entered on a regular series of revolutions, interrupted only by the outbreaks of the internal fires which were concealed beneath its still imperfectly consolidated crust.

"At the early periods in which the materials of the ancient crystalline schists were accumulated, it cannot be doubted that the chemical processes which generated silicates were much more active than in more recent times. The heat of the earth's crust was probably then far greater than at present, while a high temperature prevailed at comparatively small depths, and thermal waters abounded. A denser atmosphere, charged with carbonic acid gas, must also have contributed to maintain, at the earth's surface, a greater degree of heat, though one not incompatible with the existence of organic life.

"These conditions must have favoured many chemical processes, which in later times have nearly ceased to operate. Hence we find that subsequently to the eozoic times, silicated rocks of clearly marked chemical origin are comparatively rare."*

In order to comprehend the complex action, now mechanical, now chemical, which the waters, still in a heated state, exercised on the solid crust, let us consider what were the components of this crust. The rocks which formed its first *stratum*—the framework of the earth, the foundation upon which all others repose—may be presumed to have been a compound which, in varying proportions, forms granite and gneiss, and has latterly been designated by geologists Laurentian.

What is this gneiss, this granite, speaking of it with reference to its mineralogical character? It is a combination of silicates, with a base of alumina, potash, soda, and sometimes lime—*quartz*, *felspar*, and *mica* form, by their simple aggregation, *granite*—it is thus a ternary combination, or composed of three minerals.

Quartz, the most abundant of all minerals, is silica more or less pure and often crystallised. *Felspar* is a crystalline or crystallised mineral, composed of *silicate* of alumina, potash, soda, or lime; potash-felspar is called *orthoclase*, soda-felspar *albite*, lime-felspar *anorthite*. *Mica* is a silicate of alumina and potash, containing magnesia and oxide of iron; it takes its name from the Latin *micare*, to shine or glitter.

Granite (from the Italian *grano*, being granular in its structure) is, then, a compound rock, formed of felspar, quartz, and mica, and the three constituent minerals are more or less crystalline. *Gneiss* is a schistose variety of granite, and composed of the same minerals;

* "Address to the American Association for the Advancement of Science," by Thomas Sterry Hunt, LL.D., p. 56. 1871.