

EXPLORATION OF BRITISH NORTH AMERICA.

55

To compute True and Approximate Altitude of ☉, *s'* and *s* :—

☉'s N. P. D.	Cor.	Cor.	Eq. of T.	☉'s $\frac{1}{2}$ App. Hr. L.	In Arc.	$\frac{1}{2}$ sum (<i>l'</i> + <i>p</i>).
$\begin{array}{ccc} \circ & ' & '' \\ 19 & 46 & 9\cdot9_N \\ & 4 & 14\cdot2 \end{array}$	$\begin{array}{c} '' \\ 31\cdot77 \\ 8 \end{array}$	$\begin{array}{c} s. \\ \cdot118 \\ 8 \end{array}$	$\begin{array}{cc} M. & s. \\ 3 & 48\cdot67 \\ & \cdot99 \end{array}$	$\begin{array}{ccc} H. & M. & s. \\ 1 & 8 & 28\cdot9 \\ & 3 & 47\cdot7 \end{array}$	$\begin{array}{ccc} H. & M. & s. \\ 0 & 36 & 8\cdot3 \\ 60 & & \end{array}$	$\begin{array}{ccc} \circ & ' & '' \\ 70 & 9 & 36 \\ 37 & 7 & 30 \end{array}$
$\begin{array}{ccc} 19 & 50 & 24\cdot1 \\ \hline 70 & 9 & 35\cdot9 \end{array}$	$\begin{array}{c} 254\cdot16 \\ \hline 4 & 14\cdot2 \end{array}$	$\begin{array}{c} \cdot994 \end{array}$	$\begin{array}{cc} 3 & 47\cdot73 \end{array}$	$\begin{array}{ccc} 1 & 12 & 16\cdot6 \\ \hline 0 & 36 & 8\cdot3 \end{array}$	$\begin{array}{ccc} 36 & 8 & 18 \\ \hline 9 & 2 & 4 \end{array}$	$\begin{array}{ccc} 107 & 17 & 6 \\ \hline 53 & 38 & 33 \end{array}$

$$\text{Sin. } \theta = \sqrt{\text{sin. } l' \cdot \text{sin. } p \cdot \text{cos.}^2 \frac{H}{2}}$$
$$\text{Sin. } \frac{z}{2} = \sqrt{\text{sin.} \left(\frac{l'+p}{2} + \theta \right) \cdot \text{sin.} \left(\frac{l'+p}{2} - \theta \right)}$$

$$\begin{array}{rcl} \frac{H}{2} & \dots\dots\dots & 2 \text{ cos. } \begin{array}{ccc} \circ & ' & '' \\ 9 & 2 & 4 \end{array} = 19\cdot989160 \\ p & \dots\dots\dots & \text{sin. } 70 \ 9 \ 36 = 9\cdot973425 \\ l' & \dots\dots\dots & \text{sin. } 37 \ 7 \ 30 = 9\cdot780717 \\ & & \hline & & 53 \ 38 \ 33 \quad 19\cdot743302 \\ & & \hline & & \text{sin. } 48 \ 5 \ 5 \quad 9\cdot871651 \\ & & \hline & & \text{sin. } 101 \ 43 \ 38 = 9\cdot990839 \\ & & \text{sin. } \ 5 \ 33 \ 28 = 8\cdot986096 \\ & & \hline & & 18\cdot976935 \\ & & \hline & & \text{sin. } 17 \ 56 \ 6 \quad 9\cdot488467 \\ & & \hline & & 2 \\ & & \hline & & 35 \ 52 \ 12 \\ & & \hline s' & \dots\dots\dots & 54 \ 7 \ 48 \\ & & \text{R and Px.} \quad + \quad 36 \\ & & \hline s & \dots\dots\dots & 54 \ 8 \ 24 \\ & & \hline \end{array}$$

To compute True and Approximate Altitude of ☽, *m'* and *m* :—

M.☉'s R. A.	☽'s R. A.	Cor.	Cor.	☽'s N. P. D.	$\frac{1}{2}$ M. Dist.	In Arc.	$\frac{1}{2}$ (<i>l'</i> + <i>p</i>).
$\begin{array}{ccc} H. & M. & s. \\ 3 & 47 & 27\cdot53 \\ & 1 & 18\cdot85 \\ & & 1\cdot97 \\ 3 & 48 & 48\cdot35 \end{array}$	$\begin{array}{ccc} H. & M. & s. \\ 10 & 0 & 5\cdot06 \\ & & 25\cdot08 \\ 10 & 0 & 30\cdot01 \end{array}$	$\begin{array}{c} '' \\ 125\cdot95 \\ 2\cdot9 \\ 12 \\ 25\cdot08 \end{array}$	$\begin{array}{c} '' \\ 143 \\ 2\cdot23 \end{array}$	$\begin{array}{ccc} \circ & ' & '' \\ 13 & 51 & 36\cdot9 \\ & 2 & 23 \\ 13 & 49 & 13\cdot9 \\ 76 & 10 & 46 \end{array}$	$\begin{array}{ccc} \circ & ' & '' \\ 3 & 48 & 48\cdot35 \\ 1 & 8 & 28\cdot9 \\ 4 & 57 & 17\cdot2 \\ 10 & 0 & 30\cdot1 \\ 5 & 3 & 12\cdot9 \end{array}$	$\begin{array}{ccc} \circ & ' & '' \\ & 2 & 31 & 36\cdot4 \\ 60 & & \\ 151 & 36 & 26 \\ 37 & 54 & 6 \end{array}$	$\begin{array}{ccc} \circ & ' & '' \\ 76 & 10 & 46 \\ 37 & 7 & 30 \\ 113 & 18 & 16 \\ 56 & 39 & 8 \end{array}$

By Formulæ (1) and (2) :—

$$\begin{array}{rcl} \frac{H}{2} & \dots\dots\dots & 2 \text{ cos. } \begin{array}{ccc} \circ & ' & '' \\ 37 & 54 & 6 \end{array} = 19\cdot794228 \\ l' & \dots\dots\dots & \text{sin. } 37 \ 7 \ 30 = 9\cdot780717 \\ p & \dots\dots\dots & \text{sin. } 76 \ 10 \ 46 = 9\cdot987240 \\ & & \hline & & 56 \ 39 \ 8 \quad 19\cdot562185 \\ & & \hline & & \text{sin. } 37 \ 9 \ 41 \quad 9\cdot781092 \\ & & \hline & & \text{sin. } 93 \ 48 \ 49 = 9\cdot999037 \\ & & \text{sin. } 19 \ 29 \ 27 = 9\cdot523298 \\ & & \hline & & 19\cdot522335 \\ & & \hline & & \text{sin. } 35 \ 14 \ 20 \quad 9\cdot791167 \\ & & \hline & & 2 \\ & & \hline & & 70 \ 28 \ 40 \\ & & \hline m' & \dots\dots\dots & 19 \ 31 \ 20 \\ & & \hline \end{array}$$