From the above analysis and its cubic crystallization the mineral appears to be cobaltite, which has the theoretical composition: Co. 35.5, As. 35.2, and S. 19.3 per cent. The small amount of silver present was doubtless due to the escape of particles of native silver not affected by the nitric acid.

It will be noted that the arsenic is in excess of the theoretical percentage, while the sulphur falls below. This may result from replacement of sulphur by arsenic or may be due to the presence of small quantities of skutterudite, $CoAs_3$. The somewhat high specific gravity of the sample rather favours the latter explanation. To settle this point absolutely would require a relatively large sample of the cobaltite residue, which would necessitate the destruction of several pounds of the original specimens. There would then still remain the difficult problem of isolating the supposed skutterudite from the cobaltite.

However, the fact remains that cobaltite is, in any case the important constituent of the material analyzed. Further, it is remarkably pure as compared with most of the analyses given by Hintze and Dana. Iron is present in very small amount, and the entire absence of nickel as shown by the dimethylglyoxime test on one gram of material is especially noteworthy, since from its close association with niccolite and breithauptite it might be expected to contain nickel replacing cobalt

General Conclusions Regarding Breithauptite and Associated Minerals

The methods of chemical separation adopted as a result of observation of the relative etching effects of various acids have proven successful except in the case of cobaltite inclusions in niccolite.

That the three minerals, breithauptite, niccolite and cobaltite, though so very closely associated as to suggest simultaneous precipitation, especially in the case of breithauptite and niccolite (Fig. 8), nevertheless individually possess almost their respective theoretical compositions with but very little possible replacement by isomorphous elements, would indicate the possibility of the wide variation in some mineral analyses being due more to admixture with other minerals than to actual replacement with isomorphous elements.

Smaltite and Chloanthite Crystals, Foster Mine

A specimen of what appeared to be very pure smaltite from the Foster mine showed good crystals embedded in a hard dolomitic gangue. The crystals are slightly distorted cubes with small octahedral and still smaller rhombic dodecahedral faces. Some of the cubes reach a size of 5 millimetres.

It was thought that it would be interesting to see if these crystals were intergrowths like those described by Baumhauer, and analyzed by Vollhardt. One of the cubes was cut through the centre and polished parallel to a cubic face. After etching with acid it was seen to be made up of two different materials which were intergrown as shown in Fig. 17. On further etching at least two other components could be recognized but these were present only in very small amount. The massive part of the specimen was also etched and showed the same two prominent materials (Fig. 18) together with small quantities of others not identified. On prolonged etching the inner part of the growths was corroded deeper than the outer later part and relatively much nickel passed into solution, so that the central areas are