The law of rational indices states that the intercepts, *OP*, *OQ*, *OR*, of the natural faces of a crystal form with the unit-cell axes **a**, **b**, **c** (see Figure 1) are inversely proportional to prime integers, *h*, *k*, *l*. They are called the Miller indices of the face. They are usually small because the corresponding lattice planes are among the densest and have therefore a high interplanar spacing and low indices.

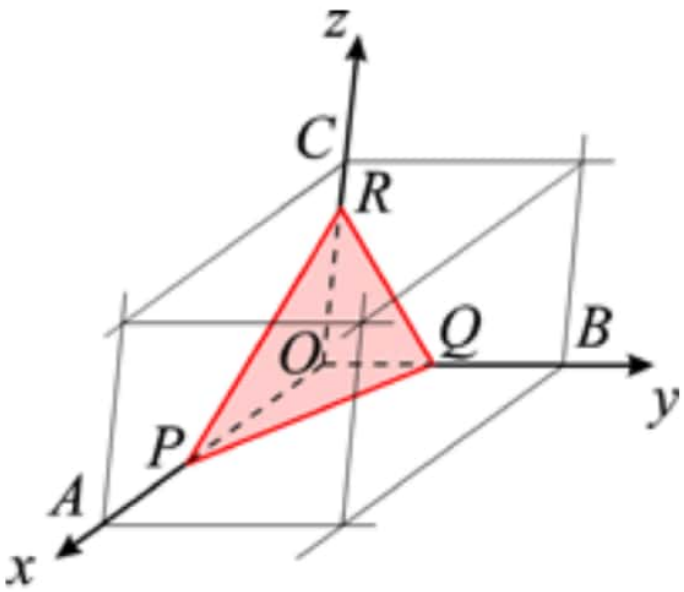
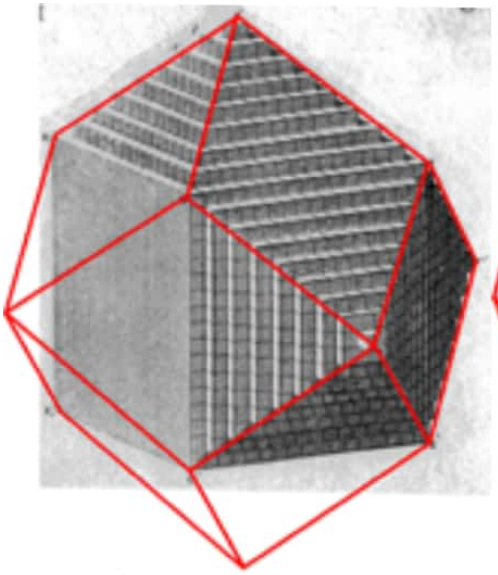


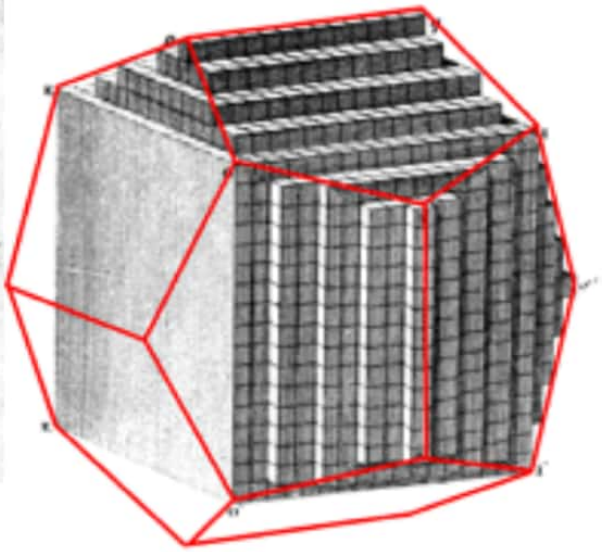
Figure 1

The law of rational indices was deduced by Haüy (1784, 1801) from the observation of the stacking laws required to build the natural faces of crystals by piling up elementary blocks, for instance cubes to construct the

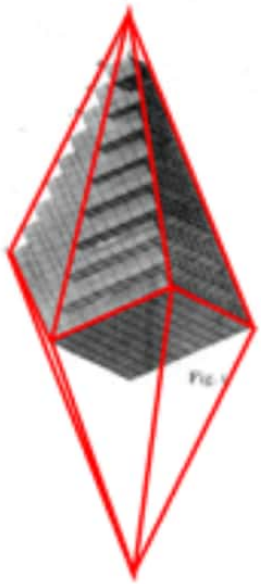
ks, for instance cubes to construct the {110} faces of the rhomb-dodecahedron observed in garnets or the ½{210} faces of the pentagon-dodecahedron observed in pyrite, or rhombohedrons to construct the {21.1} (referred to an hexagonal lattice, $\{2\bar{1}0\}$, referred to a rhombohedral lattice) scalenohedron of calcite.



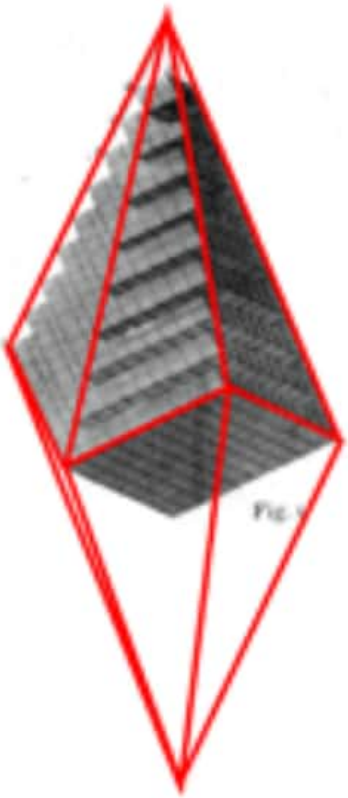
Rhomb-dodecahedron



Pentagon-dodecahedron



Scalenohedron



Scalenohedron

(Models from Haüy's *Traité de Minéralogie* (1801) - the crystal forms have been redrawn in red).