

On an Occurrence of Rare Copper Minerals from Utah.

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IN the American Eagle Mine, Utah Territory, occur in intimate association with olivenite and other copper compounds, two copper minerals of an interesting and rare composition.

Conichalcite.—Covering the surface of often large pieces of more or less friable mixed arseniates, sometimes forming a complete green coating, are numbers of beautiful emerald-green globules. In consequence of the firm adherence of the base of the globules to the underlying gangue matter, it was difficult to obtain material pure enough for analysis, and therefore the results given below lay no claim to great accuracy.

				<i>Conichalcite from Spain.</i>	
CuO	...	...	28·59	31·76	
CaO	...	...	19·67	21·36	
MgO	...	...	0·61	—	
ZnO	..	...	2·75	—	
Ag	...	...	·29	—	
As ₂ O ₅	...	...	39·80	30·68	
P ₂ O ₅	...	...	0·20	8·81	
V ₂ O ₅	...	...	—	1·78	
H ₂ O	...	...	5·55	5·61	
Fe ₂ O ₃	...	...	0·45	—	
CO ₂	...	...	0·98*	—	
Quartz	..	...	1·11	—	
			100·00	100·00	

* By difference.

The ferric oxide was derived from adhering gangue matter. The carbon dioxide was most likely combined with lime, as the temperature required for its expulsion was very much higher than that at which all the water was driven off.

The silver seems to be present in an oxidised state as silver arseniate, since nitric acid takes it all into solution, and no sulphide or native silver could be detected.

This mineral resembles very much conichalcite, found hitherto only in Andalusia in Spain. The analysis, as represented in Dana's system of mineralogy, is given above for comparison. The Utah mineral differs from the Spanish one in containing no vanadium, and having seemingly part of the copper replaced by zinc. Phosphorus is also almost wanting.

Chenevixite.—Scattered in patches throughout such parts of the ore as occur in hard lumps is a greenish opaque body, with little or no lustre, corresponding very well in composition with analysis of chenevixite from Cornwall, as given in Dana's *Mineralogy*.

				<i>Chenevixite from Cornwall.</i>	
CuO	...	...	26.88	31.70	
CaO	...	...	0.55	0.34	
MgO	...	...	0.23	—	
Fe ₂ O ₃	...	...	26.94	25.10	
Al ₂ O ₃	...	...	1.17	—	
As ₂ O ₃	...	...	34.62	32.20	
P ₂ O ₅	...	...	—	2.30	
H ₂ O	...	...	9.25	8.66	
Quartz	...	...	.71	—	
			100.35	100.30	

Before the blowpipe the two minerals react the same, giving off arsenical fumes and leaving a black magnetic residuo.