

Native Copper at Smithton—A Correction

By

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In a recent paper (Carey & Scott, 1952) in which the geology of the Smithton district was revised in several respects, we stated (p. 67) that a mineral occurring in the Smithton basalt, previously described by Nye, Finucane, and Blake (1934), as native copper had been wrongly determined and was pyrrhotite. Shortly after this paper appeared, Dr. A. B. Edwards, suspecting the possible presence of heazlewoodite, requested a sample of the rock, and we sent him a sample No. 5075 from Coward's Road, Smithton, a basalt containing megascopic clots of the coppery mineral.

After examination of the mineral Dr. Edwards wrote as follows: "The mineral resembling native copper is native copper. The appearance in polished section is typical, the mineral effervesces when etched with 1 : 1 nitric acid, and the etch drop gives a strongly positive test for copper when potassium mercuric thiocyanate is added to it. So that there should be no mistake, I had Dr. McAndrew take an X-ray diffraction pattern of the mineral, and it is undoubtedly native copper."

The determination of pyrrhotite had been based on a negative chemical test for copper and a positive magnetic test, together with a number of bits of suggestive evidence. In the absence of one of us (B.S.) who is now residing abroad, and of the other (S.W.C.), who has been away from Tasmania since Dr. Edwards' communication, Mr. R. J. Ford has, at our request, checked the field outcrops and repeated the original tests, and reports as follows:

- (1) The mineral determined by Dr. Edwards is the same mineral as that previously described. There is no question of the occurrence of pyrrhotite and native copper in separate outcrops.
- (2) The previous negative chemical tests for copper were in error in that an excess of potassium iodide had prevented the formation of a precipitate of cuprous iodide.
- (3) The previous magnetic test was in error in that microscopic examination reveals that much of the native copper is finely intergrown with magnetite, which resulted in apparent magnetic separation of the coppery mineral.
- (4) The mineral dissolves readily in dilute nitric acid to give a faint blue solution which on evaporation leaves blue-green crystals as well as a brownish residue of iron. The residue is taken up with dilute HCl. The addition of potassium iodide solution produces a white precipitate of cuprous iodide, tinged brown by iodine liberated by the acid conditions.

Hence there can be no doubt that the original determination of native copper was correct. We are grateful to Dr. Edwards for drawing our attention to our error.

REFERENCES

- CAREY, S. W. AND SCOTT, B., 1951.—Revised interpretation of the Geology of the Smithton District of Tasmania. *Pap. and Proc. Roy. Soc. Tas.* 1951, pp. 63-70.
- NYE, P. B., FINUCANE, K. J., AND BLAKE, F., 1934.—The Geology of the Smithton District. *Geol. Surv. Tas. Bull.* 41.