The substance of the above rule may be otherwise stated as follows: *The astronomical time is the hours and minutes elapsed since the* NOON LAST PAST, *the astronomical* DATE *being that of the civil day to which the noon belongs.* Thus, April 23, 4.15 p. m., civil time, is April 23, 4h. 15m., astronomical time, and April 23, 4.15 a. m., civil time, is April 22, 16h. 15m., astronomical time.

Hour Angle of Polaris.—In Fig. 9 the full vertical line represents a portion of the meridian passing through the zenith Z (the point directly overhead) and intersecting the northern horizon at the north point N, from which, for surveying purposes, the azimuths of Polaris are reckoned east or west. The meridian is pointed out by the plumb-line when it is in the same plane with the eye of the observer and Polaris on the meridian, and a visual representation is also seen in the vertical wire of the transit, when it bisects the star on the meridian.

When Polaris crosses the meridian it is said to culminate; above the pole (at S) the passage is called the *upper culmination,* in contradistinction to the lower culmination (at S').

In the diagram—which the surveyor may better understand by holding it up perpendicular to the line of sight when he looks toward the pole—Polaris is supposed to be on the meridian, where it will be about *noon* on April 10 of each year. The star appears to revolve around the pole, in the direction of the arrows, once in every 23h. 56.1m. (23 hours, 56 minutes, 4.09 seconds) of *mean solar time;* it consequently comes to and crosses the meridian, or *culminates,* nearly four minutes *earlier* each successive day. The apparent motion of the star being uniform, one quarter of the circle will (omitting fractions) be described in 5h. 59m., one-half in 11h. 58m., and three-quarters in 17h. 57m. For the positions s_1, s_2, s_3, etc., the angles SPs_1, SPs_2 SPs_3, etc., are called *Hour Angles of Polaris* for the instant the star is at s_1, s_2, or s_3, etc., and they are measured by the arcs Ss_1, Ss_2, Ss_3, etc., expressed (in these instructions) in *mean solar* (common clock) time, and are always counted from the *upper* meridian (at S) to the *west,* around the circle from 0h. 0m. to 23h. 56m.1, and may have any value between the limits named. The hour angles,