AZIMUTHS OF THE NORTH POLE STAR.

For Use Until the Year 1915.

With these tables the Azimuths of Polaris is known at any instant.

An observation can be made whenever the star is visible, practically at any moment from sunset to sunrise; the most favourable times being in the twilight of evening and morning, for the work can always be done more quickly and accurately by daylight, than in the dark.

The Azimuth of the Star being known, the direction of a true meridian, or any other line, at the point of observation, can be at once determined.

EXPLANATION OF THE TABLES.

The Azimuths are calculated for a Fixed Polar Distance of 1° 11′ 40″, and are tabulated to the nearest tenth part of a minute; for each degree of Latitude, from 38° N to 55° N. The Star's Hour Angles are in Mean Time, ten minutes apart;—excepting at 3h 0m, 8h 49m, 14h 58m, 20h 47m, where nine minutes intervene.

As the Star's Polar Distance is constantly changing, it is necessary to apply a correction, in order to obtain the True Azimuth.

The Correction is furnished, to the nearest tenth part of a minute, by means of two tables. The first gives the amount at 5 h 59 m. The second, depending on the first, gives the correction for any Hour Angle.

In the first, the amounts at 5h 59 m are given for each degree of Latitude, and for changes from 0′·1 to 3′·0 in the Polar Distance.

In the second table, the Hour Angles are at the side, the amounts at 5h 59m on the centre line of the page; and the Corrections to the Azimuths are above, and below. They are to be added to the tabulated Azimuth, when the Star's Apparent Polar Distance is greater than 1° 11′ 40″, and subtracted therefrom, when it is less.

TIME.

Local Mean Time (L. M. T.) must always be used for finding Star's Hour Angle, and care taken to remember this in places where Standard time is usually kept.

Standard Time is faster than Local Mean Time when the Standard Meridian lies to the Eastward; and slower when it lies to the Westward of a place; the amount being the difference of Longitude (in time) between the two points.

Ex: In Long. 3h 26m W. where Stand. Time of a Meridian 3h W is kept. Find L. M. T. when a watch 3m 2s fast on Stand. Time shews 8h 0m P.M.

	h	m			h	m	s	
Long. Stand. Mer.....	3	0	W	Watch	8	0	0	P.M.
Long. of place	3	26	W	do fast		3	2	
Stand. T. fast.....	0	26		Stand T.....	7	56	58	P.M.
				do. fast		26	0	
				L. M. T.....	7	30	58	P.M.

INTERPOLATIONS FOR SMALL INTERVALS OF TIME.

One tenth of the difference between two consecutive Azimuths will give the change in Azimuth for 1m of time; two tenth for 2m, etc., excepting at 3h 0m, 8h 49m, 14h 58m, 20h 47m, where one ninth, etc., must be used.

ERRORS IN AZIMUTH CAUSED BY ERRORS IN TIME.

These will be greatest when the star is crossing the meridian, for then it is moving most rapidly in Azimuth. To find the amount; Multiply the change in Azimuth for 1m at the given Hour Angle, by the error in time reduced to minutes and tenths. The result will be the corresponding error in Azimuth.

Ex: Two observations were made in Lat. 49° N. In each case, it was afterwards found that there had been an error of 2m 56s in the time used. What were the errors in Azimuth?

1st Obs'n. Hour Angle 0h 7m.	′	2nd Obs'n. Hour Angle 16h 38 m.	′
Change in Az. for 1m...	0·49	Change in Az. for 1m....	0·16
Error in Time 2m 56s....	2·9 ×	Error in Time 2m 56s	2·9 ×
Error in Az.....	1·421	Error in Az.....	0·464

NOTE—At 1000 feet, a deflection of 1′ gives an offset of 3·49 inches.