

a scale as to be illustrated even in hand-specimens. Such transitions seem to arise from the different effects of mechanical deformation on materials that offered considerable differences in lithological composition and structure. Fine talcose schists, for example, can be traced to original peridotites; hornblendic and actinolitic schists to such rocks as gabbro, diorite, or dolerite.

In the older accounts of these rocks the gneisses are described as passing into or alternating with a wholly different type of rocks, among which may be included limestone (sometimes strongly graphitic), dolomite, quartzite, graphite-schist, mica-schist and other varieties of schistose material. This apparent gradation was believed to mark an original transition of the sediment out of which the gneiss was thought to have been formed into the calcareous, argillaceous, or carbonaceous sediment, which was the earliest condition of the associated limestones and schists. It was thus looked upon as evidence that the whole crystalline series represented, in a metamorphosed state, an ancient accumulation of sedimentary materials. The existence even of organic remains in the limestone was insisted upon, and the so-called *Eozoon* was cited as the most ancient relic of animal life.<sup>3</sup> But there is now every reason to believe such gradations to be generally deceptive. As a result of the enormous mechanical compression and deformation which these ancient rocks have undergone, igneous and aqueous materials have been so complicated and crushed together and have undergone such profound metamorphism, that it is sometimes hardly possible to trace a boundary between them. There seems no

---

<sup>3</sup> See on this subject postea, pp. 1160, 1161, and authorities there cited.