

Canon, Fish Creek Mountains, contained silica, 60.58; alumina, 17.52; ferric oxide, 2.77; ferrous oxide, 2.53; manganese, a trace; lime, 3.78; magnesia, 2.76; soda, 3.30; potash, 4.46; carbonic acid, a trace. Loss by ignition, 2.25; specific gravity, 2.6-2.7. The geologists of the Geological Survey of the United States believe that the rocks included under the term "prophyrite" in the western parts of America represent various stages of the decomposition of granular diorite, porphyritic diorite, diabase, quartz-porphry, hornblende-andesite, and augite-andesite.<sup>194</sup> The name has been more recently applied by Rosenbusch to rocks which have undergone alteration by solfataric action.

### iii. Basic Series

This third series of eruptive rocks is distinguished by its low silica percentage, and the relative abundance of its basic constituents. A similar range of structure can be traced in it as in the other two series. At the one extreme come rocks with a holocrystalline structure like the gabbros. These pass into others of a hemi-crystalline character, where, amid abundant crystals, crystallites, and microlites, there are still traces of the original glass. At the other end lie true basic volcanic glasses, which externally might be mistaken for the pitchstones and obsidians of the acid rocks.

**Gabbro**<sup>195</sup> (Euphotide)—a group of coarsely crystalline rocks composed of plagioclase (labradorite) or anorthite, magnetite or titaniferous iron, and some ferro-magnesian mineral, which in the normal gabbros is augite or diallage, but may be a rhombic pyroxene, hornblende, olivine, or mica. These minerals occur in allotriomorphic forms, as in granite; but they sometimes assume ophitic relations which lead into the rock termed dolerite. The felspar has often lost its vitreous lustre and passed into the dull opaque condition known as saussurite. The augite is usually in the form of diallage, distinguished by its schiller-spar lustre.

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Geographical and Geological Survey of the Rocky Mountains), chaps. iii. and iv. Hague and Iddings, Amer. Journ. Sci. 1883.

<sup>194</sup> G. F. Becker on the Comstock Lode. Reports of U. S. Geological Survey 1880-81, and his full memoir in vol. iii. of the Monographs of U. S. Geol. Survey (1882). Hague and Iddings, Amer. Journ. Sci. xxvii. (1884), p. 454.

<sup>195</sup> On Gabbro see Lossen, Z. Deutsch. Geol. Ges. xix. p. 651. Lang, op. cit. xxxi. p. 484. Zirkel on Gabbros of Scotland, op. cit. xxiii. 1871. Judd, Quart. Journ. Geol. Soc. xlii. (1886), p. 49. G. H. Williams, Bull. U. S. Geol. Surv. No. 28 (1886). F. D. Chester, op. cit. No. 59 (1890). M. E. Wadsworth, Geol. Surv. Minnesota, Bull. 2, 1887.