

and basalt rock; but as Hall's experiments had shown that basalt when melted could again solidify in crystalline form, he supposed that the lavas of Vesuvius represented a pre-existing basalt of aqueous origin which had been melted in the earth's crust and ejected as lava. In other cases, for example at Solfatara, the lava might not be basaltic in character, and might have some other origin. In the same letter he gave a description of the definite sequence in the eruptive phenomena of Vesuvius. The eruptions, he said, begin with earthquakes, radial fissures form on the slopes of the mountains, and lava wells out; then the pent-up steam and vapours burst forth from the central vent with explosive force and noise, throwing into the air enormous masses of ashes and fragmentary scoriæ amidst dust and smoke. After the crater is emptied, quiet is regained, the exhalations of injurious gases marking the final stages of a spent volcanic outburst.

While our scientific knowledge of volcanoes was derived in great measure from Italy, that country also was the scene of the series of earthquake shocks which convulsed Calabria in 1783. Great importance is attributed to the Calabrian earthquake in scientific literature, from the circumstance that many of the observers present in Calabria during the disturbance, or immediately after it, were experienced men of science, and their vivid descriptions and accurate observations and drawings afforded the first circumstantial scientific account of earthquake phenomena.

*D. France, Belgium, Holland, and the Iberian Peninsula.*—During the eighteenth century France had fallen behind Great Britain, Germany, and Italy in the pursuit of geology and palæontology, but the influence of Buffon revived a warmer interest in these studies. Scarcely any other country in Europe offers such a fine field for geological studies as France. Apart from the Pyrenees, Alps, Brittany, and the Ardennes, the stratigraphy of French districts is comparatively simple, and the strata abound with a wealth of well-preserved fossil remains. In addition, there is the wonderful Auvergne district, with its groups of extinct volcanoes, discovered by Guettard in 1752.

Desmarest was the French geologist whose genius disclosed the full significance of these extinct volcanoes and made Auvergne famous. In 1763 he observed on the plateau of