

to perform the same operation of estimating heights by the barometer in English measures, and using Fahrenheit's thermometer, divide the English inch into 12 parts, or lines, & express the height of the Mercury in lines: take out the corresponding logarithms, & subtract the smaller from the greater: $63\frac{1}{2}$ of Fahrenheit being equivalent to 18 of Reaumur, make that the point of no correction, and for every degree of temperature above or below that add, or subtract $\frac{1}{250}$ as the correction. (the degrees of Reaumur: are to those of Fahrenheit: as 4:9 :: 200:450.) the result will give the number of toises as in the operation in French measures. for example for the height of Monticello

English measures

$$\begin{array}{r} \text{Log. of } 360.72 = 2.5571.702 \\ \text{Log. of } 333.52 = \underline{2.5484.140} \\ \hline 78^\circ - 63\frac{1}{2} \times \frac{87.562}{450} = \underline{\quad 2.819} \\ \hline 90.375 \text{ toises} \end{array}$$

French measures

$$\begin{array}{r} \text{Log. } 338.175 = 2.5291.351 \\ \text{Log. } 425 = \underline{2.5207.282} \\ \hline 206 - 18 \times \frac{87.562}{200} = \underline{\quad 2.845} \\ \hline 90.4 \text{ toises.} \end{array}$$

Monticello.

$$\begin{array}{r} \text{Log. } 353.52 = 2.5464.140 \\ \text{Log. } 349.719 = \underline{2.5437.205} \\ \hline 78^\circ - 63\frac{1}{2} \times \frac{46.935}{450} = \underline{\quad 1.508} \\ \hline 48.443 \text{ toises} \end{array}$$

The French measures gave it 48.427 toises.

1811. Jan. 31. to Feb. 26. from 12. observations of the meridian altitude of the sun with a pocket Hadley's sextant at Poplar Forest, the latitude of that place is $37^\circ - 19' - 56''$ there was but $1' - 36''$ between the extremes of the 12. observations
I conjectured the Longitude thus.

Philadelphia W. from Greenwich	$75^\circ - 13' - 30''$
Washington W. from Philadelphia	$1 - 54 -$
Poplar For. W. from Washington	<u>about $2 - 16 - 30$</u>
	$79 - 24 -$

1811. Nov. 3. Mr Randolph finds the top of Monticello higher than the river below the dam, 580. f
The road at the Thoroughfare higher than the river 360. f
difference 220. f
The road over the Pantops spur, at highest point, higher 315. f

Latitude of Willis's mountain by an observation of the \odot 's meridian altitude taken by myself from the peak adjacent to the principal \odot on the right side as seen from Monticello and two other observations by Th. R.

1811. Nov. 21. Meridian altitude $32^\circ - 37' - 20''$ gives lat. $37^\circ - 33' - 5''$
Dec. 18 $29^\circ - 2' - 50''$ $37^\circ - 35' - 10''$ } $37^\circ - 33' - 12.5''$
19 $29^\circ - 0' - 50''$ $37^\circ - 38' - 15''$ }

Lat. of Monticello $38^\circ - 8' - 0''$
of W's mount $37^\circ - 33' - 5''$
difference $38 - 55 = 40.15$ common miles

Long. of Monticello $78^\circ - 50' - 18.877$
W's mountain $78^\circ - 49' - 31.477$

$47.2 = .72136$ of a mile common. 23