

to be feldspar, (*clinkstone* or *phonolite*;) or fissile *petrosilex*, a greenish or grayish rock, dividing into slabs or columns, ringing under the hammer, and apparently a variety of compact feldspar. *Hornstone* is a compact mineral, often translucent like a horn; of various colors; in hardness and fracture approaching flint; infusible before the blow pipe; and hence composed chiefly of silica. *Cornean* is between hornstone and compact feldspar, compact and homogeneous; supposed to consist of feldspar, quartz, and hornblende. All these substances form the basis of porphyry; and hence we have clinkstone porphyry, hornstone porphyry, etc. When black augite forms the base of porphyry, it is called *melaphyre*.

### 5. *Greenstone.*

Several unstratified rocks, whose principal ingredients are feldspar and hornblende or augite, are called *Trap Rocks*, from the Swedish word *trappa*, a stair; because they are often arranged in the form of stairs or steps.

Although the term trap is loosely applied, most writers limit it to the varieties of rock called greenstone, syenitic greenstone, basalt, compact feldspar, clinkstone, pitchstone, wacke, amygdaloid, augite rock, hypersthene rock, trap porphyry, pitchstone porphyry, and tufa. Macculloch includes claystone and syenite.

Greenstone, or diorite, is ordinarily composed of hornblende and feldspar, orthoclase and albite, both compact and common, the former in the greatest quantity.

Dr. Macculloch calls those varieties of greenstone which have a green color, *augite rocks*; because augite is the predominant ingredient. When hypersthene takes the place of hornblende, he calls the compound *hypersthene rock*. When greenstone is composed almost entirely of hornblende, the rock is denominated *hornblende rock*. When the grains of feldspar and hornblende are quite coarse, it is called *syenitic greenstone*, which often takes quartz into its composition, and passes into granite. All the above rocks are frequently porphyritic; and hence we have augitic, or pyroxenic porphyry, dioritic porphyry, etc. *Euphotide*, is a rock composed of compact feldspar and diallage.

## III. VOLCANIC ROCKS.

### 6. *Basalt, or Dolerite.*

This rock appears to be composed of augite, feldspar, (labradorite), and titaniferous iron; and sometimes olivine in distinct grains. Its color is black, bluish, or grayish; and its texture compact and uniform; more so than greenstone. Augite is the predominant ingredient.

It is probable that most of the trap rocks of our Atlantic States are greenstones or diorites. Many of them have an impalpable texture like basalt; and chemical analysis alone can decide their composition in such cases. Probably the trap-rocks of the Rocky Mountains are basalt, and as recent as the basalt of Europe.

### 7. *Amygdaloid.*

This term, like porphyry, is not confined to any one sort of