Eckels in 1932 and his description is included in the report of Lovering and Goddard (1950). The mine is about one mile west of Currant Creek, one-third mile south of Black Mountain road. A 300-foot shaft has been sunk near the junction of a rhyolite breccia dike and a diabase dike, both of which have been intruded into injection gneiss.

In addition to malachite, azurite, galena, and chalcopyrite reported by Eckels the writer found significant amounts of pyrite, bornite, and sphalerite and minor amounts of covellite, either in hand specimens or in polished sections. Some of the chalcopyrite has formed as plates along the cleavages of amphibole crystals.

Although vesuvianite reported by Eckels was not confirmed, abundant green spinel is present as small disseminated grains that impart a greenish cast to the quartz-calcite-garnet-amphibole rock in which it occurs. Some octahedra of spinel attain a size of approximately 2 centimeters on edge.

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NOTE ON SPHALERITE AND WURTZITE*

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Interest in the crystal forms of zinc sulfide was aroused by its similarity to SiC, whose various structures have been investigated by members of the Mineralogy Department of the University of Michigan. Commonly natural wurtzite occurs in the form referred to as $2H$ by the Ramsdell (1947) nomenclature. In addition natural wurtzite was found by Frondel and Palache (1950) to occur in the forms $4H$, $6H$, and $15R$[1]. An investigation was undertaken to see if synthetic wurtzite could be crystallized from aqueous solution in these and in the other forms that have been identified for SiC.

Allen and Crenshaw (1914) reported the conditions under which the various forms of ZnS were precipitated. They identified sphalerite,

* Contribution from the Department of Mineralogy and Petrography, University of Michigan, No. 179.

[1] Müller (1952) has recently succeeded in producing these same modifications by tempering synthetic ZnS crystals up to 10 hours at 870–905° C.

wurtzite, and amorphous ZnS by optical methods. At temperatures below 250° C. the precipitate was so fine-grained that they called the material "amorphous." However by *x*-ray methods it is easy to establish that this apparently amorphous material is crystalline and also to determine its structural modification. At the time of these early investigations, *x*-ray techniques were not in general use so it seemed advisable to repeat these experiments, using *x*-ray powder photographs to identify the precipitates.

ZnS was precipitated at temperatures ranging from 15° C. to 100° C. from strongly alkaline to acidic zinc sulfate solutions by adding hydrogen sulfide, sodium sulfide, or ammonium sulfide. In all cases the precipitates had the sphalerite structure. In order to obtain precipitates above 100° C., the closed double tube method of Allen and Crenshaw was used. These workers claimed to have obtained 100% wurtzite by precipitating ZnS from a zinc sulfate solution containing 4% sulfuric acid by weight at 250° C. with a reaction time of 48 hours. Their experimental procedure was repeated and our product was identified as 100% sphalerite by means of *x*-ray powder photographs. In several succeeding attempts, the initial acid concentration was varied, and reactions were also carried on in alkaline solutions. The results were always the same: the product was sphalerite.

X-ray examinations showed that reagent quality ZnS[2] is predominantly wurtzite with small amounts of sphalerite. The manufacturer stated (written communication) that the ZnS was precipitated as sphalerite and roasted in an inert atmosphere in order to volatilize impurities. Fuller (1929) has prepared 100% wurtzite by heating sphalerite with NaCl at 1100° C. until the NaCl was completely volatilized. The manufacturer of the reagent ZnS realized that they were converting the sphalerite to wurtzite but made no attempt to insure complete conversion. We heated this ZnS at 250° C. with sulfuric acid of various concentrations similar to those used by Allen and Crenshaw in glass tubes sealed in steel bombs. Under these conditions all of the wurtzite was reconverted to sphalerite in 48 hours.

These results cast doubt upon the validity of the conclusions of Allen and Crenshaw which have been commonly used as a basis for determining the genetic relations in ores containing wurtzite.

The writer wishes to thank Professor C. B. Slawson of the University of Michigan for his kind cooperation in this project, which was carried on with the financial assistance of the Office of Naval Research.

[2] Baker and Adamson Co., New York.

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SYMPOSIUM ON QUARTZ OSCILLATOR PLATES

This popular number of the *American Mineralogist* for May–June, 1945, has been reprinted for the third time. Fourteen authoritative articles in 264 pages, illustrated. Price $3.00, postpaid. Send orders to the Treasurer, Dr. Earl Ingerson, U. S. Geological Survey, Washington 25, D. C.

CANADIAN REPORT PUBLISHED

The Second Annual Report, 1951–52, *National Advisory Committee on Research in the Geological Sciences,* W. A. Bell, Chairman, was published, October 1952, by the Geological Survey of Canada, Department of Mines and Technical Surveys, Ottawa, Ontario, Canada. The Report is mimeographed on legal sized sheets; included in its 87 pages is an Appendix listing conditions governing award of grants for research to Canadian Universities, a list of grants awarded for 1951–52, an 8-page section on "The Year in Review," and Reports of eight Subcommittees.

AGI OFFICERS FOR 1952–53

Carey Croneis and Harry S. Ladd were unanimously re-elected as President and Secretary-Treasurer, respectively, at the recent meeting of the Board of Directors in Boston, Massachusetts.

Vice-President for the coming year is W. C. Krumbein, geology professor at Northwestern University and AGI Board member representing SEPM.

Professor Paul Niggli, one of the Correspondents of the Mineralogical Society of America and recipient of the Roebling Medal in 1947, died of a heart attack Jan. 13, 1953, at the age of 64.

O. Ivan Lee, research spectrographer for the Crocker Cancer Institute of Columbia University and Chief spectrographer of the United States Testing Co., died on Nov. 25, 1952, at the Medical Center, Jersey City, New Jersey, at the age of 64. He was one of the founders of the New Jersey Mineralogical Society.

At the Tenth Honor Awards Convocation held on Dec. 16, 1952, in the Interior Building, Washington, D. C., Dr. Waldemar T. Schaller received the Distinguished Service Gold Medal Award of the Department of the Interior, in recognition of an eminent career in the field of science. During his 47 years of service on the Geological Survey Dr. Schaller has published 165 papers dealing with every phase of mineralogy, including the description and naming of 43 new minerals.