Fig. 15.

In the N. A. are given, for every day in the year, the sidereal times of transit at Greenwich of the moon and of certain suitable stars, called "moon-culminating" stars; also the rate of change per hour (at the time of transit) of the moon's R.A. As the moon moves rapidly through the stars from west to east it is evident that at a station not on the meridian of Greenwich the interval between the two transits will be different from that at Greenwich; and the moon's rate of motion per hour being known a simple proportion will (if the station is near the meridian of Greenwich) give the difference of time between the station and Greenwich, and thence the longitude. If the station is far from the meridian of Greenwich a correction will have to be made for the change in the rate of change of the moon's R.A. The rate of change at the time of transit at the station is found from the N. A. by interpolation by 2nd differences, and the means of the rates of change at Greenwich and at the station is taken as the rate for the whole interval of time between the transits.

An example will best illustrate the method:

At a certain station to the west of Greenwich on the 25th Oct. the interval between the transits of α Tauri and of the moon's bright limb, reduced to sidereal time, was found to be 0h. 4m. 2s.

First, to find the approximate longitude—

	Greenwich Transits.		
α Tauri........	4h.	28m.	18s.
Moon's 2d limb.	4	2	26
		25	52
		4	2
		21	50
		60	
		1310s.	

From the N.A. we find that the moon's R.A. changes 161s.17 per hour.

$\frac{1310}{161.17}=8{\cdot}127$. The approximate longitude is 8h. 7m. 37s.

To find the correct longitude we have to determine the variation of the moon's R.A. in one hour at the station. From the N.A. we find

On the 25th	at lower transit	it was	159s·67	1·50 difference.
"	" upper	"	"	161 ·17	0·71 "
"	26th lower	"	"	161 ·88	