

# CONTRIBUTIONS TO THE MINERALOGY OF NORWAY

## No. 16. Danburite from the Kragerø District.

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Topaz specimens from a number of Norwegian localities are now being examined in this Institute by spectrochemical and other methods. However, two specimens so labelled in the collection of the Mineralogisk-Geologisk Museum of the University of Oslo gave strong spectral lines of the elements B, Ca, Si. Other constituents (Al, Fe, Mg, Mn, Be) occur in quite subordinate quantities or traces only. Thus the mineral danburite is suggested. That the mineral is indeed identical with danburite was subsequently established by its optical properties and by its X-ray powder pattern.

Danburite ( $\text{CaB}_2\text{Si}_2\text{O}_8$ ) belongs to the rarer minerals, and has not been known to occur in Norway. The two specimens here examined are kept in the Mineralogisk-Geologisk Museum in Oslo, and I was kindly permitted to take small samples from them. The Museum possesses only a few specimens which were sent to the University during the years 1906, 1907 and 1908 by PEDER TANGEN, then a well known mineral collector in the Kragerø district. In 1906 J. SCHETELIG determined the specific gravity of the mineral very carefully. He arrived at the value  $3.00 \pm 0.05$ . He must have realized that the mineral is not topaz (sp. g. about 3.5) but apparently did not examine it any further. The specimens, which are up to a couple of decimeters in size and apparently all represent fragments of one or two big crystals, were labelled as topaz, with one exception: the largest fragment of all, a corner of a crystal which must have measured several decimeters, was given the label "Pseudomorph after topaz", probably because its rough faces suggest orthorhombic symmetry and its weight seems too low for topaz. (This particular specimen has not yielded material for the present investigation.) The substance of all the specimens is

granular throughout. Some of the grains are several millimeters in size, completely transparent and almost colourless, with a slight brownish tint, and imbedded in a more finegrained "ground mass". The larger grains and the ground mass of the examined specimens give identical spectrograms, and thus the specimens consist of danburite throughout.

There is some doubt about the exact location. It seems fairly certain that most of the material at least comes from Tangenbruddet (Tangen Quarry), as this name is found on most of the labels, though mostly with question marks. The specimen first examined by SCHETELIG was said to come from Sjøen, which probably means Høgsjøen but possibly Kalstadgangen (1). It appears that PEDER TANGEN is the only person who has collected danburite in the pegmatite-rich area west of Kragerø. Dr. H. BJØRLYKKE, who visited the Tangen Quarry in 1935, was not able to discover "topaz" there (2).

The danburite specimens do not show any associated minerals, except that the largest fragment referred to above has some small flakes of cleavelandite attached to its faces. This indicates that the Kragerø danburite occurs in cleavelandite pegmatite, and is in support of its occurrence at Tangen. BJØRLYKKE even refers to a Museum specimen of "topaz surrounded by cleavelandite" labelled Tangen.

It is well known that tourmaline is a common mineral in granite pegmatites of the Kragerø district, and that these pegmatites are often characterized by abundant Ca (2). Thus the chemical environment is in favour of the formation of danburite. Other pegmatites rich in tourmaline occur in the Modum — Snarum district, and some of these carry a mineral called topaz ("pyrophyssalite"). Spectrograms show that this mineral is actually topaz, so that the conditions for formation of danburite have not been fulfilled here.

Cand. mag. PER CHR. SÆBØ carefully prepared the samples for spectrochemical examination and did all the optical and X-ray work.

#### REFERENCES

1. ANDERSEN, OLAF. 1931. Feltspat II, N.G.U. 128B, p. 39.
2. BJØRLYKKE, HARALD. 1937. Mineral parageneses of some granite pegmatites near Kragerø, Southern Norway. N.G.T. 17, p. 1.

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