minutest structures of plants and animals have been, particle by particle, removed and replaced by mineral matter introduced in solution, and this so imperceptibly, and yet thoroughly, that even minutiæ of organization, requiring a high power of the microscope for their investigation, have been preserved without distortion or disarrangement. From this perfect condition of preservation, gradations may be traced until the organic structure is gradually lost amid the crystalline or amorphous infiltrated substance (Fig. 107). The most important petrifying media in nature are calcium-carbonate, silica, and iron-disulphide (marcasite more usually than pyrite). (See Book V.)

Another proof of the alteration which rocks have suffered from permeating water is supplied by the abundance of veins of calcite and quartz by which they are traversed, these minerals having been introduced in solution and often from the decomposition of the inclosing rock. As Bischof pointed out, a drop of acid seldom fails to give effervescence on pieces of rock, composed of silicates, which have been taken even at some little depth from the surface, thus indicating the decomposition and deposit caused by permeating water. As already stated, one of the most remarkable results of the application of the microscope to geological inquiry is the extent to which it has revealed these all-pervading alterations, even in what might be supposed to be perfectly fresh rocks. Among the silicates, the most varied and complex interchanges have been effected. Besides the production of calcium-carbonate by the decomposition of such minerals as the lime-felspars, the series of hydrous green ferruginous silicates (delessite, saponite, chlorite, serpentine, etc.), so commonly met with in crystalline rocks, are usually witnesses of the influence of infil-