APPENDIX.

Eclipses of the Sun are computed in precisely the same way as transits of Venus or Mercury, the Moon taking the place of the planet. The Solar and Lunar Tables furnish the longitude, latitude, equatorial parallax, and semi-diameter of the Sun and Moon, while Formulæ (19)–(30) furnish the parallax in longitude and latitude. If the computation be made from an ephemeris which gives the right ascension and declination of the Sun and Moon instead of their longitude and latitude, we can dispense with formulæ (21) and (23), and adapt (25), (26), (29), and (30) to the computation of the parallax in right ascension and declination. In *Fig.* 6, let Q be the pole of the equator, then $L\,Q$ is the co-latitude $= 90° - \phi$; $Z\,Q\,S = h$, the Moon's true hour angle $=$ the Moon's A. R. $-$ the sidereal time; $S\,Q\,S'$ is the parallax in A. R. $= x$, and $Q\,S' - Q\,S$ is the parallax in declination $= y$. Put $Q\,S$, the Moon's true north polar distance $= 90 - \delta$, then Formulæ (25) and (26) become,

$$\sin x = \sin P \cos \phi \sec \delta \sin (h + x) \qquad (25,\ \text{bis}).$$
$$= k \sin (h + x)$$

$$\text{Or,} \quad x = \frac{k \sin h}{\sin 1''} + \frac{k^2 \sin 2h}{\sin 2''} + \frac{k^3 \sin 3h}{\sin 3''} + \text{\&c.} \qquad (26,\ \text{bis}).$$

Again, the formulæ for determining the auxiliary angle θ in (29) becomes,

$$\cot \theta = \cot \phi \cos (h + \tfrac{x}{2}) \sec \tfrac{x}{2}.$$

And (29) becomes,

$$\sin y = \sin P \sin \phi \operatorname{cosec} \theta \sin ((\theta - \delta) + y). \qquad (29,\ \text{bis}).$$
$$= k \sin ((\theta - \delta) + y)$$

$$y = \frac{k \sin (\theta - \delta)}{\sin 1''} + \frac{k^2 \sin 2 (\theta - \delta)}{\sin 2''} + \frac{k^3 \sin 3 (\theta - \delta)}{\sin 3''} + \text{\&c.}$$
$$(30,\ \text{bis}).$$