

no longer retain the smallest resemblance to rocks cooled down from a state of fusion. The exhalations of sulphuretted hydrogen and muriatic acid, which are disengaged continually from the Solfatara, also produce curious changes on the trachyte of that nearly extinct volcano: the rock is bleached, and becomes porous, fissile, and honey-combed, till at length it crumbles into a white siliceous powder.\* Numerous globular concretions, composed of concentric laminae, are also formed by the same vapours in this decomposed rock.†

*Vesuvian minerals.*—A great variety of minerals are found in the lavas of Vesuvius and Somma; augite, leucite, felspar, mica, olivine, and sulphur, are most abundant. It is an extraordinary fact, that, in an area of three square miles round Vesuvius, a greater number of simple minerals have been found than in any spot of the same dimensions on the surface of the globe. Häuy enumerated only 380 species of simple minerals as known to him; and no less than eighty-two had been found on Vesuvius and in the tuffs on the flanks of Somma before the end of the year 1828.‡ Many of these are peculiar to that locality. Some mineralogists have conjectured that the greater part of these were not of Vesuvian origin, but thrown up in fragments from some older formation, through which the gaseous explosions burst. But none of the older rocks in Italy, or elsewhere, contain such an assemblage of mineral products; and the hypothesis seems to have been prompted by a disinclination to admit that, in times so recent in the earth's history, the laboratory of Nature could have been so prolific in the creation of new and rare compounds. Had Vesuvius been a volcano of high antiquity, formed when Nature

Wanton'd as in her prime, and play'd at will  
Her virgin fancies;

it would have been readily admitted that these, or a much greater variety of substances, had been sublimed in the crevices of lava, just as several new earthy and metallic compounds are known to have been produced by fumeroles, since the eruption of 1822.

*Mass enveloping Herculaneum and Pompeii.*—In addition to the ejections which fall on the cone, and that much greater mass which finds its way gradually to the neighbouring sea, there is a third portion, often of no inconsiderable thickness, composed of alluviums, spread over the valleys and plains at small distances from the volcano. Aqueous vapours are evolved copiously from volcanic craters during eruptions, and often for a long time subsequently to the discharge of scorïæ and lava: these vapours are condensed in the cold atmosphere surrounding the high volcanic peak, and heavy rains are thus caused. The floods thus occasioned, sweep along the impalpable dust and light scorïæ, till a current of mud is produced, which is called in Campania, "lava d'acqua," and is often more

\* Daubeny on Volcanos, p. 169.

‡ Monticelli and Covelli, Prodróm.

† Scrope, Geol. Trans., second series, della Mineral. Vesuv. vol. ii. p. 346.