

Mary Smith's Commonplace book concerning science and mathematics

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[[[left margin]]
[[underline]] Jupiter [[/underline]] cast an elliptical & not a circular Shadow, by [[underline]] De la Lande. [[/underline]] See p. 9. [[/left margin]]

M. de la Lande, in a memoir of the History of the Royal Academy of Sciences at Paris, for the year 1763, treats of the difference produced, by the oblate figure of Jupiter, in the semidurations of the eclipses of his satellites. He shews the necessity, and ascertains the quantity, of a new correction, relative to the theory of these satellites, arising from the consideration of the elliptical figure of Jupiter's shadow, which hath hitherto been considered as circular. By this correction, the theory of the satellites is cleared of an inequality, evidently too considerable to be neglected; as the semiduration, deduced from the supposed circular section of the shadow, differs from that drawn from the true elliptical figure of it (when the difference is greatest) 1'33" for the first satellite; 2'14" for the second; 1'13" for the third; and with regard to the fourth, an error of no less than 2 months may be [[strikethrough]] comitt [[/strikethrough]] committed, in ascertaining the time when it ceases to be eclipsed, by not attending to this correction. {Monthly review for Sept. [[superscript]] r [[/superscript]] 1767. p. 171.

[[left margin]] Experiments on the burning of Candles and Lamps. [[/left margin]]

[[underline]] Experiments to determined the expense of burning Candles of different sizes, as they are commonly made at [[/underline]] Market-Harborough, [[underline]] in [[/underline]] Leicestershire.

[[left margin - sideways]] [[underline]] Experiments to ascertain the expence of burning Chamber Oil. [[/underline]] -- A taper lamp, with eight threads of cotton in the wick, consumed in one hour, 325 oz of spermaceti oil, at two shillings and sixpence [[underline]] per [[/underline]] gallon; the expence of burning 12 hours is 4.57 farthings.

N.B. This gives as good a light as the candles of eight and ten in pound. This lamp seldom wants snuffing, and casts a steady, strong light.

A taper, chamber, or watch lamp, with 4 ordinary threads of cotton in the wick, consumes ,1664 oz of spermaceti oil in one hour; the oil at 2 [[superscript]] s [[/superscript]] fo [[superscript]] d [[/superscript]] [[underline]] per [[/underline]] gallon, the expence of burning 12 hours is 2,34 farthings. Gents Mag. for Feb. [[superscript]] y [[/superscript]] 1765. [[/left margin]]

[[table: 4 columns. Each column divided in transcription by /]] [[column titles - written vertically]] Candles in one pound / Weight of one candle / Time one candle lasted / Expence in 12 hours at 6 [[superscript]] s [[/superscript]] per dozen. [[/column titles]] [[horizontal line in table]] [[Row 2 - denoting units]] [[blank]] / Oz dr. / H M / farth. & 100 [[superscript]] th [[/superscript]] part. [[/Row 2]] [[horizontal line in table]]

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[[left of table]] In the winter 1766 I myself found the mean burning of each candle from the time of the whole 8 in the pound for 3 successive pounds to be 4 [[superscript]] H [[/superscript]] 4 [[superscript]] M [[/superscript]], 4 [[superscript]] H [[/superscript]] 35 1/3 [[superscript]] M [[superscript]], & 4 [[superscript]] H [[/superscript]] 54 1/2 [[superscript]] M [[/superscript]] The mean of these 3 again is 4 [[superscript]] H [[/superscript]] H [[/superscript]] 34 [[superscript]] M [[/superscript]] M [[/superscript]] and for one from a whole pound of twelves is 3 [[superscript]] H [[/superscript]] 39 1/4 [[superscript]] M [[/superscript]]. Which & their appurtances are put down in the three last lines of the Table

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