

lengths at which the axes are cut—one of the horizontal axes being taken as unity.

III. *Chapman's System*.—One objection to the two systems already described is that the symbols employed cannot readily be translated into words which shall precisely define the crystal-form which they represent. To remedy this, Professor Chapman has proposed a system based on the division of all forms into *basal*, *polar*, and *vertical*; and these are denoted by the initials of their names, *B*, *P*, and *V*. To these symbols are added, where necessary, the sign of the axis to which the form is parallel. The base is denoted by *B*; the triaxial pyramid by *P*; the diaxial pyramid by $\bar{P}$ or $\bar{P}$ (*front* or *side-P*); the diaxial prism by *V*; and the monaxial prism by $\bar{V}$ or $\bar{V}$ (*front* or *side-V*). As in the other systems, numerical coefficients are used with these signs to denote the lengths at which the axes are cut.

Having thus briefly described the three systems now in common use, I will proceed to describe the one I propose.

First, I would say that the desiderata of a good system of crystallographic notation are brevity and simplicity. If there is any necessity for a notation at all, the briefer it can be made the better, provided that clearness and simplicity are not sacrificed. The fewer the principles on which a notation is based, the simpler it will be. The one principle on which I propose to base my system is merely to write the sign of the axis or axes to which the form is parallel, with a number, where necessary, denoting the length at which the other axes, or axis, is cut.

The axes may be denoted as follows:—Vertical axis by *a*; right-and-left axis by *b*; and back-and-front axis by *c*.

Now, we may obtain expressions for all forms by writing one or more of these signs, according to the axes to which the form is parallel, accompanied by the proper numerical coefficients, which are of course calculated from angular measurements.

In this way the notation for any form shows the number and designation of the axes to which it is parallel by the number and designation of the signs of which it is composed. All possible forms are either triaxial, diaxial, or monaxial. Triaxial forms will have no symbol except the numerical coefficient; diaxial forms will have one, and monaxial forms two, besides their numerical coefficients. This method may of course be employed for the notation of all the forms in all the crystal-systems; but with regard to certain closed forms, especially those belonging to the Monometric System, and the Rhombohedron and Scalenohedron of the Hexagonal System—which have long been known by special names—it will be more convenient often to denote these by the initial letter of that name, adding, in the case of variable forms, the coefficient of axial ratio.

On this principle, then, the symbol for a basal form will be *bc*; for a triaxial pyramid *m*; for a diaxial pyramid *b* or *c*, according to the axis to which it is parallel; for a diaxial prism *a*; and for a monaxial prism *ab* or *ac*, according as it is parallel to axis *b* or *c*.

Taking up the crystal-systems separately, the notation for the holohedral forms in each will be as follows:—

Monometric System.—Here, as the axes are all equal, they will all be denoted by the symbol *a*. The notation, therefore, will be for—(1) Cube (Hexahedron), *aa*, or *H*; (2) Rhombic Dodecahedron, *a*, or *D*; (3) Triclinoid, *an*, or *F*; (4) Regular Octahedron, *x*, or *O*; (5) Trapezohedron, *nm*, or *T*;