

The table below gives an idea of the magnitude of the error at various hour angles.

Error in the observed solar azimuth when the assumed latitude is 1' greater than the true latitude.

Latitude.	APPARENT TIME.									
	A. M.					P. M.				
	7	8	9	10	11	1	2	3	4	5
35	-0.32	-0.70	-1.22	-2.12	-4.55	+1.55	+2.12	+1.22	+0.70	+0.32
40	-0.35	-0.75	-1.30	-2.26	-4.87	+4.87	+2.26	+1.30	+0.75	+0.35
45	-0.38	-0.82	-1.42	-2.45	-5.28	+5.28	+2.45	+1.42	+0.82	+0.38

The formula by means of which the above figures have been obtained, is—

$$c_a = c_l \sec l. \cot t.$$

where c_a is the correction to be applied to the sun's azimuth counted positive in the direction N, E, S, W.

c_l is difference between the assumed latitude and the true latitude, or the quantity to be applied to the latter to get the former.

l is the approximate latitude.

t is the hour angle or number of hours in angular measure counted from apparent noon, *minus* when *before* noon and *plus* when *after* noon.

When the assumed latitude is 1' less than the true latitude, the quantities in the table would, of course, have their signs reversed.

The latitudes of the stations were scaled from the best maps at present to be had. In the table of geographical positions, given in another chapter, the sources from which the positions were obtained are given. From some tests made it would seem that the error in the adopted latitudes will generally fall below one minute.

Since an error of 1' in latitude causes an error for latitude 39° varying from 0.'7 to 4.'8 between the hours from 8 A. M. to 11 A. M. and from 1 P. M. to 4 P. M., this was an error that should be taken into account, if thereby the increased refinement was not obtained at the cost of an additional station. To take this error into account it was necessary either to make fore- and afternoon observations at