

In going through these phases the moon more than completes the circuit of her orbit around the earth, for the earth during a lunation is carried forward in its movement around the sun about 30 degrees, and the moon must pass over that distance before sun, moon and earth take the relative positions requisite to make new moon. Such a lunation, or course of the moon once round the earth, and far enough on a second course to come again in conjunction with the sun, is called the moon's synodical revolution. The mean time for making it is 29 days, 12 hours, 44 minutes and 3 seconds. The mean time it takes for the circuit of her own orbit only is but 27 days, 7 hours, 43 minutes and 11 seconds. Thus in each lunation the moon, from the earth's motion of translation round the sun, proceeds 2 days, 5 hours and 52 seconds on a second course before coming into the necessary alignment with sun and earth essential to present the phenomenon of new moon. These figures furnish the mean time in which the moon is carried through her orbit, but disturbing forces so considerably affect her velocity and direction, that astronomers, only by long profound research, have succeeded in foretelling what will be the moon's place in the heavens at any given future time.

Astronomical science regards the heavenly bodies in two aspects : in their relations to time and space, and as masses of matter moving in obedience to cosmic forces. Ages of observation prepared the way for the latter conception, and ancient astronomy chiefly kept watch over the times and seasons. Still, in the early stages of astronomical research, the moon was accorded attention, as many ancient nations used the moon's phases as a measure of time. The word moon, it is thought by some philologists, can be traced to the root *ma*, meaning to measure.

Although a lunation is, in many respects, a desirable standard for measuring time, it has been found extremely difficult to make it a sub-division of the tropical year or the time taken by the earth to complete her course from, and return to, the vernal equinox. Wherever the lunisolar year has been adopted intercalations have been necessary to bring the lunar months and solar years out even. The Greeks used simultaneously the two standards, and had no end of difficulty to keep them from overlapping. Their Olympiads supply a record for a thousand years, and are perhaps the best scale of past events on record. They originated from holding, every four years,