

sulphur and gypsum in its crevices. Silica is likewise deposited from solution at many orifices, and coats the altered rock with a crust of chalcedony, hyalite, or some form of siliceous sinter. As the result of this action, masses of rock are decomposed below the surface, and new deposits of alum, sulphur, sulphides of iron and copper, etc., are formed above them. Examples have been described from Iceland, Lipari, Hungary, Terceira, Teneriffe, St. Helena, and many other localities.<sup>91</sup> The *lagoons* of Tuscany are basins into which the waters from suffioni are discharged, and where a precipitation of their dissolved salts takes place. Among the substances thus deposited are gypsum, sulphur, silica, and various alkaline salts; but the most important is boracic acid, the extraction of which constitutes a thriving industry. In Chile many solfataras occur among extinct volcanoes.<sup>92</sup>

Another class of gaseous emanations betokens a condition of volcanic activity further advanced toward final extinction. In these, the gas is carbon-dioxide, either issuing directly from the rock or bubbling up with water which is often quite cold. The old volcanic districts of Europe furnish many examples. Thus on the shores of the Laacher See—an ancient crater-lake of the Eifel—the gas issues from numerous openings called *moffette*, round which dead insects, and occasionally mice and birds, may be found. In the same region occur hundreds of springs more or less charged with this gas. The famous Valley of Death in Java con-

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<sup>91</sup> Von Buch, "Canar. Inseln," p. 232. Hoffmann, Pogg. Ann. 1832, pp. 38, 40, 60. Bunsen, Ann. Chem. Pharm. 1847 (lxii.), p. 10. Darwin, "Volcanic Islands," p. 29. The name *Propylite*, as already mentioned (ante, p. 293) has been proposed by Rosenbusch to be restricted to certain andesites and allied rocks altered by solfataric action.

<sup>92</sup> Domeyko, Ann. Mines, ix. (7e. sér.). Large numbers of solfataras occur also in Iceland.