walls of crevices in diabase. More recently, it has become more plentiful. In some parts of the mine it occurs as large, solid masses measured in terms of meters, although the extent of these has not been fully investigated. Three or four years ago a considerable quantity of apophyllite was found with a platy habit, and brilliant white color. Later, more prismatic crystals were found, sometimes yellowish or flesh-colored. Eighteen months ago a small number of nearly opaque crystals of a very beautiful olive-green color, caused by the inclusion of byssolite, were found. Most of the crystals were completely developed on all sides. These measure up to 4 cm. in diameter, and at a glance resemble dodecahedra of green garnet, owing to the almost equal development of base and pyramid, and suppression of the prism faces. The base is characteristically pearly, and built up of smaller crystals to about the same level, while the pyramid faces are scattered over with very minute crystals of apophyllite which show no crystallographic relationship to the larger crystals.

In view of the large amount of apophyllite discovered, and its proximity to the ore bodies, it would be interesting to discuss how far fluorine might have been the mineralizing agent which was the important factor in the formation of the ore bodies.

NOTES AND NEWS

THE STATUS OF KEELEYITE

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One of the most serious defects in modern determinative tables based on mineragraphic methods is the almost complete lack of information as to the chemical composition of the material on which observations are made. Fortunately many workers now realize this, and creditable efforts have been made from time to time to determine mineragraphic reactions on analyzed specimens. It was something of a surprise, however, to read in a recent number of this magazine,[1] a paper on a sulfosalt mineral in which the importance of knowledge as to composition of comparison material was ignored, and a conclusion reached which is completely at variance with the facts.

Keeleyite was originally described by S. G. Gordon[2] as $2PbS \cdot 3Sb_2S_3$ on the basis of an erroneous recalculation of a commercial analysis on an impure specimen. As a formula derived in such a manner would be to say the least unconvincing, and as the properties listed were identical with those of zinkenite (which is recorded as occurring at the locality), in tabulating the minerals described during 1922

[1] *Am. Mineral.*, 12, 405, Nov., 1927.

[2] *Proc. Acad. Nat. Sci. Phila.*, 74, 101, 1922.

keeleyite was placed in quotation marks by the writer[3] to show it to be discredited, the reason being given that it was a variety of zinkenite.

Shannon and Short now conclude that it "can be accorded full species rank." They supply a good analysis on microscopically homogeneous material, which leads to the formula $PbS \cdot Sb_2S_3$ (with minor amounts of replacement) identical with that universally adopted for zinkenite.[4] Nevertheless they consider the two minerals distinct because of the presence in the keeleyite of 3.26% of metals other than lead, notably including 1.24% of zinc, and because of certain mineragraphic differences.

Henglein[5] cites ten analyses of zinkenite, and in the eight of these in which metals other than lead were determined the amounts are: 0.42, 0.76, 0.80, 1.57, 1.83, 2.21, 3.10, and 4.23. Accordingly keeleyite is identical with zinkenite with respect to the presence of a few percent of minor constituents. Although zinc was not reported as such in any of these analyses, it was probably not looked for in any except perhaps Hillebrand's, but was weighed as iron, copper, or silver, one or more of which are present throughout.

The analyzed keeleyite differed mineragraphically on four out of eleven counts from another sulfosalt which Shannon and Short examined. But they gave no data as to the identity of this other sulfosalt except to say that it was labelled zinkenite. There is no information as to whether it had the ratio $PbS \cdot Sb_2S_3$, nor whether it contained zinc replacing the lead.

The claim of keeleyite to be a distinct species accordingly rests on the presence of a little more than 1 per cent of zinc—far too little to be represented in the formula—and a few mineragraphic differences, which may well be due to its zinc content, from a specimen of unknown composition which may have represented zinkenite, and which may or may not have had the same ratio. I therefore regret that I can not agree with the writers in question. They have shown that keeleyite has the zinkenite formula and that it contains enough replacement of the lead to account for minor differences in properties. Instead of establishing its specific rank, it seems that they have thus demonstrated that keeleyite is, as previously suggested, only an impure variety of zinkenite.

M. A. Lacroix, professor of mineralogy at the University of Paris, has been made a foreign member of the Stockholm Academy of Sciences.

J. E. Morrison, secretary of the San Diego, California, Chamber of Mines, has been appointed honorary curator of minerals at the Natural History Museum, San Diego.

At the University of Texas, the Bureau of Economic Geology has moved into new and better quarters. A two story fire proof building has been provided for laboratory and museum space with additional space in other buildings for offices and general storage. A mineralogical laboratory will be installed in the Bureau's new building and will be equipped through a special appropriation recently made by the Board of Regents.

[3] *Am. Mineral.*, **9**, 175, 1924.

[4] Dana, *System*, 112; Groth & Mieleitner, *Min. Tab.*, 24, 1921.

[5] Doelter's *Handbuch Mineralchem.* 4 (3) 449, 1925.