

CONTRIBUTION TO THE MINERALOGY OF NORWAY

No. 20. The Identity of Weibyeite.

By

PER CHR. SÆBØ

(Institute of Geology, University of Oslo.)

Abstract. W. C. BRØGGER (1890) described weibyeite as a new fluo-carbonate of Ce and La from a nepheline syenite pegmatite at the island Øvre Arø in the Langesundsfjord, Southern Norway. The original material has been re-examined by optical and X-ray powder methods. Weibyeite is bastnaesite pseudomorphs after ancylite and very rarely also after zircon, together with minor amounts of ancylite. Weibyeite is hereby discredited as a mineral species.

The weibyeite problem

W. C. BRØGGER (1890) described a new fluo-carbonate of cerium and lanthanum with minor calcium and strontium as weibyeite. There has been a lot of confusion about this mineral.

CH. PALACHE, BERMAN, H. and FRONDEL, C. in Dana, Vol. II (1951) came to the conclusion that weibyeite might be related to or identical to ancylite.

H. STRUNTZ in his Mineralogische Tabellen 3. Auflage (1957) says on p. 425, Weibyt? ähnlich Bästnasit?

K. BRYHN (in H. NEUMANN and BRYHN, K. 1958) found that weibyeite to a great extent was bastnaesite pseudomorphs. Further BRYHN (in SVERDRUP *et al.* 1959) showed that the parisite crystals described by Brøgger from the same mineral-association was bastnaesite and not parisite. In 1959 Dr. W. T. Pecora in a letter informed Prof. T. F. W. Barth about the results of the studies done in the years 1952–1953 by himself and Dr. Mary Mrose on original weibyeite material. Drs. Pecora and Mrose came to the conclusion

that weibyeite was partly ancylite and partly bastnaesite pseudomorphs after ancylite. Dr. Pecora wrote as follows: — “Very small colorless to white octahedral crystals of weibyeite gives an X-ray powder pattern identical with our film of ancylite from Narsarsuk, Greenland. Intimately associated with these crystals are creamy white to pale yellow aggregates of also octahedral-shaped crystals which disintegrate to a fine powder when touched with a needle, and which are hollow. The X-ray powder pattern obtained from this material is identical with our film of bastnaesite from Narsarsuk, Greenland.” —

In 1958 I started a more detailed investigation of the type material of weibyeite. The results of Drs. Pecora and Miss Mrose have been confirmed and the rather rich material of Brøgger has enabled me come to a definite conclusion about the true nature of the weibyeite.

The weibyeite consists of:

- A. Octahedral-shaped bastnaesite pseudomorphs after ancylite.
- B. Ancylite crystals more or less replaced by bastnaesite.
- C. A few unaltered rhombic crystals of ancylite.
- D. A few octahedral-shaped bastnaesite-ancylite pseudomorphs after zircon.

The few octahedrally shaped crystals of bastnaesite-ancylite after zircon show no remnants of the original mineral, but the goniometric measurements done by Brøgger prove that forms of the pseudomorphs and the numerous small octahedrally shaped zircon crystals are almost identical. (BRØGGER p. 651).

The octahedral-shaped bastnaesite pseudomorphs after ancylite as a rule exhibit much steeper pyramidal faces than the pseudomorphs after zircon. The ancylite crystals are always more or less replaced by bastnaesite. Only two crystals of ancylite have been found without the yellow, pulverulent crust of secondary bastnaesite.

The formation of the bastnaesite and ancylite belongs to the latest period of the mineral-formation of this peculiar nepheline syenite pegmatite. The rare selective replacement of some few zircon crystals by ancylite and bastnaesite remains an unsolved problem.

Acknowledgements

I want to thank Prof. T. F. W. Barth for his interest in the weibyte problem. Further I want to acknowledge the valuable contribution to this work given by Drs. W. T. Pecora and Miss Mary Mrose.

BIBLIOGRAPHY

- BRØGGER, W. C. (1890): Die Mineralien der Syenitpegmatitgänge der süd-norwegischen Augit- und Nephelinsyenite. *Z. schrift f. Krist. u. Min.* Vol. XVI. p. 650—654.
- NEUMANN H. and BRYHN, K. (1958): X-ray powder pattern for mineral identification. IV. Carbonates. *Avh. Det Norske Vitenskaps-Akademi i Oslo. I. Mat. Naturvit. Klasse 1958. No. 1.*
- PALACHE, CH. BERMAN, H. and FRONDEL, C. (1951): *The System of Mineralogy (Dana) Vol. II. p. 291—293.*
- STRUNZ H. (1957): *Mineralogische Tabellen. 3. Auflage. Leipzig 1957. p. 425.*
- SVERDRUP, T. L., BRYHN, K. and SÆBØ, P. CHR. (1959): Contribution to the mineralogi of Norway. No. 2. Bastnäsite, a new mineral of Norway. *Norsk Geol. tidsskr. Vol. 39. p. 239—241.*