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K/MUS/1/3:
Manuscript volume of observations on a solar eclipse, 1769

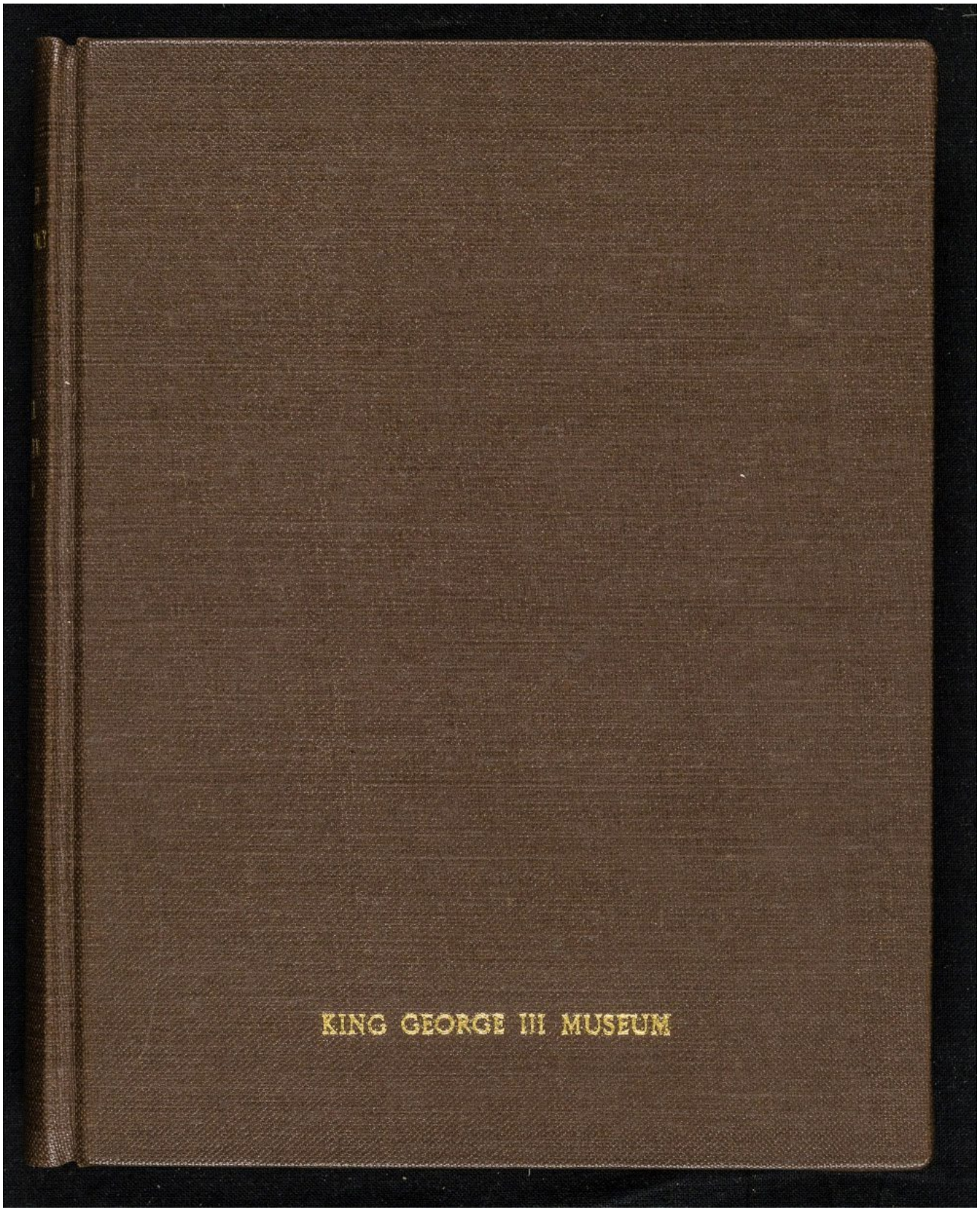
Date:

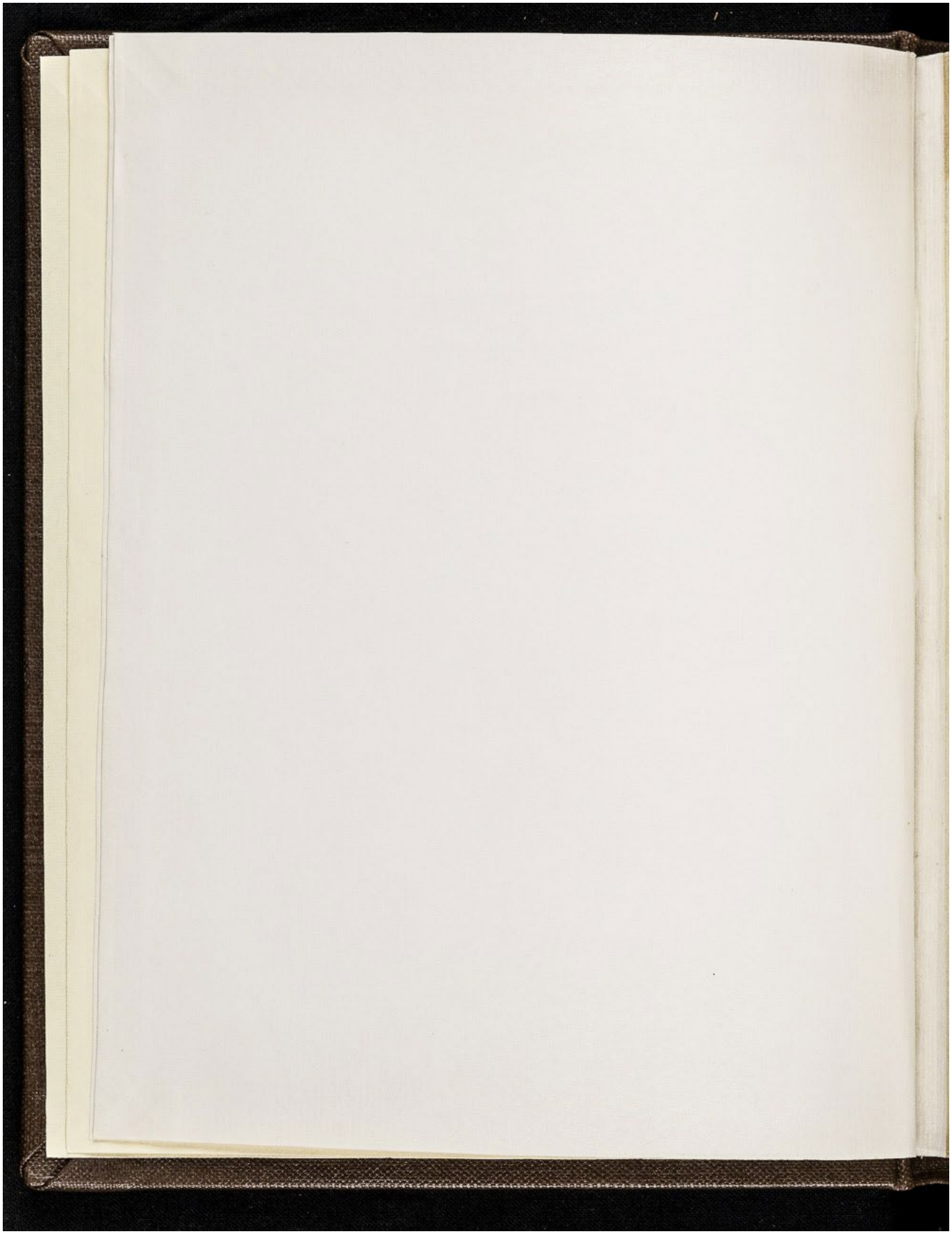
1769

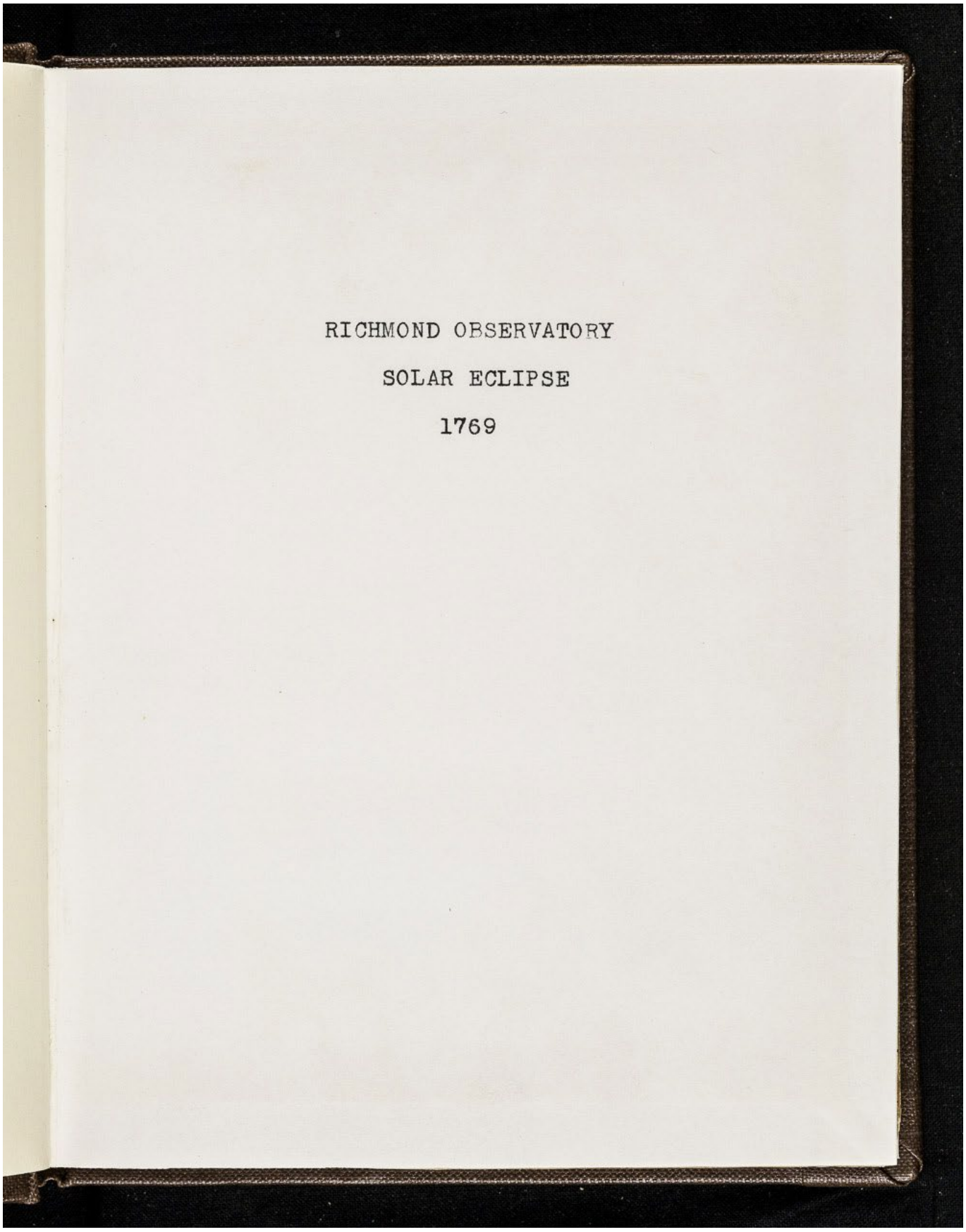
Description:

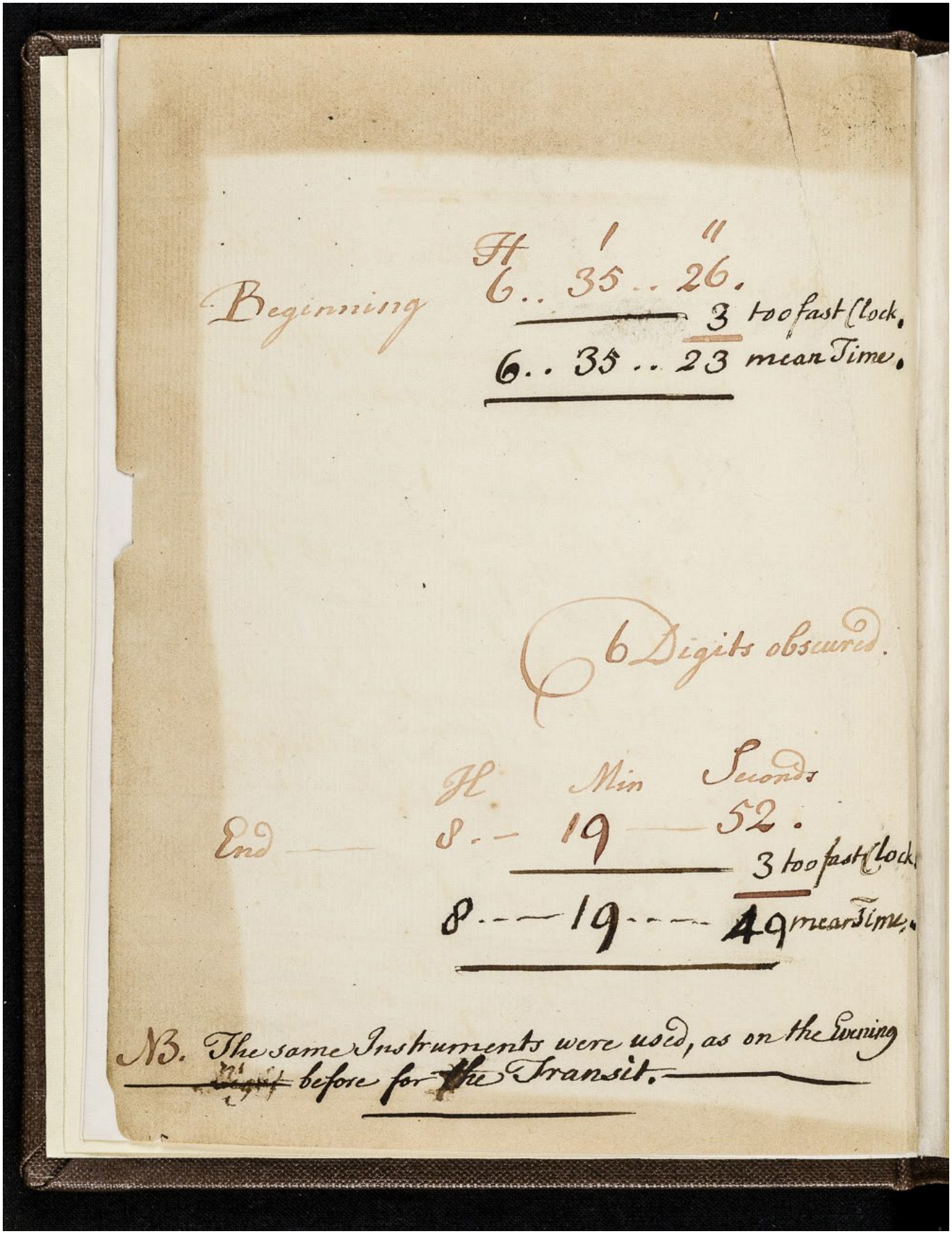
Manuscript volume of observations on a solar eclipse, 4 June 1769, describing phases of occultation, with notes on the eclipse compiled by Nevil Maskelyne, Astronomer Royal, and tables of longitude of principal celestial observation points around the world from the base line of Richmond, Surrey.

1 volume







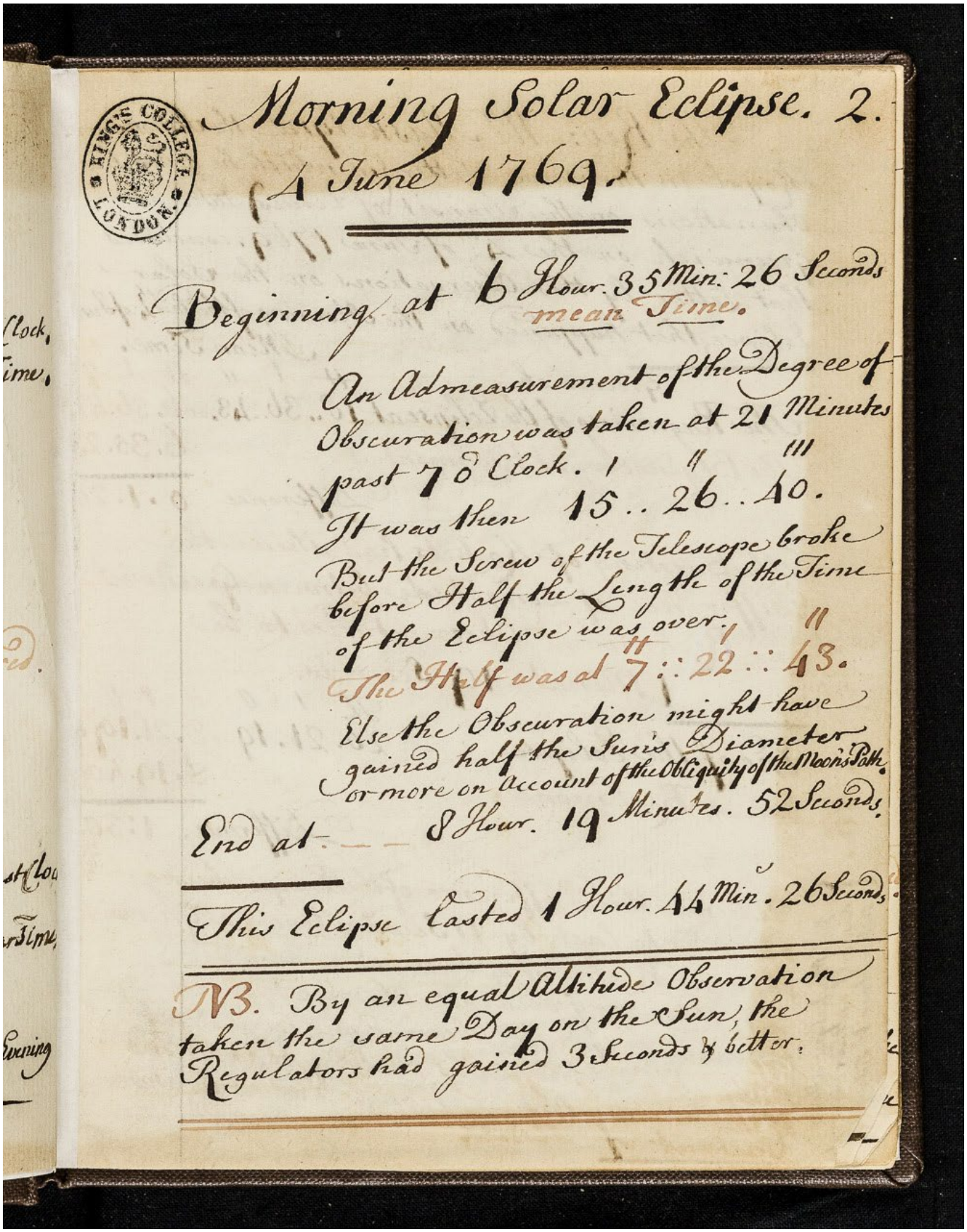


H ′ ″
Beginning 6 .. 35 .. 26.
3 too fast Clock.
6 .. 35 .. 23 mean Time.

6 Digits obscured.

H Min Seconds
End 8 .. 19 .. 52.
3 too fast Clock
8 .. 19 .. 49 mean Time.

NB. The same Instruments were used, as on the Evening ~~Night~~ before for the Transit.



Morning Solar Eclipse. 2.
A June 1769.

Beginning at 6 Hour. 35 Min: 26 Seconds
mean Time.

An Admeasurement of the Degree of
Obscuration was taken at 21 Minutes
past 7 ō Clock. ' " '''
It was then 15 .. 26 .. 10.
But the Screw of the Telescope broke
before Half the Length of the Time
of the Eclipse was over. ' "
The Half was at 7 :: 22 :: 43.
Else the Obscuration might have
gained half the Suns Diameter
or more on account of the Obliquity of the Moons Path.
End at — — 8 Hour. 19 Minutes. 52 Seconds.

This Eclipse Lasted 1 Hour. 44 Min. 26 Seconds.

NB. By an equal Altitude Observation
taken the same Day on the Sun, the
Regulators had gained 3 Seconds ½ better.

The Rev.d Mr Maskelyne, the Astronomer Royal in the same Letter (in which he gives his Observations on the Transit of Venus) dated at Greenwich on the 4th of June 1769. concludes that Letter by His Observations on the Solar Eclipse, that happened on the Morning of the said 4th of June.

		Mean Time.
Greenwich.	H ' "	H ' "
The Beginning of the Eclipse at	18..36..43. or	6.36.43.
The Beginning at Richmond at —		6.35.23
Difference		0.1.20

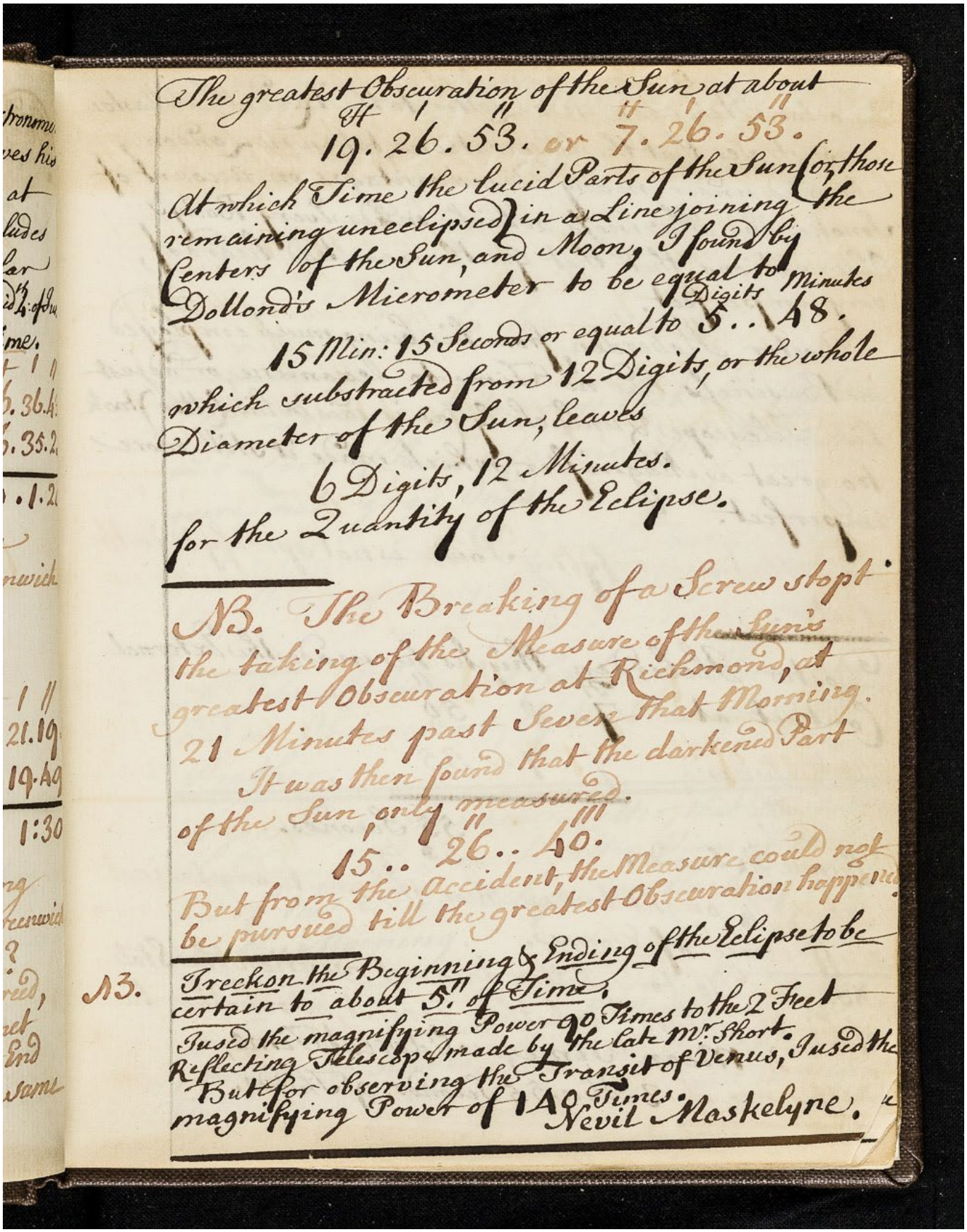
The Bursting of Rockets had shewn the Difference of Longitude between Greenwich and Richmond Observatories to be

1 Minute 19 Seconds.

	H. ' "	H ' "
End of the Eclipse —	20.21.19 or	8.21.19.
End at Richmond —		8.19.49
Difference.		1:30

N3. { Mr Maskelyne allows himself in this Observat. not certain to 5 Secon[ds] }

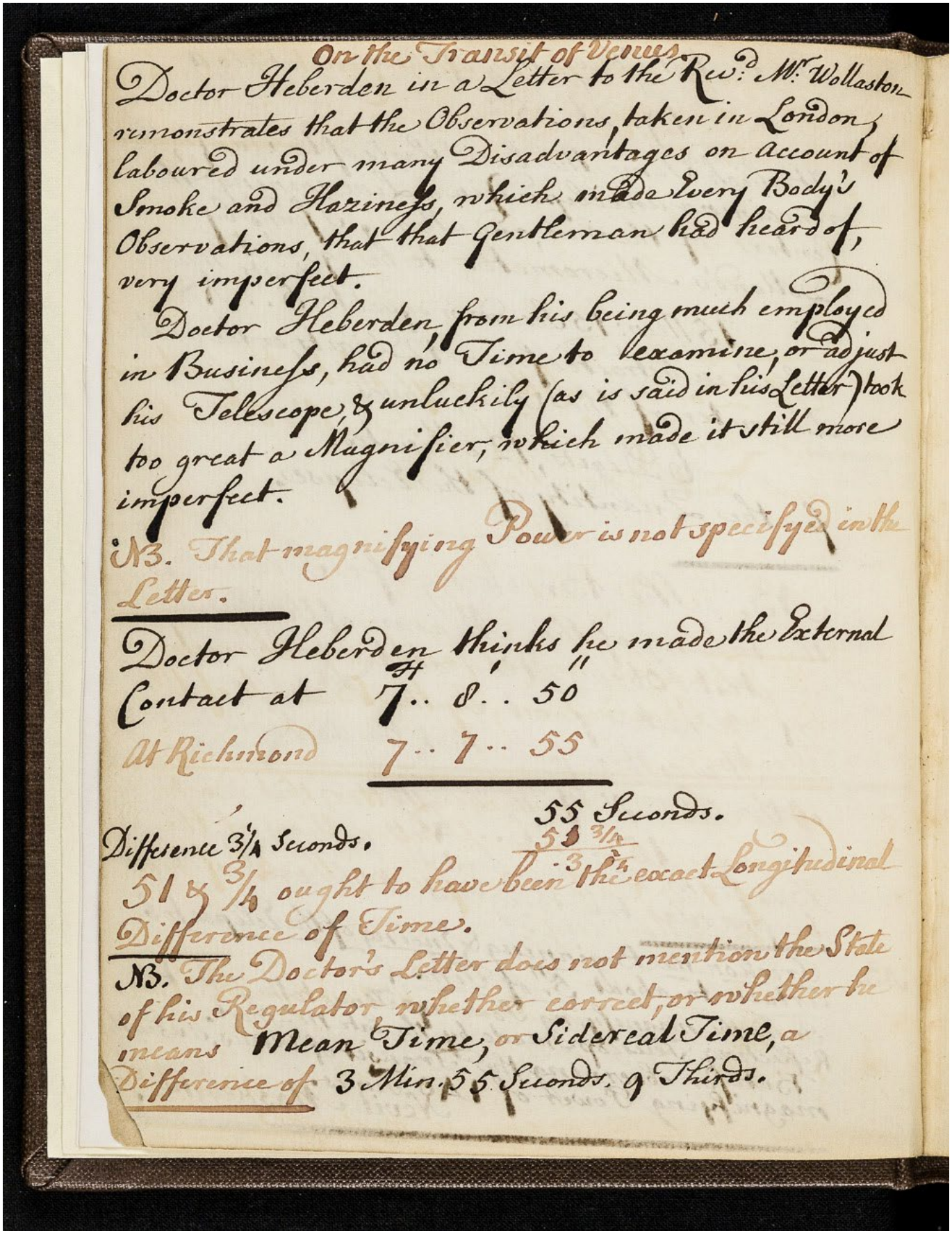
Whence this Difference of the Eclipse being observed to last by 11 Seconds longer at Greenwich than at Richmond, I cannot account for? yet Five very accurate Observers, all agreed, tho' taking seperate Observations, in distinct Parts of Richmond Observatory, to the exact End of the Sun's Obscuration, and all at the same Instant of Time.



The greatest Obscuration of the Sun at about
H ′ ″ H ′ ″
19. 26. 53. or 7. 26. 53.
At which Time the lucid Parts of the Sun (or those
remaining uneclipsed) in a Line joining the
Centers of the Sun, and Moon, I found by
Dollond's Micrometer to be equal to Minutes Digits
15 Min: 15 Seconds or equal to 5.. 48.
which substracted from 12 Digits, or the whole
Diameter of the Sun, leaves
6 Digits, 12 Minutes.
for the Quantity of the Eclipse.

NB. The Breaking of a Screw stopt
the taking of the Measure of the Sun's
greatest Obscuration at Richmond, at
21 Minutes past Seven that Morning.
It was then found that the darkened Part
of the Sun, only measured.
′ ″ ‴
15.. 26.. 40.
But from the Accident, the Measure could not
be pursued till the greatest Obscuration happened.

13. Treckon the Beginning & Ending of the Eclipse to be
certain to about 5″ of Time.
I used the magnifying Power 90 Times to the 2 Feet
Reflecting Telescope made by the late Mr. Short.
But for observing the Transit of Venus, I used the
magnifying Power of 140 Times.
Nevil Maskelyne.



On the Transit of Venus

Doctor Heberden in a Letter to the Revd Mr Wollaston remonstrates that the Observations, taken in London, laboured under many Disadvantages on account of Smoke and Haziness, which made Every Body's Observations, that that Gentleman had heard of, very imperfect.

Doctor Heberden, from his being much employed in Business, had no Time to examine, or adjust his Telescope, & unluckily (as is said in his Letter) took too great a Magnifier, which made it still more imperfect.

NB. That magnifying Power is not specified in the Letter.

Doctor Heberden thinks he made the External Contact at 7h 8' 50"

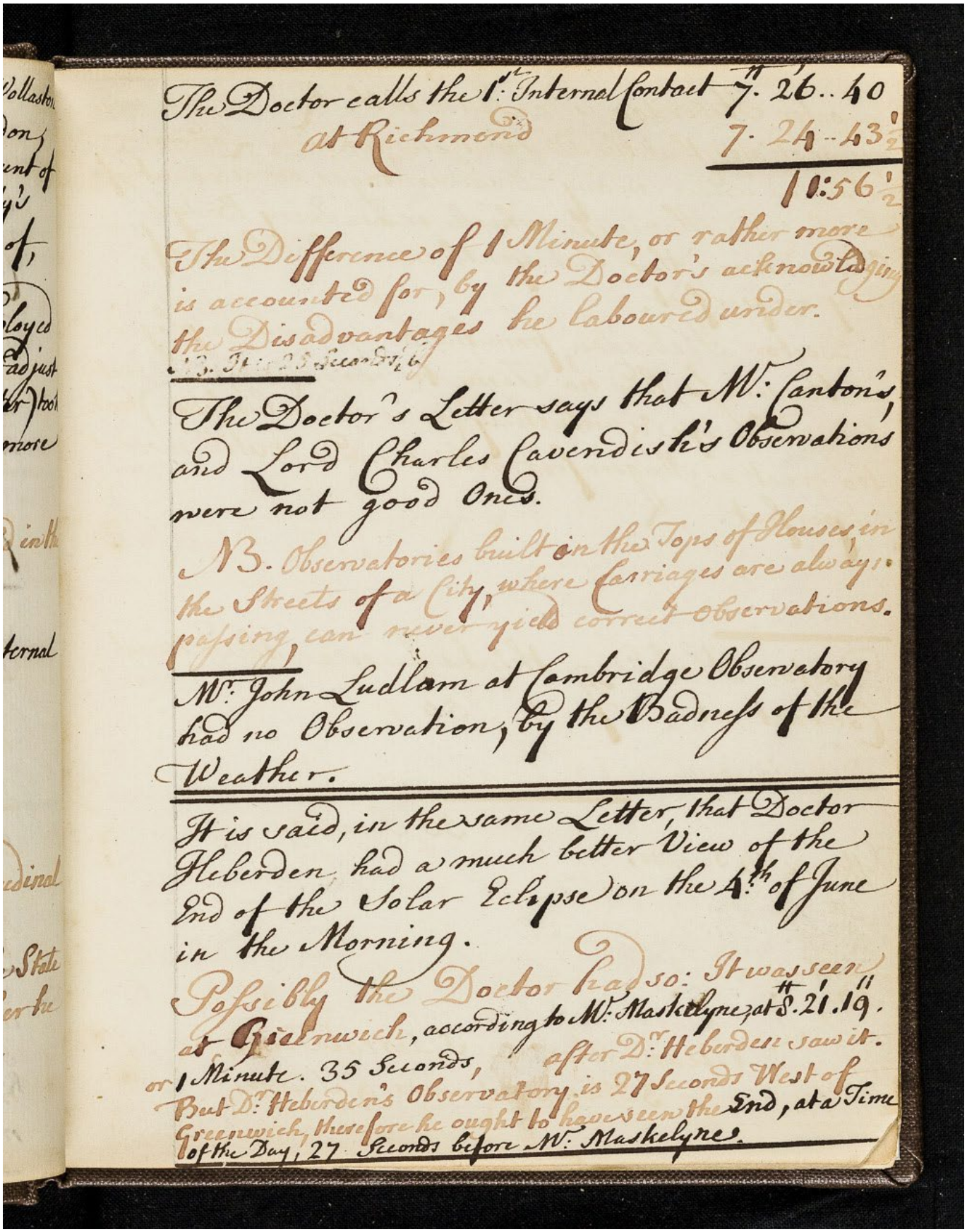
At Richmond 7 7 55

55 Seconds.

Difference 3 1/4 Seconds. 51 3/4

51 & 3/4 ought to have been the exact Longitudinal Difference of Time.

NB. The Doctor's Letter does not mention the State of his Regulator, whether correct, or whether he means Mean Time, or Sidereal Time, a Difference of 3 Min. 55 Seconds. 9 Thirds.



The Doctor calls the 1st: Internal Contact 7h. 26'. 40"
at Richmond 7. 24. 43½
10:56½

The Difference of 1 Minute, or rather more is accounted for, by the Doctor's acknowledging the Disadvantages he laboured under.
N.B. It is 2 Seconds in Time

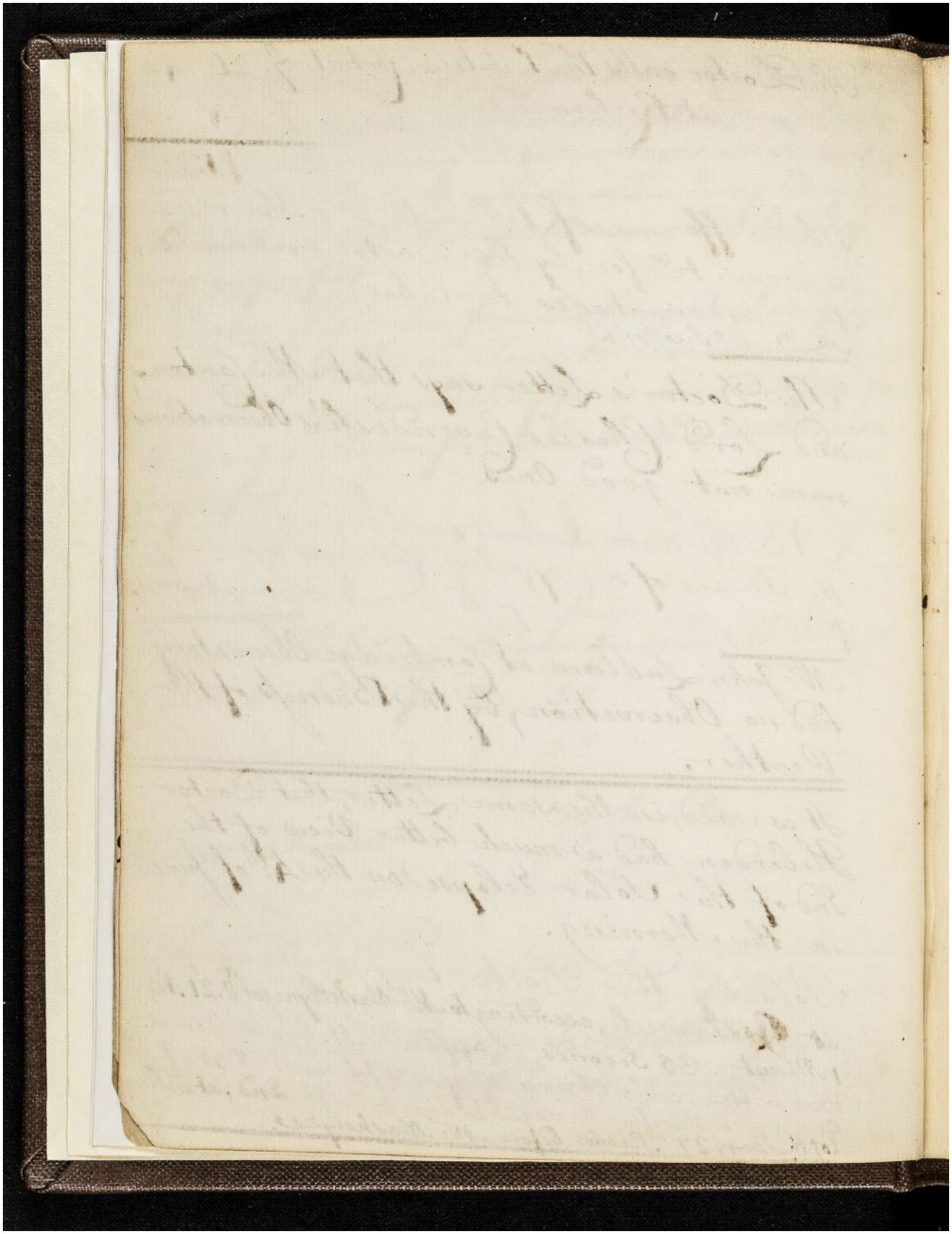
The Doctor's Letter says that Mr. Canton's, and Lord Charles Cavendish's Observations were not good Ones.

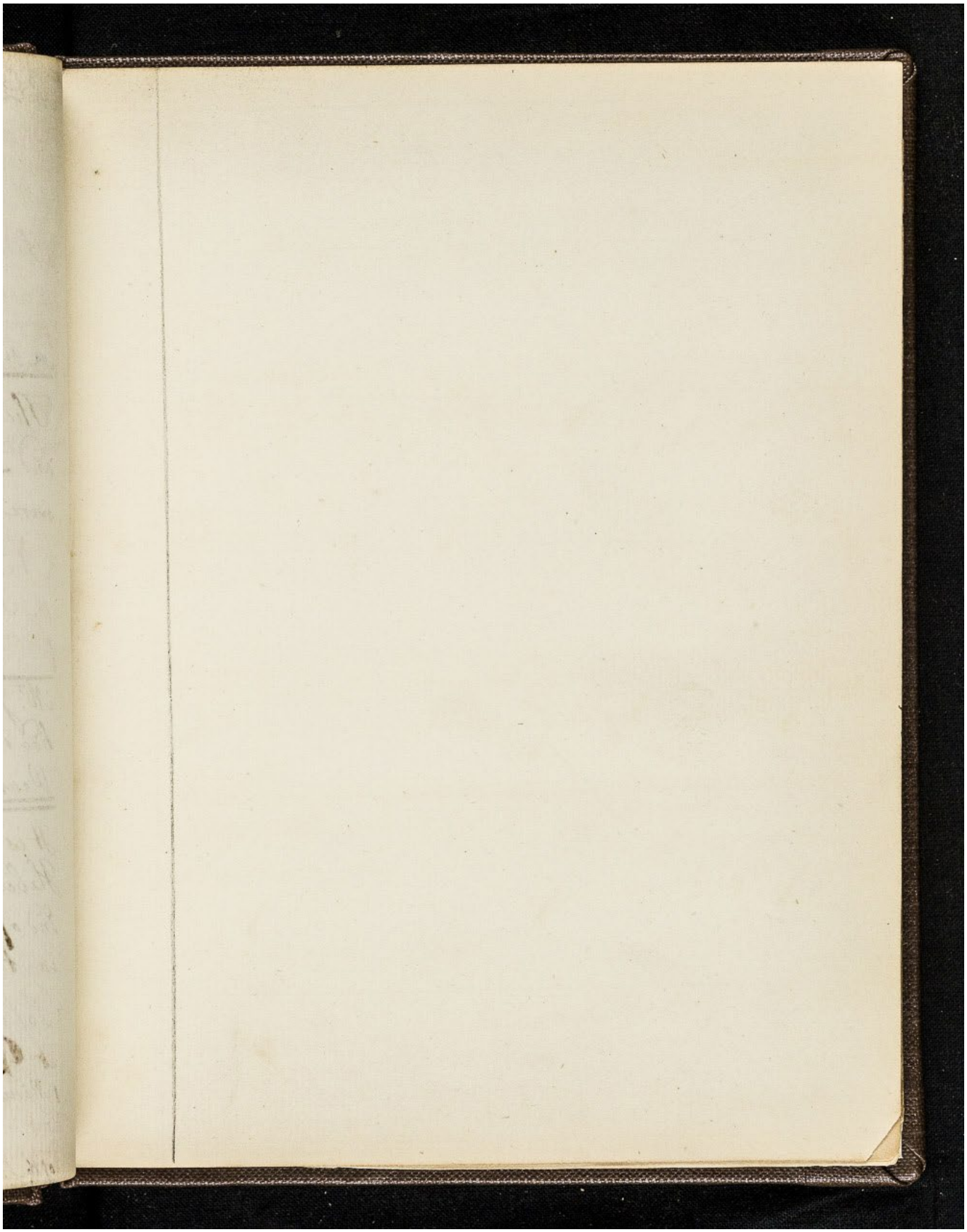
N.B. Observatories built on the Tops of Houses in the Streets of a City, where Carriages are always passing, can never yield correct Observations.

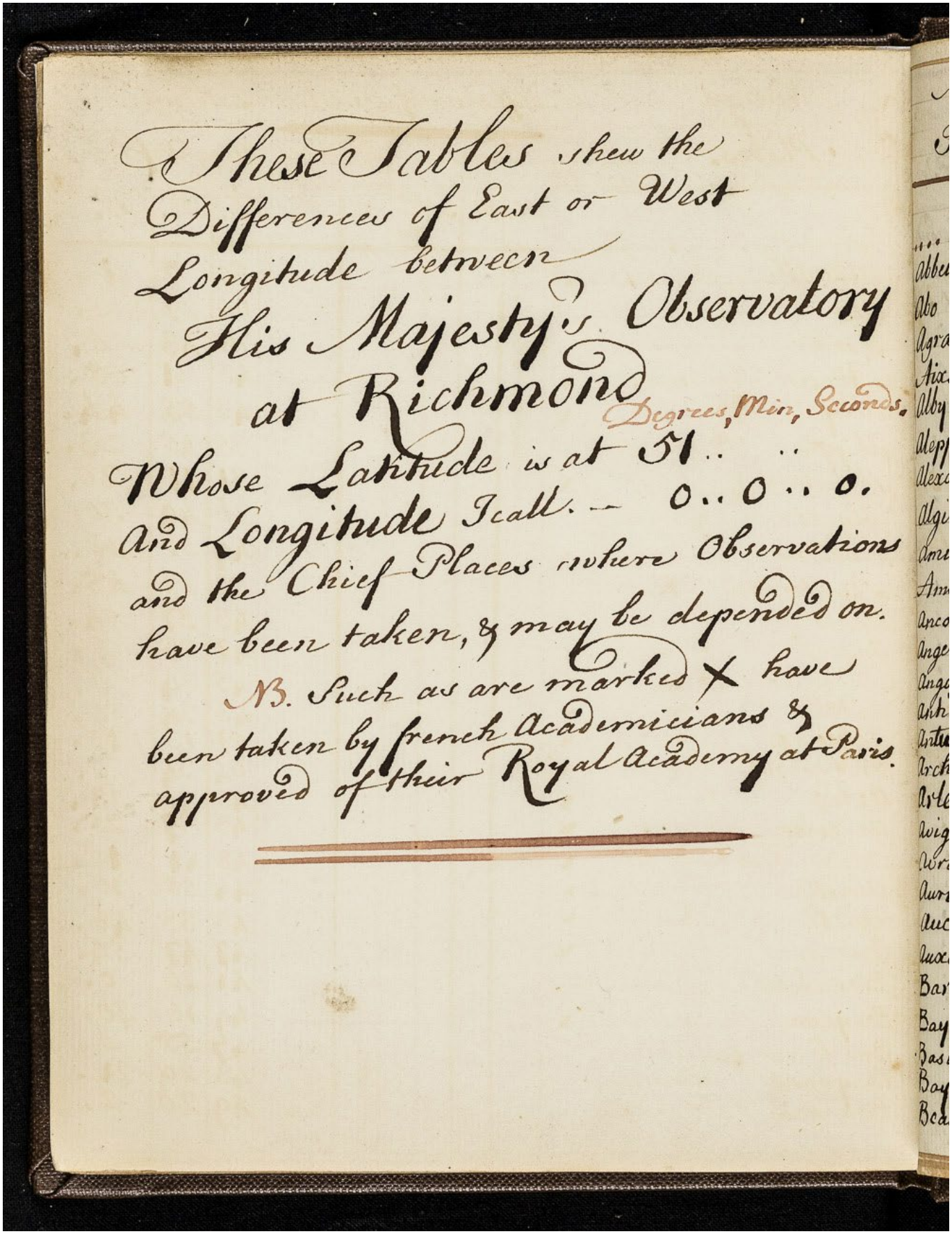
Mr. John Ludlam at Cambridge Observatory had no Observation, by the Badness of the Weather.

It is said, in the same Letter, that Doctor Heberden had a much better View of the End of the Solar Eclipse on the 4th of June in the Morning.

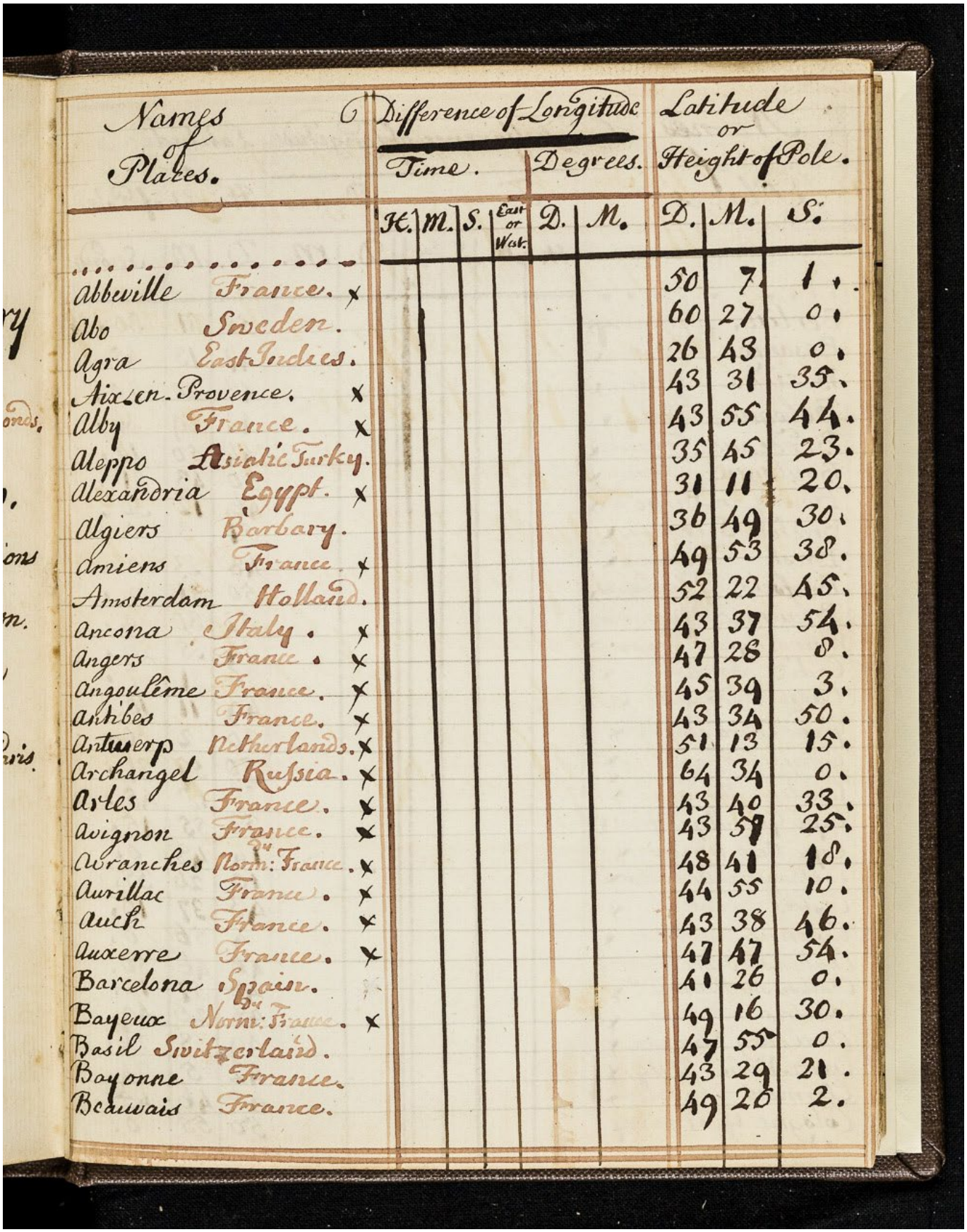
Possibly the Doctor had so: It was seen at Greenwich, according to Mr. Maskelyne, at 8h. 21'. 19". or 1 Minute. 35 Seconds, after Dr. Heberden saw it. But Dr. Heberden's Observatory is 27 Seconds West of Greenwich, therefore he ought to have seen the End, at a Time of the Day, 27 Seconds before Mr. Maskelyne.



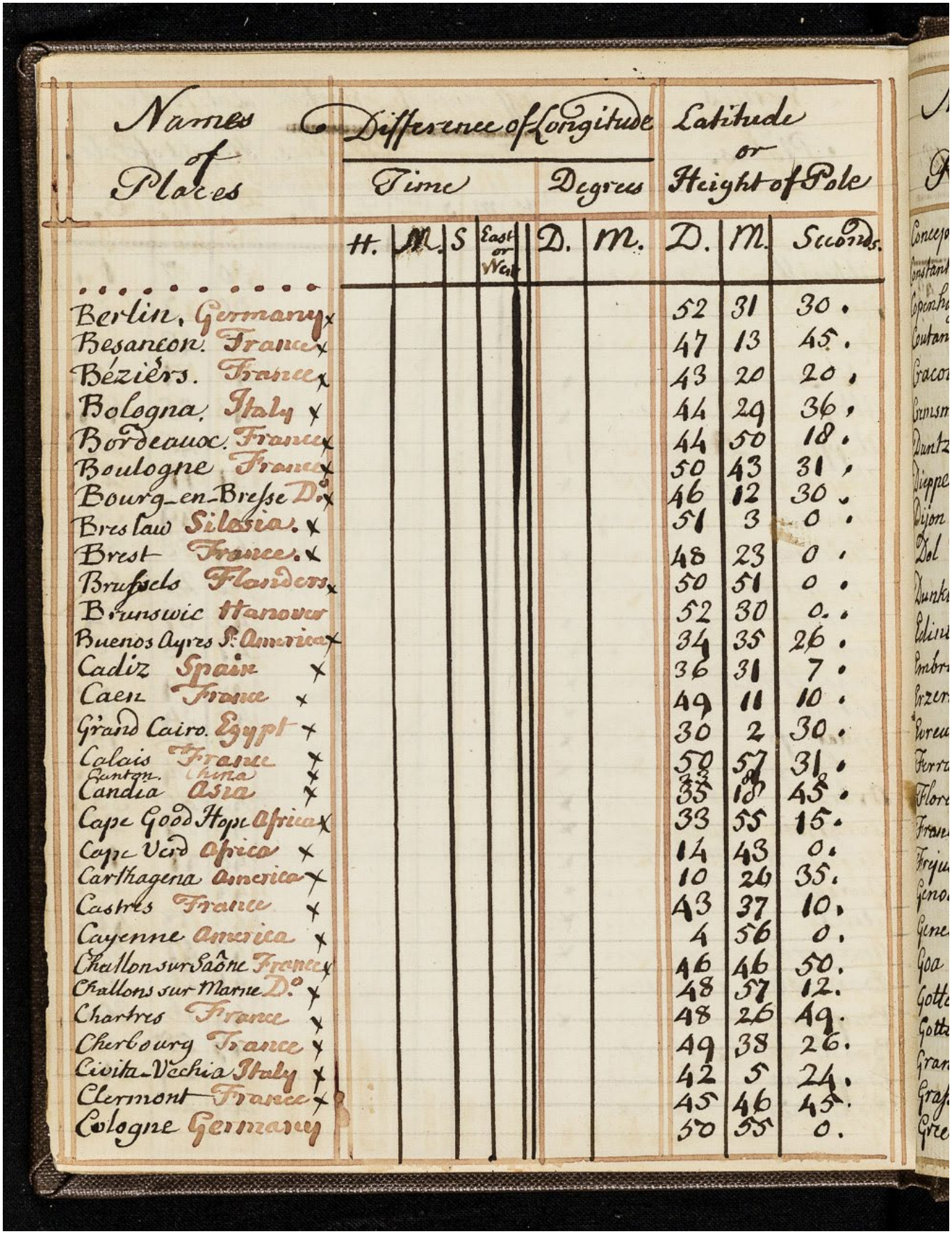




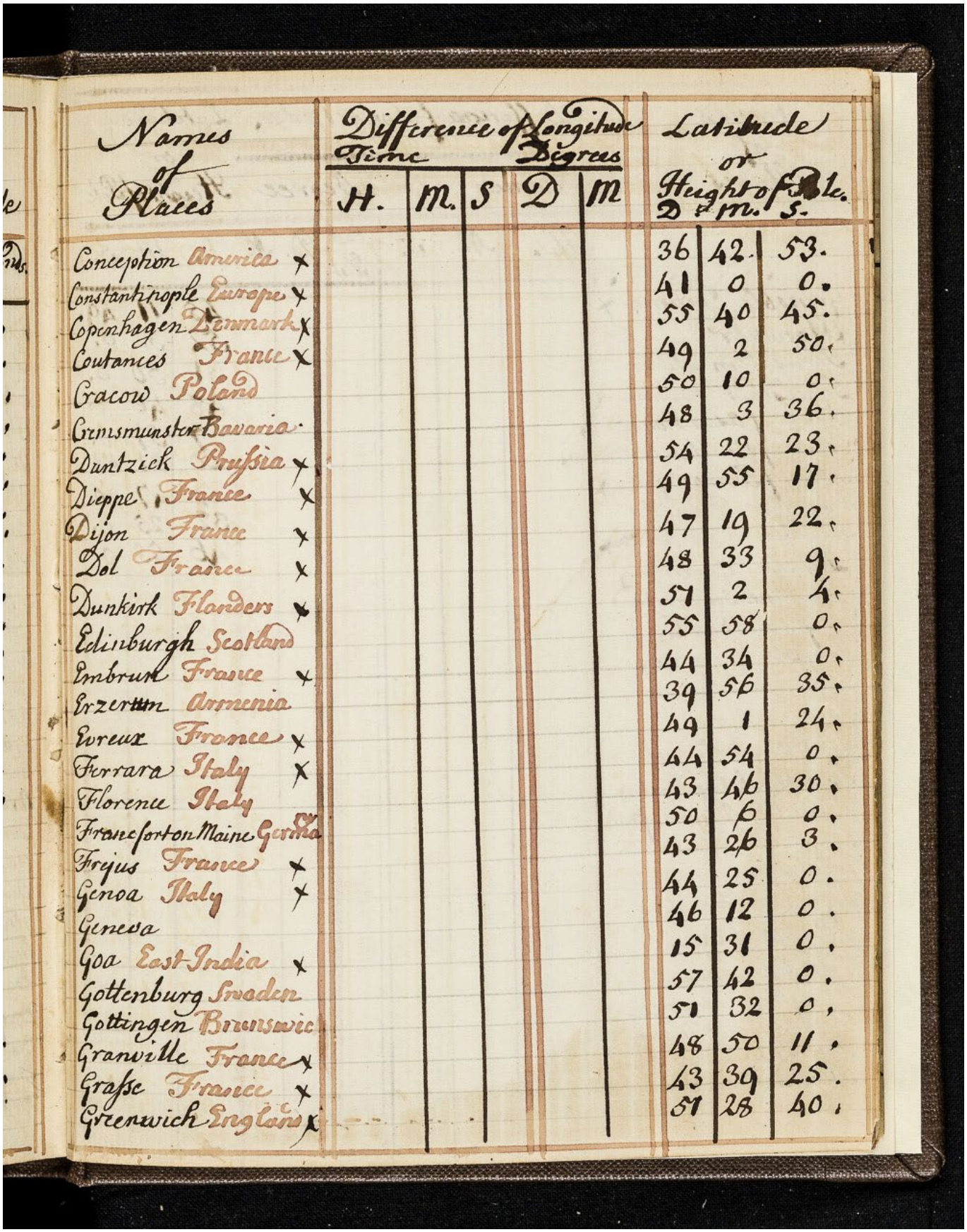
These Tables shew the
Differences of East or West
Longitude between
His Majesty's Observatory
at Richmond
Degrees, Min, Seconds.
Whose Latitude is at 51 .. ..
and Longitude I call. — 0 .. 0 .. 0.
and the Chief Places where Observations
have been taken, & may be depended on.
N.B. Such as are marked × have
been taken by French Academicians &
approved of their Royal Academy at Paris.



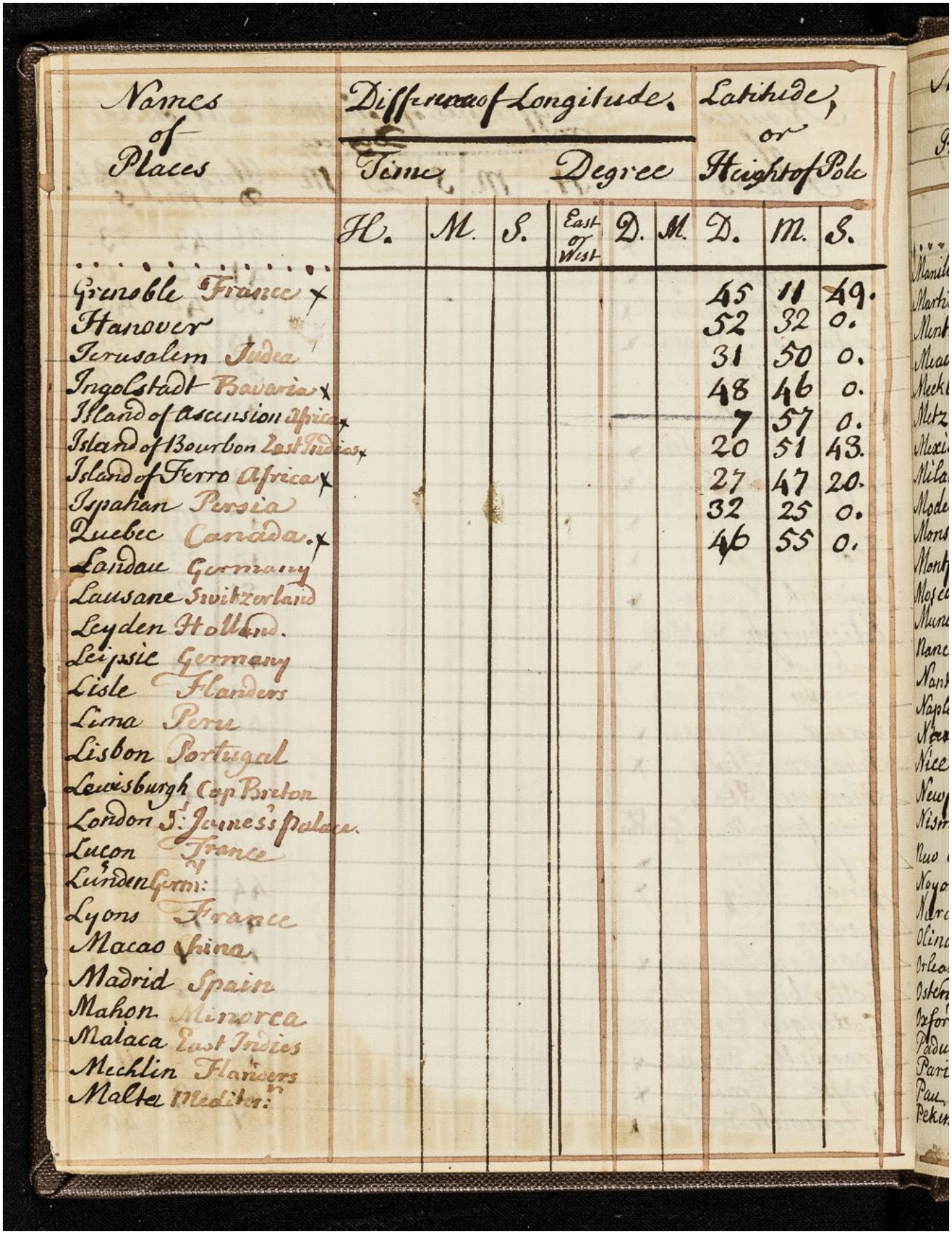
Names of Places.	Difference of Longitude						Latitude or Height of Pole.		
	Time.				Degrees.				
	H.	M.	S.	East or West.	D.	M.	D.	M.	S.
Abbeville France.							50	7	1.
Abo Sweden.							60	27	0.
Agra East Indies.							26	43	0.
Aix en Provence.							43	31	35.
Alby France.							43	55	44.
Aleppo Asiatic Turky.							35	45	23.
Alexandria Egypt.							31	11	20.
Algiers Barbary.							36	49	30.
Amiens France.							49	53	38.
Amsterdam Holland.							52	22	45.
Ancona Italy.							43	37	54.
Angers France.							47	28	8.
Angoulême France.							45	39	3.
Antibes France.							43	34	50.
Antwerp Netherlands.							51	13	15.
Archangel Russia.							64	34	0.
Arles France.							43	40	33.
Avignon France.							43	57	25.
Avranches Norm: France.							48	41	18.
Aurillac France.							44	55	10.
Auch France.							43	38	46.
Auxerre France.							47	47	54.
Barcelona Spain.							41	26	0.
Bayeux Norm: France.							49	16	30.
Basil Switzerland.							47	55	0.
Bayonne France.							43	29	21.
Beauvais France.							49	26	2.



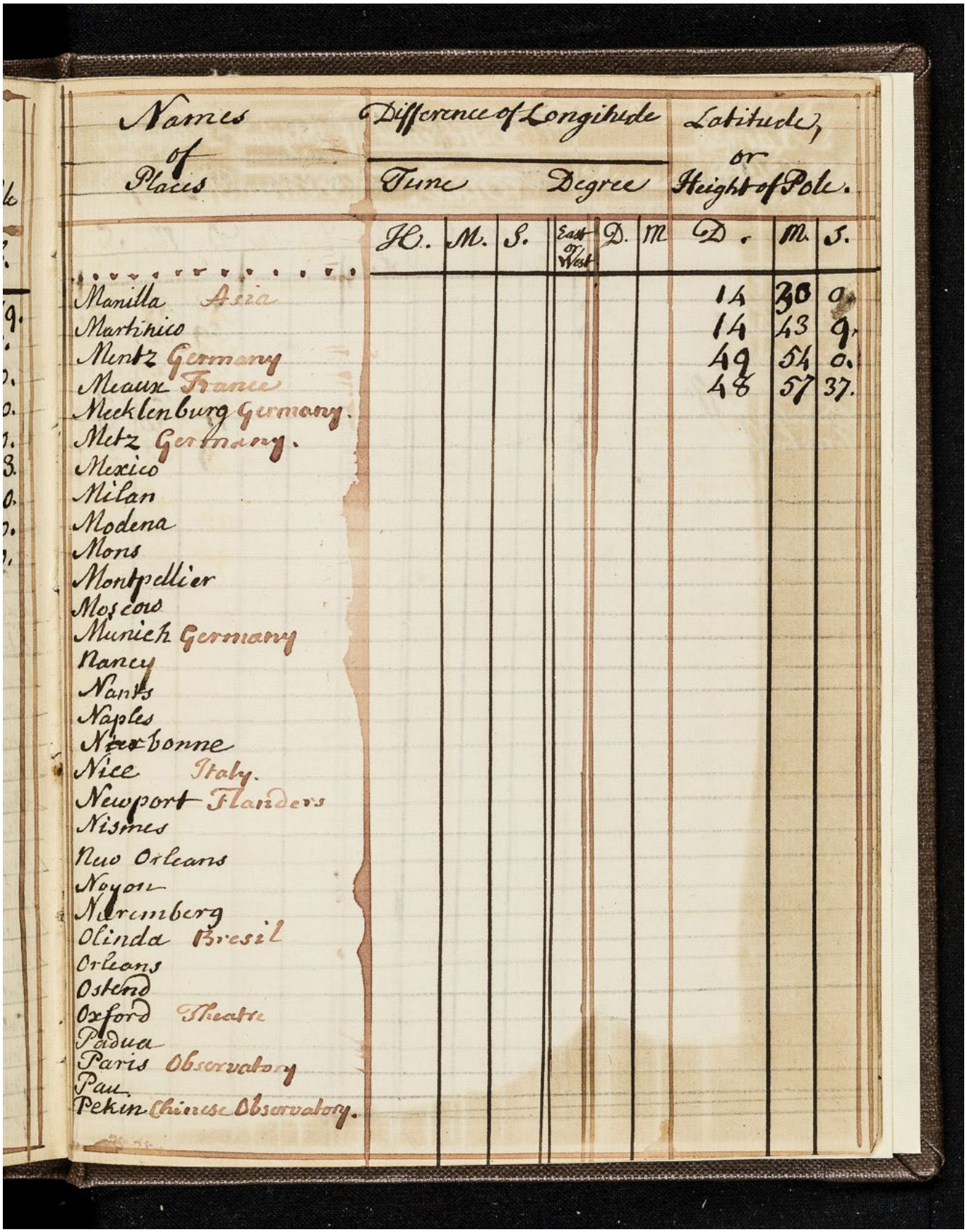
Names of Places	Difference of Longitude: Time H.	M.	S	East or West	Degrees D.	M.	Latitude or Height of Pole: D.	M.	Seconds.
Berlin. Germany							52	31	30.
Besancon. France							47	13	45.
Béziers. France							43	20	20.
Bologna. Italy							44	29	36.
Bordeaux. France							44	50	18.
Boulogne France							50	43	31.
Bourg-en-Bresse D.							46	12	30.
Breslaw Silesia.							51	3	0.
Brest France.							48	23	0.
Brufsels Flanders							50	51	0.
Brunswic Hanover							52	30	0.
Buenos Ayres S. America							34	35	26.
Cadiz Spain							36	31	7.
Caen France							49	11	10.
Grand Cairo. Egypt							30	2	30.
Calais France							50	57	31.
Canton. China							33	18	45.
Candia Asia							33	55	15.
Cape Good Hope Africa							14	43	0.
Cape Verd Africa							10	26	35.
Carthagena America							43	37	10.
Castres France							4	56	0.
Cayenne America							46	46	50.
Chalons sur Saône France							48	57	12.
Chalons sur Marne D.							48	26	49.
Chartres France							49	38	26.
Cherbourg France							42	5	24.
Civita-Vechia Italy							45	46	45.
Clermont France							50	55	0.
Cologne Germany									



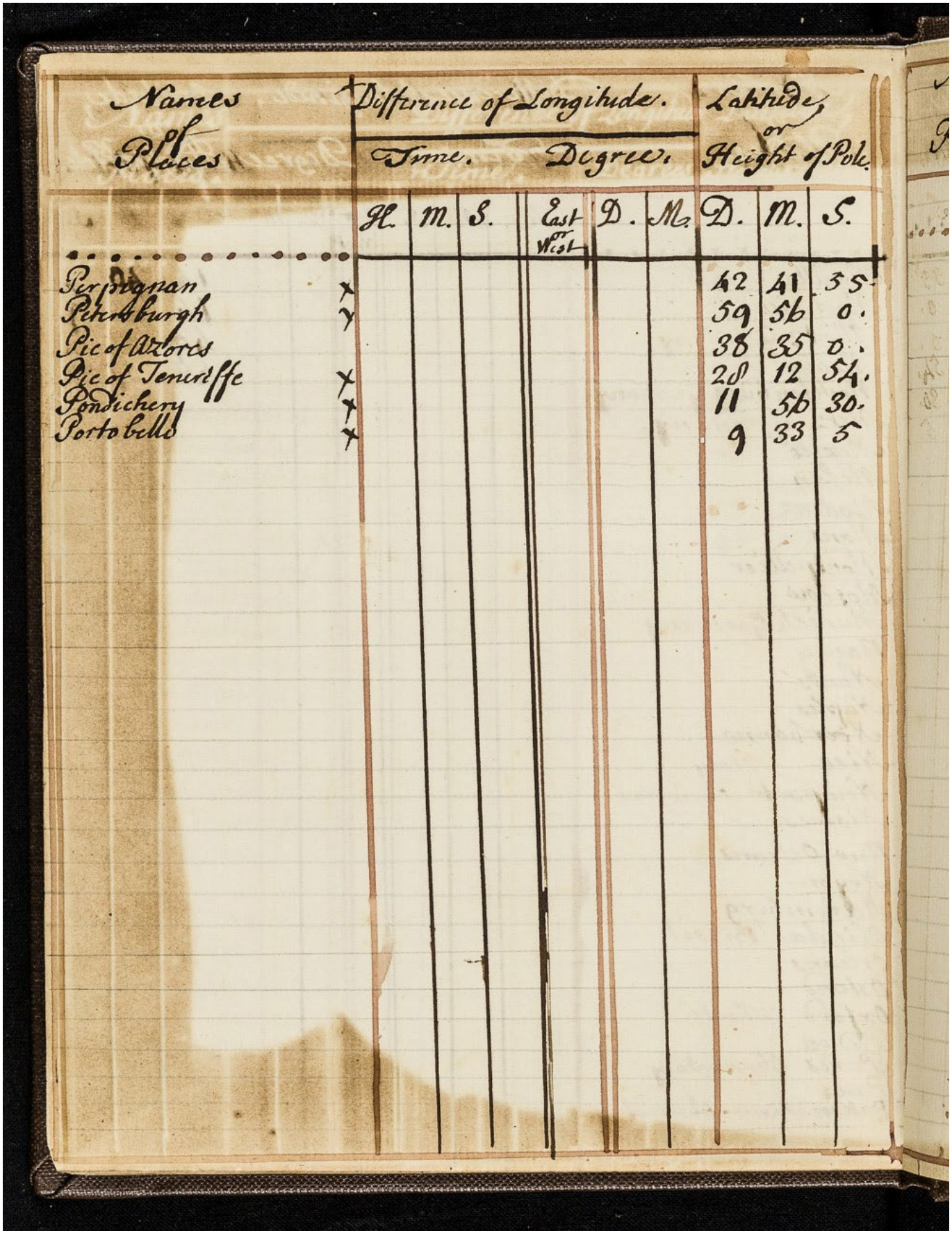
Names of Places	Difference of Longitude Time H.	m.	s	Degrees D	m	Latitude or Height of Pole D	m.	s.
Conception America						36	42.	53.
Constantinople Europe						41	0	0.
Copenhagen Denmark						55	40	45.
Coutances France						49	2	50.
Cracow Poland						50	10	0.
Crimsmunster Bavaria						48	3	36.
Duntzick Prussia						54	22	23.
Dieppe France						49	55	17.
Dijon France						47	19	22.
Dol France						48	33	9.
Dunkirk Flanders						51	2	4.
Edinburgh Scotland						55	58	0.
Embrun France						44	34	0.
Erzerum Armenia						39	56	35.
Evreux France						49	1	24.
Ferrara Italy						44	54	0.
Florence Italy						43	46	30.
Francfort on Maine Germa						50	6	0.
Frejus France						43	26	3.
Genoa Italy						44	25	0.
Geneva						46	12	0.
Goa East-India						15	31	0.
Gottenburg Sweden						57	42	0.
Gottingen Brunswic						51	32	0.
Granville France						48	50	11.
Grasse France						43	39	25.
Grenwich England						51	28	40.



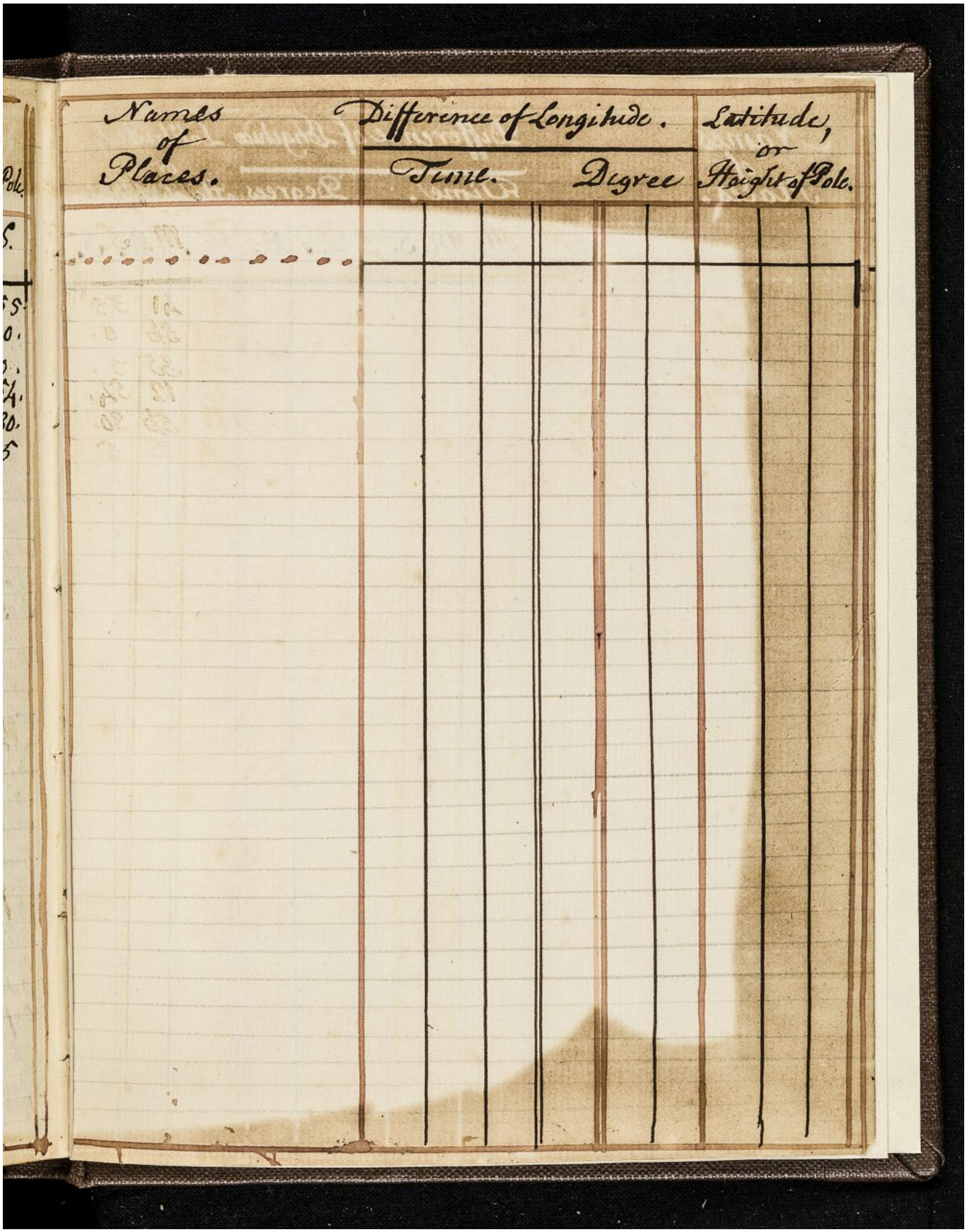
Names of Places	Difference of Longitude. Time H.	M.	S.	East or West	Degree D.	M.	Latitude, or Height of Pole D.	M.	S.
Grenoble France							45	11	49.
Hanover							52	32	0.
Jerusalem Judea							31	50	0.
Ingolstadt Bavaria							48	46	0.
Island of Ascension Africa							7	57	0.
Island of Bourbon East Indies							20	51	43.
Island of Ferro Africa							27	47	20.
Ispahan Persia							32	25	0.
Quebec Canada							46	55	0.
Landau Germany									
Lausane Switzerland									
Leyden Holland									
Leipsic Germany									
Lisle Flanders									
Lima Peru									
Lisbon Portugal									
Lewisburgh Cap Breton									
London St. James's palace									
Lucon France									
Lunden Germ:									
Lyons France									
Macao China									
Madrid Spain									
Mahon Minorca									
Malaca East Indies									
Mechlin Flanders									
Malta Mediter:									

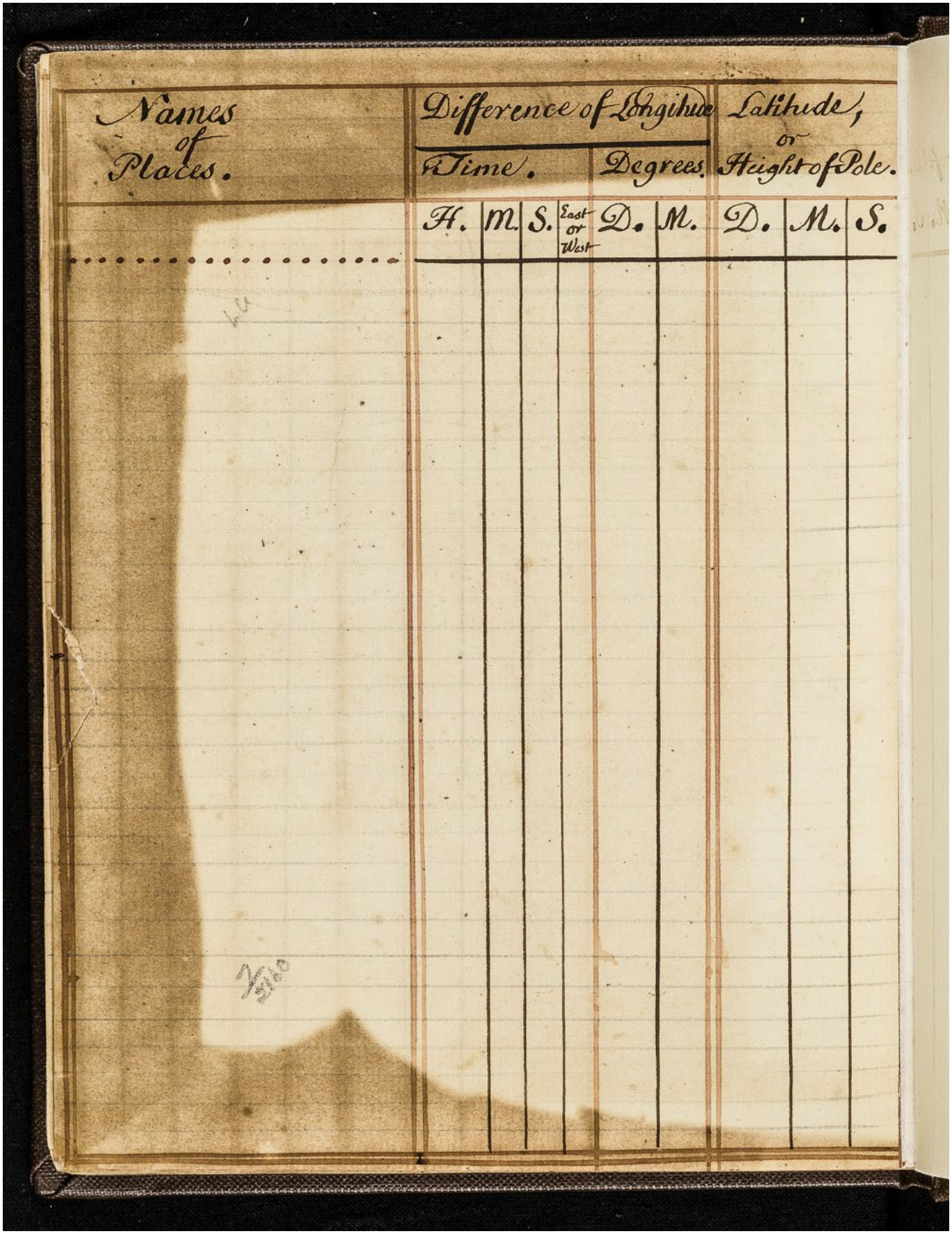


Names of Places	Difference of Longitude in Time H.	M.	S.	East or West	Degree D.	M	Latitude, or Height of Pole. D.	M.	S.
Manilla Asia							14	30	0.
Martinico							14	43	9.
Mentz Germany							49	54	0.
Meaux France							48	57	37.
Mecklenburg Germany.									
Metz Germany.									
Mexico									
Milan									
Modena									
Mons									
Montpellier									
Moscow									
Munich Germany									
Nancy									
Nants									
Naples									
Narbonne									
Nice Italy.									
Newport Flanders									
Nismes									
Neu Orleans									
Noyon									
Nuremberg									
Olinda Bresil									
Orleans									
Ostend									
Oxford Theatre									
Padua									
Paris Observatory									
Pau									
Pekin Chinese Observatory.									



Names of Places	Difference of Longitude. Time. H.	m.	S.	East or West	Degrees. D.	M.	Latitude, or Height of Pole. D.	M.	S.
Perpignan							42	41	35
Petersburgh							59	56	0
Pic of Azores							38	35	0
Pic of Tenneriffe							28	12	54
Pondichery							11	56	30
Portobello							9	33	5





Names of Places.	Difference of Longitude						Latitude, or Height of Pole.		
	Time.				Degrees.				
	H.	M.	S.	East or West	D.	M.	D.	M.	S.