

with established facts to assume that the solid crust overlying a region where the subterranean heat is increasing in intensity, becomes gradually upheaved, fractured, and distended, the lower part of the newly opened fissures becoming filled with fused matter, which soon consolidates and crystallizes. These uplifting movements may be propagated along narrow belts, placed side by side, and may have been in progress simultaneously, or in succession, in one narrow zone after another.

When the expansive force has been locally in operation for a long period, in a given district, there is a tendency in the subterranean heat to diminish;—the volcanic energy is spent, and its position is transferred to some new region. Subsidence then begins, in consequence of the cooling and shrinking of subterranean seas of lava and gaseous matter: and the solid strata collapse in obedience to gravity. If this contraction take place along narrow and parallel zones of country, the incumbent flexible strata would be forced, in proportion as they were let down, to pack themselves into a smaller space, as they conformed to the circumference of a smaller arc. The manner in which undulations may be gradually produced in pliant strata by subsidence is illustrated on a small scale by the creeps in coal-mines; there both the overlying and underlying shales and clays sink down from the ceiling, or rise up from the floor, and fill the galleries which have been left vacant by the abstraction of the fuel.* In like manner the failure of support arising from subterranean causes may enable the force of gravity, though origi-

* See "Elements of Geology," by the author. 2d ed. vol. i., p. 110.—Boston ed. vol. i. p. 108.