

Note on the Occurrence of Bismutite in the Transvaal.

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[Read January 11th, 1887.]

THIS mineral occurs plentifully, though finely disseminated, in the veins of auriferous quartz in the Lydenburg district of the Transvaal. These veins are often capped by a "gossan" of brown hæmatite, crystalline, amorphous, or at times pseudomorphous after iron pyrites; a good deal of similar brown hæmatite occurs also throughout the veins themselves. The Bismutite is disseminated irregularly through the veins, and also occurs in small pockets in the ferruginous gossan; it is from the latter source that the mineral was obtained for the subjoined description and analysis.

It is amorphous, pulverulent; colour greenish yellow to lemon-yellow, more rarely brownish yellow; opaque (feebly translucent, with waxy lustre under the microscope); its hardness appears to be about 3, but cannot well be determined on account of its pulverulent character. Specific gravity 6·86. The following is an analysis of it (great accuracy could not be attained as the quantity to be operated on was very small):—

Insoluble matter (quartz)	0·9
Bi ₂ O ₃	79·6
CO ₂	7·2
H ₂ O	2·7
Oxide of iron, traces of lime, etc.	9·6 ¹
	100·0

This analysis gives as the percentage composition of the Bismutite itself, the following:—

Bi ₂ O ₃	88·95
CO ₂	8·04
H ₂ O	3·01
	100·00

¹ No other heavy metals except Bismuth were present.

This composition gives for the mineral the formula $\text{Bi}_2\text{H}_2\text{CO}_6$, or $\text{Bi}_2\text{H}_6\text{O}_6 + (\text{Bi}_2\text{O}_3)_2, 3\text{CO}_2$. This formula differs somewhat from that hitherto assigned to Bismutite, but corresponds well with the composition of the mineral here described, the percentage composition demanded by the above formula being

Bi_2O_3	...	...	..	88.22
CO_2	...	...	...	8.36
H_2O}	...	...	...	3.42
				100.00

It is worthy of notice that this is not the only instance of the paragenesis of Bismutite with auriferous quartz, as a similar occurrence has been recorded from South Carolina.
