

reason to look upon the limestones, argillites, quartzites, and schists as other than intensely altered sediments, which in theory, if not in actual practice on the ground, must be separated from the gneisses.

Among the various theories which have been proposed to account for the genesis of the lowest gneisses and schists, three deserve particular mention here. (1) These rocks are by some geologists believed to be a portion of the original crust which solidified on the surface of the globe. (2) They are by others held to be ancient sedimentary rocks in a metamorphosed condition, and in some parts so changed as to have been actually melted and converted into intrusive material. (3) They are believed by yet another class of observers to be essentially eruptive rocks, and to be comparable with the deeper seated or plutonic portions of such igneous rocks as may be seen to traverse the earth's crust.

(1) From the ubiquity of their appearance, the persistence of their striking lithological characters, and especially the curious apparent blending in them of the igneous and sedimentary types of structure, the idea not unnaturally arose that the lowest crystalline rocks represent the first crust that formed on the surface of the globe.⁴ These rocks have been supposed to include some of the early surfaces of consolidation of the molten globe, and some of the first sediments that were thrown down from the hot ocean which eventually condensed upon the planet. Such a speculative view of their origin may seem not incredible in regions where these ancient crystalline rocks are covered unconformably

⁴ See Credner's "Geologie," vi. b. Die Fundamental Formation; Erstarrungskruste. Compare also Rosenbusch, Neues Jahrb. 1889, vol. ii. p. 81.