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To cite this article: Mr. George Innes (1822) LXXXIX. On the visible solar and lunar eclipses which will happen in the year 1823, as calculated for Greenwich and Aberdeen; the elements being calculated from the tables of M. Delambre and M. Burckhardt, Philosophical Magazine Series 1, 60:296, 440-445, DOI: [10.1080/14786442208644242](https://doi.org/10.1080/14786442208644242)

To link to this article: <http://dx.doi.org/10.1080/14786442208644242>

Published online: 29 Jul 2009.

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From the foregoing observations and experiments it may, therefore, be inferred,

1st. That there is no mercury, or mercurial salt, in the waters of the ocean.

2dly. That sea-water contains no nitrates.

3dly. That it contains sal-ammoniac.

4thly. That it holds carbonate of lime in solution.

5thly. That it contains no muriate of lime.

6thly. That it contains a triple sulphate of magnesia and potash.

Some of these circumstances will, of course, require that former analyses of sea-water, and my own in particular, should be corrected and revised; but this I shall not attempt to do, until I have obtained further and still more precise information on the subject.

Harley-street, June 20, 1822.

LXXXIX. *On the visible Solar and Lunar Eclipses which will happen in the Year 1823, as calculated for Greenwich and Aberdeen; the Elements being calculated from the Tables of M. DELAMBRE and M. BURCKHARDT. By Mr. GEORGE INNES*.*

[The times are inserted according to civil account, the day being reckoned to begin at midnight.]

To the Editors of the Philosophical Magazine and Journal.

GENTLEMEN,—IN calculating the two lunar eclipses, I have increased the moon's equatorial parallax $\frac{1}{60}$ part for the refraction of the earth's atmosphere. Astronomers seem doubtful how much is to be added to the semidiameter of the shadow of the earth as projected at the distance of the moon; but the quantity must certainly bear some proportion to the parallax.

I send you the elements of the solar eclipse, for the use of such as may wish to make a projection; but from the instant of greatest obscuration falling between 5 and 6 o'clock, it will be found very difficult to determine with sufficient accuracy the distance of the corresponding points on the respective paths.

In reference to this eclipse, it will be interesting to observe whether any visible impression is made on the sun's limb at those places which are situated about the extremity of the penumbra. Such places will be found a little to the west, southwest, and south of London.

* Communicated by the Author.

The

The elements of the solar eclipse are as follow :

	D. H. ' "			
Mean time of ecliptic conjunction } at Greenwich }	July 8	6	44	46,17
Equation of <i>mean</i> to apparent time } at conjunction }	—		4	29,99
Hence the apparent time of conjunction is	8	6	40	16,18
Longitude of the sun and moon } from true equinox }	105	14	14	74
Sun's right ascension	106	32	19	62
— declination north decreasing . .	22	35	30	6
— horary motion in longitude . .		2	23	00
— right ascension		2	23	93
— declination	—		16	10
— semidiameter		15	45	57
— horizontal parallax			8	65
— latitude	+		0	03
Horary increase of the equation of time				0,396
Obliquity of the ecliptic	23	27	49	76
Moon's latitude north decreasing . .	1	8	42	77
— equatorial horizontal parallax . .	1	1	21	15
— horizontal semidiameter		16	42	12
— horary motion in longitude } at conjunction }		37	59	971
— horary motion in longitude } for the hour preceding }		38	0	072
— horary motion for the hour } following }		37	59	871
— horary motion in latitude } at conjunction }	—	3	25	886
— horary motion in latitude } for the hour preceding }	—	3	25	610
— horary motion in latitude } for the hour following }	—	3	26	162
Angle of the relative orbit with the ecliptic	5	50	12	5
Horary motion of the moon from } the sun in the relative orbit . }		35	43	78

The following are the results which I have obtained in calculating for Greenwich and Aberdeen.

Calculation for Greenwich, reduced Latitude $51^{\circ} 17' 59''.0$.

D. 8 July	For the Beginning.			For the Apparent Conjunction.			For the End.		
	h 5 13 15,606	h 5 14 15,612	h 5 15 15,618	h 5 27 15,698	h 5 28 15,705	h 5 40 15,784	h 5 41 15,790		
Instant assumed	105 10 47,390	105 10 49,773	105 11 20,757	105 11 23,140	105 11 25,523	105 11 27,906	105 11 30,289		
Sun's longitude	106 28 50,921	106 28 53,320	106 29 24,505	106 29 26,904	106 29 29,303	106 29 31,702	106 29 34,101		
— right ascension	104 19 8,453	104 19 46,460	104 28 0,331	104 28 38,346	104 28 76,661	104 28 114,976	104 28 153,291		
Moon's true longitude	1 13 37,820	1 13 34,428	1 12 50,355	1 12 46,943	1 12 43,531	1 12 40,119	1 12 36,707		
— true latitude	4 47 43,0	5 2 47,5	8 18 20,0	8 33 22,5	8 48 25,0	9 3 27,5	9 18 30,0		
Right ascension of the meridian	45 57 58,6	46 3 9,9	47 9 41,7	47 14 44,6	47 19 47,5	48 24 50,4	48 29 53,3		
Altitude of the nonagesimal	29 55 44,6	30 6 38,9	32 27 48,2	32 38 37,0	32 49 25,8	33 60 14,6	33 71 3,4		
Longitude of the nonagesimal	42 26,128	42 27,808	42 45,960	42 47,075	42 48,190	42 49,305	42 50,420		
Parallax in longitude	42 20,477	42 16,420	41 23,851	41 19,814	41 15,777	41 11,740	41 7,703		
Parallax in latitude	9 12,809	8 35,505	34,466	2,280	2,280	2,280	2,280		
Appar. diff. long. of the ☉ and ☾	31 17,343	31 18,008	31 26,484	31 27,129	31 27,774	31 28,419	31 29,064		
Moon's apparent latitude north	16 45,49		16 46,24	16 46,99	16 47,74	16 48,49	16 49,24		
— apparent semidiameter	9,567		36,746			9,088			
— ap. mot. from ☉ in 60" of time									
Errors from instants assumed (the									
sign — indicates too early, and									
+ too late)									

which will happen in the Year 1823.

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Calculation for Aberdeen Observatory. Reduced Lat. $56^{\circ} 59' 4''$ 0. Long. in time $8^{\circ} 34' 5''$ W.

	For the Beginning.		For the Apparent Conjunction.		For the End.	
	h	h	h	h	h	h
Instant assumed ... July 8	4 58' 41,067	4 59' 41,073	5 25' 41,257	5 26' 41,264	5 55' 41,442	5 56' 41,449
Sun's longitude ...	105° 10' 33,090	105° 10' 35,473	105° 11' 39,823	105° 11' 42,207	105° 12' 48,940	105° 12' 51,323
— right ascension ...	106 28 36,529	106 28 38,927	106 29 43,696	106 29 46,095	106 30 53,262	106 30 55,661
Moon's true longitude ...	104 15 20,007	104 15 58,033	104 33 4,446	104 33 42,462	104 51 26,668	104 52 4,674
— true latitude ...	1 14 2,496	1 13 59,008	1 12 25,627	1 12 22,171	1 10 45,050	1 10 42,517
Right ascension of the meridian ...	1 8 52,5	1 23 55,1	7 55 2,5	8 10 5,0	15 26 15,0	15 41 17,4
Altitude of the nonagesimal ...	40 6 26,0	40 11 29,5	42 19 40,7	42 24 28,0	44 38 53,1	44 43 22,1
Longitude of the nonagesimal ...	32 15 46,4	32 25 46,5	36 43 53,5	36 53 45,0	41 38 15,4	41 48 2,3
Parallax in longitude ...	37 33,074	37 35,080	38 15,301	38 16,378	38 31,961	38 31,980
Parallax in latitude ...	46 36,475	46 32,940	45 1,412	44 57,911	43 19,275	43 15,867
Appar. diff. of long. of the ☉ and ☾	17 40,009	17 2,360	20,076	16,663	17 9,689	17 45,341
Moon's apparent latitude north ...	27 26,021	27 26,068	27 24,215	27 24,260	27 26,675	27 26,650
— apparent semidiameter ...	16 45,76		16 46,88		16 47,83	
— ap. mot. from ☉ in 60' of time	20,090		36,739		19,114	
Errors from instants assumed (the sign — indicates too early, and + too late) ...	— 6,48	+ 13,610	— 20,076	+ 16,663	— 11,288	+ 7,826
The eclipse begins at 4 ^h 59' 0 ^m 42 ^s 4.		Apparent Conjunction at 5 ^h 26' 10 ^m 77 ^s 3.		The eclipse ends at 5 ^h 56' 16 ^m 87 ^s 1.		

The final results of the calculations are as follow:

GREENWICH.

	Apparent time.		Mean time.	
	D.	H.	H.	
The eclipse begins, July 8	5	13 53,13	5	18 22,55
Greatest obscuration ...	5	27 20,61	5	31 50,13
Apparent conjunction ...	5	28 11,97	5	32 41,49
End of the eclipse ...	5	40 59,31	5	45 28,90

Dig.

Digits eclipsed, 0 24 51,16, on the north part of the sun's disc.—The moon will make the first impression on the sun's limb at $28\frac{3}{4}^{\circ}$ to the left of his zenith.

ABERDEEN.

	Apparent time.		Mean time.	
	D.	H.	H.	
The eclipse begins, July 8	4	59 0,42	5	3 29,80
Greatest obscuration ...	5	26 10,77	5	30 40,33
Apparent conjunction ...	5	26 14,07	5	30 43,62
End of the eclipse ...	5	56 16,87	6	0 46,63

Dig.

Digits eclipsed, 1 57 20,56, on the north part of the sun's disc.—The moon will make the first impression on the sun's limb at $6\frac{1}{2}^{\circ}$ to the left* of his zenith.

January 26. Moon eclipsed, partly visible.

GREENWICH.

ABERDEEN.

	Apparent time.		Mean time.		Appar. time.		Mean time.	
	D.	H.	H.		H.		H.	
The eclipse begins	26	15 24 46,3	15 37 37,4		15 16 11,8		15 29 2,9	
Beginning of } total darkness }		16 22 15,9	16 35 7,6		16 13 41,4		16 26 33,1	
Moon rises .		16 36 29,2	16 49 21,0		16 13 19,4		16 26 11,2	
Ecliptic opposition		17 10 43,1	17 23 35,2		17 2 8,6		17 15 0,7	
Middle . . .		17 11 29,3	17 24 21,4		17 2 54,8		17 15 46,9	
End of total } darkness . }		18 0 42,7	18 13 35,2		17 52 8,2		18 5 0,7	
End of the eclipse		18 58 12,3	19 11 5,3		18 49 37,8		19 2 30,8	

Dig.

Digits eclipsed 20 49 46,9 from the north side of the earth's shadow.—The moon's centre will pass 4' 28",0 north of the centre of the earth's shadow, at the middle of the eclipse.

* We presume the author means on the *left* side when looking through a telescope which *inverts* the objects.—EDIT.

July

July 23. Moon eclipsed, partly visible.

	GREENWICH.			ABERDEEN.		
	Apparent time.			Mean time.		
	D.	H.	"	H.	"	"
The eclipse begins	23	1	29 35,8	1	35 38,5	1 21' 1,3
Beg. of total darkness	}	2	36 22,6	2	42 25,4	2 27 48,1
Middle		3	26 2,0	3	32 4,9	3 17 27,5
Ecliptic opposition		3	28 3,4	3	34 6,3	3 19 28,9
Moon sets		4	1 0,0	4	7 3,0	3 31 54,4
End of total darkness	}	4	15 41,4	4	21 44,4	4 7 6,9
End of the eclipse		5	22 28,2	5	28 31,3	5 13 53,7

Dig. 18 13 22,1 from the north part of the earth's shadow.—The moon's centre will pass 9' 10",9 north of the centre of the earth's shadow at the middle of the eclipse.

Aberdeen, Nov. 15, 1822.

XC. Some Remarks on Urinary Calculi, and their Chemical Examination. By JOHN MURRAY, F.L.S. M.G.S. M.W.S. &c. &c.

To the Editors of the Philosophical Magazine and Journal.

10th July, 1822.

GENTLEMEN, **T**o the combined genius of Berzelius, Marcet, Henry, Prout, and Brande, we are indebted for almost all we know on the highly interesting subject of urinary calculi.

The existence of calculi composed of *lithate of ammonia*, had been called in question; but Dr. Prout had since ascertained its existence in one case at least—a young person: and to those of immature age it has hence been presumed confined. For my own part I am of opinion *none other exists, except of that description*. I have not been fortunate, at least, to meet with any composed of lithic acid; and when we consider the *solubility of this acid*, I do not think, *prima facie*, that it is reasonable to expect to meet with it *uncombined in a concrete form in urine*.

I have drawn my inferences from the numerous examples that have occurred in my chemical examination of these concretions; and must say, that I never met with one that, being mixed with pure *caustic potassa*, did not yield unequivocal evidence of the escape of ammonia, on bringing a feather dipt in acid near. If the acetic acid was weak, this indication might not appear; but if *muratic* or *nitric acid* was employed, there then remained no doubt of the presence of ammonia. Now what