

Among the Palæozoic rocks of Scotland remnants of such ancient volcanic plateaus occur in the Old Red Sandstone (hills of Lorne) and Carboniferous systems (Campsie Fells and hills above Largs), where they consist chiefly of consecutive sheets of different porphyrites and diabases rising into long terraced table-lands. The regularity of thickness and parallelism of these sheets form conspicuous features in the scenery of the districts in which they occur.

It is chiefly basaltic rocks, however, that in all parts of the world have flowed out without the production of prominent cones and craters, and now build up vast volcanic plateaus. The fragmentary Miocene plateaus of the British Islands, the Faroe Islands and Iceland; those of the Indian Deccan and of Abyssinia, and the more recent basalt floods which have closed the eventful history of volcanic action in North America, are notable illustrations of this type of structure. Beds of tuff, conglomerate, gravel, clay, shale, or other stratified intercalations occasionally separate the sheets of basalt. Layers of lacustrine clays, sometimes full of leaves, and even with sufficiently thick masses of vegetation to form bands of lignite or coal, may also here and there be detected. But marine intercalations are rare or absent. There can be no doubt that these widely extended sheets of basalt were in the main subaerial outpourings, and that in the hollows of their hardened surfaces lay lakes and smaller pools of water in which the interstratified sedimentary materials were laid down. The singular persistence of the basalt-beds has often been noticed. The same sheet may be followed for several miles along the magnificent cliffs of Skye and Mull. Mr. Clarence King believes that single sheets of basalt in the Snake River lava-field of Idaho may have flowed for 50 or 60 miles.<sup>5</sup> The basalts, however, so exactly resemble each other that the eye may be deceived unless it can follow a band without any interruption of continuity.

## § 2. Fragmental, or Tuffs

While the observer may be in doubt whether a particular bed of lava has been poured out at the surface as a true flow, or has consolidated at some depth, and, there-

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<sup>5</sup> "Geological Exploration of 40th Parallel," i. p. 593. See also C. E. Dutton, *Nature*, 27th November, 1884. 6th Ann. Rep. U. S. Geol. Surv. 1884-85, p. 181, and 4th Ann. Rep. of same Survey, 1882-83, p. 85.