

dome-shaped cones at the points of emission, have taken place over wide areas from scattered vents, along lines or systems of fissures. Vast sheets of lava have in this manner been poured out to a depth of many hundred feet, completely burying the previous surface of the land and forming wide plains or plateaus. These truly "massive eruptions" have been held by Richthofen¹³⁶ and others to represent the grand fundamental character of volcanism, ordinary volcanic cones being regarded merely as parasitic excrescences on the subterranean lava-reservoirs, very much in the relation of minor cinder cones to their parent volcano.¹³⁷

Though a description of these old fissure or massive eruptions ought properly to be included in Book IV., the subject is so closely connected with the dynamics of existing active volcanoes that an account of the subject may be given here. Perhaps the most stupendous example of this type of volcanic structure occurs in Western North America. The extent of country which has been flooded with basalt in Oregon, Washington, California, Idaho, and Montana has not yet been accurately surveyed, but has been estimated to cover a larger area than France and Great Britain combined, with a thickness averaging 2000 but reaching in some places to 3700 feet.¹³⁸ The Snake River plain in Idaho (Fig. 70) forms part of this lava-flood. Surrounded on the north and east by lofty mountains, it stretches westward as an apparently boundless desert of sand and bare sheets of black basalt. A few streams descending into the plain from the hills are soon swallowed up and lost. The Snake River, however, flows across it, and has cut out of its lava-beds a

¹³⁶ Trans. Akad. Sci. California, 1868.

¹³⁷ Proc. Roy. Phys. Soc. Edin. v. 236; Nature, xxiii. p. 3.

¹³⁸ J. LeConte. Amer. Journ. Sci. 3d ser. vii. (1874), 167, 259.