those calculated from the measurements of the authors above cited.

In addition, crystal 1 shows one face each of a prism close to 120, a pyramid not far from 122, and two other pyramids which yield the complicated symbols 357 and 562. Crystal 2 shows a face vicinal to the base, and one of a pyramid 152. Most of these faces may, however, be mere accidental surfaces where crystal growth was interrupted by other crystals, and until better evidence is obtained may be classed as doubtful.

A tetragonal iron phosphide has repeatedly been reported to occur in meteorites, and has in fact been assigned the name rhabdite (Rose, 1864). No crystallographic measurements have heretofore been obtained, however, adequate to prove that this supposed species represents anything more than distorted crystals of the well known isometric phosphide schreibersite. The present measurements demonstrate that a definite tetragonal mineral does exist in this meteorite.

NOTES AND NEWS

NOTES ON AN OCCURRENCE OF QUARTZ CRYSTALS. EDWARD F. HOLDEN. York, Pennsylvania.

Some very interesting quartz crystals are found on the farm owned by Mr. Kimmel, located two miles north of New Kingston, Cumberland Co., Pa. I recently had the good fortune to visit this locality in the company of two teachers from the York High School.

The crystals occur loose in the ground; the bedrock is a limestone, as in the case of the Herkimer, N. Y., crystals.

The most unusual crystals are those in which the form *m* is lacking, which are composed of the forms *r* and *z* only. These crystals occur in groups, each crystal being attached to another at the end of its vertical axis.

There are also crystals rivalling those of Herkimer in clearness, and crystals tinged with yellow or purple, besides smoky hued crystals. In addition opaque crystals are found, red or white in color; the opaqueness being due to internal fractures.

All of these crystals are doubly terminated and about ½ to 1 inch long.

NOTES ON THE SPHEROSIDERITE FROM SPOKANE, WASHINGTON. L. P. GRATACAP. American Museum of Natural History.—Specimens of the spherosiderite recently found in Spokane (see *Am. Min.* **2**, (3) 30, March, 1917). have been presented to the American Museum by Mr. Henry Fair, of that place. The two large specimens which have been placed on exhibition show dark greenish black spherules in cavities in the basic igneous rock. In one the surface is slightly silky-chatoyant, and in the

other it is minutely corrugated by scarcely emergent wrinkles in concretionary groups. In a third specimen the surface is smooth to the naked eye, but under a glass is minutely pustulate with flat disks.

The specific gravity was determined by the balance as 3.84. Mr. Fair submitted a sample to J. P. Maider, city chemist of Spokane, who reported as follows: $FeCO_3$, 93.16; $MnCO_3$, trace; $CaCO_3$, 5.13; $MgCO_3$, 1.83; sum 100.12,% Sp. gr. by picnometer 3.673(?).

The optical properties of this siderite have been studied by Mr. E. S. Larsen of the U. S. Geological Survey, and will be described in a forthcoming number of the Journal of the Washington Academy of Sciences.

AN ELEMENTARY INTRODUCTION TO CRYSTALLOGRAPHY

J. P. WINTRINGHAM

Brooklyn, N. Y.

(*Continued from page 66*)

The symbol 111 calls for a plane that passes thru the ends of the *a* axis in front, the end of the *b* to the right or E and of *c* above or to the N. $1\bar{1}1$ gives a plane cutting *a* in front, *b* to the left or W, and *c* above or to the N.

$\bar{1}11$ is a plane cutting *a* to the back, *b* to the right, and *c* above, $\bar{1}\bar{1}1$ *a* to the back, *b* to the left and *c* as before, above. These four would cut out a four sided pyramid. Four more which might be written at once by *reversing* the signs on the above, $\bar{1}\bar{1}\bar{1}$, $1\bar{1}\bar{1}$, $\bar{1}1\bar{1}$ and $11\bar{1}$, would give an inverted pyramid with its base to the base of the first. The whole figure will make an octahedron.

If we take the four symbols 110, $\bar{1}10$, $1\bar{1}0$ and $\bar{1}\bar{1}0$ they would indicate a square pillar or prism as the four 100, 010, $\bar{1}00$ and $0\bar{1}0$ did, but that had a face toward us, and this has an edge towards us. The three edges of a cube which meet in a point give us the direction of our three axes; here these four faces indicate that the two axes *a* and *b* are the same length or our pillar (or prism) would be diamond shaped, not square. These four faces are also in a zone parallel to *c*. They are properly called prism faces. They may be thought of as cutting off the corners of the first square pillars, whose face 100 is toward us. If they only cut off say half of the corners and left half we would have eight faces all in the *c* zone, the faces and edges all parallel to *c*.

The first four faces are the faces of a cube or are pinacoids, the last four are prism faces. As the cube has four faces parallel to *b* as well as parallel to *c*, this crystal form has four faces parallel to *b*; they are 101, $\bar{1}01$, $10\bar{1}$ and $\bar{1}0\bar{1}$, and indicate, if taken alone, a horizontal prism.