

HOW TO DETERMINE THE INDICES OF REFRACTION OF MINERALS

With this article we inaugurate a department devoted to methods of mineralogic investigation. Future numbers of the AMERICAN MINERALOGIST will contain similar notes on etching opaque minerals, methods of crystallographic measurement, how the structure of crystals is determined by X-rays, etc. Readers are invited to suggest additional subjects for treatment in this manner.—THE EDITORS.

The simplest method of determining the index of refraction of a mineral is by means of the BECKE test. Fragments of the mineral are best obtained by crushing on an anvil, sifting thru a sieve with approximately 100 meshes to the inch, and then thru a still finer one, and using the material which passes the former but not the latter. A minute amount is placed on a slide, moistened with a liquid of known index, covered with a small cover glass, and examined on the stage of a microscope with the substage lowered, and diaphragm nearly closed. On focusing sharply on the edge of the mineral and then throwing it slightly out of focus by *raising* the microscope tube, a line of light will be seen to move *toward* the substance (mineral or liquid) having the *greater* index of refraction. When the indices of the mineral and liquid are the same, no light will move in either direction; and, unless their colors are different, the mineral grain will become practically invisible. If a polarizer is attached to the microscope, two indices can be determined on the same grain (provided the mineral is doubly refracting) by making two observations with the same edge, one with it parallel and the other with it perpendicular to the plane of vibration of the polarizer. Some useful liquids for this purpose are, with their indices: kerosene, 1.45; clove oil, 1.53; bromoform, 1.59; α -monobromonaphthaline, 1.66; and methylene iodide, 1.74. Mixtures of these can be used for intermediate indices, but for accurate work the indices of both simple liquids and mixtures must be determined by a refractometer.

Elwood P. Hancock, of Burlington, N. J., whose collection included some exceptionally fine specimens of Franklin Furnace minerals, and who was further known to mineralogists as the discoverer of hancockite, died November 4, 1916, in his 82d year. His collection has been acquired by Harvard University.