

An analysis of the crystals yielded the following results:

	Fe	Bi	Co	As	S	Total
Per cent.	34.53	.79	.09	44.34	20.22	99.97

The analysis proves that these crystals are not glaucodot. The presence of bismuth is unusual, though it has been reported in two out of eighty-one analyses of arsenopyrite recorded by Hintze. When examined under a microscope, however, the crystals are seen to be non-homogeneous, which probably accounts for the corrosive effect of the acid on them, as pure arsenopyrite is not much affected by hydrochloric acid.

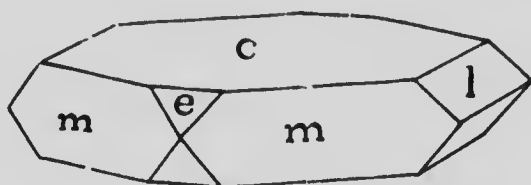


Fig. 23. Arsenopyrite crystal, G'Brien mine.

The finding of arsenopyrite as isolated crystals embedded in calcite and as crystals attached to the arsenide complex, shows that the main arsenopyrite precipitation was later than the main arsenide precipitation, though for a time both were probably being formed together. Bismuth also, in other instances, seems to come later than the period of maximum arsenide deposition, so that its presence here is not remarkable.

Arsenopyrite has been identified in a number of specimens from Cobalt and is probably present in relatively small quantity in most of the complex ore. When intergrown with massive cobalt-nickel diarsenide ore, it cannot be readily detected, except by examining etched surfaces.

Rammelsbergite, University Mine

This specimen at first glance appeared to consist chiefly of very pure niccolite bordered by a band of smaltite from a quarter to a half inch wide, in typical dolomitic vein calcite. On closer examination the supposed smaltite, which analysis shows to be really rammelsbergite, is seen to have the fibrous structure and prismatic cleavage which one associates with the rhombic cobalt-nickel arsenides.

Microscopic observation of etched surfaces shows that the rammelsbergite which is immediately in contact with the niccolite is crystallized, the numerous long, prismatic crystals extending into the niccolite (Fig. 25), and thus proving that the niccolite is the younger of the two.

The niccolite also contains detached crystals of rammelsbergite (Fig. 26) which, in some instances, have been fractured across and the fractures filled with niccolite. The rammelsbergite mass itself is not entirely pure as it contains small inclusions of niccolite which appear to have been precipitated at the same time, though in very much smaller quantity. The niccolite also contains inclusions of