

points thus determined, one being in each of the three lines xox' , $yo'y'$, zoz' .

10. The lines xox' , $yo'y'$, zoz' will be called 'axes;' the portions OA_1 , OB_1 , OC_1 'parameters.'

The symbol 321 will be used to denote the face parallel to $A_3B_2C_1$, $2\bar{1}4$ the face parallel to $A_2B_{-1}C_4$, and generally, hkl will be used to denote the face parallel to $A_hB_kC_l$, where

$$OA_h = \frac{1}{h}OA_1, OB_k = \frac{1}{k}OB_1, OC_l = \frac{1}{l}OC_1,$$

h, k, l being any positive or negative whole numbers including zero, and OA_h, OB_k, OC_l measured towards x, y, z , or towards x', y', z' , according as h, k, l are positive or negative.

The numbers 3, 2, 1, and 2, $\bar{1}$, 4 in the two former examples, and the letters h, k, l in the latter, will be called 'indices.' An index taken negatively will be distinguished by a negative sign placed over it.

The indices h, k, l , which by taking different integral values determine the positions of the different faces of the same crystal, are seldom large. The highest index does not commonly exceed six.

11. Parallel and opposite faces have the same indices with different signs.

12. The linear dimensions of the faces are not subject to any law; consequently, a face of a crystal may be represented by any plane parallel to it, on the same side of the point o .

13. When one of the indices of a face is zero, the point in which the face intersects the corresponding axis is indefinitely distant, or the face is parallel to that axis. When two of the indices are zero, the face is parallel to the two corresponding axes.

In the parallelepiped DFG (fig. 2) having its edges parallel to the axes OX, OY, OZ , DEF, LGK are the faces $100, \bar{1}00$; GEF, LDH are the faces $010, 0\bar{1}0$, and DEG, HFK are the faces $001, 00\bar{1}$.

14. In OX, OY, OZ (figs. 3, 4, 5, 6,) take OH, OK, OL , respectively proportional to $\frac{1}{h}OA_1, \frac{1}{k}OB_1, \frac{1}{l}OC_1$; $O\bar{H} = OH, O\bar{K} = OK, O\bar{L} = OL$.

Then, in the prism QR (fig. 3) having $KL\bar{K}\bar{L}$ for its section, and its axis parallel to OX , $QKL, R\bar{K}\bar{L}$ are the faces $okl, o\bar{k}\bar{l}$, and $Q\bar{K}\bar{L}, RKL$ are the faces $o\bar{k}l, ok\bar{l}$.

In the prism having $LH\bar{L}\bar{H}$ (fig. 4) for its section, and its axis parallel to OY , $HSL, \bar{H}\bar{T}\bar{L}$, are the faces $hol, \bar{h}o\bar{l}$, and $H\bar{S}\bar{L}, \bar{H}TL$ are the faces $ho\bar{l}, \bar{h}ol$.

FIG. 2.

