ficulty in hewing it smoothly across the layers. The quarries of this rock in New England are very numerous, and some of them furnish most beautiful stone, much to be preferred to sandstone.

The unstratified rocks are also described by English writers as "not very often employed in the construction of public edifices." Very different is the case with us. Trap and porphyry are not, indeed, much used on account of the difficulty of bringing the blocks into a regular shape, as they can only be broken, but not hewn. But granite and syenite are used almost everywhere, if obtainable, and form the most solid and enduring of structures. The syenitic quarries at Quincy and Cape Ann, in Massachusetts, as well as those of pure white granite at Hallowell, in Maine, at Barre, in Vermont, at Chelmsford and Fitchburg, in Massachusetts, and many other places, furnish inexhaustible quantities, and in the northern cities form a large part of the most imposing public as well as private buildings. Enormous blocks are sometimes got out at these quarries to form solid columns of great size and length, as may be seen in several public edifices in Boston and elsewhere.

It is an important and difficult point to ascertain whether an entire rock will endure long exposure without disintegration. In Europe, where buildings from the quarries have stood for several centuries, this point can generally be determined. But in this country we must resort to other means. The mineral composition will give us some information, and in general the more perfectly crystalline the rock, the less liable it is to disintegration, though there are some exceptions. A better test is to examine ledges that have been for ages exposed to atmospheric agencies, and observe the amount of erosion. A method of testing the influence of dampness and frost by the use of a boiling solution of Glauber's salts is said to afford good results in a short time. The details, which we have not room to give, may be found in Ansted's Geology, vol. ii., p. 458.

3. AGRICULTURAL GEOLOGY.

The first inquiry in Agricultural Geology is, what is the composition of good soils?

The matter in all soils capable of sustaining vegetation exists in two forms, inorganic and organic. The first contains twelve chemical elements, viz., oxygen, sulphur, phosphorus, carbon, silicon, and the metals potassium, sodium, calcium, aluminum, magnesium, iron, and manganese. In the organic part the elements are four: oxygen, hydrogen, carbon, and nitrogen. The inorganic elements are derived from the rocks; the organic elements from decaying animal and vegetable matter. So that it is with the earthy constituents of soils that geology has to do. The above-named ought all to be present. They do not indeed occur in their simple state, but as water, sulphates, phosphates, carbonic acid, silicates of potassa, soda, lime, magnesia, alumina, iron, etc. The average amount of silicates or sand in soil is 89 in 100 parts.

The second inquiry is, whether these elements of the soil are found in the rocks. In the table of their analysis given on page 93, it will be seen that they are all present except phosphorus, which, however, is not unfrequently found in them in the condition of phosphates. Moreover, the proportion of the ingredients in the rocks does not differ much from that of the soils. Hence the conclusion is, that the latter are only the former comminuted, with the addition of from three to ten per cent. of organic matter.

Since the rocks differ considerably in composition, we should expect a corresponding difference in the soils derived from them. And such is the fact to a considerable extent where the soil is simply the result of the disintegration of the rock beneath it. It is enough so in many districts to form char-