A System for constructing Crystal Forms by the Plaiting of their Zones.

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(Abstract.)

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In this paper the author described his method of constructing crystal models of paper or cardboard by means of plaiting. In the ordinary crystal "nets" (such as, according to Mr. Gorham, were constructed by himself and shown at the Royal Society as early as 1847) the faces of the model are drawn in juxtaposition on cardboard and cut out, some of the lines being only partially cut through; the net is then folded up so as to form a solid figure, and the faces are united at their edges by gum.

In the models described and exhibited by Mr. Gorham, the faces are so drawn as to be disposed along strips; these strips are united to each other at one end, and can then be folded together by a process resembling plaiting, in which the strips pass alternately under and over each other. In this way models are made precisely like those constructed from the ordinary nets, but requiring no cement; models which can, moreover, be taken to pieces (unplaited) and laid flat, or re-constructed whenever desired.

Each strip contains the faces lying in one zone, and the number of strips employed by Mr. Gorham is either three or four; the cube, for instance, is formed by the plaiting together of three, and the dodecahedron by the plaiting together of four strips.

Their order of succession is the same for each model whatever its form. Thus the strips of square faces from which the cube is constructed are three in number, and if they be denoted by the numerals 1, 2, 3 respectively, the process of plaiting always pursues the following order:—

1 passes over 2
then 3 ,, 1
then 2 ,, 3 and so on.

Any model consisting of three strips is plaited in the same order.

A peculiar (and a new) feature of the models exhibited at the meeting is that their faces are traversed by lines; one strip is marked by a single line, the second by a double, and the third by a triple line. These lines fulfil a twofold purpose: (1) by their direction they show the number and disposition of the zones in each crystal (and indicate the order in which the strips are to be plaited); and (2) the alternate appearance and disappearance of the lines, that is to say their appearance on alternate faces of the model, is strongly suggestive of their being intertwined like a plait, as is of course the fact. It is to this alone that the model is indebted for its solid form and its power of retaining the same.