

**Thomas Freeman to Thomas Jefferson, July 13,
1805, from Thomas Jefferson and Early Western
Explorers, Transcribed and Edited by Gerard W. Gawalt,
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Thomas Freeman to Thomas Jefferson

Philadelphia July 13th. 1805 N.W. Corner of Chestnut & 9th Streets

Sir

I take the liberty of enclosing you a plate and explanation of an improved and highly finished Sextant which I have procured here, and on trial find to be a very accurate one. There is to be had her also, a small acromatic Refracting Telescope of three feet length, and of sufficient Magnifying power to determine the Longitude of places within two or three seconds of the best Instrument of the kind.

The method of determining Longitude by the Right Ascension of the Moon, without the aid of Time, which you done me the favor to ask my opinion of, I have examined with all the ability I was capable, and am of opinion it will not answer in its resent shape. Knowing your wish to have it fully investigated and feeling Diffidence in my own knowledge on that subject, I have take the liberty of communicating it to me friend Mr. Patterson, Professor of Mathematics in the

University here. He has not yet made known to me his opinion of its merits, and thro' delicacy I cannot ask him for his remarks on it, believing it to be his wish to communicate those remarks to you himself if required.

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Amongst the various methods of ascertaining the Longitude of places, The most expeditious, and perhaps the most accurate, is by an Observation of the Moon's Transit over the Meridian. The requisites are:

The Apparent time of the Transit of the Moon's Limb over the meridian to find the Longitude of the place of Observation. To solve this problem is only to determine the apparent time of the Moon's passage over the Meridian of Greenwich. Which is to be had from the Sun's and Moon's Right Ascension. This method nearly agrees with the second method you proposed.

In Lunar Observations, if the Sun or Star, should be near the prime Verticle at the time of Observation, The apparent time deduced from the Observation, will be preferable to the time given by a watch and equal to that of a good Time piece.

I have the honor to Sir your Obdt. Servant Thos. Freeman