Earthy Scorodite and Erythrite, Temiskaming and Hudson Bay Mine

The erythrite of Cobalt occurs usually as earthy incrustations on oxidized smaltite, crystallized material being rather uncommon. A sample of the earthy material of yellowish pink colour from the Temiskaming and Hudson Bay mine was examined for free arsenic trioxide and incidentally was found to contain a relatively large amount of ferric iron. This appeared to indicate the presence of scorodite, so the sample was analyzed with results as below:

	Fe_2O_3	CaO	NiO	As_2O_5	H_2O (total)	CaO	As_2O_3 (Sol. in H_2O)	Insol.	CaO	Σ	Total
Per cent.	8.73	21.43	3.95	38.45	24.22	small am'n't	trace	2.90	trace	trace	99.68
Atomic Ratio	.0547	.2859	.0529	.1673	1.346	....	....	....	....	....	....
Scorodite $Fe_2O_3.As_2O_5.4H_2O$	.0547	....	....	.0547	.2188	....	....	....	....	....	....
Erythrite $Co_3As_2O_8.8H_2O$	....	.2859	....	.0953	.7624	....	....	....	....	....	....
Annabergite $Ni_3As_2O_8.8H_2O$	....	....	.0529	.0176	.1408	....	....	....	....	....	....
Excess	....	....	....	.0063	.224	....	....	....	....	....	....

On gently rubbing the material to a powder, the yellowish tint became more prominent and when some of the larger lumps were broken open, yellow spots were visible which were found to be chiefly ferric arsenate. The copper appears to be associated with the scorodite. Only a trace of water-soluble arsenic trioxide was obtained after treating the material with water for three weeks at room temperature. The total water obtained in the analysis probably includes more or less merely hygroscopic water, and perhaps, may also represent a slight loss of arsenic acid. The arsenic determinations were made on separate portions. Qualitative tests show that the iron is all in the ferric condition. The analytical results thus indicate that an important amount of scorodite is present in this earthy arsenate material.

On Isomorphism as Displayed by Certain Minerals from Cobalt

Analyses of even the most carefully selected samples of apparently pure, simple minerals from Cobalt such as, say, niccolite or smaltite, have, in the writer's experience, invariably revealed the presence of so-called isomorphous replacing elements, e.g., Fe Co, Sb and S in niccolite, Ni, Fe and S in smaltite. Such an experience is, moreover, not at all unusual, as witness the numerous similar analyses in any handbook on mineralogy. It has been usual with most mineralogists to regard such foreign elements as replacing in a molecular way a corresponding amount of the elements essential to the pure mineral. The writer, in examining polished surfaces of such minerals after etching with acid, has always found inclusions of one or