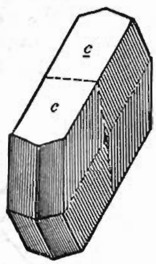
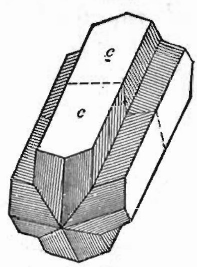
yields the form in Fig. 454, or even Fig. 400, p. 164, resembling an isometric dodecahedron, each face showing a fourfold striation.

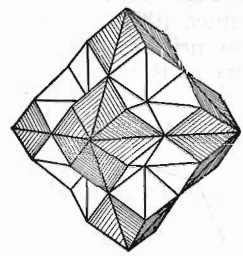
452



453



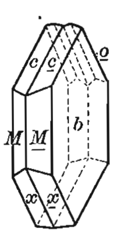
454



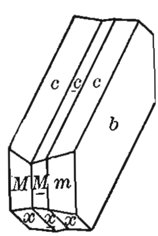
Phillipsite

251. Triclinic System. — The most interesting twins of the triclinic system are those shown by the feldspars. Twinning with $b(010)$ as the twinning-plane is very common, especially polysynthetic twinning yielding thin parallel lamellæ, shown by the striations on the face c (or the corresponding cleavage-surface), and also clearly revealed in polarized light. This is known as the *albite law* (Figs. 455, 456). Another important method (Fig. 457) is that of the *pericline law;* the twinning-axis is the crystallographic axis b. Here the twins are united by a section (rhombic section) shown in the figure and further explained under the feldspars. Polysynthetic twinning after this law is common, and hence a cleavage-mass may show two sets of striations, one on the surface parallel to $c(001)$ and the other on that parallel to $b(010)$. The angle made by these last striations with the edge 001/010 is characteristic of the particular triclinic species, as noted later.

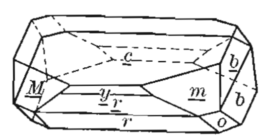
455



456



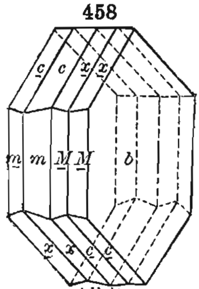
457



Albite

Twins of albite of other rarer types also occur, and further twins similar to the Carlsbad, Baveno, and Manebach twins of orthoclase. Fig. 458 shows twinning according to both the albite and Carlsbad types.

458



Albite

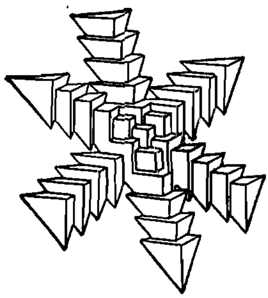
REGULAR GROUPING OF CRYSTALS

252. Parallel Grouping. — Connected with the subject of twin crystals is that of the parallel position of associated crystals of the same species, or of different species.

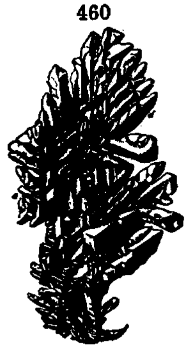
Crystals of the same species occurring together are very commonly in parallel position. In this way large crystals, as of calcite, quartz, fluorite, are sometimes built up of smaller individuals grouped together with corresponding faces parallel. This parallel grouping is often seen in crystals as they lie on the supporting rock. On glancing the eye over a surface covered with crystals a reflection from one face will often be accompanied by reflections from the corresponding face in each of the other crystals, showing that the crystals are throughout similar in their positions.

With many species, complex crystalline forms result from the growth of parallel partial crystals in the direction of the crystallographic axes, or axes of symmetry. Thus *dendritic* forms, resembling branching vegetation, often of great delicacy, are seen with gold, copper, argentite, and other species, especially those of the isometric system. This is shown in Fig. 459 (ideal), and again in Fig. 460, where the twinned and flattened cubes (cf. Fig. 403, p. 165) are grouped in directions corresponding to the diagonals of an octahedral face which is the twinning-plane.

459



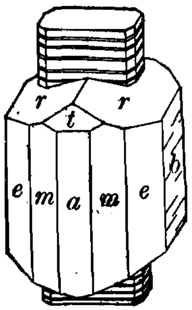
460



Copper

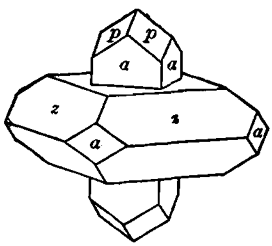
253. Parallel Grouping of Unlike Species. — Crystals of different species often show the same tendency to parallelism in mutual position. This is true most frequently of species which are more or less closely similar in form and composition. Crystals of albite, implanted on a surface of orthoclase, are sometimes an example of this; crystals of amphibole and pyroxene (Fig. 461), of zircon and xenotime (Fig. 462), of various kinds of mica, are also at times observed associated in parallel position.

461



Amphibole enclosing pyroxene in parallel position

462



Xenotime enclosing zircon in parallel position

The same relation of position also occasionally occurs where there is no connection in composition, as the crystals of rutile on tabular crystals of hematite, the vertical axes of the former coinciding with the horizontal axes of the latter. Crystals of calcite have been observed whose rhombohedral faces had a series of quartz crystals upon them, all in parallel position; sometimes three such quartz crystals, one on each rhombohedral face, entirely envelop the calcite, and unite with re-entering angles to form pseudo-twins (rather trillings) of quartz after calcite. Parallel growths of the sphenoidal chalcopyrite upon the tetrahedral sphalerite are common, the similarity in crystal structure of the two species controlling the position of the crystals of chalcopyrite.