we tread. Every one has heard of the chimera of "perpetual motion." Not every one, however, has considered that the impossibility of perpetual motion results from the impossibility of transforming forces in a perpetual circle. Force shuns perpetual motion. It tolerates no such monotony. It is seeking rest. In larger or smaller quantities it steals away from you, and lies down to a quiet slumber, while your machine is deserted and motionless as a corpse. Heat filters in every direction through the atmosphere; motion steals through the bearings of your wheels, and, under the guise of frictional heat, it sneaks away from your control.

All motion is *mechanical.* There is no motion in the heavens above, or upon the earth beneath, which is not effected by the self-same forces as we incorporate in a steam-engine, or vainly strive to chain to the drudgery of perpetual motion. Every movement which we witness upon the earth—whether of winds, or clouds, or waters, or quaking mountains, is but the motion of *some part of a machine.* The earth is a piece of mechanism. The varied motions which we witness upon its surface arise from the perpetual transformations of force. The solar system is a piece of mechanism. All its visible motions have been demonstrated to arise from the action of the same force as that which drives a water-wheel or a hydraulic ram.

The question then arises whether the motions of a great machine are more likely to be perpetuated than those of a small one. A vast and complicated machine can be nothing more than a concatenation of small ones. The very statement of the case suggests a negative response. Terrestrial forces, like those which impel the locomotive, are wearing themselves out. All their activities are destined to be invaded by the sluggishness of age—by the torpor of death. The cosmical machine, like a clock, is running