

an amorphous form. Therefore it is said that it was probably held in partial solution in hot water, even after crystallisation by segregation of the other minerals had begun. This theory, now held by several distinguished physical and chemical geologists, seems to me to be sound, especially as it agrees exceedingly well with the metamorphic theory as applied to gneiss—granite being sometimes simply the result of the extreme of metamorphism. In other words, when the metamorphism has been so great that all traces of the semi-crystalline laminated structure has disappeared, a more perfect crystallisation has taken place, and the result is a granitic mass without any minor lamination in it. Even then, however, certain planes often remain, strongly suggestive of original stratification, and even of planes of oblique stratification or false-bedding.

These general results are not founded on mere conjectures. In a memoir by Mr. H. C. Sorby, 'On the Microscopical Structure of Crystals, indicating the Origin of Minerals and Rocks,' among other important points, he describes numerous small cavities in the quartz of granites, which are partly filled with water 'holding in solution the chlorides of potassium and sodium, the sulphates of potash, soda, and lime, sometimes one and sometimes the other salt predominating.' These 'fluid cavities' sometimes make up about five per cent. of the volume of the quartz, and he concludes that 'the fluid was not an *accidental* ingredient due to the percolation of water to a fused mass naturally containing none, but a *genuine* constituent of the rock when melted.' Reasoning on the underground temperatures necessary to expand the liquid so as to fill the cavities, by an elaborate process of argument he arrives at the approximate result, that 'the pressures under which granites were most probably