cooling lavas, but also fluorine, phosphorus and boron, whence it acquired much greater activity and a capacity for acting on many bodies on which the volatile matter contained in the lavas of Etna has but a comparatively insignificant action." [36]

§ 3. Effects of compression, tension, and fracture

Among the geological revolutions to which the crust of the earth has been subjected, its rocks have been in some places powerfully compressed; elsewhere they have undergone enormous tension, and almost everywhere they have been more or less ruptured. Hence internal structures have been developed which were not originally present in the rocks. These structures will be more properly considered in Book IV. We are here concerned mainly with the nature and operation of the agencies by which they have been produced.

The most obvious result of pressure upon rocks is consolidation, as where a mass of loose sand is gradually compacted into a more or less coherent stone, or where, with accompanying chemical changes, a layer of vegetation is compressed into peat, lignite, or coal. The cohesion of a sedimentary rock may be due merely to the pressure of the superincumbent strata, but some cementing material has usually contributed to bind the component particles together. Of these natural cements the most frequent are

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[36] "Sur les Emanations Volcaniques et Metallifères," Bull. Soc. Geol. France, iv. (1846), p. 1249. This admirable and exhaustive memoir, one of the greatest monuments of Élie de Beaumont's genius, should be consulted by the student. See also De Lapparent (Bull. Soc. Geol. France, xvii. (1889), p. 282) on the part played by mineralizing agents in the formation of eruptive rocks.