tions, and mingles with and swells the waters which cover the globe.

The sun's heat pervades one half of the surface of the globe at all times; and by the periodical visitation of the various oceans by the sun, in consequence of the diurnal rotation of the globe, periodical swellings are produced in those oceans, which exhibit all the phenomena of the tides.

The waters contained in any given tract of the globe, for instance, the Atlantic Ocean, are exposed to, and receive the sun's heat once in twenty-four hours, in consequence of the diurnal motion of the earth. Let the sun be on the line : the nights and days will be equal, and the sun will rise at six o'clock. The moment the sun rises, its heat begins to sink into the ocean; as the sun ascends, the heat becomes greater, its intrusive, pervading, and expansive force greater, until it reaches the zenith, and the gradual augmentation of the water by the immersion of heat during this time, will exhibit a flood tide along the edges of the shores in contact with the ocean. It will be noon, and six hours will have elapsed. As the sun gradually declines westward, there will be also a gradual secession and escape of the heat from the ocean. The ocean, thus insensibly abandoned by the heat, will consequently shrink, and exhibit along the shores an ebb tide. At six o'clock in the evening, the sun having set, and the heat altogether vanished, low water will take place. During this first solar day of twelve hours, there will be one flood tide and high water, and one ebb tide and low water : one rise and one fall of the water.