

THE
Gentleman's Diary,
OR THE
MATHEMATICAL REPOSITORY;
An ALMANACK

For the YEAR of our LORD 1803 :

BEING THE
SEVENTH AFTER BISSEXTILE.

Containing many useful and entertaining Particulars,
peculiarly adapted to the ingenious Gentlemen engaged
in the delightful Study and Practice of the

MATHEMATICKS.

The Sixty-third ALMANACK published of this Kind;
and the Fifty-first of the NEW STYLE in ENGLAND.

————— With wise Intent
The Hand of Nature on peculiar Minds
Imprints a different Bias, and to each
Decrees its Province in the common Toil.
To some she taught the Fabrick of the Sphere,
The changeful Moon, the Circuit of the Stars,
The golden Zones of Heaven: to some she gave
To weigh the Moment of eternal Time,
Of Time, and Space, and Fate's unrolling Chain,
And Will's quick Impulse.

L O N D O N

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And Sold by GEORGE GREENHILL, Treasurer to the
Company, at their Hall, LUDGATE-STREET. 1803.

[Price Seven:een Pence stitched.]

There will be only Two Eclipses this Year, and consequently both of the Sun.

1. On February 21st the Sun will be eclipsed at night, and therefore invisible here. The conjunction being at 5 min. past 9 at night : in long. 11 S. 2° 21'. Moon's lat. S. $\frac{1}{2}$ of a min. The Sun will be centrally eclipsed on the meridian at that time in longitude 136° $\frac{1}{2}$ West, and latitude 11° South.

2. August 17th the Sun will be visibly eclipsed here. Beginning at 55 min. past 5 in the morning. Greatest obscuration at 6 h. 41 m. $\frac{1}{2}$. Visible conjunction at 6 ho. 44 m. End at 7 ho. 30 m. $\frac{1}{2}$.

Digits eclipsed 3° 12'. Moon touches the Sun's disk at 167° from the Sun's vertex on the left-hand.

Venus will be a morning star till the 14th day of October, and then an evening one to the year's end.

Jupiter will be a morning star till the 22^d day of March, then an evening star, till the 12th of October, and after that a morning star, the rest of the year.

The weather column is that for the year 1801.

EUMENES desires to correct an error which he slipped into in the latter part of the solution to *Quest.* 808 in last year's Diary : in finding the tension of the string, viz. page 35, line 1, after prevent *delete* all the rest of the answer, and instead thereof insert—and at the spontaneous centre of rotation place S, which is thus found, as $Mn : MR ::$ the last-found upward force along nR : the effective force acting along nB to turn the cylinder about S, which is the centre of percussion, when n is that of rotation ; conseq. S is a given point. And, as $Ss : SN ::$ the force acting along nB : that acting along FN, in the sense from F towards N, making an angle PNF with the string = RMn , the inclination of the axis to the horizon. Conseq. $Mn : nR ::$ the force along FN : that along PN, or the req. tension = $W \times nR \times SN \times MR \times MR$ sq. divided by $Mn \times Ss \times Ms \times Mn$ sq. which vanishes when $nR = 0$, or the axis is horizontal. I have here only to add, that the pressure of the water perp. to the base of the solid must be equal to that of the solid in the contrary direction ; otherwise not rest but motion must ensue.

We are sorry here to announce the deaths of Mr. J. Filder, of Liverpool, and Mr. Joseph Hindson, of Lincoln.

Mr. John Johnson, of Birmingham, sent answers to the 4th, 5th, 7th, 8th, 10th, and 11th mathematical questions, but quite too late. They did not come to hand till the 18th day of July.

109182

Therefore, to be directed thus : To the Author of The Gentleman's Diary, Stationers Hall, London. And must arrive there before the 1st of May, 1803 ; otherwise they will be too late. They are desired to be sent without charge.

JANUARY hath XXXI Days

[M] ☉ Decl. South.

Full Moon	7	} Day {	11 h. 0 m. Night.	
Last Quarter	16		2 52 Morning.	
New Moon	23		2 59 Morning.	
First Quarter	30		2 1 Morning.	

☉ enters 20th Day, 10 H. 16 M. Night.

1	23° 4'
6	22 35
11	21 55
16	21 4
21	20 3
26	18 52

1	S	Circumcision.	morn	45	6	39	8	thaw.
2	B	2d Sunday after Christmas.	2	10	7	29	9	
3	M		3	34	8	22	10	mild
4	T		4	57	9	17	11	and
5	W	[Twelfth Day.	6	17	10	13	12	open.
6	T	Epiphany Old Chrif. Day.	7	21	11	9	13	
7	F		2 rises.	morn.				
8	S	Lucian.	4	25		4	15	
9	B	1st Sunday after Epiphany.	5	39		55	16	
10	M	Plough Monday.	6	54	1	42	17	
11	T		8	6	2	25	18	
12	W	Days increased 26 minutes.	9	16	3	6	19	
13	T	Hil. Cam. T. beg. O. N. Y. D.	10	24	3	45	20	
14	F	Oxford Term begins.	11	34	4	24	21	
15	S		morn		5	3	22	
16	B	2d Sunday after Epiphany.		46	5	44	23	
17	M	[Prisca. Old Twelfth-D.	1	59	6	28	24	
18	T	Qu. Charl. birth-day kept.	3	17	7	18	25	
19	W		4	35	8	9	26	
20	T	Fabian. In 8d. of St. Hil. ret.	5	48	9	6	27	
21	F	Agnes.	6	49	10	7	28	
22	S	Vincent.	7	35	11	8	29	
23	B	3d Sunday after Epiphany.	2 sets.		aft.	8	N	frost.
24	M	Hilary Term begins.	5 a	54	1	5	1	fnow.
25	T	Conversion of St. Paul.	7	24	1	57	2	
26	W	Days increased 1 hour.	8	32	2	47	3	thaw.
27	T	Duke of Suffex born 1775.	10	20	3	37	4	mild
28	F		11	45	4	26	5	and
29	S		morn.		5	16	6	windy.
30	B	4th Su. af. Ep. K. Cha. I mart.	1	13	6	9	7	
31	M	[1649	2	39	7	3	8	

☉	☉ Rises	☉ Sets	☉ Cl. bef.	☉ D. Break.	Sun East	Saturn S.	Jupiter S.	Mars S.										
1	8	5	3	55	3	41	6	0	4	4	m	46	5	m	38	11	a	11
6	8	1	3	59	5	59	5	58		43	4		24	5	17	10		45
11	7	56	4	4	8	6		54		46	4		2	4	56	10		19
16	7	51	4	9	9	58		49		49	3		40	4	35	9		53
21	7	44	4	16	11	34		44		53	3		18	4	14	9		26
26	7	37	4	23	12	51		38		58	2		56	3	53	8		59

FEBRUARY XXVIII Days.

Full Moon.	6	} Day {	h. 37 m.	Afternoon.	17° 17'		
1st Quarter	14		9	44	Afternoon.	6 15 48	
New Moon	21		St	9	5	Afternoon.	11 14 14
First Quarter	28		9	47	Afternoon.	16 12 33	
☉ enters ♈ 19th Day, 1 H. 2 M. Afternoon.						21 10 47	
						26 8 57	

W. D.	Sundays, Holidays, Birth-Days, Terms, &c.	Moon R. & S.	Moon South.	D. A.	Weather.
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1	T		3 m 57	7 a 59	9 windy,
2	W	Purific. B. V. M. or Cand.-day.	5 6	8 55	10 but
3	T	Bp. Blase. On mor. of Pur. 3 ^{re} .	5 59	9 50	11 mild
4	F		6 38	10 42	12 and
5	S	Agatha.	7 4	11 30	13 open.
6	B	Septuages. Sun. O. St. Paul.	D rises. morn. F		
7	M		5 a 45	15 15	
8	T		6 57	57 16	
9	W	In 8 days of Purif. 4 ^{ret} .	8 6	1 37	17
10	T		9 15	2 16	18
11	F	Days increased 2 h.	10 25	2 55	19
12	S	Hilary Term ends.	11 39	3 35	20
13	B	Sexagesima Sunday.	morn. 4 18		21
14	M	Valentine. O. Candlemas-d.	5 58	3 3	22 frost
15	T		2 10	5 53	23 and
16	W	Days 10 hours long.	3 25	6 48	24 snow.
17	T		4 32	7 46	25
18	F		5 22	8 45	26
19	S		6 0	9 45	27 mild.
20	B	Quinquagesima or Shro. Sun.	6 27	10 44	28 open
21	M	Camb. Term divides n.	D sets. 11 39		29 fine
22	T	Shrove Tuesday.	6 a 25	aft. 33	1 season.
23	W	Ash Wednesd. Lent begins.	7 51	1 24	2
24	T	St. Matthias. D. of Camb. b.	9 22	2 16	3
25	B	St. Valentine.	10 53	3 8	4
26	S		morn. 4 2		5 high
27	B	St. Sunday in Lent.	21	4 58	6 winds.
28	M	Days increased 3 hours.	1 46	5 55	7

D	☉ Rises	☉ Sets	☾ Rises	☾ Sets	☉ D. Break	☉ Ent	Sat. S.	Jup. S.	Mars S.
1	7 24	4 36	13 55	5 30	5 4	2 m 31	3 m 29	8 a 35	
6	7 17	4 43	14 26	22	9	2 10	3 8	8 19	
11	7 8	5 2	14 37	14	15	1 49	2 47	8 3	
16	6 59	5 10	14 29	6	21	1 28	2 26	7 47	
21	6 50	5 10	14 3	4 59	27	1 7	2 5	7 31	
26	6 40	5 20	13 21	4 48	33	0 49	1 44	7 15	

MARCH hath XXXI Days.

M ☉ Decl.
D South

Full Moon	8	Day at	11 h.	22 m.	Morning.	1	7°	49
Last Quarter	16		0	59	Afternoon.	6	5	35
New Moon	23		6	55	Morning.	11	3	38
First Quarter	30		1	44	Morning.	16	2	0

☉ enters ♈ 21st Day, at 1 H. 29 M. After noon.

21 0 1
26 IN 57

1	T	David.	2 m 58	6 a 52	8	high
2	W	Ember Week. Chad.	3 58	7 48	9	winds.
3	T		4 42	8 40	10	mild
4	F	Days 11 h. long.	5 11	9 29	11	and
5	S		5 34	10 15	12	fine.
6	B	2nd Sunday in Lent.	5 50	10 38	13	moist.
7	M	Perpetua.	6 21	11 39	14	frost.
8	T		Rises. morn		F	
9	W		7 a 7	18 16		wet
10	T		8 18	58 17		and
11	F	Days increased 3 h. 50 m.	9 30	1 38	18	cold.
12	S	Gregory, M.	10 45	2 20	19	mild.
13	B	3d Sunday in Lent.	morn.		3 5	20 fine.
14	M		1 3	53 21		snow.
15	T		1 14	4 44	22	frost.
16	W		2 22	5 39	23	
17	T	St. Patrick.	3 19	6 37	24	thaw.
18	F	Edw. K. West Sax.	4 2	7 35	25	
19	S		4 32	8 32	26	
20	B	4th S. in Lent. Mid. L. S.	4 54	9 28	27	
21	M	Equinox. Benedict.	5 12	10 22	28	stormy.
22	T		5 28	11 15	29	rain.
23	W		D sets. aft.		7 N	fair.
24	T		8 a 24	1 0	1	
25	F	Annunciation, or Lady-Day.	9 59	1 55	2	
26	S		11 29	2 52	3	showry.
27	B	5th Sunday in Lent.	morn.		3 51	4 storms.
28	M		5 1	4 51	5	
29	T		1 59	5 48	6	
30	W	Days 12 h. 52 m. long.	2 48	6 43	7	cold.
31	T		3 23	7 34	8	

D	☉ Rises	☉ Sets	Cl. bef. ☉	D. Break	☉ East	Saturn S.	Jupiter S.	Mars S.
1	6 35	5 25	12 48"	4 4	5 36	mo. 35	1 m 35	7 a 6
6	25	35	11 43	31	42	14	1 15	6 56
11	15	45	10 28	20	48	11 2 53	0 45	6 46
16	5	55	9 4	10	55	11 32	0 25	6 36
21	5 55	6 5	7 35	0 6	1 11	12 0	5 6	26
26	45	15	6 3	3 48	7 10	52	11 2 45	6 16

APRIL hath XXX Days.

M ☉ Decl.
D North.

Full Moon	7	} Day {	5 h. 24 m. Morning.	
Last Quarter	15		0 22 Morning.	
New Moon	21		3 41 Afternoon.	
First Quarter	28		4 47 Afternoon.	

1	4	17
6	6	12
11	8	4
16	9	53
21	11	38
26	13	18

☉ enters ♈ 21st Day, at 1 H. 57 M. Morning

1	F	Cambridge Term ends.	3 m 46	8 a 21	9	windy.
2	S	Oxf. T. ends. Days 13 h. long.	4 . 5	9 5	10	showry.
3	T	Palm Sund. Richard Bp.	4 18	9 46	11	
4	M	Ambrose.	4 31	10 26	12	
5	T		4 42	11 5	13	fair.
6	W	Old Stile Lady-Day.	4 57	11 45	14	warm.
7	T	Maundy Thursday.	D rises.	morn.	F	
8	F	Good Friday, or Crucifixion	8 a 38		27 16	
9	S		9 57	1 11	17	
10	E	Easter Day.	11 12	1 58	18	frosty.
11	M	Easter Monday.	morn.	2 48	19	snw.
12	T	Easter Tuesday.		22 3	42 20	
13	W		1 32	4 38	21	thaw.
14	T		2 8	5 34	22	cold.
15	F		2 41	6 30	23	
16	S		3 5	7 25	24	fair.
17	S	1st Sun. aft. Easter. Low Su.	3 23	8 17	25	
18	M		3 40	9 9	26	
19	T	Alphege.	3 53	9 59	27	
20	W	Ox. and Camb. Terms begin	4 9	10 51	28	cold
21	T	Days increased 6 h. 30 min.	D sets.	11 45	N	and
22	F		8 a 49	aft.	42 1	dry.
23	S	St. George.	10 28	1 41	2	cuckow
24	E	2d Sunday after Easter.	11 48	2 42	3	come.
25	M	St. Mark. Pils. Mary born.	morn.	3 43	4	bushes
26	T			47 4	41 5	green.
27	W	Easter Term begins.	1 27	5 34	6	heavy
28	T		1 55	6 23	7	morn.
29	F		2 16	7 9	8	dews,
30	S	Days 14 hou. 46 min. long.	2 32	7 51	9	no rain.

D ☉ Rises ☉ sets Cl. bef. ☉ D. Break ☉ East Saturn S. Jupiter S. Mars S

1	5	34	6	20	4	12	3	31	6	15	10 a 29	11 a 20	6 a 4
6		24		36	2	41		21		21	10 9	11 0	5 56
11		14		46	1	15		5		27	9 49	10 40	5 48
16		5		55	aft: 3		2	52		33	9 30	10 20	5 40
21	4	55	7	5	1	13		38		39	9 11	10 0	5 32
26		46		14	2	11		23		44	8 52	0 40	5 24

MAY hath XXXI Days.

M D Decl. North.

Full Moon	6	} Day {	5 h. 24 m.	Morning.
Last Quarter	14		0 22	Morning.
New Moon	21		3 41	Afternoon.
First Quarter	28		4 47	Afternoon.

1	14° 52'
6	16 21
11	17 42
16	18 56
21	20 3
26	21 1

☉ enters 12^d Day, at a N. 24 M. Morning.

1	B	1 st S. af. East. St. Phi. & St. Jas.	2 m 44	8 a 31	10	dry &
2	M	In 3 weeks after Easter 2 ret.	2 55	9 10	11	cold.
3	T	Invention of the Cross.	3 5	9 50	12	
4	W		3 17	10 30	13	
5	T		3 28	11 13	14	
6	F	St. John Evan. ante Port. Lat.	☉ rises.	11 59	F	
7	S	Duchess of York born.	9 a 22	morn.	16	
8	B	4 th Sunday af. Easter.	10 17	49	17	
9	M	1 month after Easter 3 ret.	11 25	1	42	18
10	T		morn.	2 38	19	
11	W		10 3	34	20	
12	T		47	4 30	21	
13	F	Old May Day.	1 14	5 24	22	some
14	S		1 32	6 15	23	light
15	B	5 th Sun. af. East. Rogat. S.	2 48	7 5	24	showers
16	M	5 weeks after Easter 4 return.	2 2	7 54	25	
17	T	Prs. of Wales born 1768.	2 16	8 43	26	rain.
18	W	[Dunstan.	2 32	9 34	27	showers
19	T	Ascen. Ho. Th. O. Charl. b.	2 49	10 28	28	fair.
20	F	On morrow of Alc. 5 return.	☉ sets.	11 25	N	fine.
21	S		9 a 24	aft.	26	1
22	B	Su. aft. Alc. Day. Pro. Eliz. b.	10 32	1 27	2	
23	M	Easter Term ends.	11 23	2 28	3	
24	T		11 57	3 24	4	
25	W		morn.	4 16	5	thund.
26	T	Aug. 1 st Abp. of Can. Oxf. T.e.	20 5	4 6	6	showers
27	F	Venerable Bede.	38 5	47	7	fine
28	S	[Camb. Term. div. midn.	51 6	28	8	grow-
29	B	Whit Su. K. Cha. II. bo. & ret.	1 3	7 7	9	ing sea-
30	V	Whit Monday.	1 13	7 46	10	son.
31	T	Whit Tuesday.	1 23	8 26	11	

D	☉ Rises	☉ Sets	Cl. aft. ☉	D. Break	☉ East	Saturn S.	Jupiter S.	Mars S.
1	4 37	7 23	2 3	2 5	6 50	8 a 32	9 a 18	5 a 18
6	28	32 3	33	1 51	56	8 12	8 58	5 9
11	20	40 3	53	1 29	7	7 52	8 38	5 0
16	13	47 3	58	1 6	5 7	7 33	8 18	4 52
21	6	54 3	49	0 30	9 7	7 14	7 58	4 44
26	3 59	8 1	3 26	No night	11 6	54	7 38	4

JUNE last XXX. Days.

M ☉ Decl
D North

Full Moon	5	} Day {	10 h. 24 m.	Morning.	1	21	58	
Last Quarter	12		1	49	Afternoon.	6	22	36
New Moon	19		8	46	Morning.	11	23	3
First Quarter	27		2	40	Morning.	16	23	21
☉ enters 22d Day, at 11 H. 2 M. Morning.					21	23	28	
					26	23	23	

1	W	Ember Week. Nicomede.	1 m 35	9 a 8	12	showry.
2	T		1 48	9 53	13	
3	F		2 5	10 42	14	rain.
4	S	K. Geo. III. b. 1738.	2 27	11 34	15	
5	B	Trin. Sun. D. of Camb. b.	☉ rises. morn.		F	moist.
6	M	On-mor. of Holy Trin. 1 ret.	10 a 5	29	17	thunder
7	J	Corpus Christi.	10 46	1 26	18	
8	W	Oxford Term begins.	11 16	2 23	19	fair.
9	T		11 36	3 18	20	fine.
10	F	Trinity Term begins.	11 53	4 10	21	
11	S	St. Barnabas.	morn. 5		0 22	
12	B	1st Sunday after Trinity.	6 5	48	23	rain.
13	M	In 8 d. of Holy Tr. 2 ret.	19 6	35	24	
14	T		32 7	24	25	
15	W		48 8	15	26	fair.
16	T		1 8	9 9	27	
17	F	St. Alban.	1 34	10 7	28	
18	S		2 10	11 6	29	
19	B	2d Sunday after Trinity.	☉ sets. af. 8		N	
20	M	Tr. Edw. k. West Saxons.	9 a 48	1 6	1	
21	T		10 17	2 1	2	
22	W	Longest Day, 16 ho. 34 m. lo.	10 37	2 51	3	
23	T		10 52	3 36	4	
24	F	St. John Bap. Mid-Gun-day.	11 3	4 18	5	showers
25	S		11 14	4 58	6	
26	B	3d Sunday aft. Trinity.	11 24	5 37	7	fair.
27	M	In 3 Weeks, H. Trin. 4 ret.	11 36	6 17	8	fine.
28	T		11 49	6 58	9	
29	W	St. Peter. Trin. Term ends.	morn. 7		41	showers
30	T		3	8	27	11

D	☉ Rises	☉ Sets	Cl. aft. ☉		☉ East	Saturn S.	Jupiter S.	Mars S.
1	3 52	8 8	2' 43"	No	7 16	6 a 30	7 a 13	4 a 24
6	48	12 1	56	real	18 6	10 6	53 4	14
11	45	15 1	0	Night	19 5	50 6	34 4	4
16	43	17 bef.		in	20 5	30 6	15 3	55
21	43	17 1	5	Brit-	21 5	10 5	56 3	46
26	44	16 2	10	tain.	20 4	50 5	35 3	37

J U L Y. hath. XXXI Days.

M ☉ Decl. North.

Full Moon	4	} Day	{	9 h. 19 m.	Afternoon.	11 23 ² 11
Last Quarter	11			6 10	Afternoon.	6 22 47
New Moon	18			7 16	Afternoon.	11 22 14
First Quarter	26			7 50	Afternoon.	16 21 31
☉ enters ♌ 23 ^d Day, 9 H. 53 M. Morning.						
						21 20 39
						26 19 38

1	F		om 23	9 a 18	12	showers
2	S	Vif. of B. V. Mary.	51	10 13	13	daily
3	B	4th Su. aft. Trin. Dog-days.	1 33	11 10	14	for a
4	M	Tr. of St. Martin. [begin.	D riles	morn.	F	fort-
5	T	Cambridge Commencement.	9 a 9		8 16	night.
6	W	Old Midsummer Day.	9 35	1 4	17	
7	T		9 52	1 59	18	
8	F	Camb. Term ends.	10 8	2 50	19	
9	S		10 21	3 40	20	
10	B	5th Sun. after Trinity.	10 34	4 28	21	
11	M	Oxford Act.	10 48	5 16	22	
12	T		11 6	6 6	23	
13	W		11 32	6 58	24	
14	T		morn.	7 54	25	
15	F	Swithin.	15	8 52	26	thunder
16	S	Oxford Term ends.	47	9 51	27	showers
17	B	6th Sunday af. Trinity.	1 47	10 50	28	
18	M		D sets.	11 40	N	fair.
19	T		8 a 36	aft.	38	fine.
20	W	Margaret.	8 52	1 25	2	
21	T		9 7	2 9	3	
22	F	Magdalen.	9 17	2 50	4	
23	S		9 29	3 30	5	
24	B	7th Sunday after Trinity.	9 38	4 9	6	
25	M	St. James.	9 49	4 49	7	
26	T	Anne.	10 4	5 31	8	
27	W		10 21	6 16	9	
28	T		10 45	7 5	10	
29	F		11 21	7 57	11	wind.
30	S		morn.	8 53	12	rain.
31	B	8th Sunday after Trinity.	11	9 51	13	

D	☉ Rises	☉ Sets	☉ Cl.bef.	☉ D.Break	☉ East	Saturn S.	Jupiter S.	Mars S.
1	3 46	8 14	3 11"	No	7 19	4 a 32	5 a 17	3 28
6	49	11 4	6	real	18	4 13	4 59	3 19
11	53	7 4	53	Night	15	3 54	4 41	3 10
16	58	2 5	30	in	12	3 35	4 23	3 1
21	4 4	7 56	5 55	Brit-	9 3	3 16	4 5	2 52
26	11	40	6 5	tain.	5 2	5 5	3 47	2 42

AUGUST hath XXXI Days.

M D Decl. North.

Full Moon	3	} Day at {	6 h. 46 m.	Morning.	1	18° 14
Last Quarter	9		11 0	Night.	6	16 56
New Moon	17		8 19	Morning.	11	15 31
First Quarter	25		0 15	Afternoon.	16	14 0
					21	12 23
					26	10 41

☉ catches the 24th Day, at 4 H. 17 M. Morning.

☉ enters ♈ 24th Day, at 4 H. 17 M. Morning.

1	M	Lammas-Day.	1 m 17	10 a 49	14	showry.
2	T		2 38	11 46	15	
3	W		D riles. morn.		16	
4	T		8 a 13	40	17	
5	F		8 27	1 32	18	fair.
6	S	Transfiguration.	8 40	2 22	19	fine.
7	B	9th Su. aft. Tr. Psa. Ameliab.	8 56	3 11	20	
8	M	[Name of Jesus.	9 12	4 2	21	
9	T		9 35	4 54	22	fair.
10	W	Lawrence.	10 4	5 49	23	
11	T	Dr. Brunsw. bo.	10 43	6 47	24	very
12	F	Pr. of Wales born 1762.	11 38	7 4	25	fine
13	S	Old Lammas Day.	morn.		26	harvest
14	B	10th Sunday after Trinity.	48	9 40	27	to the
15	M	Assumption B. V. M.	2 4	10 33	28	end of
16	T	Duke of York born 1763.	3 22	11 22	29	the
17	W	☉ eclipsed visible.	D sets. aft.		7 N	month.
18	T		7 a 32	49	1	
19	F		7 37	1 29	2	
20	S		7 49	2 9	3	
21	B	11 S. af. Tr. D. of Clarence b.	8 1	2 49	4	
22	M		8 14	3 30	5	
23	T		8 30	4 14	6	
24	W	St. Bartholomew.	8 50	5 0	7	
25	T		9 20	5 50	8	
26	F		10 3	6 44	9	
27	S		10 59	7 40	10	
28	B	12th Su. af. Tr. Augutt. of H.	morn.		8 38	11
29	M	Beheading of St. John Bapt.	14	9 35	12	
30	T		1 40	10 30	13	
31	W		3 9	11 24	14	

D	☉ Rises	☉ Sets	☉ Cl. bef.	☉ D. Break	☉ East	Saturn S.	Jupiter S.	Mars S.
1	4 27	7 40	5 58"	1 24	6 59	2 a 38	3 a 28	2 a 33
6	27	33	5 35	1 44	54	2 21	3 12	2 25
11	36	24	4 58	2 2	49	2 4	2 56	2 18
16	45	15	4 7	20	44	1 4	2 40	2 11
21	51	6	3 3	35	38	1 30	2 25	2 4
26	3	6 59	1 47	50	33	1 13	2 10	1 57

SEPTEMBER hath XIX Days. | M | Decl. North.

1st Moon 1	Day { 3 h. 31 m. Afternoon.	1	8° 34'
Left Quarter 8	{ 5 54 Morning.	6	6 44
New Moon 15	at { 11 56 Night.	11	4 51
First Quarter 24	{ 3 28 Morning.	16	2 56
		21	Q 50
		26	Sou. 58

☉ enters the 24th Day, at 3 H. 50 M. Morning.

		D rises.	morn.	F	
1 T	Giles				
2 F	London burnt 1666. C. S.	6 a 52	16	16	showry.
3 S		7 7	1	8	17
4 B	1st Sunday after Trinity.	7 25	2	0	18
5 M		7 46	2	53	19
6 T		8 12	3	49	20
7 W	Enurchus.	8 50	4	47	21
8 T	Nativity of the B. V. Mary.	9 41	5	47	22 fair.
9 F		10 55	6	46	23 showry.
10 S		morn.	7	43	24
11 B	14th Sunday after Trinity.	1 18	8	37	25
12 M		1 18	9	27	26
13 T		2 38	10	12	27 showers
14 W	Holy Cross.	3 48	10	55	28
15 T		D sets.	11	36	N
16 F		6 a 6	aft.	16	1
17 S	Lambert.	6 18		56	2
18 B	15th Sunday after Trinity.	6 30	1	37	3
19 M		6 45	2	19	4
20 T		7 3	3	4	5 fair.
21 W	Ember Week. St. Matthew.	7 31	3	53	6
22 T	K. Geo. III. crowned 1761.	8 7	4	44	7 rain.
23 F		8 59	5	38	8 stormy.
24 S	Autumnal Equinox.	10 2	6	34	9 showry.
25 B	16th Sunday after Trinity.	11 20	7	29	10
26 M	Cyprian. Old Holy Rood.	morn.	8	24	11
27 T		44	9	18	12 fair.
28 W		2 15	10	10	13 fine.
29 T	St. Mich. Ds. Wirt. b. 1765.	3 44	11	1	14
30 F	Jerome.	D rises.	11	54	15

☉ Rates | ☉ Sets | Cl. aft. | ☉ D. Break | ☉ East | Saturn S. | Jupiter S. | Mars S.

1	5	15	6	45	0'	0"	3	7	6	26	0	a 54	1 a 52	1 a 49
6		25		35	1	33	21		20	0	39	1 38	1 49	
11		34		26	3	14	34		14	0	24	1 24	1 43	
16		44		16	4	58	45		8	0	9	1 10	1 37	
21		54		6	6	43	56		2	11 m 51	0	56	1 25	
26	6	4	5	56	8	26	4	7	5	55	11 26	0	42	1 10

Full Moon	1	Day at	h. 11	m.	Morning.	1	2°	55
Left Quarter	7		4	12	Afternoon.	6	4	51
New Moon	15		5	22	Afternoon.	11	6	46
First Quarter	23		5	1	Afternoon.	16	8	38
Full Moon	30		9	18	Morning.	21	10	28
☉ enters ♏. 14th Day, at 8 10. ♏. 14th Day.						26	12	14

1	S	Remigius, Bp.	5	2	38	morn.	F	fair
2	E	17th Sun. after Trinity.	5	56		48	17	and
3	M		6	32	1	45	18	fine.
4	T		6	57	2	44	19	
5	W		7	44	3	45	20	
6	T	Faith, V. M.	8	46	4	47	21	
7	F		9	58	5	46	22	
8	S		11	15	6	42	23	showry.
9	E	18th Sun. af. Tr. St. Denys.	morn.	7	33	24		
10	M	Oxf. & Cam. Terms begin.		33	8	20	25	fair.
11	T	Old Michaelmas-day.	1	47	9	3	26	
12	W		2	59	9	41	27	
13	T	Trans. K. Ed. Conf.	4	9	10	24	28	showers
14	F		5	19	11	4	29	
15	S		D sets.	11	44	N		
16	E	19th Sun. af. Trin. Days	5	a	0	aft.	26	1
17	M	Etheldreda. [decr. 6 hours.	5	18	1	10	2	
18	T	St. Luke, Evang.	5	43	1	57	3	
19	W		6	16	2	48	4	
20	T		7	0	3	40	5	frosty.
21	F		7	59	4	34	6	showry.
22	S		9	11	5	28	7	stormy.
23	E	20th Sunday after Trinity.	10	30	6	21	8	
24	M		11	54	7	13	9	fair.
25	T	K. Geo. III. Ac. Crispin.	morn.	8	3	10		
26	W	L. Geo. III. Procl. 1780.	1	20	8	53	11	wet
27	T		2	47	9	44	12	and
28	F	St. Simon and St. Jude.	4	17	10	36	13	dirty
29	S		5	46	11	31	14	roads.
30	E	21st Sunday after Trinity.	D rises.	morn.	F			
31	M		4	a	57	30	16	

D	☉	Rises	☉	Sets	Cl. aft.	☉	D. Break	☉	East	Saturn	S.	Jupiter	S.	Mars	S.
1	6	14	5	46	10	6"	4	18	5	49	11 m	20	0 a	28	1 2 15
6		24		36	11	38		29		43	11	4	0	13	1 9
11		33		27	13	1		39		37	10	48	11 m	59	1 3
16		43		17	14	11		49		31	10	32	11	45	0 58
21		53		7	15	7		59		25	10	16	11	30	0 52
26	7	2	4	58	15	48	5		19	10	0	11	15	0	48

NOVEMBER hath XXX Days. M D Decl, South:

1st Quarter	6	} Day at	6 h. 39 m.	Morning.	11	14	14
New Moon	14		11 25	Morning.	6	15	48
Full Quarter	22		4 29	Morning.	11	17	16
Full Moon	28		7 25	Afternoon.	16	18	36
☉ enters ♏ 23d Day, at 5 H. 11 M. Morning.					21	19	48
					26	21	31

1	T	All Saints.	5	a	39	1	m	32	17	
2	W	D. Kent bo. 1767. All Souls.	6		37	2		35	18	rain.
3	T	Prs. Soph. bo. 1777. On m.	7		45	3		37	19	
4	F	K. Wm. Ian. [All Souls 1 ret.	9		3	4		36	20	frosty.
5	S	P. w. ler Plot, O. S. 1605.	10		23	5		30	21	
6	B	2d S. aft. Trin. Leonard.	11		39	6		20	22	
7	M	Mich. T. beg.	morn.		7			4	23	
8	T	Prs. Aug. Sophia bo. 1768.			52	7		40	24	fair.
9	W	Lord Mayor's Day at Lond.	2		2	8		26	25	fine.
10	T		3		11	9		5	26	
11	F	St. Martin. [div. at mid.	4		21	9		45	27	
12	S	On mor. Mart. 2 ret. Ca. T.	5		31	10		26	28	showry
13	B	3d Sun. aft. Trin. Britius.	6		42	11		9	29	
14	M		D sets.		11			55	N	
15	T	Machutus.	4	a	18			45	1	
16	W		5		9	1		37	2	
17	T	Hugh Bp. of Lincoln.	5		54	2		30	3	
18	F	In 8 days of St. Mart. 3 ret.	7		3	3		24	4	
19	S		8		19	4		16	5	frost.
20	B	4th S. af. Tr. Edm. K. & M.	9		39	5		7	6	
21	M		11		1	5		56	7	
22	T	St. Cecilia.	morn.		6			43	8	
23	W	St. Clement. Old St. Martin.			23	7		31	9	
24	T		1		46	8		20	10	
25	F	D. of Glo. b. 1743. Cath. in	3		12	9		11	11	mild
26	S	[15 d. of St. Mart. 4 ret.	4		41	10		6	12	showers
27	T	Advent Sunday.	6		13	11		6	13	snow.
28	M	Michaelmas Term ends.	D rises morn.					F		
29	T		4	a	12			8	15	
30	W	St. Andrew Apoit. & Mart.	5		17	1		12	16	

☉	Rises	☉	Sets	Cl. aft.	☉	D. Break	☉	East	Saturn S.	Jupiter S.	Mars S.			
1	7	13	4	47	16	13	5	17	5	12	9 m 38	10 m 56	0 a 42	
6		22		38	16	12		24		7	9	19	10 39	30
11		30		30	15	50		32		1	9	0	10 22	30
16		38		22	15	6		37	4	57	8	41	10 6	20
21		45		15	14	2		43		52	8	23	9 50	20
26		52		8	12	28		49		49	8	5	9 34	10

DECEMBER hath XXXI Days.

M D Decl. South.

Left Quarter 6	} Day {	0 h. 56 m.	Morning.	1	21	44
New Moon 14		4 56	Morning.	6	22	26
First Quarter 21		1 52	Afternoon.	11	22	58
Full Moon 28		7 10	Morning.	16	23	19
				21	23	28
				26	23	25

☉ enters ♈ 22d Day, at 5 H. 23 M. Afternoon.

1	T		6 a 34	2 in 14	17	mild.
2	F		7 34	3 12	18	
3	S		9 15	4 5	19	frost.
4	B	2d Sunday in Advent.	10 30	4 52	20	storms.
5	M		11 42	5 35	21	
6	T	Nicholas.	morn.	6 16	22	fair.
7	W		52	6 56	23	
8	T	Conception of V. Mary.	2 1	7 35	24	frost.
9	F		3 10	8 15	25	
10	S		4 21	8 57	26	
11	B	3d Sunday in Advent.	5 34	9 42	27	
12	M		6 45	10 30	28	snow.
13	T	Lucy.	7 52	11 21	29	
14	W	Ember Week.	D fets.	aft. 15	N	frost
15	T		4 a 52	1 9	1	and
16	F	O. Sap. Camb. Term ends.	5 57	2 2	2	snow.
17	S	Oxford Term ends.	7 18	2 54	3	
18	B	4th Sunday in Advent.	8 38	3 43	4	
19	M		10 0	4 30	5	
20	T		11 21	5 16	6	rain.
21	W	St. Thomas, Ap. Shortest Day.	morn.	6 3	7	mild.
22	T		43	6 52	8	
23	F		2 8	7 43	9	moist.
24	S		3 35	8 38	10	
25	B	Christmas Day.	5 4	9 37	11	rain.
26	M	St. Stephen, Protomartyr.	6 27	10 40	12	fair.
27	T	St. John, Ap. & Evang.	7 41	11 42	13	
28	W	Holy Innocents.	D rises.	morn.	F	
29	T		5 a 15	42	15	
30	F		6 36	1 38	16	frost.
31	S	Silvester.	7 55	2 28	17	snow.

D | ☉ Rises | ☉ Sets | Cl. alt. | ☉ D. Break | ☉ East | Saturn S. | Jupiter S. | Mars S.

1	7	57	4	3	10	56	5	54	4	45	7 m 45	9 m 17	0 a 8
6	8	2	3	58	8	57		56		43	7 24	8 58	0 3
11		5		55	6	44		58		41	7 3	8 39	11 m 55
16		7		53	4	21	6	0		40	6 42	8 20	11 50
21		8		52	1	52		1		39	6 21	8 1	11 44
26		7		51	bef.	37		0		40	6 0	7 42	11 38

ANSWERS to the QUESTIONS critical and philosophical.

CCXX. By The Proposer.

What is rendered *Firmament* in the text is *Expansion* in the marginal reading of our Bibles; and seems the more proper word of the two, because the former seems to convey a notion of something solid.

This also ingeniously answered by Messrs. Cairns, Glendenning, Indigema, and Rowe.

CCXXI. By Sebastian B. of Bath.

In the works of *Famianus Strada* is a piece, entitled "*Pistor Subjuranus, sine Problema, cur sternentes salutentur.*" Here we find that the custom of saluting sneezers was in use among the ancient Greeks and Romans, and was connected with religion and augury; and, according to the time and other circumstances in which it happened, was considered as a good or bad omen. With these opinions, it was natu-

a by-stander, when a person sneezed at an ill-fated hour, to pray to avert the omen. From the Romans the custom may have ded to our own times. *Strada*, however, informs us, that, in the time of Pope Gregory the Great, there raged a pestilential disease, which sneezing or yawning immoderately immediately preceded; and that, when sneezing happened, it became customary to utter the like disaster. It must be acknowledged, however, that none of these solutions is perfectly satisfactory, and that the origin of the custom still remains obscure.

The answers are given by Messrs. *Robinson*, *Rufficus*, and *Wyrill*. Those by Messrs. *Cairns* and *Glendenning* are little different.

CCXXII. By Mr. J. Cairns, of Old Bewick.

The reason why the water is lighter when the fish is in it is, because it is more expanded, or occupies a greater space. All bodies whatever are either heavier or lighter according to the less or more space they fill up. And thus it is answered by Messrs. *Glendenning*, *Rowe*, *Rufficus*, *Sbittor*, and *Wyrill*.

CCXXIII. By Sebastian B. of Bath.

Salep is not an animal but a vegetable preparation, being a kind of *fecula* or starch, made from the root of a species of *Orchis*. It, however, as the proposer seems to have imagined, it had been the dried flesh of the viper, it might nevertheless have been innocent and salubrious; since it is well known that the flesh of this animal was formerly kept in the apothecaries shops, and administered in various diseases; and it has been discovered that its properties do not differ from those of the white flesh of some fish and fowls. The poison of the viper is confined to a small bag, situated in its mouth. It would therefore be as reasonable to expect that the whole body of an ox should be bitter, because its gall is so, as to suppose that the flesh of a viper is poisonous, because a small portion of poison is contained beneath its fangs.

Ingenious answers to this are also given by Messrs. *Cairns*, *Glendenning*, *Rufficus*, *Sbittor*, and *Wyrill*.

CCXXIV.

CCXXIV. By Mr. *Alex. Rowe*, of Reginia.

Taylor, perhaps, had their name from their trade or profession of cutting and dividing cloth, from the French *taille*. See *Boyer's Dictionary*

Other answers are also given by Messrs. *Cairns*, *Glendenning*, *Kemp*, *Rusticus*, *Sbillitoe*, and *Wyrill*.

CCXXV. By Mr. *J. Cairns*, of Old Bewick.

The passage in question has the appearance of a poem, or piece of musical composition, which he or his son Tubal had made; and might be a kind of exultation or rapture he was in on account of his son's invention of musick; or a satirical speech, wherein he vaunted over the posterity of Seth, from which Cain and his offspring had been excluded communion. For this reason he called one of his sons Tubal Cain, which signifies to return back again, or possession. The import of the speech is this. Hear my voice, ye wives of Lamech, hearken to my speech. Have I slain any man in wounding, or injured any old or young in my hurt, that I, on account of my progenitor's misconduct, should be excluded from the society of men? If the death of Cain, notwithstanding his wickedness, should be avenged sevenfold, much more shall Lamech's death be revenged, whoever shall be the cause of it, even to seventy times seven fold.

Other answers are given by Messrs. *Glendenning*, *Kemp*, *Moxon*, *Rowe*, and *Wyrill*.

CCXXVI. By Mr. *Benj. Kemp*, of Farnfield.

Love's a gentle gen'rous passion,	That false joy, which now bewitches,
Source of all sublime delights,	When obtain'd, you will repent;
Which, with mutual inclination,	Lawless passion brings vexation,
Two fond hearts in one unites.	But a chaste and gen'rous love
What are titles, pomp, or riches,	Is the glorious emulation
When compar'd with true content?	Of the blissful state above.

Says the poet; and I know no more beautiful or proper answer.

Mr. *Rich. Sbilitoe* gives this different answer thus:

"The symptoms produced by Love as a disease are as follow: the eyelids often twinkle; the eyes are hollow, and yet appear as if full with pleasure; the pulse is not peculiar to the passion, but the same with that which attends solicitude and care. When the object of this affection is thought of, particularly if the idea is sudden, the spirits are confused, the pulse changes, and its force and time are very variable. In some instances, the person is sad and thoughtful; in others, not being conscious of his state, he pines away, is slothful, and regardless of food." As the disease advances, an hectic fever, or a settled melancholy, comes on and closes the distressful scene. From the distressing effects of this tender passion, when placed on a hopeless object, how cautious and reserved should we be in courting this sweet destroyer of repose.

Other answers are given by Messrs. *Cairns*, *Glendenning*, *Moxon*, *Rowe*, *Rusticus*, and *Wyrill*; besides one in verse by Mr. *Jackson*, the proposer.

CCXXVII. By Tom of Lincoln.

Cold is no doubt the proximate cause of this, but Idleness the effective one; ply the churn-dash swiftly and uniformly, the colder the weather the quicker the motion must be. Warm the cream first, and work away to prevent it from cooling at first, and never fear getting butter.

Mr. *Sbillioe* says a little vinegar will in a few minutes produce the desired decomposition; and *vice versa*, by adding some vegetable alkali, it will render the cream which is sour and lumpy smooth and sweet. And Messrs. *Cairns*, *Glendenning*, and *Rowe*, give other answers.

CCXXVIII. By Mr. J. Moxon, of Cawood.

Having never read, heard, or seen any thing of this kind, that worms are afraid of thunder, if it be so, it must proceed from feeling its effects (as they cannot see) by a kind of rumbling agitation of the earth made by thunder. A lesson for us worms of the earth to learn by.

Like answers are given by Messrs. *Cairns*, *Glendenning*, *Rowe*, *Ruficus*, and *Sbillioe*.

CCXXIX. By Mr. A. Glendenning.

"Not more propitious the Favonian breeze

"To Nature's health than purifying storms."

And hail, independent of its tendency to purify the air in the sultry months, no doubt destroys innumerable animalculæ, which would otherwise prey upon, and materially injure the fruits of the earth.

Messrs. *Cairns*, *Kemp*, *Rowe*, and *Sbillioe*, also give answers.

CCXXX. By Mr. Glendenning.

Josephus says, that, previous to the Flood, the offspring of Seth (which includes Enoch) engraved their discoveries in the arts and sciences upon two pillars, the one of stone, to withstand a deluge, the other of brick, to endure a conflagration. Consequently, if this relation be fact, I think it manifest there might be books and writing, or something of the same nature, in the antediluvian world.

But, be all this as it may, it is the prophecy, and not the book of Enoch, that is quoted by St. Jude, which might be traditionary for generations, and not imply the necessity of the use of writing at the time Enoch lived to transmit it to posterity. And hardly of this opinion is Mr. *Wyrill*, and Messrs. *Cairns*, *Kemp*, *Rowe*, &c.

ÆNIGMATOLOGY.

ANSWERS to the last Year's ÆNIGMAS.

1. To-morrow.
2. Image by Reflection.
3. Flattery.
4. A Gate.
5. Smoke.
6. Metal Tractors.
7. Put.
8. Fame.
9. A Strap.

10. Man.
11. Poverty.
12. Truth.
13. A Pair of Spectacles.
14. Gratitude.
15. Electricity.
16. Cleanliness.
- Prize.* The Church.

- Rebus.* 1. A Bird's nest. 2. Chin. 3. Nonsense. 4. Severn.
 5. Death. 6. Head-ache. 7. Clark. 8. Fortune. 9. Old Maid.
 10. A Snow-drop. B 1. Peace.

1. Peace. By Mr. G. BRENTNALL, of Normanton-upon-Soar.

	Æ.	K.
The blessing of Peace let us welcome again :		
I hope there 'll be plenty for poor honest men :		
And that they for joy may now all change their sorrow,		
Their gratitude shewing to-day and to-morrow.	14.	1.
May every man be content with his lot,	10.	
Misfortune and poverty both be forgot	11.	8.
To nonsense and flattery never give ear,	3.	3.
But fame and reflection for ever be clear.	8.	2.
For the blessing of peace well we all may rejoice,		
Both old maids with traitors and bird-snissing boys.	6.	9.
Let death, smoke, and fire; hellish war no more make,	5.	15.
To cause many hearts so, and many heads ache.		6.
John Clark at the toll-gate near Severn's deep stream	4.	7.
Of nothing but ravage and ruin could dream ;		4.
Nay, he without spectacles plain saw, he thought,	13.	
That Britain would soon be to poverty brought :		
But now he's well pleas'd, puts new straps to his shoe,	7.	9.
Strokes his chin, smiles and says, now how well we may do.		2.
Ere snow-drops forerun all the beauty of spring		10.
In neatness with harmony let the church ring :	15.	17.
It will be our wisdom in truth to employ	12.	
Our hearts and our voices in this sacred joy.		

2. An Address to Mr. Tho. Hindmarsh, of Crook, by
Mr. THO. COULSON.

Dear Hindmarsh, I'd have you to marry while young,		
For time swiftly flies, and life cannot be long.		
Chuse not an old maid, man, tho' ever so gay,	10.	9.
If her forehead the tint of the snow-drop display ;		10.
For cleanliness fam'd, not to flatter inclin'd,	16.	8.
But one during life who business will mind.	3.	
In glass by reflection you plainly will see	2.	
To-morrow no bar will to happiness be.	1.	4.
Let your choice be a maiden in whom truth bears sway,	12.	
Grateful and obedient to all that you say ;	14.	
For, when keen adversity's tide overflows,	11.	
You in her may confide, and your feelings disclose,		
When your deadly head-ache endangers your life,		5.
No object on earth equal can a good wife.		6.
If her fortune be small, let her parts be refin'd,	9.	8.
For a choice such as this will give peace to the mind.		
Friend Clark and myself will the wedding attend		7.
When we smok'd have our pipes for electrical end ;	5.	15.
And when we return from the church will repair	17.	
To the sign of the spectacles, stay a while there,	13.	
View Nature all smiling and passing along,		
While the birds leave their nests, and chaunt forth a song.		1.
Let the urchin of love be in wedlock your guide,		2.
Or the Severn may make you as blest'd a bride.		4.
But a kind virtuous wife will present to your view		
No nonsense, but wisdom both lasting and true.		3.

May disputings all cease, and you ever agree,
Is the wish of your friend and your servant, T. C.

3. The Farmer's Generosity. By Mr. FRANCIS ASHER, of Coddock.

As Gripus the farmer was riding abroad,
He met a poor sailor upon the high road,
Who had the misfortune to have but one leg,
So poverty caus'd him to flatter and beg.
It was near the gate where they happen'd to meet,
Jack with *strap* in hand, without shoes to his feet,
Says, "Good sir, some pity, I pray, on me take,
For *truth's* sake and goodness some small present make.
When my country call'd, I of death not afraid,
Of foes quite regardless as of an old maid,
Turn'd out volunteer;" and so stroking his chin,
"Tis nonsense to murmur, I care not a pin.
And now, on reflection, I don't wish to sorrow,
Though I, like a snow-drop, be nipp'd-off to-morrow.
For man, like a shadow, soon passes away,
If he go to the church, or to sleep, or to pray.
No smoky old tractors nor spectacles need,
Well you know, when I tell you that I cannot read.
I cleanliness love; as for fame 'tis a jest,
And little I prize it now as a bird's-nest.
Put gratitude high, and I pity can take
On my brother Clark, when he's got the tooth-ache."
Old Gripus, to get rid of Jack, as they say,
Threw him down a new farthing, and so rode away,
As fast as he could, by of Severn the side,
And trembling like one just electrified.

4. An Address to Peace. By Mr. JOHN WYRILL, of Wistow, near
Salby.

Thrice welcome, Peace! thou heavenly blessing, hail!
Long may thy influence o'er the world prevail.
May ev'ry coming day, in Nature's glass,
Make us reflect on blessings as they pass.
On pomp and pow' a tedious fustian wait,
While modest worth is driven from the gate.
Involv'd in smoke, war, thund'ring on the plains,
With deadly tractors, put to flight the swains;
And Fame's shrill trumpet, bellowing loud afar,
Through all the world re-echo'd, "horrid war!"
Each strapping hero more than man appear'd.
Famine and poverty their heads uprear'd.
But truth, celestial truth, at last bore sway;
And leagu'd with thee, sweet Peace, drove War away.
With spectacles of joy the cities blaz'd,
And Gratitude the great Deliverer prais'd,
Like an electric cleanliness we see
Far differing churches all in peace agree.

In holy fervour here they all accord,
 And thanks and praises offer to their Lord.
 The feather'd songsters may in safety build
 In verdant groves, which horror lately fill'd;
 And slippant barbers, as they smooth the *chin*,
 Exult that plenty will with peace begin,
 Though discontent and *nonsense* insly grows,
 Whilst rapid *Sewern*, big with commerce, rolls;
 The instruments of *death* are laid aside,
 And *aching* heads have remedies apply'd.
 Friend *Clark*, with joy, will join the tuneful band,
 To hail the *fortune* of his native land.
 All virtuous *old maids* bless thee, sweet Peace;
 As with the *snow-drop* suitors will increase.
 Returning heroes, to the fair still true,
 Will, in their arms, to dangers bid adieu.
 Now commerce will her golden wings expand,
 And join in friendship ev'ry distant land.

5. Address to an afflicted Friend. By Mr. BENJAMIN KEMP.

Laura, why mourn? to-morrow's joys may rise,
 And chase these sad reflections all away;
 More *flattering* prospects, and propitious skies,
 May ope the gate of some more happy day.
 When *page*, like *smoke*, assail on ev'ry side,
 What though the *patent* *tractors* give no ease,
 Yet put your trust in that unerring guide,
 So *sam'd* of old for mercy, love, and peace.
 Despair's a *trap* where thoughtless men are caught;
 Manfully fight against this subtle snare;
 Though *poverty*, with sad disasters fraught,
 Be yours, yet wise *truth* bids you spurn at care.
 What shocking *spectacles* are those we find,
 Bereft of *patience*, *gratitude*, and love,
 Lost to that calm *machinery* in the mind;
 Which *subite-rob'd* innocence derives above.
 Where the pure *church* from age to age shall shine,
 There fix your heart, there ev'ry thought bestow,
 Centre your hopes in that great pow'r divine,
 From whom relief and endless comforts flow.

6. To-morrow. By Mr. J. CARNS, of Old Bewick.

To-morrow is the world's fair speech,
 But, like a cloud, 'tis out of reach.
 A pledge it is of gaudy lace,
 A gate that's hung on empty space.
 Tractor metallic call we may
 A *smoke* that vanishes away.
 A put-off and a sham excuse;
 A postman that a dream pursues;
 A *trap* that is by Satan ply'd,
 For feats of *force* and brags decry'd.

A with makes all who trust it poor,
 And shutting against *truth* the door.
 Like *spectacles* to-morrow is;
 Reflect on makes it the fool's bliss;
 Like *electricity* it flies.
 A besom to sweep clean the skies.
 To-day your *gratitude* then show.
 To-morrow's what the Church don't
 know.

7. The venerable Rustic. By Mr. PHILIP GOVE, of Exeter.

Far from the bustle of the town
There dwells an aged sire,
Not born to fortune or renown,
Nor slave to vain desire; [cares,
As knowing well that wealth brings
That honours are but breath,
And soon they must to other heirs
Be both consign'd by death.
Reflected image, like a dream,
Life's short as winter's day;
Before to-morrow's golden beam
Like birds we're snatch'd away.
Impress'd with gratitude sincere,
Each morn and ev'ning too
Devoutly he puts up a pray'r,
And praise where all is due.
His age, tho' threescore years and
No spectacles he needs; [seven,
Reports of fame, or odd or even,
He still with pleasure reads.
In nonsense he not wastes his mind,
But reads that holy book,
Where truth and wisdom all must
Who will devoutly look. [find

His church frequenting not in vain,
No Clerk more pains bestowing,
Nor snow nor heavy drops of rain
Keep him from thither going.
He with his sister, an old maid,
Walks out three times a day,
For sake of health, in verdant meads;
Sweet flowers strew the way.
Electric flattery obtrude
He will not, *trush* he loves;
And cleanliness and gratitude
Are pleasures he approves.
Frugality adorns his cot,
Not trapping china ware;
He smokes his pipe, and drinks a pos-
Of sober table-beer.
But poverty ne'er at his gates
Implores relief in vain,
That character, that man he hates,
Who can the poor disdain.
No patent *masters* can he need,
Head-ache or tooth to cure,
But health attends on him indeed;
And may it long endure!

8. Slavery and Liberty. By Mr. R. DUTTON, of Kingsley.

Slavery, thou bitter pill,
Which thousands taste, yet bitter
Still,
Behold a man in captive state
Put thro' a trap-door'd iron gate,
Meagre and poor and lost to fame,
To-morrow and a year the same.
I thro' a smoky skylight saw
Him chain'd upon a bed of straw,
No friend to flatter, hope to cheer,
No balm to ease the brow of care;
No light his track or space affords;
Bound were his limbs with straps
and cords;
A spectacle of human woe,
In truth, that ease can never know.

But let us now the scene exchange
For Liberty's enchanting range.
With gratitude the Goddess good
Electrifies and cleans the blood.
Thou'rt worship'd and ador'd in love,
In mountain church, and shady grove;
Where birds-nests, snow-drops, all
abound,
Yes, there sweet Liberty is found,
Tho' fortune frown, tooth-ache per-
Old maids despise the other sex; [plex,
Tho' Clark write clear as Severn's
stream,
And others nonsense like a dream,
Yet still my wish to heav'n shall be
To give me *dequib* or liberty.

9. The Drunkard. By Mr. ISAAC GUMLEY, of Nottingham.

The drunkard, careless of to-
morrow,
By tipping strives to banish sorrow,
From truth and wisdom far will
Thus driving gratitude away. [stray.
And, while he hugs his darling sin,
No cleanliness is found within.

Intemperance is thus the cause
Why man will break his country's
laws.
Instead of minding what he shou'd,
His own and ev'ry other's good,
Mid smokes and fumes his days will pass,
And grow quite stupid with his glass.
He,

He, fearless of the heav'nly rod,
Neglects and scorns the house of God;
Is pleas'd to hear his comrades hiss
At all who love the gates of bliss.
Electric d with noise and ale,
His *tractor* is a fluttering tale,
And puts on airs most consequential
As if he had all things essential.
Thus madmen, every day evince,
Imagine they are lords and princes.
But view his home, you there will
Most sad distress and poverty. [see

A wife, perhaps, who quakes for
dread,
And naked children wanting bread;
About with all the windows broken,
And of a fire no sign or token;
No food to eat, no bed to lie on,
Sad *spectacle* to keep one's eye on.
O, ye ingenious British youth,
Regard and love the ways of *truth*;
Avoid these paths that lead to
death, [breath.
Abjure them while you yet have

to. Reflections. By Mr. J. MOXON, of Cawood.

Swift as the shuttle seen and fled,
I only *truth* relate,
To-day alive, to-morrow dead;
How fickle is our state!
The constant *glass* its hour will run,
As we all daily see,
And, like the evening setting sun,
Is our mortality.
False *man* may flatter at the gate,
And promise bliss for years,
The debt of all, so fix'd is fate,
All pay must with arrears.
The head that knowledge can ex-
At other men's desire. [pound
Not long will with the bards be
But like a *smoke* retire. [found,

The *tractors* us'd health to restore;
Nor *straps*, when all is done,
Avail not, soon health is no more,
Time passes, and we're gone.
What *spectacles* of folly we,
Who will not time redeem!
Regarding their mortality,
The wife will it esteem.
Let all be put in mind who hear
Electric thunders sound,
Clean hearts in *gratitude* and fear
To lift up all around.
Fame both in Church and State may
Get, if we wisely spend [ue
Our lives, blest'd immortality
Obtaining in the end.

Pr. Rent-Day. By Mr. THO. WHICKER, of Exeter.

Clad with terrors, grief, and fears,
Imperial rent-day now appears
Like an *electric* stroke.
How *poverty* is now dismay'd!
Reflection, shadow of a shade,
Even fears the Church is broke.
A *dark*-like bailiff's bristly chin,
That *Severn's* waters cannot clean,
Appears, report gives ill:
Held albe to him is no excuse,
Tis *nonsense*, flattery, abuse,
That stand in no stead will.
Poor *Couplet's* gate was hung a
lost,
Where *truth* and wisdom enter'd oft.
But now with din of rant
Beside his *spectacles* and books,
Tho' few yet choice, the monster
hooks:
What bailiff can relent?

Poor *Couplet* *Clark* as snow-drop
No *gratitude* or *truth* avail, [pale,
Misfortune all and fear.
To maids and matrons in a flock
He told his tale, which caus'd a
And some bestow'd a tear. [shock,
But when Tom Bowling, jolly
mortal, [portal,
Heard the sad tale at *Couplet's*
His gen'rous heart cries, Come,
With Nelson I have cross'd the
main, [proud Spain;
To *smoke* the French, and *strap*
Some gold I have brought home.
Cheer up, *wan*, better news to-morrow,
Put *tractors* on, and end thy sorrow,
This bailiff I will pay.
He did so. And the happy bard—
Again his tuneful lyre is heard,
And thus he sung, they say:

Success to the tars of Old England I sing;
May the great God of Armies them guard with his wing!
May their Nelson, their Vincent, their Warren renown'd,
Long live to command, and such worth still abound!

12. The Tooth-ache. By Mr. THOMAS WILSON, of Newcastle.

Accept, kind sir, my humble thanks	How happy are the feather'd race,
For placing me in Dia's ranks,	Exempt from my unenvy'd case,
Making me dance, and wag my	Who in some snug Recluse's place
Without disguise, { thanks	Their dwellings rear
As if Dame Fortune in her pranks	On Severn's banks, where snow-
Had drawn a prize.	drops grace
But how shall I attempt again	The smiling year.
Clark's curious riddles to explain,	Whilst I, a poor tormented wight,
Rack'd as I am with tooth-ache's	Count round the tardy hours of night,
Of pains the chief, { pain,	Still hoping that returning light
Oft calling lazy death in vain	May bring me ease;
To give relief?	But night nor day gives me respite
No old-maid's remedy gives ease,	From this distaste.
Plagu'd with this pinching cur's'd	Then, sir, excuse the doleful strain
disease,	In which I thus describe a pain
Which pill nor potion can appease	My nonsense all can ill explain,
Of med'cine's squad.	It's so severe.
It will, I fear, my senses seize,	And I most truly yours remain
And drive me mad.	Until next year.

13. The happy Old Maid. By Mr. B. KEMP.

It has often been said of Miss Clark, the old maid,
'Tis her fortune at death to lead apes.
What nonsense! She's neat, as the snow-drop complete,
When Severn's smooth stream shows her shapes.
From the foot to the chin, in due order each pin,
As prim as a bird-nest in spring;
If head-ache she's got, still content with her lot,
She would not be a wife to a king.

14. Replies answered by Mr. J. Moxon.

I much admire the frail bird's nest	While Clark, our bard, with ease is
As emblem of our cradle-rest.	blest. [frown,
The sottish toper gives his chink.	And if dame Fortune chance to
For nonsense and a pot of drink.	No wise old-maid will be cast down,
The river Severn raging there	Nor like a snow-drop hang her
Will be the death of some I fear.	head
As some with tooth-ache are distressed,	Till she be withered and dead.

15. Prize Ænigma answered by DAMON, on the Banks of the Avon.

The Church says, quickly must I	Where kings, divested of their state,
leave	And slaves partake one common
The joys that wine and beauty give;	late.
Soon must I quit my wonted mirth,	Let then the present hour be mine,
To mingle with my parent earth.	Blest with beauty, love, and wine.
Alas! no potent drug can save	All ye virgin-throng advance,
My body from the yawning grave,	Mingle in the sprightly dance;

To the lyre's enchanting sound While the genial bowl inspires
Nimble trip the blithsome round, Soft delights and gay desires.

16. Christianity. By Mr. J. DENT, of Kirton.

Like to a rock, safe in the Saviour's hands,
On its firm base the Church securely stands;
Nor time, nor floods, nor persecution's rage,
Nor death, nor hell, should all their pow'rs engage,
Shall it destroy! this fabrick must endure
Long as the throne of God shall stand secure.
Each true believer shall his name adore
When all the Babel-builders are no more.
The gates of Sion all his saints attend,
To hold communion with their dying friend.
'Tis there the Christian each his tribute brings,
With heart sincere, to serve the King of kings.
All join in worship to his sacred name,
And in loud anthems all his praise proclaim.
With those I wish to join, and with them tell
His matchless love, who conquer'd death and hell.
By dying to redeem. At church we meet,
And pay our adorations at his feet.
'Tis there we hear his ministers proclaim
Salvation thro' the bless'd Redeemer's name.
Nor only here on earth shall Christians join
In worship so harmonious, so divine;
But when the fix days wonders are no more,
And all return to chaos as before,
Then the church militant shall soar above,
And with the church triumphant sing his love.
May you, dear gents, his happy saints among,
Rise from the dust, and join the blissful throng!

New ÆNIGMAS to be answered next YEAR.

1. ÆNIGMA 787. By Mr. GEO. BRENTNALL,

We mortals at a distance spy	Yet, when 'tis here, 'tis always light.
Unnumber'd shining worlds on high	Though it be gone to France or
A world of wonders too are seen	Spain,
Below, on ev'ry flow'ry green.	Yet, in a while, 'twill come again.
But what is meant here to display	In many places at one time,
Constantly travels night and day;	It visits almost ev'ry clime.
So sometimes here and sometimes	On land or sea it may be found,
there;	And travels all the world around.
Yes, many hundred times a year;	Backward or forward is the same,
Is not an object of your sight,	So pray be pleas'd to tell its name.

2. ÆNIGMA 788. By ANNOTATOR, of Bicker, near Boston.

Ye scientific gents, attend	You read of one a-kin to me
To one of lowly birth;	In Hezekiah's days;
Long since appear'd, you may depend,	And at this time his progeny
My ancestor on earth.	Take counsel at my ways.

In size and stature sometimes low	Sometimes I leave you in the lurch;
And feminine I'm fill'd.	With faults our tribe abound;
Though I in paths of virtue go,	These to atone, I at the church
From truth I've been beguil'd.	In solemn garb am found.
My slender limbs men oft expose	My plaintive cadence you may hear
To the severest cold.	When you are where I go;
My maker strikes me, when I'm	The longer you to me give ear,
Till I his whims unfold. [freeze.	The more your face I show.
But care of me my dame takes then	How hard my lot, small my respect,
Lest worse should be my case;	When fairly brought to light;
Yet, spite of that, bad meaning men	For I'm compell'd to go erect,
Will peep me in the face.	And work both day and night.

3. *ÆNIGMA 789.* By Mr. RICH. SAVAGE, of Green's-Norton.

Ye gentle bards, what is my name?	I aid you through the toiling day;
Reverse me, I am still the same.	Till cheerful Sol withdraws his ray.
I am esteem'd by all that live;	Then let me rest now in night's reign,
And if I'm lost, they're sure to grieve.	I'll tell you when day comes again.

4. *ÆNIGMA 790.* By Mr. B. KEMP.

Though my original's not shown,	My keeper I in safety keep;
I early in the world was known.	For, with a partner's close assistance,
One obvious truth you may remark,	We jointly make a stout resistance.
I gain'd a place in Noah's ark.	Of various fate, perhaps, ere long,
In court and cottage I am found,	You find me bound in prison strong.
And in large cities I abound.	In massy chains, 'mid grief and woe,
Often quite bare, and meanly dress'd,	I'm seen to wander to and fro.
But sometimes wear a painted vest.	Anon, at theatres and balls;
Then you in splendour me behold,	Officiate too at great St. Paul's.
With bright appendages of gold,	In ev'ry court, in ev'ry street,
And servants waiting to attend me.	My presence you will surely meet.
Who in my office all befriend me.	One hint more take: In simile,
Grateful for this, in hours of sleep	Our Lord compar'd himself to me.

5. *ÆNIGMA 791.* By Mr. RA. DUTTON.

Behold in me the source whence	Plac'd on a pedestal, my strong-built
whimfies spring,	cell.
Also the source of ev'ry serious thing.	To give me light two windows have
I am the fount from which great	a place, [from grace.
Homer drank, [street rank.	And twice as many doors my man-
Yet guide the pen of all the Grub-	I'm food for man; nor flesh or bone
Each son of Eloquence, in verse or	am I; [die.
prose, [owes.	Yet he without me very soon would
His beauties and defects to me tell	Lo angry Luna makes the surge to
In music's charms I give the thrill	roar, [ter'd shore.
ling joy, [the eye.	And the loud billows lash the bat-
In painting give the tint that charms	My cell she enters, spreads disorders
And, yet, the vilest thrummer that	there; [soon appear.
e'er play'd, [aid.	Derangements, wild conceptions,
And vilest dancer, too, receive my	When, hapless, hopeless, helpless
Sustain'd 'twixt heaven and earth,	soon I show
behold I dwell,	A pitying world a spectacle of woe.

6. *ÆNIGMA* 792. By Mr. PHILIP GOVE, of Exeter.

<p>Like as the eagle takes his flight Towards the glorious fount of light, On wing explores th' æthereal space, Behind leaves all the feather'd race, Beyond the ken of human eye Hew'ring mounts towards the sky The swift his flight, and high he soars A swifter higher heaven explore: Swifter than lightning's vivid ray I penetrate the realms of day. Join the angelic host above,</p>	<p>In joy, serenity, and love. Or to the place direct my flight, Where horrors dwell and endless night; Unpierc'd, impenetrable gloom, Where evil spirits feel their doom. With man I reign upon this earth, No moment slides but I have birth. Ye bard, with you I'm known to dwell; I ask you then my name to tell.</p>
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7. *ÆNIGMA* 793. By RUSTICUS, of Wrangle.

<p>Let others talk of feats they've done, And dangers they have undergone; How on the seas they have been toss'd, The battles they have won and lost; The num'rous hardships they have shar'd, [heard. The wonders they have seen and Why may not I, as well as they, Say how I pass my time away? In days of yore, some men suppose, The sight of me was ominous; And their weak minds with fancy That to them I foreboded ill. [fill, But though by some I was despis'd, By others I was highly priz'd, I consecrated was of old To wise Minerva; this is told, If any one should doubt my word, It may be found upon record. At Athens I was much esteem'd, And by the Tartars sacred deem'd Who honours great to me still pay,</p>	<p>And use me kindly to this day. Within some unfrequented place Each day in dormant state I pass, Till Sol has run his course, and gone Beneath the western horizon. And Luna lends her borrow'd light, To usher in the sable night. Then, like some debauchee or rake, I my nocturnal revels make. With weapons furnish'd, out I go, On many bring distress and woe. For, be it known, I take delight In apprehending thieves at night. And more I've seiz'd myself alone Than all the Bow-street gang have done. Yet one more worthy act I claim, By which, perhaps, you'll guess my name; For, as tradition truth may bring, I sav'd from death a British king.</p>
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8. *ÆNIGMA* 794. By Mr. J. DENT, of Kirton, near Boston.

<p>Ye, skill'd in enigmatic lore, Can trace the depths profound, ex- plore The theme most intricate, accept The tribute of respect here kept, Where wisdom's lens appear com- bin'd To science aid, improve the mind. My parent's birth know I can trace Ere man, or bird, or beast, had place Upon this ball, obscur'd from sight, I long remain'd stranger to light, Till, torn and tortur'd in the flame, Phoenix-like, obtain'd my name.</p>	<p>Jubal or Tubal-Cain deem I The first who could my worth descry. Caprice or custom leads the way, And to each village now I stray. To lofty piles and courts I range; Like friend sincere, I seldom change. Whene'er I fix my choice I'm seen With flocks who sport in meadows green. In inns and oft in schools appear; Am form'd to please, yet cause a tear. Nor cities will my aid refuse; You hear my voice, then learn the news.</p>
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And if reports may not bring strife;
'Tis said I sav'd a person's life.
When Royal George, our Albion's
boast,
Was overfet, by billows tofs'd,
By me was view'd the victim's doom,
Tho' lodg'd secure in wat'ry tomb.
I shew time rolls from year to year
Denote eternity draws near!
And, gents, when you resign to fate,
I note, and at your funeral wait!

To please the fair, at plays I'm found,
And, constant as each act goes round,
I take my part. On public way,
With harness'd steed, my tricks
display,
To cheer you. And in days of yore,
The scr'ptures tell, the high-priests
wore
Me on his vest, ere he drew near
The holy place. They, too, declare
An idol bore my name: Unfold
The veil, and let my name be told.

9. ÆNIGMA 795. By INDIGENA, of Whitkirk.

Say what it is that cheers the aching
heart, [the soul,
That gently stills the tumults of
Bids anxious cares and painful seas
depart, [when they roll
And calms the waves of sorrow.
Such pow'r is mine. The shades
of dark despair [day.
I dissipate, and shed the cheerful
Discord retires whenever I appear,
And moping melancholy steals
away.
As torpid nature chill'd by winter's
cold, [vives again,
Warm'd by the vernal sun, re-
Her rising beauties all their charm
unfold, [the verdant plain:
And breathe their fragrance o'er
Thus science fair, beneath my
cheering rays, [and shines;
With all the kindred arts revives
Industry all her energy displays,
And usefulness with elegance
combines.

Ere earth was form'd, or ere the
flaming sun, [in empty space,
By power supreme, was launch'd
Or time, with steady pace, had yet
began [measur'd race,
To roll through rolling years his
I was among the first-born sons of
light, [heavenly lays.
And, sweetly harmoniz'd their
Rising, through heaven's unmea-
surable height, [praise.
To my great author, in perpetual
Yet from these blissful seats of
boundless joys [away;
I, for a time, was banish'd quite
And now, on earth, the monster
Sin destroys [my sway.
My pow'r auspicious, and resists
Though much desir'd, and by the
many sought, [remain
By few I'm found, with fewer I
Though now I'm transient, flying
quick as thought, [reign.
I shall be permanent, and ever

10. ÆNIGMA 796. By MR. ISAAC GUMLEY, of Nottingham.

Ere father Adam saw the cheerful
day, [away.
In Eden's bow'rs I pass'd the time
From flow'r to flow'r serenely mov'd
along, [song
And with my presence aided ev'ry
Upon the blissful pair I did attend,
And am to all their progeny a
friend.
Without me not a creature could
survive, [I ye.
For I sustain, and keep them all

I'm here, I'm there, I'm always
full of motions, [oceans.
On island, continents, and briny
In all affairs I take an active part,
And ev'ry fair-one has me near her
heart.
In all important deep-learn'd dis-
putations [of nation
Of war and peace, the good or ill
to the chairman always pay at-
tention, [pension.
Without a premium, title, or a
Yet

Yet I'm for liberty, without dispute. No haughty despot on the earth
 Nay, freedom is my darling attri- shall bind me, [sign'd me.
 bute. For I'll enjoy the freedom fate af-
 If into bondage 'tis my lot to fall, Whoe'er 'gainst me shall base de-
 I break my prison, and surprize you signs pursue, [run them thro';
 all. Shall feel my vengeance, for I'll
 By various means I daily let you see Establish freedom on her rightful
 My pow'r is great, and that I will throne, [igion known.
 be free. And make my worth in ev'ry re-

11. ENIGMA 797. By Mr. W. WILSON, of East Haddon.

To those who are of happy mind, He had for her extreme regard,
 By heaven I'm giv'n human kind, She softly turn'd, and, for reward,
 As sighing lovers know. Gave me to the fond youth.
 With them I'm found; of virgins His sparkling eyes express his joy,
 fair, And lovely beauties caught his eye,
 The thoughtless minds I oft ensnare, Which cancell'd all his pain.
 And make their beauty glow. My winning charms thus to behold,
 When I dwindle, u sh'd for his dear, Pleas'd him much more than gems
 He sigh'd and vow'd; she would not or gold,
 His suit she disapprov'd. [hear; Brought to him o'er the main.
 He told a tale of artless love, But soon I vanish out of sight;
 And begg'd of all the pow'rs above, Like any phantom seen at night,
 To have the nymph he lov'd. As quickly disappear.
 She silent stood, and seem'd more In blooming spring 'tis said I'm seen,
 kind, When nature clothes herself in
 To hear young Edwin tell his mind; green,
 He vow'd it was a truth. To deck the verdant year.

12. ENIGMA 798. By Mr. W. CLARK, Cam's-Hall, Farnham.

Ye constant wights, whose fame is Where minds congenial constant
 on record, [word; are and true, [vow
 Justly acknowledg'd, sacred as you Bound by the sacred tie and solemn
 Whose ready counsels to the true Of lasting friendship, of the purest
 and wise, kind, [find.
 Are kindly offer'd, as occasions rise; Me, as a pledge of constancy, you
 From slander's tongue, as truth it But, if betray'd, I wing my rapid
 self hath shewn, [rown; flight, [and spite.
 You turn abhorrent, with a silen- Losing my name through treachery
 But countenance what's worthy of My value such, you to the favour'd
 your mind, [will find. few [terview;
 And only such your firm support Impart with frankness the first in-
 There are, 'tis true, who move from While greedy ears, attentive, me to
 place to place, [grace, gain, [scraps retain.
 To hear and carry scandal and dif- Oft gather scraps, nor can those
 My name will mention in oblique E'en men of science might them-
 disguise, [few fly flies. selves forget, [yet.
 To make more welcome what so Since none were ever perfect counted
 Turn we from such, avoid where But some, possessing much retentive
 they resort, [test'd court. pow'r, [hour.
 And audious shun their vile de- Have kept me perfect to the present
 These,

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These, only these, fit guardians to Spite of base slander's tongue, I bide
their trust. [unjust. with you ;
I bide not with the faithless and Remain secure. Diarism, now adieu.

13. *ÆNIGMA* 799. By Mr. WYRELL, of Wiltow.

Come, heavenly muse, and with	The law fulfill'd, and I on man
seraphic fire	[inspire. diffus'd.
Thyself describe, and ev'ry breast	On Oliver my pow'r was full dis-
Hear then, ye sons of men, my	play'd,
words attend,	And there captivity was captive led.
And truth and wisdom shall to you	Lift up your heads, eternal gates,
I, long before primeval darkness	I say,
shed,	[way,
In concord all the hosts celestial	And you, ye everlasting doors, give
Nay, doubtless mov'd by me, th'e-	That the great king of glory may
ternal cause	come in,
[its laws.	Triumphing o'er the pow'rs of death
Spake, out of nothing, nature and	At Pentecost, the chosen few I blest
In joy the morning stars together	With tongues, to tell my pow'r to
sung,	all the rest ;
[rus rung.	That they from sin and Satan might
And space etherial with their cho-	be free,
In Paradise awhile I deign'd to	[me.
dwelt ;	Full of the Holy Ghost, and full of
[he fell.	Saul, breathing threat'nings in his
But soon, alas ! man, ingrate man !	mad career,
Then was I banish'd from his dar-	[godly fear.
ken'd breast ;	I stopp'd, and fill'd his mind with
[oppress'd,	Then with myself, he, at my hea-
And he, with horror and despair	venly call,
His doom expected ; when his judg-	[Paul.
benign,	Was soon converted into preaching
refign :	I all the saints and martyrs did in-
Rol'd by my pow'r, his anger d'd	spire,
And to the self-condemn'd thi-	[the fire.
promise made,	To brave the rack, the lions, and
"The woman's seed shall bruise	in ev'ry age is shewn my matchless
the serpent's head."	pow'r,
[final hour ;	And thousands triumph at their
With righteous Abel I was alway	Upheld by me, grim death has lost
found ;	his sting,
[was drown'd ;	[exulting sing.
Protected Noah when the world	And, more than conqu'rors, they
Attended faithful Abraham all his	When earth and skies shall mingle
days,	in a blaze,
[race ;	[I'll raise ;
And all the virtuous of the human	My myriads, then, triumphantly
Yet ne'er was fully unto man de-	And borne by me to realms of end-
clar'd,	less day,
pear'd.	They ceaseless thanks and praises
Till blest'd Messiah upon earth ap-	shall display,
He all his life was influenc'd by me,	In holy rapture, to the great I AM,
But most triumphant on moun-	And sing the song of Moses and
Calvary :	the LAMB.
Then was the serpent's head com-	
pletely bruish'd,	

14. *ÆNIGMA*

14. ÆNIGMA 800. By Mr. D. T. SHERIDAN.

Like some propitious deity I shine.	With studious care, employs his
To bless you with my influence	wishful eye
divine.	My cheering emanations to descry.
On some fair eminence I take my	No longer tols'd, of wind and
stand, [command.	waves the sport, [sport,
And o'er the sea an ample view	I greet his eyes, and guide him into
The doubtful cheer, the ignorant	When gay Aurora's rosy face ap-
illumine, [doom.	pear,
To snatch them from a miserable	And all creation with her presence
When gloomy shade involves the	cheers,
world in night, [light;	My former vast importance fades
And glimmering stars diffuse a feeble	away [day.
When howling wind, with hoarse	Before the splendour of the god of
tremendous sweep, [deep;	day, when he woos fair Thetis on
In dreadful hurricanes convulse the	the main,
When foaming billows, with a sound	I then resume my consequence
ing roar, [grazing shores;	again;
Affail the ponderous rocks and	Dispense my blessings till he re-
Amid this furious elemental war,	ascend,
The dauntless, conqu'ring, patriot	And thus mankind alternately be-
tar,	friend.

PRIZE ÆNIGMA. By Mr. G. H. ISITT, of Stanion.

Ye learned gents, when 'tis your	A face I have, but don't suppose
will	That I must have eyes, mouth, and
To quice the oscillating quill,	nose,
You riddles veil with mystic skill,	Or that my cheeks outvie the rose;
Attend my artless lay.	I've not, nor will deceive.
And let once more a village swain	He that my various parts ordains,
A corner in your Diary gain,	Made me so odd, you see my veins,
Nor let him ask the boon in vain,	And liquid current each contains.
And I'll for ever pray.	Sages, you may believe.
No fiery Pegasus I'll mount,	When Jove the tempest has unfurl'd,
Nor pen dip in Permessian fount,	And from his hand the thunder
Neither my fingers mean to count.	hurl'd,
Cast not a critic's eye.	To awe the subjects of this world,
I've this once ventur'd to proceed,	With terror and dismay;
Without the help of mute or steed,	know his will, down sinks my soul,
My pipe is but a simple reed,	Quickly I fill th' inspiring bowl,
So pass my errors by.	No lightnings flash, no thunders
Whether my form may once have	I'll rise again some day. [roll;
flood	When clouds surcharg'd with water
In some fair vale or lofty word,	low'r, [pour,
Or by the borders of the flood,	Threat'ning on earth their load to
'Tis needless here to tell.	Lo I descend before the show'r;
'Tis for my knowledge men in	T be not too explicit, [skies,
prize,	Bright Sol illumines th' unclouded
Like <i>Brothers</i> great, I've prophecies.	Mist, vapour, from his presence flies,
Nor former prophets I despise,	To meet his godship I then rise.
Yet here I bear the bell.	Adieu, your servant, <i>Isitt</i> .

NEW REBUSES, CHARADES, &c.

1. By LAVINIUS, of TRINIDAD.

To wealth, dearest geant, do you	Conducted with caution, the mere
wishes aspire, [you desire;	chant well draws, [the cause.
My first may prevent you from all	Th' effect is my second; my whole is

2. By Mr. Geo. Simpin.

My first's a term for ladies gay	My whole united names the spot.
When drest and deck'd out for the	Where now I dwell, in humble
A foreign title of renown [play;	cot,
My second will to you make known;	The world forgetting, and forgot.

3. By S. H. of London.

My two first, three-fourths of a coin	My whole is a medical gent,
Which misers would keep close;	Of some fame for good skill,
My remnant on self you will find,	And next Christmas he means to
But first pull off your hose;	present
	You with either a potion or pill.

4. By Mr. George Oliver, of Gotham.

The first in the world, and the last	Will shew you a thing that hath
in the year, [middle.	lately been here, [riddle.
With the eye of a bat in the	And tell you the name of this.

5. By Mr. John Cairns, of Old Bewick,

A shepherd's god inverted soon will	What men when weary are inclin'd
make	to take.

6. By Mr. G. H. Ifitt.

In spring, 'mid suns and show'rs of	Gents, if my whole you would descry,
My opening first has birth; [rain,	Come, exercise your wit;
My next means win, procure. ob-	You'll find I have been open'd by
To profit, and so forth. [tain,	Both Addington and Pitt,

7. By Mr. R. Dutton.

Thething presented, you must know	The head of this cut off again-
Has caus'd both joy, and grief, and	Is tenant of the wat'ry main.
woe.	In pristine state if all be found,
Cut off its head, and you will see	Most of its work is turning round.
Part of yourself below the knee.	

8. By Mr. B. Kemp.

My active first is useful made	My whole, when soldiers quit the field,
To law, religion, arts, and trade;	Can sure relief and comfort yield,
My next's a noble's seat;	A welcome, a retreat.

9. By Mr. J. Wyrrill.

A monosyllable with ease you'll	You'll find two syllables left in the
find,	rear,
Whole baleful influence oft wastes	Which like the whole first, as was
mankind;	shewn before, [Stygian shore.
Omit two letters, odd tho' it appear,	Have sent their thousands to the

10. By Mr. *John Cairns*.

These letters S, T, I, rightly com- Direct reverse, yet still it reads the
blind [you'll find, same, [the name?
In sense that's physical, a word And has five letters; say, what is.

QUESTIONS critical and philosophical:

CCXXXI. By Mr. *J. Cairns*, of Old Bewick.

Who was Nathaniel in xx. 2. of St. John's Gospel? As he is not mentioned by the other Evangelists.

CCXXXII. By Mr. *A. Glendenning*.

How is Isaiah lxii. 5. to be understood; "As a young man marrieth a virgin, so shall thy sons marry thee?"

CCXXXIII. By Mr. *John Cairns*.

Is the word *coney* rightly translated in Leviticus xi. 5 and Deuteronomy xiv. 7, where we read, "the coney cheweth the cud, but divideth not the hoof;" which is contrary to the nature of these creatures, who do not chew the cud?

CCXXXIV. By Mr. *A. Glendenning*.

How is Isaiah xlii. 15 to be understood: "I will make the rivers islands?"

CCXXXV. By Mr. *B. Kemp*.

Why did our Saviour give a charge to those who were healed, to keep his miracles a secret, seeing that by their promulgation the sacred truths of Christianity were to be established?

CCXXXVI. By *Sebastian B.* of Bath.

What is the nature of that pleasure which is derived from viewing real or imaginary scenes of distress? Or, why do people visit Bedlam, public executions, or tragic exhibitions at the theatre?

CCXXXVII. By Mr. *John Cairns*.

Why does fire burn the fiercest when the weather is coldest?

CCXXXVIII. By *Sebastian B.*

Is there in the English language any word that rhimes with month?

CCXXXIX. By Mr. *Isaac Gunley*, of Nottingham.

I am informed that a small lump of sugar put into cream will prevent its being converted into butter. Is there any truth in this? If so, requited the reason of it.

CCXL. By *Rusticus*, of Wrangle.

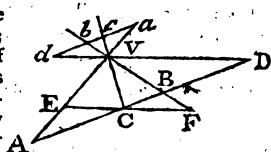
It is often said, when a corpse is carrying to be interred, if upon any account they carry it over any person's lands where there was no road before, where they carry it over shall afterwards be deemed a road, and used as such without molestation. Is there any truth in this assertion? And if so, what reason can be assigned for it?

ANSWERS to the QUESTIONS proposed last year.

(1.) QUEST. 827, answered by LIMENUS, Bruton, Somerset.

Right lines drawn from the same point, through the extremities and points of division of a line, harmonically divided, are called harmonicals, and the nature of these lines is such, that any right lines intersecting them will be harmonically divided; as is generally demonstrated by *Maclaurin*, in his excellent treatise *De Lin. Geom. Prop. Gen.* annexed to his *Algebra*, sect. 20, et seq.; where the reader may meet with a complete investigation of harmonical lines, and their application to curves of all orders.

The same, by Mr. HENRY WALTON, of Dumfries.

Let right lines Va, Vc, Vb, Vd , be harmonicals meeting in the point V ; if any right line parallel to one of them, Vd , meet the other right lines in the points E, C, F , it will be bisected in C , or $EC=EF$; and if any four harmonicals meet in any manner A  a right line in the points A, C, B, D , it will be harmonically divided in those points. See Dr. Hamilton's *Conics*, Lem. 1, B. 5; from which the rest of this is taken. Part I. Through C draw a parallel to the line ad , on which the harmonicals are formed; and, meeting them in the points A, C, B, D , it is evident that this line is divided in the same ratio as the line ad , i. e. harmonically in those points; therefore $AD : AC :: BD : CB$, but, because VD, EC , are parallel, $VD : EC (:: AD : AC$, i. e. as $BD : CB$, i. e.) as $VD : CF$ (because VD, CF , are parallel); therefore EC, CF , are equal.

Part. II. Now let any right line meet four harmonicals in A, C, B, D , and if those harmonicals be parallel, the thing is evident; but, if they intersect in V , draw ECF parallel to VD , the line most remote from C ; then, by the first part, $EC=CF$, and $AD : AC :: VD : EC$ or CF . Therefore $AD : AC :: BD : CB$. q. e. d.

And thus nearly is the answer given by Messrs. *Campbell, Furness, Glendenning, Rowe, and Wright*.

(2.) QUEST. 828, answered by Mr. JOHN WRIGHT, jun. Norley.

Through the given point P draw the diam. AB of the given circle ARB , and PR being to PQ in the given ratio, let AB be produced to C and D , till $PA : PC$ and $PB : PD$, in the same given ratio; join RA, RB, QC, QD . Then, since $PA : PC :: PB : PD$, the lines RA, QC , and RB, QD , are parallel, conseq. the angle $CQD=ARB$ = a right angle, and the point Q is in a semicircle, whose diameter is CD .

Messrs. *Campbell, Furness, Glendenning, Limenus, Rowe, and Walton*, also gave like answers.

(3.) QUEST. 829, answered by Mr. JOHN MOORE, of Long-Claxton.

From the point of sun-rising at R and casting at O let fall two perpendiculars RB and OC to the equinoctial CAB . Then, in the right-angled spherical triangle ABR , as rad. : cotang. of latitude :: tang. of declina-



tion : sine of AB, or of sun. rise before fix, and in the triangle ACO as rad. : cotang. of latitude :: tang. of declination : the sine of AC, time of casting after fix. From these two analogies it then appears, that the rectangle under the sines of AB and AC is equal to the square of the tangent of declination which is given. Therefore, by prob. 30 of Simpson's Algebra, we get $AB=20^{\circ} 34'$, $AC=11^{\circ} 56'$, and the latitude of the place is had $=52^{\circ} 30'$.

And nearly thus is the ingenious answer by Mr. A. Glendenning.

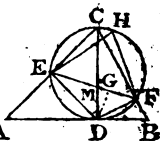
Answers to this are also given by Messrs. Campbell, Furness, Hewitt, Rowe, William Walker, and William Wijeman, of Co Ho. Hull.

(4.) QUEST. 830, answered by Mr. WM. SIMPSON, of Liverpool.

By the same reasoning, as in answer to the 7th Quest. last year, the triangle EDF (in the figure there) has the base, opposite angle, and diff. of the squares of the other two sides given; whence it is easily constructed, and thence ACB.

Composition, by Mr. WM. WALKER, of Horsforth, near Leeds.

Conf. With a radius = half the given perp. describe a circle H F D E; from any point H in the circumf. draw two equal chords HE, HF, making with each other an angle = the given vertical one; draw EF, which bisect in M, make the rectangle under MG, and EF may = half the given diff. when DG is drawn A perp. to EF, draw the diam. DC, and from C, through E and F, draw CA, CB, to meet AB drawn perp. to CD, and ACB is the required triangle.

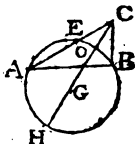


Demonstr. ACB is the given vertical angle, and CD the given perp. by constr.; join DE, DF, and the angles DEC, DFC, being semicircles, DE is perp. to AC, and DF to CB, also the diff. of the squares of DE and DF = that of those of EG and GF. (Geom. of Simpson, 9.2 = the rectangle under the sum and diff. of EG and GF, = twice the rectangle under GM and EF, = the given magnitude, by constr. q. e. d.

Like answers are also given by Messrs. Andrew, Campbell, Furness, Glendenning, Linanus, Moore, Parnell, Smith, Walton, and Wiseman.

(5.) QUEST. 831, answered by Mr. A. GLENDENNING.

The lines being drawn as directed in the question, take $CE=CB$. By Simpson's Geom. II. 25 and 22, the rectangle under the perp. and diam. of the circumscribing circle = that under CO and CH, consequently as the perp. : CH :: CO : diam. of the circumscribing circle. q. e. d.



The same answered by Mr. NATHAN PARNELL of Nuneaton.

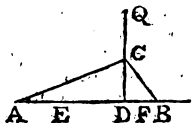
It is well known that the circle circumscribing the triangle ACB will pass through G, the centre of the circle passing through AB; and O the centre of the inscribed circle. It is also well known that the rectangle under the perp. and diam. of the circle circumscribing the triangle ACB, = the rectangle under the sides AC and CB, =

$AC \cdot CE = OC \cdot CH$, by the property of the circle. Consequently, as the perp. $CH :: OC ::$ the diam. of the circle passing through A, C , and B ; which was to be proved.

Messrs. *Brown, Campbell, Furnass, Limenus, Simpson, Smith, Walker, Walton, and Wright*, also gave like answers.

(6.) QUEST. 832, answered by Mr. COLIN CAMPBELL.

Analysis. Let ACB be the required triangle, demit the perp. CD , and in the left segment BD take $BF =$ half CD , then half $CD \cdot AB - CD \cdot CD = (AB - 4BF) \cdot BF = AE \cdot BF$ (BE being $= 4BF$) $=$ a maximum; but the ratio of $ED : BF$ is given, conseq. $AE \cdot ED =$ a maximum; therefore, since AD is given, $AE = ED$ (Simpson's Euclid, 5, 2.). *Ergo solutum.*



The same answered by Mr. JOHN WRIGHT, jun. of Norley.

Let the given ratio be that of $m : n$. Draw $AD =$ the given segment, and perp. thereto erect $DQ : AD :: n : 2n - m$. Bisect DQ in C ; and having produced AD to B till $DB : DC :: m : n$, join BC and AC ; then is ACB the triangle required.

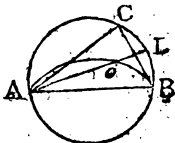
Demonstr. Since $DC : DB :: n : m$ (the given ratio) we shall have, by division, $DC : 2DC - DB :: n : 2n - m :: DQ : AD$ by constr.; that is, $AD : 2DC - DB :: DQ : DC$; hence, by division and alternation, $AD : DQ :: AB - 2DC : QC :: AB \cdot CD - 2CD^2 : QC \cdot DC$, a given ratio, because that of $AD : DQ = n : 2n - m$, which is given; and therefore, when $AB \cdot CD - 2CD^2$, or its half $=$ the diff. between the sq. of the perp. and area is a maximum, $QC \cdot DC$ is a max. which is well known to be the case when DQ is bisected in C , as by constr. q. e. d.

Calculation. In the present case $n = 4$, $m = 3$, and $AD = 8$. Hence $QD = 6.4$, $DC = 3.2$, $DB = 2.4$, $AD = 10.4$, and the area $=$ half $AB \cdot DC = 16.64$.

And Messrs. *Furnass, Glendenning, Limenus, Simpson, Smith, Walker, and Walton*, gave like answers.

(7.) QUEST. 834, answered by Mr. WM. SMITH, of Liverpool.

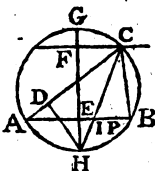
Analysis. Suppose ACB the required triangle, o the centre of the inscribed circle; join Ao , which produce to L in the circumscribing circle; join Bo , BL ; then, since the vertical angle ACB is given, the angle AoB is also given, as is well known; therefore LoB is given, and $oLB = ACB$ is given, and oL the given prolongation of the line drawn from the angle A at the base to the centre o of the inscribed circle (not subscribed, as printed by mistake); therefore the triangle LBo is given, and the construction obvious.



Messrs. *Andrew, Campbell, Furnass, Glendenning, Limenus, Poxnell, Simpson, Walker, Walton, and Wright*, also gave ingenious answers.

(8.) QUEST. 834, answered by Mr. JOHN ANDREW, of Carlisle

On the indefinite right line AEB erect EF = the given perp. and produce it to H, so that the rectangle FE.EH may be equal to the given rect. of the segments of the base; then take AE such that its square may be a fourth proportional to FH, EH, and the square of half the given sum of the sides, and make EB=AE. Then let a circle be described through the three points A, H, B, and draw CF parallel to AB; lastly, join AC, CB, and ACB is the required triangle.



Demonstration. By *Simpson's Geom.* 2, 3 Corol. HFG is the diameter of the circumscribing circle, and by parallel lines FE = the given perp. Also, by a theorem in the *Gentleman's Diary* for 1798, p. 40, HE.EF = the given rectangle. Join AH, and draw HD perp. to AC; then, by reason of the similar triangles HCD, AEH, it will be $HC^2 = HG.HF : AH^2 = HG.HE :: DE^2 : AE^2$; therefore $DC^2 : AE^2 :: HF : HE$, as by construction; and DC is well known to be half the sum of the sides; q. e. d.

The same differently, by Mr. N. PARNELL.

Analysis. Imagine ACB to be the triangle inscribed in a circle, whose diam. is GH perp. to the base AB, CP the given perp. CF perp. to GH, and I the point of contact of the inscribed circle. Then (by Mr. Cunliffe's theorem in the *Gent. Diary* for 1798) $AI.IB = CP.EH = EF.EH$, a given rectangle; therefore EF and EH are both given. It is also known that the square of the sum of the sides AC and CB = four times the rectangle EG.HF; and since $HP = FE + EH$ and $AC + CB$ are given, EC is consequently given. Wherefore the method of constr. is manifest.

Otherwise, by Mr. J. WRIGHT, of Norley.

Analysis. Let ACB be the required triangle, CP the given perp. I the point of contact of the inscribed circle with the base AB, AE = EB, and let EC be drawn. Then, it is well known that $AC^2 + CB^2 = 2EC^2 + 2AE^2 = 2EC^2 + 2AI.IB + 2EI^2 = 2EC^2 + 2AI.IB + \text{half } AC^2 + \text{half } CB^2 - AC.CB$; hence $2EC^2 = \text{half } AC^2 + \text{half } CB^2 + AC.CB - 2AI.IB$, or $EC^2 = \text{the square of half the sum of AC and CB} - AI.IB = \text{a given magnitude per quest.}$; consequently, EC is given, and since CP the perp. is given, EP half the diff. of the segments AP and PB will be given. And the quest. is thus reduced to p. 27, lib. iii. *D'Omerique*, Anal. Geom.

Coroll. Hence the square of the line drawn from the vertical angle to the middle of the base of any plane triangle is equal to the difference between the square on half the sum of the sides, and the rectangle of the segments of the base made at the point of contact of the inscribed circle.

Other ingenious answers to this quest. are given by Messrs. Campbell, Furness, Glendinning, Limenius, Rowe, Simpson, Smith, and William Walker.

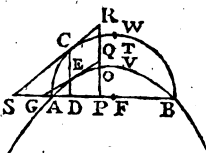
(9.) QUEST. 835, answered by Mr. ADAM GLENDENNING.

By the circle $SD \text{ sq.} = SC \text{ sq.} - CD \text{ sq.}$
 $= SA \cdot SB - SD \cdot DF.$

Hence $SD \text{ sq.} + SD \cdot DF = SA \cdot SB$; therefore $SB : SF :: SD : SA$.

Or, by division, $AF : SF :: AD : SA$.

Or, by conversion and division, $SA : AF :: SA - AD : AD$.



Or, by composition, alternation, and division, $AF : SA :: DF : AD$. Or, by doubling the antecedents, $AB : SA :: 2DF : AD ::$ per conics $AD : AG$.

But it has been shewn that $AF:SA::AD:SA-AD$; therefore, by equality, $AF:AB::AG:SA-AD$. But $AB=2AF$; therefore $SA-AD=2AG$, or $SA-AG(=SG)=AG+AD(=GD)$; but, by hypothesis, $GE=EQ$; therefore $GB=DP=SG$; whence $SD=2DP$, and consequently $SC=2CR$; which was to be demonstrated. Whence it appears that the property is not confined to the parameter, but general for any ordinate.

Cor. 1. Because $AF : SF :: AD : SA$, by alter. and conv. $AF : DF :: SF : AF$, or $AF^2 = SF.DF$.

Cor. 2. Since $AB : SA :: AD : AG$, or, by composition, $SB : SA :: DG : SA$, $SB \cdot AG =$ the square on SA .

Otherwise. By Mr. W. SIMPSON, of Liverpool.

At the focus F erect the radius of the circle FW perp. to AB, cutting the parabola in V, its tangent in T, and an ordinate at E in the abscissa VF, draw ED and RP perp. to AB, and VO parallel to AB, then draw FO. And the angle FVO being right (*Emerſon's Conics*, prob. 12), $4OV^2 = 4PF^2 = 4 \times \text{rect. of the abſciſſa and ſemiordin. of the parabola, correſponding to a ſemiordinate} = PF \text{ or } OV, = FD^2 + FD.2DG$, and (by *ibidem*, probl. 2) $2FV = FW = FC$, and conſequently $FC^2 = 4FV^2 = FD^2 + FD.2DG = FD.FS = FD.(FD - DS)$ by the property of the circle, and taking away FD^2 from each of theſe equal qualities, there remains $FD.2DG = FD.DS$, and of courſe $DS = 2DG$, but by ſuppoſition $GE = EQ$, whence $GD = DP$, or $2DP = DS$, and by parallel lines $DP : DS :: RC : CS$, or, $2DP (DS) : DS :: 2RC : CS$; therefore $2RC = CS$.

The same answered by Mr. HENRY WALTON, of Dumfries.

¶ Since $SC = 2RC$, therefore $SD = 2DP$; and, since $QG = 2EG$, $GP = 2DP = 2DG = 2GS$, or $GS = DP$, but $SD \text{ sq.} + CD \text{ sq.} = SC \text{ sq.} = SF \text{ sq.} - CF \text{ sq.}$, $4GD \text{ sq.} + CF \text{ sq.} - FD \text{ sq.} = (GF + GD) \text{ sq.} - CF \text{ sq.}$, $4GD \text{ sq.} + CF \text{ sq.} - (FG - GD) \text{ sq.}$, $4GD \text{ sq.} + CF \text{ sq.} - GF \text{ sq.} + 2FG \cdot GD - GD \text{ sq.} = FG \text{ sq.} + 2FG \cdot GD + GD \text{ sq.} - CF \text{ sq.}$, and, by division, $GD \text{ sq.} = FG \text{ sq.} - CF \text{ sq.} = (FG + CF) : (FG - CF) = AG \cdot GB$, which is a known property of the *parabola*.

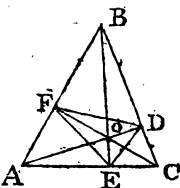
Composition. Because, by the *parabola*, $GDsq. = AG.GB = FGsq. - CFsq.$ their doubles are equal; therefore four times $GDsq. + CFsq. - (FG - DGD)(sq.) = (PG + GD)sq. - CFsq.$ $4GDsq. + CFsq. - FDsq. = SDsq. + CDsq. = SC.q. = SFsq. - CFsq.$ But $GS = DP$; and, since $GQ = 2GE = 2EQ$, $GP = 2DP = 2GS$, $SD = 2DG = 2GS = 2DP$, therefore $SC = 2RC$. *q. e. d.*

Cor. If Gm be a tang. to the circle at m , then $AG.GB$ being $\equiv Gm^2$, $Gm \equiv GD$. The prop. need not have been restricted to the parameter.

Other answers also are given by Messrs. *Campbell, Furnass, Smith, Walker, and Wright.*

(10.) QUEST. 836, answered by the Rev. J. FURNASS.

Let ABC be the triangle; AD , BE , and CF , the three perps. intersecting in O , DEF the triangle made by joining the ends of these perps. Then it is well known that a circle described about the diam. AO will pass through F and E , and likewise another described about the diam. OC will pass through D and E ; therefore, since the triangles are right-angled, and have $AOF \equiv DOC$ common, the angle $FAO \equiv DCO$, and $FEO \equiv DEO$, and in like manner $EFO \equiv DFO$, and $FDO \equiv EDO$. Wherefore, since the angles at A , B , and C , of the triangle FED are bisected by the three perps. it is manifest that their intersection O is the centre of a circle inscribed in the triangle FED . q. e. d. That is, because the angle $FAO \equiv DCO$, and (by *Euclid*, 27, 3.) $FEO (=FAO = FCO =) DEO$, EO bisects FED , and in like manner we may prove that $EFO \equiv DFO$, &c. as before.



And thus nearly are the answers by Messrs. *Andrew, Campbell, Glendenning, Limonius, Parnell, Simpson, Smith, Walker, Watson, and Wright.*

(11.) QUEST. 837, answered by Mr. JOHN ANDREW, of Cork.

Construction. Take ES \equiv the given radius, and draw AB perp. thereto. produce SE to L , so that the rectang. $ES.EL$ \equiv the diff. of the squares of half the given sum of the sides, and the given line bisecting the base; bisect SL in H , and produce HE to F , so that $HE.EF = SE.EL$; then draw FC parallel to AB , and from E apply EC \equiv the given bisecting line; join HC , and draw CG perp. to HC , intersecting HF produced in G . Then let a circle be described about the triangle GCH , cutting AB in A and B ; join AC , CB , and ACB is the required triangle.



Demonstration. With the radius AH describe the circle ABT ; draw SO , OT , parallel to AB and SL ; also draw HD perp. to AC ; then, because GCH is a right angle, GH is the diameter of the circle $AGBH$, and by reason of the similar triangles AEH , HCD , it will be $AE^2 : CD^2 :: AH^2 : HG.HE : HC^2 : HG.HF :: HE : HF :: HE.EG : HF.EG$, but $AE^2 = HE.EG$; therefore $CD^2 = HF.EG = (HE + EF)(EF + FG) = HE.EF + HE.FG + EF.FG$. And $EC^2 = EF^2 + FC^2 = EF^2 + HE.HG + EF.FG$; therefore, taking the latter of these from the former, there remains $DC^2 - EC^2 = HE.EF = SE.EL =$ (by parallel lines) $OP.PT =$ (by the theorem in the *Gentleman's Diary*, 1798,) $AP.PB$; and HA is well known to be the radius of the locus of the centre O . Likewise OP \equiv the given radius, by parallel lines and construction; and CD is well known to be half the sum of the sides. q. e. d.

From what has been done above is deduced the following *theorem*. The difference of the squares of half the sum of the sides of any plane triangle, and the line bisecting the base, is equal to the rectangle of the segments of the base made at the point of contact of the inscribed circle.

The same differently, by LIMENUS, of Bruton, Somerset.

Constr. Take any where a right line A = the given sum of the sides, B = the line bisecting the base, and C = the radius of the inscribed circle, also the base AB such that $AB : A :: \frac{1}{2}A^2 - B^2 - C^2 : \frac{1}{2}A^2 - B^2 + C^2$, and the perpendicular, a fourth proportional to the base, perimeter, and radius, of the inscribed circle. From E , the middle of the base AB , apply $EC = B$ to a line drawn parallel to the base at the distance of the perpendicular, and ACB will be the required triangle.

Demonstr. Let p and a be the points of contact of the inscribed circle with AC and AB , and it follows from the constr. that the perimeter $: AC + CB - AB = 2Ca :: \frac{1}{2}A^2 - CE^2 : C^2$; whence $\frac{1}{2}$ perim. $\times Ca$. $(\frac{1}{2}A^2 - CE^2) = C^2 \times$ sq. of half the perimeter, = sq. of the area, = half perimeter $\times Ca$. $AP \cdot BP$, wherefore $A^2 = 4CE^2 + 4AP \cdot BP + AC^2 \times 2 + 2CB^2 - AB^2 + AB^2 - (AC - CB)^2 = (AC + CB)^2$, and $AC + CB$ = the given sum of the sides.

Otherwise, by Mr. JOHN WRIGHT, jun. of Norley.

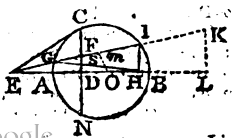
Take EH such that $2EH \times$ rad. of the inscribed circle may be equal to the square on half the sum of the sides, minus the sum of the squares on the other two data; produce HE to F till $HE \cdot FE$ = the difference between the squares on half the sum of the sides and on the line bisecting the base; draw FC perp. to EF , to which from E apply EC , = the said bisecting line. Then through the points H and C describe a circle having its centre in HF , and cutting AB drawn perp. to EF in E , in the points A and B , and draw the triangle ACB , which is that required.

Demonstr. Draw the radius of the inscribed circle OP perp. to AB , and produce it to meet a circle whose centre is H , and radius HA in T ; then, by Encl. 35, 3, $AP \cdot PB = OP \cdot PT = OP \cdot (2EH + OP) = OP$ sq. $+ 2OP \cdot HE$; but, by coroll. to my answer to Quest. 8, $AP \cdot PB$ must be equal $(\text{half } AC + \text{half } CB)^2 - EC^2$; therefore $OP^2 + 2OP \cdot HE$ is equal to $(\text{half } AC + \text{half } CB)^2 - EC^2$, and conscq. $2OP \cdot HE = (\text{half } AC + \text{half } CB)^2 - EC^2 - OP^2$. Again, by Mr. Cunliffe's theorem, $HE \cdot FE = AP \cdot PB = (\text{half } AC + \text{half } CB)^2 - EC^2$, as by construction, q. e. d.

Ingenious solutions to this are also given by Messrs. Campbell, Glendinning, Lowry, Simpson, Smith, and Wm. Walker. The Rev. Mr. Furzess and Mr. Rowe also gave answers.

(12) QUEST. 838, answered by LIMENUS, of Bruton.

From any point E draw EC , DEN , touching the circle in C and N , and EOI meeting it in G and I ; join CN meeting EI and EB drawn through the centre in the points F and D , and because tangents at C and N meet GI in E (Maclaurin do



Lin. sect. 23.) $\frac{2}{FE} = \frac{1}{FG} - \frac{1}{FI}$, and EI is therefore harmonically di-

vided in G and F. Draw IH perp. to EB, and join GH, which let meet CD in S, and since DC is cut by the three harmonicals HF, HG, and HE in the points F, S, and D, and is parallel to the fourth HI; therefore (*ibidem*, sect. 21, in the Appendix to Maclaurin's Algebra,) $FS=SD$.

Coroll. Let EG be any right line drawn from E any point without the curve of an *ellipsis* GCIN conceived drawn, meeting the curve in G and I, and C and N the points of contact of two tangents drawn from E to the curve; join CN, and let EG cut CN in F; draw IH parallel to CN, and through any point D, taken *ad libitum* in CN or CN produced, draw ED, which produce till it meets IH in H, then GH being joined will bisect FD in S. And this is a property pervading all the conic sections.

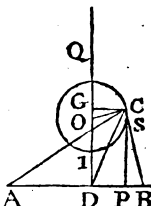
The same answered by Mr. COLIN CAMPBELL, the proposer.

Bisect AB in o, make om perp. to IG, join oC, HG, and draw FL, KL, parallel to GH, HI meeting EA, EI, produced in LK respectively. Then oE:Em::EF:ED, conseq. Em.EF=oE.ED=EC sq = GE. EI; therefore FE:GE::EI: mE; and, *dividendo & permutando*, FG:lm::GE:Em, or FG:IG::GE:2Em, and, *invertendo & dividendo*, IF:FG::IE:GE, and, *permutando*, IF:EI::FG:GE::LH:HE::KI:IE; hence IF=IK, conseq. LH=HD, and therefore FS=SD. q. e. d.

And thus nearly is the answer given by Messrs. Glendenning, Simpson, Smith, Walker, Walton, and Wright.

(13.) QUEST. 839, answered by Mr. J. LOWRY, the proposer.

Let AB be the given base, which divide at D, so that AD:DB::n:m; draw DQ perp. to AB, and take DB:2DQ::a:b; bisect DQ in O, and take OC such, that its square may be equal to the excess of the square on OD above the rectangle ADB, with centre O and radius OC describe a circle, and from A, if m be greater than n, but from B, if m be less than n, draw the tangent AC or BC, then is ACB the triangle required.



For, draw CP the perp. and CG parallel to AB, A and join DC, and let the square on BS be taken = the space: the square on BC, has the same given ratio that m has to n. Then, by construction, the square on OD minus the rectangle ADB = the square on OC = the sum of the squares on OG and GC, or $OD^2 = ADB + OG^2 + CG^2$; take away OG^2 common, then the rectangle QGD = $ADB + CG^2$, add DG^2 to both, then $QDG = ADB + DG^2 + CG^2 = ADB + DC^2$. But, by the lemma, p. 174 of *Simpson's Select Exercises*, it is evident that $AC^2 + BS^2 : ADB + DC^2 :: m+n : m :: AB : DB$; therefore $AC^2 + BS^2 : QDG :: AB : BD$, but QDG : the triangle ACB :: $2DQ$: BCD; therefore $A^2 + BS^2$: triangle ACB :: $2DQ$: BD, the given ratio by *constr.*, and BC being a tangent to the circle at C, the angle at B must be a maximum.

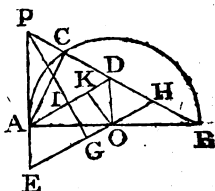
And to the same effect are the answers by Messrs. Campbell, Glendenning, Limous, Smith, and Wright.

and, by *Euclid*, 2, 5, the rectangle under the two unequal parts of the line YC is less than that under equal ones YM and MC , but Yd is greater than Ad , because a circle described on the centre d , with radius dY , will pass beyond A ; therefore the rectangle $Yd.dC$ is greater than $Ad.dC$, but $Yd.dC$ is less than $YM.MC$; consequently $YM.MC$ being greater than $Yd.dC$ must much more be greater than $Ad.dC$.

Again, when D falls between M and Y , since BA is given, the greater BD is taken, the greater must AD be; therefore the greater $BD.DC$ is taken, the greater must $AD.DC$ be; but, *Euclid*, 2, 5, $BD.DC$ is greater when D coincides with M than when it falls in any point between M and Y ; consequently $AD.DC$, when D coincides with M , is a maximum. *q. e. d.*

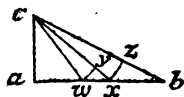
The same answered by Mr. COLIN CAMPBELL.

Analysis. Let ACB be any right-angled plane triangle, and the line AD drawn as required, making the rectangle $AD.DB$ a maximum. Draw PE per. to AB at A , make $AO = BO$, and through O draw EH parallel to AD , produce BC to meet AP in P , from which per. to EH draw PG , cutting AD in I , and draw OK parallel and $= IG$; then join BC and DO . By similar triangles $AD : DO :: AO : OK$, and $BD : DO :: AB : AC$; therefore $AD.OK = DO.AO$, and the rect. $BD.AC = DO.AB$. Hence the rect. $AD.OK = \text{half } AC.BD$, and $AD^2.OK = \text{half } AC.BD.AD$; but AC is given; therefore, when $BD.AD$ is a maximum, $AD^2.OK$ is also a maximum. But, in the triangle EPH , $AD^2.OK$ is a maximum; and, by the same reasoning as at theorem 19th of *Simson on the Maxima, &c. of Geometrical Quantities*, at page 209 of his *Geometry*, this will be when $PD = 2DH$. Consequently $PD = AD = DB$, when $AD.DB$ is a maximum. *Ergo solutum.*



Otherwise, by Mr. THO. WHITE, of Dumfries.

Geometrical Analysis. Let abc be the given triangle, and x the required point, and w another point ultimately coinciding with x . Draw cx and cw , and make $cy = cw$. Now, because the rectangle $cx.xb$ is a maximum, we have $cw.wb$, that is, $(cx - yx)(bx + xw)$ ultimately equal to $cx.xb$; and therefore we have $cx.xw$ ultimately $= yx.bw$; hence, ultimately, $cx : bw :: ax : cx :: gw : xw$, that is, w and x coincide, $cx : bx :: cx : ax$, that is, $bx.ax = cx^2$, that is, $ac^2 = ax^2 + bx^2$. Or, $bx.ax = ax^2 = ac^2$, $(ab - 2ax).ax = ac^2$. *Ergo solutum.* The prob. is reduced to the 5th of *Simpson's Exercises*.



Coroll. Drop the perp. xx ; then, when $cx.xb$ is a max. so is $cx.xw$; for $bc : ca :: bx : xx :: cx : bx :: cx : xw$.

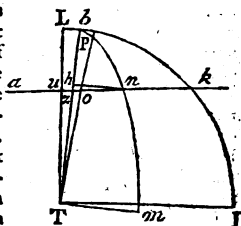
Messrs. Furness, Glendenning, Linenut, Rowe, Smith, and Wright, gave also other various answers.

fore $2OM$ being given, $AC^2.CD^2$ will be a maximum when $FC.DC^2$ is so; that is, drawing CR parallel to AB , because the ratio of $CR : CF :: OM : AM$ is given, consequently, when $AC^2.CD^2$ will be a maximum, when $RC.CD^2$ is so; which, by what has been proved by Mr. Simpson in his Geometry, is when the tangent KL is so divided in C that $2CK=CL$. But, by constr. $MT=3TA$, and, by parallel lines, $KL=3KA$, or $LC=2CK$; therefore $AC.CD$ is a max. or $AC.CD$ diam. of the given circle, or its equal $AC^2.CB$ is a maximum, and conseq. ACB the triangle required.

Mr. Wright, the proposer, determines $2DB=AD$, and other answers are given by Messrs. Furness, Glendenning, Limenius, Rowe, Walker, and White.

(17) QUEST. 843, answered by the late Mr. JOHN TODD, the Proposer.

Let LTI be a quadrant of the earth's disk as seen from the star's place at T , at the distance of the Moon, LT the axis of the ecliptic, PT that of the earth, P the North pole, Tu the difference of latitude of the Moon and star when in conjunction, and ak the path of the moon's centre.



The star passing the meridian at O at 10h. 47' 14" P.M. the elliptic or midnight meridian Pnm will make therewith the angle TPm $18^\circ 11'$. Make PmT a right angle, and draw Tb perp. and nb parallel to Tm . Then it is evident the point n , where the meridian Pnm intersects the Moon's path, will be the place required. Having in the right-angled spheric triangle TPm , $TP = 73^\circ 53'$, the star's co-declination, and TPm $18^\circ 11'$, the time in degrees past the fiducial noon, we obtain Pm $73^\circ 9'$, PTm $84^\circ 47'$, and bTP $5^\circ 13'$. And Tu , and the angles Tuo , uTo , and zTo being given, we have uz 157, Tz 2119, bz 1401, and buz $5^\circ 24'$, the ratio of its sine to its cosine put $= m$, $Tb=a$, $Tm=b$, $bz=d$, and $bn=mx$; then will $bz=mx$, and $bb=d-mx$; then, per conics, $a^2x^2=b^2.(d-mx).(2a-d+mx)$, which, solved, gives $x=839$, whence $xn=842$, and $un=999$, which the Moon will describe in $27' 7''$, which, added to the time of conjunction, gives 10h. 43m. $7''$, the time at London when the star will be centrally eclipsed at n at 12 ho. P.M. the fiducial meridian, PT being then 1 deg. 2 min. to the West of London, and the place at n (per quest.) being $18^\circ 11'$ to the East of the said meridian; its longitude from London will therefore be $17^\circ 9'$ East. But Tb 2298 (10 rad. of disk) is the sine of the arc nm $39^\circ 24'$, which taken from Pm gives Pn $33^\circ 45'$, the co-latitude of the required place.

Beginning of this occultation at London Dec. 16, 9h. 41m. Middle 10h. 17m. End 10h. 53m. Nearest approach of Moon's centre to the star $1^\circ 32'$ North.

The

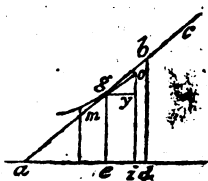
The track of central occultation commencing in *Virginia* will pass over the *Western Ocean*, and the southern parts of *Great Britain* and *Ireland*; thence over the *German Ocean*, *Denmark*, *Sweden*, and *Russia*, and terminate in the eastern part of *Great Tartary*.

Scholium. The greatest limit or difference of latitude of the moon and any fixed star (at the time of conjunction), wherein an occultation can happen, being found $= 1^{\circ} 18' 18''$, i. e. the sum of the moon's horizontal parallax, and her apparent semi-diameter, both when greatest, her least South latitude pertaining thereto, with respect to the star *Aldebaran*, will be $4^{\circ} 11' 32''$, and the greatest inclination of her orbit to the ecliptic, being $5^{\circ} 17'$, her least distance from the node will be $52^{\circ} 33'$. Therefore, when the moon is in conjunction with this star, if her argument of latitude be more than $78.22^{\circ} 33'$, and less than $108.70^{\circ} 27'$, an occultation must happen; and as she comes within this limit about *April* 1810, and goes out about *March* 1814, an occultation must of course happen to some part of the earth at every conjunction during this period: but, as she cannot again be within this limit (at the time of conjunction) in less than about 15 years, no occultation of this star can happen during this period. It must therefore follow that this star cannot be eclipsed by the moon before the spring of 1810. And it is further evident that no fixed star can be eclipsed by the moon whose latitude is greater than the sum of her greatest latitude, and the above limit; that is to say, $5^{\circ} 17' 20'' + 1^{\circ} 18' 18'' = 6^{\circ} 35' 38''$.

I cannot but lament the death of Mr. *Todd*, the ingenious proposer of this question, with whom I had been personally acquainted upwards of forty years. See the Gentleman's Diary for 1759, page the second.

The PRIZE QUESTION, answered by EUMENES.

Let *ad* represent the horizontal, *bd* the vertical plane, and *ac* the metal rod, whose centre of gravity is at *g*, the middle point of it; bisect *ab* in *m*, and let *w* = the weight of the rod. Let *a* be the first position of *g*, and drop *vi*, *ge*, perp. to *ad*. Then if the part *bc* be equal to *ab*, the centre of gravity *g* must coincide with *b*, and consequently the whole may be supported in any position by the plane or right line *bd* passing through its centre of gravity at *b*, *bc* taking away the whole tendency to motion in *ab*. But,



if *bc* be less than *ab*, it cannot destroy its whole tendency to motion, but can only do so in part. And it appears to me that the part of the weight which has a tendency to motion must then be found thus, as $ac : w :: ac - 2bc = ab - bc = 2bg : \text{the weight which has such tendency}$

$$= w \cdot \frac{ab - bc}{ac} = w \cdot \frac{2bg}{ac}.$$
 Hence, by mechanics, as $ab : bd :: \text{the}$

weight last found $: \frac{bd}{ab} \cdot w \cdot \frac{2bg}{ac} = \text{the weight that acts in the direction } ba$, which being resolved into the direction *da* in the sense from *d* towards *a*, gives $\frac{ad \cdot bd \cdot 2bg}{ab^2 \cdot ac} \cdot w = \text{the whole force or initial tendency which the rod has to slide as required.}$

Now, let $ga=a$, $ge=y$, and at the beginning of the curve $gi=b$; then $\sqrt{a^2-y^2}=ae$, $ie=gy=x$, $oy=b-y$, by similar triangles, as $oy:ge::gy:ae$, or $b-y:y::x:\sqrt{a^2-y^2}$; hence $xy=(b-y)\sqrt{a^2-y^2}$ is the equation of the curve, or $x=\frac{b-y}{y}\sqrt{a^2-y^2}$.

$$\frac{b-y}{y} \cdot \frac{a^2-y^2}{\sqrt{a^2-y^2}} = \left(\frac{b}{y}-1\right) \cdot \left(\frac{a^2}{\sqrt{a^2-y^2}} - \frac{y^2}{\sqrt{a^2-y^2}}\right) =$$

$$\frac{ba^2}{y\sqrt{a^2-y^2}} - \frac{by}{\sqrt{a^2-y^2}} - \frac{a^2}{\sqrt{a^2-y^2}} + \frac{y^2}{\sqrt{a^2-y^2}} = \frac{ba \times 2a}{2y\sqrt{a^2-y^2}}$$

$$- \frac{by}{\sqrt{a^2-y^2}} - \sqrt{a^2-y^2}, \text{ and } xy = \frac{ba}{2} \cdot \frac{2ay}{y\sqrt{a^2-y^2}} =$$

$\frac{bay}{\sqrt{a^2-y^2}} - y\sqrt{a^2-y^2}$, which are all well known forms, giving

$xy - b\sqrt{a^2-y^2} + b\sqrt{a^2-b^2} - \frac{ba}{2}$, hyperb. log. of $\frac{a-\sqrt{a^2-y^2}}{a+\sqrt{a^2-y^2}}$

$\cdot \frac{a+\sqrt{a^2-b^2}}{a-\sqrt{a^2-b^2}} + A = \text{the area } gciog \text{ required. Where } A = \text{the circular area or correct fluent of } y\sqrt{a^2-y^2}.$

A very ingenious solution to this question is also given by Mr. T. White, of Dumfries, which gives him the Prize of ten Diaries without a competitor.

The second Prize of eight Diaries is given to Mr. Colin Campbell, of Liverpool.

The third Prize of nine Diaries belongs to Mr. J. Wyrill, of Wiltow, near Selby, in Yorkshire.

And the fourth Prize of nine Diaries to Mr. John Cairns, of Old Bewick.

They must send to Mr. G. Greenhill, at Stationers'-Hall, for them.

New Mathematical QUESTIONS, to be answered in next Year's DIARY.

(1) QUEST. 845, by Mr. ALEX. ROWE, of Reginnis, near Penzance.

It is required to find the dimensions and solidity of the greatest parallelopipedon that can be cut out of the solid globe whose diameter is thirty inches?

(2) QUEST. 846, by Mr. JOSEPH YOULE, of Warfop, Nottinghamshire.

Kind analysts, sit down, I pray,
And try your skill in algebra.
To solve what I've inserted here
I hope you will not fail next year.
Yet workman-like I'd have it done,
Not into high dimensions run;

But solve it by a square equation;
It will be best on this occasion.
The sum of squares of numbers three
Exactly will five thousand be:
One hundred is their total sum.
What follows is a maximum*.

* $x^3+y^3-z^3 = a \text{ maximum}$; where x , y , and z , represent the three numbers.

N.B. This quest. was sent up in the copy last year, but omitted by printer for want of room.

(3) QUEST.

(3) QUEST. 847, by Mr. J. BARR, of St. John's Lane, London.

In a five-sided polygⁿ $a b c d e$ are given $ab \text{ sq.} + bc \text{ sq.} + cd \text{ sq.} + de \text{ sq.} + ea \text{ sq.} = \beta \text{ sq.}$; $ab \text{ sq.} + bc \text{ sq.} + cd \text{ sq.} + ae \text{ sq.} + de \text{ sq.} = \delta \text{ sq.}$; $ab \text{ sq.} + bc \text{ sq.} + ae \text{ sq.} + de \text{ sq.} + cd \text{ sq.} = \epsilon \text{ sq.}$; $ae \text{ sq.} + de \text{ sq.} + cd \text{ sq.} + ab \text{ sq.} + cb \text{ sq.} = \lambda \text{ sq.}$; and $ae \text{ sq.} + de \text{ sq.} + bc \text{ sq.} + cd \text{ sq.} + ab \text{ sq.} = \theta \text{ sq.}$; together with the ratios of $ad : ac$, and $ad : ab$, to determine the polygⁿ.

(4) QUEST. 848, by Mr. WM. SMITH.

When AC is a chord to the semicircle whose diam. is AB , DC perp. thereto, is prolonged to P till $DP = AC$, what curve is the locus of the point P ?

(5) QUEST. 849, by Mr. ALEXANDER ROWE.

To construct the plane triangle, when the solid under the base and square of the perpend. is a maximum; when a line of a given length, drawn from the vertical angle, divides the triangle into two parts in the ratio of 5 to 4?

(6) QUEST. 850, by Mr. JOHN MOORE, of Long Claxton.

On what day in the Spring quarter, in latitude fifty-three degrees North, is the sun's rising amplitude one third part of his altitude at *sen*?

(7) QUEST. 851, by Mr. A. GLENDENNING.

Given the base, the rectangle of the sides, and one of the angles at the base, to construct the triangle?

(8) QUEST. 852, by Mr. NATHAN PARNEL, of Nuncaton.

If AD be a tangent to a circle, AC a chord thereof, and from C a right line CD be drawn, cutting the periphery in B , and BE parallel to AD , meeting AC in E , the chord BC will be to $AD :: CE : AB$. Required the demonstration?

(9) QUEST. 853, by Mr. JAMES CUNLIFFE.

If AC and CD be the principal semi-axes of an ellipsis, to which a tangent is drawn to some point r in the periphery, cutting CA and CD produced in T and t , then rv being let fall perp. to AC in v , and DE drawn parallel to the tangent Tt , and cutting CT in E ; then will CE be a mean proportional to Tv and TC . Required the demonstration?

(10) QUEST. 854, by Mr. A. GLENDENNING.

If GFH , the diameter of a circle, be perp. to and bisect the base AB of its inscribed triangle ACB in E , and CF parallel to BA meet GH in F , then is half the sum of the sides of the triangle a mean proportional between HE and FG . Required the demonstration?

(11) QUEST. 855, by Mr. JOHN ANDREW.

Given the rectangle of the segments of the base made at the point of contact of the inscribed circle, minus the rectangle of those made by the perpendicular: the length of the line drawn to bisect the vertical angle, and terminate at the base, and its prolongation till it meets the circumscribing circle; to construct the plane triangle?

(12) QUEST. 856, by Mr. JAS. CUNLIFFE.

Required, by means of a circular arc, the sum of the infinite series

$$\frac{n+m}{(n-m)^2} + \frac{4n+m}{(4n-m)^2} + \frac{9n+m}{(9n-m)^2} + \frac{16n+m}{(16n-m)^2} + \&c.?$$

(13) QUEST. 857, by Mr. JOHN JOHNSON, of Birmingham.

Given the rectangle of the difference of the segments of the base, made by the line bisecting the vertical angle, and the segment intercepted between the perp. and point of contact of the inscribed circle; the ratio of that segment to the difference of the segments of the base made by the perp.; and the difference of the angle at the base. To construct the plane triangle?

(14) QUEST. 858, by Mr. W. WALKER, of Horsforth.

~~Given the difference of the sides, the radius of the circle passing through the ends of the base, and the centre of the inscribed circle, and the rectangle of the base and radius of the circle, touching the base and two sides produced; to construct the triangle?~~

(15) QUEST. 859, by the Rev. J. FURNASS.

Given the vertical angle, the distance of the centres of the inscribed and circumscribing circles, and their distances from a point where a line bisecting the vertical angle cuts the base; to construct the triangle?

(16) QUEST. 860, by Mr. COLIN CAMPBELL.

Given one side, AC, the ratio of the segments of the base, AD, DB, made by the perp. from the vertical angle, and the ratio of BC to BE; to construct the plane triangle, when AB—BE is equal to a given line?

(17) QUEST. 861, by Mr. JOHN WRIGHT.

The ratio of the two sides, and the difference of the segments of the base made by the perp. from the vertical angle thereon, being given; to construct the triangle, when its area is a *maximum*?

PRIZE QUESTION, by EUMENES.

To the astronomical *Prize Question* in the *Gentleman's Diary* for 1781, an answer is given the succeeding year by a very complex biquadratic equation having all the terms. But it admits of a conclusion far more elegant, and of the most simple form, requiring only to find a mean proportional to two given right lines. Of this the demonstration or investigation is here required?

F I N I S.