forms of crystals are not irregular or accidental, but definite, and based on certain fixed laws; and he pointed out that whilst certain forms are derivable from a given nucleus, there are others which cannot occur.

Moreover he observed that when any change in a crystal took place by its combination with other forms, all similar parts (angles, edges and faces) were modified in the same way. Most important of all, he shewed that these changes could be indicated by *rational* co-efficients.

Thus Haüy became the discoverer of two of the three great laws of crystallography, namely, THE LAW OF SYMMETRY, and THE LAW OF WHOLE NUMBERS. The other, THE LAW OF CONSTANCY OF ANGLES, we have already mentioned.

Let us consider for a moment Haüy's two laws, taking first :—

THE LAW OF SYMMETRY.

E. S. Dana enunciates this as follows: "The symmetry of crystals is based upon the law that either :

I. All parts of a crystal similar in position with reference to the axes are similar in planes or modification, or

II. Each half of the similar parts of a crystal, alternate or symmetrical in position or relation to the other half, may be alone similar in its planes or modifications.

The forms resulting according to the first method are termed *holohedral* forms and those according to the second, *hemihedral*."

An easy experimental way of studying the symmetry of crystals is to cut one, or the model of one, in two, and place the parts against the surface of a mirror, which may or may not produce the exact appearance, of the original crystal. If it does produce the *exact* appearance we have severed the crystal in *a plane of symmetry*. By referring to Fig. 6 it will readily be seen that a cube, for instance, possesses *nine* such planes, indicated by the dotted lines.

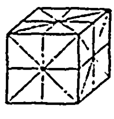

Fig. 6.

In a sphere there would of course be an infinite number of these planes.