

larly interesting to the geologist. In Auvergne, and the more southern parts of France, there are extinct volcanoes of different ages, covering with their products several thousand square miles. The most recent of these volcanoes has been extinct or dormant since the records of authentic history, and probably for a longer period. Julius Cæsar, who was encamped on this volcanic soil, and has described the country, makes no allusion to its having been the seat of active volcanoes.*

West of the town of Clermont, there is an extensive granitic plain, rising about sixteen hundred feet above the level of the river Allier. On this plain there are numerous cones, and dome-shaped hills, varying in height from twelve hundred to two thousand feet; some of these cones have well-preserved craters, and the cones themselves are formed chiefly of scoriaceous lava. These are the most recent volcanoes of that country; their products differ in no respect from those of modern volcanoes, except that the lava may often be observed passing to the state of compact basalt, exactly similar to many of the basaltic rocks in Great Britain. That these volcanoes are the most recent, is proved by the lava flowing down from them into the present valleys; and hence we are certain, that the eruptions must have taken place subsequently to the excavation of the valleys. There are other currents of lava from more ancient volcanoes, that have flowed before the valleys were excavated, and form isolated caps on the hills that enclose the present valleys. These currents of lava are composed chiefly of compact basalt: the position of these isolated caps of basalt is similar to that on the hill *b*, (Plate III. fig. 2.) but they are not always columnar. The openings from which these beds of basalt have flowed cannot be always traced; but as we can observe the change from scoriaceous lava to basalt in the currents of undoubted lava, we cannot hesitate to admit, that the basalt which forms these caps, must have had a similar origin. Under the caps of basalt, there are in many situations thick beds of volcanic tufa, containing bitumen, which will be subsequently noticed. Beside the volcanoes with craters, that have ejected currents of scoriaceous lava and basalt, and poured them into the valleys; and beside the more ancient volcanoes, that have formed beds of basalt before the excavation of the valleys,—there are other volcanic mountains, which have rounded summits or domes, without any perforation or crater, and these are composed chiefly of whitish or grey earthy felspar, containing imbedded crystals of felspar: to this rock the name of trachyte has been given, on account of its rough fracture. It may be properly called a volcanic porphyry.

* I visited the extinct volcanoes of France in the spring of 1822, and published an account of them in the 2d volume of my Travels, accompanied with cuts, and a section and outline of the country round Clermont, which is, I believe, the first attempt to render in this manner the structure of this volcanic district intelligible to the general reader. Without the aid of sections and diagrams, it is difficult to obtain a distinct notion of the relative position of the different volcanic formations.