

tenacity of the lava, prevented its escape, it would be compressed, and form cavities, or air bubbles, at the bottom of the melted mass. In other instances, where the fluidity of the lava permitted the steam from below to escape through it, the mass would be compact and form solid basalt, or greenstone. It might sometimes happen that water would be enclosed in the cavities of the mass, which is found to be the case in some basalt rocks.

Thus, according to the different circumstances of pressure from the depth of the ocean, and from the tenacity of the melted mass, Sir G. Mackenzie, supposes that porous and vesicular lava, or compact basalt, might be formed from the same eruption; or the mass might be porous below and compact above.

As Iceland is at present the seat of active volcanoes, and as submarine volcanoes are forming rocks near the shores of that island, Sir George Mackenzie's explanation of the causes which have produced the various appearances in the basaltic ranges of that island, seems highly probable. In Sicily, the connection of basaltic with volcanic rocks has been clearly established by Ferrara, Professor of Natural Philosophy at Catania.

In the vicinity of Clermont Ferrand in Auvergne, a thick bed of basalt has once covered an extensive tract of country; it rests upon a bed of volcanic tufa, and the latter frequently covers beds of fresh water limestone. This bed of basalt, and the subjacent tufa and limestone, have evidently been furrowed and excavated by the same causes, which have excavated valleys in other parts of the world; hence the basalt occurs, forming isolated caps on many of the mountains. In some parts a gradation may be traced in the same bed from a compact basalt, similar to that of Arthur's Seat near Edinburgh, to porous basalt, approaching more or less to the state of scoriaceous lava. But the basalt of Auvergne belongs evidently to volcanic products, and will be described in the chapter on volcanoes. It may be proper to remark, that as the basalt of Auvergne covers beds of fresh water limestone, which belongs to the tertiary strata, its age is evidently posterior to that formation of limestone, which is regarded as the most recent.

Basalt sometimes presents a globular structure, globes of hard basalt being imbedded in a mass of basalt of a softer kind.

Wacke or earthy basalt has frequently a greenish or reddish brown colour; it often contains cavities which are generally filled with nodules of agate, or with zeolite or calcareous spar. The agates are composed of concentric layers, and have apparently been formed by siliceous infiltration, depositing successive coats within each other, until the cavity is filled up. Basaltic rocks of this kind are called amygdaloids. The Hill of Kinnoul, in the vicinity of Perth, is formed of basaltic amygdaloid, containing agate nodules in great abundance, of various dimensions and beautifully striped. At Woodford Bridge, in Gloucestershire, there is a low rock of amygdaloidal