

by considering the viscosity of the moving mass, and easily imitable by art.

The minerals which enter into the composition of lava are, as already stated (p. 56.), chiefly felspar, augite, and titaniferous iron. But besides these, many varieties of substances are produced in a crystallised state during the cooling of the fused mass; and, as is commonly observed among the old rocks, such as granite and basalt, these occur most plentifully, and in the finest crystallisations, in cellular cavities and small fissures of the lava. Eighty-two species of minerals are enumerated in a catalogue of the products of Vesuvius by Monticelli and Covelli, and others have been added to the already large list of this unusually rich locality.

“Lava, when observed as near as possible to the point from whence it issues, is, for the most part, a semifluid mass of the consistence of honey, but sometimes so liquid as to penetrate the fibre of wood. It soon cools externally, and therefore exhibits a rough unequal surface; but, as it is a bad conductor of heat, the internal mass remains liquid long after the portion exposed to the air has become solidified. That of 1822, some days after it had been emitted, raised the thermometer from 59° to 95° at a distance of 12 feet; 3 feet off, the heat greatly exceeded that of boiling water. The temperature at which it continues fluid is considerable enough to melt glass and silver, and has been found to render a mass of lead fluid in 4 minutes, when the same mass, placed on red-hot iron, required double that time to enter into fusion.”—“Even stones are said to have been melted when thrown into the lava of Vesuvius and Etna. On the other hand, the temperature in some cases does not appear to have been sufficient to fuse copper; for, when bell-metal was submitted to the action of the lava of 1794, the zinc was separated, but the copper remained unaffected.” (Daubeny, *On Volcanos*, p. 381.) These experiments on the heat of lava at the surface are not at all discordant with what is known of the easy fusibility of basaltic and trachytic compounds. In lava