NOTES AND NEWS

OCCURRENCE OF DOUBLY TERMINATED QUARTZ CRYSTALS IN SANDSTONE IN THE SHENANDOAH VALLEY, VIRGINIA

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The writer during the summer of 1928, while engaged in field work for his master's thesis, encountered an occurrence of doubly terminated quartz crystals similar to those described by Tarr,[1] but in this case they are replacing dolomite rather than gypsum. These crystals were found in a ferruginous sandstone of the Jonesboro formation three-fourths of a mile west of Elkton, Virginia. A like occurrence in the same formation had been noted by Mr. Charles Butts of the United States Geological Survey during the previous summer in the vicinity of Wytheville, Virginia. He submitted specimens of that material to Dr. A. A. Pegau of the Geological Department at the University of Virginia. The latter referred these specimens to the author, with the suggestion that he make a detailed study of their occurrence.

The material upon which this investigation was conducted consisted of seven specimens of ferruginous sandstone in which the quartz crystals were embedded in a matrix of brown to reddish brown iron hydroxide, collected from the two localities mentioned. This sandstone is present as bands, not over ten inches thick, at the base of the Jonesboro (Ozarkian) formation, along the upper contact of the Elbrook (Upper Cambrian) formation. It is also found at intervals throughout the Jonesboro bed, from top to bottom.

The sandstone is fine-grained to compact, thinly laminated (see Fig. 1), brownish-yellow to gray in color, depending upon the amount of dolomite with which it is mixed.

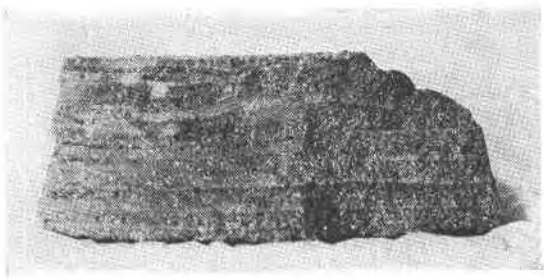

FIG. 1

Thinly laminated sandstone from the Jonesboro formation, made up of doubly terminated quartz crystals. Natural size.

[1] Tarr, W. A., Doubly Terminated Quartz Crystals Occurring in Gypsum, *Amer. Mineralogist*, Vol. **14**, pp. 19–25, 1929.

The quartz crystals (see Fig. 2), ranging in length from 0.50 to 1.20 mm. and in diameter from 0.20 to .50 mm. occur in clusters and as isolated grains. In the clusters a few of the smaller crystals were found intergrown with the larger ones, but usually they are present as separate individuals. In the cases of intergrowth the crystal faces exhibit indentations which result from the separation of crystals in crushing.

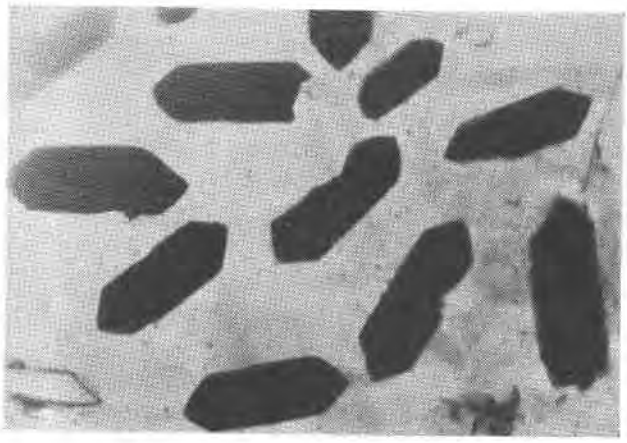

FIG. 2
Photomicrograph of doubly terminated quartz crystals from the sandstone member of the Jonesboro formation. Magnified 25 times.

The crystals usually display simple forms, hexagonal prisms, terminated by the plus (r) and minus rhombohedrons (z), equally developed. The only distortions observed were those resulting from the intergrowths of crystals in clusters.

The color results from hydrous iron oxide, originally dissolved in the silica gel in a ferrous condition and later changed to the ferric state. It appears that the silica had been uniformly stained by the iron before crystallization of the former.

Some of the specimens show pure white crystalline calcite, associated with the quartz and iron oxide. No perfect crystals of this mineral were found but good rhombohedral faces and a distinct rhombohedral cleavage were observed. Since the calcite has not been colored by the iron it seems to be of a later crystallization than the quartz.

ORIGIN

These quartz crystals were evidently formed following the solution of dolomite by ground water, and the precipitation of quartz in its place.

The silica which formed the crystals was leached from the siliceous portions of the Jonesboro formation, 600 feet of which is composed of a very siliceous dolomite, heavily laden with chert.

FIG. 3
Doubly terminated quartz crystals from the sandstone member of the Jonesboro formation. Magnified 5 times.

The abundance, perfect development, and uniformity in shape and size of the crystals points to a full, free space for crystallization indicating not so much replacement as the occupation of space already made.

The solutions from which the silica crystallized must have encountered divalent calcium in the dolomite which induced the coagulation and precipitation of the silica.

The color of the quartz crystals came from iron hydroxide, leached from adjoining rocks, which had stained the silica gel previous to its precipitation.

SUMMARY

Quartz crystals representing a solution and re-precipitation of silica in cavities formed by the solution of dolomite in the Jonesboro formation occur near Elkton and Wytheville, Virginia. The coloring resulted from the presence of iron hydroxide in the silica gel.

Dr. Willy Bruhns, professor of Mineralogy at the Bergakademie at Clausthal died June 18 at the age of 65 years.

Dr. F. Rinne, one of the honorary life fellows of the Mineralogical Society of America has been elected to honorary membership in the Royal Society of Natural Sciences of Madrid.

As a result of investigations started in 1926 the Soviet Government has announced the discovery of rich potash salts near Solikamsh in the Ural Mountains. Mining operations were started this summer employing about 5000 men.

Pennsylvania State College is erecting a new Mineral Industries Building at a cost of over $300,000. It will be the largest academic building on the campus. The four floors will contain a large number of laboratories, class rooms and offices to care for all instruction and research work in ceramics, geology, mineralogy, geography, oil and gas production, mining and metallurgy. It is hoped to have the building ready for use when college opens in September 1930.

BOOK REVIEWS

THE LABORATORY INVESTIGATION OF ORES. A SYMPOSIUM. ERNEST E. FAIRBANKS AND OTHERS. 262+ix pages. McGraw-Hill Book Co., *New York*. 1928. Price $3.50.

This book, edited by Ernest E. Fairbanks, consists of thirteen contributions (chapters) written by twelve authors, and deals with the various laboratory methods employed at present in the investigation of ore minerals. The titles of the chapters and list of authors are as follows:

Historical review of the study of polished sections of opaque minerals. Waldemar Lindgren.

Microscopes, their construction and use. Ernest E. Fairbanks.

Crystal analysis by means of x-rays. Wheeler P. Davey.

Practical photomicrography. R. P. Loveland and A. P. H. Trivelli.

Dielectric methods. Ernest E. Fairbanks.

Genetic significance of grain. Alfred C. Lane.

Ore-mineral sequence. R. J. Colony.

The microscopic criteria of replacement in the opaque ore minerals. W. H. Newhouse.

The textural relationships of the opaque manganese minerals. G. A. Thiel.

Geologic thermometry. N. L. Bowen.

The enrichment of silver ores. F. N. Guild.

Zonal distribution. Ernest E. Fairbanks.

Ore dressing microscopy. G. M. Schwartz.

The book contains many well chosen illustrations and readily holds the attention of the reader. The question of the evidence illustrating sequence of crystallization has quite naturally brought forth conflicting views by two of the authors. Further field and laboratory work will unquestionably throw additional light on the interpretation of marginal relations. In fact, a manuscript received from Mr. H. E. McKinstry, which will appear shortly in this Journal, records additional field evidence on this interesting question.

The chapter on Geologic Thermometry by N. L. Bowen has been reprinted by the Geophysical Laboratory of the Carnegie Institution of Washington, D. C. and issued as *Paper No.* 671 of their publications.

W. F. H.