

XI. *Astronomical Observations made in the Austrian Netherlands in 1772 and 1773. By Nathanael Pigott, Esquire, F. R. S. Foreign Member of the Academies of Bruffels and Caen. In a Letter to the Reverend Nevil Maskelyne, Astronomer Royal, F. R. S.*

TO THE REV. NEVIL MASKELYNE.

REV. SIR,

Louvain,
August 11, 1775.

R. Dec. 9, 1775. **I** RECEIVED, about a month ago, the favour of your letter, and return you many thanks for the Greenwich observations, which you were so obliging to send me. I wait, with impatience, the publication of your journey into Scotland, which must be very curious and interesting. I beg of you, SIR, to present my respects to the Royal Society, with the inclosed astronomical observations, which I have contracted as much as I well could, consistently with a view of affording means to verify them, or rectify any mistake which, by inadvertency, may have crept in. I shall only add a short account of the instruments I used, and the elements I employed in the calculations, that a proper judgement may be formed, how far these observations may be depended upon.

The meridian altitudes were taken with a quadrant one foot radius made by Mr. BIRD, very steadily fixed; free from any communication with the floor, and well placed in the plane of the meridian.

Repeated

Repeated observations for the error of the line of collimation gave $1' 58'',7$ additive to the zenith distances.

I always observed both the limbs of the Sun on the meridian, when the weather would permit: its declination was computed from the Nautical Almanac: its parallax and all refractions, account being always kept of the height of the barometer and thermometer, from Professor MAYER'S tables, published by the Board of Longitude.

The declinations of the fixed stars were taken from the *Connoissance des tems*. The corrections on account of aberration and nutation, were either taken from the same ephemeris, or computed.

My son always observed 4's satellites with a reflector, made by SHORT, of eighteen inches focal length, magnifying 95 times. I observed them with a reflector of two feet and a half focal length, made by WING, magnifying the diameter of the object about 200 times.

The clock was a compound gridiron pendulum, made by the Sieur LE PAUTE at Paris.

The equal altitudes were taken with a quadrant of eighteen inches radius.

This astronomical journey was undertaken at the request of the government here. They expressed a desire that the situations of some of their towns, at least, should be determined by observation; and I readily concurred, without regretting either trouble or expence, in a project which had public utility in view.

I am, &c.

Cor-

Corresponding altitude of the Sun and Stars.

1772		h	'	"
Aug.	30. Clock at noon corrected by four obs. of Sun,	11	54	7,9
Sept.	5. Clock at noon corrected by seven ditto,	11	47	26,8
	13. Clock at noon corrected by four ditto,	0	2	48,5
	19. Clock at noon corrected by seven ditto,	11	57	21,1
	21. Clock at noon corrected by seven ditto,	11	54	42,7
Oct.	10. Clock at noon corrected by eight ditto,	11	32	37,7
	11. Clock at noon corrected by nine ditto,	11	31	20,0
	19. Clock at noon corrected by five ditto,	11	22	33,1
	20. Clock at noon corrected by five ditto,	11	21	31,0—
	21. Clock at noon corrected by six ditto,	11	20	30,5+
Nov.	9. Clock at noon corrected by five ditto,	0	21	23,6—
	11. Clock at noon corrected by three ditto,	0	23	10+
	13. Clock at noon corrected by three sets ditto,	0	24	55,1
	14. Clock at noon corrected by six ditto,	0	25	9,7+
	20. Clock at noon corrected by seven ditto,	0	30	30,5—
	Ditto. Fomahant crossed the meridian by the clock,	7	28	28,0
	21. Fomahant crossed the meridian by ditto,	7	25	19,9—
Dec.	23. β Ceti on meridian by the clock,	6	39	38,5—
	24. Clock at noon corrected by four obs. of Sun,	0	19	6,0

N A M U R 1772.

By a mean of eight meridian altitudes of the fixed stars taken in September, I determined the latitude of my observatory, in the *Rue St. Nicholas*, near the Recollets Church, $50^{\circ} 28' 32''$ North.

Sept. 4, emerfion of α 's first fat. at $10^h 38'$ by the clock.

	Apparent times. h ' "
Emerfion at Tyrnaw in Hungary, by Father WEISS, $3\frac{1}{2}$ feet achrom. } weather fine,	11 41 11
To reduce to time of the Royal Observatory at Paris,	—1 0 55
Emerfion of the fat. at Paris,	10 40 16
Emerfion by my fon at Namur,	11 49 55
Namur East of the Paris Observatory, in time,	9 39

Or in parts of a great circle $2^{\circ} 24' 45''$.

A very good observation. α 's belts very distinct.
I faw the emerfion $5''$ latter.

L U X E M B O U R G 1772.

By a mean of twenty-nine meridian altitudes of the Sun and fixed stars taken in September and October, one of which only, gives the latitude $19^{\circ}9'$ different from the mean of the whole, I determined the latitude of my observatory, in the *Rue St. Esprit*, near the Jesuits Church, $49^{\circ}37'6'' +$ North,

Sept. 11. emerfion 4's first fat. $12^h 55' 20''$ by the clock.

	Apparent times. h ' "
Emerfion at Greenwich, by the Nautical Almanac,	12 28 15
Error of tables, by a good obfervation at Tyrnaw, Sept. 4,	+ 0 7
Greenwich Weft of Paris,	+ 9 16
Emerfion at Paris,	12 37 38
I obferved it at Luxembourg,	12 53 19
Luxembourg Eaft of Paris Obfervatory,	15 41

My fon faw the emerfion $19''$ later.

made in the Austrian Netherlands.

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LUXEMBOURG, Sept. 20, 1772.

Emerfion 4's first fat. at 9h 15' 23" by the clock.

	Apparent times. h ' "
Emerfion at Greenwich, by Nautical Almanac,	8 55 12
Error of tables, as above,	+ 7
Greenwich Weft of Paris,	+ 9 16
Emerfion at Paris,	9 4 35
I obferved it at Luxembourg,	9 19 52
Luxembourg Eaft of Paris,	15 17

My fon obferved the emerfion 13" later.

The fame emerfion.

Emerfion at Greenwich, by Nautical Almanac,	8 55 12
Error of tables, by an obfervation at Greenwich on the 27th,	— 25
At Greenwich, by the tables corrected,	8 54 47
Difference of meridians,	+ 9 16
Emerfion at Paris,	9 4 3
I obferved it at Luxembourg,	9 19 52
Luxembourg Eaft of Paris,	15 49

LUXEMBOURG, Oct. 19, 1772.

Emerfion 4's fecond fat. at 7h 31' 39" by the clock.

	Apparent time.
	h ' "
Emerfion at Tyrnaw, achrom. 3½ feet,	8 54 47
To reduce to Paris time,	— 1 0 55
At Paris,	7 53 52
My fon obferved it at Luxembourg,	8 9 14
Luxembourg Eaft of Paris,	15 22
I faw it 3" later.	

The fame emerfion.

At Senones, by M. MESSIER, achrom. 5 feet,	8 12 8
To reduce to Paris time, according to his letter,	— 18 34
Emerfion at Paris,	7 53 34
At Luxembourg,	8 9 14
Luxembourg Eaft of Paris,	15 40

This emerfion was obferved alfo at 7h 44' 13" apparent time, with a 6 feet reflector, at Greenwich. Allow-
ing, according to the Aftronomer Royal's rule, about 20" for the difference of telefcopes, the refult will be, Luxem-
bourg Eaft of Paris 15' 25".

LUXEM-

made in the Austrian Netherlands.

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LUXEMBOURG, Oct. 20, 1772.

Emerfion 4's first fat. at 11h 0' 15" by the clock.

	Apparent time.
	h
Emerfion at Greenwich, achrom. $3\frac{1}{2}$ feet,	11 14 18
To reduce to Paris time,	+ 9 16
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At Paris,	11 23 34
I observed it at Luxembourg,	11 39 13
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Luxembourg East of Paris,	15 39

My fon faw it 12" later.

LUXEM-

LUXEMBOURG, Oct. 11, 1772.

Eclipse of the Moon.

By clock	Appar. time.			Luxemb. East of Paris.			
h	'	"	h	'	"		
6	25	18	6	54	17	Galileus out of the shadow at Luxembourg,	
6	36	57	6	5	4	Copernicus begins to emerge at Luxembourg,	
6	38	07	6	6	59	Copernicus out at Luxembourg,	
			6	51	37	at Senones, reduced to Paris,	15 21
			6	51	54	at the Observatory at Paris,	15 5
6	40	42	7	9	41	Tycho begins to emerge at Luxembourg,	
6	42	35	7	11	34	Tycho out at Luxembourg,	
			6	56	13	at Senones, reduced to Paris,	15 21
			6	55	56	at the Observatory at Paris,	15 38
			6	56	21	Rue St. Honoré at Paris, by M. DE LA LANDE,	15 13
6	53	56	7	22	54	Manilius begins to emerge at Luxembourg,	
			7	7	25	at the Observatory at Paris,	15 29
			7	7	28	Paris, Rue St. Honore,	15 26
7	3	25	7	32	25	Mare Serenitatis out at Luxembourg,	
			7	17	10	Senones, reduced to Paris,	15 15
			7	17	23	at the Observatory at Paris,	15 2
7	12	17	7	41	17	Mare Crisium begins to emerge at Luxembourg,	
			7	26	18	at Paris, Rue St. Honoré,	14 59
7	17	37	7	46	35	Mare Crisium out at Luxembourg,	
			7	30	45	at Senones, reduced to Paris,	15 50
By a mean,							15 20+
			7	52	7	end of the eclipse at Luxembourg.	
			7	33	55	at Senones, by M. MESSIER, reduced to Paris.	
			7	35	46	at the Royal Observatory at Paris.	
			7	34	54	Paris, Rue St. Honoré, by M. DE LA LANDE.	

At Luxembourg, Sky remarkably clear, without the least wind.

Hence, by a mean of 24's satellites,

15 33 +

Luxembourg East of the R. Observ. at Paris, by a mean of the whole, 15 27 +

Which gives $3^{\circ} 51' 45''$ in parts of a great circle.

LUXEM-

LUXEMBOURG, 1772.

Oct. 22. at 3 hours P. M. a magnetic needle of four inches, made by DOLLOND, gave the declination West $18^{\circ} 42\frac{1}{2}'$.

Oct. 23. at 10 hours A. M. the declination was $18^{\circ} 50'$.

At LA HEESE, near HOOGSTRAETEN.

By a mean of twenty-two meridian altitudes of the Sun and fixed stars taken in November 1772, one of which only, gives the latitude different from the mean of the whole $10''$, 2, I determined the latitude of my observatory $51^{\circ} 23' 2'' + N$.

Nov. 9. Emerſion μ 's third fat. 6h 49' 29" by the clock.

	Apparent time.
	h ' "
Emerſion at Tyrnaw, achrom. $3\frac{1}{2}$ feet,	7 19 2
To reduce to Paris time,	— 1 0 55
Emerſion at Paris,	6 18 7
I obſerved it at La Heeſe,	6 27 50
La Heeſe Eaſt of the Paris Obſervatory,	9 43

My ſon ſaw the Emerſion $13''$ later.

L A H E E S E, NOV. 14, 1772.

Emerſion μ 's firſt fat. at 6h 44' 5" by the clock.

	Apparent time. h ' "
Emerſion at Senones, achrom. $3\frac{1}{2}$ feet,	6 27 7
To reduce to Paris time,	<u>— 18 34</u>
Emerſion at Paris,	6 8 33
I obſerved it at La Heeſe,	<u>6 18 42</u>
La Heeſe Eaſt of Paris,	10 9

The ſame emerſion.

At Greenwich, 6 feet reflector,	5 59 28
Difference of teleſcopes,	+ 0 15
Greenwich Weſt of Paris,	<u>+ 9 16</u>
Emerſion at Paris,	6 8 59
By my obſervation at La Heeſe,	<u>6 18 42</u>
La Heeſe Eaſt of Paris,	9 43

Nov. 20. Emerſion μ 's ſecond fat. at 8h 15' 59" by
the clock.

Emerſion by my ſon, but I have no correſponding obſervation,	7 45 9
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At

At LA HEESE, Nov. 21, 1772.

Emerfion μ 's first fat. at 8h 45' 12" by the clock.

	Apparent time. h ' "
Emerfion at Greenwich, by Nautical Almanac,	7 53 54
Error of tables, by the observ. at Greenwich, Senones, and Tyrnaw,	+ 12
Greenwich West of Paris,	+ 9 16
Emerfion at Paris,	8 3 22
I observed it at La Heefe,	8 13 3
La Heefe East of Paris,	9 41

My fon saw the emerfion 5" later.

By a mean of the observations of μ 's fatellites, *La Heefe* is East of the Royal Observatory at Paris 9' 49" in time, or $2^{\circ} 27' 15''$. If the observation of Nov. 14, compared with that made at *Senones*, be rejected, the difference of meridians will be $7\frac{1}{2}''$ in time less.

At H O O G S T R A E T E N, Nov. 24, 1772.

By a bafe of 3028 feet, twice very exactly measured and angles taken with a quadrant 18 inches radius, I determined the church of *Hoogstraeten* 10380 feet North and 5873 feet East of the Observatory at *La Heefe*.

Hence latitude of La Heefe,	51° 23' 2"
Difference of latitudes,	+ 1 42
Latitude North of the church of Hoogstraeten,	51 24 44
Longitude of La Heefe, as above,	0 h ' "
Difference of meridians,	0 9 49
Hoogstraeten East of the Royal Observatory at Paris, in time,	+ 6
	9 55

Or 2° 28' 45" in parts of a great circle.

A T O S T E N D E.

By a mean of 24 meridian altitudes of the Sun and stars taken in December, one of which only, gives the latitude 11,7 different from the mean of the whole, I determined the latitude of my observatory, in the *Rue de la Poste* 51° 15' 10" North.

The *Connoissance des tems* gives the lat. 51° 13' 55"; but I do not know in what part of the town, or by whom it was determined.

At

At OSTENDE, Dec. 23, 1772.

Emerfion u's first fat. at 4h 52' 48" by the clock.

	Apparent time.
	h ' "
Emerfion at Greenwich, by Nautical Almanac,	4 22 1
Error of tables, as Nov. 21,	+ 12
Greenwich West of Paris,	+ 9 16
Emerfion at Paris,	4 31 29
I obferved it at Oftende,	4 34 2
Oftende East of Paris Obfervatory, in time,	2 33

Or 38' 15" in parts of a great circle.

Twilight ftrong; fky very clear and ferene; good obfervation.

Dec. 24, at 3 hours P. M. I found the declination of the magnetic needle West $20^{\circ} 35\frac{1}{2}'$.

At T O U R N A I, 1773.

By a mean of 14 meridian altitudes of the Sun and ftars taken in January, one of which only gives the latitude 22",8 different from the mean of the whole, I determined the latitude of my obfervatory in the *Rue des Jefuites* $50^{\circ} 36' 57''$ + North.

The weather would not permit to obferve either u's fatellites, or an occultation of a ftar by the Moon, for the longitude of Tournai.