of at least the rhyolites and felsites. Every gradation can be traced from a perfect glass into a thoroughly devitrified and even crystalline rock. As already remarked, the original vitreous condition of rhyolite can still be seen even with the naked eye in the clots and streaks of glass that occasionally run through it in the direction of its flow-structure. Various names have been given to the glassy rocks, of which the chief are obsidian, pitchstone and pumice. These, however, are not to be regarded as distinct rock-species but rather as the glassy condition of different lavas.

Obsidian (rhyolite-glass)—the most perfect form of volcanic glass, externally resembling bottle glass, having a perfect conchoidal fracture, and breaking into sharp splinters, transparent at the edges. Its colors are black, brown, or grayish-green, rarely yellow, blue, or red, but not infrequently streaked or banded with paler and darker hues. A thin slice of obsidian prepared for the microscope is found to be very pale yellow, brown, gray, or nearly colorless, and on being magnified shows that the usual dark colors are almost always produced by the presence of minute opaque crystallites, which present themselves as black opaque trichytes, sometimes beautifully arranged in eddy-like lines showing the original fluid movement of the rock (Fig. 19); also as rod-like transparent microlites. They occasionally so increase in abundance as to make the rock lose the aspect of a glass and assume that of a dull flint-like or enamel-like stone. This devitrification can only be properly studied with the microscope. Again, dull gray enamel-like spherulites appear in some parts of the rock in great abundance, drawn out into layers so as to give the rock a fissile structure, while steam- or gas-cavities likewise occur, sometimes so large and abundant as to impart a cellular aspect. The occurrence of abundant sanidine crystals gives rise to *Porphyritic Obsidian*. Many obsidians, from the increase in the number of their steam-vesicles, pass into pumice. Now and then, the steam-pores are found in enormous numbers, of extremely minute size, as in an obsidian from Iceland, a plane of which, about one square millimetre in size, has been estimated to include 800,000 pores. The average chemical composition of obsidian is—silica, 71·0; alumina, 13·8; potash, 4·0; soda, 5·2; lime, 1·1; magnesia, 0·6; oxides of iron and manganese, 3·7; loss, 0·6 (little or no water). Mean specific gravity, 2·40. Obsidian occurs as a product of the volcanoes of late geological periods. It is found in Lipari, Iceland, and Teneriffe; in North America, it has been erupted