23	S	*Clement*; Old Mart. d.		47		13			24	7		43	4
24	✠	24 S. after Trinity		49		11			37	8		56	5
25	M	*Catharine*		50		10			49	10		8	6
26	Tu			51		9	21		0	11		21	7
27	W			52		8			11	morn.			8
28	Th	Mich. Term ends		53		7			22	0		31	9
29	F			55		5			32	1		39	10
30	S	St. Andrew		56		4			42	2		46	11

Days	Length of D.		Day Dec.		D. breaks		Tw. ends		Sun East		Cl. aft. Sun		7 Stars South		
1	9	36	6	58	5	17	6	48	5	12	16′	15″	1	m	7
6		18	7	16		24		36		6	16	11	0		47
11		2		32		30		30		1	15	46			27
16	8	46		48		36		24	4	56	14	59			6
21		30	8	4		43		17		52	13	51	11	a	41
26		18		16		49		11		48	12	28			20

Full Moon ..... 4th, 51m. past 8 After.
Last Quarter ..... 12th, 52m. past 3 Morn.
New Moon ..... 18th, 37m. past 10 After.
First Quarter ..... 26th, 52m. past 1 After.

Sun enters ♑ 21d. 14h. 27m.

1	☿		7	57	4	3	21	52	8 a 54	12
2	M			58	2	22	1	5	4	13
3	Tu			58	1		9	6	44	14
4	W	Moon eclipsed visib.	8	0	0		17	rises		F
5	Th			1	3 59		25	4 a 20		16
6	F	*Nicholas*		1	59		33	5	6	17
7	S			2	58		39	6	4	18
8	☽	*Concep.*		3	57		46	7	15	19
9	M			4	56		52	8	35	20
10	Tu			4	56		57	9	55	21
11	W			5	55	23	2	11	18	22
12	Th			6	54		7	morn.		23
13	F	*Lucy*		6	54		11	0	40	24
14	S			6	54		15	2	3	25
15	☾			7	53		18	3	28	26
16	M	*O Sapientia:* Ca. T. e.		7	53		21	4	54	27
17	Tu	Oxford Term ends		7	53		23	6	38	28
18	W			8	52		25	sets		N
19	Th						27	4 a 10		1
20	F						27	5	12	2
21	S	Shortest					28	6	21	3
22	☉	[day					28	7	36	4
23	M						27	8	50	5
24	Tu						26	10	2	6
25	W			8	52		25	11	11	7
26	Th			7	53		23	morn.		8
27	F			7	53		20	0	19	9
28	S			7	53		18	1	27	10
29	☽			6	54		14	2	35	11
30	M			6	54		10	3	45	12
31	Tu	*Silvester*		5	55		6	4	57	13

Shortest Day at Lond. is 7h. 44m. 17sec. allowing 9m. 5sec. for refraction.

Days	Length of D.	Day Dec.	D. breaks	Tw. ends	Sun East	Cl. aft. Sun	7 Stars South
1	8 6	8 28	5 55	6 5	4 45	10′ 38″	10 a 59
6	7 58	56	58	2	43	8 37	37
11	50	44	59	1	41	6 23	15
16	46	48	6 0	0	40	3 59	9 53
21	44	50	1	5 59	39	1 29	31
26	46	Dec. 2	0	6 0	40	1 bef. 2	9

CHRONOLOGICAL NOTES, &c. in 1816.

Dominical Letter	GF	Roman Indiction	4	Easter Day, April	7
Golden Number	12	Septuag. Sun.	Feb. 11	Ascen. Day, May	2
Epact	1	Shrove Sunday	Feb. 25	Whit-Sund.	June
Solar Cycle	5	Lent begins	Feb. 28	Advent S.	Dec.

ECLIPSES, &c.

THERE will be four eclipses this year; two of the Sun, and two of the Moon; three of which will be visible in these parts.

I. MAY 27, the Sun is eclipsed, but invis. at 3h. 6m. morning.

II. JUNE 9 and 10, the Moon is totally eclipsed, and visible, from 11h. 30m. at night, till 3h. the next morning.

III. Nov. 19, the Sun is eclipsed, and visible, from 8h. 18m. till 10h. 34m. in the morning.

IV. Dec. 4, the Moon is eclipsed, and visible, from 7h. 15m. till 10h. 14m. at night.

VENUS is a morning star till Aug. 1; then an evening star to the end.

JUPITER is a morning star till April 25; then an evening star till Nov. 12; then a morning star to the end.

ANSWERS TO THE ENIGMAS.

1. Bachelor	4. Poetry	7. Fortune	10. *or Prize, Last.*
2. Ball	5. Horn	8. Fire	
3. New Year	6. Ear	9. Pattens	

ANSWERS TO THE PRIZE ENIGMA.

1. *By Amanda, of Kennington.*

When first I tried, with searching wit,
The meaning of the prize to hit;
I puzzled, pondered in my mind,
What might be in such terms defined:
It seemed at first a thing despised,
Then afterwards what might be prized;
Perplexed, some time thus having past,
I think I've found it out at *last*.

2. *By Miss M. A. Collins, Ladies' Seminary, High-street, Kensington.*

In careless numbers poets sing,
Of pauper, peasant, prince, and king;
Friend Smart, at last, in mystic guise,
A *last* has sent us for the prize.

3. *By Mr. Rob. Froude, of Aveton Giffard.*

Your langnage of the former year,
I hope, dear Smart, was not sincere;
Words are but wind, an empty blast;
It cannot, must not, be your *last*.

4. *Mr. J. Hare, to Miss C. C. Richardson; on having broken her Penknife.*

Your knife, unfit for stubborn oak,
With usage rough, at *last* it broke;
Fearing, dear Charlotte, to offend,
I strove in vain the knife to mend;
For, were you once displeased with me,
My heart so broken then would be.

5. *Acrostic Answer, by Maria.*

L-ong time, my friend Smart, you had puzzled my brains,
A-nd kept me in ignorance fast;
S-till I firmly resolved not to spare any pains
T-o find you out, sly-boots, at *last*.

6. *The Wish, by Mr. Henry Egerton Massie, Marbury.*

When the *last* dreadful trump shall awful sound,
And every soul with trembling fear rebound,
Then may the immortal Smart with joy arise,
To gain with rapture the cele-tial skies.

7. *Acrostic Answer, by Mr. J. W. Puckle, Kent-Road.*

*L*et Dia's fair their sorrows prove,
*A*nd mourn in verse the bard they love;
Sever'd by fate, his magic lyre
Too sweetly tells the parting dire.

8. *Mr. Sheridan's Address to Mr. T. R. Smart.*

Ingenious Smart! accept the votive line
That friendship offers at Apollo's shrine;
The meed, tho' humble, speaks a grateful heart
For all the bliss thy mystic strains impart.
Long be thy life, and happy be thy days,
To grace Diana with thy dulcet lays;
And, when the *last* eventful hour shall come,
To waft your spirit to his native home,
May friendship's soothing voice your pains allay,
And angels waft you to eternal day.
While sense and learning bless this happy land,
Thy name among her tuneful bards shall stand,
Join'd with Narcissa's, Bentley's, Tasso's name,
In Dia's pages of immortal fame.

9. *Mr. John Smith, on the Death of an indeared Child.*

By sickening blasts assail'd, the budding rose
Its virgin blush to expectation's eye
Is oft forbidden fully to disclose,
And destin'd premature to fade and die:—
So Thomas early fell, my much-lov'd boy.

10. *To Mr. T. R. Smart, by Timid.*

To solve your enig,
I put on my wig,
That emblem of wisdom so vast;
To Crispin, I trow,
I hasten'd, when, lo!
The *first* thing I saw was the *last*.

11. *Ne Sutor ultra crepidam, by Mr. James Wood.*

Apelles once a picture drew,
And plac'd the same to public view:
A cobler bold, with face demure,
Must needs become a connoisseur.
Apelles cries, Well, cobler bold,
Tell me what fault you can behold.
The latchets, Sir, they are too few,
I'd place them better to a shoe.
Apelles, angry at what past,
Cries, Cobler keep unto your *last*,
Nor vainly try thus to amend
What you can never comprehend.

12. *The Simile, by Mr. Richard Worrell.*

Behold, vain man! thy transient moments glide,
Like empty bubbles sporting in the tide,
That raise their heads above the glassy wave,
But soon they mingle in one common grave:
Thou too shalt perish, when thy life is past;
Then live this hour as if it were the *last*.

Other separate and ingenious answers to the Prize Enigma were also given by the following Ladies and Gentlemen; viz. T. E. Abbott, Rd. Addison, Mrs. Amsden, Angelina, Anonymous, G. Badcock, J. Baines, T. Bell, B. Barlow, Mary Barlow, N. Barlow, S. Barlow, T. Barlow, S. Bates, R. Boulby, W. Becket, R. Bradley, B. Brooke, Brookbank, T. Brirton, Caroline Caines, F. Charlton, Clanculurius, R. Claye, Tho. Collins, A. Cook, T. Coulson, J. Davey, Dawes, Female Diarian, Geo. Dudket, M. Etty, T. Gill, J. Handford, J. Herdson, J. Hive, Cha. Holl, Maria Hoics, Hannah Jameson, Juvenis, Laura, W. Lincolne, T. Little, T. Luccock, T. H. Madge, Anna Lumley, Madgin, R. Maffett, T. Martin, H. Milburn, Mira, T. Nield, P. Ninnis, Wm. Oats, W. Putsey, T. Robinson, Maria Rose, C. S., J. E. Savage, J. Savige, J. Smith, W. D. Snooke, E. T., Jack Tar, Theunia, J. Thornton, R. Thorpe, Louisa Thorpe, S. Treeby, J. Tyson, Miss Vinale, J. Wilkinson, J. Winward, Zyab, &c.

GENERAL ANSWERS TO THE ENIGMAS.

1. *The Feeling Heart; by Mr. Richard Claye.*

What soothes the mind, with grief opprest,
And calms the tempest in the breast;
What bids the tongue of scandal rest?
A feeling heart. 6

What longs to drag from worldly strife,
Friend, husband, *bachelor*, or wife;
What gives to reputation, life?
A feeling heart. 1

What joys to rescue from distress
The hungry, sad, and *patten*less; 9
What round the *fire* delights to bless?
A feeling heart. 8

What gives to *fame* the humble lay, 7
And blunts the *thorns* that clog the way; 5
What cheers the *ball* on *new-year*'s day? 2, 3
A feeling heart.

Where'er on earth my lot is cast,
Tho' *fancy* pictures many a blast, 4
I hope to prize, while life will *last*, 10
A feeling heart.

2. *Content; by Miss M. A. Collins, Kensington.*

Content, thou source of human joys,
Religion's master-piece on earth,
Who dwell'st out of mid or strife or noise,
Or envious or malicious breath.

Thou summit of all human art, 4
Not form'd by *fame*'s precarious aid; 7
Come, Oh! come, thy joys impart,
Till Nature all her debt has paid.

Let *maidens balls* or routs pursue, 1, 2
Or listen to the winding *horn*; 5
Still none so pleasing are as you,
For thou'rt immortal, heaven-born.

Each *day* then let me *hear* thy voice, 3, 6
By holy whispers guide my soul;
Oh! ever let me be thy choice,
Till time and tide shall cease to roll.

With holy *fire* inspire my breast, 8
Be thou my pattern and my guide;
Then *shall* I breathe content my *last*, 9, 10
And in the realms of bliss reside.

3. *On May, address'd to Miss B.; by Mr. Tho. Collins.*

May returns, the face of nature
Wears an aspect cheerful, gay:
Come, lovely animating creature,
O'er the woodlands let us stray.

The lark soars high, with swelling note,
Superior to the clanging *horn*;
The thrush expands his little throat
And hails the *day*-returning morn.

Those strike the *ear* and rouse the sense; [the sight:
The *beauteous landscape* charms
Oh! could we e'er with this dispense
For artful mimic's vain delight.

No, lovely *maid*, views more sublime, [breast,
Are cherish'd in thy spotless
That *shall* not perish until time
Shall see eternity at rest.

Oh! thou, the loveliest flow'r of spring, [rose,
More blooming than the fairest
Surpassing all that *poets sing*,
Or wond'ring fame or *fortune* knows.

With thee in wedlock to be blest,
And warm'd by Hymen's holy *fire*,
Would make me happy to the last:
Oh! heaven, fulfil thou my desire.

4. *Cruel Sports disgrace the Nation; by a Female Diarian.*

'Tis hard, with true *poetic fire*,
To touch at all a tuneful lyre,
And join the strange discordant strings
That Lady Di this *new-year* brings.

A *ball* the *bachelor* may join,
But *pattens* ill with *fame* combine.
But, hark! what savage sounds are there,
That seem to rend the ambient air?

The harmless *horned* beast to bait,
While eyes and *ears* enjoy the treat;
Say, in the 19th century, can
Such deeds disgrace the name of man?

O! when will gracious Mercy deign
To free us from so foul a stain?
The cruel demon's reign be past,
And fell Oppression breathe his *last*?

5. *On the Year; by Mr. Wm. Oats, St. Just, in Penwith.*

The *new*-born *year* we hail with joyful sound, 3
(Tho' rigid winter spreads a gloom around,)
And *sympathetic* fancy charms the soul, 9
To view the varying seasons as they roll.

See now th' extended lawn in snow array'd;
Emblem of white-robed innocence display'd,
Whose native beauties from this earth will rise,
And shine refulgent 'yond the blazing skies.
Now lovely Spring unfolds each vernal grace,
By Nature's pencil drawn;—what *art* can trace! 4
The charming birds now in the *tuneful* grove 7
Attract the *ear* with innocence and love: 6
Faint emblem of the songs by seraphs given,
That sound triumphant thro' the vault of heaven.
Next glowing Summer comes, in fervent rays,
Warm'd with the *fire* of Sol's meridian blaze, 8
Whose mighty influence oft the brook detains,
And fades the verdure of the blooming plains.
Then rich luxurious Autumn spreads her train,
The great variety of fruit and grain:
'Tis now the produce of the fruitful vine,
For *Bacchus'* sons produce the much-*loved* wine. 1
Hark! how the silence of the tranquil morn
Is interrupted with the loud-toned *horn:* 5
See! how the huntsmen, with th' unkenneled hounds
Pursue their game with mighty leaps and bounds:
With rapid speed the victim pants for breath,
Till, seized at last, his eye-*ball* rolls in death. 2
Again stern Winter comes, with winged haste,
And so concludes the fleeting year at *last*. 10

6. *Ancient Love; by Mrs. E. R.*

Reclin'd on Marg'ry's aged breast,
Old Patrick thus his *flame* exprest;
My dear, (then sigh'd and cried
heigh ho!)
I love; but dare not tell you so.
Says Madge, our days are but a
span,
To sweet en life *should* be our plan;
Then cease to sigh and cry heigh
ho!
And if you love me, tell me so.

Pat took the hint, and nam'd the
day
To join love, honour, and obey;
So then they laugh'd and cried
heigh ho!
I love, and dare to tell you so.

Now, happy o'er their social *fire*,
With *horn* of ale and other cheer,
They crack their jokes, and cry
heigh ho!
I love, and dare to tell you so.

7. *Mrs. Richardson in London, to her Daughter in Hinderwell, Yorks.*

From Hilda's springs, my *dear*, my long-lost child, 6
Well *hast* thou drawn thy Robin's hapless fate; 10
Ev'n so relentless Death, with ravage wild,
Tore from thy mother's arms her dear-lov'd *mate*.
Long had his numbers graced Diaria's page;
Oft had he given departed worth to *fame;* 7
But not a friendly bard would e'er engage
To mourn his loss, or *celebrate* his name. 1
Ten *years* the Muse laid sorrowing in his tomb, 3
Fir'd by thy strains, *shall* now triumphant rise, 8, 2

Lift her weak wings, and pierce the sullen gloom,
To meet her tow'ring offspring in the skies.
And, 'ere ten moons have *fill'd their course* on high,
I'll drop a parting tear in mis'ry's urn;
To clasp thee to my aching heart I'll fly,
And never to the faithless world *return*.

Perhaps sweet peace may bless my closing *day*,
When safe immur'd in Hilda's happy bowers,
Where erst I tun'd my simple rural lay,
And living pleasure strew'd my way with flowers.

8. *The Early Primrose; by Miss Charlotte Caroline Richardson, Hinderwell.*

Ah! lovely primrose, tell me why
Thou thus darest tempt yon frowning sky
With thy untimely bloom;
And why so willingly unfold
Thy bosom to the bitter cold
That threats thy instant doom?
Was it some *warm* and kindly beam
Or didst thou, flowret, fondly dream
That fragrant breath of thine
Would soothe the furious winds to rest,
Or the rude tempest's angry breast
To pity would incline?

Alas! sweet flower, thy *day* is past;
Hark, from the north yon howling blast
Heeds not thy tender smile;
The driving *shower*, the cruel storm,
Will soon thy lovely charms deform,
And thy soft foliage spoil.
So my sad soul once hop'd to find
The world to gentle peace inclin'd,
Till *fate's* dire storm arose,
O'erthrew my joys, my pleasures quell'd,
With anxious cares this bosom fill'd,
And check'd its calm repose.

9. *To a Friend; by Mr. T. D. Sheridan, of Stafford.*

Upon this mossy seat reclin'd at ease,
Inhaling fragrance from the balmy breeze,
Where blooming cowslips, and the primrose pale,
And modest violets perfume the gale;
From Sow's green banks, beneath a shady tree,
These lines, dear friend, I dedicate to thee.
Oh! were you here, how would your bosom glow
To see this limpid stream meand'ring flow,
Thro' fertile meadows wind its devious way,
While sportive lambkins on its margin play,
The glow of genius would your *fancy fire*,
The youthful *year* would happiness inspire;
The freaks of *fortune*, and the echoing *horn*,
Would only move our laughter or our scorn.
The crazy *bachelor*, whose *ball* imparts
O'erflowing joy to female *ears* and hearts,
At *last* prepares the *pattens* for the fair,
And cautions them against the midnight air.
But what's his flimsy joy compar'd to ours,
In classic groves and academic bowers,

From Dia's page extracting various sweets,
And solving problems in our calm retreats:
These are the joys that soothe our anxious breast,
These are the sweet employments of the blest.

10. *Contemplation; by Mr. Rd. Worrell, Ranskill.*

The setting sun now gilds the western sky,
Staining the fleecy clouds with crimson dye;
He sinks serenely, glittering in the flood,
His lucid *fire* illumes yon lofty wood; 8
His *last* departing beams (divinely bright!) 10
Fill contemplative minds with pure delight.
At eve's approach I often trace the meads
From whence the slow meand'ring stream proceeds,
Where odorif'rous flow'rs perfume the vale,
And whispering Zephyr breathes a gentle gale.
In silent scenes, where placid Nature dwells,
My musing mind with secret rapture swells,
My wond'ring eyes survey'd the flow'ry plain,
Charm'd with the beauties in great Nature's chain:
I view'd the unshorn lambkins' antic skill, 5
Whose wanton *steps* attempt'd the lofty hill: 9
My rambling thoughts thro' scenes ideal rov'd,
Then drew the picture which I truly lov'd.
Should *man's few years* in smooth succession glide, 1, 3
And virtue be the sole directing guide,
And *fortune* bless us in this earthly *sphere*, 7, 2
And calm content in purest form appear, 6
We all must quit this transitory state,
And yield to heav'n's decree—the will of fate.
The charms of *fancy*, and the pomp of pow'r, 4
And beauty's pride, perhaps, may live an hour;
But soon such sublunary things decay,
Quick as imagination wings its way.
If I search th' earth, the page, the rolling wave,
I find life's but a journey to the grave.
When Death's cold hand enfeebles ev'ry limb
And ev'ry active nerve, and sense grows dim,
Then earthly ties and fond endearments cease,
This clay-built form shall rest in perfect peace.

Other ingenious answers to the enigmas were given by the following Ladies and Gentlemen; viz. Rd. Addison, John Baines, Teasdale Bell, Rob. Bowlby, B. Brooke, Caroline Caines, Ant. Cook, T. Coulson, John Davey, R. Froude, Lucy Grundy, John Herdson, James Hood, Tho. H. Mudge, Rob. Maffett, F. Martin, W. Milburn, R. J. Morgan, Tho. Nield, Paul Ninnis, W. Purssey, Alex. Raby, John E. Savage, J. Savige, John Smith, W. D. Snooke, Theana, Sam. Treby, John Tyson, R. W., J. Wilkinson, &c.

ANSWERS TO THE REBUSES AND CHARADES.

Rebuses.		*Charades.*	
1. Slaley.	3. Pattens.	1. Manage.	3. Rosebud.
2. Sheridan.	4. Sand.	2. Love-knot.	4. Tea-cup.

1. *By Mr. John Davey, of St. Just, in Penwith, Cornwall.*

At some distance from *Slaley*, a slattern did dwell,
(If 'tis true what I've heard Mr. *Sheridan* tell,)
Who to keep her shoes clean never *pattens* would wear,
Nor once *sand* her cottage throughout the whole year;
To *manage* things frugally ne'er was her end,
For a coat, shift, or *love-knot* she never would mend;
To 'tend her sweet *rosebuds* would often neglect,
And therefore fine *tea-cups* could never expect.

2. *The same, by Mr. R. Froude, and Mr. I. H. Parsons.*

The blooming nymphs of *Slaley* town,
Rose-water use, if fair or brown;
And some with *pattens* thro' the mud,
And some with *love-knots* red as blood,
Will from their mansion haste away,
For, on the *sands*, a holiday;
There *Sheridan*, perhaps, they'll meet,
And *rose-buds* make the whole complete.

3. *Address to Mr. Bell, of Slaley, by Mr. John Herdson, London.*

To *Slaley*, dear Bell, you entice me to love,
To see your sweet nymphs *and* to offer my love;
So when I arrive I shall wait upon you,
And make you my friend and companion too;
But the *Rose* of your villa, just now *budding* forth,
Shall claim my attention, sweet damsel of worth;
And, if I should *manage* to make her my prize,
The *love-knot*, the *tea-cup*, and *pattens* likewise,
Shall be at her service: but mark, my dear friend,
We first will be married, and you shall attend.

4. *Address to Lady Di, by Mr. Tho. H. Madge, Plymouth.*

Dear Di, I hope you'll not refuse,
Nor rashly check my youthful muse,
Tho' not like *Sheridan* or Bell,
Who oft in Dia's page excel;
Yet emulation warms my breast,
When musing o'er that welcome guest,
That in stern winter, 'mid bleak winds,
Appears to cheer and warm our minds.
O lovely fair one, what divine
And heavenly radiance in the shine!
Thy rebuses attract the heart,
As *pattens*, *sand*, and *Slaley* smart;
Thy charades also fix our thoughts
On *rose-buds*, *tea-cups*, and *love-knots*.

What though no *mansion* I possess,
I always will my love confess
To Di, where I give my lays,
And who deserves my warmest praise.

5. *The same, by Mr. John Savige, of Greenshorton.*

May *Slaley's* bard's harmonious song,
Like *Sheridan's*, amuse us long;
Or Herdson's, who a *patten* sends,
To entertain his female friends;
Or Virtet, who the *sandy* shore,
For *shells* to treat them, does explore.
Ah! could I manage to disclose
What they in mystic dress propose,
On *lovelocks* or on *rose-bud* made,
Or lover hid in deepest shade.

6. *To Madam Diana, by Mr. John Smith, Alton Park.*

Again, dear Di, thy votary tries
To free thy puzales from disguise;
To *manage* which is hard;
Yet *Sheridan*, with piercing view,
Their mystic veils would soon see thro',
So too would *Slaley's* bard.
These, and some others of thy band,
Can well depict the countless *sand*,
Or paint the *rose-bud* gay;
Show how in *pattens* Patty trips,
How *tea-cups* kiss her cherry lips,
Or *love-knots* fine pourtray.

Ingenious answers were also given by the following Ladies and Gentlemen; viz. Anonymous, T. Bell, B. Brooke, Caroline Caines, Rd. Savage, Ju. Hood, R. Maffett, W. Milburn, T. Nield, R. I. Morgan, P. Ninnis, Wm. Oats, W. Purssey, A. Ruby, J. E. Savage, D. T. Sheridan, W. D. Snooke, Theana, S. Treby, J. Tyson, J. Wilkinson, &c.

ANSWERS TO THE QUERIES.

QUERY I. *answered by Mr. Wm. Makinson, Manchester.*

All oxides are heavier than the metal which produces them, because oxygen, by whose union with the metal the oxid is effected, is heavier than atmospheric air. The increase of weight is so great in some bodies, that, in the instance of the formation of red lead, 20 cwt. of lead will give 22 cwt. of that oxide: so that 2 cwt. of oxygen are absorbed from the atmosphere during the process. By making iron red hot, and passing over it a continued stream of aqueous vapour, the metal receives an increase of weight of near 30 per cent. arising from its decomposing the water and imbibing its oxygen.

The same answered, by Mr. W. D. Snooke, Woolbridge.

Metals become oxides by their combination with oxygen, and are, of course, as much heavier as the weight of the oxygen imbibed.

Thus, 10lb. of lead, in its oxidation, imbibes 1lb. of oxygen, and consequently the whole oxide weighs 11lb.; but, though the oxide is thus absolutely, it is not specifically, heavier than the metal.

QUERY II. *answered by Mr. John Baines, jun. mathematical master of the Mathematical School, Reading.*

It appears, by the hygrometer, that substances dilate or contract when the atmosphere becomes humid or dry, and that these dilatations and contractions take place alternately as the weather changes from one to the other. The hairs and sinews of animals exhibit this as well as corns, which thus expand with the imbibed humidity of the atmosphere, even before indication by the other senses.

The same, by Mr. W. D. Snooke.

Any change in the atmosphere produces also a change in the animal frame: hence, corns, wounds, sprains, &c. being affected by them, usually occasion pain; consequently the shooting of corns, as well as the variations in the barometer and thermometer, are the effects of an alteration which has taken place in the atmosphere: so that, these being perceived before any obvious change in the weather, they are considered as indications of such a change.

QUERY III. *answered by Mr. Wm. Mackinson.*

As it respects the formation of butter; milk is divided into two substances, one consisting of butter, the other of whey; and churning is only a violent motion, by which the former is coagulated and separated from the latter. This process is facilitated by an admixture of warm water, for its caloric unites with the hydrogen of the milk, and carries part of it off in hydrogen gas; while the oxygen, the other component part of water, unites with the remaining milk, and by its acidity separates the butyrous matter from the serous.

Mr. D. T. Snooke says,

The application of heat to the water tends towards its decomposition; whence the oxygen of the water readily combines with the oil of the cream, and thus the formation of butter is facilitated. If, instead of warm water, a moderate heat be communicated to the cream, in the open air, a like result would take place, and the butter obtained by this method be preferable to the other: and hence the propriety in the practice of placing the churn near the fire during the operation.

QUERY IV. *answered by Mr. F. Martin, Birmingham.*

My opinion on the subject of this query, however erroneous it may be, is, that it proceeds from appearance more than from reality.

The same, by Mr. Paul Ninnis, St. Agnes, Cornwall.

White hairs appear more conspicuous among black than any other colour; so that, according to my notion of the word grey, it cannot possibly be composed of any other colours than black and white.

Thus ingenious answers to the queries were given by Messrs. John Baines, J. Crowther, Wm. Makinson, F. Martin, Paul Ninnis, W. Pursey, W. D. Snooke, Joseph Williams, &c.

NEW ENIGMAS.

I. ENIGMA (982), *by Mr. Teasdale Bell, of Sluley.*

My master sought me in the shady grove,
Where sylvan songsters chaunt their tales of love;
When found, convey'd me to his snug retreat,
Improved my form, and made me quite complete.
This done, behold how lovingly we roam
O'er hills and dales, and journey far from home;
See me, with glee, my airy gambols play,
And sport and frisk along the devious way.
I hop before, where I a space remain,
Till he o'ertakes, then off I hop again.
'Tis in my worth my master does confide;
I'm his defendor, advocate, and guide.
If thro' some public place you chance to stray,
Whole groups of us you'll meet upon the way;
Some tall young striplings, comely to the sight;
Others uncouth, devoid of beauty quite;
Yet true it is—with what wild phrenzy fir'd!—
This is the species that is most admir'd.
But hold, I've said enough to tell my name,
So next year place me in the list of fame.

II. ENIGMA (983), *by Mr. Tho. Coulson, East-Gate.*

Frown not, dear ladies, should I try
To elude for once your piercing eye.
No matter when, nor how, nor where,
I first was born and breath'd the air;
Like you, from mother earth I came,
And crafty man gave me a name.
I'm such an envious puny elf,
I scarcely can describe myself.
When fair Aurora gilds the skies,
I wink with both my squallid eyes;
When Phœbus reigns, I soon grow pale,
My power does in an instant fail!
But see the wondrous change of fate,
On silver plac'd, on kings I wait:
In station high, with quick advance,
I join with you the sprightly dance;
Or should you unto court repair,
You'll find me grace the ball-room there:
My uses such, the learned say,
I show to erring man his way;
And should the wand'ring sceptic stray,
Thro' mazes dire I mark the way;
I aid the philosophic sight,
And bring the darkest things to light.
Ye bards, who shine in lists of fame,
Record my worth and tell my name.

III. ENIGMA (984), *by a Female Diarian.*

Severe and harsh, I come with frowning face,
Hopes long indulg'd and pleasing dreams to chace;
In various ways I poignant sorrows bring,
Distress the subject, and afflict the king;

From rosy lips I dash the cup of joy,
And all their visionary schemes destroy.
O'er youth and age, a despot like, I reign,
And often give the gentle bosom pain;
Nor those who sail thro' life's meridian day
Exemption find from my tyrannic sway.
But why thus brand me with a tyrant's name?
Look at my end, and see if I'm to blame.
For beauteous Rachel long had Jacob strove,
And thought secure the object of his love;
Just when his hopes seem'd crown'd, his wish possess'd,
I rose to agitate his troubled breast,
With poignant grief his faithful bosom wrung,
And sad complainings dwelt upon his tongue.
Yet think not, fair ones, that I'm never good;
I'm sometimes kind, when rightly understood:
Nay, often to the virtuous and the wise
I prove a real blessing in disguise.
Involv'd in clouds, that beam no cheering ray,
I prove to future happiness the key;
And some there are who, to their joy, have found
I've been with great and lasting blessings crown'd.

IV. ENIGMA (985), *by Forrester, Chorley.*

Say not, fair maids, when Winter's midnight gloom
Obscures the shining lamps of heaven's high dome,
Or beauteous bright, in mazy orbits flow,
Diffuse mild radiance on this world below,
Should I, afar, your wand'ring eye detain,
Near upland mountain or the lowland plain,
Where restless ghosts from haunted shades advance,
Or blue-eyed fairies to the night-bird dance,
That I'm by fate charg'd with vindictive ire
When my fair womb glows with devouring fire;
From fifty mouths volcanic smoke ascends,
Quick light'ning darts far as the eye extends,
And the last remnants of the dead consume,
Of such as may receive the dreadful doom.
But should, perchance, at noon-day I be seen,
Remote, alone, meand'ring o'er the green,
Then might you judge, with more prophetic skill,
That I'm the herald of some baleful ill;—
Some earthquake dire or deluge near at hand,
Omniscient vengeance on some guilty land;
Or fierce Bellona, in her blood-stain'd car,
Rushing with frenzy to fresh scenes of war,
With crimson hand to lash th' ensanguin'd steed,
While harpies fell and furies urge her speed;
Some mighty monarch tumbled from his throne,
Or "gasping nature's last tremendous groan!"
No, beauteous nymphs! believe no fabled wiles,
I calm your terror and command your smiles;

Yes, ye in whom celestial graces charm,
Sent to protect you by a pow'rful arm.—
Of matter form'd; tho' young, in beauty's prime,
Of age coeval with the wheels of time;
My fairer part in yon large orb is found,
And darker limb in dungeons under ground:
Still to enlighten the enlighten'd race,
Launch'd by my maker into ærial space;
Guide the lone trav'ller down the mountain's steep,
Point the glad mariner on the "vasty deep;"
Above, below, around, both wide and far,
I vie with Luna and the polar star.
I have a younger brother on the earth,
Who from conspiring elements took his birth,
And, while I range the hills and vallies wide,
Takes his fix'd station as some servile guide,
Who oft befriends the foes of social weal,
And sure directs the vile assassin's steel!
Such deeds avaunt! such kindred I disown,
While woo'd and priz'd by you, and you alone.

V. ENIGMA (986), *by Mr. Henry Lee, formerly of Bingham.*

Let others seek a surreptitious name,
Prop a weak cause, or bolster up their fame
I need it not: when statesmen justly deal,
They rest on me—the constitution's weal!
The crown—the monarch—on this basis placed,
I form the body-guard, with trappings grac'd!
Let History, with her thousand tongues relate
Eastern magnificence, its pomp, and state,
Where bloated despots, on a gore-dy'd throne,
Proudly conceit the subject world their own;
Thro' deluges of blood they reckless haste,
And lay whole provinces in desert waste;
Nor would their profligacy end e'en here,
But nature stops them in their mad career:
Man's strength is finite, and this truth they gain,
Exhausted power relies on me in vain.
Not so the monarch, where the people's voice
On him reverberates the nation's choice;
Who, only proud when proudly great he reigns,
And every subject's happiness maintains,
On me reposing, his best comfort finds,
Tranquillity unknown to guilty minds.
In times of danger men court me the less,
Tho', seamen-like, I'm subject to the press.
When beat, I shrunk, and never fled the coast;
I rose again—was ready at my post.
Let naturalists my name and species trace,
By some affix'd on quadrupedal base:
But doctors differ—terms may change or meet,
One thinks my head what t'other calls my feet!

It matters not, or whether feet or head,
Or both, or neither, stand in case or stead;
It boots not if etherial or terrestrial,
Doctors may call me, if they please, celestial!
E'en man and wife, like doctors, disagree—
Their broils, alas! are oft referr'd to me;
Impressious change as this or that divides,
I vary with them as they each change sides.
But haste we now to where loud billows rise,
And seas tempestuous dash the clouded skies:
Can it be thought that I, a foe to strife,
Acknowledged comforter of humble life,
And who in courts could tranquil ease maintain,
Should yet be found within the stormy main?
Yet, so it is; nay, nearer home repair,
Search well old father Thames—you'll find me there.
Again we'll range: behold th' ensanguin'd plain,
Where Victory hovers o'er her heaps of slain;
There too I'm found—at least, so bards declare—
The pamper'd sons of honour find me there.
The proverb says, that, since the world begun,
Mankind find nothing new beneath the sun?
Hence my great progeny, by human aid,
Are oft found old, e'en when they're newly made.
Write then, ye fair! for, should your fancy doze,
My genial influence helps you to compose:
Read and digest—at length, my name declare,
For happy lovers all my blessings share!

VI. ENIGMA (987), *by Mr. Jas. Wm. Puckle.*

To form me lovely Nature took delight,
And cloth'd me in a robe of spotless white;
Gay pass'd my hours, in fields and fragrant air,
And oft my bathing in the water fair.
My form is tall, and slender is my waist,
And, to adorn me, I'm with fringes grac'd;
Happy to-day, and thoughtless of to-morrow,
Till cruel man admir'd me, to my sorrow;
He tore me from my tender mother's side,
Strip'd off my skin and all my early pride,
My head he lopp'd, and shorten'd me at foot,
And tore my marrow out, in strange pursuit;
Then, like a magpye serv'd, my tongue he slit,
And certainly by that improv'd my wit.
I prattle without speech, and oft disguise
The honest truth by telling shameful lies.
My master can from me no secret hide—
I plainly see his arts, his silly pride,
And, in revenge for all my wrongs, expose
His greatest follies to his greatest foes.
All languages alike I can command,
Yet not one single sentence understand.
Without my aid, the wise and grave divine,
Or learned lawyer, would not know a line:
Nay, man, although my master, is my slave;
I often give command to kill or save.
But now adieu; while I my case relate,
I hurt myself, and hasten on my fate.

VII. Enigma (988), *by Mrs. E. Richardson.*

Fair Emma rose at early dawn,
Wak'd by the voice of love,
And tripp'd across the flow'ry lawn,
To view the spreading grove:
An infant-crow, with fall astound,
Her tender bosom wrings,
While, gasping on the dewy ground,
It flaps its feeble wings.

"The orphan-linnet, widow-dove,
Demand affection kind,
(Dear objects of pathetic love;)
But interest lurks behind:
The linnet's song, the pigeon pie,
Ensure a sweet reward;
But thou, poor fated bird, may die,
Unblest with fond regard."

Soft pity all her soul possest,
And sorrow fill'd her eyes;
She snatch'd the sufferer to her breast,
And homeward bore the prize:
Reviv'd and nourish'd by her care,
He rear'd his pinions high;
Joyful, she saw him float in air,
And lost him in the sky.

Transcendant fair, thy choice is made,
Thy lot is with the blest;
I lead to joys that never fade,
Go, enter into rest.
Thy happy soul, with balance even,
Shall signs celestial bear,
Unlock the mystic gates of heav'n,
And find her treasure there.

VIII. Enigma (989), *by Serena.*

In a gentleman's family liv'd a cook-maid;
The footman admir'd her, and sought the kind aid
Of pen, ink, and paper, his mind to reveal,
And hop'd that the wound in his heart she would heal,
And at Hymen's blest altar his happiness seal.
The damsel prov'd kind, and she wish'd to impart
The tender emotions that rose in her heart;
But how to effect it now puzzled her quite,
She could read his fond strains, but, alas! could not write:
Yet love will a thousand devices invent—
So, wrapt in a small bit of paper, she sent
What her kitchen produc'd, and an emblem might prove
Of what she much wish'd might result from their love.
The swain took the hint: ye wits, pray discover
What the damsel made use of to send to her lover.

IX. Enigma (990), *by Mr. D. T. Sheridan, of Stafford.*

The wily politician's selfish schemes,
The moon-struck prophet's visionary dreams,
The lover's lunacy, the coxcomb's cant,
The self-created preacher's mystic rant,
Dissolve to air; while thus my hero tells
His artless story to the listening belles.
I had no place in Eden's blissful bowers,
Nor ever breath'd the fragrance of its flowers;
From later times my humble birth I date,
When arts and commerce civilised the state.
Among the ornamental class I stand,
Adorn'd with all the trappings of command.

Unto the fair one's fascinating face,
I add the charms of elegance and grace;
The easy motion and the graceful mien,
That to be lov'd needs only to be seen.
Those juvenile sensations I impart,
That cheer the mind and elevate the heart;
Confer amusement, appetite, and health,
And various needs superior to wealth:
Yet Esculapius, anxious for his fee,
In his prescriptions never mentions me!
The Lunar motions, 'mid the stellar host,
More regularity than mine can boast:
In central and eccentric orbs I glide,
Describe Hyperbolas, and Euclid's pride;
In horizontal lines perform my part,
And please all eyes with my surprising art.
Around my orb see secondaries move,
Like sparkling planets in the realms above,
Partake my motions, imitate my ways,
And gain the plaudits of maternal praise.
Some virtuosos say they heard me speak
Italian, English, Arabic, and Greek!
And some aver that they have heard me sing,
Sweet as the sylvan songsters of the spring!—
That I produce harmonious sounds, is true,
And, like Amphion, built a mansion too;
But as to emulate the blackbird's strain,
Were an attempt impertinent as vain!
Kings, queens, fair princesses, and lords likewise,
And smirking courtiers, in their dark disguise,
At various seasons grac'd my throng'd levee,
And owe their easy elegance to me.
Among the ancients, as some sage indites,
I taught th' initiated sacred rites:
Though all the pious brethren of this isle
Conceive my precepts would their race defile;
And gravely tell you, from the sacred word,
That I'm a detestation to the Lord!
But from such partial judges I appeal,
To well-bred belles, who my importance feel.
On Gaul's gay viny hills, and vernal vales,
Where mirth and music swell the balmy gales,
I most abound;—congenial to my mind
Is that sweet rural bliss which there we find.
Among the gay, the gayest I appear,
And crown the blessings of the smiling year.

X. Or PRIZE ENIGMA (991), *by Mr. W. Hannaford, of Totnes.*

[*Whoever answers it before Feb.* 1, *has two chances for eight Diaries.*]

Heav'n-born, and near related to the plain,
I come, ye fair, your kind regards to gain;

When your soft bosom heaves th' impressive sigh,
And the big tear hangs pendant in the eye;
'Tis not myself—my emblem 'tis you see;
As much alike as any two can be.
Wide is my empire, boundless my domain;
I kiss the uplands, and embrace the plain.
What time the cock awakes th' labouring swain,
And warns the milk-maid to the fields again,
With laugh and song they pass my beauties by,
Nor note my virtues, nor my worth descry.
Thus, heedless youth the path of science flies,
To catch at bubbles as the vapours rise.
The violet, lily, pink, and blushing rose,
Perfume my bed,—on these I take repose.
The wanton zephyr often woos my charms;
But his rude touch my chastity alarms:
I fly th' embrace,—to earth my form consign;
Then, phœnix-like, I rise again and shine.
A pow'r there is, that mortal strength defies,
That works unseen, and takes me by surprise:
'Twere vain to plead, where Mercy has no ears,
Though I, like Niobe, dissolve in tears.
When the gay morn awakes the lark to sing,
Love swells his breast and flutters on his wing;
The smiling hills rejoice in humid show'rs,
And the rich glebe its grateful incense pours:
Then I appear, in shining vestments gay;
A splendid scene;—but short, ah! short's my stay:
A little hour, perchance, and I'm no more;
But time will soon my wonted charms restore.
The morning breaks, and I again appear,
With countless numbers in my front and rear:
I represent, in miniature, the spheres,
I nurse your hopes, alleviate your fears;
Like the pale moon, I shine in borrow'd light,
For I'm the offspring of the shades of night.
Name me, ye fair;—define this mystic tale,
And I'll to-morrow greet you in the vale.

NEW REBUSES, CHARADES, AND QUERIES.

I. REBUS; *by Camilla.*

If the name of a wine
With yourself you combine,
And a partnership place in the rear;
You'll an ornament view,
Which, if taste you pursue,
At the front of your house will appear.

II. REBUS; *by Clancularius.*

A Trojan leader brave and bold;
A Latin poet fam'd of old;
A hill most sacred to the nine;
The place where all the blest recline;
Join th' initials.—I from heaven
To frail humanity was given;
A friend when sad afflictions low'r,
In dire adversity's dark hour.

III. REBUS; *by Mr. John Herdson.*

A weight, and half a league subjoin'd,
Will quickly bring to view
What's in a windy cave confin'd,
And yet a rambler, too.

IV. REBUS; *by Mr. Wm. Oats.*

An emblem of beauty; an elegant stone;
What oft gives us warning; a Muse next make known;
Add a Greek tragic poet; then th' initials unite,
And a term you'll discover in which we delight.

I. CHARADE; *by Aurora.*

My first's an appendage of high birth and state,
And follows most closely the steps of the great;
My next, though but small, if its merits you scan,
For prudence and foresight's a lesson to man;
My whole is most pompous, and makes a great glare
For wisdom to smile at, and folly to stare.

II. CHARADE; *by Mr. Richard Claye.*

My second doth my first contain,
Yet lawyers clearly will explain
My second in my first is bound,
And both within my whole are found.

III. CHARADE; *by Mr. James Hood.*

With shepherd lads my first is seen;
My second gambols on the green;
My whole's a bard of Dia's page,
The pride and glory of this age.

IV. CHARADE; *by Tasso.*

To court with my first lawyers oftentimes walk;
And why?—from my mouth they're enabled to talk:
My next, form'd by man, and design'd for deceit;
The ladies now use, in their turn, as a cheat.
My whole oft at levees with nobles hath been,
And, courtier-like, bowed to the king and the queen:
Yet, if with a bishop was seen more than half,
How the courtiers would stare, and the Prince Regent laugh.

I. QUERY; *by Mr. John Herdson.*

If a tea-cup be inverted upon a saucer nearly half-full of water, in a few minutes all the water will go under the cup: required the reason.

II. QUERY; *by Mr. Wm. Makinson.*

It is a curious fact that inanimate substances have a tendency to become of the temperature of the surrounding medium, but man and other animals retain their heat in intense cold. How is this accounted for?

III. QUERY; *by Mr. F. Martin.*

Which, of all common vices, has the least grounds for a plea in its behalf?

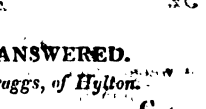
IV. QUERY; *by Mr. W. Putsey.*

What female accomplishment is the most amiable; and how is it to be obtained?

MATHEMATICAL QUESTIONS ANSWERED.

I. Question, *answered by Mr. John Craggs, of Hylton.*

The sum of the proportional numbers 4+2+1=7; then 180°÷7=25° 42′ 6/7=∠A, its sine ·43388376; the double 51° 25′ 5/7=∠B, its sine ·7818343; the double again 102° 51′ 3/7=∠C, its sine ·97437944; the sum of which sines is 2·1900975. Then, as 2·1900975 : 400 :: ·4338376 : 79·247=BC :: ·7818343 : 142·79=AC :: ·97437944 : 177·96=AB; the three sides of the triangle.



The same, by Mr. Alfred Fox, of Falmouth.

The angles are easily found to be as follows, viz. ∠A=1/7 of 180°=25° 5/7, ∠B=2/7 of 180=51° 3/7, ∠C=102° 6/7. Then, from Hutton's Course, vol. 3, ch. 3. ex. 4, we deduce the following proportion; as sin. A+sin. B+sin. C : 400 :: sin. A : sin. B : sin. C ∝ 78·23 : 142·76 : 278·01, the distances between the three trees.

The same, by Mr. W. G. Horner, of Bath.

The angles are 1/7, 2/7, and 4/7 of 180°, or 25° 42′ 6/7, 51° 25′ 5/7, and 102° 51′ 3/7, the nat. sines of which are =·4338838x, ·7818315x, and ·97492791x; the sum of which is 2·1906432x=400; theref. x=400÷2·1906432, and the three sides 79·225, 142·758, 178·017 yards, nearly.

N.B. This is ex. 14, Analyt. Plane Trig. Hutton's Course, vol. 3.

Schol. Let s = sine of the smallest ∠A; then the sine of the largest ∠A, will be $(4s-8s^3)\sqrt{1-s}$, and that of its supplement 3A is $3s-4s^3$. These must be equal, and, by making them so, we arrive at the equation $s^6-\frac{7}{4}s^4+\frac{7}{8}s^2-\frac{7}{64}=0$, the three positive roots of which are the sines of the three angles.

The same, by Mr. John Smith, of Alten Park.

Since the three angles together contain 180°, it will be, 1+2+4=7 : 180 :: 1 : 25° 42′ 6/7=∠A :: 2 : 51° 25′ 5/7=∠B :: 4 : 102° 51′ 3/7=∠C. Then sin. A+sin. B+sin. C : BC+AC+AB=400 :: sin. A : BC=77·225 :: sin. B : AC=142·758 :: sin. A : AB=178·017.

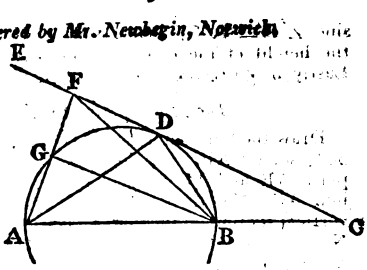
After a scientific solution by Mr. A. Glendenning, he adds, For a neat synthetical solution, and an easy mode of calculation deduced from it, see the Mathematician, quest. 44.

Other ingenious solutions were given by Messrs. John Abram, R. J. Amber, H. Atkinson, Wm. Bagshaw, J. Baines, Sam. Bawden, Tees. Bell, Wm. Bircham, J. Blackwell, Wm. Burdon, John Butterworth, Tho. Chapman, John Charlton, Tho. Charlton, John Collins, Tho. Collins, Ant. Cook, J. Crowther, John Curwin, Geo. Dalton, John Darby, John Darcy, Jas. Dawe, Geo. Dicket, A. Fox, J. Furness, T. H., Chs. Holt, H. Hubert, Susan Jackson, S. Jones, Mat. Lamplugh, R. Maffett, Wm. Makinson, T. Martin, P. Mason, Hen. Milburn, Tho. Mundell, Jas. Newbegin, Edw. Page, A. Pilot, Chs. Pritty, W. Pursey, Wm. Putsey, Alex. Raby, Edw. Riddle, W. S., J. T. Sheridan, Tho. Smith, W. D. Snooke, W. Swinburn, John Taylor, Chs. Thompson, Sam. Treby, W. Truman, Mary Weston, John Whitley, Jos. Williams, John Wills, Wm. Wiseman, Jas. Wood, &c.

II. Quest. was by mistake inserted over again, after having been answered the former year

III. Quest. *answered by Mr. Newbegin, Norwich.*

In CE take CD = $\sqrt{}$ AC. CB, a mean proportional between CA and CB; then will CD be a tangent to the circle drawn through the three points A, B, D (cor. to theor. 61 Hutton's geom.). Draw AD, BD; then the ∠ ADB is the greatest that can be subtended by AB, when D falls on CE.—For, take any other point F in CE; and draw AF, BG, BF. Now the exterior ∠ AGB (of the triangle BGF) = ∠ ADB in the same segment (geom. theor. 50) is greater than the interior ∠ AFB (geom. theor. 8). And the same may be proved of any other point in CE. Therefore ADB is the greatest angle that can be subtended by AB when D falls in CE.



The same, by Miss Mary Weston, near Gainsborough.

Let AC be the given line, and CE another, making a given angle with it; also B the given point in AC. Then, by prop. 43 Simps. Algeb. describe the circle ADB, touching CE in D; and from the point of contact D, draw the lines DA, DB; then will the ∠ ADB be the greatest possible.—For, from any other point F, in the line CD, draw the lines FA, FB; as also from the point G where FA cuts the circle, draw GB. Then the ∠ AGB, being external with regard to the triangle BGF, will be greater than the ∠ AFB. Theref. ADB, on the same segment with AGB, will be also greater than AFB. Consequently ∠ ADB is the greatest possible.

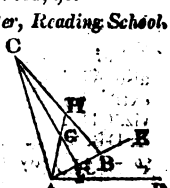
The same, by Mr. John Walls, Kentish Town.

Let AC be the given line divided in the point B. By prob. 42 Simpson's geom. describe the circle ABD through the two given points A, B, and touching the line CE given by position, in the point D, which will be the point required.—For, if any other two lines be drawn, either above or below that point, the angle will fall without the circle, and will of course be less than the angle which falls in the circle.

Much in the same manner was the solution given by Messrs. Abram, Ambler, Atkinson, Bagshaw, Baines, Bell, Burdon, Butterworth, Chapman, Charlton, J. Collins, T. Collins, Cook, Craggs, Crowther, Curnin, Darby, Davey, Dolchen, Ducket, Fox, Furnass, Glendenning, T. H., Holt, Horner, Hubert, Jackson, Jones, Lamplugh, Maffett, Makinson, Mason, Milburn, Mundell, Page, Pritty, Purssey, Putsey, Riddle, W. S., Sheridan, J. Smith, T. Smith, Snooke, Swinburn, Taylor, Thompson, Treby, Truman, Whitley, Williams, Wiseman, Wood, &c.

IV. Quest. *ans. by Mr. John Baines, Math. Master, Reading School.*

Let ABE represent the inclined plane, ABC the cone, its axis CF, AGH perp. to the horizon AD; then H is the highest point on the side where a weight may be laid without oversetting the cone; G is the centre of gravity, FC = 4FG, AF = FB = 3, the ∠ BAD = 30° = ∠ G, ∠ BAH = 60°. Then, by trigon. FG = $3\sqrt{3}$, CF = 4FG = $12\sqrt{3}$. In the △ CBF are given CF and BF, to find the



sine $\angle B = \frac{5}{14}\sqrt{3}$; hence sine $\angle H = \frac{5}{14}\sqrt{3}$; theref. $AH = 8\frac{2}{5}$, the height of the highest point where the weight can be placed. Lastly, $6^2 \times 12\sqrt{3} \times .2618 = 195.89$ is the solidity of the cone.

The same, by Mr. Anthony Cook, of Wooley.

Draw the horizontal line AD, and the inclined plane AE elevated 30°; set off AB = C, the cone's base, which bisect in F; erect FC perp. AB and AG perp. AD meeting FC in G, make FC = 4FG, join AC, BC; then will G be the centre of gravity, and ABC a vertical section of the cone (see prop. 38, vol. 2, Hutton's Course.)—Now the $\angle AGF = BAD = 30°$, theref. $AG = 2AF = 6$, and $FG = AF\sqrt{3} = 3\sqrt{3}$, hence $FC = 12\sqrt{3}$, and the solidity $AB^2 \times \frac{1}{3}$ FC × .7854 = 195.89.—Also, if AG be produced to meet the slant side in H, it is obvious that H will be the highest point where a weight can be placed without overturning the cone.

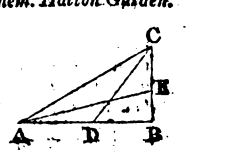
The same, by Mr. A. Glendenning, North Yarmouth.

Let AB be the inclined plane, making with the horizon the $\angle BAD = 30°$; having made AB = 6 feet, let CF be perp. to and bisect AB in F, and intersect AH, drawn perp. to AD in G; make GC = 3GF, and FC is the altitude of the required cone.—For G is the centre of gravity of the cone by constr. and Dr. Hutton's Dictionary under Centre: and, since AH is perp. to the horizon, and passes through that centre, the body is supported (Machan. prop. 38 course, vol. 2): and, because the base AB and inclination BAD are constant, and the cone is merely supported, it is consequently the greatest which can be constituted on that base under those limitations.—It is further obvious that the point H, at which AG produced meets BC, is the highest point at which a weight may be placed without overturning the cone. For, were the weight placed higher than H, the common centre of gravity of that and the cone would not be supported.

Calcul. In the right-angled △AFG, AF is given = 3 feet, and the $\angle GAF = 60°$, to find FG = $3\sqrt{3}$, theref. FC = $12\sqrt{3}$, and the solidity $6^2 \times .7854 \times 4\sqrt{3} = .7854 \times 144\sqrt{3} = 195.89$ &c.

Ingenious solutions were also given by Messrs. Abram, Atkinson, Bagshaw, Bowden, Bell, Burden, Butterworth, Chapman, F. G. and T. Charlton, J. and T. Collins, Craggs, Crowther, Curnick, Dalton, Darby, Davey, Dawe, Dotchen, Ducket, Fox, Furnass, Holt, Horner, Susan Jackson, Jones, Lamplugh, Maffett, Makinson, Mason, Milburn, Page, Pritty, Purssey, Pulsey, Ruby, Riddle, W. S. Sheridan, Smith, Snooke, Swinburn, Taylor, Thompson, Treby, Truman, Mary Weston, Whitley, Williams, Wills, Wiseman, Wood, &c.

V. QUEST. *ans. by Mr. John Collins, Teach. of Mathem. Hatton Garden.*



Let AB and BC be the shadow and the pole; also AE and CE the given lines drawn from the extremity of each to the middle of the other, viz. CD = 2o = *a* and 4E = 36 = *b*; put *x* = AD = DB, or 2*x* = AB; then $BC^2 = a^2 - x^2 = 4(b^2 - 4x^2)$ by theor. 34 Hutton's Geom.; this

equation reduced gives $x = \sqrt{\frac{1b^2 - a^2}{15}} = 4\sqrt{\frac{299}{15}} = 17.8587$, or AB $= 35.7174$; hence $BC = \sqrt{(CD^2 - DB^2)} = 9.0037$, the height of pole. Now, in the triangle ABC, are given AB and BC, to find the $\angle A = 14° 3' 55''$ the sun's apparent altitude; which corrected by allowance for semidiameter, refraction, and parallax, gives 13° 49' 36", its true altitude. Then we have two sides of a spheric triangle given, and an angle opposite to one of them, to find the 3d side, which (by prop. 25, pa. 167, Dr. Hutton's Tables, 5th edit.) is 103° 17' 35"; and hence the declination is 13° 17' 35", answering to Feb. 14, and Oct. 29, 1814.

The same, ans. by Mr. A. Glendenning, North Yarmouth.

Let AD = DB be $= x$, and BE = EC $= y$. Then $4x^2 + y^2 = 36^2$, and $x^2 + 4y^2 = 20^2$; hence $x = 4\sqrt{\frac{299}{15}}$, and $y = 4\sqrt{\frac{11}{15}}$; theref. AB : BC :: radius : $\sqrt{\frac{1}{299}}$, the tangent of $\angle A = 14° 8' 51''$, the sun's altitude at the time of observation. Then, in an obliqne-angled spherical triangle, we have two sides and an angle opposite to one of them, viz. the complement of the latitnde, the complement of the sun's altitude, and the time from noon, to find the sun's polar distance $= 102° 59' 36''$; hence his declination was 12° 59' 16" south, corresponding to Feb. 15, and Oct. 28, 1814.

The same, by Mr. Jos. Williams, Schoolmaster, Cardiff.

Here is given AE = 3C, and CD = 20. Then, by theor. 37 Dr. Hutton's Geom. $\frac{1}{3}(AE^2 - CD^2) + CB^2 = AB^2 = (\text{per fig.}) AC^2 - CB^2$; and by theor. 38, ... $2CD^2 + \frac{1}{2}AB^2 = AC^2 + CB^2$; hence by subtraction we have . . . $2CD^2 - \frac{1}{3}AB^2 = 2CB^2$, which by substit. for AB^2, its equal, viz. $\frac{4}{3}(AE^2 - CD^2) + CB^2$, it gives $BC = 2\sqrt{\frac{4CD^2 - AE^2}{15}} = 9.0037$, the perpendicular EC, and $AB = 2\sqrt{\frac{4AE^2 - CD^2}{15}} = 35.7034$, the base AB.

Then 35.7034 : 9.0037 :: radius : tang. 14° 9' of the sun's altitude; Hence, in the spheric triangle ZSP, we have given

the coalt. SZ = 75° 51'
the colat. ZP = 38 20
the hour $\angle$ SPZ = 45 58

to find SP = 102° 57' the polar distance or 12° 57' south declin. answering to Feb. 15, or Oct. 28, 1814, the time.

This question was resolved by geometrical construction by Mr. Wm. Burden and Mr. W. G. Horner; and several ingenious corrections were added to his solution by Mr. Henry Atkinson.

Ingenious solutions were also given by Messrs. Abram, Baines, Butterworth, Bagshaw, Bawden, Bell, Bircham, Chapman, Charlton, T. Collins, Cook, Craggs, Crowther, Curnin, Dalton, Davey, Dotchen, Ducket, Fox, Furnass, T. H., Hall, Susan, Jackson, J nes, Lamplugh, Langton, Maffitt, Mason, Mukinson, Milburn, Mundell, Page, Parssey Putsey, Raby, Riddle, Sheridan, Smith, Snooke, Swinburn, Taylor, Thompson, Treby, Mary Weston, Whitby, Wills, Wiseman, Wood, &c.

VI. QUESTION, *answered, by Messrs. John Charlton, Foster Charlton, John Davey, Rev. John Furnass, A. Glendenning, Henry Milburn, Edw. Riddle, and D. T. Sheridan.*

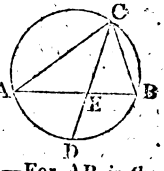
Suppose ACB is the triangle, O the centre of the circumscribing circle, OD the given perp. and CD the given bisecting line. Then, by theor. 38 in the Course, $AC^2+BC^2-2CD^2=2AD^2$; but AC^2+BC^2, and $2CD^2$, being given, $2AD=AB$ will also be given. Therefore take $AB=$ to the given base, bisect it in D, erect the given perp. DO, with the centre O and distance OA, describe the circle AFCB, apply $DC=$ the given bisecting line, join AC, BC, and ABC is evidently the triangle required.

The same answered, by Messrs. Wm. Burdon, Geo. Dalton, A. Fox, Wm. Makinson, and W. S.

By Dr. Hutton's Geom. theor. 38, $2AD^2+2CD^2=AC^2+BC^2$; and since AC^2+BC^2 is given, as also the line CD, therefore AD is also given, and the radius $AO=\sqrt{(AD^2+DO^2)}$ is obtained; hence the construction.—Draw AB, which bisect by the given perp. DO; with radius AO and centre O describe a circle; then from D, with the given line bisecting the base, cut the circle in C, and ABC will be the required triangle.

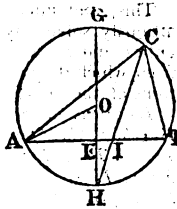
In similar manners were the solutions given by Messrs. Abram, Atkinson, Baines, Butterworth, Bagshaw, Bell, Chapman, Collins, Cook, Craggs, Croucher, Curnin, Darley, Dotchen, Ducket, T. H., Harlston, Holt, Horner, Hubert, Jones, Lamplugh, Maffet, Martin, Mason, Mundell, Newbegin, Page, Purssey, Putsey, Raby, Snooke, Swinburn, Taylor, Thompson, Treby, Mary Weston, Whitley, Williams, Wills, Wiseman, Wood, &c.

VII. QUESTION, *answered by Messrs. J. Collins, John Davey, James Newbegin, W. Purssey, D. T. Sheridan, and John Wills.*



Since the vertical angle and diameter of the circumscribing circle are given, the base is given. Therefore, having made AB = the base, and divided it at E in the given ratio of the sides, describe on it the segment of a circle to contain the vertical angle, by Geom. prob. 14; complete the circle, and bisect the arc ADB in D; draw DE, and continue it to meet the circle in C; join AC, BC, and ABC will be the triangle required.—For AB is the given base, and ACB the given vertical angle, by constr. and because the angles ACD, BCD, stand on equal arcs, DC bisects the vertical angle: also AE is to EB in the given ratio of the sides; therefore, by the Geom. theor. 83 in the Course, AC and BC are the sides.

The same answered, by Messrs. Wm. Burdon, Geo. Dalton, John Durley, Rev. J. Farnuss, A. Gleudenning, Alfred Fox, and W. S.



About the given diameter GH describe a circle, and let O be its centre; make the $\angle$ AOH = the given vertical angle; draw the chord AB perp. to GH; take AI to IB in the given ratio of the sides; through the points H, I, draw a straight line to meet the circle in C; join AC, CB, and ABC is the triangle required.—For that triangle is inscribed in the given circle; and because GH is perp. to AB, the arcs AH, BH, are equal (Geom. theor. 40), theref. the $\angle$ ACB = AOH (ibid. theor. 51) = the given vertical angle (by construc.) Also, because the arcs AH, BH, are equal, the $\angle$ ACB is bisected by CH, and conseq. AC : CB :: (ibid. theor. 83) AI : IB the given ratio by construction.

Other ingenious constructions were given by Messrs. Abram, Atkinson, Bagshaw, Baines, Butterworth, Bell, Chapman, Charlton, Collins, Cook, Crowther, Craggs, Curnin, Dotchen, Ducket, T. H., Halston, Holt, Horner, Jones, Lamplugh, Maffett, Makinson, Martin, Mason, Milburn, Mundell, Page, Putsey, Raby, Riddle, Snooke, Swinburn, Taylor, Thompson, Treby, Mary Weston, Whitley, Williams, Wiseman, Wood, &c.

VIII. Ques. *ans. by Messrs. J. R. Ambler, Wm. Burdon, and W. S.*

Let $x^3 + 2$ and $x^3 - 2$ denote the numbers. Then the dif. of their squares, $8x^3$, is evidently a cube. It remains then to make the dif. of their cubes $12x^6 + 16$, or $3x^6 + 4$ a square. For its root put $2x^3 - z$; then $3x^6 + 4 = 4x^6 - 8x^3 + 4$; this gives $x^6 = 8x^3$, or $x^3 = 8$; hence $x = 2$; and the required numbers are 10 and 6.

The same, by Mr. John Baines, Math. Master, Reading School.

Let $x+y$ and $x-y$ denote the two numbers; and put the dif. of their squares $(x+y)^2 - (x-y)^2 = 8y^3$, which gives $x = 2y^2$; then the dif. of their cubes $(x+y)^3 - (x-y)^3$ becomes $(2y^2 + y)^3 - (2y^2 - y)^3 = 24y^5 + 2y^3$ a square, or $24y^3 + 2y$ a square, which is the case when $y = 2$; hence $x = 2y^2 = 8$; and theref. $x+y = 10$, and $x-y = 6$, the least two numbers that answer the question.

The same, ans. by Mr. John Davey, the proposer.

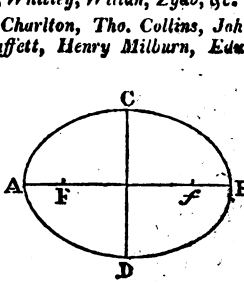
Let x be the greater number, and y the less: then is $x^2 - y^2 =$ a cube, and $x^3 - y^3 =$ a square. Put $x^2 - y^2 = z^3$, and assume $x = n^2 z - y$; then will x^2 or $z^3 + y^2 = n^4 z^2 - 2n^2 zy + y^2$, which reduced gives $y = \frac{n^4 z - z^2}{2n^2}$, conseq. $x = n^2 z - y = \frac{n^4 z + z^2}{2n^2}$; theref. $x^3 - y^3 = \left(\frac{n^4 z + z^2}{2n^2}\right)^3 - \left(\frac{n^4 z - z^2}{2n^2}\right)^3 = (3n^8 + z^2) \times \frac{z^2}{4n^8} =$ a square, or, striking out square numbers, $3n^8 + z^2 =$ a square; let its root be $rn^4 - z$, then will $3n^8 + z^2 = r^2 n^8 - 2n^4 rz + z^2$, hence $z = \frac{r^2 - 3}{2r} n^4$. Now, to get an answer in whole numbers, let r and n be each taken = 2; then will $z = 4$, $y = 6$, and $x = 10$; which appear to be the least numbers that will answer the conditions.

The same ans. by Messrs. Teasdale, Bell, Tho. Chapman, Ant. Cook, Wm. Makinson, Tho. Smith, and Miss Mary Weston.

This, and indeed many other diophantine problems, may be expeditiously solved by the very useful and extensive tables of squares, cubes, and roots, in vol. 1 of Dr. Hutton's Course of Mathematics; from which it quickly appears that 10 and 6 will answer the conditions of the question; for $10^2 - 6^2 = 4^3$, and $10^3 - 6^3 = 28^2$.

Ingenious answers were also given by Messrs. Abram, Atkinson, Bagshaw, Charlton, Collins, Craggs, Curnin, Dalton, Darby, Ducket, Dane, Fox, Furnass, Glendenning, Holt, Horner, Susan. Jackson, Jones, Lamplugh, Maffett, Mundell, Page, Purssey, Putsey, Ruby, Riddle, Sheridan, Taylor, Treby, Truman, Whitley, Willan, Zyab, &c.

IX. Ques. *answered by Messrs. Foster Charlton, Tho. Collins, John Davey, Cha. Holt, S. Jones, R. Maffett, Henry Milburn, Edw. Riddle, and Sam. Treby.*

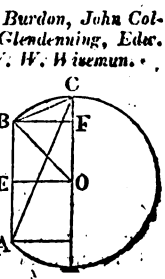


Let ACBD be the elliptic section of the spheroid, AB the transverse axe, CD the conjugate, and F, *f*, the two foci. Then, by the ques. a sound emitted at F, after arriving at *f*, will pass on to B, and by striking the curve there, reverberate from B to *f* again, in the 8th part of a second; hence, by the theory of sound, $2fB = 1142 \div 8 = 142\frac{1}{4}$ feet, which put $= a$; also put 12 millions $= b$, $\cdot 5236 = c$, and $Ff = x$. Then by the nature of the ellipse (see Dr. Hutton's Course and his Mensuration) we have $AB = x + a$, $AF = \frac{1}{2}a$, $FB = x + \frac{1}{2}a$, and $CD^2 = 4AF \times FB = 2ax + a^2$; hence the solid content $= CD^2 \times AB \times C = ac\,(2x^2 + 3ax + a^2) = b$ by the question; this equation solved gives $x = 178{\cdot}50309$: therefore $AB = 321{\cdot}25309$, and $CD = 267{\cdot}09585$.

Note. In this quest. as proposed last year, for *axis*, read *axes*.

Other ingenious solutions, little different from the above, were given by Messrs. Abram, Atkinson, Bagshaw, Baines, Bell, Burdon, Butterworth, J. Charlton, J. Collins, Cook, Craggs, Crowther, Curnin, Dalton, Darby, Ducket, Fox, Furnass, Glendenning, Horner, Hubert, Jackson, Lamplugh, Makinson, Mason, Page, Purssey, Ruby, Sheridan, Smith, Snooke, Swinburn, Taylor, Thompson, Truman, Mary Weston, Whitley, Wiseman, Wood, &c.

X. Quest. *answered by Messrs. H. Atkinson, Wm. Burdon, John Collins, John Davey, J. A. Dolchen, A. Fox, A. Glendenning, Edw. Page, Edw. Riddle, J. Smith, J. Whitley, and W. W. Wiseman.*



Take AB = 50 feet, the given distance of the two balls; on which describe a segment of a circle to contain an angle of 15°, the given angle between the two planes. Through O, the centre of the circle, draw the diameter CD parallel to AB; join CA, CB, which will be the required planes.—For (by prop. 25, cor. 4, Dr. Hutton's Course, vol. 2) the times of descent down CA, CB, will be each equal to the time down the diameter CD.—Now draw BF, EO, perp. to CD;

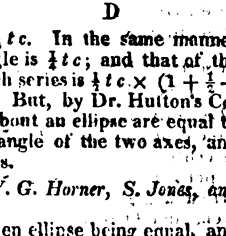
then $\angle$ BOE $=$ $\angle$ BCA $= 15°$; theref. by trigon. OB $=$ OC $\times$ 96592·6; also $\angle$ TBC $=$ $\frac{1}{2}$ arc BC $= 37° 30'$, the elevation of the plane BC above the horizon, and $37° 30' + 15° = 52° 30'$ that of the plane AC. Lastly $\sqrt{\frac{CD}{16\frac{1}{12}}} = \sqrt{\frac{2\,OB}{16\frac{1}{12}}} = 3{\cdot}4658$ seconds, is the time of descent of each ball.

N. B. Mr. Atkinson, at the end of his solution, remarks that the balls would be continually in the same vertical line.—And Mr. Davey adds, that, if the friction of the planes be such as will just cause the balls to roll, then will the time down each plane be $3{\cdot}46576 \times \frac{7}{5} = 4{\cdot}85206$ seconds.

Ingenious answers were also given by Messrs. Abram, Bagshaw, Baines, Bell, Brown, Butterworth, Charlton, Tho. Collins, Cook, Craggs, Crowther, Dalton, Curnin, Darby, Ducket, Furnass, Holt, Horner, Susan Jackson, S. Jones, Lamplugh, Maffett, Mukinson, Mason, Milburn, Purssey, Raby, Sheridan, Snooke, Taylor, Thompson, Truly, Truman, Mary Weston, Wood, &c.

XI. QUESTION, *ans. by Messrs. Wm. Bagshaw, Wm. Burdon, Tho. Collins, Geo. Ducket, Hen. Milburn, Miss Weston, and Ed. Riddle.*

Put the transverse diam. AM $= t$, the conjugate BD $= c$, and the length of the greatest inscribed rectangle NM $= x$; then by conics the breadth GP or HR $= \frac{c}{t}\sqrt{(t^2 - x^2)}$; theref. $t^3 x^2 - x^4$ $=$ a max. the fluxion of which gives $x = t\sqrt{\frac{1}{2}} =$ NM, and GP $= c\sqrt{\frac{1}{2}}$.



Hence the area of the triangle GPM is $\frac{1}{2}tc$. In the same manner it is found that the next inscribed rectangle is $\frac{1}{4}tc$; and that of the next $= \frac{1}{8}tc$, and so on. The sum of which series is $\frac{1}{2}tc \times (1 + \frac{1}{2} + \frac{1}{4} + \frac{1}{8}$ &c.) to infinity $= \frac{1}{2}tc \times 2 = tc$. But, by Dr. Hutton's Conics, vol. 2, theor. 10, all parallelograms about an ellipse are equal to one another, and each equal to the rectangle of the two axes, and theref. equal to all the inscribed rectangles.

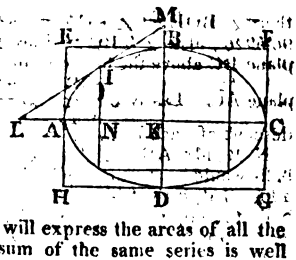
The same, ans. by Messrs. John Davey, W. G. Horner, S. Jones, and John Whitley.

All parallelograms circumscribing a given ellipse being equal, and double the greatest inscribed one, it follows that if a be put for the area of the circumscribing one, the series of rectangles will be $a + \frac{1}{2}a + \frac{1}{4}a + \frac{1}{8}a$, &c. which put $= z$; then by transpos. $\frac{1}{2}a + \frac{1}{4}a + \frac{1}{8}a$, &c. $= z - a$, and the double is $a + \frac{1}{2}a + \frac{1}{4}a$, &c. $= 2z - 2a = z$, theref. $z = 2a$, and $a = \frac{1}{2}a + \frac{1}{4}a + \frac{1}{8}a +$, &c. ad infinitum.

The same, ans. by Mr. W. Truman, Schoolmaster, Exeter.

Let ABCD be a given ellipsis, EFGH the least circumscribing parallelogram. By Dr. Hutton's 3d vol. pa. 35, the least triangle that can be described about, and the greatest parallelogram that can be described in, any curve concave to its axis, is when the subtangent LN is equal to half the base of the triangle LMK, or to the whole base NK of the parallelogram IK, and that the triangle LMK

and parallelogram IK, are as 2 to 1. And by the Conic Sections, vol. 2, pa. 107, all parallelograms circumscribing an ellipsis, are equal to one another, that is the paral. AERK = △ LMK, and the paral. IK = ½ the paral. EK, so that the greatest inscribed = ½ of the least circumscribed paral. Now, let a be the area of the least circumscribed paral. EG; then $\frac{1}{2}a, \frac{1}{4}a, \frac{1}{8}a, \frac{1}{16}a$, &c. ad infinitum, will express the areas of all the parallelograms inscribed; and the sum of the same series is well known to be equal to a, the area of the least circumscribed paral. as required.



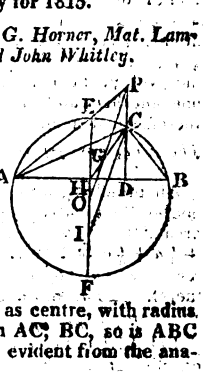
Ingenious solutions were also given by Messrs. Abram, Ambler, Atkinson, Bagshaw, Baines, Bell, Brown, Butterworth, Charlton, Collins, Cook, Craggs, Crowther, Curnin, Dalton, Darby, Dotchon, Fox, Furnass, Glendenning, Holt, Lamplugh, Maffett, Makinson, Martin, Mason, Page, Pretty, Raby, W. S., Sheridan, Snooke, Taylor, Thompson, Treby, Wood, Wright, &c.

XII. QUEST. *ans. by Messrs. Teasdale Bell, Wm. Burden, Alf. Fox, A. Glendenning, R. Maffett, and Sam. Treby.*

In any triangle, if O denote the centre of the circumscribing circle, G the centre of gravity, and P the intersection of the perps. from the angles upon the opposite sides; then it appears, from Diary quest. 896 and its solution, that the three points O, G, P, are all in the same straight line, and that OG = ½ GP; but GP is given, therefore OG is a given line, and the prob. is reduced to quest. 1280, the solution of which see in pa. 42 of the Diary for 1815.

The same, answered by Messrs. John Darby, W. G. Horner, Mat. Lamplugh, D. T. Sheridan, Chs. Thompson, and John Whitley.

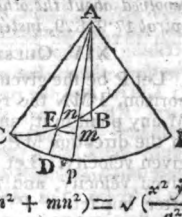
Let ABC represent the required triangle, O the centre of the circumscribing circle, G the centre of gravity, P the intersection of the perpendiculars. Now, since the base and vertical angle are given, the diameter EF is given, and O is a given point; also OG = ⅓OP by parallels and the centre of gravity; HO = ⅓CP is given by similar triangles; therefore draw IC parallel to OP, and I is a given point; hence this



Construction. Describe the circle AEF given by analysis, take OI = 2 OH, and from I as centre, with radius = 3 OG = OP, intersect the circle in C; join AC, BC, so is ABC the required triangle.—The demonstration is evident from the analysis.

Ingenious solutions were also given by Messrs. Abram, Atkinson, Baines, Brown, Butterworth, Charlton, Cook, Craggs, Crowther, Davey, Furnass, T. H., Holt, Jones, Makinson, Mason, Milburn, Mandell, Riddle, W. S., Taylor, Thompson, Wright, &c.

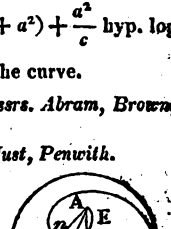
XIII. Quest. *ans. by Mr. Henry Atkinson, Newcastle.*



It is plain that the triangle, by revolving round its side AB, will form the cone ACDF, and that a curve of some kind will be described by the point E. Put AC $= 6 = a$, the circumf. of the base $= 6 \times 3{\cdot}1416 = c$, AE $= x$, and CD $= y$, also let mn represent $\dot{x}$, then will Dp denote $\dot{y}$. Now, by sim. tri. AD : AE :: Dp : Em, or $a : x :: \dot{y} : Em = \frac{x\dot{y}}{a}$, and the fluxion of the curve $En = \sqrt{(Em^2 + mn^2)} = \sqrt{(\frac{x^2\dot{y}^2}{a^2} + \dot{x}^2)}$. But, by the quest. $a : c :: \dot{x} : \dot{y} = \frac{c\dot{x}}{a}$; this value of $\dot{y}$ substituted in the above fluxion, gives $En = \sqrt{(\frac{c^2x^2\dot{x}^2}{a^4} + \dot{x}^2)} = \frac{\dot{x}}{b}\sqrt{(x^2 + b^2)}$, putting $b = \frac{a^2}{c}$; the correct fluent of which is $\frac{1}{b} \times (\frac{x}{2}\sqrt{(x^2 + b^2)} + \frac{b^2}{2} \times \text{hyp. log.} \frac{x + \sqrt{(x^2 + b^2)}}{b})$; which, when $x = a$ and the value of b restored, becomes $\frac{1}{2} \times (\sqrt{(c^2 + a^2)} + \frac{a^2}{c}\text{ hyp. log. } \frac{c + \sqrt{(c^2 + a^3)}}{a}) = 11{\cdot}6691$ feet, the length of the curve.

In the same manner is the solution given by Messrs. Abram, Browne, J. Charlton, Ducket, Glendenning, and Riddle.

The same, ans. by Mr. John Davey, of St. Just, Penwith.



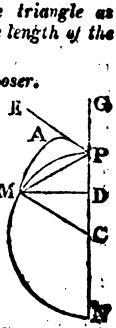
Let ABC be the triangle, AEvmP the spiral path described by the body, while the triangle, in one revolution round the base AB, describes, with the vertex C, the circle PCDP. Draw ADB indefinitely near ABC, and nv parallel to DC; put PC $= x$, DC $= \dot{x}$, Av = An $= y$, $mn = \dot{y}$, AEv $= z$, $mv = \dot{z}$, BC $= r = 3$, AC $= 2r = 6$, and $3{\cdot}1416 = c$. Now, while the vertex C, when at the point P, begins to move and describes the arc PC, let the body move from A to v, and by virtue of both motions describe the spiral AEv: then, as $y : x :: 2r : 2rc :: \dot{y} : \dot{x} = c\dot{y} =$ DC, and by similar sectors as $2r : c\dot{y} :: y : \frac{cy\dot{y}}{2r} = nv$; hence $\dot{z} = \frac{\dot{y}}{2r}\sqrt{(4r^2 + c^2y^2)}$; whose correct fluent z, when $y = 2r$, is $r\sqrt{(c^2 + 1)} + \frac{r}{c} \times \text{hyp. log. } c + \sqrt{(c^2 + 1)} = 11{\cdot}6691$ feet $=$ the length of the whole spiral path.

And exactly in this way was the solution given by Messrs. Baines, Craggs, Dotchen, Miss Weston, and Mr. Whitley.

Other solutions were also given by Messrs. Bawden, Bell, Butterworth, Cook, Crowther, Curnin, Dawe, Ducket, Fox, Furnass, Horner, Jones, Lightfoot, Muffett, Milburn, Ruby, Mason, Sheridan, Snooke, Treby, Wood, Wright, &c.—But, on account of some indistinctness in the

wording of this question, some gentlemen considered the triangle as revolved about the other leg, by which they brought out the length of the spiral 17·91829, *instead of* 11·6691 *as above.*

XIV. QUESTION, *answered by Omicron, the proposer.*

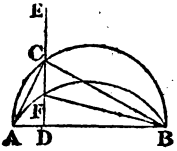


Let P be the given point in a line GPN perp. to the horizon, PMN the required locus in a vertical plane, M any point in it, and suppose the ball to be thrown in the direction MP, so as to strike the point P with a given velocity. Let $p = 4$ times the space due to the given velocity, and let PE be the line of direction after impact at P: then the body will describe the parabola PAM, and p will be the parameter to the diameter PN. Draw MC parallel to PE, which will be an ordinate to the diameter PN. Then, since the $\angle$ EPC = EPG = MCP, theref. MC = MP, and drawing MD perp. to PN, PD = DC, and $MC^2 = PC \times p = PD \times 2p$; theref. the locus is a circle of which the diameter is $2p = PN$.

NOTE. The principle of this solution, by the author of the question, is, that the ball is thrown or passes in a direct line to the given point, or, at least, that it strikes the given point in that direction. And on this supposition the solution was given, similar to the above, by Messrs. *S. Jones*, *James Wood*, and *Wm. Wright*. But most of our other contributors have contemplated the question on the supposition that the ball thrown from the hand describes a parabolic curve in its approach to the given point, where it strikes that point in the vertex of the parabola, perpendicular to the given plane, and from whence, being elastic, the ball must necessarily return again in the same curve, and consequently arrive at the hand again. And in this way the solution is given scientifically by Messrs. *Abram*, *Atkinson*, *Butterworth*, *Charlton*, *Cook*, *Cruggs*, *Dalton*, *Davey*, *Fox*, *Furnass*, *Glendenning*, *Horner*, *Maffett*, *Mason*, *Raby*, *Riddle*, *Sheridan*, *Treby*, *Whitley*, &c.

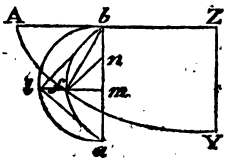
XV. *or* PRIZE QUESTION, *ans. by Llerien, the proposer.*

On any line AB, describe a semicircle ACB. Draw any ordinate DC, and produce it to E, making CE = CA. Take DF a 3d proportional to DE, CE; AFB being the locus of F.—Join BC, BF; I say BF bisects the $\angle$ CBD.



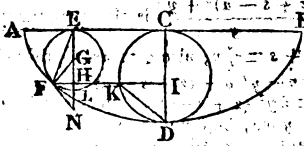
For, DE : DC :: DC : DF,
theref. AC + DC : DC :: DC : DF,
theref. AC : DC :: CF : DF,
theref. BC : BD :: CF : DF,
theref. (by Eucl.) BF bisects the $\angle$ CBD.

Let AY be the cycloid, *b* the point in the horizontal base AZ; *ba* equal, and parallel ZY; *bla* a semicircle, *bfa* a curve similar to BFA in the first fig. cutting the cycloid in *f*; then *bf* is the line required.—For draw *mfl* an ordinate to the semicircle; join *bl*, *la*, *bf*, and draw *fn* parallel to *bl*. Then the $\angle$ *nfb* = $\angle$ *fbl* = $\angle$ *nlf*, theref.



$af = \frac{1}{2}bb$, therefore the circle described from the centre f, with the radius af, passes through b; it also touches the cycloid, for af is parallel to bl, and bl is perp. to la; therefore af is perp. to the tangent la. Hence lf may easily be shown to be the line required.

The same, ans. by Mr. Henry Atkinson, of Newcastle.

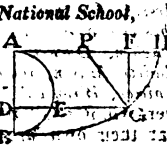


This ingenious gentleman first gives a solution by means of a mechanical curve similar to that of the ingenious proposer, above given. He then adds a solution analytically thus: Let ACB be the base of the cycloid AFDB, and let CKD be the generating circle, and E the given point in the base. Now, if a circle be drawn, having its vertex in E, and just touching the cycloid in some point F, it is manifest that EF will be the line of shortest descent. Draw the other lines as in the figure, and put $CD = a$, $CE = b$, $ID = x$, $IF = y$, and $GE = GF = z$; then will $IK = \sqrt{(ax - x^2)}$, $FH = y - b$, and $GH = a - x - z$: now $FH^2 + HG^2 = FG^2$, that is $(y-b)^2 + (a-x-z)^2 = z^2$, hence $z = \frac{(y-b)^2 + (a-x)^2}{2(a-x)}$. Again, from the nature of the cycloid, the triangles KID and GHF are similar, hence KI : ID :: GH : HF, that is $\sqrt{(ax-x^2)} : x :: a-x-z : y-b$, hence we have $x(a-x-z) = (y-b)\sqrt{(ax-x^2)}$; then, by substituting the value of z, and reducing, it is $x\left(\frac{a-x}{y-b} - \frac{y-b}{a-x}\right) = 2\sqrt{(ax-x^2)}$; but, from the nature of the cycloid, we know that $y = (\sqrt{(ax-x^2)} + \text{arc DK})$; so that, if this value of y be substituted in the above equation, there will then be only one unknown quantity, and conseq. the value of x may be found, and thence all the other parts be readily determined. For examp. suppose a and b to be each $= 2$, then x is found to be $= .8645774$, the arc $KD = 82^\circ\ 15'\ 1''$, $y = 2.4257443$, and thence $EF = 1.21262$, and $\angle FEH = \frac{1}{2}$ arc $KD = 20^\circ\ 33'\ 15''\frac{1}{4}$.

But any example in numbers, Mr. A. continues, may be worked much more expeditiously by trial-and-error, than by the above equation; and then Mr. A. works over the whole calculation by this method, bringing out the very same numbers as those above. And, though it be impossible to find room for this correspondent's calculations, we are greatly obliged by the correct and ample state in which his solutions are conveyed.

In a manner similar to that of the first solution also is the construction very neatly and ably given by Mr. *A. Glendenning*, of North Yarmouth, by means of another mechanical curve.

Another solution, by Mr. John Abram, of the National School, Canterbury.



Let ABGH be the given semicycloid, P a given point in the base, and PG the line of shortest descent. Suppose DG parallel to AH, and PG to AB, B being the vertex of the cycloid. About AB describe the semicircle

AEB. Put $AB = r$, $BD = v$, the arc $BE = z$, $DE = s$, $AD = PG = y$, and $AP = x$. Then, by the cycloid, $DG = AF = z + s$, theref. $PF = AF - AP = z + s - a$. Now, by mechan. the time of descent down PG varies as $\frac{PG}{\sqrt{FG}} = \frac{\sqrt{((z+s-a)^2+y^2)}}{\sqrt{y}}$, a min. theref. $\frac{(z+s-a)^2+y^2}{y}$ is also a minimum. But the fluxion of $z + s - a$ is $\dot{z} + \dot{s} = \frac{r}{v}\dot{v}$; also $y = 2r - v$, theref. $\dot{y} = -\dot{v}$. Hence $2y^2(z+s-a)\frac{1}{v}\dot{s} - y^2\dot{v} + (z+s-a)^2\dot{v} = 0$, theref. by reduction $y^2 - (z+s-a)^2 = 2y^2(z+s-a)\frac{1}{v}$. Now, as the value of y and s depend on that of z, y may be found by the method of trial-and-error, by assuming any value of z, till both sides of the equation become equal. Having determined y, make AD equal to it, and draw DG parallel to AH to meet the curve in G, then PG joined will be the line of shortest descent.

The same, ans. by Mr. Edw. Riddle, Master of the Trinity House School, Newcastle-on-Tyne.

Let EFL be a circle inscribed in the cycloid touching the base in the given point E (last fig. but one), then is EF the straight line of shortest descent, as may easily be proved.—Draw the diameter EL, and produce it to meet the tangent FN in N; join F and the centre G; draw FI parallel to AB, cutting the generating circle in K, and its diameter in I, and join DK. Then, by the property of the cycloid, FK = arch DK, and the chord DK is parallel to the tangent FN.—Put $CD = a$, $CE = b$, $IK = x$, $DI = v$, and arch $DK = z$. Then $FI = x + z$, $FH = x + z - b$, $EH = a - v$; $EL = \frac{EH^2 + FH^2}{EH} = \frac{(a-v)^2 + (x+z-b)^2}{a-v}$; $FG = HG = \frac{(a-v)^2 + (x+z-b)^2}{2(a-v)}$; $GH = EH - EG = a - v - \frac{(a-v)^2 + (x+z-b)^2}{2(a-v)} = \frac{(a-v)^2 - (x+z-b)^2}{2(a-v)}$. But $GH : HF :: HF : HN :: IK : ID$, or $\frac{(a-v)^2 - (x+z-b)^2}{2(a-v)} : x + z - b :: x : v$, hence $v((a-v)^2 - (x+z-b)^2) = 2x(a-v)(x+z-b)$. From this equation, with the aid of Dr. Hutton's Tables, x, v, and z, may very easily be determined; for, if z be assumed in degrees, the tables immediately indicate the corresponding values of v and x, and the length of z; hence the true values may be readily approximated.—If $a = 2$, and $b = 2$, then $z = 82° 13'$, and $EF = 1.2126$.

Many other solutions were given by our ingenious correspondents, Messrs. Bagshaw, Bell, Brown, Burdon, F. Charlton, J. Charlton, Chesterfield, J. Collins, T. Collins, Cook, Craggs, Curnin, Davey, Dawe, Dolchen, Ducket, Fox, Furnass, Hine, Holt, Horner, Lightfoot, Maffett, Mason, Milburn, Raby, W. S., Sheridan, Taylor, Miss Weston, Whitley, Winward, Wright, &c.—Some of our correspondents, however, will not fail to perceive, by observing the foregoing solutions, that their own are not always on the most accurate principles.

particularly when they describe a circle through the given point and cutting the curve of the cycloid, whether that circle be equal, or greater, or less than the generating circle of that curve. And though those solutions are not incorrect which only direct to describe a circle through the given point and touching the curve of the cycloid, yet they are not to be considered as complete, since such a tangent circle cannot be described geometrically, or by the ruler and compasses only.

NEW QUESTIONS.

I. QUEST. (1299), *by Mr. George Brown.*

The length of the curve of a parabola is 24, and the parameter 4; required its area.

II. QUEST. (1300), *by Mr. D. T. Sheridan, Math. Acad. Stafford.*

A nymph, dear ladies, of superior parts,
Profoundly skilled in sciences and arts,
In bloom of beauty, charming, good, and kind,
Possess'd of all that captivates the mind;
And, like your lovely selves, well known to fame:
From these equations please to tell her name.

$(x^2 + y^2)^3 + xyz = a = 226985140.$
$(x^2 + y^2 - z^2) \times \sqrt{(x^2 + y^2)} = b = 228729827\cdot1109005.$
$(x^2 + y^2)^3 \times \sqrt{(x^2 + y^2 - z^2)} = c = 3289267185\cdot2292292.$

Where x, y, z, denote the places of the letters in the alphabet that compose the fair one's name. To be solved independently of affected equations.

III. QUEST. (1301), *by Mr. John Darby, Land-surveyor, Sutton.*

Given the three chords of three arches completing a semicircle, equal to 60, 70, and 80; to find the area of the semicircle.

IV. QUEST. (1302), *by Mr. John Baines, jun. Mathematical School, Reading.*

There are two dials, both made for the same latitude, one a horizontal, and the other a vertical, dial: the arc included between the hour-lines of 12 and 1 on the horizontal dial, is equal to that between 2 and 3 on the vertical dial. Required the latitude of the place for which they were made.

V. QUEST. (1303), *by Mr. Sam. Treeby, Schoolmaster, Plymouth.*

AB is the diameter of a given semicircle, AD a given chord; it is required to draw geometrically another chord, BC, to intersect the former in E, so that the triangle ACE may be a maximum.

VI. QUEST. (1304), *by Mr. John Abram, Master of the National School, St. Dunstan's, near Canterbury.*

Admit two places to be on the same meridian, the one in latitude 40° north, and the other in latitude 50° north, the sun's declination

20° north: it is required to find the time in the morning when the sun's altitude will be the same at each place, and also the altitude and azimuth at the same time.

VII. Quest. (1305), *by Mr. John Collins, Mathematical Master, Hatton Garden.*

If any two sides of a spherical triangle be produced till the continuation of each side be half the supplement of that side, the arc of a great circle joining the extremities of the sides thus produced will be the measure of the angle contained by the chords of those two sides: required the demonstration.

VIII. Quest. (1306), *by Mr. Wm. Burdon, Acaster Malbis.*

Find an arc such, that the sum of the natural sines, to every minute of it, may be equal to 1000, the radius being 1.

IX. Quest. (1307), *by Mr. W. G. Horner, of Bath.*

A young surveyor has engaged, for a high wager, to lay out an equilateral triangle of 6 chains in each side, with no instrument but a chain and some pickets, and without using his chain for any other purpose than to *measure:* he now doubts, with Montucla (Recreations, vol. 1, Geom. Prob. 3), the possibility of performing the construction, and applies to the Diarian mathematicians concerning his chance of success.

X. Quest. (1308), *by Mr. A. Glendenning, North Yarmouth.*

Theorem. When the distance of the centres of the circumscribing circle, and the circle touching the base and the continuation of the sides of a triangle, are given; those sides are given in magnitude and position: required the demonstration.

XI. Quest. (1309), *by Mr. Geo. Ducket, Northwich.*

If a ball of lead, 4 inches diameter, be dropt from the top of a salt pit, 100 yards deep, 20 yards of which is filled with brine, of 1·4 specific gravity: quere, the last velocity of the ball, and the whole time of descent?

XII. Quest. (1310), *by Mr. John Whitley, Rotherham.*

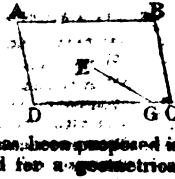
A circle and a right line without it being given in position: if from any point in that line, as a centre, a circle be described with a radius equal to a tangent drawn from the same point to the given circle, its circumference will always pass through a certain given point, and which point is also to be found.

XIII. Quest. (1311), *by Omicron, of Penrith.*

Three circles, none of which are included within the others, being given in magnitude and position: to determine geometrically a point in a line of any kind, given also in position, so that tangents being drawn from thence to those circles, the figures described on them, given in specie, may be equal to a given quantity.

XIV. Query. (1312), *by Uderico.*

A string, without weight, is attached to a point E, in the horizontal table ABCD: with the other end of the string a body G, collected in its centre of gravity, is connected: the string being at full stretch, the body is brought to the edge of the table, as in the figure, and suffered to descend by its weight; required the curve it describes in its descent.—N. B. This question has been proposed in a periodical publication; but is now reproposed for a geometrical solution.



XV. *or* Prize Quest. (1313), *by Mr. Henry Atkinson, Newcastle.* [*Whoever answers it before Feb.* 1, *has two chances for ten Diaries.*]

It is now generally admitted by philosophers, that stones have sometimes fallen from the atmosphere; but they are still much divided in their opinions respecting their origin. Some suppose them to be projected from the moon. If this be admitted, with what velocity will a ball, whose specific gravity is 3500, and weight 1 ounce, strike the surface of the earth, supposing its velocity at the point of equal attraction to be 1000 feet per second, taking in the resistance of the air? Also, with what velocity must it have been projected from the moon, supposing her to have no atmosphere.

Errata in last year's Diary.—Pa. 41, line 28, for "invariably" read inversely. And pa. 46, line 8 from the bottom, for "dissected" read bisected.

The Prizes for the several Solutions have been determined by lot as follows: 1st. For the Prize Enigma, to Miss A. Collins, and to Mr. D. T. Sheridan, each 8 Diaries.—2nd. For the General Answer to the Enigmas, to Mr. Rd. Claye, and to Mr. Wm. Oats, each 8 Diaries.—3rd. For the Rebuses and Queries, &c. to Mr. J. Baines, and to Mr. John Herdson, each 6 Diaries.—4th. For the Prize Question, to Mr. John Abram, and to Mr. Henry Atkinson, each 10 Diaries. All of whom will please to send for their prizes to Mr. Greenhill, at Stationers' Hall, London.—It is again requested, that all letters be sent within the limited time, so as to come to hand before the 1st of May, otherwise they cannot be used; and post-paid or franked, otherwise they will not be received; and that the several compositions be made as short as they can, with propriety; but the solutions for the Prize Enigma and Prize Question must come to hand before Feb. 1, to entitle them to a chance for the Prizes. And, along with all new Questions, Enigmas, Rebuses, and Charades, their answers must be sent.

Our ingenious correspondents should recollect that new questions are not inserted that have not been accompanied with their solutions. And we are sorry that the new question of our ingenious young female correspondent, S. J., came not to hand till after the Diary copy had been completed and sent to the printer.—The contributors will also learn with pleasure that Dr. Hutton's new Dictionary and Mr. Leybourn's new edition of the Diaries have both been published; particulars of which to be had of Mr. Laybourn, at the Royal Military College, Bagshot.

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