

good distinction to be drawn between them. Under the name of *Tholeite* some interesting augite-andesites have been described, in which the felspar prisms form a network filled in with granular augite and interstitial matter (interstitial structure). In other varieties of andesite the felspar-mesh has been filled with large crystalline patches of augite, which thus incloses the felspar (ophitic structure).

*Tephrite* (Nepheline-andesite, Leucite-andesite, Nosean- or Hauyne-andesite)—a group of andesites, in which the felspar is partly replaced by one of the felspathoids, nepheline, leucite, nosean, or hauyne.

*Porphyrite*—a name for old forms of andesite which have generally undergone considerable alteration, and consequently appear as dull, sometimes earthy, generally reddish or brownish rocks. When fresh they are dark gray or black. They are commonly porphyritic, and show abundant scattered crystals of plagioclase, less commonly of mica. Their texture varies from coarse crystalline to exceedingly close-grained, passing occasionally into vitreous varieties (Yetholm, Cheviot Hills). Rocks of this type have been abundantly poured forth as lavas during Palæozoic time, and they occur as interstratified lava-beds, eruptive sheets, dikes, veins, and irregular bosses. In Scotland they form masses, several thousand feet thick, erupted in the time of the Lower Old Red Sandstone, and others of wide extent and several hundred feet in depth belonging to the Lower Carboniferous period. In Germany porphyrites appear also at numerous points among formations of later Palæozoic age.

*Propylite*—a name given by Richthofen to certain Tertiary volcanic rocks of Hungary, Transylvania, and the Western Territories of the United States, consisting of a triclinic felspar and hornblende in a fine-grained non-vitreous ground-mass, and closely related to the Hornblende-andesites. Their distinguishing feature is the great alteration which they have undergone, whereby their ferro-magnesian constituents have been converted into chlorite, and their felspars into epidote. Some quartziferous propylites have been described by Zirkel from Nevada, wherein the quartz abounds in liquid inclusions containing briskly-moving bubbles, and sometimes double inclosures with an interior of liquid carbon-dioxide.<sup>193</sup> A specimen from Storm

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<sup>193</sup> Zirkel's "Microscopical Petrography," p. 110. King, "Exploration of 40th Parallel," vol. i. p. 545. C. E. Dutton's "High Plateaus of Utah" (U. S.