

used as synonymous with the terms igneous effects and igneous agencies, while at other times they are only employed in relation to elevations which eject from their summits or cones fused rocks, and the cause which gives them birth. Some writers include in the expression, volcanic action, the phenomenon of hot springs; others add to this the ejection of mud, as at Turbaco, in South America, while others confine it to the positive projection of liquefied mineral matter from the interior of the earth. Now, however certain it may be that many phenomena derive their origin from the energy of the same cause, yet some difference should be made in descriptive language; and therefore, instead of applying the term volcano to all those appearances in which heated substances are ejected from below the surface of the earth, we shall confine its application to those spots where liquefied rocks, having proofs of calorific agency, are ejected.

Volcanoes, according to our definition of them, may be divided into two classes, active and extinct. There is some difficulty in determining whether a volcano is extinct or not; for craters which have not suffered eruption for ages, have suddenly assumed all their activity, and spread their liquefied contents over the adjacent districts. We must then consider all volcanoes to be extinct which have not been active during the historic period; but should any of these hereafter exhibit any proof of a continued existence of the agent, they may then be classed among the active cones.

The most interesting series of extinct volcanoes with which we are personally acquainted, is that of Auvergne, in France. The most recent of these had certainly no relic of activity at the time when Julius Cesar invaded Gaul; for although he encamped upon them, he has not in his commentaries alluded to their volcanic origin. How long before this they ceased to present those phenomena which attend eruption must be a matter of speculation, as the most ancient historical records of the country do not in any way refer to them.

The most recent part of this district is that to the west of Claremont. This fact is determined by the position of the lavas, and not by any distinctive characters in their composition; for it is well known that all deductions formed upon the differences of chymical constitution in the ejected materials, are exceedingly erroneous. But when the geologist traces a bed of lava down a contiguous valley, he is justified