

back to the primeval energy of the parent nebula, or sun. There is, however, a certain propriety and convenience in distinguishing between that part of it which is due to the survival of some of the original energy of the planet, and that part which arises from the present supply of energy received day by day from the sun. In the former case, the geologist has to deal with the interior of the earth and its reaction upon the surface; in the latter, he is called upon to study the surface of the earth, and to some extent its reaction on the interior. This distinction allows of a broad treatment of the subject under two divisions:

I. **Hypogene or Plutonic Action**—the changes within the earth, caused by original internal heat and by chemical action.

II. **Epigene or Surface Action**—the changes produced on the superficial parts of the earth, chiefly by the circulation of air and water set in motion by the sun's heat.

PART I. HYPOGENE ACTION

An Inquiry into the Geological Changes in Progress beneath the Surface of the Earth

In the discussion of this branch of the subject, it is useful to carry in the mind the conception of a globe still intensely hot within, radiating heat into space, and consequently contracting in bulk. Portions of molten rocks from inside are from time to time poured out at the surface. Sudden shocks are generated, by which earthquakes are propagated to and along the surface. Wide geographical areas are upraised or depressed. In the midst of these movements, the rocks of the crust are fractured, squeezed, sheared, crumpled, rendered crystalline, and even fused.