PHILOSOPHICAL TRANSACTIONS.

XV. The Bakerian Lecture.—*On the Tides at the Port of London.* *By* John William Lubbock, *Esq. F.R.S.*

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THE discussions of tide observations which I have had the honour to lay before the Society on different occasions, have been instituted with reference to the transit of the moon immediately preceding the time of high water. The Tables which I have thus prepared for London and Liverpool, in order to serve for predicting the phenomena, answer the purpose for which they were intended, and may also afford some notions with respect to the laws of the phenomena, and to the degree of accuracy of which the inquiry is susceptible, impeded by the rude manner in which the observations are made, and by accidents. But when the discussion is instituted with reference to the transit immediately preceding the time of high water, the law of the variations in the interval between the moon's transit and the time of high water is obscured.

The discussion of nineteen years' observations of tides at the London Docks, which I now offer, has been made with reference to the moon's transit two days previous, and will, I trust, be viewed with interest, for it proves that the laws to which the phenomena are subject accord generally with the views propounded long since by Bernoulli.

Mr. Stratford states in the preface to the Nautical Almanac, that he employs manuscript tables for computing the time of high water at London Bridge, founded upon my principal Table III., given at page 401 of the Philosophical Transactions for 1831, and he states that this table has been reconstructed. But my table is founded upon so great a number of observations, and the law agrees with theory so remarkably, that Mr. Stratford's alterations cannot be important. I have reason to think that Mr. Stratford employs my corrections for the variations of the moon's parallax and declination, but that he deduced the *calendar-month inequality in the interval* by a process similar to that which I employed in the Philosophical Transactions

for 1834, Part I. The nature of this inequality, which has not been yet understood, is clearly shown in this paper. When the moon's transit immediately preceding the time of high water is taken as the *argument*, this inequality arises chiefly from the variation in the interval between successive transits of the moon*.

I shall now endeavour to explain BERNOULLI's solution of the problem, in order to render intelligible the comparisons between theory and observation which accompany this paper. Let us allow for an instant, that were the earth a perfect sphere covered throughout by a fluid, the fluid would assume the same form at any given instant as it would do if the forces then acting upon each particle were invariable in magnitude and direction. The actual approximation to this state of things is greater in the southern hemisphere than in northern latitudes, and on our coasts. Moreover, let us suppose that the tide-wave is subject to this law at the Cape of Good Hope, or in some region still more remote, and that it is propagated along the Atlantic Ocean and round our island, "according to the stamp first set upon it by the moon's pressure." Upon these suppositions, which are virtually those of BERNOULLI, and which may be said to constitute the equilibrium-theory, it is easy to calculate the variations in the time and height of high water at any given place, if the time in which the tide-wave is propagated does not vary. The results which are contained in this paper are intended to assist in determining how far the phenomena accord with these suppositions.

The tide-wave travels from the Cape of Good Hope to Gibraltar in about twelve hours, from Gibraltar to Edinburgh in about twelve hours, and from Edinburgh to London in about the same time. I have shown that the *retard* at Brest is considerably less than at London; and there can be no doubt that at the Cape of Good Hope it is less than at Brest.

BERNOULLI's theory may be considered as proceeding upon these principles. BERNOULLI calculated tables for some of the corrections, but he did not explain with sufficient precision the manner in which these tables must be used. I allude here particularly to BERNOULLI's parallax correction for the interval, p. 165. He says, "Pour se servir de cette table, il ne faudra plus qu'ajouter aux nombres des six dernières colonnes l'heure moyenne du port." But it is not sufficient to increase the argument of the table, which is the angular distance between the luminaries, by twenty degrees, as BERNOULLI supposes, in order to accommodate the table to the reasoning in p. 161, where he says, "Et enfin on trouve une conformité exacte entre les deux points en question, en donnant un jour et demi au retardement des marées, c'est-à-dire, en supposant que l'état des marées est tel qu'il devroit être naturellement, un jour et demi plutôt." Although this supposition is admissible, at Brest, for example, and although BERNOULLI's table would I think afford the true correction in the interval between the moon's transit and the time of high water, in the case of a perfect sphere covered by an ocean, by applying it to the transit of the moon *immediately*

* See Table XXIII.

preceding, still this is not the case actually, and no approximation even would be obtained to the true parallax or calendar-month inequality in this manner. Nor did BERNOULLI indicate the great difference in the *retard*, or *age of the tide*, at different places; and he appears to have attributed this retard* to the inertia of the water, an error which LAPLACE pointed out. The difficulty to which I have alluded in ascertaining the correct interval between a given transit of the moon and the time of high water does not influence so much the calculation of the heights, because the parallax and declination corrections for the height change very little with the moon's age.

In forming future discussions similar to that contained in this paper, it is desirable that they should be instituted with reference to the same transit of the moon, namely, with reference to the transit which precedes the time of high water at London by about 5 1 hours †; otherwise even the variations in the heights will not be immediately comparable with those here given, and the variations in the intervals will be very different. This may be seen by comparing the tables in this paper with those which I obtained formerly with Mr. DESSIOU's assistance, and in which the discussion of the same observations was instituted with reference to the transit immediately preceding the time of high water. The variations in the interval between two successive transits of the moon are, in fact, of the same order in amount as those in the interval between the moon's transit and the time of high water due to the variations in magnitude of the attractive forces; and when the interval between the time of high water and the moon's transit *immediately preceding* is considered, (at least on our coasts,) the variations from both these causes are mixed up together.

As the tide-wave travels northward to the coasts of Great Britain from the Cape of Good Hope, passing the French coast, the variations in the *interval* and in the height at Brest must be similar to those at London and Liverpool. My results ought, therefore, to agree with those which may hereafter be deduced from the observations made at Brest by order of the French Government, and not yet published. The Brest observations may, however, be rather more accurate than those to which I have had access; and as the tide is single, the diurnal inequality is perhaps there more distinct.

Although the imperfection of observations renders it indispensable to employ the average of a great number in order to deduce with safety any conclusions, this is equally required on account of the influence of what may be termed accidents, such as the winds and the varying pressure of the atmospheric column. M. DAUSSY has

* "Nous avons encore fait voir, que sans le concours des causes secondes les plus grandes marées devroient se faire dans les syzygies et les plus petites dans les quadratures. Cependant on a observé, que les unes et les autres se font un ou deux jours plus tard. Ce retardement est encore produit, si non pour le tout, au moins en partie par l'inertie des eaux qui doivent être mises en mouvement et qui ne sauroient obéir assez promtement aux forces qui les sollicitent, pour leur faire suivre les loix que ces forces demanderoient."—p. 158. I use the word *retard* after BERNOULLI.

† This is also desirable with reference even to the *establishment* of ports, for obvious reasons.

ascertained that at Brest the height of high water varies inversely as the height of the barometer, and that the ocean rises ·223 metre, or 8·78 inches, for a depression of ·0158 metre, or ·622 inch, in the barometer *.

In order to confirm this interesting result, and to ascertain the variation in the height of high water at Liverpool simultaneous with the variation of the atmospheric pressure, I requested Mr. Dessiou to calculate from our tables the heights and times of high water at Liverpool for the year 1784, and to compare the errors of the calculated heights and times with the heights of the barometer as recorded by Mr. Hutchinson for that year. The errors were divided into three categories:

	inches.		inches.
Those for a height of barometer between	29	and	29·50
———	29·50	and	30
———	30	and	30·50

inches.				inches.
For 29·25,	mean of 148	results, we found the mean	error in the calculated heights of high water...	−5·6
29·76,	——— 328			+ ·1
30·16,	——— 232			+4·5

Hence we may say roughly that at Liverpool a fall of one tenth of an inch in the barometer raises the tide an inch, *cæteris paribus*. The time of high water appeared not to be much affected.

The same errors in the calculated times and heights for 1784 were again classed, in order if possible to ascertain the effect of the wind, and the following results were obtained.

	Error in calculated Time of High Water.	Error in calculated Height of High Water.	Height of Barometer.	Number of Observations.
	m	inches.		
N.	+ ·1	+1·4	29·80	32
N.N.E.	− ·8	+8·9	29·83	19
N.E.	− ·8	+9·7	29·79	28
E.N.E.	+1·7	+9·1	29·77	16
E.	− ·8	+5·2	29·86	38
E.S.E.	−2·8	+ ·7	29·76	21
S.E.	−1·6	+1·0	29·91	141
S.S.E.	−4·2	+2·2	29·80	37
S.	−5·0	−4·7	29·60	4
S.S.W.	−3·2	−4·2	29·25	12
S.W.	−1·7	−3·0	29·57	45
W.S.W.	−4·2	−5·5	29·54	42
W.	−1·6	− ·4	29·73	87
W.N.W.	−2·9	+1·2	29·89	28
N.W.	−1·5	− ·3	29·38	72
N.N.W.	−3·9	−2·4	29·61	24

Hence it appears that north-easterly winds at Liverpool depress the tide, and south-

* See Connaissance des Temps, 1834.

westerly winds raise it. As northerly winds raise the barometer and southerly winds depress it, it will be difficult, if not impossible, to separate the effect of winds and that of the variation in the pressure of the atmosphere from each other.

I requested Mr. DESSIOU to separate and class the errors of the predicted heights from Table D., in order to ascertain the variation in the height of high water at London simultaneous with the variation of the barometer during 1835.

Barom.	Therm.				inches.
For 29·29	51·9, mean of	68	results, we found the mean		+ 6·1
29·77	59·0 ———	282	error in the calculated		+ 10·7
30·19	56·9 ———	351	heights of high water...		+ 12·4

so that the water rises 6·3 inches for ·90 depression of the barometer.

I have found on several occasions when remarkably high tides have taken place at London, that they have been preceded by a very low barometer.

If these collateral inquiries relating to the influence of the wind and of the atmospheric pressure appear of sufficient importance to deserve a complete and satisfactory solution, much additional labour must be devoted to the accomplishment of this object. I find upon comparing the registers of the London and St. Katherine Docks, that the direction of the wind is scarcely ever noted to be the same on the same day; probably the direction is always fluctuating, and the discrepancy may then be accounted for by supposing that the observation is not made at the same moment at both places. The barometer admits of more precise observation; but if the tide originates at a very remote distance on the surface of the earth, the atmospheric pressure *there* has probably more influence upon the phenomena than the pressure in our vicinity. This difficulty is diminished by the circumstance that the great fluctuations of the barometer are not rapid, and that the variations in the pressure of the atmosphere are extremely extensive. It will still, however, I apprehend, be very difficult to distinguish between the effects arising from variations in the atmospheric pressure, and those arising immediately from the effect of wind, as I have before remarked.

When the discussion of the observations of the tides made at Liverpool was published, although the opinion of several persons whom I consulted was in favour of *apparent* solar time having been employed by Mr. HUTCHINSON in registering the observations, I was unable to arrive at any certain conclusion in this particular. But by comparing our predicted tides for Liverpool with the observations made there in February last, it seems beyond doubt that Mr. HUTCHINSON did employ *apparent* solar time, and our tables must be interpreted accordingly, for the mean error of our predicted times of high water for last February is only three minutes, while the equation of time for that month is much more considerable.

If the surface of the fluid assume the same form at any given instant as it would do if the forces then acting upon each particle were invariable in magnitude and direction, the variation of the height of the water, or distance of a particle at the

surface of the ocean from the earth's centre, neglecting terms multiplied by the fourth power of the parallaxes, is proportional to

$$\frac{3\,m\,P^3}{2}\left\{\cos^2\zeta-\frac{1}{3}\right\}+\frac{3\,m'\,P'^3}{2}\left\{\cos^2\zeta'-\frac{1}{3}\right\}*,$$

where m is the mass of the luminary, P the horizontal parallax, and ζ the zenith distance, the unaccented quantities referring to the sun, and the accented quantities to the moon.

If α denote right ascension, δ declination, l geographical latitude, and μ sidereal time,

$$\cos\zeta=\cos\delta\cos l\cos(\mu-\alpha)+\sin\delta\sin l.$$

h, the height of the water,

$$\begin{aligned}=D&-\frac{m\,R\,P^3}{2\,M}\left(1-\frac{3}{2}\cos^2 l\right)(1-3\sin^2\delta)\\&+\frac{3\,m\,R\,P^3}{4\,M}\cos^2 l\{\cos^2\delta\cos(2\mu-2\alpha)+2\sin 2\delta\tan l\cos(\mu-\alpha)\}\\&-\frac{m'\,R\,P'^3}{2\,M}\left(1-\frac{3}{2}\cos^2 l\right)(1-3\sin^2\delta')\\&+\frac{3\,m'\,R\,P'^3}{4\,M}\cos^2 l\{\cos^2\delta'\cos(2\mu-2\alpha')+2\sin 2\delta'\tan l\cos(\mu-\alpha')\},\end{aligned}$$

M being the mass of the earth, and D a constant depending only on the zero line, from which the heights are reckoned.

At high water

$$\tan(2\mu-2\alpha')=\frac{\frac{m\,P^3\cos^2\delta}{m'\,P'^3\cos^2\delta'}\sin(2\alpha-2\alpha')-\frac{m\,P^3\sin 2\delta\tan l\sin(\mu-\alpha)}{m'\,P'^3\cos^2\delta'\cos(2\mu-2\alpha')}-\frac{2\tan l\tan\delta'\sin(\mu-\alpha')}{\cos(2\mu-2\alpha')}}{1+\frac{m\,P^3\cos^2\delta}{m'\,P'^3\cos^2\delta'}\cos(2\alpha-2\alpha')}.$$

If $\mu-\alpha'=\psi$, $\quad\alpha-\alpha'=\varphi$ $\quad\frac{m\,P^3\cos^2\delta}{m'\,P'^3\cos^2\delta'}=A$ $\quad\mu-\alpha=\psi-\varphi$

and if we neglect the difference in the interval for the morning and evening tides,

$$\tan 2\psi=\frac{A\sin 2\varphi}{1+A\cos 2\varphi}:$$

ψ is the hour-angle of the moon at the time of high water, and is an angle differing† little from 0 or 180°.

If $E=\frac{3\,m'\,R\,P'^3}{4\,M}\cos^2 l\cos^2\delta'$,

considering only the arguments $2\mu-2\alpha$ and $2\mu-2\alpha'$,

* This amounts to supposing that the differential equation to the fluid surface is given by the equation

$$X\,dx+Y\,dy+Z\,dz=0$$

so as to neglect the quantity $u'\,dx+v'\,dy+w'\,dz$ in the notation of M. Poisson, Traité de Mécanique, vol. ii. p. 669.

† This has reference to the case of a perfect sphere.

$$h = D + E\{A\cos(2\psi - 2\varphi) + \cos 2\psi\}$$

$E\,A$ varies as $P^3\cos^2\delta$, E varies as $P'^3\cos^2\delta'$.

If (A) and (E) denote the values of those quantities for the mean parallaxes and declinations, that is, when $\delta = \delta' = 15°$, $P = \sin 8''{\cdot}8$, $P' = \sin 57'$, the semimenstrual inequalities in the interval and in the height are given by the expressions

$$\tan 2\psi = \frac{(A)\sin 2\varphi}{1 + (A)\cos 2\varphi},$$

$$h = D + (E)\{(A)\cos(2\psi - 2\varphi) + \cos 2\psi\};$$

D being a constant which depends only on the zero line, from which the height is reckoned. The value of (A) obtained from observations of the interval at different places should be the same, unless neap tides are transmitted with a different velocity from that of spring tides.

The difference in height between the morning and evening tide depends upon the angles $\psi - \varphi$ and ψ; if this difference be called d h, considering only the quantities multiplied by P^3 and P'^3,

$$\mathrm{d}\,h = B\{(A)\sin 2\delta\cos(\psi - \varphi) + \sin 2\delta'\cos\psi\};$$

B being a constant. The quantities multiplied by P'^4 may also, perhaps, give some sensible term in the diurnal inequality; and the term $\frac{m' R P'^3}{2M}$ may give an inequality in the height depending upon the moon's parallax and independent of her age or time of transit. The diurnal inequality of the interval may be put in the form

$$\mathrm{d}\,\psi = \frac{F\cos 2\psi}{1 + (A)\cos 2\varphi}\left\{\frac{(A)\sin 2\delta}{\cos^2\delta'}\sin(\psi - \varphi) + 2\tan\delta'\sin\psi\right\}$$

F being a constant.

The inequalities of the heights at different places depending upon the angles $2\psi - 2\varphi$ and 2ψ are proportional to the quantity (E); so that if they have been obtained for any place P, they may be obtained for any other place P', by multiplying the former by $\frac{(E')}{(E)}$. The inequalities in the interval are the same everywhere, according to the theory above explained; but in both cases the argument may require to be shifted.

The British Association for the Advancement of Science having placed at my disposal for the purpose a sum of money, I employed Mr. JONES and Mr. RUSSELL, two excellent computers, to discuss nineteen years' observations made at the London Docks, with reference to the moon's transit two days previous, and the results have been arranged in the accompanying tables. I now proceed to compare these with theoretical results deduced from the preceding expressions.

First, with respect to the semimenstrual inequality. From the column headed "Mean" in Table II. it appears that

For the transit happening at $9^h\ 30^m$ the interval is $3^h\ 48^m{\cdot}9$

3 30 — 2 25 ·1

$3^h\ 48^m{\cdot}9 - 2^h\ 25^m{\cdot}1 = 1^h\ 23^m{\cdot}8$, which, converted into space, $= 21°$ nearly.

$$\log \tan 21^\circ = \log (A) = 9{\cdot}5841774.$$
$$\frac{1}{(A)} = 2{\cdot}605.$$

When the discussion was instituted with reference to the transit immediately preceding the time of high water, the value of log (A) came out 9·5784858.

I find, moreover,

$$D = 16^{\text{ft}}{\cdot}69 \qquad (E) = 4{\cdot}43 \qquad \log (E) = {\cdot}6468993.$$

The semimenstrual inequality calculated from Bernoulli's expression is very similar to the inequality deduced from observation. See Table XXVIII. and Plate XVIII.

The mean interval in the former discussion corresponded to the moon's transit at 2^{h}; now it corresponds to the moon's transit at 26^{m}. The constants now obtained differ so little from those obtained before, that the tables calculated by Mr. Jones, and given in my last paper*, are applicable, making the moon's transit at 30^{m} correspond to $\varphi = 0$, for the moon's transit at $1^{\text{h}}\ 30^{\text{m}}$ $\varphi = 15^\circ$, &c.

The calendar-month inequality is complicated in its nature; it results from the variations in the declinations of the luminaries, and in the sun's parallax. Table XXIX., calculated by Mr. Jones, offers a comparison in this respect between theory and observation†. The results in this table have been laid down in diagrams (see Plate XIX.), in order that the nature of the agreement may be better understood. The terms

$$\left\{1 - \frac{3}{2}\cos^2 l\right\}\left\{\frac{3\,m\,R\,P^3}{2\,M}\sin^2\delta + \frac{3\,m'\,R\,P'^3}{2\,M}\sin^2\delta'\right\},$$

occur in the expression for the height (see p. 222.), substituting of course for

$$1 - \frac{3}{2}\cos^2 l$$

a certain constant, to be determined from the observations, which amounts to introducing an inequality in the height

$$= C\{(A)\sin^2\delta + \sin^2\delta'\},$$

C being a constant; but these terms appear to be insensible.

The calendar month inequality in the height may also result partly from the fluctuations in the barometer. According to Mr. Daniell‡, the following are the heights of the barometer in the different months of the year:

	inches.		inches.		inches.		inches.
January	29·921	April	29·881	July	29·874	October	29·774
February	30·067	May	29·898	August	29·891	November	29·776
March	29·843	June	30·020	Sept.	29·931	December	29·693

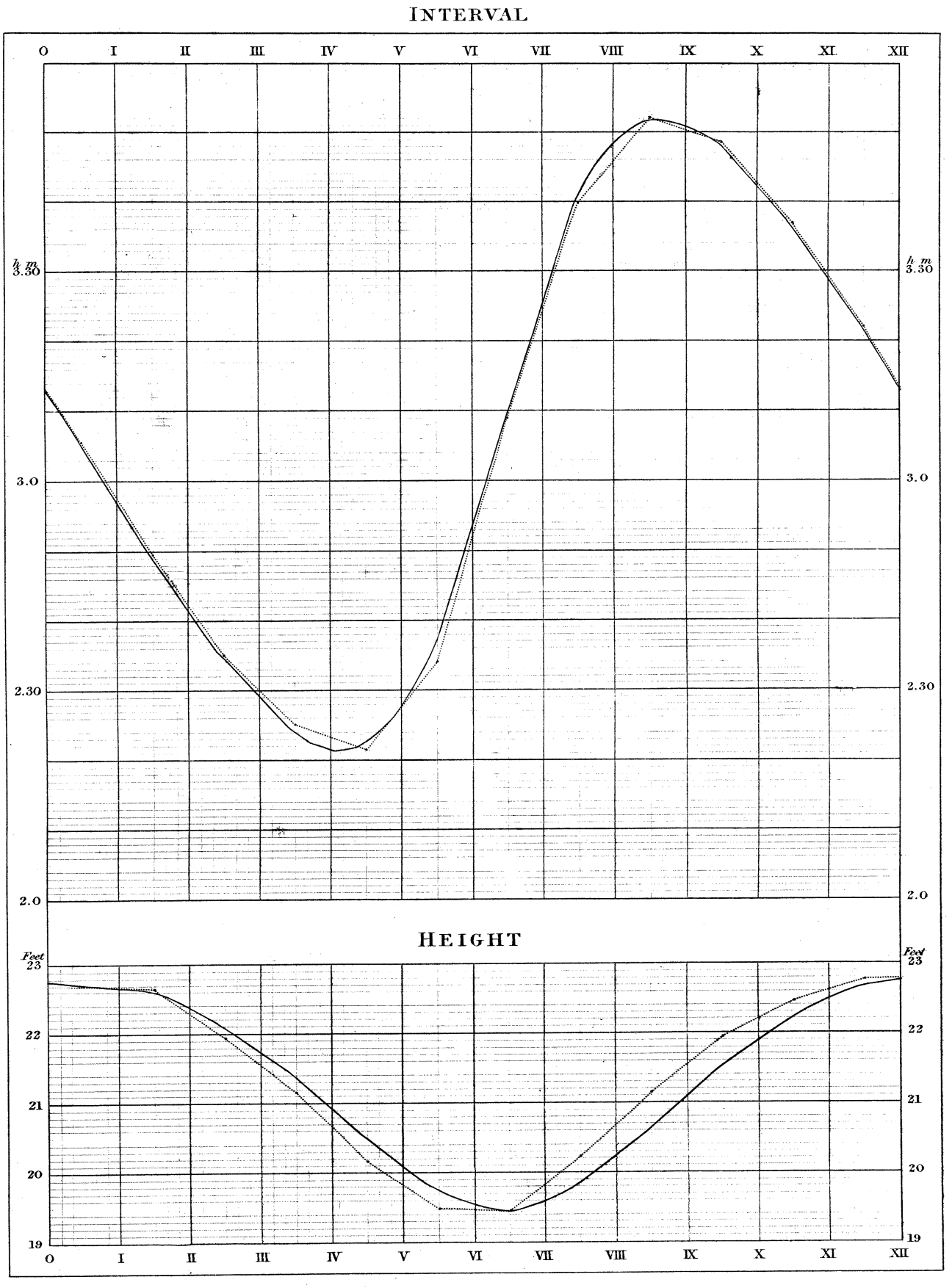
Hence, in order to arrive at the utmost precision in the comparison, it might, per-

* Philosophical Transactions, 1836, p. 58.

† The sun's declination is that for the middle of the month, and the moon's declination is given for each category in Table I.

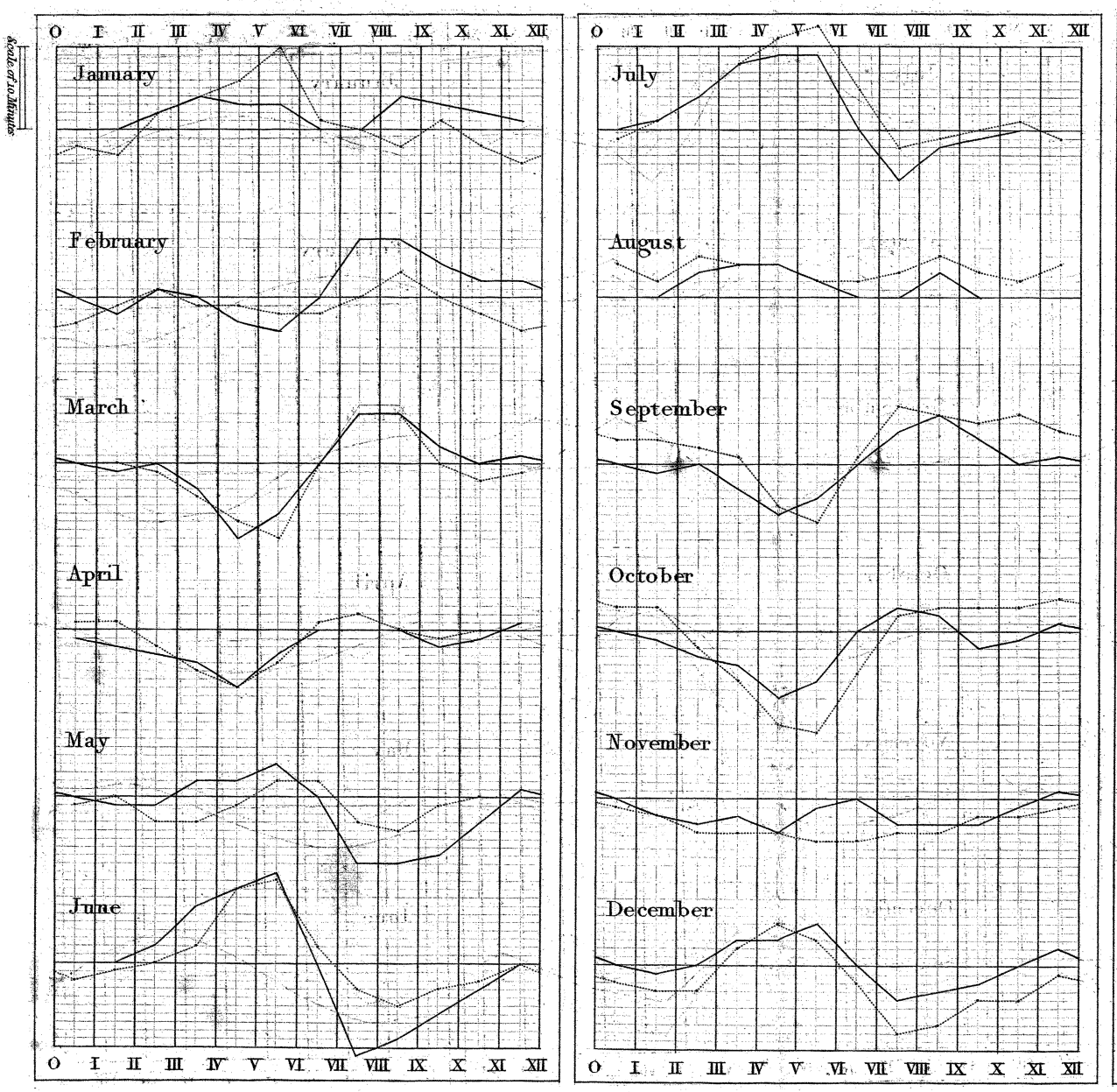
‡ Meteorological Essays.

Diagram showing a comparison between the Semi-menstrual correction at London, in the interval, and in the height, as deduced from theory and from observation. *See Table XXVIII.*



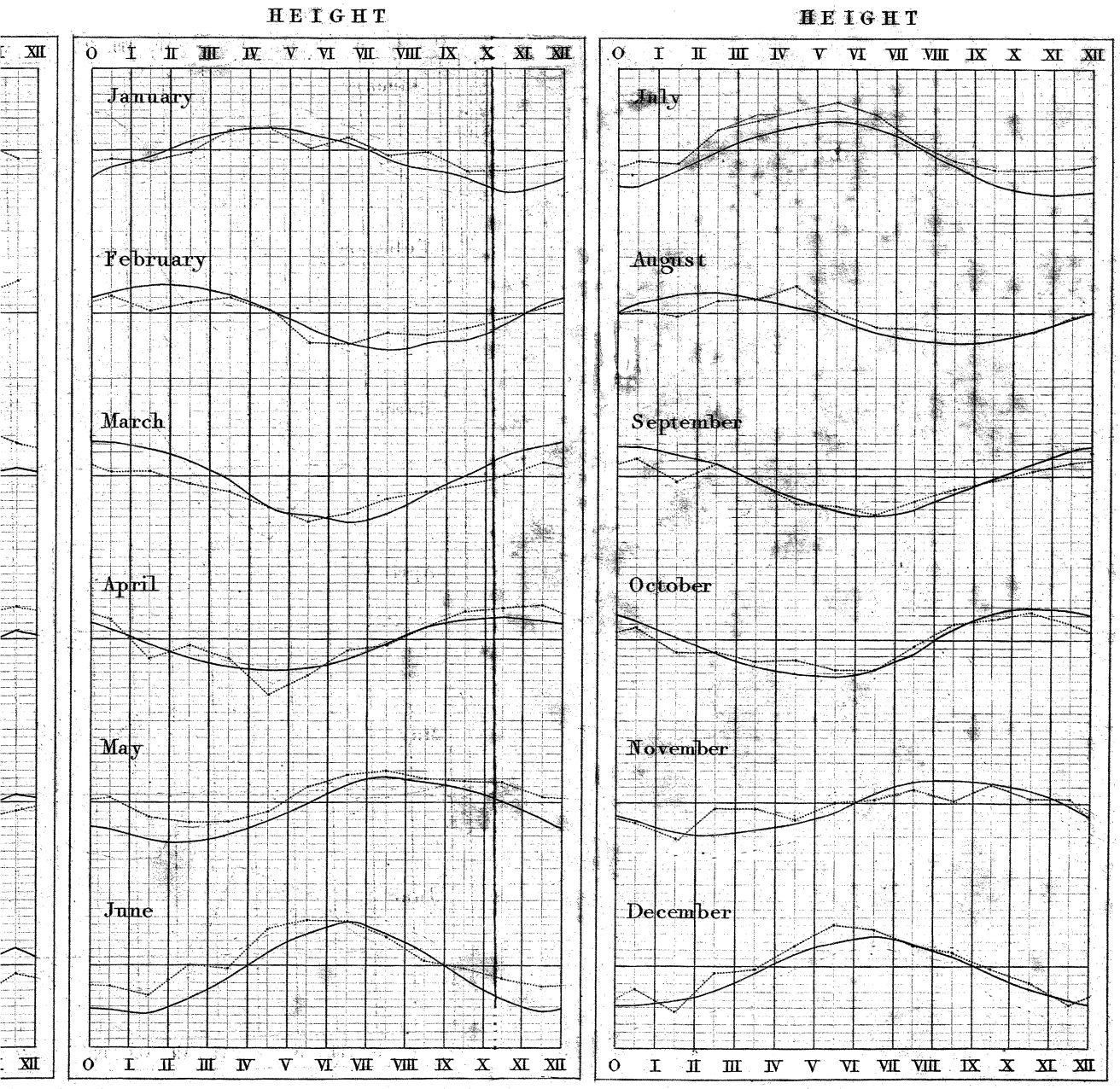
In these curves the abscissa represents the time of the Moon's transit two day's previous. *Observation*..... *Theory.* ——

Diagram showing a comparison between the calen
the height as deduced from theory and from ob



In these curves the abscissa represents the time of the Mo

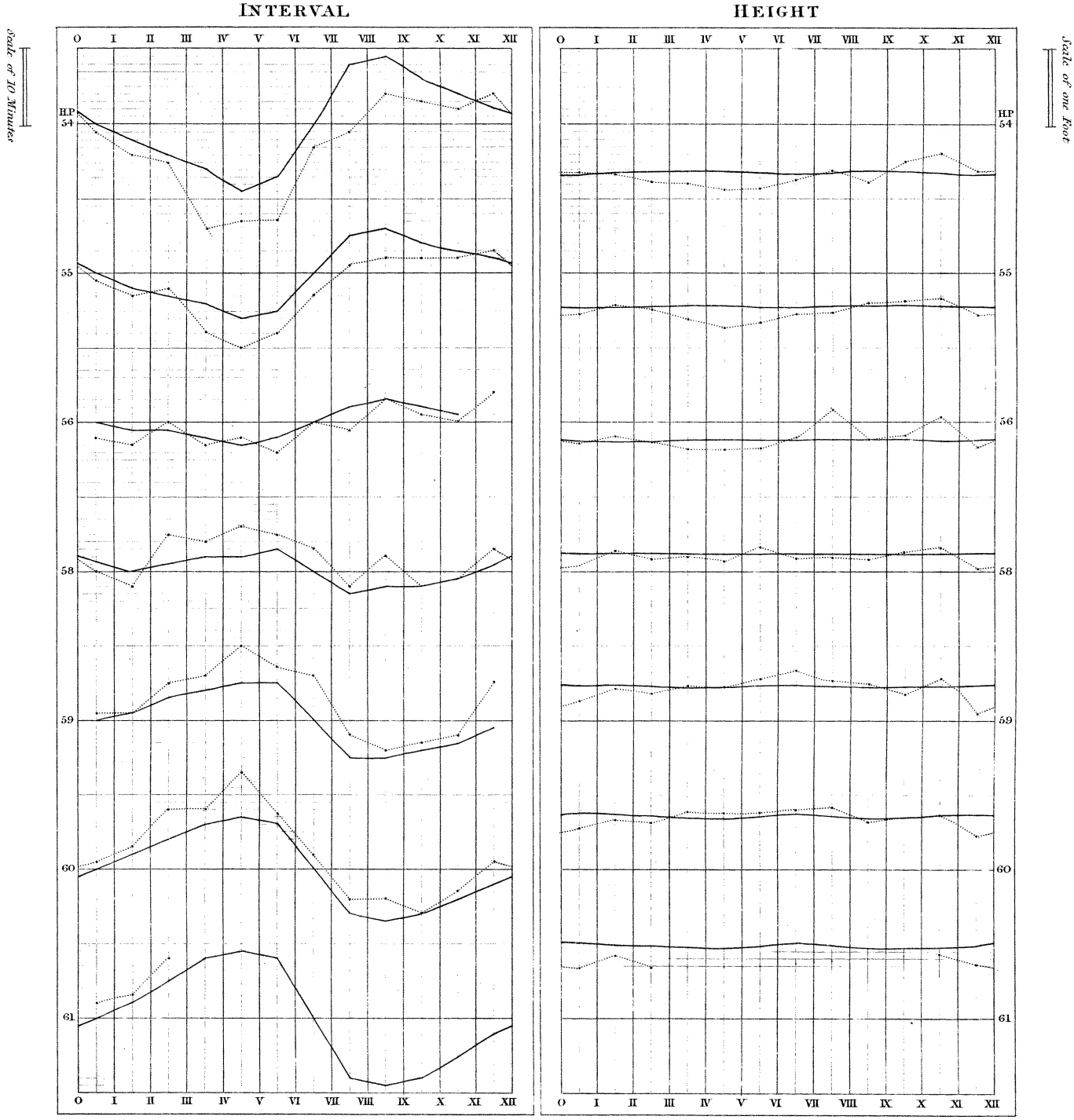
e calendar month correction in the interval and in
rom observations at the London Docks _ See Table XXIX.



the Moons transit two days previous Observation.....Theory.——


XII
Scale of One Foot
XII

Diagram showing a comparison between the Moon's parallax correction in the interval and in the height as deduced from theory and from observations at the London Docks. — See Table XXX.



In these curves the abscissa represents the time of the Moon's transit two days previous. *Observation* ..... *Theory* ———

haps, be necessary to introduce a correction depending upon the height of the barometer, which may amount in the extreme case to nearly two inches at London. Another difficulty arises from the influence of the wind, in as much only as it is distinguished from that of the atmospheric pressure. This circumstance, and the rude nature of the observations, seem to render it very doubtful whether the refinements to which I have alluded would be attended with much advantage.

Table XXX. offers a comparison between the moon's parallax-correction in the interval and in the height, as deduced from theory and from observation. See Plate XX. In order to diminish the irregularities, and to employ the concourse of all the observations, I employed the following method: Let δP be the difference of parallax, or

$$\text{The parallax} - 57'.$$

I suppose the parallax correction to be proportional to δP; hence the correction for parallax $54'$ = three times the correction for parallax $56'$, and the total of the absolute corrections for parallaxes $54'$, $55'$, $56'$, $58'$, $59'$, $60'$, $61' = \frac{16}{3} \times$ the correction for parallax $54'$. Whatever be the law of the parallax-correction, it may certainly be considered as proceeding according to powers of δP; and the preceding hypothesis amounts to neglecting all the powers except the first. I now employ only the total of the corrections deduced from the discussions, and I multiply it by $\frac{3}{16}$, or the equivalent multiplier, in order to have the correction for $54'$. The following Table exhibits the results, which may each be considered as resulting from the average of about 800 observations.

Correction for H. P. $54'$ at London.

Moon's Transit.	Interval. A.	Height. A.	Moon's Transit.	Interval. A.	Height. A.
h m	m	feet.	h m	m	feet.
0 30	− 1·4	−·56	6 30	− 5·0	−·72
1 30	− 2·7	−·65	7 30	+ 1·7	−·69
2 30	− 6·1	−·62	8 30	+ 3·9	−·67
3 30	−10·7	−·80	9 10	+ 4·3	−·60
4 30	−13·1	−·83	10 10	+ 2·5	−·59
5 30	−12·5	−·92	11 30	+ 0·3	−·49

The number of observations from which the preceding Table is deduced is so considerable, that it is impossible, I think, to admit in it any error of consequence. According to the expression for tan 2ψ in p. 222, the moon's parallax-correction in the interval is the same for $\varphi = 90 \pm \theta$, only with a contrary sign, and for the height it is the same. In the following Table I have endeavoured to detach all such part of the moon's parallax-correction (deduced from the observations) as is consistent with such an expression, from the residue, and I have placed in the next column the moon's parallax-correction calculated by Mr. JONES from the expression for tan 2ψ in p. 222.

φ.	Moon's Transit.	Correction for H. P. 54′.					
		Interval.			Height.		
		Observation. B.	Theory.	Residue. C.	Observation. B.	Theory.	Residue. C.
° °	h m	m	m	m			
0 or 180	0 30	0	0	— 1·4	— ·66	— ·66	+ ·10
15 — 195	1 30	— 1·5	— 2·1	— 1·2	— ·57	— ·66	— ·08
30 — 210	2 30	— 4·3	— 4·2	— 1·8	— ·60	— ·64	— ·02
45 — 225	3 30	— 7·5	— 6·5	— 3·2	— ·70	— ·62	— ·10
60 — 240	4 30	— 8·5	— 8·7	— 4·6	— ·75	— ·61	— ·08
75 — 255	5 30	— 7·1	— 8·4	— 5·4	— ·80	— ·64	— ·12
90 — 270	6 30	0	0	— 5·0	— ·66	— ·66	— ·06
105 — 285	7 30	+ 7·1	+ 8·4	— 5·4	— ·80	— ·64	+ ·11
120 — 300	8 30	+ 8·5	+ 8·7	— 4·6	— ·75	— ·61	+ ·08
135 — 315	9 30	+ 7·5	+ 6·5	— 3·2	— ·70	— ·62	+ ·10
150 — 330	10 30	+ 4·3	+ 4·2	— 1·8	— ·60	— ·64	+ ·01
165 — 345	11 30	+ 1·5	+ 2·1	— 1·2	— ·57	— ·66	+ ·08

$$B + C = A.$$

The residue of the interval may, I think, be represented by

$$\frac{\text{constant} \times \delta P}{1 + A \cos 2\varphi}$$

which is not inconsistent with theory. The *residue* of the height is small. The results of the preceding Table are displayed in diagrams at foot of Plate XX.

Table XXXI. offers a comparison between the moon's declination-correction in the interval and in the height, as deduced from BERNOULLI's theory and from the observations.

It appears that the semimenstrual, declination and parallax-corrections are in accordance with the laws assigned to them by BERNOULLI's theory, at least taken in the manner which I have attempted to define in this paper, and within the limits of the errors of the observations. This view of the question accords with that given by LAPLACE in the following passage of the Exposition du Système du Monde, p. 289: "Chacun de nos ports peut être considéré à cet égard, comme étant à l'extremité d'un canal, à l'embouchure duquel les marées partielles arrivent au moment même du passage des astres au méridien, et emploient un jour et demi à parvenir à son extrémité."

This view of the question is also adopted by Mr. WHEWELL; but I do not think with Mr. WHEWELL that the "retroposition of the tide in longitude and in time is affected by changes depending upon variations of the moon's force*." I think that what Mr. WHEWELL attributes to the change in λ', "the retroposition of the tide in longitude," is chiefly due to the variation in the intervals between the successive transits of the moon, which has hitherto been overlooked.

From the expression

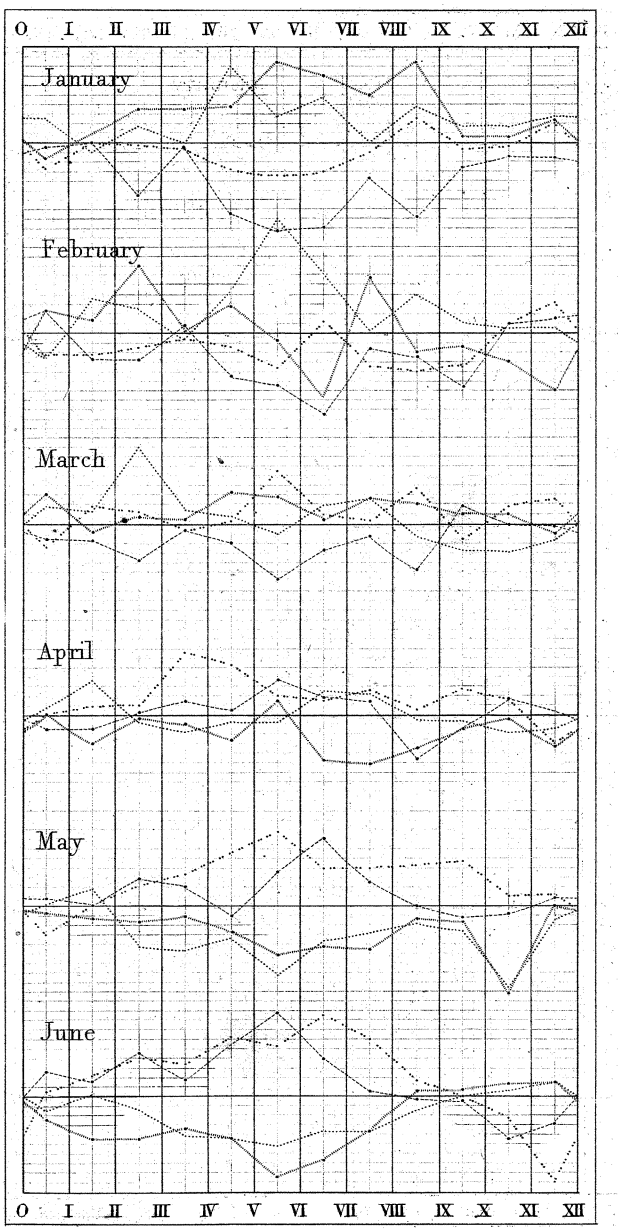
$$\tan 2\psi = \frac{A \sin 2\phi}{1 + A \cos 2\phi}$$

* "On the Empirical Laws of the Tides in the Port of Liverpool." Philosophical Transactions, 1836, p. 22.

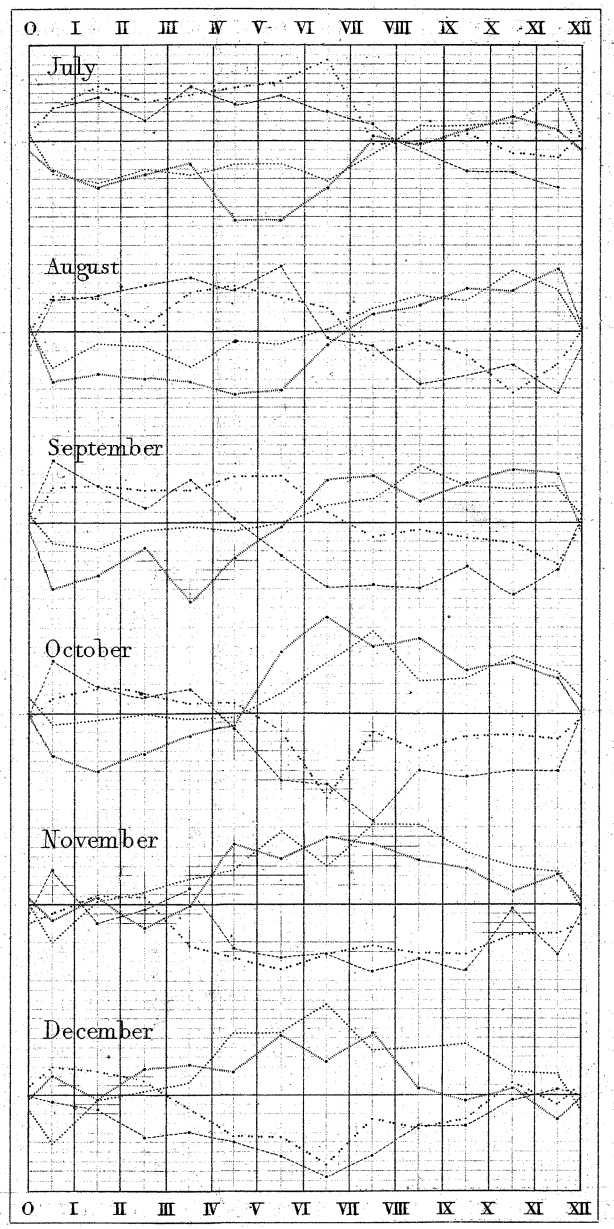
Intervals depending upon Upper Transits P.M. _____ .....
_____ D.º _____ A.M. _____ .....
_____ Lower (Interpolated) Transits A.M. .....
_____ D.º _____ P. M. .....

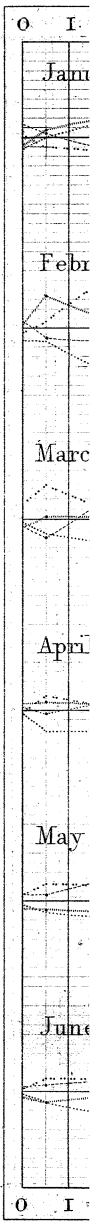
Diagram showing the Diurnal inequality in the Interval and in the ha
from Observations at the London Do

INTERVAL



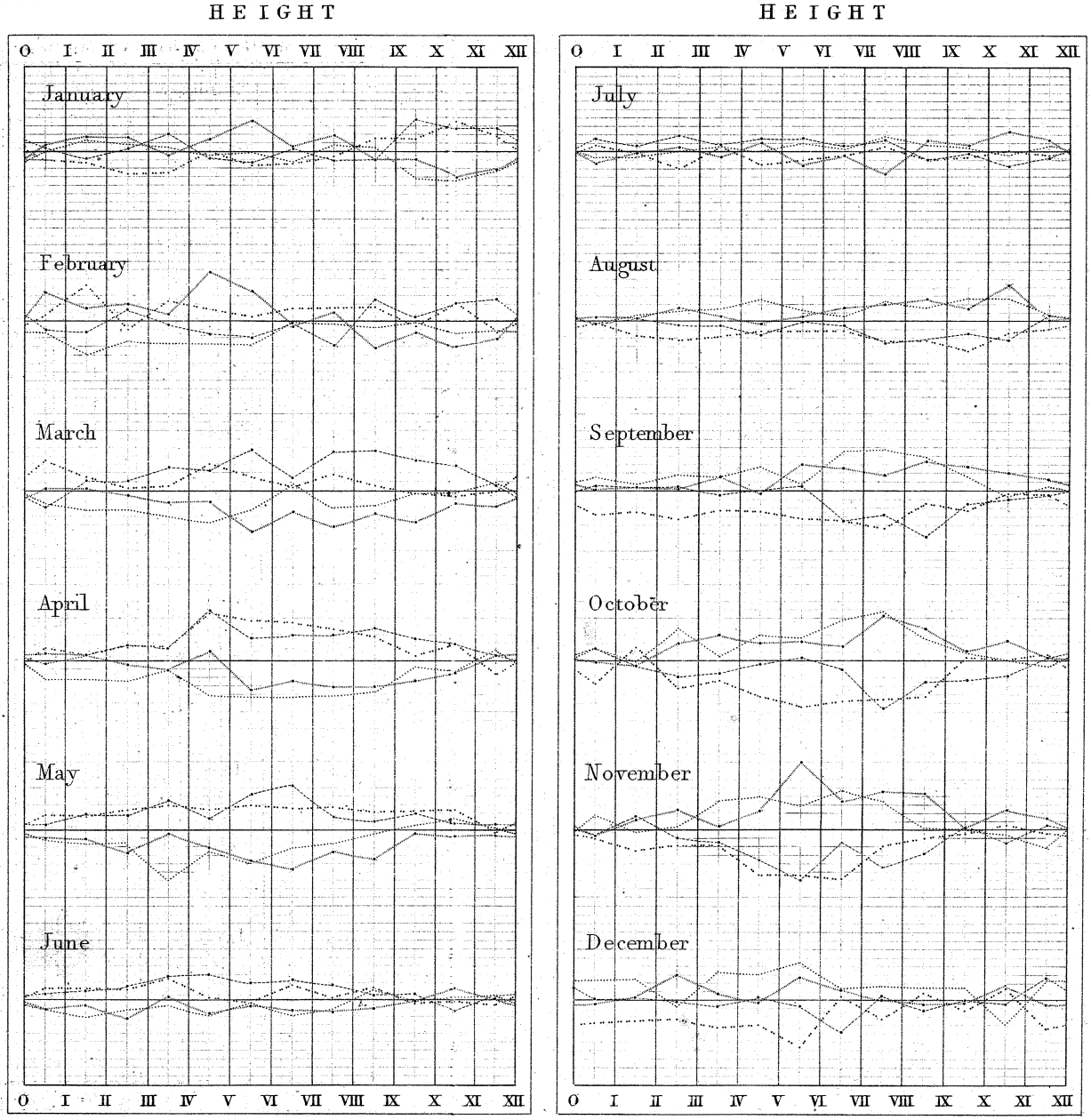
INTERVAL





In these curves the abscissa represents the time of the Moon's

the height for the middle of every month in the Year.
don Docks _ See Table XXI



Moon's transit two days previous *Observation*..... *Theory*.——

it is easy to deduce

$$d\psi = \frac{\cos^2 2\psi \sin 2\phi \, dA}{2(1 + A\cos 2\phi)^3} = \frac{\sin 2\phi \, dA}{2(1 + 2A\cos 2\phi + A^2)}.$$

The expression $d\psi = \frac{\sin 2\phi \, dA}{2}$ would agree with the empirical expressions which Mr. WHEWELL has suggested* for the variations in the interval; but the terms $2A\cos 2\phi + A^2$ in the denominator have a sensible influence on the value of $d\psi$.

Table XXI. shows the diurnal inequality in the interval and in the height, which is also laid down in Plate XXII. The diurnal inequality of the height at London is scarcely sensible; and when the observations are divided into so many categories, a sufficient number does not remain to afford a satisfactory average. I have given a comparison with theory of the diurnal inequality for the interval in Table XXXII.

In the comparison which I have instituted between BERNOULLI's theory and observation, it should be remembered that I have employed throughout the same constant (A) for all the interval and height corrections. But by assuming the form only of the corrections according to theory, and using various constants, expressions might perhaps be obtained which would represent the observations a little better. Such alterations, however, have not been suggested by theory, nor would they be attended with any practical utility. My intention in laying down the results in diagrams has been partly to exhibit the nature and extent of their irregularities, which would no doubt be diminished by employing a greater number of observations. If even the equilibrium-theory were complete and sufficient in the case of a perfect sphere, the form of the channel in which a derived tide-wave flows cannot fail to influence in a slight degree the form and magnitude of the different corrections. It is easy to see, for example, that the corrections for a derived tide-wave flowing through a channel bounded by perpendicular sides, would not be exactly the same as in a channel bounded by shelving coasts. May not the slight disagreement between the theory and observation curves for the semimenstrual inequality of the height in Plate XVIII. be accounted for in this manner? If spring tides and neap tides are propagated with different velocities, the value of the constant (A) resulting from observations at distant places will not be exactly the same.

In comparing the semimenstrual inequality as deduced from theory with that deduced from observation, I have supposed the declinations of the sun and moon to be equal to 15°, and the horizontal parallax of the moon equal to 57′. The corrections which might be required in consequence of deviations from this hypothesis, and which are given in Tables XXVIII. and XXIX., are so small, that they may be neglected, and the columns headed "Mean" in Tables II. and III. may be considered as affording the semimenstrual inequality. The moon's average declination corresponding to the totality of observations employed is 15°·2, and the moon's average horizontal parallax 57′·0. The agreement between the theory and observation curves in Plates XIX.,

* Philosophical Transactions, 1834.

XX., and XXI., is more striking for the heights than for the intervals. This, I apprehend, is partly owing to the circumstance that the corrections for the height vary but little with the moon's age, and are therefore less influenced by the particular moon's transit chosen to be the argument of the tables.

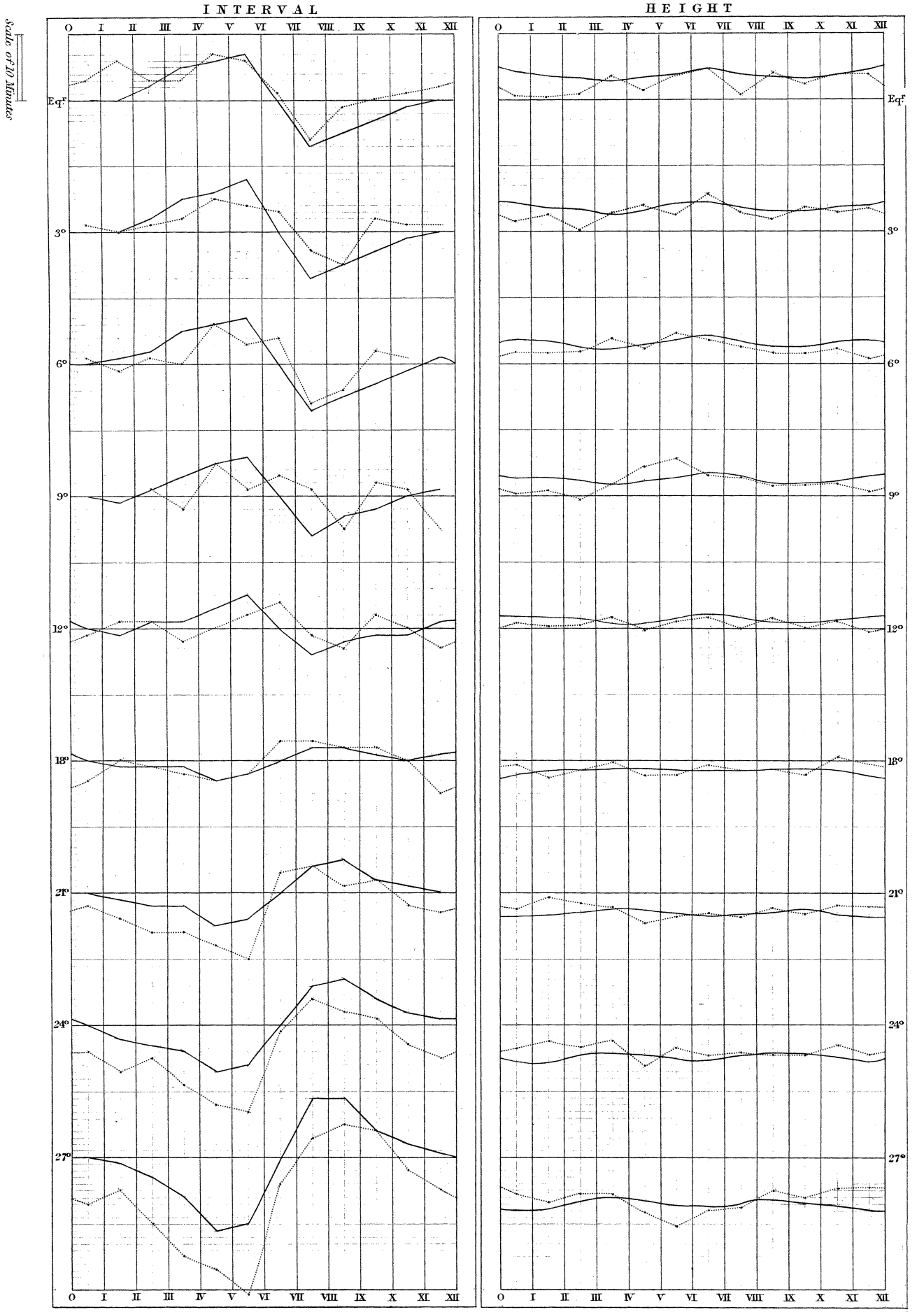
In future, for the port of London, the phenomena of the tides may safely be predicted by employing tables founded on BERNOULLI's theory, having for their *argument* the fifth transit of the moon preceding the high water of which the time and height are required, and founded upon the constants (A), D and (E) given in pp. 223 and 224. Such tables are included in those contained in this paper, and calculated by Mr. JONES, which give the comparisons between theory and observation. The calendar-month correction is of course to be considered as included in those for the declinations and parallaxes of the luminaries.

In estimating how far the agreement between theory and observation is to be considered as complete, it must be recollected that it is impossible, even with the apparatus at the St. Katherine Docks, to determine the exact minute of high water; for the water almost always continues stationary for some time, without falling one tenth of an inch. At the London Docks they only attempt to register the time to the nearest five minutes.

Mr. PEIRCE informs me that he cannot account for the difference between the observations at the London and the St. Katherine Docks. The swell of the steamers cannot affect the gauge at the latter place, as it is completely sheltered from any motion of the surface of the river. I suspect occasional errors of transcription, particularly in the month of January last. Results of theory cannot offer a closer agreement with those of observation than observations at the same place, or at places separated by a short distance, do with each other. Tables A and B, which have been furnished me by Mr. DEACON, offer a comparison between the observations at the London and at the St. Katherine Docks. The observations have been brought up to the same standard by the addition of certain quantities; in order that if no source of error existed, they might present no difference.

The tables in this paper having reference to the interval between successive transits of the moon, furnish the means of shifting the argument approximately.

Diagram showing a Comparison between the Moon's declination correction in the interval and in the height as deduced from theory & from observations at the London Docks. — See Table XXXI.



In these curves the abscissa represents the time of the Moon's transit two days previous. Observation ..... Theory ———

TABLE A.

Showing a comparison of the observations of the Times of High Water made at the London Docks, increased by five minutes, and those at the St. Katherine Docks. The observations marked with an * appear doubtful.

Date. 1836.	January.			February.			March.			April.			May.			June.		
	London Docks. +5 min.	St. Kath. Docks.	Difference.	London Docks. +5 min.	St. Kath. Docks.	Difference.	London Docks. +5 min.	St. Kath. Docks.	Difference.	London Docks. +5 min.	St. Kath. Docks.	Difference.	London Docks. +5 min.	St. Kath. Docks.	Difference.	London Docks. +5 min.	St. Kath Docks.	Difference.
	h m	h m	m	h m	h m	m	h m	h m	m	h m	h m	m	h m	h m	m	h m	h m	m
1.	.....	.....	.....	1 5	1 18	−13	12 15	12 28	−13	1 35	1 28	+ 7	1 45	1 47	− 2	2 45	2 43	+ 2
	12 25	12 33	− 8	1 20	1 33	−13	12 45	12 48	− 3	2 5	2 9	− 4	2 15	2 17	− 2	3 10	3 18	− 8
2.	1 5	1 8	− 3	1 50	1 43	+ 7	1 10	1 12	− 2	2 15	2 12	+ 3	2 25	2 33	− 8	3 35	3 37	− 2
	1 20	1 48	−28	2 20	2 13	+ 7	1 40	1 42	− 2	2 40	2 48	− 8	2 50	2 58	− 8	3 45	3 57	−12
3.	1 35	1 48	−13	2 35	2 33	+ 2	1 50	2 2	−12	2 45	2 48	− 3	3 0	3 3	− 3	4 20	4 28	− 8
	1 55	2 2	− 7	2 45	2 53	− 8	2 15	2 32	−17	3 20	3 32	−12	3 30	3 43	−13	4 35	4 43	− 8
4.	2 20	2 34	−14	3 10	3 17	− 7	2 45	2 43	+ 2	3 30	3 38	− 8	3 45	3 53	− 8	5 10	5 13	− 3
	2 30	2 47	−17	3 25	3 46	−21	3 5	3 13	− 8	3 50	4 2	−12	4 5	4 12	− 7	5 35	5 34	− 1
5.	2 45	3 12	−27	3 50	3 58	− 8	3 20	3 15	+ 5	4 5	4 12	− 7	4 30	4 33	− 3	6 15	6 17	+ 2
	3 5	3 24	−19	4 15	4 11	+ 4	3 35	3 51	−16	4 30	4 38	− 8	4 55	4 59	− 4		6 29	
6.	3 35	3 52	−17	4 20	4 18	+ 2	3 40	3 52	−12	4 50	4 58	− 8	5 20	5 24	− 4	7 15	7 17	− 2
	3 55	4 3	− 8	4 40	4 42	− 2	4 10	4 10	0	5 15	5 22	− 7	5 40	5 48	− 8	7 30	7 38	− 8
7.	4 5	4 28	−23	4 50	4 46	+ 4	4 45	4 23	+22	5 30	5 38	− 8	6 15	6 24	− 9	8 25	8 27	−12
	4 15	4 40	−25	5 20	5 23	− 3	4 50	4 50	0	5 50	6 6	−16	6 25	6 42	−17	8 45	8 42	+ 3
8.	4 25	5 12	−47	5 35	5 28	+ 7	5 5	5 13	− 8	6 15	6 15	0	7 20	7 27	− 7	9 35	9 37	− 2
	5 0	5 7	− 7	5 55	6 3	− 8	5 30	5 27	+ 3	6 35	6 37	− 2	7 40	7 47	− 7	9 50	9 43	+ 7
9.	5 5	5 48	−43	6 20	6 18	+ 2	5 45	5 42	+ 3	7 15	7 23	− 8	8 40	8 52	−12	10 30	10 43	−13
	5 35	5 53	−18	6 35	6 39	− 4	6 15	6 10	+ 5	7 45	7 46	− 1	9 25	9 21	+ 4	10 50	10 49	+ 1
10.	5 55	6 30	−35	6 50	6 48	+ 2	6 30	6 31	1	8 45	9 4	−19	10 10	10 23	−13	11 25	11 46	−21
	6 20	6 32	−12	7 25	7 29	− 4	6 45	7 9	−24	9 15	9 22	− 7	10 35	10 42	− 7	11 50	11 57	− 7
11.	6 35	7 1	−26	7 45	7 53	− 8	7 10	7 18	− 8	10 20	10 32	−12	11 20	11 27	− 7	.....	.....	.....
	7 0	7 4	− 4	8 5	8 14	− 9	8 0	8 8	− 8	10 55	10 58	− 3	11 35	11 42	− 7	12 20	12 19	+ 1
12.	7 5	7 25	−20	8 15	8 38	−23	8 15	8 31	−16	11 45	11 52	− 7	.....	.....	.....	12 30	12 32	− 2
	7 45	8 23	−38	9 45	9 43	+ 2	9 30	9 38	− 8	.....	.....	.....	12 15	12 22	− 7	1 5	1 7	− 2
13.	8 15	9 4	−49	10 35	10 47	−12	10 20	10 17	+ 3	12 15	12 8	− 3	12 30	12 32	− 2	1 20	1 16	+ 4
	9 0	9 38	−38	11 20	11 28	− 8	10 50	10 53	− 3	12 45	12 52	− 7	1 5	1 8	− 3	1 40	1 50	−10
14.	9 25	10 19	−54	11 50	12 8	−18	11 55	12 15	−20	1 5	1 18	−13	1 15	1 12	+ 3	2 5	1 57	+ 8
	9 55	10 53	−58	.....	.....	.....	.....	.....	.....	1 25	1 28	− 3	1 30	1 41	−11	2 20	2 27	− 7
15.	10 40	11 11	−31	12 25	12 31	− 6	12 25	12 17	+ 8	1 40	1 44	− 4	1 50	1 53	− 3	2 25	2 42	−17
	11 15	11 29	−14	12 55	1 6	−11	12 45	12 42	+ 3	2 10	2 18	− 8	2 15	2 22	− 7	2 55	2 58	− 3
16.	11 55	12 9	−14	1 30	1 32	− 2	12 55	1 7	−12	2 20	2 24	− 4	2 25	2 31	− 6	3 10	3 13	− 3
	.....	.....	.....	1 55	2 13	−18	1 35	1 41	− 6	2 45	2 57	−12	2 50	2 53	− 3	3 25	3 28	− 3
17.	12 35	12 41	− 6	2 35	2 32	+ 3	1 55	1 59	− 4	3 0	3 5	− 5	3 10	3 6	+ 4	3 50	3 57	− 7
	1 5	1 8	− 3	2 50	3 4	−14	2 25	2 39	−14	3 10	3 18	− 8	3 20	3 28	− 8	4 0	4 8	− 8
18.	1 35	1 37	− 2	3 20	3 27	− 7	2 45	2 53	− 8	3 25	3 24	+ 1	3 35	3 37	− 2	4 25	4 21	+ 4
	1 55	2 12	−17	3 30	3 37	− 7	2 55	2 57	− 2	3 45	3 51	− 6	3 55	3 51	+ 4	4 30	4 31	− 1
19.	2 30	2 28	+ 2	3 55	3 48	+ 7	3 10	3 13	− 3	3 55	3 56	− 1	4 15	4 17	− 2	4 55	4 57	− 2
	2 45	2 48	− 3	4 15	4 23	− 8	3 50	3 57	− 7	4 20	4 20	0	4 25	4 32	− 7	5 5	5 6	− 1
20.	3 20	3 27	− 7	4 20	4 18	+ 2	3 50	3 48	+ 2	4 25	4 32	− 7	4 40	4 43	− 3	5 35	5 36	− 1
	3 45	3 52	− 7	4 45	4 52	− 7	4 15	4 16	− 1	4 35	4 46	−11	4 50	5 2	−12	5 45	5 48	− 3
21.	4 5	4 5	0	4 55	4 57	− 2	4 20	4 18	+ 2	4 55	5 2	− 7	5 15	5 12	+ 3	6 25	6 27	− 2
	4 30	4 33	− 3	5 25	5 22	+ 3	4 30	4 47	−17	5 5	5 1	+ 4	5 20	5 27	− 7	6 40	6 32	+ 8
22.	4 45	4 41	+ 4	5 35	5 43	− 8	4 50	4 53	− 3	5 25	5 27	− 2	6 0	5 52	+ 8	7 25	7 25	0
	5 15	5 18	− 3	5 50	6 2	−12	5 10	5 16	− 6	5 45	5 47	− 2	6 5	6 6	− 1	7 35	7 32	+ 3
23.	5 20	5 12	+ 8	6 0	6 3	− 3	5 25	5 21	+ 4	5 55	5 56	− 1	6 40	6 47	− 7	8 15	8 17	− 2
	6 5	6 12	− 7	6 25	6 33	− 8	5 35	5 46	−11	6 20	6 28	− 8	7 5	7 7	− 2	8 25	8 42	−17
24.	6 15	6 18	− 3	6 35	7 1	−26	5 55	6 2	− 7	6 55	7 7	−12	7 40	7 42	− 2	9 15	9 21	− 6
	6 25	6 21	+ 4	6 50	7 7	−17	6 20	6 22	− 2	7 20	7 32	−12	8 0	8 8	− 8	9 40	9 57	−17
25.	6 35	6 31	+ 4	7 0	7 50	−50	6 20	6 18	+ 2	8 15	8 21	− 6	9 0	9 1	− 1	10 25	10 27	− 2
	7 20	7 23	− 3	7 35	8 13	−38	7 15	7 21	− 6	9 15	9 11	+ 4	9 25	9 32	− 7	10 55	10 58	− 3
26.	7 30	8 3	−33	8 5	9 2	−57	7 20	7 15	+ 5	9 50	9 46	+ 4	10 15	10 22	− 7	11 30	11 42	−12
	8 5	8 21	−16	9 5	9 37	−32	7 45	7 56	−11	10 25	10 27	− 2	10 50	10 41	+ 9	11 55	11 49	+ 6
27.	8 5	8 37	−32	9 35	9 48	−13	8 30	8 28	+ 2	11 10	11 10	0	11 25	11 27	− 2	.....	.....	.....
	8 25	9 57	−92	10 25	10 27	− 2	9 35	9 23	+12	11 35	11 37	− 2	11 40	11 32	+ 8	12 30	12 32	− 2
28.	9 40	9 17	+23	11 0	11 7	− 7	10 20	10 32	−12	.....	.....	.....	.....	.....	.....	12 50	12 55	− 5
	9 45	10 28	−43	11 50	11 47	+ 3	10 55	11 9	−14	12 15	12 18	− 3	12 10	12 17	− 7	1 20	1 22	− 2
29.	10 20	11 33	−73	.....	.....	.....	11 40	12 7	−27	12 30	12 33	− 3	12 25	12 32	− 7	1 40	1 44	− 4
	11 35	11 40	− 5	12 15	11 49	+26	.....	.....	.....	1 0	12 57	+ 3	12 55	1 3	− 8	2 20	2 20	0
30.	11 35	11 32	+ 3	.....	.....	.....	12 15	12 6	+ 9	1 10	1 12	− 2	1 15	1 20	− 5	2 40	2 38	+ 2
	11 25	11 51	−26	.....	.....	.....	12 35	12 41	− 6	1 25	1 42	−17	1 40	1 53	−13	3 5	3 13	− 8
31.	.. ...	.....	.....	.....	.....	.....	12 50	1 4	−14	.....	.....	.....	1 55	2 2	− 7	.....	.....	.....
	12 20	12 33	−13	.....	.....	.....	1 10	1 21	−11	.....	.....	.....	2 25	2 35	−10	.....	.....	.....

TABLE B.

Showing a comparison of the observations of the Heights of High Water made at the London Docks, increased by five feet, and those at the St. Katherine Docks. The observations marked with an * appear doubtful.

Date. 1836.	January.			February.			March.			April.			May.			June.		
	London Docks. + 5 ft.	St. Kath. Docks.	Difference.	London Docks. + 5 ft.	St. Kath. Docks.	Difference.	London Docks. + 5 ft.	St. Kath. Docks.	Difference.	London Docks. + 5 ft.	St. Kath. Docks.	Difference.	London Docks. + 5 ft.	St. Kath. Docks.	Difference.	London Docks. + 5 ft.	St. Kath. Docks.	Difference.
	ft. in.	ft. in.	in.	ft. in.	ft. in.	in.	ft. in.	ft. in.	in.	ft. in.	ft. in.	in.	ft. in.	ft. in.	in.	ft. in.	ft. in.	in.
1.	.....	.....	.....	25 10	25 4	+ 6	26 0	25 8	+ 4	27 6	27 6	0	27 10	27 8	+ 2	28 9	28 10	− 1
	25 2	25 2	0	26 3	26 4	− 1	26 4	25 11	+ 5	28 8	28 1	+ 7	28 8	28 8	0	28 5	28 5	0
2.	24 5	24 5	0	26 9	26 9	0	23 0	26 5	−41	28 9	28 9	0	29 2	29 0	+ 2	28 9	28 9	0
	25 0	24 8	+ 4	27 8	27 8	0	26 2	22 9	+45	28 3	28 4	− 1	30 9	30 8	+ 1	28 3	28 4	− 1
3.	24 6	24 7	− 1	28 3	28 0	+ 3	27 5	26 3	+14	28 10	29 0	− 2	29 3	29 2	+ 1	28 3	28 4	− 1
	25 11	26 0	− 1	28 4	28 5	− 1	28 5	28 6	− 1	28 11	28 11	0	29 4	29 5	− 1	27 0	27 1	− 1
4.	25 5	26 9	−16	28 2	28 3	− 1	28 5	28 3	+ 2	28 11	28 10	+ 1	29 2	29 2	0	28 1	28 1	0
	26 8	26 10	− 2	27 6	27 7	− 1	28 3	28 5	− 2	28 6	28 5	+ 1	28 6	28 6	0	26 5	26 4	+ 1
5.	26 10	27 0	− 2	27 2	27 3	− 1	28 0	28 5	− 5	28 4	28 5	− 1	28 5	28 5	0	27 3	27 4	− 1
	27 0	26 9	+ 3	27 4	27 6	− 2	28 10	28 10	0	28 1	28 1	0	27 9	27 9	0		25 7	
6.	26 6	27 1	− 7	26 11	26 10	+ 1	29 3	29 2	+ 1	27 10	27 10	0	27 11	28 0	− 1	26 8	26 9	− 1
	27 1	26 9	+ 4	28 8	28 8	0	29 7	29 4	+ 3	27 4	27 4	0	26 6	26 9	− 3	24 11	24 7	+ 4
7.	26 9	26 6	+ 3	28 2	28 3	− 1	28 11	28 10	+ 1	27 4	27 5	− 1	26 11	27 0	− 1	25 8	25 8	0
	26 6	25 11	+ 7	28 5	28 5	0	28 4	28 4	0	26 2	26 1	+ 1	25 3	25 3	0	25 6	25 5	+ 1
8.	26 0	26 1	− 1	27 2	27 4	− 2	28 5	28 5	0	27 10	27 9	+ 1	25 10	25 9	+ 1	25 8	25 9	− 1
	26 2	26 6	− 4	25 10	25 10	0	28 6	28 7	− 1	26 3	26 3	0	24 2	24 2	0	25 3	25 3	0
9.	26 3	26 1	+ 2	26 3	26 3	0	27 10	27 10	0	26 6	26 6	0	25 6	25 7	− 1	25 11	25 11	0
	26 1	25 9	+ 4	27 0	26 10	+ 2	27 7	27 6	+ 1	25 0	24 10	+ 2	24 0	23 11	+ 1	25 8	25 8	0
10.	25 10	26 6	− 8	26 6	26 8	− 2	27 7	27 8	− 1	25 6	25 6	0	25 8	25 8	0	25 8	25 7	+ 1
	26 4	25 4	+12	25 7	25 8	− 1	26 0	26 0	0	24 5	24 6	− 1	24 0	24 8	− 8	26 2	26 3	− 1
11.	25 3	26 2	−11	24 3	24 0	+ 3	25 6	25 7	− 1	26 0	26 0	0	25 7	25 8	− 1	.....	.....	.....
	26 3	25 8	+ 7	29 3	29 1	+ 2	25 0	25 0	0	25 2	25 2	0	25 3	25 3	0	26 9	26 10	− 1
12.	26 0	26 5	− 5	22 6	22 5	+ 1	24 8	24 8	0	26 3	26 3	0	.....	.....	.....	26 1	26 1	0
	26 4	25 2	+14	28 4	28 4	0	24 0	24 0	0	.....	.....	.....	26 6	26 6	0	22 6	26 7	− 1
13.	25 2	25 0	+ 2	25 3	25 4	− 1	24 10	24 10	0	26 1	26 3	− 2	26 3	26 3	0	26 6	26 7	− 1
	25 5	24 11	+ 6	24 8	24 8	0	24 9	24 9	0	26 10	26 10	0	26 8	26 8	0	26 8	26 7	+ 1
14.	24 9	23 9	+12	26 0	26 1	− 1	22 1	21 10	+ 3	27 1	27 1	0	26 6	26 7	− 1	26 8	26 8	0
	23 10	25 3	−17	.....	.....	.....	.....	.....	.....	28 3	27 8	+ 7	27 3	27 5	− 2	27 1	27 0	+ 1
15.	25 6	26 1	− 7	25 10	25 10		27 0	27 0	0	27 5	27 6	− 1	26 11	26 10	+ 1	27 1	27 3	+ 1
	26 11	26 5	+ 6	26 11	26 10	+ 1	26 8	26 9	− 1	28 1	28 0	+ 1	27 1	27 2	− 1	27 4	27 3	+ 1
16.	28 0	28 1	− 1	26 8	26 8	0	26 1	26 1	0	27 10	27 10	0	27 1	27 1	0	27 2	27 1	+ 1
	.....	.....	.....	27 7	27 7	0	28 3	28 1	+ 2	27 10	27 11	− 1	27 4	27 3	+ 1	26 11	27 0	− 1
17.	26 3	26 3	0	25 5	25 3	+ 2	28 2	28 2	0	28 1	28 1	0	27 0	27 0	0	27 1	27 0	+ 1
	28 7	28 8	− 1	28 6	28 8	− 2	24 3	24 3	0	27 9	27 9	0	27 0	26 11	+ 1	26 11	27 0	− 1
18.	27 6	27 6	0	29 9	29 7	+ 2	28 1	28 2	− 1	27 9	27 4	+ 5	26 8	26 8	0	26 8	26 10	− 2
	26 3	26 1	+ 2	30 1	30 0	+ 1	30 0	29 11	+ 1	27 8	27 7	+ 1	26 8	26 9	− 1	22 2	26 3	− 1
19.	27 10	27 9	+ 1	28 0	27 11	+ 1	27 11	27 10	+ 1	27 5	27 5	0	27 0	26 11	+ 1	26 8	26 3	+ 5
	29 2	27 3	+23	28 4	28 4	0	28 3	28 3	0	27 1	27 1	0	26 2	26 3	− 1	26 3	26 4	− 1
20.	27 3	27 6	− 3	28 3	28 2	+ 1	28 11	28 10	+ 1	26 7	26 8	− 1	25 11	25 11	0	26 3	26 3	0
	27 8	27 7	+ 1	28 0	28 1	− 1	28 6	28 6	0	25 3	25 4	− 1	25 9	25 7	+ 2	25 4	24 5	+11
21.	27 8	27 8	0	27 5	27 5	0	28 0	28 0	0	26 1	26 1	0	25 9	25 10	− 1	25 9	25 9	0
	27 11	27 9	+ 2	26 9	26 9	0	27 10	27 8	+ 2	26 3	26 4	− 1	25 8	25 8	0	25 3	25 4	− 1
22.	27 8	27 8	0	27 3	27 4	− 1	27 10	27 10	0	24 1	25 0	−11	25 1	25 0	+ 1	24 8	24 7	+ 1
	26 10	27 8	−10	26 6	26 8	− 2	27 0	27 1	− 1	25 3	25 3	0	24 2	24 3	− 1	24 6	24 5	+ 1
23.	26 3	26 7	− 4	26 10	26 10	0	27 8	27 8	0	25 6	25 5	+ 1	24 11	25 0	− 1	24 10	24 10	0
	23 3	24 7	−16	26 0	25 11	+ 1	25 4	25 4	0	24 1	24 0	+ 1	24 4	24 4	0	24 9	24 9	0
24.	26 5	26 5	0	25 11	24 11	+12	25 6	25 2	+ 4	24 6	24 7	− 1	25 0	25 0	0	25 5	23 5	+24
	27 4	27 4	0	25 0	24 4	+ 8	24 7	24 8	− 1	24 2	24 2	0	23 4	23 4	0	24 10	24 7	+ 3
25.	26 3	26 1	+ 2	24 5	24 5	0	25 5	25 6	− 1	23 7	23 7	0	24 4	24 4	0	25 7	25 6	+ 1
	24 8	24 7	+ 1	24 1	24 7	− 6	23 4	23 5	− 1	23 0	22 11	+ 1	24 2	24 1	+ 1	25 9	25 6	+ 3
26.	24 8	23 9	+11	24 8	24 2	+ 6	21 2	21 0	+ 2	24 1	24 0	+ 1	25 8	25 8	0	26 5	26 4	+ 1
	23 9	23 4	+ 5	24 2	24 5	− 3	22 6	22 5	+ 1	24 8	23 7	+13	24 9	24 9	0	26 7	26 7	0
27.	23 6	23 2	+ 4	23 5	28 6	−61	23 5	23 6	− 1	25 8	25 7	+ 1	25 10	25 10	0	.....	.....	.....
	23 3	26 7	−40	24 3	24 3	0	22 9	22 9	0	24 5	24 5	0	25 7	25 7	0	26 9	26 8	+ 1
28.	24 8	24 9	− 1	24 9	24 10	− 1	24 11	24 10	+ 1	.....	.....	.....	.....	.....	.....	27 2	27 1	+ 1
	24 10	23 2	+20	24 9	24 9	0	23 2	23 2	0	25 3	25 4	− 1	26 7	26 8	− 1	27 4	27 2	+ 2
29.	23 3	24 5	−14	.....	.....	.....	24 4	24 6	− 2	27 5	27 6	− 1	26 10	26 10	0	28 1	28 1	0
	24 5	25 0	− 7	25 8	24 6	+14	.....	.....	.....	27 9	27 9	0	27 11	27 8	+ 3	27 9	27 9	0
30.	25 1	27 4	−27	.....	.....	.....	25 3	25 3	0	27 3	27 11	− 8	27 3	27 3	0	28 3	28 4	− 1
	27 4	25 2	+26	.....	.....	.....	26 4	26 5	− 1	27 7	27 8	− 1	28 3	28 1	+ 2	28 1	28 7	− 6
31.	.....	.....	.....	.....	.....	.....	25 3	25 6	− 3	.....	.....	.....	28 3	28 3	0	.....	.....	.....
	23 6	23 7	− 1	.....	.....	.....	25 5	25 5	0	.....	.....	.....	28 8	28 7	+ 1	.....	.....	.....

TABLE C.

Showing a comparison of the observed Times of High Water at the St. Katherine Docks, increased by five minutes, with the predicted Times given in the British Almanac. The observations marked with an * appear doubtful.

Date. 1836.	January.			February.			March.			April.			May.			June.		
	British Alman.	St.Kath. Docks. +5 min.	Error of Prediction.	British Alman.	St.Kath. Docks. +5 min.	Error of Prediction.	British Alman.	St.Kath. Docks. +5 min.	Error of Prediction.	British Alman.	St.Kath. Docks. +5 min.	Error of Prediction.	British Alman.	St.Kath. Docks. +5 min.	Error of Prediction.	British Alman.	St.Kath. Docks. +5 min.	Error of Prediction.
	h m	h m	m	h m	h m	m	h m	h m	m	h m	h m	m	h m	h m	m	h m	h m	m
1.	.....	.....	.....	1 16	1 23	− 7	12 48	12 33	+15	1 51	1 33	+18	1 49	1 52	− 3	2 57	2 48	+ 9
	12 32	12 38	− 6	1 40	1 38	+ 2	1 15	12 53	+22	2 11	2 14	− 3	2 8	2 22	−14	3 23	3 23	.....
2.	12 55	1 13	−18	2 1	1 48	+13	1 38	1 17	+21	2 28	2 17	+11	2 29	2 38	− 9	3 47	3 42	+ 5
	1 18	1 53	−35	2 20	2 18	+ 2	1 59	1 47	+12	2 42	2 53	−11	2 49	3 3	−14	4 13	4 2	+11
3.	1 40	1 53	−13	2 41	2 38	+ 3	2 18	2 7	+11	3 0	2 53	+ 7	3 11	3 8	+ 3	4 39	4 33	+ 6
	1 57	2 7	−10	3 0	2 58	+ 2	2 37	2 37	0	3 17	3 37	−20	3 35	3 48	−13	5 3	4 48	+15
4.	2 18	2 39	−21	3 18	3 22	− 4	2 57	2 48	+ 9	3 37	3 43	− 6	3 57	3 58	− 1	5 28	5 18	+10
	2 35	2 52	−17	3 35	3 51	−16	3 14	3 18	− 4	3 57	4 7	−10	4 19	4 17	+ 2	5 53	5 39	+14
5.	2 55	3 17	−22	3 53	4 3	−10	3 32	3 20	+12	4 15	4 17	− 2	4 43	4 38	+ 5	6 22	6 22	0
	3 14	3 29	−15	4 10	4 16	− 6	3 48	3 56	− 8	4 35	4 43	− 8	5 8	5 4	+ 4	6 50	6 34	+16
6.	3 31	3 57	−26	4 28	4 23	+ 5	4 4	3 57	+ 7	4 55	5 3	− 8	5 31	5 29	+ 2	7 18	7 22	− 4
	3 49	4 8	−19	4 47	4 47	0	4 20	4 15	+ 5	5 18	5 27	− 9	5 59	5 53	+ 6	7 49	7 43	+ 6
7.	4 8	4 33	−25	5 8	4 51	+17	4 39	4 28	+11	5 41	5 43	− 2	6 15	6 29	−14	8 25	8 42	−17
	4 28	4 45	−17	5 24	5 28	− 4	4 57	4 55	+ 2	6 6	6 11	− 5	6 54	6 47	+ 7	9 1	8 47	+14
8.	4 47	5 17	−30	5 44	5 33	+11	5 14	5 18	− 4	6 31	6 20	+11	7 29	7 32	− 3	9 35	9 42	− 7
	5 7	5 12	− 5	6 4	6 8	− 4	5 35	5 32	+ 3	6 55	6 42	+13	8 8	7 52	+16	10 8	9 48	+20
9.	5 27	5 53	−26	6 23	6 23	0	5 59	5 47	+12	7 27	7 28	− 1	8 50	8 57	− 7	10 39	10 48	− 9
	5 49	5 58	− 9	6 45	6 44	+ 1	6 21	6 15	+ 6	8 7	7 51	+16	9 32	9 26	+ 6	11 9	10 54	+15
10.	6 12	6 35	−23	7 8	6 53	+15	6 43	6 36	+ 7	8 57	9 9	−12	10 16	10 28	−12	11 39	11 51	−12
	6 34	6 37	− 3	7 30	7 34	− 4	7 6	7 14	− 8	9 46	9 27	+19	10 54	10 47	+ 7	12 4	12 2	+ 2
11.	6 58	7 6	− 8	7 56	7 58	− 2	7 35	7 23	+12	10 34	10 37	− 3	11 33	11 32	+ 1	.....	.....	.....
	7 23	7 9	+14	8 29	8 19	+10	8 11	8 13	− 2	11 19	11 3	+16	12 3	11 47	+16	12 28	12 24	+ 4
12.	7 43	7 30	+13	9 7	8 43	+24	8 55	8 36	+19	11 54	11 57	− 3	.....	.....	.....	12 48	12 37	+11
	8 7	8 28	−21	9 50	9 48	+ 2	9 43	9 43	0	.....	.....	.....	12 28	12 27	+ 1	1 11	1 12	− 1
13.	8 39	9 9	−30	10 37	10 52	−15	10 37	10 22	+15	12 26	12 13	+13	12 48	12 37	+11	1 30	1 21	+ 9
	9 10	9 43	−33	11 24	11 33	− 9	11 25	10 58	+27	12 52	12 57	− 5	1 7	1 13	− 6	1 49	1 55	− 6
14.	9 42	10 24	−42	12 6	12 13	− 7	12 5	12 20	−15	1 19	1 23	− 4	1 27	1 17	+10	2 6	2 2	+ 4
	10 18	10 58	−40	.....	.....	.....	.....	.....	.....	1 42	1 33	+ 9	1 44	1 46	− 2	2 27	2 32	− 5
15.	10 58	11 16	−18	12 42	12 36	+ 6	12 38	12 22	+16	2 0	1 49	+11	1 59	1 58	+ 1	2 45	2 47	− 2
	11 35	11 34	+ 1	1 17	1 11	+ 6	1 9	12 47	+22	2 14	2 23	− 9	2 15	2 27	−12	3 3	3 3	0
16.	12 12	12 14	− 2	1 43	1 37	+ 6	1 36	1 12	+24	2 30	2 29	+ 1	2 32	2 36	− 4	3 24	3 18	+ 6
	.....	.....	.....	2 6	2 18	−12	1 58	1 46	+12	2 47	3 2	−15	2 48	2 58	−10	3 38	3 33	+ 5
17.	12 48	12 46	+ 2	2 36	2 37	− 1	2 18	2 4	+14	3 2	3 10	− 8	3 4	3 11	− 7	3 55	4 2	− 7
	1 18	1 13	+ 5	2 58	3 9	−11	2 40	2 44	− 4	3 20	3 23	− 3	3 22	3 33	−11	4 13	4 13	0
18.	1 48	1 42	+ 6	3 17	3 32	−15	2 59	2 58	+ 1	3 35	3 29	+ 6	3 38	3 42	− 4	4 32	4 26	+ 6
	2 16	2 17	− 1	3 38	3 42	− 4	3 14	3 2	+12	3 48	3 56	− 8	3 54	3 56	− 2	4 47	4 36	+11
19.	2 39	2 33	+ 6	3 56	3 53	+ 3	3 33	3 18	+15	4 6	4 1	+ 5	4 10	4 22	−12	5 6	5 2	+ 4
	3 4	2 53	+11	4 15	4 28	−13	3 47	4 2	−15	4 22	4 25	− 3	4 27	4 37	−10	5 26	5 11	+15
20.	3 28	3 32	− 4	4 32	4 23	+ 9	4 2	3 53	+ 9	4 37	4 37	0	4 44	4 48	− 4	5 45	5 41	+ 4
	3 51	3 57	− 6	4 49	4 57	− 8	4 18	4 21	− 3	4 49	4 51	− 2	5 3	5 7	− 4	6 5	5 53	+13
21.	4 14	4 10	+ 4	5 5	5 2	+ 3	4 34	4 23	+11	5 3	5 7	− 4	5 21	5 17	+ 4	6 29	6 32	− 3
	4 36	4 38	− 2	5 21	5 27	− 6	4 48	4 52	− 4	5 19	5 6	+13	5 39	5 32	+ 7	6 56	6 37	+19
22.	4 57	4 46	+11	5 35	5 48	−13	5 3	4 58	+ 5	5 37	5 32	+ 5	6 2	5 57	+ 5	7 25	7 30	− 5
	5 18	5 23	− 5	5 54	6 7	−13	5 17	5 21	− 4	5 56	5 52	+ 4	6 24	6 11	+13	7 55	7 37	+18
23.	5 40	5 17	+23	6 11	6 8	+ 3	5 33	5 26	+ 7	6 19	6 1	+18	6 50	6 52	− 2	8 21	8 22	− 1
	6 3	6 17	−14	6 28	6 38	−10	5 51	5 51	0	6 41	6 33	+ 8	7 18	7 12	+ 6	8 47	8 47	0
24.	6 20	6 23	− 3	6 46	7 6	−20	6 9	6 7	+ 2	7 10	7 12	− 2	7 49	7 47	+ 2	9 17	9 26	− 9
	6 38	6 26	+12	7 5	7 12	− 7	6 28	6 27	+ 1	7 39	7 37	+ 2	8 25	8 13	+12	9 44	10 2	−18
25.	6 56	6 36	+20	7 27	7 55	−28	6 45	6 23	+22	8 18	8 26	− 8	9 3	9 6	− 3	10 17	10 32	−15
	7 15	7 28	−13	7 49	8 18	−29	7 9	7 26	−17	9 3	9 16	−13	9 40	9 37	+ 3	10 51	11 2	−11
26.	7 35	8 8	−33	8 21	9 7	−46	7 37	7 20	+17	9 44	9 51	− 7	10 17	10 27	−10	11 23	11 47	−24
	7 59	8 26	−27	8 56	9 42	−46	8 12	8 1	+11	10 26	10 32	− 6	10 48	10 46	+ 2	11 55	11 54	+ 1
27.	8 25	8 42	−17	9 40	9 53	−13	8 56	8 33	+23	11 5	11 15	−10	11 18	11 32	−14	.....	.....	.....
	8 52	10 2	−70	10 24	10 32	− 8	9 44	9 28	+16	11 38	11 42	− 4	11 40	11 37	+ 3	12 30	12 37	− 7
28.	9 25	9 22	+ 3	11 8	11 12	− 4	10 28	10 37	− 9	.....	.....	... 0	.....	.....	.....	12 59	1 0	− 1
	10 0	10 33	−33	11 47	11 52	− 5	11 13	11 14	− 1	12 8	12 23	−15	12 6	12 22	−16	1 28	1 27	+ 1
29.	10 37	11 38	−61	.....	.....	.....	11 48	12 12	−24	12 33	12 38	− 5	12 32	12 37	− 5	1 53	1 49	+ 4
	11 16	11 45	−29	12 20	11 54	+24	.....	.....	... ..	12 55	1 2	− 7	12 57	1 8	−11	2 21	2 25	− 4
30.	11 49	11 37	+12	.....	.....	.....	12 18	12 11	+ 7	1 13	1 17	− 4	1 19	1 25	− 6	2 50	2 43	+ 7
	12 20	11 56	+24	.....	.....	.....	12 45	12 46	− 1	1 30	1 47	−17	1 41	1 58	−17	3 15	3 18	− 3
31.	.....	.....	.....	.....	.....	.....	1 9	1 9	0	.....	.....	.....	2 6	2 7	− 1	.....	.....	.....
	12 49	12 38	+11	.....	.....	.....	1 32	1 26	+ 6	.....	.....	.....	2 30	2 40	−10	.....	.....	.....

TABLE D.

Showing a comparison of the observed Heights of High Water at the St. Katherine Docks, with the predicted Heights given in the British Almanac, increased by five feet. The observations marked with an * appear doubtful.

Date.	January.			February.			March.			April.			May.			June.		
1836.	British Alman. + 5 ft.	St. Kath. Docks.	Error of Prediction.	British Alman. + 5 ft.	St. Kath. Docks.	Error of Prediction.	British Alman. + 5 ft.	St. Kath. Docks.	Error of Prediction.	British Alman. + 5 ft.	St. Kath. Docks.	Error of Prediction.	British Alman. + 5 ft.	St. Kath. Docks.	Error of Prediction.	British Alman. + 5 ft.	St. Kath. Docks.	Error of Prediction.
	ft. in.	ft. in.	in.	ft. in.	ft. in.	in.	ft. in.	ft. in.	in.	ft. in.	ft. in.	in.	ft. in.	ft. in.	in.	ft. in.	ft. in.	in.
1.	.....	.....	.....	25 9	25 4	+ 5	25 6	25 8	− 2	27 4	27 6	− 2	27 7	27 8	− 1	28 2	28 10	− 8
	25 0	25 2	− 2	26 1	26 4	− 3	26 1	25 11	+ 2	27 7	28 1	− 6	27 10	28 8	−10	28 2	28 5	− 3
2.	25 4	24 5	+11	26 6	26 9	− 3	26 6	26 5	+ 1	27 8	28 9	−13	28 0	29 0	−12	28 2	28 9	− 7
	25 9	24 8	+13	26 11	27 8	− 9	26 10	22 9	+49	27 10	28 4	− 6	28 1	30 8	−31	28 0	28 4	− 4
3.	26 1	24 7	+18	27 1	28 0	−11	27 2	26 3	+11	27 11	29 0	−13	28 2	29 2	−12	27 10	28 4	− 6
	26 4	26 0	+ 4	27 3	28 5	−14	27 6	28 6	−12	28 0	28 11	−11	28 3	29 5	−14	27 6	27 1	+ 5
4.	26 9	26 9	0	27 5	28 3	−10	27 8	28 3	− 7	28 1	28 10	− 9	28 2	29 2	−12	27 1	28 1	−12
	26 11	26 10	+ 1	27 6	27 7	− 1	27 10	28 5	− 7	28 2	28 5	− 3	28 0	28 6	− 6	26 7	26 4	+ 3
5.	27 1	27 0	+ 1	27 7	27 3	+ 4	27 11	28 5	− 6	28 0	28 5	− 5	27 9	28 5	− 8	26 1	27 4	−15
	27 2	26 9	+ 5	27 8	27 6	+ 2	28 0	28 10	−10	27 11	28 1	− 2	27 5	27 9	− 4	25 7	25 7	0
6.	27 3	27 1	+ 2	27 8	26 10	+10	28 0	29 2	−14	27 9	27 10	− 1	26 10	28 0	−14	25 1	26 9	−18
	27 4	26 9	+ 7	27 7	28 8	−13	27 11	29 4	−17	27 5	27 4	+ 1	26 4	26 9	− 5	24 9	24 7	+ 2
7.	27 4	26 6	+10	27 6	28 3	− 9	27 11	28 10	−11	26 11	27 5	− 6	25 9	27 0	−15	24 7	25 8	−13
	27 3	25 11	+16	27 4	28 5	−13	27 9	28 4	− 7	26 5	26 1	+ 4	25 3	25 3	0	24 1	25 5	−12
8.	27 2	26 1	+13	27 1	27 4	− 3	27 7	28 5	−10	25 10	27 9	−23	24 9	25 9	−12	24 5	25 9	−16
	27 0	26 6	+ 6	26 10	25 10	+12	27 3	28 7	−16	25 2	26 3	−13	24 6	24 2	+ 4	24 4	25 3	− 9
9.	26 11	26 1	+10	26 6	26 3	+ 3	26 11	27 10	−11	24 9	26 6	−21	24 3	25 7	−16	24 5	25 11	−18
	26 8	25 9	+11	26 3	26 10	− 7	26 0	27 6	−18	24 5	24 10	− 5	24 5	23 11	+ 6	24 6	25 8	−14
10.	26 5	26 6	− 1	25 10	26 8	−10	25 1	27 8	−31	24 4	25 6	−14	24 8	25 8	−12	24 8	25 7	−11
	26 2	25 4	+10	25 5	25 8	− 3	24 7	26 0	−17	24 5	24 6	− 1	24 11	24 8	+ 3	24 11	26 3	−16
11.	26 0	26 2	− 2	25 0	24 0	+12	24 3	25 7	−16	24 9	26 0	−13	25 3	25 8	− 5	.....	.....	.....
	25 9	25 8	+ 1	24 8	29 1	−53	24 1	25 0	−11	25 1	25 2	− 1	25 6	25 3	+ 3	25 0	26 10	−22
12.	25 5	26 5	−12	24 6	22 5	+25	24 2	24 8	− 6	25 7	26 3	− 8	.....	.....	.....	25 4	26 1	− 9
	25 2	25 2	0	24 7	28 4	−45	24 5	24 0	+ 5	.....	.....	.....	25 8	26 6	−10	25 9	26 7	−10
13.	24 11	25 0	− 1	24 11	25 4	− 5	24 10	24 10	0	25 10	26 3	− 5	25 10	26 3	− 5	26 0	26 7	− 7
	24 10	24 11	− 1	25 4	24 8	+ 8	25 3	24 9	+ 6	26 3	26 10	− 7	26 1	26 8	− 7	26 3	26 7	− 4
14.	24 9	23 9	+12	25 10	26 1	− 3	25 8	21 10	+46	26 8	27 1	− 5	26 4	26 7	− 3	26 7	26 8	− 1
	25 0	25 3	− 3	.....	.....	.. ...	.....	.....	.....	26 11	27 8	− 9	26 7	27 5	−10	26 10	27 0	− 2
15.	25 4	26 1	− 9	26 4	25 10	+ 6	26 1	27 0	−11	27 0	27 6	− 6	26 9	26 10	− 1	27 1	27 0	+ 1
	25 9	26 5	− 8	26 10	26 10	0	26 7	26 9	− 2	27 1	28 0	−11	26 11	27 2	− 3	27 1	27 3	− 2
16.	26 2	28 1	−23	27 1	26 8	+ 5	26 10	26 1	+ 9	27 2	27 10	− 8	27 0	27 1	− 1	27 0	27 1	− 1
	.....	.....	.....	27 5	27 7	− 2	27 1	28 1	−12	27 3	27 11	− 8	27 1	27 3	− 2	27 0	27 0	0
17.	26 9	26 3	+ 6	27 7	25 3	+28	27 4	28 2	−10	27 3	28 1	−10	27 1	27 0	+ 1	27 0	27 0	0
	27 0	28 8	−20	27 8	28 8	−12	27 7	24 3	+40	27 3	27 9	− 6	27 0	26 11	+ 1	26 11	27 0	− 1
18.	27 5	27 6	− 1	27 9	29 7	−20	27 8	28 2	− 6	27 3	27 4	− 1	27 0	26 8	+ 4	26 10	26 10	0
	27 10	26 1	+21	27 9	30 0	−27	27 8	29 11	−27	27 2	27 7	− 5	26 11	26 9	+ 2	26 8	26 3	+ 5
19.	27 10	27 9	+ 1	27 9	27 11	− 2	27 7	27 10	− 3	27 1	27 5	− 4	26 10	26 11	− 1	26 6	26 3	+ 3
	27 11	27 3	+ 8	27 8	28 4	− 8	27 6	28 3	− 9	26 11	27 1	− 2	26 8	26 3	+ 5	26 3	26 4	− 1
20.	27 11	27 6	+ 5	27 6	28 2	− 8	27 5	28 10	−17	26 9	26 8	+ 1	26 6	25 11	+ 7	26 1	26 3	− 2
	27 11	27 7	+ 4	27 3	28 1	−10	27 3	28 6	−15	26 6	25 4	+14	26 4	25 7	+ 9	25 10	24 5	+17
21.	27 10	27 8	+ 2	27 0	27 5	− 5	27 1	28 0	−11	26 3	26 1	+ 2	26 0	25 10	+ 2	25 8	25 9	− 1
	27 8	27 9	− 1	26 8	26 9	− 1	26 11	27 8	− 9	26 11	26 4	+ 7	25 8	25 8	0	25 6	25 4	+ 2
22.	27 5	27 8	− 3	26 6	27 4	−10	26 8	27 10	−14	25 7	25 0	+ 7	25 5	25 0	+ 5	25 3	24 7	+ 8
	27 2	27 8	− 6	26 1	26 8	− 7	26 4	27 1	− 9	25 3	25 3	0	25 1	24 3	+11	25 1	24 5	+ 8
23.	26 9	26 7	+ 2	25 10	26 10	−12	26 1	27 8	−19	24 10	25 5	− 7	24 10	25 0	− 2	25 0	24 10	+ 2
	26 3	24 7	+20	25 4	25 11	− 7	25 8	25 4	+ 4	24 6	24 0	+ 6	24 7	24 4	+ 3	24 10	24 9	+ 1
24.	26 0	26 5	− 5	25 0	24 11	+ 1	25 4	25 2	+ 2	24 2	24 7	− 5	24 6	25 0	− 6	24 9	23 5	+16
	25 8	27 4	−20	24 8	24 4	+ 4	24 11	24 8	+ 3	24 0	24 2	− 2	24 5	23 4	+13	24 10	24 7	+ 3
25.	25 3	26 1	−10	24 2	24 5	− 3	24 6	25 6	−12	23 10	23 7	+ 3	24 6	24 4	+ 2	25 0	25 6	− 6
	24 11	24 7	+ 4	23 11	24 7	− 8	24 1	23 5	+ 8	23 11	22 11	+12	24 9	24 1	+ 8	25 4	25 6	− 2
26.	24 6	23 9	+ 9	23 6	24 2	− 8	23 10	21 0	+34	24 2	24 0	+ 2	25 2	25 8	− 6	25 9	26 4	− 7
	24 1	23 4	+ 9	23 4	24 5	−13	23 7	22 5	+14	24 6	23 7	+11	25 5	24 9	+ 8	26 1	26 7	− 6
27.	23 10	23 2	+ 8	23 5	28 6	−61	23 7	23 6	+ 1	25 1	25 7	− 6	25 9	25 10	− 1	... ..	.....	.....
	23 7	26 7	−36	23 8	24 3	− 7	23 8	22 9	+11	25 7	24 5	+14	26 0	25 7	+ 5	26 7	26 8	− 1
28.	23 4	24 9	−17	24 1	24 10	− 9	24 3	24 10	− 7	.....	.....	.....	.....	.....	.....	27 1	27 1	0
	23 5	23 2	+ 2	24 6	24 9	− 3	24 7	23 2	+17	26 1	25 4	+ 9	26 3	26 8	− 5	27 5	27 2	+ 3
29.	23 8	24 5	− 9	.....	.....	.....	25 0	24 6	+ 6	26 7	27 6	−11	26 8	26 10	− 2	27 9	28 1	− 4
	23 11	25 0	−13	24 11	24 6	+ 5	.....	.....	.....	26 11	27 9	−10	27 1	27 8	− 7	28 0	27 9	+ 3
30.	24 4	27 4	−36	.....	.....	.....	25 7	25 3	+ 4	27 5	27 11	− 6	27 4	27 3	+ 1	28 1	28 4	− 3
	24 10	25 2	− 4	.....	.....	.....	26 0	26 5	− 5	27 7	27 8	− 1	27 7	28 1	− 6	28 2	28 7	− 5
31.	.....	.....	.....	.....	.....	.....	26 7	25 6	+13	.....	.....	.....	27 11	28 3	− 4	.....	.....	.....
	25 3	23 7	+20	.....	.....	.....	27 0	23 5	+43	.....	.....	.....	28 1	28 7	− 6	.....	.....	.....

TABLE I.

Showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water, and the Height of High Water at the London Docks (together with the Interval between the Moon's Transits), corresponding to the Apparent Solar Time of the Moon's Transit, in each month of the year, from 13,370 observations made at the London Docks between the 1st of January 1808, and the 31st of December 1826.

January.

Number of Observations.	Apparent Solar Time of Moon's Transit.	Interval between the Moon's Transit and the Time of high water.	Height of Tide.	Interval between Moon's Transits.	Mean of Moon's Declination.	Mean Hor. Par.
	h m	h m	ft. in.	h m	°	′
90	0 30·0	3 3·3	22 8·4	1 40·1	19	56·9
89	1 28·8	2 47·3	22 6·7	1 36·1	16	57·3
103	2 28·3	2 37·5	21 11·3	1 32·2	11	57·1
103	3 30·4	2 29·5	21 4·9	1 30·5	6	56·9
101	4 30·0	2 27·7	20 5·4	1 31·8	5	56·7
109	5 30·5	2 44·0	19 6·0	1 36·3	9	56·9
96	6 30·2	3 9·8	19 7·1	1 40·9	13	56·9
97	7 29·6	3 39·9	20 2·2	1 46·7	18	57·0
89	8 29·9	3 50·3	21 1·5	1 50·4	21	57·2
86	9 29·3	3 49·6	21 8·3	1 50·7	23	57·1
86	10 29·3	3 35·9	22 2·5	1 49·7	23	57·4
88	11 29·2	3 18·3	22 6·9	1 48·0	21	57·2

Sun's Declination S. 21°.

February.

Number of Observations.	Apparent Solar Time of Moon's Transit.	Interval between the Moon's Transit and the Time of high water.	Height of Tide.	Interval between Moon's Transits.	Mean of Moon's Declination.	Mean Hor. Par.
	h m	h m	ft. in.	h m	°	′
89	0 29·1	3 2·8	23 0·2	1 34·8	10	57·3
93	1 27·5	2 49·5	22 8·7	1 33·4	6	57·3
98	2 28·1	2 36·2	22 1·2	1 33·9	5	57·2
95	3 29·5	2 24·5	21 4·4	1 36·5	8	56·8
89	4 29·8	2 20·8	20 2·5	1 40·0	14	56·7
83	5 28·8	2 30·7	19 1·7	1 45·3	18	56·7
84	6 28·1	3 5·8	19 0·6	1 47·3	21	56·6
78	7 28·5	3 39·8	19 11·8	1 49·5	23	56·8
77	8 27·1	3 55·2	20 10·1	1 48·0	22	56·8
83	9 27·6	3 49·4	21 8·7	1 46·1	22	57·2
86	10 30·0	3 35·0	22 5·2	1 41·2	19	57·2
83	11 30·8	3 18·3	22 10·3	1 37·4	14	57·3

Sun's Declination S. 13°.

March.

Number of Observations.	Apparent Solar Time of Moon's Transit.	Interval between the Moon's Transit and the Time of high water.	Height of Tide.	Interval between Moon's Transits.	Mean of Moon's Declination.	Mean Hor. Par.
	h m	h m	ft. in.	h m	°	′
102	0 29·0	3 5·9	22 10·5	1 35·2	5	57·2
100	1 30·5	2 49·4	22 8·8	1 37·8	8	57·2
96	2 29·8	2 34·1	21 10·4	1 40·9	13	56·9
92	3 28·7	2 21·2	20 11·9	1 45·0	17	56·8
93	4 29·0	2 14·0	19 9·5	1 46·9	23	57·2
86	5 29·2	2 24·7	18 11·6	1 48·2	22	56·5
90	6 28·6	3 7·7	18 11·9	1 47·6	23	56·8
89	7 28·5	3 45·1	19 10·8	1 45·2	22	56·8
98	8 29·2	3 57·7	20 11·3	1 42·2	19	57·1
92	9 29·4	3 49·0	21 10·3	1 39·4	16	57·4
101	10 29·2	3 35·8	22 5·5	1 36·6	11	57·5
98	11 29·0	3 21·6	22 11·5	1 35·5	6	57·1

Sun's Declination S. 2°.

April.

Number of Observations.	Apparent Solar Time of Moon's Transit.	Interval between the Moon's Transit and the Time of high water.	Height of Tide.	Interval between Moon's Transits.	Mean of Moon's Declination.	Mean Hor. Par.
	h m	h m	ft. in.	h m	°	′
91	0 29·4	3 7·0	23 0·7	1 43·8	13	57·2
88	1 27·9	2 50·8	22 5·7	1 47·0	17	57·4
91	2 28·7	2 33·4	21 10·8	1 48·3	20	57·0
82	3 28·8	2 20·2	20 11·8	1 49·4	22	57·0
86	4 27·8	2 13·5	19 6·0	1 46·9	23	57·2
86	5 28·1	2 28·3	19 0·9	1 44·2	22	56·6
89	6 28·2	3 8·7	19 3·6	1 40·7	20	57·0
94	7 28·8	3 41·4	20 1·8	1 36·4	16	56·8
97	8 29·5	3 52·2	21 3·7	1 34·2	11	57·0
101	9 29·9	3 48·1	22 3·3	1 34·3	6	57·1
98	10 30·1	3 37·3	22 10·3	1 36·3	5	57·3
97	11 30·2	3 22·2	23 2·2	1 39·9	7	57·5

Sun's Declination N. 10°.

May.

Number of Observations.	Apparent Solar Time of Moon's Transit.	Interval between the Moon's Transit and the Time of high water.	Height of Tide.	Interval between Moon's Transits.	Mean of Moon's Declination.	Mean Hor. Par.
	h m	h m	ft. in.	h m	°	′
91	0 30·1	3 4·6	22 10·3	1 50·6	20	57·5
86	1 30·1	2 49·3	22 5·9	1 51·5	22	57·6
89	2 29·9	2 32·1	21 8·6	1 48·6	23	57·2
87	3 29·6	2 22·3	20 11·5	1 45·5	22	57·0
95	4 29·3	2 20·6	20 1·0	1 40·3	20	56·8
94	5 29·1	2 35·5	19 8·1	1 35·6	17	56·6
99	6 29·0	3 10·1	19 9·2	1 32·2	12	56·5
104	7 29·3	3 37·1	20 7·6	1 32·2	7	56·7
103	8 30·2	3 48·1	21 5·3	1 33·2	5	56·8
100	9 30·1	3 47·6	22 2·6	1 37·4	7	57·1
92	10 28·1	3 38·1	22 8·3	1 42·7	12	57·3
97	11 27·7	3 22·5	22 10·3	1 47·2	17	57·5

Sun's Declination N. 19°.

June.

Number of Observations.	Apparent Solar Time of Moon's Transit.	Interval between the Moon's Transit and the Time of high water.	Height of Tide.	Interval between Moon's Transits.	Mean of Moon's Declination.	Mean Hor. Par.
	h m	h m	ft. in.	h m	°	′
85	0 28·3	3 4·1	22 7·1	1 45·1	21	57·3
87	1 30·1	2 48·7	22 3·7	1 45·6	22	57·4
87	2 30·4	2 35·2	21 11·3	1 40·9	20	57·4
92	3 30·1	2 27·1	21 1·8	1 34·8	16	57·0
99	4 30·1	2 31·0	20 7·2	1 32·8	11	57·0
100	5 29·7	2 43·5	20 0·6	1 31·1	7	56·8
104	6 30·8	3 11·3	19 11·7	1 32·0	5	56·6
97	7 31·0	3 36·8	20 7·1	1 35·8	8	56·4
95	8 30·4	3 47·2	21 2·5	1 41·4	12	57·0
88	9 29·6	3 46·4	21 11·2	1 46·6	17	57·1
85	10 28·7	3 34·9	22 3·6	1 49·3	20	57·2
83	11 28·2	3 22·5	22 6·3	1 51·0	22	57·3

Sun's Declination N. 23°.

July.

Number of Observations.	Apparent Solar Time of Moon's Transit.	Interval between the Moon's Transit and the Time of high water.	Height of Tide.	Interval between Moon's Transits.	Mean of Moon's Declination.	Mean Hor. Par.
	h m	h m	ft. in.	h m	°	′
86	0 30·1	3 5·0	22 8·2	1 41·6	20	57·3
89	1 27·9	2 51·4	22 6·1	1 36·3	16	57·1
106	2 29·1	2 39·3	22 2·5	1 33·2	11	57·3
101	3 30·9	2 33·3	21 6·4	1 31·9	6	57·1
103	4 29·6	2 32·8	20 8·2	1 32·5	5	56·9
107	5 29·6	2 45·8	20 1·1	1 36·4	8	57·1
101	6 28·8	3 12·8	19 10·3	1 40·9	13	56·9
96	7 28·5	3 37·7	20 3·4	1 45·1	17	56·9
88	8 28·9	3 50·9	20 11·9	1 49·2	20	57·0
88	9 29·2	3 48·7	21 8·1	1 50·8	23	57·0
83	10 28·9	3 38·8	22 2·3	1 49·5	23	57·1
91	11 29·3	3 21·7	22 6·2	1 45·7	22	57·2

Sun's Declination N. 21°.

August.

Number of Observations.	Apparent Solar Time of Moon's Transit.	Interval between the Moon's Transit and the Time of high water.	Height of Tide.	Interval between Moon's Transits.	Mean of Moon's Declination.	Mean Hor. Par.
	h m	h m	ft. in.	h m	°	′
98	0 30·0	3 9·8	22 9·8	1 34·7	11	57·1
94	1 30·1	2 51·4	22 7·7	1 32·2	7	57·0
98	2 28·7	2 40·6	22 1·4	1 33·5	4	57·0
100	3 29·1	2 29·2	21 4·2	1 36·0	8	56·8
97	4 29·8	2 25·6	20 5·8	1 40·1	13	56·7
90	5 29·2	2 35·8	19 5·8	1 45·0	18	56·6
99	6 29·9	3 11·0	19 3·4	1 48·3	21	56·8
88	7 30·0	3 43·0	19 11·6	1 51·3	22	57·2
92	8 28·5	3 56·7	20 10·6	1 50·1	23	57·1
89	9 29·6	3 52·4	21 8·4	1 47·6	22	57·3
89	10 30·5	3 39·4	22 3·0	1 43·2	19	57·2
92	11 29·8	3 26·0	22 8·6	1 38·4	16	57·3

Sun's Declination N. 14°.

TABLE I. (Continued.)

September.							October.						
Number of Observations.	Apparent Solar Time of Moon's Transit.	Interval between the Moon's Transit and the Time of high water.	Height of Tide.	Interval between Moon's Transits.	Mean of Moon's Declination.	Mean Hor. Par.	Number of Observations.	Apparent Solar Time of Moon's Transit.	Interval between the Moon's Transit and the Time of high water.	Height of Tide.	Interval between Moon's Transits.	Mean of Moon's Declination.	Mean Hor. Par.
	h m	h m	ft. in.	h m	°	′		h m	h m	ft. in.	h m	°	′
100	0 29·1	3 9·5	23 0·3	1 35·7	5	57·1	96	0 30·0	3 9·0	22 11·2	1 42·7	12	57·5
99	1 29·8	2 53·0	22 7·5	1 37·3	8	57·2	96	1 30·2	2 52·3	22 6·3	1 46·4	16	57·5
94	2 30·1	2 37·2	22 0·8	1 40·7	12	57·0	89	2 30·4	2 33·5	21 9·5	1 48·0	20	57·0
88	3 28·8	2 26·7	21 1·1	1 44·6	17	56·9	87	3 29·0	2 18·9	20 10·9	1 49·1	22	56·9
92	4 30·0	2 16·2	19 10·3	1 46·6	20	56·5	89	4 29·9	2 10·1	19 11·2	1 47·4	23	56·7
81	5 30·4	2 27·6	19 1·8	1 49·3	22	56·8	90	5 30·2	2 21·7	19 1·6	1 44·5	22	56·6
84	6 30·2	3 9·5	18 11·8	1 47·6	23	56·6	87	6 31·4	3 5·0	19 1·1	1 41·1	20	56·7
87	7 29·9	3 46·9	19 11·0	1 44·3	22	56·8	90	7 31·4	3 41·9	20 1·9	1 36·6	17	56·6
89	8 29·9	3 58·0	21 0·0	1 42·3	20	57·0	95	8 30·0	3 55·4	21 3·6	1 34·4	12	56·8
94	9 29·7	3 53·6	21 11·0	1 39·4	17	57·3	103	9 28·8	3 51·8	22 2·2	1 33·8	7	56·9
94	10 29·6	3 43·1	22 6·5	1 36·6	12	57·3	105	10 29·2	3 40·5	22 9·1	1 35·6	5	57·4
96	11 29·3	3 26·6	22 11·3	1 35·4	7	57·4	102	11 29·8	3 26·2	22 11·5	1 38·7	7	57·5
Sun's Declination N. 3°.							Sun's Declination S. 9°.						
November.							December.						
87	0 28·6	3 5·1	22 7·3	1 49·9	20	57·5	87	0 28·9	3 3·7	22 6·2	1 48·2	23	57·2
86	1 28·6	2 47·8	22 3·1	1 50·7	22	57·3	85	1 30·5	2 46·0	22 1·5	1 45·4	22	57·2
85	2 29·2	2 30·9	21 10·5	1 48·9	23	57·2	89	2 31·2	2 31·3	21 10·3	1 40·4	20	57·4
87	3 29·8	2 21·4	21 1·1	1 45·2	22	57·3	93	3 30·6	2 27·6	21 1·6	1 35·5	16	57·1
89	4 30·3	2 17·7	19 11·5	1 40·0	20	56·8	101	4 29·4	2 26·4	20 5·2	1 32·4	11	57·1
88	5 28·8	2 28·1	19 6·4	1 36·1	18	56·6	107	5 30·0	2 37·1	19 11·9	1 30·9	7	56·9
103	6 29·3	3 3·3	19 5·8	1 32·5	12	56·6	101	6 29·4	3 6·2	19 10·9	1 31·9	5	56·7
95	7 29·9	3 36·0	20 4·7	1 31·9	7	56·7	103	7 28·3	3 31·2	20 5·3	1 34·9	8	56·7
97	8 29·2	3 47·6	21 1·8	1 33·1	5	56·9	102	8 29·7	3 44·8	21 3·6	1 41·1	12	56·9
96	9 29·7	3 46·5	22 1·8	1 37·1	7	57·2	88	9 29·9	3 44·8	21 10·7	1 45·5	17	57·1
93	10 29·3	3 35·3	22 6·1	1 41·3	10	57·1	89	10 28·4	3 33·8	22 3·3	1 48·2	20	57·1
88	11 28·6	3 21·2	22 9·6	1 46·3	16	57·3	88	11 28·0	3 21·3	22 3·5	1 49·1	23	57·2
Sun's Declination S. 18°.							Sun's Declination S. 23°.						

The argument, Moon's Transit, is the fifth transit previous to the time of high water, therefore all the *intervals* must be increased by 48 hours. The fifth column contains the interval between the moon's transit in the second column and the fourth afterwards, both transits being the mean of the same as the number of observations given in the first column.

TABLE II. (Interpolated from Table I.)

Showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water at the London Docks, for each month in the year.

Moon's Transit.	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Mean.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
0 30	3 3·3	3 2·6	3 5·6	3 6·9	3 4·6	3 3·7	3 5·0	3 9·8	3 9·2	3 9·0	3 4·7	3 3·4	3 5·7
1 30	2 47·1	2 48·9	2 49·5	2 50·2	2 49·3	2 48·7	2 51·0	2 51·4	2 53·0	2 52·4	2 47·4	2 46·1	2 49·6
2 30	2 37·3	2 35·8	2 34·1	2 33·1	2 32·1	2 35·3	2 39·2	2 40·4	2 37·2	2 33·6	2 30·8	2 31·6	2 35·1
3 30	2 29·6	2 24·5	2 21·0	2 20·1	2 22·3	2 27·1	2 33·3	2 29·1	2 26·5	2 18·7	2 21·4	2 27·6	2 25·1
4 30	2 27·7	2 20·8	2 14·2	2 14·0	2 20·8	2 30·1	2 32·8	2 25·6	2 16·2	2 10·1	2 17·7	2 26·4	2 21·4
5 30	2 43·9	2 31·4	2 25·3	2 29·6	2 36·0	2 43·6	2 45·9	2 36·1	2 27·4	2 21·6	2 28·8	2 37·1	2 33·9
6 30	3 9·7	3 6·9	3 8·6	3 9·7	3 10·5	3 10·9	3 13·3	3 11·1	3 9·4	3 4·1	3 3·7	3 6·5	3 8·8
7 30	3 40·0	3 40·2	3 45·4	3 41·6	3 37·2	3 36·4	3 38·2	3 43·0	3 46·9	3 41·3	3 36·0	3 31·6	3 39·8
8 30	3 50·3	3 54·9	3 57·6	3 52·2	3 48·1	3 47·1	3 51·0	3 56·8	3 58·0	3 55·4	3 47·7	3 44·8	3 52·0
9 30	3 49·6	3 48·8	3 48·9	3 48·1	3 47·6	3 46·3	3 48·6	3 52·3	3 53·6	3 51·6	3 46·5	3 44·8	3 48·9
10 30	3 35·7	3 35·0	3 35·6	3 37·3	3 37·6	3 34·7	3 38·6	3 39·5	3 43·0	3 40·3	3 35·2	3 33·6	3 37·2
11 30	3 18·1	3 18·5	3 21·4	3 22·2	3 21·8	3 22·0	3 21·5	3 26·0	3 26·4	3 26·1	3 20·9	3 20·8	3 22·1

Table III. (Interpolated from Table I.)

Showing the Height of High Water at the London Docks, corresponding to the Apparent Solar Time of the Moon's Transit, in each month of the year.

Moon's Transit.	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Mean.
h m	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.
0 30	22·70	23·01	22·87	23·05	22·86	22·58	22·68	22·82	23·02	22·93	22·59	22·52	22·80
1 30	22·55	22·70	22·74	22·45	22·49	22·31	22·50	22·64	22·62	22·52	22·25	22·12	22·66
2 30	21·93	22·08	21·86	21·88	21·72	21·94	22·20	22·10	22·07	21·80	21·87	21·87	21·94
3 30	21·41	21·36	20·97	20·95	20·95	21·15	21·54	21·34	21·07	20·90	21·09	21·14	21·16
4 30	20·45	20·20	19·78	19·48	20·09	20·60	20·67	20·48	19·86	19·93	19·96	20·42	20·17
5 30	19·51	19·14	18·97	19·08	19·69	20·05	20·09	19·47	19·15	19·13	19·51	19·99	19·49
6 30	19·59	19·08	19·00	19·33	19·78	19·98	19·86	19·28	18·98	19·08	19·48	19·91	19·44
7 30	20·19	20·00	19·93	20·17	20·64	20·58	20·30	19·97	19·92	20·13	20·40	20·47	20·22
8 30	21·13	20·88	20·95	21·32	21·44	21·20	21·01	20·91	21·00	21·30	21·16	21·30	21·14
9 30	21·70	21·75	21·86	22·28	22·22	21·93	21·68	21·70	21·92	22·20	22·15	21·89	21·94
10 30	22·21	22·43	22·46	22·86	22·70	22·31	22·20	22·25	22·54	22·77	22·51	22·28	22·46
11 30	22·58	22·86	22·96	23·18	22·85	22·53	22·52	22·72	22·94	22·96	22·80	22·30	22·77

Table IV.

Showing the Difference in the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water, and the Mean Interval, for every month in the year.

Moon's Transit.	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Moon's Transit.
h m	m	m	m	m	m	m	m	m	m	m	m	m	h m
0 30	− 2·4	− 3·1	− 0·1	+ 1·2	− 1·1	− 2·0	− 0·7	+ 4·1	+ 3·5	+ 3·3	− 1·0	− 2·3	0 30
1 30	− 2·5	− 0·7	− 0·1	+ 0·6	− 0·3	− 0·9	+ 1·4	+ 1·8	+ 3·4	+ 2·8	− 2·2	− 3·5	1 30
2 30	+ 2·2	+ 0·7	− 1·0	− 2·0	− 3·0	+ 0·2	+ 4·1	+ 5·3	+ 2·1	− 1·5	− 4·3	− 3·5	2 30
3 30	+ 4·5	− 0·6	− 4·1	− 5·0	− 2·8	+ 2·0	+ 8·2	+ 4·0	+ 1·4	− 6·4	− 3·7	+ 2·5	3 30
4 30	+ 6·3	− 0·6	− 7·2	− 7·4	− 0·6	+ 8·7	+11·4	+ 4·2	− 5·2	−11·3	− 3·7	+ 5·0	4 30
5 30	+10·0	− 2·5	− 8·6	− 4·3	+ 2·1	+ 9·7	+12·0	+ 2·2	− 6·5	−12·3	− 5·1	+ 3·2	5 30
6 30	+ 0·9	− 1·9	− 0·2	+ 0·9	+ 1·7	+ 2·1	+ 4·5	+ 2·3	+ 0·6	− 4·7	− 5·1	− 2·3	6 30
7 30	+ 0·2	+ 0·4	+ 5·6	+ 1·8	− 2·6	− 3·4	− 1·6	+ 3·2	+ 7·1	+ 1·5	− 3·8	− 8·2	7 30
8 30	− 1·7	+ 2·9	+ 5·6	+ 0·2	− 3·9	− 4·9	− 1·0	+ 4·8	+ 6·0	+ 3·4	− 4·3	− 7·2	8 30
9 30	+ 0·7	− 0·1	0·0	− 0·8	− 1·3	− 2·6	− 0·3	+ 3·4	+ 4·7	+ 2·7	− 2·4	− 4·1	9 30
10 30	− 1·5	− 2·2	− 1·6	+ 0·1	+ 0·4	− 2·5	+ 1·4	+ 2·3	+ 5·8	+ 3·1	− 2·0	− 3·6	10 30
11 30	− 4·0	− 3·6	− 0·7	+ 0·1	− 0·3	− 0·1	− 0·6	+ 3·9	+ 4·3	+ 4·0	− 1·2	− 1·3	11 30

Table V.

Showing the Difference in the Height of High Water and the Mean Height, for every month in the year.

Moon's Transit.	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Moon's Transit.
h m	feet.	feet.	feet.	feet.	feet	feet.	feet.	feet.	feet.	feet.	feet.	feet.	h m
0 30	− ·10	+ ·21	+ ·07	+ ·25	+ ·06	− ·22	− ·12	+ ·02	+ ·22	+ ·13	− ·21	− ·28	0 30
1 30	− ·11	+ ·04	+ ·08	− ·21	− ·17	− ·35	− ·16	− ·02	− ·04	− ·14	− ·41	− ·54	1 30
2 30	− ·01	+ ·14	− ·08	− ·06	− ·22	·00	+ ·26	+ ·16	+ ·13	− ·14	− ·07	− ·07	2 30
3 30	+ ·25	+ ·20	− ·19	− ·21	− ·21	− ·01	+ ·38	+ ·18	− ·09	− ·26	− ·07	− ·02	3 30
4 30	+ ·28	+ ·03	− ·39	− ·69	− ·08	+ ·43	+ ·50	+ ·31	− ·31	− ·24	− ·21	+ ·25	4 30
5 30	+ ·02	− ·35	− ·52	− ·41	+ ·20	+ ·56	+ ·60	− ·02	− ·34	− ·36	+ ·02	+ ·50	5 30
6 30	+ ·15	− ·36	− ·44	− ·11	+ ·34	+ ·54	+ ·42	− ·16	− ·46	− ·36	+ ·04	+ ·47	6 30
7 30	− ·03	− ·22	− ·29	− ·05	+ ·42	+ ·36	+ ·08	− ·25	− ·30	− ·09	+ ·18	+ ·25	7 30
8 30	− ·01	− ·26	− ·19	+ ·18	+ ·30	+ ·06	− ·13	− ·23	− ·14	+ ·16	+ ·02	+ ·16	8 30
9 30	− ·24	− ·19	− ·08	+ ·34	+ ·28	− ·01	− ·26	− ·24	− ·02	+ ·26	+ ·21	− ·05	9 30
10 30	− ·25	− ·03	·00	+ ·40	+ ·24	− ·15	− ·26	− ·21	+ ·08	+ ·31	+ ·05	− ·18	10 30
11 30	− ·19	+ ·09	+ ·19	+ ·41	+ ·08	− ·24	− ·25	− ·05	+ ·17	+ ·19	+ ·03	− ·47	11 30

Table VI.

Showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water, the Height of High Water, and the Interval between the Moon's Transits at the London Docks, corresponding to the Apparent Solar Time of the Moon's Transit, for every minute of her Horizontal Parallax.

Hor. Par. 54′.						Hor. Par. 55′.					
Number of Observations.	Moon's Transit.	Interval.	Height of Tide.	Interval of Transits.	Moon's Declination.	Number of Observations.	Moon's Transit.	Interval.	Height of Tide.	Interval of Transits.	Moon's Declination.
	h m	h m	ft. in.	h m	°		h m	h m	ft. in.	h m	°
232	0 29·7	3 4·7	22 2·4	1 30·3	15·2	149	0 29·3	3 5·0	22 3·8	1 33·2	14·4
225	1 29·4	2 46·5	21 9·4	1 30·2	14·8	155	1 28·7	2 48·0	22 1·3	1 33·4	14·7
221	2 29·2	2 28·9	21 2·9	1 30·9	15·7	178	2 29·4	2 32·0	21 6·2	1 32·5	13·7
202	3 28·8	2 12·4	20 5·7	1 30·2	14·6	181	3 29·5	2 17·7	20 7·7	1 33·0	15·1
190	4 29·9	2 9·5	19 6·0	1 31·2	15·6	214	4 29·9	2 12·4	19 7·7	1 33·4	15·1
159	5 28·4	2 21·6	18 8·6	1 31·0	16·1	215	5 29·9	2 27·3	18 11·3	1 32·9	14·8
169	6 29·4	3 3·9	18 9·5	1 30·9	15·4	223	6 28·9	3 4·3	18 10·9	1 33·2	15·4
176	7 31·1	3 40·4	19 8·0	1 30·3	15·4	206	7 28·8	3 40·7	19 8·6	1 33·1	15·0
194	8 30·3	3 55·9	20 4·5	1 30·1	15·0	189	8 29·3	3 53·8	20 8·8	1 32·8	14·6
217	9 29·7	3 52·6	21 4·4	1 30·4	15·2	159	9 28·9	3 52·4	21 6·3	1 32·6	14·8
222	10 29·9	3 39·7	21 10·8	1 30·1	14·8	163	10 29·0	3 40·1	21 11·3	1 32·8	14·5
223	11 29·2	3 23·2	22 2·6	1 30·1	14·4	158	11 29·4	3 23·2	22 3·3	1 33·1	14·4
Sun's Declination 15°.						Sun's Declination 15°.					
Hor. Par. 56′.						Hor. Par. 57′.					
123	0 29·1	3 4·5	22 6·7	1 36·4	14·5	88	0 29·1	3 6·1	22 9·9	1 40·0	14·7
107	1 29·8	2 47·3	22 3·0	1 36·1	14·0	105	1 30·8	2 50·1	22 5·1	1 40·3	14·9
130	2 29·6	2 33·5	21 8·9	1 36·7	14·9	96	2 31·1	2 33·2	21 11·8	1 39·2	14·2
125	3 30·4	2 23·2	20 10·8	1 36·0	14·1	113	3 29·9	2 25·9	21 3·0	1 40·3	14·9
141	4 28·9	2 19·8	20 0·1	1 36·5	14·9	128	4 30·8	2 22·2	20 4·3	1 40·6	15·4
153	5 30·6	2 32·0	19 3·3	1 36·9	15·1	135	5 30·4	2 35·9	19 7·1	1 40·4	15·8
150	6 30·0	3 7·3	19 3·1	1 36·2	14·6	143	6 29·2	3 7·3	19 5·5	1 40·4	15·1
143	7 29·3	3 39·7	20 5·0	1 36·9	15·2	135	7 29·0	3 40·3	20 3·0	1 41·2	15·4
146	8 28·3	3 54·0	20 10·9	1 37·4	15·2	116	8 30·6	3 51·6	21 1·8	1 41·0	15·2
128	9 28·8	3 51·2	21 8·1	1 37·7	15·4	108	9 29·4	3 50·0	21 10·4	1 40·6	14·7
117	10 28·2	3 38·4	22 3·8	1 37·7	14·3	100	10 27·8	3 38·4	22 3·1	1 40·9	14·8
113	11 29·2	3 24·1	22 6·4	1 36·9	14·6	98	11 28·9	3 20·2	22 10·1	1 40·3	14·1
Sun's Declination 15 .						Sun's Declination 15°.					
Hor. Par. 58′.						Hor. Par. 59′.					
87	0 31·0	3 5·5	22 10·9	1 44·3	15·0	96	0 28·2	3 7·7	23 1·0	1 47·9	14·4
93	1 28·5	2 48·3	22 8·7	1 44·1	14·7	97	1 30·6	2 51·1	22 10·2	1 46·6	14·0
107	2 30·1	2 38·1	22 1·9	1 43·2	14·3	109	2 30·4	2 38·0	22 4·2	1 47·1	14·6
114	3 31·0	2 30·1	21 5·3	1 43·6	15·0	150	3 31·0	2 32·2	21 8·4	1 47·3	14·8
140	4 29·5	2 27·8	20 6·2	1 43·0	14·3	217	4 32·0	2 32·2	20 9·5	1 48·0	15·4
166	5 29·8	2 40·3	19 11·2	1 44·6	15·2	283	5 29·7	2 42·7	20 2·0	1 48·4	15·3
166	6 29·3	3 10·1	19 7·5	1 44·9	15·6	281	6 29·9	3 13·6	20 1·8	1 49·2	15·3
141	7 28·1	3 37·9	20 6·3	1 45·1	14·6	224	7 27·2	3 37·8	20 9·0	1 49·4	15·0
123	8 27·2	3 52·8	21 3·4	1 45·6	15·6	147	8 26·9	3 47·6	21 7·2	1 49·1	14·4
103	9 28·4	3 47·8	22 1·3	1 45·4	15·0	121	9 27·0	3 46·9	22 2·6	1 50·0	15·2
92	10 30·1	3 36·9	22 7·1	1 44·4	14·8	97	10 29·2	3 36·4	22 10·4	1 48·6	14·3
90	11 29·3	3 22·5	22 10·7	1 44·8	14·7	90	11 27·7	3 24·9	22 11·4	1 48·7	14·7
Sun's Declination 15°.						Sun's Declination 15°.					
Hor. Par. 60′.						Hor. Par. 61′.					
112	0 29·2	3 6·5	23 4·6	1 52·3	14·8	214	0 29·7	3 8·0	23 6·1	1 55·8	14·5
112	1 30·7	2 53·6	23 1·4	1 51·1	14·8	196	1 28·1	2 53·6	23 3·2	1 55·1	14·8
170	2 31·8	2 41·3	22 7·0	1 50·5	14·3	112	2 22·7	2 43·0	22 9·0	1 53·1	15·3
211	3 28·4	2 33·7	22 0·7	1 50·0	15·0	5	3 8·0	2 34·4	21 10·6	1 55·6	18·6
101	4 23·0	2 34·5	21 2·7	1 48·8	15·4						
7	5 7·3	2 46·7	20 8·6	1 46·4	14·5						
4	6 42·5	3 31·7	20 3·2	1 55·2	16·0						
90	7 37·4	3 39·1	21 1·9	1 54·7	15·1						
205	8 32·2	3 47·8	21 9·3	1 54·5	15·0	2	8 57·0	3 49·5	22 5·0	1 60·0	16·5
171	9 26·8	3 44·7	22 6·4	1 52·9	13·9	98	9 38·1	3 43·4	22 9·8	1 58·2	15·5
123	10 28·3	3 35·2	23 0·0	1 53·3	14·6	184	10 30·4	3 34·8	23 1·8	1 57·4	14·4
107	11 29·3	3 21·1	23 3·5	1 51·8	13·9	217	11 29·4	3 20·9	23 4·9	1 57·1	14·6
Sun's Declination 15°						Sun's Declination 15°.					

TABLE VII. (Interpolated from Table VI.)

Moon's Transit.	H. P. 54′.		H. P. 55′.		H. P. 56′.		H. P. 57′.		H. P. 58′.		H. P. 59′.		H. P. 60′.		H. P. 61′.	
	Interval.	Height of Tide.	Interval.	Height of Tide.	Interval.	Height of Tide.	Interval.	Height of Tide.	Interval.	Height of Tide.	Interval.	Height of Tide.	Interval.	Height of Tide.	Interval.	Height of Tide.
h m	h m	ft.	h m	ft.	h m	ft.	h m	ft.	h m	ft.	h m	ft.	h m	ft.	h m	ft.
0 30	3 4·6	22·20	3 4·8	22·31	3 4·2	22·55	3 5·8	22·82	3 5·8	22·91	3 7·2	23·08	3 6·3	23·38	3 7·9	23·51
1 30	2 46·3	21·78	2 47·6	22·02	2 47·2	22·25	2 50·3	22·43	2 48·0	22·71	2 51·2	22·85	2 53·7	23·12	2 53·2	23·26
2 30	2 28·7	21·23	2 31·8	21·51	2 33·4	21·74	2 33·4	21·99	2 38·1	22·16	2 38·1	22·35	2 41·6	22·60	2 41·8	22·68
3 30	2 12·2	20·46	2 17·6	20·63	2 23·2	20·90	2 25·9	21·25	2 30·2	21·45	2 32·3	21·72	2 33·6	22·04		
4 30	2 9·5	19·50	2 12·4	19·64	2 20·6	20·00	2 22·3	20·37	2 27·9	20·51	2 32·0	20·82	2 35·1	21·14		
5 30	2 22·3	18·71	2 27·4	18·94	2 31·8	19·28	2 35·8	19·60	2 40·4	19·93	2 42·8	20·17				
6 30	3 4·3	18·80	3 5·0	18·92	3 7·3	19·26	3 7·7	19·46	3 10·4	19·63	3 13·6	20·15				
7 30	3 39·9	19·65	3 41·2	19·73	3 40·0	20·43	3 40·7	20·26	3 38·6	20·55	3 38·6	20·78	3 37·0	21·07		
8 30	3 55·9	20·37	3 53·9	20·74	3 54·2	20·93	3 51·5	21·14	3 53·0	21·33	3 47·8	21·64	3 47·7	21·75		
9 30	3 52·6	21·37	3 52·3	21·53	3 51·0	21·68	3 49·9	21·87	3 47·6	22·13	3 46·6	22·25	3 44·4	22·57	3 43·9	22·72
10 30	3 39·7	21·90	3 39·9	21·95	3 38·0	22·33	3 37·8	22·28	3 36·9	22·59	3 36·3	22·87	3 34·9	23·01	3 34·9	23·15
11 30	3 22·9	22·22	3 23·0	22·27	3 23·8	22·54	3 19·8	22·85	3 22·3	22·89	3 24·4	22·95	3 20·9	23·29	3 20·7	23·41

TABLE VIII.

Showing the Difference in the Interval between the Time of the Moon's Transit and the Time of High Water, and the Interval corresponding to fifty-seven minutes of the Moon's Horizontal Parallax.

Moon's Transit.	H. P. 54′.	H. P. 55′.	H. P. 56′.	H. P. 57′.	H. P. 58′.	H. P. 59′.	H. P. 60′.	H. P. 61′.
h m	m	m	m	m	m	m	m	m
0 30	− 1·2	− 1·0	− 1·6	0	0·0	+ 1·4	+ 0·5	+ 2·1
1 30	− 4·0	− 2·7	− 3·1	0	− 2·3	+ 0·9	+ 3·4	+ 2·9
2 30	− 4·7	− 1·6	0·0	0	+ 4·7	+ 4·7	+ 8·2	+ 8·4
3 30	−13·7	− 8·3	− 2·7	0	+ 4·3	+ 6·4	+ 7·7	
4 30	−12·8	− 9·9	− 1·7	0	+ 5·6	+ 9·7	+12·8	
5 30	−13·5	− 8·4	− 4·1	0	+ 4·6	+ 7·0		
6 30	− 3·4	− 2·7	− 0·4	0	+ 2·7	+ 5·9		
7 30	− 0·8	+ 0·5	− 0·7	0	− 2·1	− 2·1	− 3·7	
8 30	+ 4·4	+ 2·4	+ 2·7	0	+ 1·5	− 3·7	− 3·8	
9 30	+ 2·7	+ 2·4	+ 1·1	0	− 2·3	− 3·3	− 5·5	− 6·0
10 30	+ 1·9	+ 2·1	+ 0·2	0	− 0·9	− 1·5	− 2·9	− 2·9
11 30	+ 3·1	+ 3·2	+ 4·0	0	+ 2·5	+ 4·6	+ 1·1	+ 0·9

TABLE IX.

Showing the Difference between the Height of High Water and the Height corresponding to fifty-seven minutes of the Moon's Horizontal Parallax.

Moon's Transit.	H. P. 54′.	H. P. 55′.	H. P. 56′.	H. P. 57′.	H. P. 58′.	H. P. 59′.	H. P. 60′.	H. P. 61′.
h m	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.
0 30	− ·62	− ·51	− ·27	0	+ ·09	+ ·26	+ ·56	+ ·69
1 30	− ·65	− ·41	− ·18	0	+ ·28	+ ·42	+ ·69	+ ·83
2 30	− ·76	− ·48	− ·25	0	+ ·17	+ ·36	+ ·61	+ ·69
3 30	− ·79	− ·62	− ·35	0	+ ·20	+ ·47	+ ·79	
4 30	− ·87	− ·73	− ·37	0	+ ·14	+ ·45	+ ·77	
5 30	− ·88	− ·66	− ·32	0	+ ·33	+ ·57		
6 30	− ·66	− ·54	− ·20	0	+ ·17	+ ·69		
7 30	− ·61	− ·53	+ ·17	0	+ ·29	+ ·52	+ ·81	
8 30	− ·77	− ·40	− ·21	0	+ ·19	+ ·50	+ ·61	
9 30	− ·50	− ·34	− ·19	0	+ ·26	+ ·38	+ ·70	+ ·85
10 30	− ·38	− ·33	+ ·05	0	+ ·31	+ ·59	+ ·73	+ ·87
11 30	− ·63	− ·58	− ·31	0	+ ·04	+ ·10	+ ·44	+ ·56

Table X.

Showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water, the Height of High Water, and the Interval between the Moon's Transits, at the London Docks, corresponding to the Apparent Solar Time of the Moon's Transit for every three degrees of her Declination north and south.

Number of Observations.	Moon's Transit.	Interval.	Height of Tide.	Interval of Transits.	Hor. Par.	Sun's Decl.
	1° 30′ N. to 1° 30′ South Declination.					
	h m	h m	ft. in.	h m	′	°
48	0 31·2	3 9·9	22 11·2	1 34·2	57·2	4·4
42	1 27·8	2 58·1	22 7·5	1 33·1	57·1	9·1
51	2 26·7	2 41·0	22 1·7	1 33·3	57·3	14·1
45	3 27·6	2 31·3	21 6·8	1 31·7	57·0	18·3
47	4 26·4	2 31·0	20 6·7	1 31·1	56·6	21·0
43	5 30·5	2 44·3	19 11·7	1 30·5	56·6	22·8
41	6 28·3	3 7·0	19 11·5	1 31·4	56·6	22·8
44	7 25·0	3 31·7	20 4·1	1 31·8	56·6	21·5
47	8 25·8	3 50·1	21 6·3	1 33·3	57·0	19·3
49	9 27·9	3 47·5	22 3·2	1 34·5	57·3	14·2
49	10 26·7	3 39·4	22 9·5	1 35·1	57·3	9·1
52	11 29·2	3 26·2	23 2·2	1 35·0	57·2	4·5
	1° 30′ to 4° 30′ North Declination.					
48	0 29·1	3 8·7	23 0·8	1 34·5	57·2	4·6
47	1 25·7	2 52·1	22 11·3	1 34·8	57·5	8·9
56	2 28·8	2 37·3	21 11·7	1 31·9	56·8	14·1
49	3 30·7	2 31·3	21 5·4	1 31·7	56·8	18·6
41	4 30·2	2 29·1	20 7·5	1 31·0	56·8	20·9
42	5 30·5	2 40·7	19 10·7	1 32·0	56·9	22·5
47	6 30·9	3 10·0	20 0·7	1 31·7	56·6	22·5
50	7 33·7	3 36·3	20 8·6	1 31·3	56·6	21·0
50	8 34·0	3 49·9	21 6·5	1 34·2	57·1	17·8
44	9 34·0	3 50·1	22 6·5	1 33·9	56·9	14·2
49	10 30·4	3 38·8	22 9·3	1 34·8	57·1	9·2
50	11 26·7	3 25·8	23 1·4	1 36·5	57·6	5·0
	1° 30′ to 4° 30′ South Declination.					
44	0 28·7	3 8·0	23 0·0	1 35·9	57·4	4·7
54	1 30·7	2 50·7	22 9·1	1 34·4	57·3	9·0
43	2 29·5	2 38·1	22 1·9	1 32·9	57·0	14·2
49	3 30·2	2 30·2	21 5·4	1 31·9	56·9	18·7
47	4 33·0	2 28·8	20 10·1	1 31·9	56·8	21·3
46	5 29·9	2 44·7	19 10·7	1 30·7	56·6	22·6
48	6 29·8	3 10·1	20 0·8	1 32·6	56·9	22·6
45	7 31·0	3 37·7	20 7·5	1 32·0	56·8	21·8
45	8 31·9	3 45·3	21 4·3	1 34·7	57·0	18·3
46	9 29·7	3 46·8	22 4·4	1 35·4	57·4	14·6
46	10 27·3	3 39·2	22 9·1	1 35·3	57·3	9·3
52	11 30·7	3 24·9	23 2·0	1 35·7	57·5	5·1
	4° 30′ to 7° 30′ North Declination.					
57	0 30·1	3 8·3	23 0·5	1 36·5	57·5	6·4
55	1 30·2	2 50·7	22 9·5	1 35·1	57·2	8·9
48	2 32·5	2 38·1	22 0·8	1 34·1	57·3	14·7
49	3 31·5	2 29·5	21 5·9	1 33·1	57·0	18·3
43	4 26·6	2 30·1	20 6·2	1 31·4	56·5	20·6
50	5 26·9	2 39·8	20 1·3	1 31·9	56·6	22·0
52	6 29·2	3 7·8	19 11·1	1 32·4	56·6	22·1
48	7 29·8	3 31·2	20 9·2	1 33·7	56·9	20·4
47	8 30·5	3 50·7	21 3·7	1 33·9	57·1	17·9
51	9 29·3	3 50·9	22 2·0	1 36·1	57·3	13·7
57	10 31·4	3 38·4	22 8·2	1 35·6	57·3	8·9
52	11 32·0	3 24·9	22 10·4	1 35·7	56·9	6·7
	7° 30′ to 10° 30′ North Declination.					
52	0 29·0	3 7·3	22 11·1	1 35·6	57·0	9·0
53	1 29·8	2 50·8	22 7·4	1 35·7	57·1	9·9
51	2 28·9	2 37·6	21 11·2	1 34·5	56·6	13·8
49	3 31·0	2 26·3	21 2·5	1 33·5	56·7	17·4
49	4 30·1	2 27·1	20 5·0	1 32·3	56·6	19·6
49	5 31·7	2 37·3	19 11·8	1 33·7	56·4	21·1
48	6 28·7	3 8·6	19 10·5	1 33·2	56·6	21·2
52	7 28·9	3 39·5	20 6·9	1 34·7	56·7	19·5
52	8 29·0	3 49·6	21 2·5	1 34·5	56·6	16·4
52	9 28·6	3 51·1	22 1·4	1 35·1	56·7	12·7
52	10 31·0	3 39·5	22 8·0	1 37·2	57·2	9·9
50	11 27·9	3 23·9	22 9·0	1 36·2	57·0	9·1
	4° 30′ to 7° 30′ South Declination.					
50	0 30·1	3 7·5	23 1·2	1 36·5	57·6	7·0
47	1 27·8	2 53·4	22 8·9	1 35·0	57·1	8·2
50	2 26·7	2 38·9	22 4·2	1 35·0	57·4	13·5
44	3 27·6	2 28·0	21 7·8	1 32·2	56·6	17·2
48	4 30·1	2 29·5	20 8·9	1 32·5	56·9	20·7
50	5 28·9	2 42·1	20 0·4	1 33·0	56·9	21·8
45	6 27·4	3 13·1	19 10·2	1 32·2	56·5	22·0
46	7 29·8	3 35·1	20 5·5	1 33·8	57·1	20·9
44	8 28·3	3 45·3	21 5·4	1 34·8	57·0	17·9
51	9 29·7	3 47·0	22 2·5	1 35·5	57·2	14·1
51	10 30·3	3 38·1	22 7·4	1 36·8	57·4	8·0
51	11 29·8	3 24·3	22 11·3	1 36·1	57·2	6·7
	7° 30′ to 10° 30′ South Declination.					
54	0 29·6	3 7·7	22 10·6	1 37·5	57·6	9·0
52	1 29·8	2 49·9	22 8·5	1 36·8	57·4	9·9
52	2 29·8	2 39·2	22 1·1	1 36·2	57·4	13·0
48	3 28·7	2 27·7	21 6·1	1 35·7	57·2	15·6
53	4 31·6	2 31·5	20 5·9	1 33·8	56·8	19·6
50	5 31·1	2 42·7	20 5·0	1 34·7	57·0	21·0
50	6 30·9	3 12·7	19 8·9	1 33·4	56·7	21·1
45	7 29·9	3 40·9	20 8·0	1 36·7	57·2	19·7
51	8 28·4	3 44·6	21 6·3	1 34·7	56·8	15·8
51	9 28·1	3 46·6	22 2·8	1 37·9	57·4	14·0
53	10 28·6	3 38·6	22 7·3	1 38·2	57·5	9·3
55	11 28·7	3 15·5	22 11·8	1 39·2	57·6	9·5

TABLE X. (Continued.)

Number of Observations.	Moon's Transit.	Interval.	Height of Tide.	Interval of Transits.	Hor. Par.	Sun's Decl.
	10° 30′ to 13° 30′ North Declination.					
	h m	h m	ft. in.	h m	′	°
60	0 28·4	3 6·1	22 11·0	1 38·3	57·2	11·6
59	1 29·8	2 52·5	22 6·8	1 37·7	57·3	12·0
57	2 28·9	2 38·5	22 0·3	1 36·6	56·8	11·7
59	3 28·3	2 27·1	21 3·1	1 35·6	56·8	14·9
55	4 29·4	2 23·7	20 4·4	1 35·3	56·9	17·7
55	5 30·1	2 37·5	19 8·2	1 32·8	56·4	19·5
55	6 28·9	3 10·0	19 7·9	1 34·2	56·5	19·1
52	7 28·4	3 36·4	20 4·4	1 36·8	56·7	18·2
56	8 29·7	3 47·7	21 2·2	1 35·9	56·6	15·8
58	9 30·3	3 49·5	22 1·6	1 38·3	57·1	13·0
52	10 29·5	3 38·0	22 6·1	1 38·2	57·0	11·3
59	11 29·6	3 23·0	23 0·0	1 38·1	56·9	12·0
	10° 30′ to 13° 30′ South Declination.					
57	0 27·9	3 8·1	23 0·6	1 40·9	57·6	12·1
61	1 28·8	2 53·1	22 7·7	1 39·7	57·8	11·8
59	2 30·6	2 36·8	22 2·6	1 38·4	57·4	13·2
63	3 29·4	2 26·8	21 5·4	1 37·1	57·0	14·5
53	4 30·1	2 24·7	20 4·4	1 36·8	57·0	17·5
52	5 29·0	2 42·8	19 10·2	1 37·2	57·0	19·4
52	6 27·4	3 10·0	19 9·2	1 37·0	57·0	19·8
57	7 28·6	3 38·5	20 4·0	1 37·7	57·1	18·0
59	8 29·7	3 50·1	21 5·6	1 38·2	57·2	15·3
55	9 32·8	3 49·3	22 0·2	1 40·4	57·5	12·1
54	10 28·9	3 37·7	22 8·3	1 40·2	57·5	12·3
54	11 29·3	3 20·8	22 6·3	1 40·7	57·7	11·9

Number of Observations.	Moon's Transit.	Interval.	Height of Tide.	Interval of Transits.	Hor. Par.	Sun's Decl.
	13° 30′ to 16° 30′ North Declination.					
	h m	h m	ft. in.	h m	′	°
60	0 31·2	3 6·2	22 9·8	1 39·3	56·9	15·5
64	1 29·7	2 49·9	22 6·1	1 39·4	56·9	14·2
59	2 28·4	2 35·7	22 0·5	1 38·0	56·7	13·3
62	3 27·4	2 27·6	21 0·8	1 38·7	56·6	12·8
63	4 31·2	2 21·8	20 2·7	1 36·9	56·4	16·0
66	5 28·9	2 38·0	19 6·8	1 37·9	56·6	16·7
62	6 28·2	3 3·9	19 4·5	1 37·2	56·2	16·9
65	7 28·5	3 39·9	20 2·1	1 37·1	56·5	15·4
72	8 29·3	3 52·9	21 2·3	1 39·0	56·6	13·5
61	9 30·3	3 48·5	22 0·5	1 38·5	56·6	13·0
71	10 28·3	3 38·6	22 4·9	1 39·4	56·7	14·1
67	11 29·5	3 25·4	22 9·0	1 40·4	57·0	16·0
	13° 30′ to 16° 30′ South Declination.					
58	0 28·8	3 8·4	22 11·2	1 42·5	57·6	15·0
63	1 27·9	2 53·4	22 8·3	1 43·3	58·0	13·7
63	2 32·6	2 38·1	22 0·2	1 41·5	57·7	13·4
61	3 31·5	2 29·6	21 3·8	1 41·1	57·4	13·2
71	4 30·7	2 26·2	20 5·9	1 37·1	57·1	14·7
66	5 30·3	2 38·7	19 8·0	1 39·5	56·9	17·0
64	6 31·4	3 10·3	19 7·7	1 38·6	57·0	16·7
59	7 29·2	3 37·5	20 6·2	1 40·9	57·1	15·4
60	8 29·4	3 51·0	21 2·9	1 42·5	57·5	14·2
59	9 29·4	3 45·5	22 1·0	1 41·6	57·6	13·4
64	10 28·9	3 37·4	22 6·5	1 41·8	57·5	13·8
68	11 29·3	3 23·6	22 10·6	1 43·3	57·9	15·2

	16° 30′ to 19° 30′ North Declination.					
92	0 29·5	3 5·1	22 8·4	1 42·2	56·8	18·9
92	1 30·4	2 50·4	22 1·5	1 40·5	56·5	17·4
95	2 30·1	2 34·6	21 10·0	1 40·1	56·5	15·2
94	3 29·4	2 23·7	21 0·2	1 40·6	56·5	13·3
94	4 28·9	2 19·1	20 0·8	1 40·2	56·4	11·6
92	5 29·0	2 34·8	19 5·6	1 40·1	56·3	11·6
105	6 30·2	3 10·8	19 4·8	1 40·2	56·4	11·0
93	7 29·6	3 44·1	20 0·3	1 40·8	56·4	12·6
101	8 27·7	3 53·8	21 0·4	1 41·2	56·4	13·6
84	9 29·9	3 51·0	21 9·5	1 42·0	56·6	15·4
88	10 29·4	3 38·5	22 6·3	1 42·6	57·2	18·5
87	11 29·0	3 22·3	22 7·1	1 42·1	56·8	18·9
	16° 30′ to 19° 30′ South Declination.					
92	0 30·1	3 3·8	22 10·7	1 46·2	57·8	19·0
80	1 28·2	2 51·7	22 5·8	1 45·5	57·7	18·3
95	2 28·0	2 37·3	21 11·9	1 44·4	57·6	16·2
86	3 29·2	2 28·7	21 4·1	1 45·5	57·7	13·1
94	4 30·4	2 23·9	20 3·1	1 43·8	57·3	12·0
88	5 30·2	2 37·3	19 4·1	1 44·5	57·2	11·4
93	6 29·7	3 9·8	19 5·3	1 44·3	57·1	11·6
99	7 30·7	3 40·8	20 4·5	1 45·3	57·3	12·0
89	8 30·9	3 54·1	21 1·7	1 46·1	57·5	13·5
84	9 27·2	3 48·7	21 10·5	1 46·2	57·6	14·6
91	10 31·2	3 36·8	22 5·8	1 47·5	57·9	17·7
75	11 28·7	3 16·9	22 9·8	1 47·4	58·1	19·3

	19° 30′ to 22° 30′ North Declination.					
64	0 28·0	3 5·2	22 7·6	1 47·7	57·5	19·0
64	1 27·7	2 48·3	22 7·5	1 47·5	57·6	18·6
71	2 28·9	2 31·3	21 11·1	1 46·0	57·3	15·6
65	3 31·9	2 21·4	21 0·2	1 46·4	57·0	11·8
76	4 28·7	2 16·4	19 9·4	1 44·8	56·8	11·8
74	5 27·6	2 28·7	19 2·3	1 46·0	57·0	10·7
70	6 28·9	3 11·3	19 4·6	1 46·7	57·1	11·7
71	7 29·5	3 42·8	20 0·8	1 47·7	57·2	10·9
64	8 29·9	3 52·1	21 0·7	1 49·2	57·6	13·0
68	9 28·7	3 47·9	21 10·3	1 48·7	57·7	15·2
66	10 30·3	3 35·3	22 4·5	1 49·0	58·0	18·3
65	11 28·8	3 22·6	22 7·6	1 48·8	57·7	19·9
	19° 30′ to 22° 30′ South Declination.					
67	0 29·8	3 5·9	22 7·7	1 45·4	57·1	19·9
65	1 30·7	2 46·5	22 4·6	1 46·7	57·5	18·2
69	2 30·0	2 31·8	21 9·6	1 43·8	56·9	15·0
68	3 29·4	2 22·9	20 10·6	1 43·0	56·8	13·9
79	4 30·0	2 16·3	19 11·9	1 42·6	56·5	11·5
68	5 30·7	2 28·1	19 3·4	1 42·4	56·6	11·2
75	6 28·6	3 6·9	19 0·1	1 41·8	56·2	10·5
71	7 28·6	3 42·5	19 10·1	1 41·9	56·3	12·1
77	8 30·6	3 53·8	20 10·9	1 43·2	56·4	12·9
68	9 30·6	3 50·2	21 7·8	1 43·9	56·7	15·6
65	10 27·1	3 36·4	22 2·1	1 41·9	56·6	17·8
72	11 29·8	3 21·1	22 6·7	1 45·7	57·1	19·9

TABLE X. (Continued.)

Number of Observations.	22° 30′ to 25° 30′ North Declination. Moon's Transit.	Interval.	Height of Tide.	Interval of Transits.	Hor. Par.	Sun's Decl.	Number of Observations.	Above 25° 30′ North Declination. Moon's Transit.	Interval.	Height of Tide.	Interval of Transits.	Hor. Par.	Sun's Decl.
	h m	h m	ft. in.	h m	′	°		h m	h m	ft. in.	h m	′	°
55	0 29·8	3 2·9	22 5·8	1 53·2	58·1	21·0	41	0 30·7	3 1·7	22 6·6	1 49·9	56·9	22·3
54	1 29·8	2 46·4	22 4·7	1 51·6	57·8	19·3	42	1 29·7	2 48·4	21 9·7	1 49·6	57·1	21·0
53	2 31·4	2 33·7	21 8·9	1 50·2	57·5	16·4	49	2 31·2	2 27·4	21 5·6	1 48·8	56·6	17·9
49	3 27·8	2 21·5	21 0·0	1 49·9	57·5	13·1	47	3 29·8	2 13·1	20 6·9	1 49·9	56·8	13·8
56	4 29·2	2 13·8	19 10·0	1 49·8	57·1	10·3	52	4 28·3	2 8·5	19 3·8	1 48·5	56·5	9·2
52	5 31·3	2 25·3	19 4·0	1 49·4	57·1	10·3	59	5 28·9	2 18·4	18 6·3	1 47·9	56·4	6·6
57	6 30·9	3 7·6	18 11·3	1 50·6	57·3	8·9	55	6 29·2	3 4·1	18 7·2	1 48·6	56·3	6·6
53	7 30·3	3 42·0	20 0·2	1 51·5	57·3	10·9	54	7 29·2	3 43·9	19 6·3	1 48·9	56·3	8·5
53	8 27·0	3 52·1	20 10·5	1 52·4	57·7	13·1	47	8 27·6	3 56·8	20 8·0	1 49·5	56·3	13·6
55	9 27·0	3 49·5	21 8·0	1 52·4	57·6	16·2	54	9 27·4	3 52·4	21 4·1	1 49·0	56·7	17·7
49	10 29·5	3 34·7	22 4·6	1 54·5	58·2	19·2	43	10 27·9	3 37·0	21 10·6	1 50·5	56·9	20·9
48	11 29·5	3 18·2	22 8·0	1 52·5	57·7	20·8	47	11 29·0	3 20·0	22 3·3	1 50·0	56·7	22·2
	22° 30′ to 25° 30′ South Declination.							Above 25° 30′ South Declination.					
56	0 29·4	3 4·1	22 6·5	1 46·8	56·9	20·9	40	0 29·8	2 57·9	22 6·4	1 53·9	57·3	22·3
55	1 31·8	2 41·7	22 3·2	1 45·3	56·5	19·3	44	1 29·1	2 44·8	22 0·2	1 54·0	57·7	21·0
53	2 30·1	2 30·6	21 7·7	1 44·9	56·6	16·4	47	2 30·5	2 27·0	21 5·9	1 52·3	57·3	17·7
53	3 31·7	2 17·3	20 10·9	1 44·9	56·6	13·0	49	3 27·1	2 14·4	20 8·4	1 52·4	57·3	14·0
56	4 29·8	2 10·0	19 7·8	1 43·6	56·2	10·8	53	4 29·0	2 6·5	19 9·4	1 52·7	57·2	9·2
60	5 30·7	2 27·1	19 1·9	1 44·3	56·6	9·3	53	5 25·9	2 14·9	18 8·7	1 51·7	56·8	6·3
56	6 31·1	3 7·0	19 1·3	1 43·7	56·2	9·9	57	6 28·9	3 0·6	18 9·9	1 52·9	57·0	6·7
56	7 29·9	3 45·0	19 10·8	1 44·3	56·2	10·5	51	7 28·7	3 39·5	19 7·5	1 53·7	57·1	9·0
59	8 27·3	3 56·1	20 7·2	1 45·1	56·3	12·9	47	8 27·9	3 56·4	20 8·7	1 55·9	57·6	13·9
54	9 29·7	3 47·5	21 5·5	1 44·7	56·3	16·2	49	9 28·8	3 49·8	21 6·4	1 55·4	57·7	18·2
51	10 27·6	3 35·0	21 11·4	1 45·2	56·3	19·4	44	10 31·0	3 35·9	22 2·0	1 55·5	57·9	20·5
51	11 27·4	3 20·5	22 0·7	1 45·2	56·5	21·1	43	11 29·0	3 20·1	22 5·0	1 55·6	57·8	22·3

TABLE XI. (Interpolated from Table X.)

Showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water at the London Docks for every three degrees of her Declination north *and* south.

Moon's Transit.	0° Decl.	3° N. Decl.	6° N. Decl.	9° N. Decl.	12° N. Decl.	15° N. Decl.	18° N. Decl.	21° N. Decl.	24° N. Decl.	27° N. Decl.	Mean.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
0 30	3 10·1	3 8·5	3 8·3	3 7·0	3 5·7	3 6·6	3 5·0	3 4·6	3 2·8	3 1·9	3 6·1
1 30	2 57·6	2 51·0	2 50·7	2 50·8	2 52·4	2 49·8	2 50·5	2 47·7	2 46·4	2 48·3	2 50·5
2 30	2 40·3	2 37·1	2 38·5	2 37·4	2 38·3	2 35·4	2 34·6	2 31·1	2 34·0	2 27·7	2 35·4
3 30	2 31·1	2 31·3	2 29·6	2 26·2	2 26·9	2 27·3	2 23·6	2 21·6	2 21·1	2 13·1	2 25·2
4 30	2 31·4	2 29·1	2 30·4	2 27·1	2 23·7	2 21·9	2 19·2	2 16·5	2 13·8	2 8·6	2 22·2
5 30	2 44·1	2 40·5	2 40·8	2 36·7	2 37·5	2 38·4	2 35·2	2 29·8	2 24·7	2 18·9	2 34·7
6 30	3 7·7	3 9·6	3 8·1	3 7·9	3 10·5	3 4·8	3 10·7	3 12·0	3 7·0	3 4·6	3 8·3
7 30	3 33·5	3 35·1	3 31·3	3 39·1	3 36·9	3 40·5	3 44·2	3 43·0	3 41·9	3 44·3	3 39·0
8 30	3 50·7	3 49·5	3 50·6	3 49·7	3 47·7	3 52·9	3 53·9	3 52·1	3 52·3	3 57·0	3 51·6
9 30	3 47·3	3 50·5	3 50·8	3 51·0	3 49·5	3 48·5	3 51·0	3 47·7	3 49·1	3 52·0	3 49·7
10 30	3 38·8	3 38·9	3 38·7	3 39·7	3 37·9	3 38·3	3 38·4	3 35·4	3 34·6	3 36·4	3 37·7
11 30	3 26·0	3 25·0	3 25·4	3 23·3	3 22·9	3 25·3	3 22·0	3 22·3	3 18·1	3 19·7	3 23·0
		3° S. Decl.	6° S. Decl.	9° S. Decl.	12° S. Decl.	15° S. Decl.	18° S. Decl.	21° S. Decl.	24° S. Decl.	27° S. Decl.	Mean.
0 30		3 7·6	3 7·5	3 7·6	3 7·5	3 8·0	3 3·8	3 5·9	3 2·9	2 57·9	3 6·5
1 30		2 50·9	2 49·8	2 49·9	2 52·8	2 52·9	2 51·3	2 46·7	2 42·1	2 44·5	2 49·9
2 30		2 38·0	2 38·3	2 39·2	2 36·9	2 38·6	2 36·9	2 31·8	2 30·6	2 27·1	2 35·8
3 30		2 30·2	2 27·8	2 27·6	2 26·8	2 29·8	2 28·6	2 22·9	2 17·6	2 14·0	2 25·6
4 30		2 28·6	2 29·5	2 31·3	2 24·7	2 26·3	2 23·9	2 16·3	2 10·0	2 6·5	2 22·9
5 30		2 44·7	2 42·4	2 42·3	2 43·2	2 38·6	2 37·2	2 27·8	2 26·8	2 16·8	2 36·4
6 30		3 10·2	3 14·2	3 12·3	3 12·2	3 9·6	3 9·9	3 7·8	3 6·3	3 1·3	3 9·2
7 30		3 37·4	3 35·2	3 40·9	3 39·0	3 37·8	3 40·5	3 43·0	3 45·0	3 40·1	3 39·2
8 30		3 45·1	3 45·6	3 44·7	3 50·1	3 51·0	3 54·0	3 53·8	3 56·3	3 56·5	3 50·8
9 30		3 46·8	3 47·0	3 46·5	3 49·6	3 45·4	3 48·6	3 50·3	3 47·5	3 49·6	3 47·9
10 30		3 38·7	3 38·2	3 38·3	3 37·4	3 37·2	3 37·1	3 35·7	3 34·4	3 36·2	3 37·2
11 30		3 25·1	3 24·3	3 15·1	3 20·6	3 23·4	3 16·5	3 21·0	3 19·8	3 19·8	3 21·2

Table XII.

Showing the Interval between the Apparent Time of the Moon's Transit and the Time of High Water at the London Docks, for every three degrees of her Declination north *or* south.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Mean.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
0 30	3 10·1	3 8·0	3 7·9	3 7·3	3 6·6	3 7·3	3 4·4	3 5·3	3 2·9	2 59·9	3 6·3
1 30	2 57·6	2 51·0	2 50·3	2 50·3	2 52·6	2 51·3	2 50·9	2 47·2	2 44·3	2 46·4	2 50·2
2 30	2 40·3	2 37·6	2 38·4	2 38·3	2 37·6	2 37·0	2 35·8	2 31·4	2 32·3	2 27·4	2 35·6
3 30	2 31·1	2 30·8	2 28·7	2 26·9	2 26·8	2 28·5	2 26·1	2 22·2	2 19·4	2 13·7	2 25·4
4 30	2 31·4	2 28·9	2 30·0	2 28·7	2 24·2	2 24·1	2 21·5	2 16·4	2 11·9	2 7·6	2 22·5
5 30	2 44·1	2 42·6	2 41·6	2 39·5	2 40·4	2 38·5	2 36·2	2 28·8	2 25·8	2 17·9	2 35·5
6 30	3 7·7	3 9·9	3 11·1	3 10·1	3 11·3	3 7·2	3 10·3	3 9·9	3 6·7	3 2·9	3 8·7
7 30	3 33·5	3 36·3	3 33·3	3 40·0	3 37·9	3 39·1	3 42·3	3 43·0	3 43·5	3 42·2	3 39·1
8 30	3 50·7	3 47·3	3 48·1	3 47·4	3 48·9	3 52·0	3 53·9	3 52·9	3 54·3	3 56·8	3 51·2
9 30	3 47·3	3 48·6	3 48·9	3 48·7	3 49·5	3 47·0	3 49·8	3 49·0	3 48·3	3 50·8	3 48·8
10 30	3 38·8	3 38·8	3 38·5	3 39·0	3 37·6	3 37·8	3 37·7	3 35·5	3 34·5	3 36·3	3 37·5
11 30	3 26·0	3 25·1	3 24·9	3 19·2	3 21·7	3 24·4	3 19·2	3 21·6	3 19·0	3 19·7	3 22·1

Table XIII.

Showing the Difference in the Interval between the Apparent Time of the Moon's Transit and the Time of High Water at the London Docks, and the Interval corresponding to fifteen degrees Declination, for every three degrees of the Moon's Declination north *and* south.

Moon's Transit.	0° Decl.	3° N. Decl.	6° N. Decl.	9° N. Decl.	12° N. Decl.	15° N. Decl.	18° N. Decl.	21° N. Decl.	24° N. Decl.	27° N. Decl.	Moon's Transit.
h m	m	m	m	m	m	m	m	m	m	m	h m
0 30	+ 3·5	+ 1·9	+ 1·7	+ 0·4	− 0·9	0	− 1·6	− 2·0	− 3·8	− 4·7	0 30
1 30	+ 7·8	+ 1·2	+ 0·9	+ 1·0	+ 2·6	0	+ 0·7	− 2·1	− 3·4	− 1·5	1 30
2 30	+ 4·9	+ 1·7	+ 3·1	+ 2·0	+ 2·9	0	− 0·8	− 4·3	− 1·4	− 7·7	2 30
3 30	+ 3·8	+ 4·0	+ 2·3	− 1·1	− 0·4	0	− 3·7	− 5·7	− 6·2	−14·2	3 30
4 30	+ 9·5	+ 7·2	+ 8·5	+ 5·2	+ 1·8	0	− 2·7	− 5·4	− 8·1	−13·3	4 30
5 30	+ 5·7	+ 2·1	+ 2·4	− 1·7	− 0·9	0	− 3·2	− 8·6	−13·7	−19·5	5 30
6 30	+ 2·9	+ 4·8	+ 3·3	+ 3·1	+ 5·7	0	+ 5·9	+ 7·2	+ 2·2	− 0·2	6 30
7 30	− 7·0	− 5·4	− 9·2	− 1·4	− 3·6	0	+ 3·7	+ 2·5	+ 1·4	+ 3·8	7 30
8 30	− 2·2	− 3·4	− 2·3	− 3·2	− 5·2	0	+ 1·0	− 0·8	− 0·6	+ 4·1	8 30
9 30	− 1·2	+ 2·0	+ 2·3	+ 2·5	+ 1·0	0	+ 2·5	− 0·8	+ 0·6	+ 3·5	9 30
10 30	+ 0·5	+ 0·6	+ 0·4	+ 1·4	− 0·4	0	+ 0·1	− 2·9	− 3·7	− 1·9	10 30
11 30	+ 0·7	− 0·3	+ 0·1	− 2·0	− 2·4	0	− 3·3	− 3·0	− 7·2	− 5·6	11 30
	0° Decl.	3° S. Decl.	6° S. Decl.	9° S. Decl.	12° S. Decl.	15° S. Decl.	18° S. Decl.	21° S. Decl.	24° S. Decl.	27° S. Decl.	
0 30	+ 2·1	− 0·4	− 0·5	− 0·4	− 0·5	0	− 4·2	− 2·1	− 5·1	−10·1	0 30
1 30	+ 4·7	− 2·0	− 3·1	− 3·0	− 0·1	0	− 1·6	− 6·2	−10·8	− 8·5	1 30
2 30	+ 1·7	− 0·6	− 0·3	+ 0·6	− 1·7	0	− 1·7	− 6·8	− 8·0	−11·5	2 30
3 30	+ 1·3	+ 0·4	− 2·0	− 2·2	− 3·0	0	− 1·2	− 6·9	−12·2	−15·8	3 30
4 30	+ 5·1	+ 2·3	+ 3·2	+ 5·0	− 1·6	0	− 2·4	−10·0	−16·3	−19·8	4 30
5 30	+ 5·5	+ 6·1	+ 3·8	+ 3·7	+ 4·6	0	− 1·4	−10·8	−11·8	−21·8	5 30
6 30	− 1·9	+ 0·6	+ 4·6	+ 2·7	+ 2·6	0	+ 0·3	− 1·8	− 3·3	− 8·3	6 30
7 30	− 4·3	− 0·4	− 2·6	+ 3·1	+ 1·2	0	+ 2·7	+ 5·2	+ 7·2	+ 2·3	7 30
8 30	− 0·3	− 5·9	− 5·4	− 6·3	− 0·9	0	+ 3·0	+ 2·8	+ 5·3	+ 5·5	8 30
9 30	+ 1·9	+ 1·4	+ 1·6	+ 1·1	+ 4·2	0	+ 3·2	+ 4·9	+ 2·1	+ 4·2	9 30
10 30	+ 1·6	+ 1·5	+ 1·0	+ 1·1	+ 0·2	0	− 0·1	− 1·5	− 2·8	− 1·0	10 30
11 30	+ 2·6	+ 1·7	+ 0·9	− 8·3	− 2·8	0	− 6·9	− 2·4	− 3·6	− 3·6	11 30

Table XIV.

Showing the Difference in the Interval between the Apparent Time of the Moon's Transit and the Time of High Water at the London Docks, and the Interval corresponding to fifteen degrees Declination, for every three degrees of the Moon's Declination north *or* south.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Moon's Transit.
h m	m	m	m	m	m	m	m	m	m	m	h m
0 30	+ 2·8	+ 0·7	+ 0·6	0·0	− 0·7	0	− 2·9	− 2·0	− 4·4	− 7·4	0 30
1 30	+ 6·3	− 0·3	− 1·0	− 1·0	+ 1·3	0	− 0·4	− 4·1	− 7·0	− 4·9	1 30
2 30	+ 3·3	+ 0·6	+ 1·4	+ 1·3	+ 0·6	0	− 1·2	− 5·6	− 4·7	− 9·6	2 30
3 30	+ 2·6	+ 2·3	+ 0·2	− 1·6	− 1·7	0	− 2·4	− 6·3	− 9·1	−14·8	3 30
4 30	+ 7·3	+ 4·8	+ 5·9	+ 4·6	+ 0·1	0	− 2·6	− 7·7	−12·2	−16·5	4 30
5 30	+ 5·6	+ 4·1	+ 3·1	+ 1·0	+ 1·9	0	− 2·3	− 9·7	−12·7	−20·6	5 30
6 30	+ 0·5	+ 2·7	+ 3·9	+ 2·9	+ 4·1	0	+ 3·1	+ 2·7	− 0·5	− 4·3	6 30
7 30	− 5·6	− 2·8	− 5·8	+ 0·9	− 1·2	0	+ 3·2	+ 3·9	+ 4·4	+ 3·1	7 30
8 30	− 1·3	− 4·7	− 3·9	− 4·6	− 3·1	0	+ 1·9	+ 0·9	+ 2·3	+ 4·8	8 30
9 30	+ 0·3	+ 1·6	+ 1·9	+ 1·7	+ 2·5	0	+ 2·8	+ 2·0	+ 1·3	+ 3·8	9 30
10 30	+ 1·0	+ 1·0	+ 0·7	+ 1·2	− 0·2	0	− 0·1	− 2·3	− 3·3	− 1·5	10 30
11 30	+ 1·6	+ 0·7	+ 0·5	− 5·2	− 2·7	0	− 5·2	− 2·8	− 5·4	− 4·7	11 30

Table XV. (Interpolated from Table X.)

Showing the Height of High Water at the London Docks for every three degrees of the Moon's Declination north *and* south.

Moon's Transit.	0° Decl.	3° N. Decl.	6° N. Decl.	9° N. Decl.	12° N. Decl.	15° N. Decl.	18° N. Decl.	21° N. Decl.	24° N. Decl.	27° N. Decl.	Mean.
h m	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.
0 30	22·94	23·07	23·04	22·92	22·91	22·82	22·70	22·63	22·48	22·55	22·81
1 30	22·61	22·94	22·79	22·62	22·56	22·51	22·13	22·61	22·39	21·81	22·49
2 30	22·12	21·97	22·09	21·92	22·01	22·02	21·83	21·91	21·76	21·47	21·91
3 30	21·53	21·46	21·51	21·22	21·23	21·03	21·91	21·03	20·96	20·57	21·15
4 30	20·51	20·62	20·47	20·42	20·36	20·24	20·05	19·77	19·83	19·29	20·16
5 30	19·97	19·89	20·09	19·93	19·68	19·56	19·46	19·19	19·34	18·52	19·56
6 30	19·97	20·05	19·92	19·88	19·66	19·38	19·40	19·39	18·93	18·61	19·52
7 30	20·41	20·67	20·77	20·58	20·38	20·20	20·03	20·08	20·01	19·54	20·27
8 30	21·59	21·48	21·30	21·21	21·20	21·20	21·07	21·06	20·92	20·70	21·17
9 30	22·29	22·50	22·17	22·14	22·13	22·04	21·80	21·87	21·71	21·37	22·00
10 30	22·82	22·77	22·76	22·66	22·52	22·42	22·53	22·37	22·39	21·90	22·51
11 30	23·18	23·12	22·86	22·76	23·01	22·75	22·60	22·63	22·67	22·28	22·79
		3° S. Decl.	6° S. Decl.	9° S. Decl.	12° S. Decl.	15° S. Decl.	18° S. Decl.	21° S. Decl.	24° S. Decl.	27° S. Decl.	Mean.
0 30		23·00	23·10	22·88	23·04	22·93	22·89	22·64	22·54	22·53	22·92
1 30		22·76	22·72	22·71	22·63	22·67	22·47	22·39	22·27	22·01	22·52
2 30		22·14	22·32	22·09	22·22	22·05	21·97	21·80	21·64	21·50	21·98
3 30		21·45	21·62	21·49	21·44	21·33	21·33	20·89	20·93	20·65	21·27
4 30		20·87	20·74	20·51	20·37	20·50	20·26	19·99	19·65	19·77	20·32
5 30		19·89	20·02	20·43	19·84	19·67	19·35	19·29	19·17	18·70	19·63
6 30		20·07	19·87	19·76	19·77	19·65	19·44	19·01	19·10	18·83	19·54
7 30		20·61	20·46	20·67	20·35	20·53	20·37	19·87	19·90	19·65	20·28
8 30		21·33	21·47	21·54	21·47	21·25	21·13	20·90	20·63	20·76	21·21
9 30		22·37	22·21	22·25	21·99	22·09	21·91	21·64	21·46	21·54	21·97
10 30		22·77	22·62	22·62	22·69	22·55	22·47	22·20	21·97	22·16	22·49
11 30		23·17	22·94	22·93	22·52	22·88	22·82	22·57	22·03	22·42	22·75

Table XVI.

Showing the Height of High Water at the London Docks for every three degrees of the Moon's Declination north *or* south.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Mean.
h m	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.
0 30	22·94	23·04	23·07	22·90	22·97	22·88	22·79	22·64	22·51	22·54	22·86
1 30	22·61	22·85	22·76	22·66	22·60	22·59	22·30	22·50	22·33	21·91	22·51
2 30	22·12	22·05	22·21	22·00	22·11	22·04	21·90	21·85	21·70	21·49	21·95
3 30	21·53	21·46	21·57	21·35	21·33	21·18	21·17	20·96	20·94	20·61	21·21
4 30	20·51	20·75	20·60	20·46	20·36	20·37	20·16	19·88	19·74	19·53	20·24
5 30	19·97	19·89	20·06	20·18	19·76	19·62	19·40	19·24	19·25	18·61	19·60
6 30	19·97	20·06	19·90	19·82	19·71	19·51	19·42	19·20	19·01	18·72	19·53
7 30	20·41	20·64	20·61	20·62	20·36	20·36	20·20	19·97	19·95	19·60	20·27
8 30	21·59	21·41	21·39	21·38	21·33	21·22	21·10	20·98	20·77	20·73	21·19
9 30	22·29	22·43	22·19	22·20	22·06	22·06	21·85	21·75	21·58	21·46	21·99
10 30	22·82	22·77	22·69	22·64	22·60	22·48	22·50	22·28	22·18	22·03	22·50
11 30	23·18	23·15	22·90	22·84	22·76	22·81	22·71	22·60	22·35	22·35	22·77

Table XVII.

Showing the Difference in the Height of High Water at the London Docks, and the Height corresponding to fifteen degrees Declination, for every three degrees of the Moon's Declination north *and* south.

Moon's Transit.	0° Decl.	3° N. Decl.	6° N. Decl.	9° N. Decl.	12° N. Decl.	15° N. Decl.	18° N. Decl.	21° N. Decl.	24° N. Decl.	27° N. Decl.	Moon's Transit.
h m	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	h m
0 30	+ 0·12	+ 0·25	+ 0·22	+ 0·10	+ 0·09	0	− 0·12	− 0·19	− 0·34	− 0·27	0 30
1 30	+ 0·10	+ 0·43	+ 0·28	+ 0·11	+ 0·05	0	− 0·38	+ 0·10	− 0·12	− 0·70	1 30
2 30	+ 0·10	− 0·05	+ 0·07	− 0·10	− 0·01	0	− 0·19	− 0·11	− 0·26	− 0·55	2 30
3 30	+ 0·50	+ 0·43	+ 0·48	+ 0·19	+ 0·20	0	− 0·02	0·00	− 0·07	− 0·47	3 30
4 30	+ 0·27	+ 0·38	+ 0·23	+ 0·18	+ 0·12	0	− 0·19	− 0·47	− 0·41	− 0·95	4 30
5 30	+ 0·41	+ 0·33	+ 0·53	+ 0·37	+ 0·12	0	− 0·10	− 0·37	− 0·22	− 1·04	5 30
6 30	+ 0·59	+ 0·67	+ 0·54	+ 0·50	+ 0·28	0	+ 0·02	+ 0·01	− 0·45	− 0·77	6 30
7 30	+ 0·21	+ 0·47	+ 0·57	+ 0·38	+ 0·18	0	− 0·17	− 0·12	− 0·19	− 0·66	7 30
8 30	+ 0·39	+ 0·28	+ 0·10	+ 0·01	0·00	0	− 0·13	− 0·14	− 0·28	− 0·50	8 30
9 30	+ 0·25	+ 0·46	+ 0·13	+ 0·10	+ 0·09	0	− 0·24	− 0·17	− 0·33	− 0·67	9 30
10 30	+ 0·40	+ 0·35	+ 0·34	+ 0·24	+ 0·10	0	+ 0·11	− 0·05	− 0·03	− 0·52	10 30
11 30	+ 0·43	+ 0·37	+ 0·11	+ 0·01	+ 0·26	0	− 0·15	− 0·12	− 0·08	− 0·47	11 30
	0° Decl.	3° S. Decl.	6° S. Decl.	9° S. Decl.	12° S. Decl.	15° S. Decl.	18° S. Decl.	21° S. Decl.	24° S. Decl.	27° S. Decl.	
0 30	+ 0·01	+ 0·07	+ 0·17	− 0·05	+ 0·11	0	− 0·04	− 0·29	− 0·49	− 0·40	0 30
1 30	− 0·06	+ 0·09	+ 0·05	+ 0·04	− 0·04	0	− 0·20	− 0·28	− 0·40	− 0·66	1 30
2 30	+ 0·07	+ 0·09	+ 0·27	+ 0·04	+ 0·17	0	− 0·08	− 0·25	− 0·41	− 0·55	2 30
3 30	+ 0·20	+ 0·12	+ 0·29	+ 0·16	+ 0·11	0	0·00	− 0·44	− 0·40	− 0·68	3 30
4 30	+ 0·01	+ 0·37	+ 0·24	+ 0·01	− 0·13	0	− 0·24	− 0·51	− 0·85	− 0·73	4 30
5 30	+ 0·30	+ 0·22	+ 0·35	+ 0·76	+ 0·17	0	− 0·32	− 0·38	− 0·50	− 0·97	5 30
6 30	+ 0·32	+ 0·42	+ 0·22	+ 0·11	+ 0·12	0	− 0·21	− 0·64	− 0·55	− 0·82	6 30
7 30	− 0·12	+ 0·08	− 0·07	+ 0·14	− 0·18	0	− 0·16	− 0·66	− 0·63	− 0·88	7 30
8 30	+ 0·34	+ 0·08	+ 0·22	+ 0·29	+ 0·22	0	− 0·12	− 0·35	− 0·62	− 0·49	8 30
9 30	+ 0·20	+ 0·28	+ 0·12	+ 0·16	− 0·10	0	− 0·18	− 0·45	− 0·63	− 0·55	9 30
10 30	+ 0·27	+ 0·22	+ 0·07	+ 0·07	+ 0·14	0	− 0·08	− 0·35	− 0·58	− 0·39	10 30
11 30	+ 0·30	+ 0·29	+ 0·06	+ 0·05	− 0·36	0	− 0·06	− 0·31	− 0·85	− 0·46	11 30

Table XVIII.

Showing the Difference in the Height of High Water at the London Docks, and the Height corresponding to fifteen degrees Declination, for every three degrees of the Moon's Declination north *or* south.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Moon's Transit.
h m	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	feet.	h m
0 30	+ 0·06	+ 0·16	+ 0·19	+ 0·02	+ 0·09	0	− 0·09	− 0·24	− 0·37	− 0·34	0 30
1 30	+ 0·02	+ 0·26	+ 0·17	+ 0·07	+ 0·01	0	− 0·29	− 0·09	− 0·26	− 0·68	1 30
2 30	+ 0·08	+ 0·01	+ 0·17	− 0·04	+ 0·07	0	− 0·14	− 0·19	− 0·34	− 0·55	2 30
3 30	+ 0·35	+ 0·28	+ 0·39	+ 0·17	+ 0·15	0	− 0·01	− 0·22	− 0·24	− 0·57	3 30
4 30	+ 0·14	+ 0·38	+ 0·23	+ 0·41	− 0·01	0	− 0·21	− 0·49	− 0·63	− 0·84	4 30
5 30	+ 0·35	+ 0·27	+ 0·44	+ 0·56	+ 0·14	0	− 0·22	− 0·38	− 0·37	− 1·01	5 30
6 30	+ 0·46	+ 0·55	+ 0·39	+ 0·31	+ 0·20	0	− 0·09	− 0·31	− 0·50	− 0·79	6 30
7 30	+ 0·05	+ 0·28	+ 0·25	+ 0·26	0·00	0	− 0·16	− 0·39	− 0·41	− 0·76	7 30
8 30	+ 0·37	+ 0·19	+ 0·17	+ 0·16	+ 0·11	0	− 0·12	− 0·24	− 0·45	− 0·49	8 30
9 30	+ 0·23	+ 0·37	+ 0·13	+ 0·14	0·00	0	− 0·21	− 0·31	− 0·48	− 0·60	9 30
10 30	+ 0·34	+ 0·29	+ 0·21	+ 0·16	+ 0·12	0	+ 0·02	− 0·20	− 0·30	− 0·45	10 30
11 30	+ 0·37	+ 0·34	+ 0·09	+ 0·03	− 0·05	0	− 0·10	− 0·21	− 0·46	− 0·46	11 30

Table XIX.

Showing the Difference in the Height of High Water at the London Docks when the Moon's Declination is north or south.

Moon's Transit.	6° Declination.			21° Declination.		
	North.	South.	Difference.	North.	South.	Difference.
h m	feet.	feet.	feet.	feet.	feet.	feet.
0 30	+ ·13	+ ·11	− ·02	− ·28	+ ·04	+ ·32
1 30	+ ·19	+ ·14	− ·05	− ·21	− ·22	− ·01
2 30	− ·05	+ ·14	+ ·19	− ·21	− ·24	− ·03
3 30	+ ·21	+ ·34	+ ·13	− ·18	− ·13	+ ·05
4 30	+ ·13	+ ·34	+ ·21	− ·49	− ·40	+ ·09
5 30	+ ·35	+ ·49	+ ·14	− ·29	− ·35	− ·06
6 30	+ ·44	+ ·39	− ·05	− ·27	− ·33	− ·06
7 30	+ ·31	+ ·22	− ·09	− ·32	− ·31	+ ·01
8 30	+ ·11	+ ·22	+ ·12	− ·20	− ·33	− ·13
9 30	+ ·21	+ ·22	+ ·01	− ·27	− ·39	− ·12
10 30	+ ·25	+ ·19	− ·06	− ·05	− ·27	− ·22
11 30	+ ·10	+ ·20	+ ·10	− ·18	− ·34	− ·16

The preceding Table has been formed by considering the quantities given for 6° and 21° as arithmetic means between those given in Table XVII. for 3°, 6°, 9°, and 18°, 21°, and 24°, so that they may each be considered as resulting from the average of about 150 observations. This Table does not seem to confirm what is stated by Laplace, Méc. Cél. tom. v. p. 162. "L'action de la lune pour élever la mer à Brest, est plus grande lorsque sa déclinaison est australe, que lorsqu'elle est boréale."

TABLE XX.

Showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water, and the Height of High Water at the London Docks (together with the Interval between the Moon's Transits), corresponding to the Apparent Solar Time of the Moon's Upper and Lower Transit, P.M. and A.M.

January.

Upper Transits, P.M.						Lower (Interpolated) Transits, A.M.					
Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.	Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.
h m	′	h m	ft. in.	h m	°	h m	′	h m	ft. in.	h m	°
0 32·8	56·9	3 4·2	22 8·4	1 38·6	S. 19·1	0 26·6	57·4	3 4·0	22 8·8	1 41·2	S. 19·2
1 33·4	57·2	2 45·5	22 7·8	1 35·1	S. 15·1	1 25·4	57·2	2 48·1	22 6·0	1 36·7	S. 16·2
2 28·2	57·1	2 39·3	22 0·5	1 32·1	S. 9·7	2 27·1	56·6	2 31·9	22 0·1	1 30·6	S. 10·8
3 29·2	56·6	2 29·6	21 5·7	1 29·1	S. 4·3	3 26·7	57·2	2 29·4	21 8·1	1 31·4	S. 3·3
4 30·3	56·7	2 35·7	20 4·7	1 31·2	N. 1·4	4 30·3	56·3	2 20·3	20 4·5	1 30·6	N. 2·5
5 31·7	56·5	2 45·9	19 5·9	1 35·6	N. 8·7	5 29·7	56·9	2 34·3	19 4·4	1 36·0	N. 7·6
6 31·9	56·5	3 15·4	19 6·0	1 40·3	N. 13·9	6 28·5	57·0	3 0·3	19 7·3	1 40·2	N. 13·1
7 26·2	56·9	3 38·8	20 2·5	1 47·3	N. 17·5	7 30·2	56·8	3 36·3	20 0·8	1 45·3	N. 17·5
8 25·7	57·1	3 54·4	21 1·4	1 49·7	N. 20·5	8 32·9	57·0	3 42·2	21 1·1	1 50·6	N. 21·4
9 29·0	57·0	3 51·5	21 4·2	1 50·7	N. 22·9	9 29·4	57·1	3 46·7	22 1·0	1 49·9	N. 22·3
10 30·5	57·4	3 37·3	21 10·4	1 50·6	N. 23·1	10 25·6	57·4	3 35·4	22 5·5	1 49·2	N. 22·4
11 28·9	57·5	3 20·9	22 3·9	1 46·1	N. 21·8	11 28·3	57·1	3 16·9	22 10·3	1 45·3	N. 20·9
Upper Transits, A.M.						Lower (Interpolated) Transits, P.M.					
0 30·4	57·1	3 2·5	22 7·1	1 39·8	N. 18·8	0 30·8	56·3	3 1·2	22 9·2	1 40·9	N. 20·0
1 30·6	57·4	2 47·0	22 4·8	1 36·5	N. 15·0	1 26·0	57·2	2 48·6	22 8·8	1 35·9	N. 15·7
2 30·8	57·3	2 37·1	21 7·6	1 32·5	N. 10·9	2 27·1	57·3	2 41·1	22 1·4	1 33·8	N. 8·8
3 29·1	57·1	2 28·9	21 1·9	1 31·8	N. 3·4	3 31·9	57·0	2 32·8	21 3·9	1 30·3	N. 3·9
4 29·8	56·8	2 25·0	20 5·5	1 31·8	S. 2·4	4 29·5	57·1	2 31·5	20 7·3	1 33·7	S. 2·4
5 29·3	57·1	2 40·5	19 4·0	1 37·0	S. 8·2	5 31·0	56·9	2 52·6	19 9·2	1 36·8	S. 8·5
6 25·8	57·0	3 4·8	19 5·0	1 41·3	S. 12·7	6 34·4	57·0	3 18·8	19 7·1	1 41·8	S. 13·4
7 28·4	56·9	3 38·7	20 0·9	1 46·2	S. 17·9	7 33·5	57·5	3 46·1	20 5·0	1 48·4	S. 18·0
8 31·2	57·2	3 53·0	21 3·4	1 51·0	S. 21·1	8 29·9	57·3	3 58·8	21 0·3	1 50·3	S. 20·5
9 29·2	57·2	3 49·0	21 9·9	1 53·0	S. 23·0	9 29·7	57·1	3 50·0	21 7·5	1 50·4	S. 22·2
10 28·3	57·3	3 35·7	22 6·3	1 49·8	S. 22·5	10 32·6	57·4	3 35·5	21 10·9	1 49·4	S. 23·3
11 27·9	57·1	3 20·8	22 9·0	1 46·0	S. 21·6	11 31·9	56·9	3 19·7	22 3·7	1 42·8	S. 20·5

February.

Upper Transits, P.M.						Lower (Interpolated) Transits, A.M.					
0 29·0	57·2	3 5·0	22 11·0	1 33·8	S. 10·4	0 31·4	57·3	2 59·9	22 10·4	1 34·0	S. 10·1
1 26·5	57·2	2 53·2	22 4·0	1 32·6	S. 5·0	1 28·7	56·9	2 46·5	22 7·1	1 32·1	S. 3·6
2 28·8	57·2	2 38·7	21 10·3	1 33·7	N. 2·3	2 28·8	57·1	2 33·3	22 2·6	1 33·3	N. 1·3
3 29·7	56·4	2 25·3	21 3·8	1 35·2	N. 8·4	3 27·5	56·7	2 23·8	21 1·7	1 36·5	N. 7·7
4 31·3	56·9	2 25·5	19 8·3	1 41·8	N. 14·3	4 28·1	56·3	2 16·1	20 1·0	1 39·6	N. 13·0
5 26·4	56·6	2 41·9	18 10·0	1 44·7	N. 17·9	5 31·4	56·4	2 26·6	18 11·6	1 45·0	N. 19·0
6 27·4	56·3	3 11·6	19 0·4	1 46·1	N. 20·7	6 31·6	56·6	2 59·0	19 0·6	1 47·6	N. 20·8
7 31·5	56·9	3 41·0	20 0·0	1 50·4	N. 22·8	7 25·9	56·8	3 36·9	19 7·8	1 49·9	N. 22·7
8 25·6	57·0	3 58·5	20 8·9	1 48·4	N. 22·6	8 25·0	56·7	3 51·9	21 0·2	1 47·8	N. 21·9
9 25·0	57·5	3 50·7	21 8·0	1 48·9	N. 21·9	9 28·3	57·0	3 43·3	21 9·4	1 45·6	N. 21·9
10 29·0	57·3	3 35·9	22 3·3	1 44·2	N. 18·4	10 30·4	57·3	3 36·0	22 7·7	1 41·6	N. 18·7
11 28·7	57·3	3 19·9	22 8·7	1 37·7	N. 15·3	11 31·4	57·6	3 19·6	23 2·4	1 39·0	N. 15·0
Upper Transits, A.M.						Lower (Interpolated) Transits, P.M.					
0 25·9	57·7	3 1·7	23 1·0	1 36·2	N. 10·7	0 30·4	57·0	3 4·6	23 4·0	1 35·4	N. 9·5
1 25·0	57·5	2 47·8	23 2·1	1 34·4	N. 4·6	1 29·5	57·6	2 50·3	22 10·1	1 34·3	N. 4·4
2 26·7	57·1	2 34·8	22 0·2	1 33·7	S. 1·9	2 28·3	57·4	2 43·4	22 3·6	1 35·2	S. 1·9
3 30·4	57·1	2 23·8	21 7·0	1 37·6	S. 7·7	3 30·2	57·1	2 24·5	21 5·0	1 37·0	S. 7·8
4 27·9	56·7	2 18·7	20 4·3	1 40·8	S. 13·8	4 32·8	57·0	2 23·5	20 8·9	1 42·3	S. 14·0
5 28·0	56·7	2 27·0	19 2·5	1 45·1	S. 18·0	5 28·9	57·0	2 30·1	19 6·1	1 46·3	S. 18·1
6 26·1	57·0	3 6·1	19 2·3	1 48·6	S. 20·8	6 30·7	56·5	3 1·9	19 0·0	1 47·1	S. 20·6
7 25·6	56·7	3 35·3	20 1·9	1 48·6	S. 22·2	7 31·0	57·0	3 46·3	20 1·2	1 49·3	S. 22·6
8 27·5	56·6	3 48·8	21 0·1	1 47·9	S. 23·2	8 29·9	56·8	3 52·8	20 6·6	1 48·2	S. 23·2
9 27·0	57·2	3 45·9	21 7·9	1 46·4	S. 21·8	9 30·2	57·2	3 47·3	21 7·3	1 45·6	S. 21·6
10 30·7	57·0	3 35·9	22 7·6	1 40·5	S. 19·0	10 30·0	57·0	3 31·8	22 1·3	1 40·9	S. 18·6
11 31·0	57·3	3 21·6	22 9·0	1 37·5	S. 14·4	11 32·0	56·8	3 12·9	22 9·0	1 35·5	S. 14·5

Tabe XX. (Continued.)

March.

Upper Transits, P.M.

Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.
h m	′	h m	ft. in.	h m	°
0 31·9	57·1	3 7·2	22 8·5	1 35·3	N. 2·1
1 33·4	56·7	2 49·9	22 5·5	1 36·3	N. 7·6
2 25·6	57·0	2 43·3	21 8·3	1 42·2	N. 13·4
3 28·5	56·6	2 22·7	20 8·4	1 44·3	N. 17·0
4 28·2	56·4	2 15·0	19 5·1	1 46·0	N. 20·8
5 29·8	55·5	2 24·2	18 9·0	1 47·5	N. 22·2
6 27·8	56·9	3 9·0	19 0·6	1 47·8	N. 23·0
7 26·4	56·7	3 46·5	19 7·8	1 44·9	N. 22·3
8 28·1	57·2	3 56·5	20 8·7	1 42·8	N. 18·6
9 30·4	57·3	3 46·1	21 10·0	1 39·5	N. 15·9
10 27·8	57·6	3 33·3	22 4·9	1 37·0	N. 11·4
11 27·9	58·0	3 19·9	23 0·6	1 37·8	N. 4·7

Lower (Interpolated) Transits, A.M.

Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.
h m	′	h m	ft. in.	h m	°
0 26·8	56·7	3 4·8	22 8·0	1 33·5	N. 0·9
1 28·3	57·3	2 48·2	22 10·4	1 38·4	N. 6·7
2 28·2	56·6	2 30·8	22 0·0	1 39·1	N. 12·9
3 31·8	56·5	2 20·2	21 2·3	1 44·3	N. 17·5
4 30·8	56·5	2 12·1	20 0·0	1 47·4	N. 20·8
5 29·0	56·5	2 19·1	19 5·6	1 47·3	N. 21·6
6 29·8	56·5	3 5·7	19 1·6	1 47·6	N. 23·4
7 31·3	57·1	3 44·8	20 4·7	1 47·0	N. 21·7
8 30·2	57·2	3 52·8	21 4·8	1 43·1	N. 19·9
9 30·2	57·5	3 51·8	22 2·6	1 39·5	N. 15·2
10 32·7	57·7	3 34·9	22 9·2	1 37·4	N. 10·2
11 29·6	57·4	3 21·4	23 0·4	1 35·6	N. 4·7

Upper Transits, A.M.

0 30·5	57·0	3 3·1	23 2·7	1 34·4	S. 1·7
1 28·9	57·4	2 51·6	22 10·6	1 39·0	S. 6·7
2 26·3	56·9	2 36·1	21 11·1	1 40·8	S. 13·4
3 26·7	56·9	2 21·1	21 1·0	1 46·2	S. 17·3
4 28·4	57·0	2 14·4	20 1·4	1 47·6	S. 20·4
5 27·2	56·9	2 29·9	19 1·5	1 48·6	S. 22·1
6 27·3	56·7	3 7·6	19 0·1	1 47·7	S. 22·8
7 26·3	56·6	3 43·9	20 0·6	1 44·8	S. 22·8
8 27·6	57·1	4 1·4	20 11·7	1 41·3	S. 19·1
9 26·4	57·4	3 48·1	21 10·0	1 39·8	S. 16·8
10 26·1	57·5	3 38·0	22 4·1	1 36·5	S. 11·2
11 29·3	55·8	3 24·1	22 11·5	1 33·1	S. 4·6

Lower (Interpolated) Transits, P.M.

0 26·7	58·0	3 9·3	22 10·6	1 38·0	S. 0·8
1 30·4	57·2	2 48·7	22 9·1	1 38·1	S. 7·5
2 33·7	57·1	2 34·0	21 9·1	1 42·2	S. 13·3
3 27·2	57·0	2 21·8	20 10·6	1 45·3	S. 17·1
4 29·0	56·7	2 17·4	19 8·1	1 46·8	S. 20·4
5 30·6	56·9	2 28·2	18 5·8	1 49·4	S. 22·8
6 29·7	57·0	3 8·9	18 9·2	1 47·4	S. 23·0
7 29·8	56·9	3 47·9	19 6·0	1 44·6	S. 21·7
8 31·0	57·0	3 59·6	20 8·3	1 41·5	S. 19·7
9 30·2	57·3	3 49·9	21 6·4	1 38·7	S. 15·7
10 30·2	57·2	3 36·7	22 3·7	1 35·4	S. 10·0
11 29·0	57·1	3 21·0	22 9·1	1 35·6	S. 4·7

April.

Upper Transits, P.M.

0 29·6	57·1	3 7·9	22 10·0	1 42·6	N. 12·7
1 26·2	57·3	2 54·7	22 3·2	1 47·5	N. 17·0
2 27·4	56·5	2 33·1	21 8·1	1 46·8	N. 20·0
3 29·0	56·8	2 18·4	20 9·9	1 48·9	N. 22·2
4 24·4	56·5	2 10·1	19 2·0	1 46·4	N. 22·4
5 21·8	56·5	2 24·7	18 8·2	1 44·4	N. 22·9
6 26·7	57·7	3 9·8	18 10·4	1 41·0	N. 19·4
7 30·1	56·8	3 43·8	19 9·2	1 37·5	N. 16·8
8 28·7	56·9	3 51·6	20 11·0	1 34·0	N. 11·1
9 28·7	57·5	3 47·7	22 2·1	1 36·1	N. 5·9
10 31·1	57·4	3 35·1	22 8·6	1 36·1	S. 0·9
11 32·1	58·1	3 20·3	23 3·5	1 43·3	S. 7·7

Lower (Interpolated) Transits, A.M.

0 29·6	56·6	3 5·4	23 0·5	1 42·5	N. 12·4
1 27·7	57·0	2 49·4	22 6·6	1 44·8	N. 16·3
2 27·9	56·9	2 33·8	22 1·0	1 48·6	N. 20·5
3 28·3	56·9	2 21·7	21 1·3	1 48·8	N. 22·0
4 29·7	56·4	2 14·3	20 0·9	1 46·2	N. 22·8
5 31·0	56·7	2 34·0	19 3·9	1 44·5	N. 21·9
6 29·6	57·0	3 11·2	19 7·7	1 40·8	N. 20·3
7 30·0	56·9	3 42·9	20 5·7	1 36·6	N. 15·8
8 27·0	57·3	3 47·3	21 7·9	1 36·0	N. 11·1
9 28·3	57·1	3 47·0	22 6·0	1 34·3	N. 6·0
10 27·9	57·8	3 39·0	23 0·3	1 37·9	S. 0·3
11 29·2	57·4	3 22·7	23 2·7	1 39·0	S. 6·4

Upper Transits, A.M.

0 27·4	57·5	3 8·0	23 2·5	1 44·2	S. 12·1
1 29·3	57·5	2 51·4	22 6·3	1 47·2	S. 16·4
2 33·2	57·3	2 33·5	22 0·2	1 49·4	S. 20·8
3 28·8	57·0	2 26·8	21 1·4	1 48·4	S. 21·7
4 25·3	57·0	2 19·1	20 0·6	1 47·8	S. 22·9
5 26·1	56·6	2 29·9	19 6·5	1 44·5	S. 22·8
6 24·4	56·9	3 7·6	19 8·7	1 41·0	S. 20·5
7 23·9	56·7	3 42·0	20 5·3	1 35·4	S. 16·1
8 30·1	57·0	3 52·5	21 7·3	1 34·4	S. 11·9
9 33·7	56·9	3 50·4	22 4·2	1 33·2	S. 5·1
10 32·9	57·1	3 38·4	23 0·8	1 36·5	N. 1·1
11 30·6	57·3	3 18·9	23 0·2	1 38·6	N. 6·6

Lower (Interpolated) Transits, P.M.

0 31·3	57·7	3 6·7	23 1·0	1 46·0	S. 13·3
1 28·2	57·8	2 47·5	22 6·5	1 48·7	S. 16·9
2 26·8	57·2	2 33·5	21 10·4	1 48·7	S. 19·6
3 28·9	57·2	2 19·3	20 10·2	1 50·1	S. 22·1
4 31·1	56·9	2 11·0	19 7·0	1 47·3	S. 23·2
5 33·5	56·5	2 32·8	18 8·8	1 43·5	S. 21·6
6 32·2	56·5	3 6·0	19 1·0	1 40·1	S. 19·9
7 31·6	56·6	3 37·0	19 10·5	1 36·1	S. 15·8
8 31·8	56·6	3 48·7	21 0·3	1 32·3	S. 11·2
9 28·3	56·9	3 47·1	22 0·2	1 33·8	S. 4·9
10 28·6	57·0	3 37·3	22 8·6	1 35·2	N. 0·9
11 29·1	57·0	3 19·3	23 2·9	1 39·2	N. 6·4

TABLE XX. (Continued.)

May.

Upper Transits, P.M.						Lower (Interpolated) Transits, A.M.					
Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.	Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.
h m	′	h m	ft. in.	h m	°	h m	′	h m	ft. in.	h m	°
0 30·4	57·2	3 4·6	22 8·8	1 49·6	N. 20·5	0 30·4	57·4	3 5·3	22 10·9	1 50·3	N. 19·6
1 34·7	57·4	2 49·6	22 3·2	1 50·3	N. 22·0	1 26·0	57·5	2 50·3	22 8·5	1 51·1	N. 21·7
2 33·2	57·1	2 27·1	21 6·1	1 48·5	N. 23·3	2 28·4	57·0	2 35·1	21 11·0	1 48·0	N. 22·2
3 31·2	56·9	2 17·6	20 4·0	1 44·6	N. 22·0	3 30·3	57·0	2 24·4	21 3·5	1 45·0	N. 21·9
4 29·8	56·8	2 17·5	19 9·9	1 40·9	N. 20·0	4 29·2	56·9	2 19·8	20 2·5	1 40·6	N. 20·4
5 29·6	56·3	2 28·5	19 3·6	1 35·4	N. 16·6	5 29·8	56·6	2 39·4	20 1·3	1 35·5	N. 16·7
6 28·2	56·6	3 5·8	19 6·6	1 31·8	N. 11·9	6 27·1	56·7	3 16·5	20 4·3	1 34·0	N. 11·4
7 27·7	57·1	3 33·6	20 5·3	1 34·0	N. 5·4	7 28·1	56·6	3 39·1	20 9·1	1 31·0	N. 6·5
8 33·2	56·8	3 46·6	21 5·5	1 33·1	S. 0·5	8 30·2	57·3	3 48·3	21 8·9	1 35·6	S. 0·5
9 30·7	57·5	3 44·7	22 3·5	1 39·0	S. 6·8	9 31·4	57·1	3 46·2	22 5·0	1 37·9	S. 6·0
10 23·7	57·6	3 30·0	22 9·5	1 43·6	S. 11·4	10 30·6	57·6	3 36·7	22 9·5	1 43·9	S. 12·3
11 25·2	57·3	3 21·5	22 10·1	1 46·9	S. 16·3	11 27·9	58·0	3 23·0	22 10·9	1 49·6	S. 16·5
Upper Transits, A.M.						Lower (Interpolated) Transits, P.M.					
0 32·2	58·0	3 1·1	23 0·5	1 53·0	S. 20·5	0 28·0	57·5	3 4·2	22 9·1	1 50·0	S. 19·4
1 28·8	57·7	2 49·6	22 7·8	1 52·2	S. 22·4	1 30·7	57·7	2 47·9	22 4·4	1 52·2	S. 22·0
2 23·6	57·2	2 35·5	22 0·3	1 48·7	S. 22·7	2 35·5	57·6	2 29·1	21 4·4	1 49·0	S. 22·9
3 22·2	56·9	2 26·4	21 4·5	1 46·6	S. 22·7	3 34·7	57·3	2 20·8	20 10·2	1 45·8	S. 20·9
4 27·5	56·7	2 25·9	20 4·0	1 39·2	S. 20·0	4 31·1	56·8	2 18·0	19 10·4	1 40·6	S. 19·7
5 29·5	57·0	2 43·6	19 11·9	1 33·2	S. 16·4	5 27·5	56·6	2 29·8	19 3·6	1 35·7	S. 17·2
6 29·3	56·4	3 14·2	20 0·2	1 32·5	S. 12·6	6 29·6	56·3	3 6·2	19 3·7	1 30·8	S. 11·8
7 32·1	56·6	3 41·9	20 11·1	1 31·9	S. 5·9	7 29·6	56·6	3 32·5	20 4·3	1 31·9	S. 5·2
8 28·4	56·6	3 52·3	21 7·1	1 32·0	N. 0·4	8 28·6	56·4	3 46·6	21 0·8	1 32·4	0·0
9 28·6	56·6	3 52·5	22 5·0	1 35·8	N. 6·4	9 30·0	57·1	3 46·0	22 2·2	1 37·3	N. 6·5
10 29·9	57·0	3 38·3	22 11·2	1 41·6	N. 11·7	10 27·7	56·9	3 28·3	22 6·9	1 41·6	N. 11·8
11 28·6	57·6	3 23·4	22 9·7	1 47·9	N. 16·7	11 29·5	56·9	3 22·0	22 9·0	1 45·1	N. 16·9

June.

Upper Transits, P.M.						Lower (Interpolated) Transits, A.M.					
0 32·2	57·5	3 1·5	22 5·6	1 49·6	N. 22·9	0 27·6	57·0	3 7·1	22 8·0	1 48·5	N. 22·7
1 28·7	57·2	2 49·2	22 1·3	1 45·2	N. 21·9	1 30·4	57·4	2 49·9	22 5·0	1 45·6	N. 22·0
2 31·1	57·3	2 33·6	21 9·9	1 40·6	N. 19·4	2 28·2	57·3	2 40·0	22 1·2	1 40·4	N. 19·9
3 33·4	57·1	2 22·8	21 0·4	1 35·4	N. 16·0	3 24·3	57·0	2 32·6	21 6·0	1 37·0	N. 16·2
4 32·0	57·0	2 26·1	20 5·0	1 32·4	N. 11·2	4 28·2	57·0	2 34·9	20 11·0	1 33·5	N. 11·6
5 29·3	57·0	2 38·3	20 0·2	1 32·6	N. 5·8	5 29·6	56·7	2 52·4	20 3·0	1 31·3	N. 5·7
6 29·0	56·6	3 6·8	19 8·9	1 31·5	S. 0·3	6 29·8	56·8	3 14·6	20 2·4	1 33·8	S. 0·3
7 30·4	57·0	3 32·6	20 5·6	1 37·2	S. 6·6	7 32·0	55·6	3 37·7	20 9·3	1 36·1	S. 6·7
8 28·9	57·2	3 45·6	21 3·7	1 42·2	S. 12·4	8 31·5	57·1	3 46·9	21 3·2	1 42·6	S. 12·1
9 31·3	57·1	3 46·1	21 11·0	1 46·9	S. 17·6	9 26·1	57·5	3 46·1	21 11·5	1 47·0	S. 16·4
10 28·7	57·4	3 35·4	22 4·1	1 50·6	S. 20·3	10 27·7	57·0	3 35·7	22 2·0	1 48·6	S. 20·0
11 22·1	57·7	3 25·4	22 6·7	1 52·7	S. 22·2	11 31·3	57·6	3 18·8	22 6·7	1 52·0	S. 22·3
Upper Transits, A.M.						Lower (Interpolated) Transits, P.M.					
0 24·2	57·3	3 5·9	22 8·7	1 49·8	S. 23·0	0 30·2	57·5	3 1·4	22 5·7	1 49·2	S. 22·8
1 30·8	57·7	2 50·8	22 5·2	1 45·7	S. 21·9	1 30·6	57·3	2 44·0	22 3·0	1 45·6	S. 21·8
2 35·6	57·7	2 38·5	22 0·2	1 41·0	S. 19·4	2 25·9	57·4	2 31·5	21 8·9	1 41·7	S. 20·0
3 35·9	57·1	2 30·5	21 4·0	1 35·5	S. 15·8	3 27·3	56·8	2 23·8	21 2·4	1 35·7	S. 16·5
4 32·9	56·8	2 36·7	20 7·0	1 32·0	S. 11·1	4 27·1	57·2	2 25·3	20 5·4	1 33·0	S. 10·8
5 32·1	56·5	2 49·5	20 0·2	1 29·6	S. 7·0	5 28·3	56·8	2 34·7	19 11·5	1 31·0	S. 5·7
6 31·8	56·5	3 20·1	20 2·2	1 31·4	N. 1·1	6 32·6	56·5	3 5·4	19 10·0	1 51·3	N. 0·6
7 31·2	56·4	3 42·7	20 7·3	1 33·9	N. 6·6	7 30·2	56·7	3 32·4	20 5·2	1 35·8	N. 6·6
8 30·0	56·9	3 48·9	21 4·1	1 41·1	N. 12·7	8 31·2	56·7	3 47·5	21 0·2	1 40·0	N. 12·0
9 26·4	56·7	3 46·9	21 10·3	1 45·6	N. 16·6	9 34·0	56·9	3 46·7	21 11·5	1 46·8	N. 17·0
10 28·0	56·9	3 33·0	22 3·5	1 48·4	N. 19·8	10 30·9	57·3	3 35·7	22 5·3	1 50·0	N. 20·3
11 31·3	57·1	3 12·6	22 5·5	1 50·8	N. 22·8	11 27·9	56·9	3 23·9	22 6·2	1 48·7	N. 21·5

TABLE XX. (Continued.)

July.

Upper Transits, P.M.						Lower (Interpolated) Transits, A.M.					
Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.	Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.
h m	′	h m	ft. in.	h m	°	h m	′	h m	ft. in.	h m	°
0 30·3	57·3	3 1·5	22 7·5	1 42·2	N. 19·5	0 28·9	57·3	3 8·4	22 9·8	1 41·7	N. 19·3
1 29·5	57·0	2 46·4	22 5·3	1 35·7	N. 16·3	1 27·2	57·1	2 56·2	22 7·2	1 37·0	N. 16·1
2 28·3	57·1	2 36·5	22 2·5	1 33·8	N. 10·4	2 30·7	57·6	2 41·1	22 4·7	1 33·4	N. 11·2
3 29·5	57·1	2 29·7	21 7·2	1 31·9	N. 5·2	3 32·8	57·4	2 38·7	21 7·1	1 33·2	N. 5·2
4 27·8	57·0	2 30·0	20 8·3	1 32·8	S. 1·8	4 28·6	56·9	2 36·4	20 10·1	1 33·1	S. 2·1
5 28·1	57·2	2 42·8	20 2·7	1 37·9	S. 7·6	5 28·6	56·9	2 50·2	20 2·7	1 36·1	S. 6·8
6 31·6	56·9	3 9·8	19 10·8	1 41·7	S. 13·2	6 26·5	57·2	3 15·0	19 10·9	1 42·1	S. 12·5
7 31·9	57·3	3 37·5	20 5·8	1 46·9	S. 16·9	7 26·8	56·9	3 35·5	20 5·2	1 45·5	S. 16·7
8 28·6	57·3	3 52·3	21 0·8	1 50·7	S. 19·8	8 29·9	57·1	3 49·7	20 11·2	1 49·8	S. 20·4
9 29·0	57·0	3 50·5	21 8·3	1 50·8	S. 22·6	9 31·1	57·2	3 45·4	21 7·7	1 50·9	S. 22·9
10 28·5	57·0	3 40·8	22 1·8	1 49·0	S. 23·0	10 29·1	57·6	3 35·6	22 0·0	1 51·1	S. 22·9
11 30·8	57·4	3 26·9	22 7·0	1 46·1	S. 21·7	11 26·6	57·0	3 17·4	22 5·0	1 46·2	S. 21·8
Upper Transits, A.M.						Lower (Interpolated) Transits, P.M.					
0 31·7	57·3	3 7·9	22 9·0	1 41·2	S. 19·0	0 29·7	57·3	3 2·0	22 6·5	1 41·4	S. 20·0
1 26·5	57·3	2 57·6	22 6·1	1 38·0	S. 16·4	1 28·1	56·9	2 46·0	22 5·8	1 34·6	S. 15·0
2 28·6	56·8	2 43·3	22 0·0	1 31·9	S. 11·3	2 28·5	57·5	2 36·0	22 3·0	1 34·7	S. 11·1
3 28·9	57·2	2 38·0	21 7·4	1 32·0	S. 4·5	3 31·2	56·7	2 30·1	21 5·4	1 30·9	S. 4·6
4 29·8	56·8	2 38·5	20 6·1	1 32·3	N. 1·6	4 32·0	56·8	2 24·4	20 8·9	1 32·1	N. 1·3
5 31·6	56·7	2 52·6	19 11·7	1 35·7	N. 7·4	5 30·5	57·4	2 37·8	19 10·9	1 35·7	N. 7·9
6 26·4	56·8	3 20·5	19 9·8	1 39·9	N. 12·0	6 29·7	56·7	3 8·1	19 9·7	1 40·0	N. 12·9
7 28·7	56·6	3 37·7	20 2·1	1 44·0	N. 16·0	7 29·5	56·8	3 38·2	20 0·2	1 45·5	N. 17·2
8 31·7	56·6	3 51·1	20 11·2	1 48·0	N. 20·6	8 25·0	56·8	3 50·3	21 0·6	1 48·3	N. 20·1
9 31·0	57·0	3 49·2	21 7·6	1 50·8	N. 22·6	9 26·0	56·8	3 49·9	21 8·3	1 50·5	N. 22·3
10 28·6	57·0	3 37·4	22 2·2	1 49·1	N. 23·0	10 29·5	56·9	3 41·0	22 5·2	1 48·9	N. 23·0
11 31·0	56·9	3 19·5	22 5·4	1 44·9	N. 21·3	11 28·7	57·4	3 22·9	22 7·4	1 45·8	N. 22·5

August.

Upper Transits, P.M.						Lower (Interpolated) Transits, A.M.					
0 30·7	57·3	3 5·9	22 9·3	1 35·7	N. 10·5	0 31·1	57·0	3 12·7	22 9·3	1 34·0	N. 11·1
1 29·5	56·9	2 50·4	22 8·5	1 31·9	N. 4·9	1 29·4	57·4	2 54·8	22 8·1	1 33·9	N. 5·6
2 29·7	57·3	2 38·8	22 2·8	1 34·6	S. 1·1	2 28·2	56·8	2 45·5	22 1·2	1 33·2	S. 1·5
3 30·2	57·0	2 25·3	21 6·0	1 36·7	S. 7·1	3 29·2	56·9	2 34·6	21 3·4	1 35·7	S. 7·1
4 32·2	56·8	2 24·9	20 8·5	1 41·1	S. 13·3	4 29·0	56·8	2 29·6	20 4·1	1 40·7	S. 12·9
5 33·5	56·6	2 36·3	19 6·6	1 46·7	S. 18·1	5 28·2	57·0	2 42·3	19 5·9	1 45·4	S. 17·2
6 30·4	56·8	3 11·4	19 3·9	1 48·2	S. 20·6	6 30·0	56·8	3 10·5	19 2·8	1 48·6	S. 21·2
7 31·7	57·3	3 46·1	20 2·7	1 51·9	S. 22·7	7 27·5	57·3	3 40·7	19 8·2	1 52·0	S. 22·3
8 31·3	57·1	4 0·9	21 1·2	1 49·7	S. 23·2	8 26·8	57·3	3 51·3	20 7·6	1 51·2	S. 22·6
9 30·1	57·0	3 55·5	21 11·6	1 46·1	S. 21·6	9 27·4	57·6	3 48·0	21 6·2	1 49·0	S. 21·9
10 27·0	57·5	3 46·4	22 5·6	1 43·9	S. 19·1	10 30·2	56·9	3 36·1	22 0·4	1 42·9	S. 20·0
11 23·5	57·5	3 32·1	22 10·5	1 39·7	S. 16·0	11 31·9	57·3	3 19·1	22 8·0	1 37·7	S. 15·6
Upper Transits, A.M.						Lower (Interpolated) Transits, P.M.					
0 26·9	56·9	3 14·5	22 9·8	1 34·2	S. 11·3	0 32·0	57·2	3 4·0	22 10·4	1 35·1	S. 11·4
1 29·4	57·0	2 54·7	22 5·8	1 32·3	S. 5·3	1 32·4	56·6	2 46·3	22 8·1	1 30·9	S. 4·8
2 28·0	56·8	2 41·1	21 10·8	1 32·8	N. 0·2	2 29·2	57·1	2 35·6	22 3·0	1 33·3	N. 1·1
3 28·3	56·8	2 33·3	21 2·4	1 36·3	N. 7·4	3 28·6	56·6	2 24·0	21 4·9	1 35·2	N. 7·9
4 28·5	56·7	2 30·2	20 4·7	1 39·3	N. 12·3	4 28·5	56·6	2 18·8	20 5·7	1 38·9	N. 12·2
5 28·1	56·6	2 38·9	19 4·4	1 44·0	N. 17·2	5 27·5	56·3	2 28·8	19 6·5	1 43·9	N. 17·7
6 32·8	56·9	3 15·0	19 2·1	1 48·9	N. 21·0	6 25·8	56·6	3 7·1	19 5·1	1 47·4	N. 20·8
7 35·8	57·0	3 42·7	19 9·7	1 50·7	N. 22·5	7 25·0	57·0	3 42·7	20 1·4	1 50·7	N. 22·2
8 31·8	56·8	3 55·9	20 8·3	1 49·0	N. 22·4	8 24·4	57·2	3 58·8	21 1·0	1 50·7	N. 22·7
9 32·3	57·3	3 49·6	21 4·4	1 47·8	N. 21·9	9 28·3	57·2	3 56·9	21 9·9	1 47·5	N. 22·3
10 34·5	57·0	3 31·9	22 1·8	1 42·6	N. 19·3	10 30·3	57·3	3 43·6	22 4·3	1 43·5	N. 19·2
11 32·7	57·2	3 22·0	22 7·7	1 37·5	N. 16·2	11 30·3	57·3	3 32·4	22 8·6	1 38·7	N. 15·9

TABLE XX. (Continued.)

September.

Upper Transits, P.M.

Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.
h m	′	h m	ft. in.	h m	°
0 28·9	57·8	3 7·3	23 2·2	1 37·4	0·0
1 32·1	57·2	2 49·7	22 8·2	1 37·4	S. 6·2
2 32·5	57·3	2 35·8	22 2·8	1 42·3	S. 12·7
3 33·3	57·2	2 25·5	21 1·9	1 46·1	S. 17·0
4 33·8	56·6	2 15·1	20 1·0	1 47·1	S. 20·3
5 33·7	57·0	2 29·0	19 2·4	1 49·8	S. 22·2
6 33·8	56·5	3 13·6	19 5·2	1 47·2	S. 23·0
7 34·7	56·8	3 51·3	20 5·6	1 45·0	S. 22·2
8 34·5	56·8	4 4·0	21 5·4	1 41·6	S. 19·7
9 34·0	57·7	3 56·8	22 1·2	1 40·6	S. 16·7
10 32·8	56·9	3 45·8	22 5·9	1 34·8	S. 11·6
11 31·9	57·4	3 29·5	22 11·9	1 35·0	S. 5·0

Lower (Interpolated) Transits, A.M.

Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.
h m	′	h m	ft. in.	h m	°
0 30·0	57·2	3 15·8	23 0·9	1 35·4	N. 0·8
1 28·2	57·2	2 57·1	22 8·3	1 37·4	S. 6·7
2 28·0	57·3	2 38·9	22 1·5	1 41·5	S. 12·0
3 24·5	57·5	2 31·6	21 1·3	1 44·7	S. 16·1
4 29·0	56·7	2 16·2	19 10·4	1 46·9	S. 20·4
5 28·9	56·9	2 23·5	19 1·1	1 49·5	S. 22·3
6 26·8	56·7	3 0·4	18 7·5	1 47·9	S. 22·9
7 26·1	57·0	3 38·6	19 7·0	1 46·8	S. 22·4
8 25·3	57·2	3 50·7	20 4·7	1 42·2	S. 20·1
9 28·4	57·0	3 49·2	21 8·9	1 38·3	S. 17·0
10 30·5	57·6	3 35·3	22 5·3	1 37·5	S. 11·2
11 29·3	57·3	3 21·9	22 10·4	1 34·8	S. 6·3

Upper Transits, A.M.

0 30·5	57·3	3 12·5	22 8·9	1 35·5	S. 0·1
1 31·3	56·8	2 56·1	22 4·3	1 36·7	N. 6·8
2 31·4	57·0	2 40·0	21 8·7	1 40·4	N. 12·1
3 28·6	56·2	2 29·8	20 10·4	1 43·4	N. 16·3
4 31·7	56·5	2 20·8	19 6·9	1 46·6	N. 20·3
5 34·3	56·7	2 33·8	18 9·6	1 49·3	N. 22·3
6 35·6	56·6	3 13·8	18 8·0	1 47·7	N. 22·9
7 32·5	56·9	3 46·3	19 6·1	1 45·7	N. 22·4
8 30·7	57·0	3 57·1	20 10·2	1 42·2	N. 19·6
9 31·3	57·1	3 51·7	21 8·4	1 39·1	N. 17·1
10 28·1	57·6	3 41·2	22 5·8	1 37·6	N. 11·5
11 26·8	57·1	3 22·8	22 10·2	1 34·5	N. 6·4

Lower (Interpolated) Transits, P.M.

0 27·3	56·9	3 3·0	23 0·4	1 34·2	S. 0·2
1 27·5	57·5	2 48·1	22 8·1	1 37·7	N. 6·2
2 29·3	56·4	2 34·7	22 1·0	1 38·8	N. 12·3
3 29·2	56·7	2 18·3	21 2·9	1 44·5	N. 17·4
4 25·4	56·0	2 12·3	19 10·8	1 46·1	N. 20·0
5 24·8	56·6	2 24·6	19 5·9	1 48·5	N. 22·2
6 24·2	56·5	3 9·8	19 2·2	1 47·8	N. 22·7
7 26·8	56·4	3 50·5	20 0·5	1 45·1	N. 22·5
8 29·2	56·8	4 0·0	21 3·5	1 42·0	N. 20·0
9 25·6	57·2	3 58·1	22 1·8	1 40·1	N. 16·0
10 27·2	57·3	3 48·7	22 8·6	1 36·6	N. 12·7
11 29·1	57·7	3 31·6	23 0·8	1 37·1	N. 5·6

October.

Upper Transits, P.M.

0 30·3	57·4	3 7·7	23 1·0	1 42·2	S. 11·9
1 33·4	57·8	2 50·5	22 5·7	1 48·3	S. 16·4
2 33·4	57·5	2 32·4	22 1·5	1 50·2	S. 19·8
3 29·9	57·0	2 18·0	20 11·3	1 49·3	S. 21·9
4 31·8	56·8	2 9·6	20 2·5	1 47·5	S. 22·8
5 33·5	56·5	2 25·5	19 4·6	1 44·1	S. 22·0
6 37·1	56·9	3 14·3	19 7·3	1 41·8	S. 20·5
7 34·6	56·7	3 51·8	20 9·7	1 36·7	S. 17·0
8 30·8	56·6	3 58·9	21 6·6	1 33·0	S. 11·7
9 29·6	56·9	3 55·4	22 3·3	1 33·3	S. 6·8
10 29·5	57·3	3 46·4	22 9·1	1 34·5	S. 0·3
11 29·3	57·0	3 30·6	22 10·6	1 36·8	N. 5·6

Lower (Interpolated) Transits, A.M.

0 27·9	57·9	3 15·3	23 0·9	1 44·1	S. 11·0
1 26·0	57·7	2 56·4	22 6·2	1 46·8	S. 15·4
2 30·2	57·0	2 35·3	21 7·3	1 47·9	S. 19·9
3 30·5	57·0	2 21·0	20 9·1	1 49·8	S. 22·3
4 28·5	56·9	2 8·3	19 11·0	1 48·3	S. 22·8
5 25·8	56·7	2 12·8	19 2·1	1 45·7	S. 22·5
6 27·6	57·0	2 54·9	18 11·6	1 42·4	S. 20·3
7 27·8	56·4	3 29·3	19 6·4	1 36·3	S. 17·6
8 28·9	56·6	3 49·3	21 0·4	1 33·5	S. 12·5
9 25·1	56·6	3 45·7	21 11·1	1 34·0	S. 7·0
10 28·1	57·1	3 34·7	22 7·0	1 34·5	S. 1·2
11 30·6	57·8	3 19·9	22 11·8	1 39·7	N. 5·7

Upper Transits, A.M.

0 30·7	57·3	3 10·2	22 7·9	1 43·0	N. 11·8
1 30·5	57·4	2 54·6	22 8·0	1 45·5	N. 15·5
2 30·9	56·5	2 35·5	21 5·7	1 46·6	N. 20·2
3 31·6	56·7	2 19·5	20 7·6	1 49·0	N. 22·0
4 33·9	56·5	2 9·1	19 5·4	1 47·1	N. 23·1
5 34·4	56·6	2 21·5	18 6·9	1 43·7	N. 22·4
6 32·1	56·5	2 56·6	18 7·2	1 40·0	N. 19·7
7 34·8	56·6	3 41·3	19 9·7	1 36·4	N. 17·0
8 32·3	57·0	3 51·9	20 11·1	1 35·6	N. 12·2
9 31·0	57·1	3 49·2	22 2·4	1 34·9	N. 6·2
10 30·7	57·3	3 37·7	22 9·2	1 35·4	N. 1·0
11 29·1	58·2	3 23·4	23 0·2	1 41·3	S. 5·3

Lower (Interpolated) Transits, P.M.

0 30·9	57·2	3 4·2	22 11·0	1 41·9	N. 11·8
1 31·0	57·0	2 46·1	22 5·5	1 45·0	N. 15·3
2 26·8	56·9	2 30·4	22 0·4	1 47·3	N. 19·3
3 24·2	56·8	2 17·4	21 3·4	1 48·5	N. 21·9
4 29·7	56·5	2 8·5	20 1·6	1 46·8	N. 22·7
5 27·2	56·4	2 26·6	19 4·3	1 44·4	N. 20·3
6 28·9	56·5	3 13·6	19 2·7	1 40·5	N. 20·1
7 28·6	56·7	3 47·4	20 7·5	1 37·1	N. 16·7
8 28·0	57·0	4 3·1	21 7·6	1 35·6	N. 12·7
9 28·9	56·9	3 56·0	22 3·4	1 32·8	N. 7·0
10 28·6	58·0	3 45·7	22 11·9	1 38·9	N. 0·5
11 30·3	57·1	3 29·3	22 11·6	1 37·5	S. 5·6

TABLE XX. (Continued.)

November.

Upper Transits, P.M.

Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.
h m	′	h m	ft. in.	h m	°
0 24·5	57·8	3 2·9	22 9·7	1 52·2	S. 19·5
1 22·1	57·4	2 49·1	22 3·3	1 51·7	S. 21·5
2 27·8	57·3	2 32·6	21 11·1	1 49·3	S. 23·0
3 34·6	57·2	2 23·5	21 4·4	1 45·5	S. 22·6
4 36·5	57·0	2 21·6	20 4·5	1 39·2	S. 19·7
5 30·1	56·7	2 37·4	19 10·8	1 36·2	S. 17·4
6 29·0	56·4	3 7·5	19 10·9	1 32·1	S. 12·5
7 30·8	56·6	3 44·8	20 8·0	1 30·7	S. 6·3
8 27·8	56·9	3 55·7	21 1·7	1 33·0	N. 0·2
9 29·9	56·8	3 51·8	22 2·2	1 35·7	N. 5·3
10 28·7	57·2	3 39·5	22 5·7	1 42·5	N. 11·9
11 27·7	56·9	3 24·9	22 7·1	1 44·2	N. 15·9

Lower (Interpolated) Transits, A.M.

Moon's Transit.	Moon's Parallax.	Interval between the Moon's Transit and the Time of high water.	Height.	Interval of Transits.	Moon's Declination.
h m	′	h m	ft. in.	h m	°
0 33·6	57·5	3 8·3	22 6·0	1 50·0	S. 20·3
1 36·5	57·7	2 44·8	22 4·4	1 52·0	S. 22·1
2 29·9	57·3	2 30·6	21 9·2	1 48·9	S. 22·7
3 25·3	57·4	2 23·4	20 11·9	1 46·2	S. 22·1
4 28·4	56·6	2 13·2	19 8·7	1 40·1	S. 21·0
5 28·9	56·5	2 22·7	18 10·5	1 35·8	S. 17·4
6 27·7	56·7	2 57·6	19 3·0	1 32·6	S. 13·0
7 28·2	56·8	3 28·7	19 10·6	1 32·6	S. 6·2
8 31·3	56·8	3 42·0	20 10·9	1 32·3	S. 0·8
9 31·9	57·2	3 39·4	22 2·5	1 37·7	N. 6·0
10 29·5	56·7	3 34·8	22 4·2	1 39·4	N. 11·4
11 28·9	57·1	3 16·1	22 10·3	1 45·1	N. 16·4

Upper Transits, A.M.

0 28·8	57·1	3 4·0	22 6·0	1 49·2	N. 20·1
1 31·3	57·3	2 48·1	22 0·0	1 50·6	N. 22·3
2 32·7	57·3	2 31·0	21 7·9	1 48·7	N. 22·7
3 31·8	57·3	2 16·8	20 10·6	1 43·8	N. 21·7
4 29·1	57·0	2 12·3	19 5·0	1 40·5	N. 20·6
5 29·2	56·4	2 21·6	19 0·0	1 35·9	N. 17·9
6 31·2	56·6	3 0·0	18 10·6	1 32·3	N. 12·0
7 30·0	56·6	3 31·9	20 2·1	1 31·7	N. 6·1
8 28·2	56·8	3 42·4	21 0·3	1 32·8	N. 0·9
9 26·7	57·6	3 41·6	22 0·6	1 38·6	S. 5·6
10 28·8	57·0	3 32·3	22 6·3	1 40·4	S. 11·1
11 30·7	57·7	3 17·5	22 10·1	1 49·3	S. 16·6

Lower (Interpolated) Transits, P.M.

0 26·3	57·4	3 4·7	22 6·4	1 48·6	N. 19·5
1 25·0	57·0	2 49·0	22 4·8	1 48·6	N. 21·7
2 26·9	56·9	2 28·9	22 1·6	1 48·6	N. 23·6
3 26·8	57·1	2 21·7	21 2·2	1 45·3	N. 22·2
4 27·5	56·7	2 23·8	20 3·7	1 40·1	N. 20·0
5 27·3	56·7	2 32·7	20 5·2	1 36·5	N. 17·3
6 29·6	56·8	3 10·5	19 9·3	1 33·0	N. 12·2
7 30·7	56·9	3 39·1	20 10·3	1 32·5	N. 5·7
8 29·2	57·1	3 52·1	21 7·0	1 34·6	N. 0·8
9 30·2	57·1	3 50·2	22 1·8	1 36·8	S. 6·6
10 30·5	57·6	3 36·2	22 8·7	1 44·0	S. 11·8
11 27·7	57·5	3 24·8	22 11·2	1 47·0	S. 15·8

December.

Upper Transits, P.M.

0 35·1	57·1	2 56·7	22 9·0	1 47·6	S. 22·5
1 28·1	57·6	2 46·1	22 4·6	1 46·6	S. 22·5
2 25·3	57·4	2 32·7	21 9·9	1 41·9	S. 20·1
3 28·0	57·0	2 29·0	21 6·0	1 35·0	S. 16·9
4 29·0	57·3	2 32·9	20 8·8	1 32·5	S. 11·0
5 30·1	56·8	2 43·8	20 5·3	1 30·2	S. 5·1
6 29·6	56·7	3 16·0	20 0·5	1 32·0	N. 0·3
7 27·7	56·6	3 35·8	20 7·6	1 34·3	N. 6·0
8 28·5	56·6	3 49·6	21 5·2	1 40·2	N. 12·3
9 31·2	56·7	3 50·1	22 0·6	1 44·5	N. 17·2
10 29·2	57·1	3 31·5	21 11·8	1 49·1	N. 20·3
11 25·6	57·0	3 24·1	22 6·0	1 49·1	N. 22·0

Lower (Interpolated) Transits, A.M.

0 25·2	57·5	3 4·1	22 6·3	1 49·5	S. 22·6
1 30·4	57·0	2 44·1	22 1·7	1 45·8	S. 22·8
2 34·4	57·3	2 26·1	21 10·1	1 39·6	S. 19·5
3 32·2	57·3	2 23·5	21 0·6	1 36·4	S. 16·3
4 30·8	56·8	2 21·6	20 5·3	1 32·1	S. 11·3
5 31·2	56·9	2 31·1	19 11·3	1 31·1	S. 6·9
6 27·6	56·7	2 56·7	19 6·3	1 31·1	S. 0·5
7 27·6	56·3	3 24·6	20 5·7	1 34·1	N. 7·2
8 28·9	56·9	3 41·5	21 1·8	1 39·8	N. 11·8
9 26·3	57·1	3 42·0	21 10·4	1 45·3	N. 16·6
10 27·2	56·7	3 33·4	22 2·7	1 46·0	N. 19·7
11 28·9	57·1	3 21·7	22 6·5	1 50·6	N. 22·6

Upper Transits, A.M.

0 27·0	57·1	3 7·3	22 3·0	1 48·0	N. 22·4
1 31·3	57·0	2 48·5	21 10·2	1 45·0	N. 22·9
2 30·9	57·7	2 33·1	21 7·6	1 40·0	N. 19·8
3 30·3	57·0	2 26·4	20 9·2	1 35·9	N. 15·6
4 27·0	57·3	2 21·7	20 1·8	1 33·3	N. 11·6
5 29·0	56·7	2 32·3	19 5·2	1 30·0	N. 6·3
6 31·0	57·0	2 59·6	19 11·4	1 33·7	S. 0·4
7 30·7	56·8	3 29·3	20 3·1	1 35·5	S. 6·7
8 31·9	57·0	3 41·6	21 4·4	1 41·8	S. 12·4
9 28·1	57·7	3 42·6	21 9·1	1 46·7	S. 16·5
10 27·1	57·2	3 35·1	22 4·8	1 49·0	S. 19·5
11 31·9	57·2	3 19·5	21 11·7	1 49·9	S. 22·9

Lower (Interpolated) Transits, P.M.

0 29·6	57·1	3 5·5	22 5·8	1 47·7	N. 23·0
1 32·0	57·2	2 45·3	22 2·0	1 44·4	N. 22·6
2 33·6	57·3	2 33·8	22 1·7	1 40·2	N. 19·7
3 32·5	57·1	2 30·7	21 2·2	1 34·9	N. 16·0
4 30·5	56·9	2 28·9	20 4·5	1 31·7	N. 11·5
5 29·0	57·2	2 43·4	20 3·3	1 32·6	N. 5·6
6 29·1	56·4	3 9·6	20 0·3	1 30·9	S. 0·7
7 26·7	57·1	3 37·3	20 5·1	1 36·9	S. 6·1
8 29·8	57·1	3 45·4	21 3·0	1 42·5	S. 12·7
9 33·3	57·0	3 43·7	21 10·3	1 45·7	S. 17·1
10 30·7	57·2	3 34·0	22 5·7	1 49·1	S. 20·4
11 25·6	57·6	3 19·2	22 2·4	1 51·7	S. 22·4

TABLE XXI.

Showing the Difference in the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water, and the Mean Interval and the Difference between the Height of High Water and the Mean Height.

Upper Transits, P.M.

Moon's Transit, P.M.	January.			February.			March.		
	Diurnal Inequality.		Moon's Declination.	Diurnal Inequality.		Moon's Declination.	Diurnal Inequality.		Moon's Declination.
	Interval.	Height of High Water.		Interval.	Height of High Water.		Interval.	Height of High Water.	
h m	m	feet.	°	m	feet.	°	m	feet.	°
0 30	+ 2·3	·00	S. 19·1	− 2·4	− ·14	S. 10·4	+ 1·8	− ·15	N. 2·1
1 30	− 0·9	+ ·12	S. 15·1	+ 3·7	− ·40	S. 5·0	+ 1·1	− ·23	N. 7·6
2 30	+ 1·8	+ ·09	S. 9·9	+ 2·6	− ·24	N. 2·3	+ 8·2	− ·23	N. 13·4
3 30	0·0	+ ·05	S. 4·3	− 0·4	− ·26	N. 8·4	+ 1·4	− ·30	N. 17·0
4 30	+ 8·0	− ·05	N. 1·4	+ 4·5	− ·28	N. 14·3	+ 0·8	− ·38	N. 20·8
5 30	+ 2·7	− ·01	N. 8·7	+11·9	− ·29	N. 17·9	− 1·1	− ·22	N. 22·2
6 30	+ 4·8	− ·14	N. 13·9	+ 6·0	− ·02	N. 20·7	+ 1·9	+ ·07	N. 23·0
7 30	0·0	+ ·07	N. 17·5	+ 0·2	− ·02	N. 22·8	+ 2·6	− ·23	N. 22·3
8 30	+ 3·7	+ ·03	N. 20·5	+ 3·9	− ·08	N. 22·6	− 1·1	− ·19	N. 18·6
9 30	+ 1·8	− ·34	N. 22·9	+ 1·0	− ·02	N. 21·9	− 2·7	− ·03	N. 15·9
10 30	+ 1·7	− ·35	N. 23·1	+ 0·6	− ·15	N. 18·4	− 2·8	− ·03	N. 11·4
11 30	+ 2·5	− ·25	N. 21·8	+ 0·5	− ·13	N. 15·3	− 1·9	+ ·10	N. 4·7
	April.			May.			June.		
0 30	+ 0·9	− ·22	N. 12·7	+ 0·1	− ·12	N. 20·5	− 1·5	− ·11	N. 22·9
1 30	+ 3·4	− ·22	N. 17·0	+ 1·7	− ·17	N. 22·0	+ 0·2	− ·21	N. 21·9
2 30	− 0·8	− ·24	N. 20·0	− 4·1	− ·16	N. 23·3	− 1·5	− ·11	N. 19·4
3 30	− 1·9	− ·14	N. 22·2	− 4·6	− ·60	N. 22·0	− 4·1	− ·07	N. 16·0
4 30	− 0·8	− ·41	N. 22·4	− 3·3	− ·26	N. 20·0	− 4·3	− ·21	N. 11·2
5 30	− 0·7	− ·44	N. 22·9	− 7·3	− ·39	N. 16·6	− 5·1	− ·04	N. 5·8
6 30	+ 2·3	− ·43	N. 19·4	− 3·7	− ·21	N. 11·9	− 3·7	− ·21	S. 0·3
7 30	+ 2·1	− ·40	N. 16·8	− 2·8	− ·16	N. 5·4	− 3·9	− ·12	S. 6·6
8 30	− 0·6	− ·38	N. 11·1	− 1·8	− ·03	S. 0·5	− 1·4	+ ·12	S. 12·4
9 30	− 0·6	− ·08	N. 5·9	− 2·8	+ ·06	S. 6·8	− 0·1	− ·02	S. 17·6
10 30	− 2·0	− ·13	S. 0·9	− 8·8	+ ·13	S. 11·4	+ 0·5	+ ·04	S. 20·3
11 30	− 1·4	+ ·12	S. 7·7	− 1·5	+ ·01	S. 16·3	+ 1·3	+ ·05	S. 22·2
	July.			August.			September.		
0 30	− 3·4	− ·06	N. 19·5	− 3·7	− ·05	N. 10·5	− 2·2	+ ·16	0·0
1 30	− 4·6	− ·06	N. 16·3	− 1·1	+ ·07	N. 4·9	− 2·8	+ ·08	S. 6·2
2 30	− 2·9	·00	N. 10·4	− 1·7	+ ·13	S. 1·1	− 0·9	+ ·19	S. 12·7
3 30	− 3·6	+ ·05	N. 5·2	− 3·8	+ ·16	S. 7·1	− 0·4	+ ·15	S. 17·0
4 30	− 2·6	·00	S. 1·8	− 0·9	+ ·26	S. 13·3	− 1·0	+ ·28	S. 20·3
5 30	− 2·5	+ ·12	S. 7·6	− 1·2	+ ·12	S. 18·1	0·0	+ ·07	S. 22·2
6 30	− 4·2	+ ·03	S. 13·2	+ 0·1	+ ·04	S. 20·6	+ 1·7	+ ·43	S. 23·0
7 30	− 1·4	+ ·17	S. 16·9	+ 2·4	+ ·23	S. 22·7	+ 2·5	+ ·47	S. 22·2
8 30	+ 1·5	+ ·07	S. 19·8	+ 3·9	+ ·17	S. 23·2	+ 5·7	+ ·37	S. 19·7
9 30	+ 1·8	+ ·02	S. 22·6	+ 3·2	+ ·27	S. 21·6	+ 3·7	+ ·13	S. 16·7
10 30	+ 1·9	− ·04	S. 23·0	+ 6·3	+ ·24	S. 19·1	+ 3·4	− ·07	S. 11·6
11 30	+ 5·6	+ ·06	S. 21·7	+ 4·4	+ ·15	S. 16·0	+ 3·6	+ ·04	S. 5·0
	October.			November.			December.		
0 30	− 1·2	+ ·15	S. 11·9	− 4·0	+ ·19	S. 19·5	− 5·2	+ ·24	S. 22·5
1 30	− 0·9	− ·02	S. 16·4	+ 0·4	− ·03	S. 21·5	− 0·5	+ ·25	S. 22·5
2 30	− 0·2	+ ·37	S. 19·8	+ 1·2	+ ·03	S. 23·0	+ 0·4	− ·09	S. 20·1
3 30	− 0·7	+ ·04	S. 21·9	+ 2·6	+ ·34	S. 22·6	+ 1·3	+ ·33	S. 16·9
4 30	− 0·5	+ ·30	S. 22·8	+ 3·5	+ ·40	S. 19·7	+ 6·6	+ ·30	S. 11·0
5 30	+ 2·3	+ ·28	S. 22·0	+ 8·6	+ ·29	S. 17·2	+ 6·7	+ ·46	S. 5·1
6 30	+ 5·5	+ ·47	S. 20·5	+ 3·9	+ ·43	S. 12·5	+ 9·7	+ ·13	N. 0·3
7 30	+ 8·6	+ ·59	S. 17·0	+ 8·6	+ ·31	S. 6·3	+ 4·8	+ ·19	N. 6·0
8 30	+ 3·4	+ ·23	S. 11·7	+ 8·2	+ ·01	N. 0·2	+ 5·0	+ ·15	N. 12·3
9 30	+ 3·8	+ ·08	S. 6·8	+ 5·3	+ ·03	N. 5·3	+ 5·4	+ ·15	N. 17·2
10 30	+ 6·0	− ·01	S. 0·3	+ 4·0	− ·03	N. 11·9	+ 2·2	− ·30	N. 20·3
11 30	+ 4·3	− ·08	N. 5·6	+ 3·4	− ·21	N. 15·9	+ 2·2	+ ·21	N. 22·0

TABLE XXI. (Continued.)

Upper Transits, A.M.

Moon's Transit, A.M.	January.			February.			March.		
	Diurnal Inequality.		Moon's Declination.	Diurnal Inequality.		Moon's Declination.	Diurnal Inequality.		Moon's Declination.
	Interval.	Height of High Water.		Interval.	Height of High Water.		Interval.	Height of High Water.	
h m	m	feet.	°	m	feet.	°	m	feet.	°
0 30	− 2·7	− ·10	N. 18·8	− 2·1	+ ·09	N. 10·7	− 2·4	+ ·36	S. 1·7
1 30	0·0	− ·14	N. 15·0	− 2·2	+ ·43	N. 4·6	+ 1·9	+ ·13	S. 6·7
2 30	− 0·1	− ·29	N. 10·9	− 1·7	− ·11	S. 1·9	+ 1·1	+ ·01	S. 13·4
3 30	− 0·8	− ·26	N. 3·4	− 0·6	+ ·23	S. 7·7	− 0·5	+ ·06	S. 17·3
4 30	− 2·7	·00	S. 2·4	− 1·5	+ ·12	S. 13·8	+ 0·3	+ ·31	S. 20·4
5 30	− 3·2	− ·17	S. 8·2	− 3·6	+ ·05	S. 18·0	+ 5·7	+ ·13	S. 22·1
6 30	− 3·0	− ·15	S. 12·7	+ 1·3	+ ·14	S. 20·8	+ 0·7	+ ·03	S. 22·8
7 30	− 0·7	− ·09	S. 17·9	− 3·3	+ ·16	S. 22·2	+ 0·2	+ ·18	S. 22·8
8 30	+ 2·6	+ ·14	S. 21·1	− 3·9	+ ·16	S. 23·2	+ 3·9	+ ·05	S. 19·1
9 30	− 0·7	+ ·13	S. 23·0	− 3·2	− ·07	S. 21·8	− 1·5	− ·02	S. 16·8
10 30	− 0·4	+ ·33	S. 22·5	+ 1·0	+ ·20	S. 19·0	+ 1·9	− ·08	S. 11·2
11 30	+ 2·1	+ ·18	S. 21·6	+ 3·3	− ·12	S. 14·4	+ 2·5	·00	S. 4·6
	April.			May.			June.		
0 30	+ 0·2	+ ·15	S. 12·1	− ·30	+ ·19	S. 20·5	+ 0·6	+ ·13	S. 23·0
1 30	+ 1·0	+ ·07	S. 16·4	+ ·01	+ ·17	S. 22·4	+ 2·3	+ ·12	S. 21·9
2 30	+ 1·0	+ ·17	S. 20·8	+ ·21	+ ·24	S. 22·7	+ 4·2	+ ·12	S. 19·4
3 30	+ 6·6	+ ·15	S. 21·7	+ ·34	+ ·30	S. 22·7	+ 3·5	+ ·26	S. 15·8
4 30	+ 5·2	+ ·55	S. 22·9	+ ·55	+ ·23	S. 20·0	+ 6·1	+ ·02	S. 11·1
5 30	+ 1·9	+ ·47	S. 22·8	+ ·78	+ ·30	S. 16·4	+ 5·1	− ·03	S. 7·0
6 30	+ 1·4	+ ·44	S. 20·5	+ ·40	+ ·24	S. 12·6	+ 8·4	+ ·19	N. 1·1
7 30	+ 2·6	+ ·36	S. 16·1	+ ·40	+ ·26	S. 5·9	+ 6·0	+ ·02	N. 6·6
8 30	+ 0·3	+ ·29	S. 11·9	+ ·43	+ ·18	N. 0·4	+ 1·8	+ ·14	N. 12·7
9 30	+ 2·9	+ ·03	S. 5·1	+ ·47	+ ·21	N. 6·4	+ 0·1	− ·05	N. 16·6
10 30	+ 1·8	+ ·19	N. 1·1	+ ·07	+ ·23	N. 11·7	− 2·3	− ·01	N. 19·8
11 30	− 3·1	− ·17	N. 6·6	+ ·12	− ·04	N. 16·7	− 8·9	− ·08	N. 22·8
	July.			August.			September.		
0 30	+ 3·3	+ ·08	S. 19·0	+ 3·7	− ·01	S. 11·3	+ 3·4	− ·28	S. 0·1
1 30	+ 5·9	− ·02	S. 16·4	+ 3·1	− ·17	S. 5·3	+ 3·5	− ·25	N. 6·8
2 30	+ 3·9	− ·21	S. 11·3	+ 0·3	− ·23	N. 0·2	+ 3·1	− ·33	N. 12·1
3 30	+ 4·7	+ ·06	S. 4·5	+ 4·0	− ·17	N. 7·4	+ 3·1	− ·23	N. 16·3
4 30	+ 5·7	− ·16	N. 1·6	+ 4·7	− ·11	N. 12·3	+ 4·5	− ·26	N. 20·0
5 30	+ 6·1	− ·11	N. 7·4	+ 3·5	− ·12	N. 17·2	+ 4·5	− ·32	N. 22·3
6 30	+ 8·6	− ·04	N. 12·0	+ 2·4	− ·11	N. 21·0	+ 1·0	− ·35	N. 22·9
7 30	− 0·2	+ ·07	N. 16·0	− 2·3	− ·24	N. 22·5	− 1·6	− ·45	N. 22·4
8 30	− 0·1	− ·10	N. 20·6	− 1·0	− ·24	N. 22·4	− 0·9	− ·16	N. 19·6
9 30	+ 0·7	− ·06	N. 22·6	− 2·2	− ·36	N. 21·9	− 1·7	− ·24	N. 17·1
10 30	− 1·6	− ·01	N. 23·0	− 6·6	− ·14	N. 19·3	− 2·2	− ·04	N. 11·5
11 30	− 1·7	− ·07	N. 21·3	− 3·4	− ·10	N. 16·2	− 4·5	− ·07	N. 6·4
	October.			November.			December.		
0 30	+ 1·4	− ·27	N. 11·8	− 1·0	− ·10	N. 20·1	+ 3·0	− ·28	N. 22·4
1 30	+ 2·3	+ ·15	N. 15·5	+ 0·7	− ·24	N. 22·3	+ 2·8	− ·26	N. 22·9
2 30	+ 2·1	− ·32	N. 20·2	+ 0·7	− ·19	N. 22·7	+ 1·6	− ·23	N. 19·8
3 30	+ 1·1	− ·24	N. 22·0	− 4·4	− ·18	N. 21·7	− 1·2	− ·34	N. 15·6
4 30	+ 1·1	− ·42	N. 23·1	− 5·4	− ·55	N. 20·6	− 4·5	− ·30	N. 11·6
5 30	− 2·1	− ·53	N. 22·4	− 6·9	− ·53	N. 17·9	− 4·5	− ·57	N. 6·3
6 30	− 8·9	− ·49	N. 19·7	− 4·9	− ·61	N. 12·0	− 7·4	+ ·04	S. 0·4
7 30	− 2·0	− ·44	N. 17·0	− 4·5	− ·18	N. 6·1	− 2·5	− ·22	S. 6·7
8 30	− 3·7	− ·42	N. 12·2	− 5·2	− ·11	N. 0·9	− 3·5	+ ·09	S. 12·4
9 30	− 2·3	+ ·01	N. 6·2	− 5·2	− ·06	S. 5·6	− 2·4	− ·12	S. 16·5
10 30	− 2·2	− ·01	N. 1·0	− 3·1	+ ·02	S. 11·1	+ 1·2	+ ·13	S. 19·5
11 30	− 2·9	+ ·06	S. 5·3	− 3·2	− ·04	S. 16·6	− 0·8	− ·33	S. 22·9

TABLE XXI. (Continued.)

Lower (Interpolated) Transits, A.M.

Moon's Transit, A.M.	January.			February.			March.		
	Diurnal Inequality.		Moon's Declination.	Diurnal Inequality.		Moon's Declination.	Diurnal Inequality.		Moon's Declination.
	Interval.	Height of High Water.		Interval.	Height of High Water.		Interval.	Height of High Water.	
h m	m	feet.	°	m	feet.	°	m	feet.	°
0 30	− 0·4	+ ·02	S. 19·2	+ 2·2	− ·10	S. 10·1	− 1·6	− ·21	N. 0·9
1 30	− 0·1	− ·08	S. 16·2	− 2·8	− ·12	S. 3·6	− 1·8	+ ·12	N. 6·7
2 30	− 5·8	+ ·05	S. 10·8	− 2·7	+ ·13	N. 1·3	− 3·7	+ ·12	N. 12·9
3 30	− 0·5	+ ·22	S. 3·3	+ 0·8	− ·04	N. 7·7	− 0·5	+ ·26	N. 17·5
4 30	− 7·3	− ·07	N. 2·5	− 4·4	− ·17	N. 13·0	− 2·1	+ ·23	N. 20·8
5 30	− 9·6	− ·14	N. 7·6	− 5·4	− ·20	N. 19·0	− 5·8	+ ·49	N. 21·6
6 30	− 9·1	+ ·03	N. 13·1	− 8·6	− ·04	N. 20·8	− 2·8	+ ·14	N. 23·4
7 30	− 3·6	− ·12	N. 17·5	− 1·6	− ·28	N. 22·7	− 1·2	+ ·44	N. 21·7
8 30	− 7·8	− ·09	N. 21·4	− 2·5	+ ·23	N. 21·9	− 4·8	+ ·45	N. 19·9
9 30	− 2·9	+ ·39	N. 22·3	− 5·7	+ ·06	N. 21·9	+ 1·9	+ ·35	N. 15·2
10 30	− 1·4	+ ·27	N. 22·4	+ 1·1	+ ·20	N. 18·7	0·0	+ ·29	N. 10·2
11 30	− 1·6	+ ·29	N. 20·9	+ 1·5	+ ·34	N. 15·0	− 0·1	+ ·08	N. 4·7
	April.			May.			June.		
0 30	− 1·6	− ·01	N. 12·4	+ 0·8	+ ·06	N. 19·6	+ 2·7	+ ·08	N. 22·7
1 30	− 1·4	+ ·08	N. 16·3	0·0	+ ·19	N. 21·7	+ 1·3	+ ·11	N. 22·0
2 30	+ 0·2	+ ·18	N. 20·5	+ 2·7	+ ·18	N. 22·2	+ 4·4	+ ·14	N. 19·9
3 30	+ 1·3	+ ·13	N. 22·0	+ 2·1	+ ·35	N. 21·9	+ 1·7	+ ·29	N. 16·2
4 30	+ 0·3	+ ·59	N. 22·8	− 0·9	+ ·11	N. 20·4	+ 5·1	+ ·30	N. 11·6
5 30	+ 3·9	+ ·25	N. 21·9	+ 3·5	+ ·42	N. 16·7	+ 8·9	+ ·20	N. 5·7
6 30	+ 1·7	+ ·32	N. 20·3	+ 7·0	+ ·52	N. 11·4	+ 3·8	+ ·22	S. 0·3
7 30	+ 1·3	+ ·30	N. 15·8	+ 2·4	+ ·14	N. 6·5	+ 0·8	+ ·18	S. 6·7
8 30	− 4·8	+ ·39	N. 11·1	− 0·1	+ ·10	S. 0·5	− 0·3	+ ·05	S. 12·1
9 30	− 1·2	+ ·24	N. 6·0	− 1·3	+ ·18	S. 6·0	− 0·6	+ ·06	S. 16·4
10 30	+ 1·3	+ ·18	S. 0·3	− 0·8	+ ·08	S. 12·3	− 4·5	− ·14	S. 20·0
11 30	+ 0·3	+ ·04	S. 6·4	+ 0·7	+ ·07	S. 16·5	− 2·8	+ ·02	S. 22·3
	July.			August.			September.		
0 30	+ 3·2	+ ·14	N. 19·3	+ 3·2	− ·05	N. 11·1	+ 6·6	+ ·06	N. 0·8
1 30	+ 4·6	+ ·09	N. 16·1	+ 3·3	+ ·03	N. 5·6	+ 3·8	+ ·05	S. 6·7
2 30	+ 2·0	+ ·20	N. 11·2	+ 4·8	− ·04	S. 1·5	+ 1·3	+ ·03	S. 12·0
3 30	+ 5·5	+ ·08	N. 5·2	+ 5·4	− ·07	S. 7·1	+ 4·2	− ·06	S. 16·1
4 30	+ 3·7	+ ·15	S. 2·1	+ 4·1	− ·16	S. 12·9	+ 0·1	− ·01	S. 20·4
5 30	+ 4·8	+ ·13	S. 6·8	+ 6·8	·00	S. 17·2	− 3·4	+ ·04	S. 22·3
6 30	+ 3·0	+ ·06	S. 12·5	− 0·6	− ·05	S. 21·2	− 6·9	− ·34	S. 22·9
7 30	+ 1·8	+ ·16	S. 16·7	− 1·4	− ·25	S. 22·3	− 6·7	− ·28	S. 22·4
8 30	− 1·3	− ·08	S. 20·4	− 5·3	− ·23	S. 22·6	− 7·0	− ·53	S. 20·1
9 30	− 3·1	− ·05	S. 22·9	− 4·6	− ·15	S. 21·9	− 4·6	− ·16	S. 17·0
10 30	− 3·2	− ·19	S. 22·9	− 3·4	− ·22	S. 20·0	− 7·6	− ·10	S. 11·2
11 30	− 5·0	− ·09	S. 21·8	− 6·4	+ ·07	S. 15·6	− 4·7	− ·07	S. 6·3
	October.			November.			December.		
0 30	+ 5·7	+ ·14	S. 11·0	+ 3·9	− ·07	S. 20·3	− 0·7	·00	S. 22·6
1 30	+ 2·8	− ·05	S. 15·4	− 1·9	+ ·16	S. 22·1	− 1·9	+ ·02	S. 22·8
2 30	+ 1·8	− ·19	S. 19·9	− 0·4	− ·10	S. 22·7	− 4·8	·00	S. 19·5
3 30	+ 2·4	− ·13	S. 22·3	+ 1·5	− ·17	S. 22·1	− 4·0	− ·07	S. 16·3
4 30	− 1·8	− ·04	S. 22·8	− 4·4	− ·34	S. 21·0	− 4·9	+ ·03	S. 11·3
5 30	− 6·9	+ ·02	S. 22·5	− 5·7	− ·63	S. 17·4	− 6·4	− ·04	S. 6·9
6 30	− 7·6	− ·10	S. 20·3	− 5·3	− ·23	S. 13·0	− 8·7	− ·38	S. 0·5
7 30	−11·1	− ·56	S. 17·6	− 7·1	− ·44	S. 6·2	− 6·4	+ ·04	N. 7·2
8 30	− 6·0	− ·25	S. 12·5	− 5·8	− ·27	S. 0·8	− 3·1	− ·13	N. 11·8
9 30	− 6·5	− ·22	S. 7·0	− 6·9	+ ·03	N. 6·0	− 3·1	− ·01	N. 16·6
10 30	− 6·0	− ·17	S. 1·2	− 0·5	− ·16	N. 11·4	− 0·5	− ·05	N. 19·7
11 30	− 6·0	+ ·02	N. 5·7	− 5·1	+ ·06	N. 16·4	+ 0·6	+ ·24	N. 22·6

TABLE XXI. (Continued.)

Lower (Interpolated) Transits, P.M.

Moon's Transit, P.M.	January.			February.			March.		
	Diurnal Inequality.		Moon's Declination.	Diurnal Inequality.		Moon's Declination.	Diurnal Inequality.		Moon's Declination.
	Interval.	Height of High Water.		Interval.	Height of High Water.		Interval.	Height of High Water.	
h m	m	feet.	°	m	feet.	°	m	feet.	°
0 30	− 1·9	+ ·07	N. 20·0	+ 2·1	+ ·32	N. 9·5	+ 3·0	+ ·01	S. 0·8
1 30	+ 0·8	+ ·16	N. 15·7	+ 1·3	+ ·14	N. 4·4	− 0·7	+ ·02	S. 7·5
2 30	+ 3·4	+ ·15	N. 8·8	+ 7·2	+ ·20	S. 1·9	+ 0·7	− ·04	S. 13·3
3 30	+ 3·4	− ·06	N. 3·9	0·0	+ ·06	S. 7·8	+ 0·4	− ·14	S. 17·1
4 30	+ 3·9	+ ·15	S. 2·4	+ 2·8	+ ·58	S. 14·0	+ 3·2	− ·12	S. 20·4
5 30	+ 8·3	+ ·36	S. 8·5	− 0·9	+ ·35	S. 18·1	+ 2·6	− ·49	S. 22·8
6 30	+ 7·0	+ ·03	S. 13·4	− 5·4	− ·08	S. 20·6	+ 0·5	− ·23	S. 23·0
7 30	+ 4·9	+ ·18	S. 18·0	+ 5·7	+ ·10	S. 22·6	+ 2·6	− ·43	S. 21·7
8 30	+ 8·5	− ·10	S. 20·5	− 2·1	− ·33	S. 23·2	+ 2·0	− ·28	S. 19·7
9 30	+ 0·3	− ·07	S. 22·2	− 1·5	− ·14	S. 21·6	+ 1·0	− ·33	S. 15·7
10 30	+ 0·4	− ·32	S. 23·3	− 3·2	− ·32	S. 18·6	+ 1·1	− ·16	S. 10·0
11 30	+ 2·1	− ·29	S. 20·5	− 6·2	− ·23	S. 14·5	− 0·6	− ·20	S. 4·7
	April.			May.			June.		
0 30	+ 0·2	+ ·05	S. 13·3	− 0·9	− ·12	S. 19·4	− 2·3	− ·11	S. 22·8
1 30	− 3·2	+ ·08	S. 16·9	− 1·2	− ·12	S. 22·0	− 4·6	− ·07	S. 21·8
2 30	− 0·3	− ·05	S. 19·6	− 1·8	− ·29	S. 22·9	− 4·5	− ·23	S. 20·0
3 30	− 1·0	− ·12	S. 22·1	− 1·1	− ·04	S. 20·9	− 3·2	+ ·02	S. 16·5
4 30	− 2·9	+ ·12	S. 23·2	− 2·7	− ·21	S. 19·7	− 4·5	− ·18	S. 10·8
5 30	+ 1·6	− ·36	S. 21·6	− 5·2	− ·39	S. 17·2	− 8·3	− ·10	S. 5·7
6 30	− 4·9	− ·23	S. 19·9	− 4·1	− ·47	S. 11·8	− 6·7	− ·14	N. 0·6
7 30	− 5·2	− ·32	S. 15·8	− 4·6	− ·27	S. 5·2	− 3·9	− ·15	N. 6·6
8 30	− 3·4	− ·32	S. 11·2	− 1·4	− ·35	0·0	+ 0·3	− ·10	N. 12·0
9 30	− 1·2	− ·24	S. 4·9	− 1·6	− ·04	N. 6·5	+ 0·8	− ·02	N. 17·0
10 30	− 0·3	− ·13	N. 0·9	− 9·0	− ·10	N. 11·8	+ 1·2	+ ·12	N. 20·3
11 30	− 3·1	+ ·06	N. 6·4	+ 0·1	− ·09	N. 16·9	+ 1·4	·00	N. 21·5
	July.			August.			September.		
0 30	− 3·1	− ·14	S. 20·0	− 5·3	+ ·05	S. 11·4	− 7·0	·00	S. 0·2
1 30	− 4·8	− ·02	S. 15·0	− 4·5	+ ·02	S. 4·8	− 5·5	+ ·04	N. 6·2
2 30	− 3·4	+ ·03	S. 11·1	− 5·0	+ ·14	N. 1·1	− 2·7	+ ·01	N. 12·3
3 30	− 2·6	− ·07	S. 4·6	− 5·3	+ ·05	N. 7·9	− 8·3	+ ·15	N. 17·4
4 30	− 8·5	+ ·10	N. 1·3	− 6·7	− ·03	N. 12·2	− 3·8	− ·03	N. 20·0
5 30	− 8·3	− ·18	N. 7·9	− 6·3	+ ·05	N. 17·7	− 0·5	+ ·30	N. 22·2
6 30	− 5·0	− ·05	N. 12·9	− 1·5	+ ·16	N. 20·8	+ 4·2	+ ·24	N. 22·7
7 30	+ 0·2	− ·28	N. 17·2	+ 1·9	+ ·21	N. 22·2	+ 4·9	+ ·17	N. 22·5
8 30	− 0·2	+ ·11	N. 20·1	+ 2·7	+ ·25	N. 22·7	+ 2·0	+ ·31	N. 20·0
9 30	+ 1·0	+ ·06	N. 22·3	+ 4·4	+ ·14	N. 22·3	+ 4·1	+ ·28	N. 16·0
10 30	+ 2·3	+ ·23	N. 23·0	+ 4·2	+ ·41	N. 19·2	+ 5·1	+ ·20	N. 12·7
11 30	+ 1·0	+ ·12	N. 22·5	+ 6·5	·00	N. 15·9	+ 4·9	+ ·13	N. 5·6
	October.			November.			December.		
0 30	− 4·6	− ·01	N. 11·8	− 1·7	− ·08	N. 19·5	+ 2·0	− ·04	N. 23·0
1 30	− 6·0	− ·05	N. 15·3	+ 0·7	+ ·12	N. 21·7	− 0·3	+ ·06	N. 22·6
2 30	− 4·1	+ ·20	N. 19·3	− 2·6	+ ·23	N. 23·6	+ 2·7	+ ·30	N. 19·7
3 30	− 2·4	+ ·30	N. 21·9	− 0·1	+ ·04	N. 22·2	+ 3·2	+ ·08	N. 16·0
4 30	− 1·6	+ ·19	N. 22·7	+ 6·3	+ ·22	N. 20·1	+ 2·5	− ·04	N. 11·5
5 30	+ 6·3	+ ·21	N. 20·3	+ 4·9	+ ·81	N. 17·3	+ 6·6	+ ·28	N. 5·6
6 30	+10·2	+ ·15	N. 20·1	+ 7·0	+ ·32	N. 12·2	+ 3·5	+ ·11	S. 0·7
7 30	+ 6·7	+ ·52	N. 16·7	+ 6·3	+ ·46	N. 5·7	+ 6·5	·00	S. 6·1
8 30	+ 7·9	+ ·37	N. 12·7	+ 4·6	+ ·43	N. 0·8	+ 0·6	− ·05	S. 12·7
9 30	+ 4·3	+ ·10	N. 7·0	+ 3·7	·00	S. 6·6	− 0·8	− ·05	S. 17·1
10 30	+ 5·1	+ ·23	N. 0·5	+ 1·1	+ ·21	S. 11·8	+ 0·5	+ ·19	S. 20·4
11 30	+ 3·3	+ ·01	S. 5·6	+ 3·3	+ ·13	S. 15·8	− 2·7	− ·09	S. 22·4

Table XXII.

Showing the Interval between the Moon's Transit in the first column and the fourth succeeding for each month of the year.

Moon's Transit.	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	October.	Nov.	Dec.	Mean.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
0 30	1 40·1	1 34·8	1 35·2	1 43·9	1 50·6	1 45·1	1 41·6	1 34·7	1 35·7	1 42·7	1 49·9	1 48·2	1 41·9
1 30	1 36·0	1 33·4	1 37·8	1 47·2	1 51·5	1 45·6	1 36·2	1 32·2	1 37·3	1 46·4	1 50·7	1 45·4	1 41·6
2 30	1 32·1	1 34·0	1 40·9	1 48·4	1 48·6	1 40·9	1 33·2	1 33·5	1 40·7	1 48·0	1 48·9	1 40·5	1 40·8
3 30	1 30·5	1 36·5	1 45·1	1 49·3	1 45·5	1 34·8	1 31·9	1 36·0	1 44·7	1 49·1	1 45·2	1 35·5	1 40·3
4 30	1 31·8	1 40·0	1 46·9	1 46·8	1 40·2	1 32·8	1 32·5	1 40·1	1 46·6	1 47·4	1 40·0	1 32·4	1 39·8
5 30	1 36·3	1 45·3	1 48·2	1 44·1	1 35·6	1 31·1	1 36·4	1 45·1	1 49·3	1 44·5	1 36·0	1 30·9	1 40·2
6 30	1 40·9	1 47·4	1 47·5	1 40·6	1 32·2	1 32·0	1 41·0	1 48·3	1 47·6	1 41·2	1 32·5	1 31·9	1 40·3
7 30	1 46·7	1 49·5	1 45·1	1 36·3	1 32·2	1 35·9	1 45·2	1 51·3	1 44·3	1 36·7	1 31·9	1 35·0	1 40·8
8 30	1 50·4	1 47·9	1 42·1	1 34·2	1 33·2	1 41·4	1 49·3	1 50·1	1 42·3	1 34·4	1 33·1	1 41·1	1 41·6
9 30	1 50·7	1 45·9	1 39·4	1 34·3	1 37·4	1 46·6	1 50·8	1 47·6	1 39·4	1 33·8	1 37·1	1 45·5	1 42·4
10 30	1 49·7	1 41·2	1 36·6	1 36·3	1 42·8	1 49·3	1 49·5	1 43·2	1 36·6	1 35·6	1 41·3	1 48·2	1 42·5
11 30	1 48·0	1 37·3	1 35·5	1 39·9	1 47·3	1 51·0	1 45·7	1 38·4	1 35·4	1 38·7	1 46·4	1 49·1	1 42·7

Table XXIII.

Showing the Difference in the Interval between the Moon's Transit in the first column and the fourth succeeding for each month of the year, and the Mean of all.

Moon's Transit.	January.	February.	March.	April.	May.	June.	July.	August.	Sept.	Oct.	Nov.	Dec.	Moon's Transit.
h m	m	m	m	m	m	m	m	m	m	m	m	m	h m
0 30	− 1·8	− 7·1	− 6·7	+ 2·0	+ 8·7	+ 3·2	− 0·3	− 7·2	− 6·2	+ 0·8	+ 8·0	+ 6·3	0 30
1 30	− 5·6	− 8·2	− 3·8	+ 5·6	+ 9·9	+ 4·0	− 5·4	− 9·4	− 4·3	+ 4·8	+ 9·1	+ 3·8	1 30
2 30	− 8·7	− 6·8	+ 0·1	+ 7·6	+ 7·8	+ 0·1	− 7·6	− 7·3	− 0·1	+ 7·2	+ 8·1	− 0·3	2 30
3 30	− 9·8	− 3·8	+ 4·8	+ 9·0	+ 5·2	− 5·5	− 8·4	− 4·3	+ 4·4	+ 8·8	+ 4·9	− 4·8	3 30
4 30	− 8·0	+ 0·2	+ 7·1	+ 7·0	+ 0·4	− 7·0	− 7·3	+ 0·3	+ 6·8	+ 7·6	+ 0·2	− 7·4	4 30
5 30	− 3·9	+ 5·1	+ 8·0	+ 3·9	− 4·6	− 9·1	− 3·8	+ 4·9	+ 9·1	+ 4·3	− 4·2	− 9·3	5 30
6 30	+ 0·6	+ 7·1	+ 7·2	+ 0·3	− 8·1	− 8·3	+ 0·7	+ 8·0	+ 7·3	+ 0·9	− 7·8	− 8·4	6 30
7 30	+ 5·9	+ 8·7	+ 4·3	− 4·5	− 8·6	− 4·9	+ 4·7	+10·5	+ 3·5	− 4·1	− 8·9	− 5·8	7 30
8 30	+ 8·8	+ 6·3	+ 0·5	− 7·4	− 8·4	− 0·2	+ 7·7	+ 8·5	+ 0·7	− 7·2	− 8·5	− 0·5	8 30
9 30	+ 8·3	+ 3·5	− 3·0	− 8·1	− 5·0	+ 4·2	+ 8·4	+ 5·2	− 3·0	− 8·6	− 5·3	+ 3·1	9 30
10 30	+ 7·2	− 1·3	− 5·9	− 6·2	+ 0·3	+ 6·8	+ 7·4	+ 0·7	− 5·9	− 6·9	− 1·2	+ 5·7	10 30
11 30	+ 5·3	− 5·4	− 7·2	− 2·8	+ 4·6	+ 8·3	+ 3·0	− 4·3	− 7·3	− 4·0	+ 3·7	+ 6·4	11 30

Table XXIV.

Showing the Interval between the Moon's Transit in the first column and the fourth succeeding for every minute of the Moon's Horizontal Parallax.

Apparent Solar Time of Moon's Transit.	H. P. *54′*.	H. P. *55′*.	H. P. *56′*.	H. P. *57′*.	H. P. *58′*.	H. P. *59′*.	H. P. 60′.	H. P. 61′.
h m	h m	h m	h m	h m	h m	h m	h m	h m
0 30	1 30·3	1 33·2	1 36·4	1 40·0	1 44·3	1 47·9	1 52·3	1 55·8
1 30	1 30·2	1 33·4	1 36·1	1 40·3	1 44·1	1 46·6	1 51·1	1 55·1
2 30	1 30·9	1 32·5	1 36·7	1 39·2	1 43·2	1 47·1	1 50·5	1 53·1
3 30	1 30·2	1 33·0	1 36·0	1 40·3	1 43·6	1 47·3	1 50·0	
4 30	1 31·2	1 33·4	1 36·5	1 40·6	1 43·0	1 48·0	1 48·8	
5 30	1 31·0	1 32·9	1 36·9	1 40·4	1 44·6	1 48·4		
6 30	1 30·9	1 33·2	1 36·2	1 40·4	1 44·9	1 49·2		
7 30	1 30·3	1 33·1	1 36·9	1 41·2	1 45·1	1 49·4	1 54·7	
8 30	1 30·1	1 32·8	1 37·4	1 41·0	1 45·6	1 49·1	1 54·5	
9 30	1 30·4	1 32·6	1 37·7	1 40·6	1 45·4	1 50·0	1 52·9	1 58·2
10 30	1 30·1	1 32·8	1 37·7	1 40·9	1 44·4	1 48·6	1 53·3	1 57·4
11 30	1 30·1	1 33·1	1 36·9	1 40·3	1 44·8	1 48·7	1 51·8	1 57·1

Table XXV.

Showing the Difference in the Interval between the Moon's Transit in the first column and the fourth succeeding for every minute of the Moon's Horizontal Parallax, and that for Parallax 57′.

Apparent Solar Time of Moon's Transit.	H. P. 54′.	H. P. 55′.	H. P. 56′.	H. P. 57′.	H. P. 58′.	H. P. 59′.	H. P. 60′.	H. P. 61′.
h m	m	m	m	m	m	m	m	m
0 30	− 9·7	− 6·8	− 3·6	0	+ 4·3	+ 7·9	+12·3	+15·8
1 30	−10·1	− 6·9	− 4·2	0	+ 3·8	+ 6·3	+10·8	+14·8
2 30	− 8·3	− 6·7	− 2·5	0	+ 4·0	+ 7·9	+11·3	+13·9
3 30	−10·1	− 7·3	− 4·3	0	+ 3·3	+ 7·0	+ 9·7	
4 30	− 9·4	− 7·2	− 4·1	0	+ 2·4	+ 7·4	+ 8·2	
5 30	− 9·4	− 7·5	− 3·5	0	+ 4·2	+ 8·0		
6 30	− 9·5	− 7·2	− 4·2	0	+ 4·5	+ 8·8		
7 30	−10·9	− 8·1	− 4·3	0	+ 3·9	+ 8·2	+13·5	
8 30	−10·9	− 8·2	− 3·6	0	+ 4·6	+ 8·1	+13·5	
9 30	−10·2	− 8·0	− 2·9	0	+ 4·8	+ 9·4	+12·3	+17·6
10 30	−10·8	− 8·1	− 3·2	0	+ 3·5	+ 7·7	+12·4	+16·5
11 30	−10·2	− 7·2	− 3·4	0	+ 4·5	+ 8·4	+11·5	+16·8

Table XXVI.

Showing the Interval between the Moon's Transit in the first column and the fourth succeeding for every three degrees of Declination.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Mean.
h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m	h m
0 30	1 34·2	1 35·2	1 36·5	1 36·6	1 39·6	1 40·9	1 44·2	1 47·2	1 50·0	1 51·9	1 41·6
1 30	1 33·1	1 34·6	1 35·0	1 36·2	1 38·4	1 41·4	1 43·0	1 47·1	1 48·4	1 51·8	1 40·9
2 30	1 33·3	1 32·4	1 34·5	1 35·3	1 37·5	1 39·7	1 42·3	1 44·9	1 47·6	1 50·5	1 39·8
3 30	1 31·7	1 31·8	1 31·8	1 34·6	1 36·4	1 39·9	1 43·1	1 44·7	1 47·4	1 51·1	1 39·2
4 30	1 31·1	1 31·5	1 32·2	1 33·0	1 36·0	1 37·0	1 42·0	1 43·7	1 46·2	1 50·6	1 38·3
5 30	1 30·5	1 31·3	1 32·4	1 34·2	1 35·0	1 38·7	1 42·3	1 44·2	1 46·9	1 49·8	1 38·5
6 30	1 31·4	1 32·2	1 32·3	1 33·3	1 35·6	1 37·9	1 42·2	1 44·3	1 47·2	1 50·8	1 38·7
7 30	1 31·8	1 31·7	1 33·7	1 35·7	1 37·2	1 39·0	1 43·0	1 44·8	1 47·9	1 51·3	1 39·6
8 30	1 33·3	1 34·4	1 34·4	1 34·6	1 37·1	1 40·7	1 43·7	1 46·2	1 48·7	1 52·7	1 40·6
9 30	1 34·5	1 34·6	1 35·8	1 36·5	1 39·3	1 40·0	1 44·1	1 46·3	1 48·5	1 52·2	1 41·2
10 30	1 35·1	1 35·0	1 36·2	1 37·7	1 39·2	1 40·6	1 45·0	1 45·4	1 49·8	1 53·0	1 41·7
11 30	1 35·0	1 36·1	1 35·9	1 37·7	1 39·4	1 41·9	1 44·6	1 47·2	1 48·8	1 52·8	1 41·9

Table XXVII.

Showing the Difference in the Interval between the Moon's Transit in the first column and the fourth succeeding for every three degrees of Declination, and that for Declination 15°.

Moon's Transit.	0° Decl.	3° Decl.	6° Decl.	9° Decl.	12° Decl.	15° Decl.	18° Decl.	21° Decl.	24° Decl.	27° Decl.	Moon's Transit.
h m	m	m	m	m	m	m	m	m	m	m	h m
0 30	− 6·7	− 5·7	− 4·4	− 4·3	− 1·3	0	+ 3·3	+ 6·3	+ 9·1	+ 11·0	0 30
1 30	− 8·3	− 6·8	− 6·4	− 5·2	− 3·0	0	+ 1·6	+ 5·7	+ 7·0	+ 10·4	1 30
2 30	− 6·4	− 7·3	− 5·2	− 4·4	− 2·2	0	+ 2·6	+ 5·2	+ 7·9	+ 10·8	2 30
3 30	− 8·2	− 8·1	− 8·1	− 5·3	− 3·5	0	+ 3·2	+ 4·8	+ 7·5	+ 10·2	3 30
4 30	− 5·9	− 5·5	− 4·8	− 4·0	− 1·0	0	+ 5·0	+ 6·7	+ 9·2	+ 13·6	4 30
5 30	− 8·2	− 7·4	− 6·3	− 4·5	− 3·7	0	+ 3·6	+ 5·5	+ 8·2	+ 11·1	5 30
6 30	− 6·5	− 5·7	− 5·6	− 4·6	− 2·3	0	+ 4·3	+ 6·4	+ 9·3	+ 12·9	6 30
7 30	− 7·2	− 7·3	− 5·3	− 3·3	− 1·8	0	+ 4·0	+ 5·8	+ 8·9	+ 12·3	7 30
8 30	− 7·4	− 6·3	− 6·3	− 6·1	− 3·6	0	+ 3·0	+ 5·5	+ 8·0	+ 12·0	8 30
9 30	− 5·5	− 5·4	− 4·2	− 3·5	− 0·7	0	+ 4·1	+ 6·3	+ 8·5	+ 12·2	9 30
10 30	− 5·5	− 5·6	− 4·4	− 2·9	− 1·4	0	+ 4·4	+ 4·8	+ 9·2	+ 12·4	10 30
11 30	− 6·9	− 5·8	− 6·0	− 4·2	− 2·5	0	+ 2·7	+ 5·3	+ 6·9	+ 13·9	11 30

TABLE XXVIII.

Showing a Comparison between the Semimenstrual Correction at London in the Interval and in the Height, as deduced from theory and observation. See Plate XVIII.

Moon's Transit.	Interval. Ψ + constant.		Height. h.	
	Theory.	Observation.	Theory.	Observation.
h m	h m	h m	feet.	feet.
0 0	3 13·5		22·76	
0 30	3 5·3	3 5·7	22·77	22·80
1 0	2 57·0		22·70	
1 30	2 49·5	2 49·6	22·58	22·66
2 0	2 41·3		22·35	
2 30	2 35·0	2 35·1	22·09	21·94
3 0	2 29·0		21·73	
3 30	2 25·0	2 25·1	21·35	21·16
4 0	2 23·0		20·90	
4 30	2 21·5	2 21·4	20·47	20·17
5 0	2 28·0		20·10	
5 30	2 36·0	2 33·9	19·75	19·49
6 0	2 51·0		19·58	
6 30	3 9·0	3 8·8	19·47	19·44
7 0	3 24·0		19·64	
7 30	3 41·0	3 39·8	19·85	20·22
8 0	3 47·0		20·25	
8 30	3 52·0	3 52·0	20·63	21·14
9 0	3 50·0		21·10	
9 30	3 48·0	3 48·9	21·50	21·94
10 0	3 43·0		21·89	
10 30	3 37·0	3 37·2	22·22	22·46
11 0	3 29·0		22·47	
11 30	3 22·0	3 22·1	22·66	22·77

The argument in the preceding Table is the apparent solar time of the Moon's transit two days previous to the tide required. The constants employed in the calculation are

$$\log(A) = 9{\cdot}5841774 \quad D = 16{\cdot}69 \quad \log(E) = 0{\cdot}6468993.$$

See p. 224.

TABLE XXIX.

Showing the Calendar-month Inequality, as deduced from BERNOULLI's theory and from observation. See Plate XIX.

Moon's Transit.	January.					February.					March.					Moon's Transit.
	d Ψ		d h		Moon's Declination.	d Ψ		d h		Moon's Declination.	d Ψ		d h		Moon's Declination.	
	Theory.	Observation.	Theory.	Observation.		Theory.	Observation.	Theory.	Observation.		Theory.	Observation.	Theory.	Observation.		
h m	m	m	feet.	feet.	°	m	m	feet.	feet.	°	m	m	feet.	feet.	°	h m
0 30	0	− 2	−·49	−·10	19	0	− 3	+·08	+·21	10	0	0	+·32	+·07	5	0 30
1 30	0	− 3	−·36	−·11	16	− 2	− 1	+·16	+·04	6	− 1	0	+·25	+·08	8	1 30
2 30	+ 2	+ 2	−·13	−·01	11	+ 1	+ 1	+·16	+·14	5	0	− 1	+·10	−·08	13	2 30
3 30	+ 4	+ 4	+·03	+·25	6	0	− 1	+·10	+·20	8	− 3	− 4	−·11	−·19	17	3 30
4 30	+ 3	+ 6	+·10	+·28	5	− 3	− 1	−·09	+·03	14	− 9	− 7	−·36	−·39	23	4 30
5 30	+ 3	+10	+·08	+·02	9	− 4	− 2	−·28	−·35	18	− 6	− 9	−·49	−·52	22	5 30
6 30	0	+ 1	+·01	+·15	13	0	− 2	−·45	−·36	21	0	0	−·58	−·44	23	6 30
7 30	0	0	−·24	−·03	18	+ 7	0	−·54	−·22	23	+ 6	+ 6	−·49	−·29	22	7 30
8 30	+ 4	− 2	−·43	−·01	21	+ 7	+ 3	−·47	−·26	22	+ 6	+ 6	−·26	−·19	19	8 30
9 30	+ 3	+ 1	−·53	−·24	23	+ 4	0	−·45	−·19	22	+ 2	0	−·06	−·08	16	9 30
10 30	+ 2	− 2	−·66	−·25	23	+ 2	− 2	−·29	−·03	19	0	− 2	+·16	·00	11	10 30
11 30	+ 1	− 4	−·60	−·19	21	+ 2	− 4	−·07	+·09	14	+ 1	− 1	+·29	+·19	6	11 30
	Sun's Decl. 21°, and Par. 8″·94.					Sun's Decl. 13°, and Par. 8″·90.					Sun's Decl. 3°, and Par. 8″·84.					

TABLE XXIX. (Continued.)

Moon's Transit.	April.					May.					June.					Moon's Transit.
	d ψ.		d h.		Moon's Declination.	d ψ.		d h.		Moon's Declination.	d ψ.		d h.		Moon's Declination.	
	Theory.	Observation.	Theory.	Observation.		Theory.	Observation.	Theory.	Observation.		Theory.	Observation.	Theory.	Observation.		
h m	m	m	feet.	feet.	°	m	m	feet.	feet.	°	m	m	feet.	feet.	°	h m
0 30	0	+ 1	+·22	+·25	13	0	− 1	−·17	+·06	20	0	− 2	−·24	−·22	21	0 30
1 30	− 2	+ 1	+·04	−·21	17	− 1	0	−·28	−·17	22	0	− 1	−·29	−·35	22	1 30
2 30	− 3	− 2	−·12	−·06	20	− 1	− 3	−·30	−·22	23	+ 2	0	−·14	·00	20	2 30
3 30	− 4	− 5	−·24	−·21	22	+ 2	− 3	−·22	−·21	22	+ 7	+ 2	+·11	−·01	16	3 30
4 30	− 7	− 7	−·31	−·69	23	+ 2	− 1	−·07	−·08	20	+ 9	+ 9	+·36	+·43	11	4 30
5 30	− 3	− 4	−·32	−·41	22	+ 4	+ 2	+·10	+·20	17	+11	+10	+·55	+·56	7	5 30
6 30	0	+ 1	−·22	−·11	20	0	+ 2	+·34	+·34	12	0	+ 2	+·67	+·54	5	6 30
7 30	0	+ 2	−·02	−·05	16	− 8	− 3	+·42	+·42	7	−11	− 3	+·55	+·36	8	7 30
8 30	0	0	+·20	+·18	11	− 8	− 4	+·41	+·30	5	− 9	− 5	+·34	+·06	12	8 30
9 30	− 2	− 1	+·34	+·34	6	− 7	− 1	+·34	+·28	7	− 6	− 3	+·06	−·01	17	9 30
10 30	− 1	0	+·38	+·40	5	− 3	0	+·20	+·24	12	− 2	− 2	−·14	−·15	20	10 30
11 30	+ 1	0	+·37	+·41	7	+ 1	0	−·02	+·08	17	0	0	−·29	−·24	22	11 30
	Sun's Decl. 10°, and Par. 8″·76.					Sun's Decl. 19°, and Par. 8″·70.					Sun's Decl. 23°, and Par. 8″·66.					
	July.					August.					September.					
0 30	0	− 1	−·14	−·12	20	0	+ 4	+·30	+·02	11	0	+ 3	+·46	+·22	5	0 30
1 30	+ 1	+ 1	+·05	−·16	16	0	+ 2	+·41	−·02	7	− 1	+ 3	+·39	−·04	8	1 30
2 30	+ 4	+ 4	+·26	+·26	11	+ 3	+ 5	+·44	+·16	4	0	+ 2	+·26	+·13	12	2 30
3 30	+ 8	+ 8	+·41	+·38	6	+ 4	+ 4	+·35	+·18	8	− 3	+ 1	+·02	−·09	17	3 30
4 30	+ 9	+11	+·48	+·50	5	+ 4	+ 4	+·22	+·31	13	− 6	− 5	−·18	−·31	20	4 30
5 30	+ 9	+12	+·50	+·60	8	+ 2	+ 2	·00	−·02	18	− 4	− 7	−·36	−·34	22	5 30
6 30	0	+ 5	+·42	+·42	13	0	+ 2	−·16	−·16	21	0	+ 1	−·45	−·46	23	6 30
7 30	− 6	− 2	+·20	+·08	17	0	+ 3	−·21	−·25	22	+ 4	+ 7	−·36	−·30	22	7 30
8 30	− 2	− 1	−·01	−·13	20	+ 3	+ 5	−·24	−·23	23	+ 6	+ 6	−·18	−·14	20	8 30
9 30	− 1	0	−·22	−·26	23	0	+ 3	−·19	−·24	22	+ 3	+ 5	+·02	−·02	17	9 30
10 30	0	+ 1	−·27	−·26	23	0	+ 2	−·03	−·21	19	0	+ 6	+·26	+·08	12	10 30
11 30	0	− 1	−·25	−·25	22	0	+ 4	+·10	−·05	16	+ 1	+ 4	+·41	+·17	7	11 30
	Sun's Decl. 21°, and Par. 8″·66.					Sun's Decl. 14°, and Par. 8″·70.					Sun's Decl. 4°, and Par. 8″·76.					
	October.					November.					December.					
0 30	0	+ 3	+·13	+·13	12	0	− 1	−·42	−·21	20	0	− 2	−·77	−·28	23	0 30
1 30	− 1	+ 3	−·05	−·14	16	− 2	− 2	−·53	−·41	22	− 1	− 3	−·70	−·54	22	1 30
2 30	− 3	− 2	−·24	−·14	20	− 3	− 4	−·56	−·07	23	0	− 3	−·53	−·07	20	2 30
3 30	− 4	− 6	−·37	−·26	22	− 2	− 4	−·47	−·07	22	+ 3	+ 2	−·27	−·02	16	3 30
4 30	− 8	−11	−·45	−·24	23	− 4	− 4	−·34	−·21	20	+ 3	+ 5	−·01	+·25	11	4 30
5 30	− 6	−12	−·46	−·36	22	− 1	− 5	−·22	+·02	18	+ 5	+ 3	+·15	+·50	7	5 30
6 30	0	− 5	−·37	−·36	20	0	− 5	+·05	+·04	12	0	− 2	+·25	+·47	5	6 30
7 30	+ 3	+ 2	−·21	−·09	17	− 3	− 4	+·14	+·18	7	− 4	− 8	+·13	+·25	8	7 30
8 30	+ 2	+ 3	+·04	+·16	12	− 3	− 4	+·15	+·02	5	− 3	− 7	−·04	+·16	12	8 30
9 30	− 2	+ 3	+·19	+·26	7	− 3	− 2	+·09	+·21	7	− 2	− 4	−·32	−·05	17	9 30
10 30	− 1	+ 3	+·26	+·31	5	− 1	− 2	·00	+·05	10	0	− 4	−·53	−·18	20	10 30
11 30	+ 1	+ 4	+·24	+·19	7	+ 1	− 1	−·23	+·03	16	+ 2	− 1	−·70	−·47	23	11 30
	Sun's Decl. 9°, and Par. 8″·84.					Sun's Decl. 18°, and Par. 8″·90.					Sun's Decl. 23°, and Par. 8″·94.					

The sun's parallax was taken from DELAMBRE's Tables for the middle of the month. The numbers given in the column headed "Observation" may each be considered as resulting from the mean of from 80 to 100 observations.

Table XXX.

Showing the Moon's Parallax Correction, as deduced from Bernoulli's theory and from observation. See Plate XX.

Moon's Transit.	H. P. 54′.				H. P. 55′.				H. P. 56′.				H. P. 57′.				Moon's Transit.
	d ψ.		d h.		d ψ.		d h.		d ψ.		d h.		d ψ.		d h.		
	Theory.	Observation.	Theory.	Observation.	Theory.	Observation.	Theory.	Observation.	Theory.	Observation.	Theory.	Observation.	Theory.	Observation.	Theory.	Observation.	
h m	m	m	feet.	feet.	m	m	feet.	feet.	m	m	feet.	feet.	m	m	feet.	feet.	h m
0 30	0	− 1	−·66	−·62	0	− 1	−·45	−·51	0	− 2	−·23	−·27	0	0	·00	·00	0 30
1 30	− 2	− 4	−·66	−·65	− 2	− 3	−·45	−·41	− 1	− 3	−·23	−·18	0	0	·00	·00	1 30
2 30	− 4	− 5	−·64	−·76	− 3	− 2	−·44	−·48	− 1	0	−·23	−·25	0	0	·00	·00	2 30
3 30	− 6	−14	−·62	−·79	− 4	− 8	−·42	−·62	− 2	− 3	−·21	−·35	0	0	·00	·00	3 30
4 30	− 9	−13	−·61	−·87	− 6	−10	−·42	−·73	− 3	− 2	−·21	−·37	0	0	·00	·00	4 30
5 30	− 8	−13	−·64	−·88	− 5	− 8	−·44	−·66	− 2	− 4	−·22	−·32	6	0	·00	·00	5 30
6 30	0	− 3	−·66	−·66	0	− 3	−·45	−·54	0	0	−·23	−·20	0	0	·00	·00	6 30
7 30	+ 8	− 1	−·64	−·61	+ 5	+ 1	−·44	−·53	+ 2	− 1	−·22	+·17	0	0	·00	·00	7 30
8 30	+ 9	+ 4	−·61	−·77	+ 6	+ 2	−·42	−·40	+ 3	+ 3	−·21	−·21	0	0	·00	·00	8 30
9 30	+ 6	+ 3	−·62	−·50	+ 4	+ 2	−·42	−·34	+ 2	+ 1	−·21	−·19	0	0	·00	·00	9 30
10 30	+ 4	+ 2	−·64	−·38	+ 3	+ 2	−·44	−·33	+ 1	0	−·23	+·05	0	0	·00	·00	10 30
11 30	+ 2	+ 3	−·66	−·63	+ 2	+ 3	−·45	−·58	+ 1	+ 4	−·23	−·31	0	0	·00	·00	11 30
	H. P. 58′.				H. P. 59′.				H. P. 60′.				H. P. 61′.				
0 30	0	0	+·24	+·09	0	+ 1	+·49	+·26	0	+ 1	+·75	+·56	0	+ 2	+1·01	+·69	0 30
1 30	0	− 2	+·24	+·28	+ 1	+ 1	+·48	+·42	+ 2	+ 3	+·73	+·69	+ 2	+ 3	+0·99	+·83	1 30
2 30	+ 1	+ 5	+·23	+·17	+ 3	+ 5	+·47	+·36	+ 4	+ 8	+·72	+·61	+ 5	+ 8	+0·97	+·69	2 30
3 30	+ 2	+ 4	+·22	+·20	+ 4	+ 6	+·45	+·47	+ 6	+ 8	+·70	+·79	+ 8		+0·95		3 30
4 30	+ 2	+ 6	+·22	+·14	+ 5	+10	+·45	+·45	+ 7	+13	+·69	+·77	+ 9		+0·94		4 30
5 30	+ 3	+ 5	+·23	+·33	+ 5	+ 7	+·46	+·57	+ 6		+·71		+ 8		+0·97		5 30
6 30	0	+ 3	+·24	+·17	0	+ 6	+·49	+·69	0		+·75		0		+1·01		6 30
7 30	− 3	− 2	+·23	+·29	− 5	− 2	+·46	+·52	− 6	− 4	+·71	+·81	− 8		+0·97		7 30
8 30	− 2	+ 2	+·22	+·19	− 5	− 4	+·45	+·50	− 7	− 4	+·69	+·61	− 9		+0·94		8 30
9 30	− 2	− 2	+·22	+·26	− 4	− 3	+·45	+·38	− 6	− 6	+·70	+·70	− 8	− 6	+0·95	+·85	9 30
10 30	− 1	− 1	+·23	+·31	− 3	− 2	+·47	+·59	− 4	− 3	+·72	+·73	− 5	− 3	+0·97	+·87	10 30
11 30	0	+ 3	+·24	+·04	− 1	+ 5	+·48	+·10	− 2	+ 1	+·73	+·44	− 2	+ 1	+0·99	+·56	11 30

Table XXXI.

Showing the Moon's Declination Correction in the Interval and Height, as deduced from Bernoulli's theory and from observation. See Plate XXI.

Moon's Transit.	0° Declination.					3° Declination.					6° Declination.					Moon's Transit.
	Sun's Declination.	d ψ		d h		Sun's Declination.	d ψ		d h		Sun's Declination.	d ψ		d h		
		Theory.	Observation.	Theory.	Observation.		Theory.	Observation.	Theory.	Observation.		Theory.	Observation.	Theory.	Observation.	
h m	°	m	m	feet.	feet.	°	m	m	feet.	feet.	°	m	m	feet.	feet.	h m
0 30	4·4	0	+ 3	+·43	+·06	4·6	0	+ 1	+·41	+·16	6·7	0	+ 1	+·37	+·19	0 30
1 30	9·1	0	+ 6	+·38	+·02	8·9	0	0	+·37	+·26	8·5	+ 1	− 1	+·33	+·17	1 30
2 30	14·1	+ 2	+ 3	+·32	+·08	14·1	+ 2	+ 1	+·31	+·01	14·1	+ 2	+ 1	+·27	+·17	2 30
3 30	18·3	+ 5	+ 3	+·28	+·35	18·6	+ 5	+ 2	+·26	+·28	17·8	+ 5	0	+·22	+·39	3 30
4 30	21·0	+ 6	+ 7	+·32	+·14	21·1	+ 6	+ 5	+·31	+·38	20·6	+ 6	+ 6	+·27	+·23	4 30
5 30	22·8	+ 7	+ 6	+·39	+·35	22·5	+ 8	+ 4	+·40	+·27	21·9	+ 7	+ 3	+·36	+·44	5 30
6 30	22·8	0	+ 1	+·47	+·46	22·5	0	+ 3	+·47	+·55	22·0	0	+ 4	+·41	+·39	6 30
7 30	21·5	− 7	− 6	+·39	+·05	21·4	− 7	− 3	+·37	+·28	20·6	− 7	− 6	+·33	+·25	7 30
8 30	19·3	− 5	− 1	+·31	+·37	18·1	− 5	− 5	+·30	+·19	17·9	− 5	− 4	+·26	+·17	8 30
9 30	14·2	− 3	0	+·30	+·23	14·4	− 3	+ 2	+·29	+·37	13·9	− 3	+ 2	+·25	+·13	9 30
10 30	9·1	− 1	+ 1	+·36	+·34	9·2	− 1	+ 1	+·35	+·29	8·4	− 1	+ 1	+·31	+·21	10 30
11 30	4·5	0	+ 2	+·41	+·37	5·0	0	+ 1	+·39	+·34	6·7	+ 1	+ 1	+·35	+·09	11 30
	9° Declination.					12° Declination.					15° Declination.					
0 30	9·0	0	0	+·29	+·02	11·8	0	− 1	+·16	+·09	15·2	0	0	·00	·00	0 30
1 30	9·9	− 1	− 1	+·26	+·07	11·9	− 1	+ 1	+·15	+·01	13·9	0	0	·00	·00	1 30
2 30	13·4	+ 1	+ 1	+·22	−·04	12·4	+ 1	+ 1	+·13	+·07	13·3	0	0	·00	·00	2 30
3 30	16·5	+ 3	− 2	+·18	+·17	14·7	+ 1	− 2	+·10	+·15	13·0	0	0	·00	·00	3 30
4 30	19·6	+ 5	+ 5	+·21	+·41	17·6	+ 3	0	+·12	−·01	15·3	0	0	·00	·00	4 30
5 30	21·0	+ 6	+ 1	+·27	+·56	19·4	+ 5	+ 2	+·16	+·14	16·9	0	0	·00	·00	5 30
6 30	21·1	0	+ 3	+·33	+·31	19·4	0	+ 4	+·20	+·20	16·8	0	0	·00	·00	6 30
7 30	19·6	− 6	+ 1	+·26	+·26	18·1	− 4	− 1	+·15	·00	15·4	0	0	·00	·00	7 30
8 30	16·1	− 3	− 5	+·19	+·16	15·5	− 2	− 3	+·11	+·11	13·8	0	0	·00	·00	8 30
9 30	13·3	− 2	+ 2	+·20	+·14	12·5	− 1	+ 2	+·11	·00	13·2	0	0	·00	·00	9 30
10 30	9·6	0	+ 1	+·25	+·16	11·8	− 1	0	+·14	+·12	14·0	0	0	·00	·00	10 30
11 30	9·3	+ 1	− 5	+·29	+·03	12·0	+ 1	− 3	+·15	−·05	15·6	0	0	·00	·00	11 30

TABLE XXXI. (Continued.)

Moon's Transit.	18° Declination.					21° Declination.					Moon's Transit.
	Sun's Declination.	d ψ		d h		Sun's Declination.	d ψ		d h		
		Theory.	Observation.	Theory.	Observation.		Theory.	Observation.	Theory.	Observation.	
h m	°	m	m	feet.	feet.	°	m	m	feet.	feet.	h m
0 30	18·9	0	− 3	−·20	−·09	19·4	0	− 2	−·38	−·24	0 30
1 30	17·8	− 1	0	−·19	−·29	18·4	− 1	− 4	−·34	−·09	1 30
2 30	15·7	− 1	− 1	−·14	−·14	15·3	− 2	− 6	−·28	−·19	2 30
3 30	13·2	− 1	− 2	−·12	−·01	12·8	− 2	− 6	−·26	−·22	3 30
4 30	11·8	− 3	− 3	−·14	−·21	11·6	− 5	− 8	−·38	−·49	4 30
5 30	11·5	− 2	− 2	−·16	−·22	11·0	− 4	−10	−·32	−·38	5 30
6 30	11·3	0	+ 3	−·17	−·09	11·1	0	+ 3	−·34	−·31	6 30
7 30	12·3	+ 2	+ 3	−·16	−·16	11·5	+ 4	+ 4	−·31	−·39	7 30
8 30	13·5	+ 2	+ 2	−·13	−·12	13·0	+ 5	+ 1	−·28	−·24	8 30
9 30	15·0	+ 1	+ 3	−·13	−·21	15·4	+ 2	+ 2	−·27	−·31	9 30
10 30	18·1	0	− 0	−·17	+·02	18·0	+ 1	− 2	−·32	−·20	10 30
11 30	19·1	+ 1	− 5	−·21	−·10	19·9	0	− 3	−·38	−·21	11 30
	24° Declination.					27° Declination.					
0 30	21·0	0	− 4	−·58	−·37	22·3	0	− 7	−·79	− ·34	0 30
1 30	19·3	− 2	− 7	−·54	−·26	21·0	− 1	− 5	−·77	− ·68	1 30
2 30	16·4	− 3	− 5	−·46	−·34	17·8	− 3	−10	−·67	− ·55	2 30
3 30	13·0	− 4	− 9	−·44	−·24	13·9	− 6	−15	−·62	− ·57	3 30
4 30	10·5	− 7	−12	−·44	−·63	9·2	−11	−17	−·61	− ·84	4 30
5 30	9·8	− 6	−13	−·50	−·37	6·4	−10	−21	−·70	−1·01	5 30
6 30	9·4	0	− 1	−·54	−·50	6·6	0	− 4	−·75	− ·79	6 30
7 30	10·7	+ 6	+ 4	−·49	−·41	8·7	+ 9	+ 3	−·67	− ·76	7 30
8 30	13·0	+ 7	+ 2	−·44	−·45	13·8	+ 9	+ 5	−·61	− ·49	8 30
9 30	16·2	+ 4	+ 1	−·44	−·48	18·0	+ 4	+ 4	−·64	− ·60	9 30
10 30	19·3	+ 2	− 3	−·50	−·30	20·7	+ 2	− 2	−·71	− ·45	10 30
11 30	21·0	+ 1	− 5	−·58	−·46	22·2	+ 1	− 5	−·79	− ·46	11 30

TABLE XXXII.

Showing a Comparison between the Diurnal Inequality in the Interval, as deduced from theory and observation.

The numbers in the column headed "Theory" have been calculated by Mr. RUSSELL from the expression for d ψ in p. 223, making the constant $F = 10$.

Observation and theory agree in this respect, that there is no difference between the diurnal inequality for the upper and lower transits, and that it recurs after six months with a contrary sign. I deduced the numbers in the column headed "Observation" upon these suppositions from those given in Table XXI. *before I had seen Mr. RUSSELL's calculations.* The agreement is satisfactory with the expression derived from the equilibrium-theory; but in order to ascertain clearly the law of the diurnal inequality, I think it would be desirable to employ a greater number of observations.

Moon's Transit. P.M.	January.		February.		March.		April.		May.		June.		Moon's Transit. P.M.
	Observation.	Theory.	Observation.	Theory.	Observation.	Theory.	Observation.	Theory.	Observation.	Theory.	Observation.	Theory.	
h m	m	m	m	m	m	m	m	m	m	m	m	m	h m
0 30	0	0	0	0	0	0	0	0	0	0	0	0	0 30
1 30	+ 1	+ 1	+ 1	0	0	0	0	0	0	− 1	0	− 1	1 30
2 30	+ 3	+ 1	+ 3	0	+ 1	0	0	− 1	− 1	− 2	− 2	− 2	2 30
3 30	+ 3	+ 2	+ 3	0	+ 1	− 1	− 1	− 2	− 1	− 3	− 3	− 3	3 30
4 30	+ 4	+ 2	+ 3	0	+ 1	− 1	− 1	− 3	− 2	− 4	− 4	− 3	4 30
5 30	+ 5	+ 3	+ 4	+ 1	+ 1	− 1	− 2	− 4	− 4	− 5	− 5	− 4	5 30
6 30	+ 5	+ 4	+ 4	+ 3	+ 1	0	− 2	− 3	− 5	− 4	− 6	− 4	6 30
7 30	+ 4	+ 5	+ 3	+ 4	+ 0	+ 2	− 2	− 1	− 5	− 3	− 5	− 4	7 30
8 30	+ 4	+ 4	+ 3	+ 3	+ 1	+ 2	− 2	0	− 4	− 2	− 4	− 3	8 30
9 30	+ 5	+ 3	+ 3	+ 2	+ 1	+ 1	− 1	0	− 3	− 2	− 3	− 3	9 30
10 30	+ 3	+ 2	+ 2	+ 1	+ 1	+ 1	− 1	0	− 3	− 1	− 3	− 2	10 30
11 30	+ 1	+ 1	+ 1	+ 1	0	0	0	0	− 2	− 1	− 1	− 1	11 30

For the other months the same quantities recur with a contrary sign.

TABLE XXXIII.

This Table is intended to show that the deviations from the H. P. 57′ corresponding to the column headed "Mean" in Table II., have no sensible influence, so that the column in question may be considered as affording the Semimenstrual Inequality.

Moon's Transit.	Mean Par. (a).	Mean of $(a) = (b)$.	$a - b$.	Corrections for $(a - b)$ in		Moon's Transit.
				d Ψ.	d h.	
h m	′		′	m	feet.	
0 30	57·1		+ ·3	·00	+ ·07	0 30
1 30	57·3		+ ·3	·00	+ ·07	1 30
2 30	57·1		+ ·1	+ ·10	+ ·02	2 30
3 30	57·0		·0	·00	·00	3 30
4 30	56·9		− ·1	+ ·30	− ·02	4 30
5 30	56·7		− ·3	+ ·60	− ·07	5 30
6 30	56·7	57′·0	− ·3	·00	− ·07	6 30
7 30	56·8		− ·2	− ·60	− ·07	7 30
8 30	57·0		·0	− ·30	− ·02	8 30
9 30	57·1		+ ·1	·00	·00	9 30
10 30	57·3		+ ·3	− ·10	+ ·02	10 30
11 30	57·3		+ ·3	·00	+ ·07	11 30

TABLE XXXIV.

This Table is intended to show that the deviations of the Moon's Declination from 15°, corresponding to the column headed "Mean" in Table II., have no sensible influence.

Moon's Transit.	Mean Decl. $(a)'$.	Mean of $(a)' = (b)'$.	$a' - b'$.	Corrections for $(a' - b')$ in		Moon's Transit.
				d Ψ.	d h.	
h m	°		°	m	feet.	h m
0 30	14·7		− ·5	·00	+ ·02	0 30
1 30	15·0		− ·2	·00	+ ·01	1 30
2 30	15·1		− ·1	+ ·03	·00	2 30
3 30	15·2		·0	·00	·00	3 30
4 30	15·6		+ ·4	+ ·27	− ·02	4 30
5 30	15·8		+ ·6	+ ·20	− ·03	5 30
6 30	15·6	15°·2	+ ·4	·00	− ·02	6 30
7 30	15·5		+ ·3	− ·20	− ·03	7 30
8 30	15·2		·0	− ·27	− ·02	8 30
9 30	15·3		+ ·1	·00	·00	9 30
10 30	14·8		− ·4	− ·03	·00	10 30
11 30	14·7		− ·5	·00	+ ·01	11 30

TABLE XXXV.

Showing the Correction d ψ for the Sun's Parallax in the different months of the year, according to BERNOULLI's theory.

	January. December.	February. November.	March. October.	April. September.	May. August.	June. July.	
Moon's Transit.	8″·94	8″·90	8″·84	8″·76	8″·70	8″·66	Moon's Transit.
h m	m	m	m	m	m	m	h m
0 30	0	0	0	0	0	0	0 30
1 30	− 1	− 1	0	0	0	0	1 30
2 30	− 1	− 1	0	0	+ 1	+ 1	2 30
3 30	− 2	− 2	0	0	+ 2	+ 2	3 30
4 30	− 3	− 2	− 1	+ 1	+ 3	+ 3	4 30
5 30	− 3	− 2	− 1	+ 1	+ 3	+ 3	5 30
6 30	0	0	0	0	0	0	6 30
7 30	+ 3	+ 2	+ 1	− 1	− 3	− 3	7 30
8 30	+ 3	+ 2	+ 1	− 1	− 3	− 3	8 30
9 30	+ 2	+ 2	0	0	− 2	− 2	9 30
10 30	+ 1	+ 1	0	0	− 1	− 1	10 30
11 30	+ 1	+ 1	0	0	0	0	11 30

Table XXXVI.

Showing the Correction d h for the Sun's Parallax in the different months of the year, according to Bernoulli's theory.

	January. December.	February. November.	March. October.	April. September.	May. August.	June. July.	
Moon's Transit.	8″·94	8″·90	8″·84	8″·76	8″·70	8″·66	Moon's Transit.
h m	feet.	feet.	feet.	feet.	feet.	feet.	h m
0 30	+ ·09	+ ·06	+ ·03	− ·03	− ·05	− ·08	0 30
1 30	+ ·08	+ ·05	+ ·03	− ·03	− ·05	− ·08	1 30
2 30	+ ·06	+ ·04	+ ·02	− ·02	− ·04	− ·06	2 30
3 30	+ ·03	+ ·02	+ ·01	− ·01	− ·02	− ·03	3 30
4 30	− ·01	·00	·00	·00	·00	+ ·01	4 30
5 30	− ·07	− ·05	− ·02	+ ·02	+ ·03	+ ·05	5 30
6 30	− ·08	− ·05	− ·03	+ ·03	+ ·06	+ ·09	6 30
7 30	− ·07	− ·05	− ·02	+ ·02	+ ·03	+ ·05	7 30
8 30	− ·01	·00	·00	·00	·00	+ ·01	8 30
9 30	+ ·03	+ ·02	+ ·01	− ·01	− ·02	− ·03	9 30
10 30	+ ·06	+ ·04	+ ·02	− ·02	− ·04	− ·06	10 30
11 30	+ ·08	+ ·05	+ ·03	− ·03	− ·05	− ·08	11 30

Index to the Tables.

In all the Tables the Interval is to be increased by two days, the argument being the transit two days previous.

Table I., showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water, and the Height of High Water at the London Docks (together with the Interval between the Moon's Transits), corresponding to the Apparent Solar Time of the Moon's Transit, in each month of the year, from 13,370 observations made at the London Docks between the first of January 1808 and the 31st of December 1826.

Table II. (Interpolated from Table I.), showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water at the London Docks, for each month in the year.

Table III. (Interpolated from Table I.), showing the Height of High Water at the London Docks, corresponding to the Apparent Solar Time of the Moon's Transit, in each month of the year.

Table IV., showing the Difference in the Interval between the Apparent Solar Time of the Moon's Transit and the time of High Water, and the Mean Interval, for every month in the year.

Table V., showing the Difference in the Height of High Water and the Mean Height, for every month in the year.

Table VI., showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water, the Height of High Water, and the Interval between the Moon's Transits at the London Docks, corresponding to the Apparent Solar Time of the Moon's Transit, for every minute of her Horizontal Parallax.

Table VII. (Interpolated from Table VI.)

Table VIII., showing the Difference in the Interval between the Time of the Moon's Transit and the Time of High Water, and the Interval corresponding to fifty-seven minutes of the Moon's Horizontal Parallax.

Table IX., showing the Difference between the Height of High Water and the Height corresponding to fifty-seven minutes of the Moon's Horizontal Parallax.

Table X., showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water, the Height of High Water, and the Interval between the Moon's Transits, at the London Docks, corresponding to the Apparent Solar Time of the Moon's Transit for every three degrees of her Declination north and south.

Table XI. (Interpolated from Table X.), showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water at the London Docks for every three degrees of her Declination north *and* south.

Table XII., showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water at the London Docks, for every three degrees of her Declination north *or* south.

Table XIII., showing the Difference in the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water at the London Docks, and the Interval corresponding to fifteen degrees Declination, for every three degrees of the Moon's Declination north *and* south.

Table XIV., showing the Difference in the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water at the London Docks, and the Interval corresponding to fifteen degrees Declination, for every three degrees of the Moon's Declination north *or* south.

Table XV. (Interpolated from Table X.), showing the Height of High Water at the London Docks for every three degrees of the Moon's Declination north *and* south.

Table XVI., showing the Height of High Water at the London Docks for every three degrees of the Moon's Declination north *or* south.

Table XVII., showing the Difference in the Height of High Water at the London Docks, and the Height corresponding to fifteen degrees Declination, for every three degrees of the Moon's Declination north *and* south.

Table XVIII., showing the Difference in the Height of High Water at the London Docks, and the Height corresponding to fifteen degrees Declination, for every three degrees of the Moon's Declination north *or* south.

Table XIX., showing the Difference in the Height of High Water at the London Docks when the Moon's Declination is north or south.

The variation of the interval and in the height in Tables X. to XIX. inclusive, is partly due to the change of the sun's declination, which is given in Table X. but not afterwards repeated, because interpolation for the even half-hour is not required.

Table XX., showing the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water, and the Height of High Water at the London

Docks (together with the Interval between the Moon's Transits), corresponding to the Apparent Solar Time of the Moon's Upper and Lower Transits, P.M. and A.M.

Table XXI., showing the Difference in the Interval between the Apparent Solar Time of the Moon's Transit and the Time of High Water, and the Mean Interval and the Difference between the Height of High Water and the Mean Height. This Table has been formed by Interpolation from Table XX., in order to ascertain the amount of the Diurnal Inequality.

The moon's parallax in Table I. and Table X. is throughout very nearly, but not exactly $57'$, and the moon's declination in Table VI. is very nearly, but not exactly $15°$. In strictness the interval and the height ought to have been brought up to what they would have been upon those suppositions. I have neglected the small quantities which would have been thus introduced on account of their minuteness, and on account of the great additional labour they would have occasioned.

Table XXII., showing the Interval between the Moon's Transit in the first column and the fourth succeeding Transit for each month of the year.

Table XXIII., showing the Difference in the Interval between the Moon's Transit in the first column and the fourth succeeding Transit for each month of the year and the Mean of all.

Table XXIV., showing the Interval between the Moon's Transit in the first column and the fourth succeeding for every minute of the Moon's Horizontal Parallax.

Table XXV., showing the Difference in the Interval between the Moon's Transit in the first column and the fourth succeeding Transit, for every minute of the Moon's Horizontal Parallax, and that for Parallax $57'$.

Table XXVI., showing the Interval between the Moon's Transit in the first column and the fourth succeeding Transit for every three degrees of Declination.

Table XXVII., showing the Difference in the Interval between the Moon's Transit in the first column and the fourth succeeding for every three degrees of Declination, and that for Declination $15°$.

When the moon's transit is at 2^h P.M., for example, α' is greater than α, ψ is negative, tan 2ψ is negative, and ψ the variable quantity to be *added* to the apparent solar time of the moon's transit or the interval (in the perfect sphere) is negative.

Table XXVIII., showing a Comparison between the Semimenstrual Correction at London in the Interval and in the Height as deduced from theory and observation. See Plate XVIII.

The quantities in the following Tables, deduced from BERNOULLI'S equilibrium theory, are taken from the Tables calculated by Mr. JONES, and given in my paper in the Philosophical Transactions, 1836, p. 58, with the exception of the sun's parallax correction, which influences in a slight degree the calendar-month inequality. This correction, omitted before, is now given in Tables XXXIV. and XXXV.

The theory correction has been calculated by Mr. JONES with the following constants: $\log(A) = 9{\cdot}5841774$ $D = 16^{ft}{\cdot}69$ $\log(E) = {\cdot}6468993$.

Table XXIX., showing the Calendar-month Inequality, as deduced from BERNOULLI's theory and from observation. In making this comparison the inequality is supposed to arise from the corrections d ψ and d h due to the declinations of the sun and moon and to the sun's parallax, the moon's parallax being 57′ throughout. See Plate XIX.

Table XXX., showing the Moon's Parallax Correction, as deduced from BERNOULLI's theory and from observation. In this comparison the declinations of the sun and moon are supposed equal to 15° throughout. The actual declinations are given in Table VI. for each category, in order to show that this supposition is admissible. See Plate XX.

Table XXXI., showing the Moon's Declination Correction in the Interval and Height, as deduced from BERNOULLI's theory and from observation. See Plate XXI. The quantities in this Table are influenced by the sun's declination, which is given for each category in Table X.

The parallax and declination corrections have been calculated by Mr. JONES from the expressions

$$\tan 2\psi = \frac{A \sin 2\varphi}{1 + A \cos 2\varphi} \qquad h = D + E\{A \cos(2\psi - 2\varphi) + \cos 2\psi\}.$$

Table XXXII., showing a Comparison between the Diurnal Inequality in the Interval, as deduced from theory and observation.

Table XXXIII., showing that the deviations from the H. P. 57′, corresponding to the column headed "Mean" in Table II., have no sensible influence; so that the column in question may be considered as affording the semimenstrual Inequality.

Table XXXIV., showing that the deviations in the Moon's Declination from 15°, corresponding to the column headed "Mean" in Table II. have no sensible influence.

Table XXXV., showing the Correction d ψ for the Sun's Parallax in the different months of the year, according to BERNOULLI's theory.

Table XXXVI., showing the Correction d h for the Sun's Parallax in the different months of the year, according to BERNOULLI's theory.

Conclusion.

The expressions which we have employed in calculating from theory the semimenstrual, parallax, and declination corrections, are virtually those of BERNOULLI. These expressions are in a form well adapted for computation, so that nothing would have been gained by employing expressions less exact.

The approximate expression which Mr. WHEWELL deduced empirically from my former discussion of the London Dock observations for the moon's parallax correction of the interval is

$$P' = (P - p)\{B + B \sin(2\varphi - 2\beta)\}^*.$$

* Philosophical Transactions, 1834, p. 37.

The second term agrees approximately with BERNOULLI's theory, as Mr. WHEWELL remarked. I consider that the first term was due to the variation in the interval between the moon's transits, and it has vanished, or nearly so, in the present discussion, because we have employed a different transit. I account in the same manner for the first term in the moon's declination correction of the interval, which Mr. WHEWELL deduced empirically from my former discussion, and which has also vanished in the present discussion for the same reason. This term perplexed me formerly in comparing the results I obtained from BERNOULLI's theory with those I obtained from observation*, being far too great to be attributed to errors in the observations, or in the mode of their discussion, so that I ventured to express an opinion that BERNOULLI's theory was insufficient. I discovered the true origin of this term about a year ago†. I conceive that the comparisons which accompany this paper establish the accuracy of BERNOULLI's theory nearly in as great a degree with respect to all the other corrections as with respect to the semimenstrual inequality, so that little remains to be gained by treating the problem more rigorously.

One point at least, however, I think deserves further elucidation. The mass of the moon which would result immediately from the constant (A), which I have deduced from the London and the Liverpool observations, is greater than that which has been derived by other methods. LAPLACE appears to have arrived at a similar conclusion from the Brest observations; but the arguments which he has used in order to remove this difficulty do not seem free from obscurity.

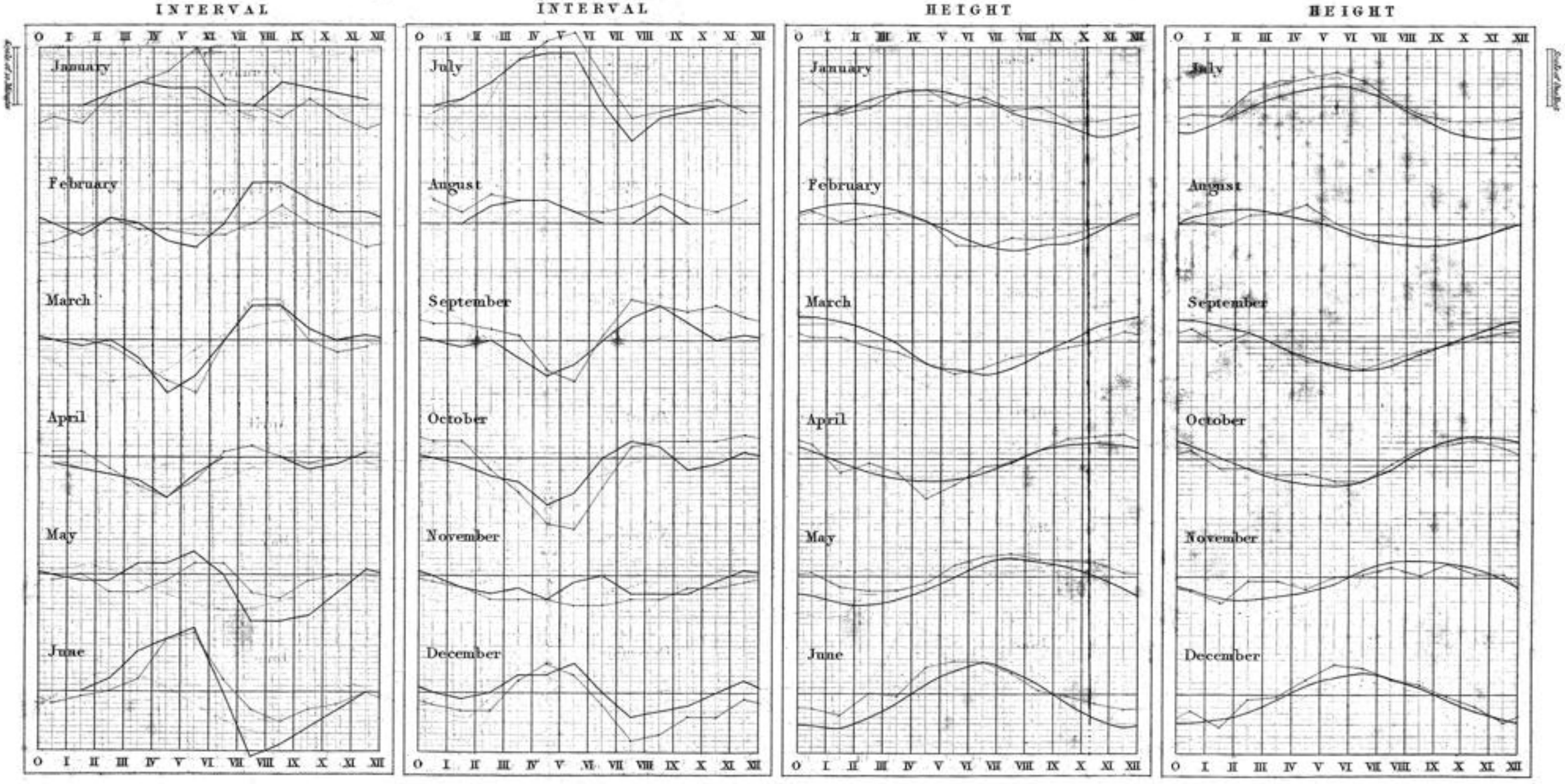
* See Philosophical Transactions, 1834, p. 144.

† See London and Edinburgh Philosophical Magazine, December 1835.

ERRATUM.

Page 224, *for* $\phi = 15°$ *read* $\phi = -15°$.

Diagram showing a comparison between the calendar month correction in the interval and in the height as deduced from theory and from observations at the London Docks. See Table XXIX.

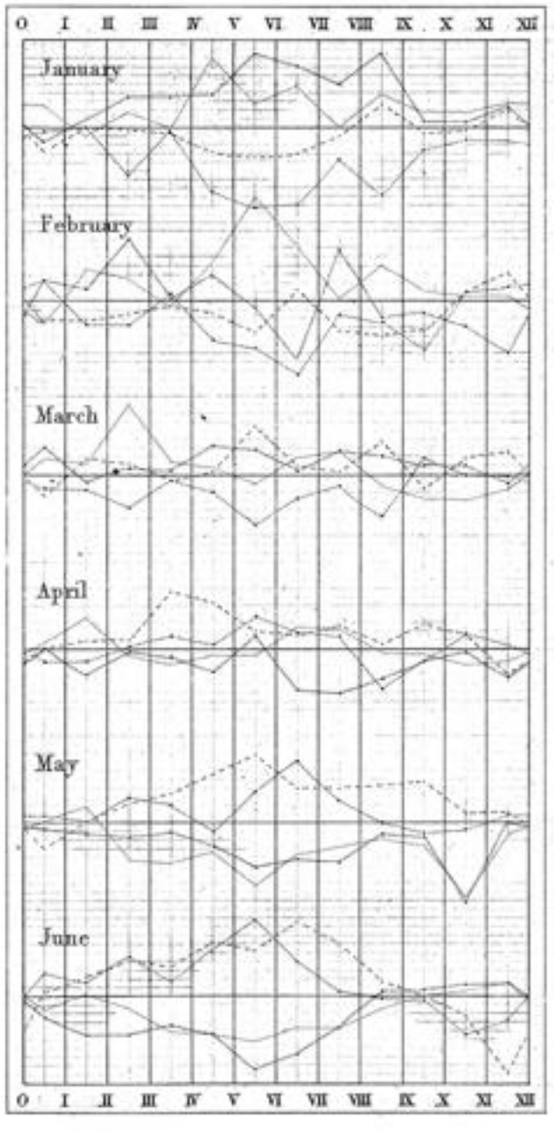


In these curves the abscissa represents the time of the Moons transit two days previous *Observation* ——— *Theory.* ———

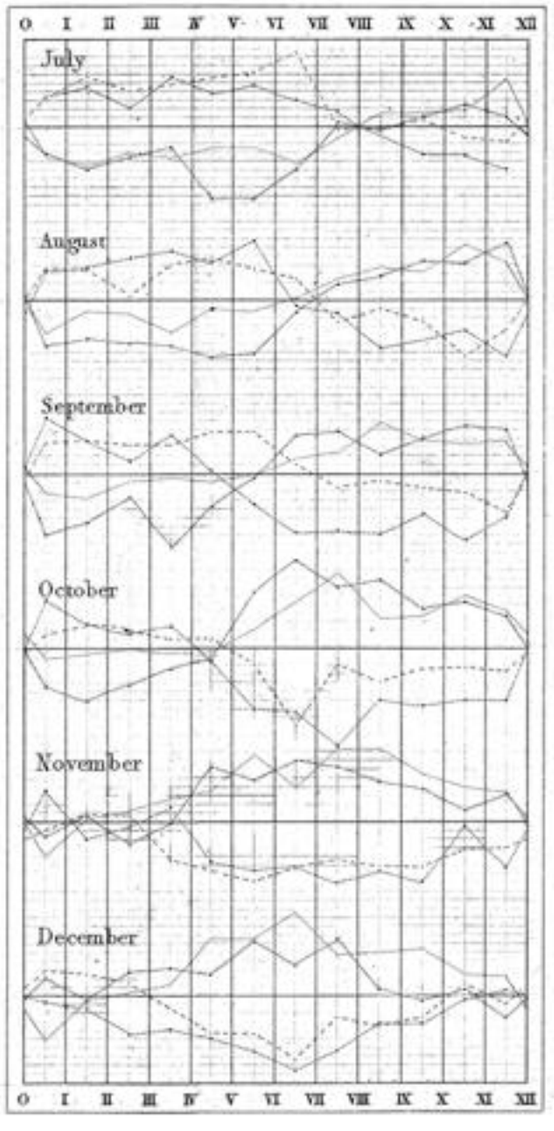
Intervals depending upon Upper Transits P.M. _____ _____
_____ *D.°* _____ *A.M.* _____ ----------
_____ *Lower (Interpolated) Transits A.M.* _____
_____ *D.°* _____ *P.M.* _____

Diagram showing the Diurnal inequality in the Interval and in the height for the middle of every month in the Year.
from Observations at the London Docks _ See Table XXI

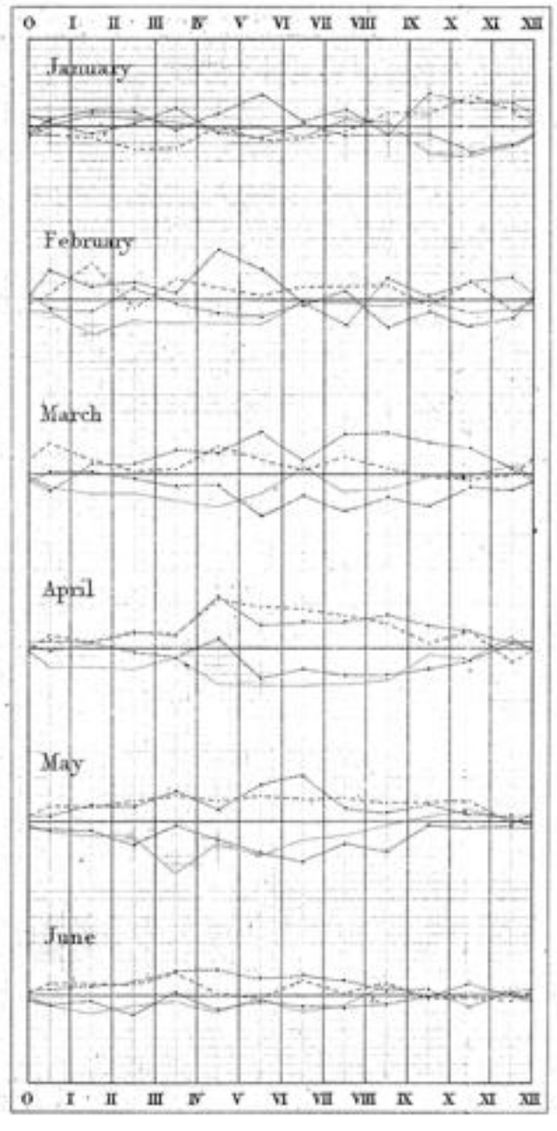
INTERVAL



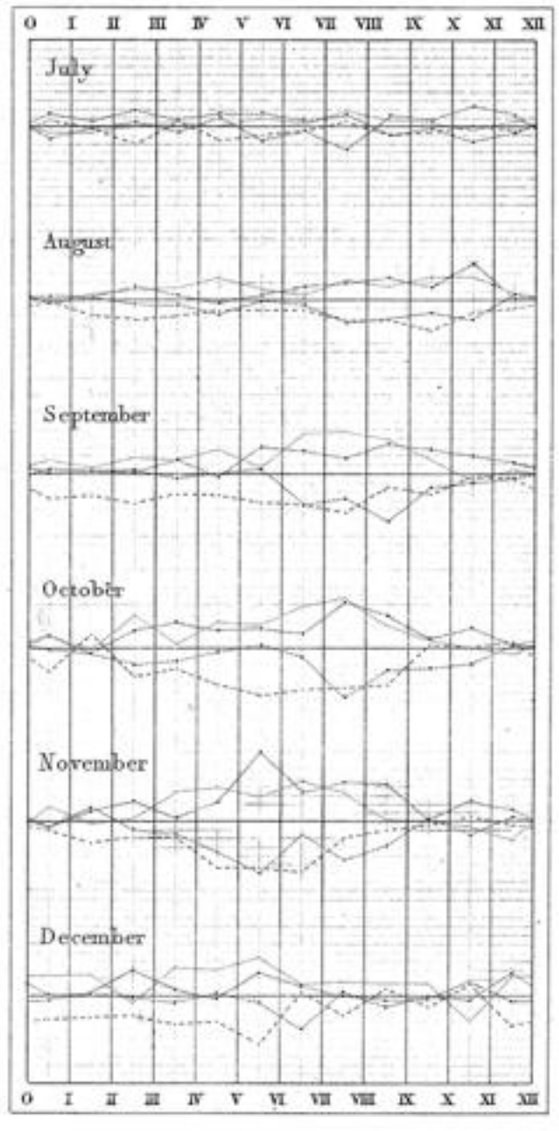
INTERVAL



HEIGHT



HEIGHT



In these curves the abscissa represents the time of the Moon's transit two days previous *Observation* ____ *Theory* ____