

instant of absolute time from the different parts of the earth to which they are visible, but their relative time will differ according to their difference of longitude: Now, the times of these appearances in the heavens are calculated according to a certain meridian, suppose that of London, and these calculations we have in the ephemeris or almanack; if then, we nicely attend to the time of the coming on of the eclipse; according to our distance, east or west from the meridian of London, so will the hour of its appearance differ from that of the calculation; but the difference of time between any two places is, as was already remarked, only another name for their difference of longitude.

However, eclipses of the moon happen too seldom to be of much use at sea, and eclipses of the Jupiter's Satellites are of no use except at land, because they are not visible without a telescope, which requires a steadiness not suited to the motion of a ship. But mariners in long-voyages make use of the moon's distance from the sun, and from some stars in the zodiac at particular hours, which being calculated before hand for the meridian of London, they may by an exact observation and careful calculation from it, correct their computed longitude, for, by the course and distance they sail they compute how much their longitude and latitude are altered, which they call the ship's reckoning, which is never quite exact, and which in stormy weather they may lose.

15. *Maps.*] It is by longitude and latitude the situation of places is determined and described by the moderns. A true map of the world can only be delineated on a globe or ball. Maps, however, are projected upon different principles on plane surfaces. If a large space be described on one of these it must necessarily be represented in a distorted manner. The distortion, however, is regular; and any small part of the map in tolerable proportion with itself, though not with the whole. The lines that run from north to south in maps are the meridians. All the places that lie on one of these, from pole to pole, are in the same longitude. The lines that cross these from east to west are called parallels of latitude, as they are really on the globe parallel to each other, and to the equinoctial; all the places that lie on one of these are in the same latitude quite round the world or round the poles.

On the margins of the maps, the degrees are marked; and by these we know the longitude and latitude of the places contained.

16. *Climates.*] The ancients, in their scanty knowledge of geography, and before their invention of the manner of reckoning by the degrees of longitude and latitude, contented themselves with mentioning the climate as the situation of a place.

A climate is a certain space of the earth contained between two parallels of latitude, where the difference between the longest day in each parallel is half an hour. The climates decrease in breadth in proportion as they advance from the equator to the poles. There are twenty-four climates on each side of the equator. The equator is the beginning of the first climate either to the north or to the south. The polar circle is the termination of the twenty-fourth climate.

Within