

3. **Lava.**—The term lava is applied generally to all the molten rocks of volcanoes.<sup>16</sup> The use of the word in this broad sense is of great convenience in geological descriptions, by directing attention to the leading character of the rocks as molten products of volcanic action, and obviating the confusion and errors which are apt to arise from an ill-defined or incorrect lithological terminology. Precise definitions of the rocks, such as those given above in Book II., can be added when required. A few remarks regarding some of the general lithological characters of lavas may be of service here; the behavior of the rocks in their emission from volcanic orifices will be described in § 2.

While still flowing or not yet cooled, lavas differ from each other in the extent to which they are impregnated with gases and vapors. Some appear to be saturated, others contain a much smaller gaseous impregnation; and hence arise important distinctions in their behavior (pp. 370–395). After solidification, lavas present some noticeable characters, then easily ascertainable. (1) Their average specific gravity may be taken as ranging between 2.37 and 3.22. (2) The heavier varieties contain much magnetic or titaniferous iron, with augite and olivine, their composition being basic, and their proportion of silica averaging about 45 to 55 per cent. In this group come the basalts, nepheline-lavas, and leucite-lavas. The lighter varieties contain commonly a minor proportion of metallic bases, but are rich in silica, their percentage of that acid ranging between 70 and 75. They are thus not basic but acid rocks. Among their more important varieties are the rhyolites and obsidians. Some intermediate varieties (trachytes, phonolites, and andesites) connect the acid and basic series. (3) Lavas differ much in structure and texture. (a) Some are entirely crystalline, consisting of an interlaced mass of crystals and crystalline particles, as in some dolerites, and granitoid rhyolites. Even quartz, which used to be considered a non-volcanic mineral, charac-

---

<sup>16</sup> "Alles ist Lava was im Vulkane fließt und durch seine Flüssigkeit neue Lagerstätten einnimmt" is Leopold von Buch's comprehensive definition.