THE

AMERICAN

JOURNAL OF SCIENCE.

Established by BENJAMIN SILLIMAN in 1818.

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THIRD SERIES.

VOL. XLI.—[WHOLE NUMBER, CXLI.]

Nos. 241—246.

JANUARY TO JUNE, 1891.

WITH XVIII PLATES.

NEW HAVEN, CONN.: J. D. & E. S. DANA.

1891.

ART. XLVI.—*Contributions to Mineralogy, No. 51;* by F. A. GENTH.

1. *Aguilarite*, a new species.

A PRECIOUS lot of about half a dozen specimens, secured by Mr. William Niven of Geo. L. English & Co., from Señor Aguilar, the superintendent of the San Carlos Mine at Guanajuato, Mexico, as Naumannite, were placed in my hands for identification. They all proved to be a new species which has been named *Aguilarite*, in acknowledgment to the discoverer of this interesting mineral. I am indebted to Messrs. Geo. L. English & Co. for allowing me to break off a sufficient quantity of this valuable material for investigation.

There was only *one piece* in the lot which gave aguilarite in a state of perfect purity. It is, associated with little quartz, imbedded in colorless calcite which was readily removed by dilute acetic acid. The pure crystals, thus obtained, were placed in the hands of Prof. S. L. Penfield, who very kindly determined the crystallization, of which he gives the following description:

"It is isometric; the crystals are skeleton dodecahedrons with only the edges well developed. Many are lengthened out in the direction of one of the crystallographic axes, looking then like a tetragonal prism, terminated by a pyramid of the opposite order; others are elongated in the direction of an octahedral axis and these resemble hexagonal prisms, terminated by a rhombohedron. I detached one crystal for measurement; it gave only approximate reflections; eight dodecahedral angles, in three different zones, gave angles which varied between 60° 33′ and 59° 35′, the average being 60° 5′, calculated 60° 0′. I also measured two angles over the top of the dodecahedron 89° 59′ and 90° 11′, calculated 90° 0′. The crystals are attached and grouped together, so that distinct, fully developed dodecahedrons do not seem to occur."

The largest crystals were not over $10^{mm} \times 6^{mm}$ in size, groups of crystals up to 15^{mm}. No cleavage observed; fracture hackly; sectile; malleable; H. = 2·5; sp. gr. = 7·586; color iron black; luster very brilliant. In an open tube at low heat, gradually increased to red heat, it yields metallic silver, a slight sublimate of selenium, slender silky needles of selenous oxide and sulphuric oxide, which latter, attacking silver, forms a small quantity of Ag_2SO_4; no SeO_3 could be observed. The analyses gave:

	1.	2.	Ratio.		Calculated.
Ag	79·13	79·07	·732	4	79·50
S	----	5·86	·183	1	5·89
Se	----	14·82	·188	1	14·61
		99·75			100·00

Represented by the formula : $Ag_2S + Ag_2Se$.

All the other specimens were more or less altered; the aguilarite crystals had become rounded, and in the proportion to the extent of the alteration, their crystalline form was more or less obliterated. They often were penetrated by round holes, showed the presence of metallic silver and were coated with microscopic iron-black crystals, sometimes in, apparently, hexagonal scales. Although this coating was quite brittle, I did not succeed in obtaining the unaltered nucleus of aguilarite in a state of purity, as has been proved by the following analyses :

	1.	2.	3.
Ag	78·09	77·85	75·75
S	not det.	7·55	8·32
Se	12·39	12·22	not det.

Sb, As, Cu, etc., not determined.

I was able to separate, in a state of approximate purity, a little over half a gram of the scaly brittle iron-black product of alteration, which gave :

		Ratio.			
Ag	67·08	·621		5·84	11·6
Cu	6·44	·101		0·94	2
Fe	0·82				
Sb	10·82	·090	·107	1·00	2
As	1·29	·017			
S	13·62	·426		3·98	8
	100·07				

Giving the molecular ratio of a cupriferous stephanite $5(Ag, Cu)_2S + (Sb, As)_2S_3$ with an admixture of metallic silver.

2. *Seleniferous Bismuthinite and Guanajuatite.*

A. *Seleniferous Bismuthinite.*—As crystallized Guanajuatite, Messrs. Geo. L. English & Co. sent me for identification a small specimen, consisting of slender, striated crystals, about 5^{mm} in length and 0·5 to 1^{mm} in thickness with distinct brachydiagonal cleavage, imbedded in indurated clay. Color light gray, some crystals showing a yellowish tarnish. Sp. gr. = 6·306. The analysis gave :