

In each of these Systems, it often happens that two or more crystals are united, forming the so-called twin or compound combinations. When four individuals are thus united, cruciform crystals usually originate; and stellate combinations frequently arise from the union of five or six individuals. Of these latter, the six-rayed stelliform crystals of snow must be familiar to all Canadian readers. These snow crystals have hitherto been referred, by almost universal consent, to the Hexagonal System of Crystallization—to which, indeed, at first sight, they naturally seem to belong. Now the object of my present communication is to shew that this generally received view, whilst unsupported by anything like actual proof, is opposed by much evidence of a more or less direct character. This evidence is based, first, on the occurrence of stelliform groups amongst minerals; and, secondly, on the results afforded by some experiments on the crystallization of dilute solutions of various salts.

Amongst the natural products of the mineral kingdom, stelliform six-rayed groupings and pseudo-hexagonal combinations occur (more especially) in Discrasite or Antimonial Silver, Chrysoberyl, Sulphate of Lead, Carbonate of Lead, Carbonate of Baryta, and Arragonite: all of which belong to the Trimetric System. To these must be added the curious stellate groupings of native copper from Bosgolowsk in the Northern Ural—described by Professor Gustav Rose, in his “*Reise nach dem Ural*,” in 1829—the only example of a Monometric combination of this kind, hitherto made known. Stellate groupings amongst Hexagonal minerals (always omitting the doubtful snow-crystals) have not been recognised; although in the opalescence of certain corundums something akin to this structure may perhaps be admitted. Apart from this exceedingly indirect evidence, the assumed crystallization of snow receives therefore no support, but the very reverse, from what is known respecting mineral bodies of natural formation. Let us inquire if artificially-produced crystals will throw any additional light upon the question.

From time to time, during the last three or four years, I have been making a series of experiments on the crystallization of dilute solutions of various salts. These experiments have been made with the primary object of ascertaining whether the crystallizations, thus produced, do not follow certain definite laws in their arrangement; and although I have failed, up to the present, to establish anything very satisfactory in this respect, I still hope to succeed eventually; and my observations