

are consequently of organic origin. From the great similarity between the forms of the pargasite grains and the Eozoon-serpentine, we may fairly be permitted to assume the presence of Eozoon in the crystalline limestones of Finland.\*

Similar relations are doubtless to be met with throughout the crystalline limestones of Scandinavia, wherever such mineral species occur in rounded grains or in tuberculated forms. The notion that these forms are of organic origin, and have been moulded in the spaces left in a calcareous skeleton by the decay of animal matter, receives a strong support from the observations of Nordenskiöld and Bischof. The former found in a tuberculated pyrrholite, 6.38 per cent. of bituminous matter, besides 3.58 per cent. of water; while Bischof states that the same mineral becomes black when ignited, and when calcined in a glass tube, gives off a clear water with a very offensive empyreumatic odor.

There may also be mentioned in this connection a phenomenon which is probably related to those just described. Upon the pyritous layers which occur in the Hereynian gneiss near Boden, are found great quantities of grains of quartz, almost transparent, and with a fatty lustre, which have in all cases rounded undulating forms, precisely resembling the pargasite tubercles from Finland. Dichroite also sometimes occurs in this region in similar shapes, although it also, in many cases, forms perfect crystals. The evidence of organic forms may perhaps be found in these masses of quartz and dichroite, though their treatment will necessarily present difficulties.

A specimen of crystalline limestone, with rounded pyroxene (coecolite) grains from New York, showed, after etching by means of acids, no traces of tubuli; but the grains of coecolite, remaining after the entire removal of the carbonate of lime, were found to be connected with each other by numerous fine cylindrical tubuli and skin-like laminæ. The surface of the rounded coecolite grains was much wrinkled, and studded with small cylindrical processes of a white mineral, sometimes ramifying, and apparently representing the remnants of a system of tubuli which had been destroyed by the crystallization of the carbonate of lime. The flaky residue from the solvent action of the acid exhibits, under the microscope, laminæ, needles, and strings of

\* These belong to the primitive gneiss formation of Scandinavia, which the geologists of Canada, so long ago as 1855, referred to the Laurentian system.—T. S. H.