Isolation of Breithauptite. A specimen containing as little niccolite and cobaltite as possible and with relatively large and pure-looking areas of breithauptite was selected and sawn into slices about an eighth of an inch thick. These slices were then treated with hot dilute nitric acid (1-1) until the outside coating of niccolite had been dissolved away and the slices presented the appearance of arborescent skeletons of breithauptite. The cobaltite falls off as the supporting niccolite is dissolved, leaving the breithauptite free of all impurities except the microscopic niccolite inclusions still contained in the interior. These thin branching pieces of breithauptite were then broken up by hand and inspected for freedom from niccolite and cobaltite. In this way about seven grams of breithauptite were obtained which apparently were entirely free of cobaltite and free of all but microscopic inclusions of niccolite. The specific gravity of this sample was 8.11 at 20° C. The arsenic content was 5.83 per cent. These selected pieces were then broken to 100 mesh and again treated with dilute nitric acid until the breithauptite began to be noticeably attacked as shown by the formation of the white antimony oxide. The breithauptite in the form of fine grains of size considerably less than 100 mesh was then rinsed and treated with dilute hydrofluoric acid to clear off any oxidised material, rinsed again and dried with alcohol at 120° C. Under the microscope the rounded grains thus obtained appeared to be of good colour, lustrous and apparently unchanged by the acid, though the sample in bulk was slightly darker than the original massive material. No cobaltite was visible. The specific gravity of the sample of about three grams was 8.23 at 20° C, but allowance must be made for the finely divided condition of the sample which results in slightly too high a figure for the specific gravity.[a] This material was then analyzed with the following results:—

Ni	Co	Fe	Sb	As	S	Total
32.09	.59	.04	66.62	.58	nil	99.92

It may be noted that the amount of nickel found is relatively a little low. This may be due to loss in analysis or to a slight surface oxidation of the breithauptite by the acid by which the bases are subtracted leaving a film of antimony oxide on the grains. As to the chemical constitution of the breithauptite, it seems probable that the cobalt and iron present replace some of the nickel since there is no microscopic evidence of the presence of cobaltite, while the absence of sulphur is a further confirmation. As to what extent arsenic actually replaces antimony, it is difficult to decide. The remainder of the material, after the analysis was subjected to further treatment with dilute nitric acid, was analyzed and the arsenic re-determined and found to be 0.47 per cent., which indicates that some niccolite was still present. This exhausted the supply of material. It is probable, however, that isomorphous arsenic, if present, amounts to less than 0.47 per cent.

The above analysis shows that the breithauptite is individually quite pure: in fact, this is nearer a theoretical analysis than any given by Hintze or Dana. It also

[a] Day, Allen and Iddings—The Isomorphism and Thermal Properties of the Feldspars. Pages 56, 57.