

Nantokite from New South Wales.

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[Read April 10th, 1894.]

SOME specimens of this rare mineral have recently been kindly forwarded to me by Mr. J. R. McKay, Manager of the Broken Hill South Silver Mining Company, New South Wales, together with a report upon them by Mr. J. O. Armstrong of the above mine, and Mr. A. D. Carmichael of the Broken Hill Proprietary Block 10 mine, as follows:—

“Mineral found at the Broken Hill South Mine, at the 300 feet level in the carbonate of lead stopes, below original water level.

“It was found in one boulder about 2-3 feet diameter; the boulder consists principally of carbonate of lead, native and oxide of copper, with films of oxy-chloride of copper.

“The crystals on examination were found to consist wholly of copper and chlorine, a quantitative analysis showing:—

Copper	...	...	64·28
Chlorine	...	...	35·82
			100·10

“This corresponds extremely closely to the calculated percentage composition of cuprous chloride, Cu_2Cl_2 , which is:—

Copper	...	...	64·18
Chlorine	...	...	35·82
			100·00

“At the time of making this examination only small portions of the mineral were available.

“S. G. (approx.) 4·8; insoluble in water, soluble in ammonia, hydrochloric acid and solution of common salt; on heating with water in presence of air it is decomposed, lemon-yellow coloured hydrated sub-oxide of copper being precipitated, which on further heating is changed into red

anhydrous sub-oxide, part of the copper going into solution as cupric chloride.

“(Signed) J. O. Armstrong, South Mine.
A. D. Carmichael, B. H. P. Block 10 Mine.”

The properties of the specimens forwarded to me correspond with those given by Messrs. Armstrong and Carmichael, hence any additional analysis seems unnecessary.

The specimens received consisted of the mineral in its matrix of cuprite, associated with native copper, cerussite and a little quartz; the nantokite was of a pea-green tint with a slightly effloresced surface, there were also some selected pieces separated from the matrix, from $\frac{1}{4}$ -inch to $\frac{1}{3}$ -inch through; at first these possessed but a pale shade of green from superficial oxidation, but they gradually became of a darker green, and in two or three days the surface effloresced or became powdery; when freshly fractured the mineral is colourless and transparent, and has a highly vitreous or even adamantine lustre. The fracture is small-conchoidal, and an occasional cleavage plane is presented.

Before the blowpipe it fuses and colours the flame a vivid blue, and on charcoal leaves a globule of copper.

I found the specific gravity of these pure fragments to be 4.1 at 27° C., and the hardness 2.5.

Although the fragments look like portions of crystals, I could not identify any faces with certainty.

The mineral corresponds in all respects to the description given by Dana (*System of Mineralogy*, 1892, p. 154) of the original specimens found at Nantoko, Chili.
