

B. GLASS.—Even to the unassisted eye, many volcanic rocks consist obviously in whole or in great measure of glass.⁹² This substance in mass is usually black or dark green, but when examined in thin sections under the microscope, it presents for the most part a pale brown tint, or is nearly colorless. In its purest condition, it is quite structureless, that is, it contains no crystals, crystallites, or other distinguishable individualized bodies. But even in this state it may sometimes be observed to be marked by clot-like patches or streaks of darker and lighter tint, arranged in lines or eddy-like curves, indicative of the flow of the original fluid mass. Rotated in the dark field of crossed Nicol-prisms, such a natural glass remains dark, as, unless where it has undergone internal stresses, it is perfectly inert in polarized light. Being thus *isotropic*, it may readily be distinguished from any inclosed crystals which, acting on the light, are *anisotropic* (p. 169). Perfectly homogeneous structureless glass, without inclosures of any kind, occurs for the most part only in limited patches, even in the most thoroughly vitreous rocks. Originally the structure of all glassy rocks, at the time of most complete fusion, may have been that of perfectly unindividualized glass. But as these masses tended toward a solid form, devitrification of their glass set in. Many forms of incipient or imperfect crystallization, as well as perfect crystals, were developed in the still fluid and moving mass, and, together with crystals of earlier growth, were arranged in the direction of motion. Devitrification has in frequent examples proceeded so far that no trace remains of any actual glass.⁹³

⁹² See E. Cohen on glassy Rocks. Neues Jahrb. 1880 (ii.), p. 23.

⁹³ Consult a paper on the microscopic character of devitrified glass and some analogous rock-structures, by D. Herman and F. Rutley. Proc. Roy. Soc. 1885, p. 87.