some two or three months before and after. Six months later the star Zeta (ζ) in the tail of the Great Bear will supply its place.

2. Using the apparatus just described under II, place the " peep sight " in the line with the plumb-line and Polaris, and move it to the *west* as Polaris moves *east*, until Polaris and Delta, for example, *appear upon the plumb-line together*, and carefully note the time by a clock or watch; then by moving the peep sight, preserve the alignment with *Polaris* and the *plumb-line* (paying no further attention to the other star); at the expiration of the small interval of time given below the *peep sight* and *plumb-line* will define the *true meridian*, which may be permanently marked for future use.

According to Mr. Schott the interval of time before Polaris will be exactly on the meridian is:

Annual
Increase.

For Zeta (ζ) Ursae Majoris in $\begin{cases} 1890 & -0.9 \text{ minutes} \\ 1900 & +2.6 \end{cases}$ $\Big\}$ 0.35 m.

For Delta (δ) Cassiopeiae in $\begin{cases} 1890 & +0.1 \\ 1900 & +3.4 \end{cases}$ $\Big\}$ 0.33 m.

The method given in this article for finding the true meridian cannot be used with advantage on account of the haziness of the atmosphere near the horizon, at places below about 38° north latitude.

The foregoing methods for the determination of the true meridian are excellent in themselves when available, as they answer the requirements of the surveyor and give results with all desirable precision. They do not require an accurate knowledge of the time, which is their principal advantage. The relative motion of the stars employed, when near the meridian and the unchangeable azimuth of Polaris at elongation (so far as the surveyor is concerned), indicate with sufficient exactness the moment when the observation should be made. Stormy weather, a hazy atmosphere, or the presence of clouds, may interfere or entirely prevent observation when the star is either at elongation or on the meridian, and both events sometimes occur in broad daylight or at an inconvenient hour of the night. Under such circumstances a simple method applicable at any time (Polaris being visible), may be acceptable, and can often be used by the surveyor when other methods fail.