And first we observe that the sun holds the earth in its orbit in space, which is comprehended under the law of gravity, whereby every body exerts an attractive influence upon every other body. It is the same force that causes all material things to drop toward the centre of the earth; it is the force that underlies our ideas of weight.

Between us and the sun our senses tell us there is nothing, nothing but empty space. The scientist, however, in his conception goes beyond the senses, and in the invisible builds a theory, which we have not space here to question, but accept for the present on the ground of authority. He says that all space is filled with an invisible, perfectly elastic ether, rarer than any known gas and imperceptible by any of the senses. The undulations or waves of this ether constitute heat and light. The motions of this ether striking upon the molecules of our body, or of any body, set these molecules in motion somewhat in the same manner as the motion of the air striking upon the strings of an Eolian harp set them in vibration. These vibrations of the human body are transmitted to the brain and the mind translates them as *heat*. Similar vibrations of the ether, however, strike the eye, which is differently constructed from the rest of the body, and therefore the motions or vibrations transmitted will be different, and the mind translates them as *light*. Heat and light are thus both caused by the same rays. The eye and the body may be compared to two harps differently strung: the same breeze sweeps the strings of both, but the sounds resulting are quite different.

These rays of heat and light play a great part in the origin of the forces and phenomena of the world. As they come from the sun at the rate of 186,000 miles per second they first encounter the ocean of atmosphere that surrounds the earth. The heat being most intense at the equator, the air there is heated, expands, and becoming lighter ascends, when the colder and heavier air from the north and south rushes in and produces a wind. To this cause can be attributed the great prevailing winds on the earth's surface. 'Tis the sun we see that drives