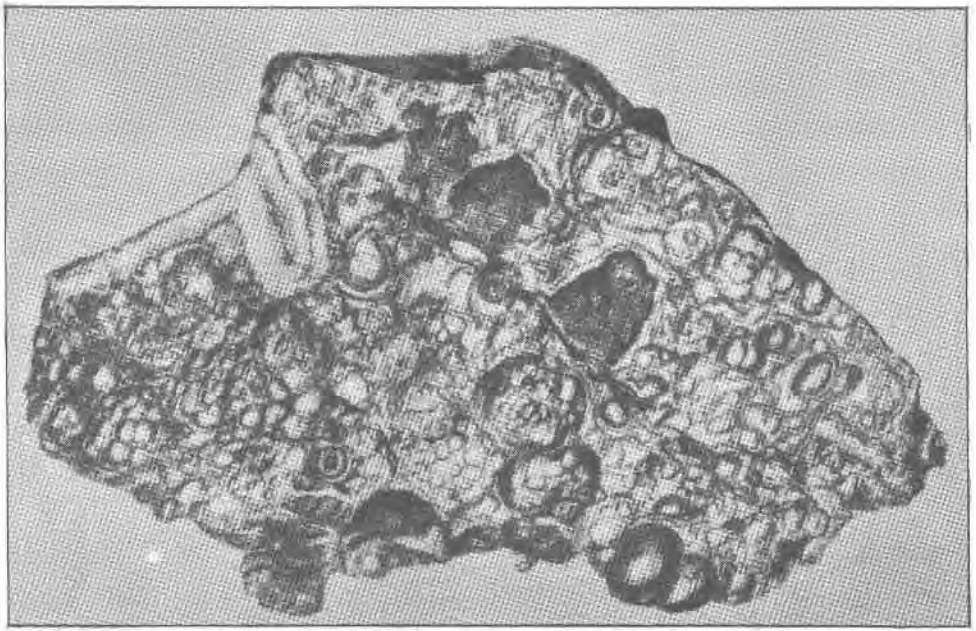
PLATE 5



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"ALLEMONTITE," ATLIN, B. C.

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"ALLEMONTITE" FROM ATLIN, B. C.[1]

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In October, 1917, the writer obtained from the late Captain James Alexander of Atlin, B. C., some specimens from the Engineer Mine, of which he was the proprietor. The property in question contains exceedingly rich gold ore in quartz veins along with "allemontite" and native antimony. According to Cairnes[2] these veins carry tellurium, but he does not give any chemical analyses to support this view. Some pieces of the richest gold ore were, at the writer's suggestion, tested by Mr. J. E. Thomson for tellurium with negative results. In order to indicate the exceeding richness of this ore I quote from Captain Alexander's letter: "I am sending you a piece of $100,000 ore which comes in connection with the allemontite. . . . The gold values vary from $50.00 to 3000 ounces per ton." Mr. George A. Clothier, provincial government mining engineer for this part of British Columbia, in his annual report to the Minister of Mines, states: "The record run of this mill was 24 lbs. 8 oz. (troy) of gold from 160 lbs. of ore. . . . Altogether it is a wonderful showing of gold and there is every reason to believe that it can be developed into one of the greatest gold producers of the continent."[3]

This statement regarding a mill run refers to the treatment of small quantities of picked ore such as they were able at the time to treat with available appliances.

The presence of "allemontite" in these deposits has been known to the operators and to the provincial Department of Mines for

[1] Presented at the meeting of the Mineralogical Society of America, Dec. 28, 1920. [Another "species" is fully discredited! ED.]

[2] Cairnes, D. D. *Memoir, Geological Survey of Canada*, No. 37, 74, 1913.

[3] Clothier, G. A. *Annual Report of the Minister of Mines, Victoria*, 1918, 91–92.

some years but so far as the writer is aware it has never been referred to in the literature. The following examination was undertaken to determine the character of the mineral and to call attention to the first occurrence of "allemontite" in Canada.

The specimen from Captain Alexander exhibits beautiful mammillary structure, a characteristic of this mineral from other localities. (See frontispiece.) Its specific gravity was found to be 6.05 and on the freshly broken surface it was tin-white in color. A chemical analysis of this material is shown in III, table 1.

In the summer of 1919 the writer visited the Engineer Mine and collected a little more of the "allemontite" and packed it along with other specimens in a wine cask. After two months the specimens reached Toronto, and, when unpacked, it was noted that the mineral had become tarnished—probably as a result of vapors from the fermented liquor. When cross-sections of the mammillary masses were examined it was found that some layers had taken on a red-brown tarnish while others were either steely-metallic or white pulverulent. The layers showing the brownish tarnish were coarsely mammillated while the others were finely mammillated or almost pimply. Three portions according to the differentiation shown by the tarnish were separated for specific gravity determination and chemical analysis, as shown in I, II, and IV, table 1.

TABLE 1. ANALYSES OF "ALLEMONTITE."

	I.	II.	III.	IV.
As	87.98	82.54	70.08	42.69
Sb	10.97	17.74	28.68	57.06
S	—	—	0.25	—
Au	—	—	0.05	—
Totals	98.95	100.28	99.06	99.75
Sp. Gr. obs.	5.80	5.92	6.05	6.34
Sp. Gr. calcd.	5.81	5.88	5.99	6.27

I. Dull reddish brown on tarnished surface, coarsely mammillary.
II. Dull gray on surface, coarsely mammillary.
III. Fresh, not selected with reference to tarnish or coarseness of structure.
IV. Bright metallic or light gray on exposed surfaces, finely mammillary.

The calculated specific gravities are based on the values: As 5.70, Sb 6.70.

Mr. J. E. Thomson, who examined some cross sections thru the "allemontite" by mineragraphic methods, informs me that even with high power there was always a distinct banding apparent.

From the above observations on this supposed allemontite it appears that:

(*a*) There is a regular increase of specific gravity with the percentage of antimony present, the close agreement between the observed values and those calculated from the composition indicating the lack of combination between the constituents.

(*b*) The more readily tarnished varieties contain most arsenic and assume more coarsely mammillary forms.

(*c*) The "allemontite" is really an intergrowth of successive layers of arsenic and antimony, and not a definite chemical compound, nor even an isomorphous mixture.

Dana assigns to "allemontite" the formula As_3Sb, which requires 34.8 per cent. of antimony. Hintze[1] gives six analyses of this mineral with the following percentages of antimony:— 37.85, 16.00, 9.18, 9.27, 7.97 and 4.29. From this series of analyses it is apparent that there is no evidence of constancy of chemical composition, nor of any definite ratio between the constituent elements. The results obtained on the material from Atlin are in harmony with the series quoted by Hintze.

The writer inclines to the opinion that allemontite is not a distinct mineral species and urges that, as has been suggested by others[1] but not widely acted upon, the name should be dropped from mineralogical literature. Since arsenic is usually in considerable excess, the material may be labeled *antimoniferous arsenic.*

NOTES AND NEWS

The Senckenbergische Naturforschende Gesellschaft, Viktoria-Allee 7, Frankfurt am Main, Germany, has on hand a large series of specimens illustrating the metamorphic minerals produced by the intrusion of basalt, and masses of native iron in this rock, from Bühl, Weimar, Cassel. They invite correspondence from collectors who may be interested in obtaining series of these specimens.

[1] Hintze, C. *Handbuch der Mineralogie*, Vol. 1, 114.

[2] Compare Wherry, Edgar T. The nomenclature and classification of the native element minerals. *J. Wash. Acad. Sci.*, 7, 451, 1917.