

## BALTHASAR'S FEAST

Most readers would probably be very pleased to have just a mineral named after them, but Ove Balthasar Bøggild (1872–1956) must have been particularly popular with his peers, because he had a feast of things named after him. Bøggild was Professor of Mineralogy at the Mineralogical Museum of the University of Copenhagen, Denmark. His middle name (often spelt Belshazzar) is rather striking. The Old Testament story of Balthasar's vast feast tells how, before a thousand guests, wives and concubines, the hand of God wrote on the wall, in a mysterious script, the awesome words 'Thou art weighed in the balances, and art found wanting'. The phrase 'the writing on the wall', for obvious impending doom, has entered everyday speech. Much later, the early Christian church decided that one of the Three Wise Men was called Balthasar. Perhaps this was what was in the minds of Ove's parents as they thought of names for their newborn son!



Iridescent labradorite, light diffracted by the Bøggild intergrowth



O. B. Bøggild, at the right, at Ivittuut in 1900

Bøggild is the man at the right of my monochrome picture, taken at Ivittuut (formerly Ivigtut) in southwestern Greenland in 1900, with his Greenlander crew. The man at the left is N. V. Ussing, who did pioneering and perceptive work on the exotic Ilimaussaq intrusion. Bøggild is nattily attired in a pork-pie hat and a wing collar. What else would one wear in the sub-Arctic summer? Ivittuut is best known as the only locality at which the important mineral cryolite has been mined (see *Elements* 5: 64), but the small granite and pegmatite body is the type locality of no less than 17 minerals, of which 6 have yet to be found elsewhere. Bøggild became the leading expert on the minerals of Greenland, publishing his 625-page *Mineralogia Groenlandica* in 1905, when only 33. The mineral Bøggildite,  $\text{Na}_2\text{Sr}_2\text{Al}_2(\text{PO}_4)\text{F}_9$ , from near the contact of the cryolite ore body, was named by the manager of the mine in 1952, to mark Ove's 80<sup>th</sup> birthday.

He was an extremely skilful and careful crystallographer, and the microstructure in intermediate plagioclase feldspars that gives rise to the beautiful play of iridescent colours known as 'labradorescence' is now called the 'Bøggild intergrowth'. He wrote a short book on this phenomenon, *On the Labradorization of the Feldspars* (1926), and showed, using optical goniometry, that it was caused by a planar feature. Because we can use electrons for microscopy, we now know that the iridescence is caused by coherent scattering of light by lamellar intergrowths of two plagioclases with different refractive indices, with a periodicity between 80 and 250 nm. The periodicity increases systematically with anorthite content, and the colour of the iridescence obeys Bragg's law and changes from blue to red. Bøggild was the first to demonstrate that the common feldspar microcline is triclinic, using optical goniometry with astonishing accuracy on a single crystal of microcline from Greenland. He realised that microcline is usually macroscopically monoclinic, because of repeated fine-scale 'tartan' twinning.



A world of ice near O. B. Bøggild fjord, at 83°N

But the thing for which I most envy Ove Bøggild is on a completely different scale. He has a fjord named after him, O. B. Bøggild Fjord. It is in the far north of Greenland, exactly on the 83<sup>rd</sup> parallel, almost as far north as it is possible to get on land. Its waters are permanently frozen, and the surrounding hills are draped by innumerable glaciers and small ice caps. The winter night is four months long, but during the four-month day that is its summer, little clumps of flowers, and even modest meadows, burst into life. Pure white, fluffy hares, unafraid, will run long distances to investigate the strange bipedal creatures that briefly and very infrequently invade their solitude. If I had the choice of being immortalized by a mineral name, a mineral intergrowth, or a fjord, I'd definitely go for the fjord!

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