

A sample of about 5 or 6 grams of crystals, free from adhering matter was selected, ground to 200 mesh and analyzed, with results as in No. 1.

	Co	Ni	Fe	As	S	Total
I	28.11	3.07	4.76	44.61	19.57	100.12
II	28.28	3.12	4.16	44.82	19.20	99.82
III	28.64	3.06	4.11	44.77	19.34	99.92
Theoretical	35.41			45.26	19.33	100.00

The powder left after analysis No. 1, was digested for two or three days at room temperature with concentrated hydrochloric acid, a little potassium chlorate being added from time to time. The residue was then washed, dried and a sample analyzed, which gave the results under No. II. What remained was digested with silver nitrate solution for a week. Only a very little metallic silver was precipitated, which was removed with dilute nitric acid. The final residue gave the results under No. III. In the analyses, Co, Ni, Fe, and S were determined only once, the arsenic by titrations of two aliquot portions of the same sample.

The chief results of interest are:

1. The regular increase in the amount of cobalt found, with corresponding decrease in the percentage of iron.

2. The fact that the nickel percentage remains practically the same, or perhaps even increases slightly. This result, considered along with the observation of inclusions which appear to resist corrosion better even than cobaltite, appears to point to the conclusion that there is some inert nickel mineral present, intergrown with the cobaltite. It is not unlikely that this mineral is gersdorffite— NiAsS . The progressive decrease in the iron found tends to confirm the suspicion that the iron is present as a mineral rather than in molecular combination replacing cobalt.

Summary—All the evidence—microscopic and analytical—confirms the conclusion that in the case of these cobaltite crystals, the iron and nickel found by analysis can be accounted for by the presence of microscopically visible inclusions of other minerals in the crystals.

There is reason to believe that these included minerals are, for the most part, not later infiltrations or replacements, but are intergrowths with cobaltite, being formed from the same solution at the same time.

Löllingite, Kerr Lake Mine

The specimen in which this mineral was identified is a cross-section of a portion of a calcite vein. One side was originally in contact with the vein wall and contains small angular fragments of decomposed country rock (Figs. 20 and 21).