References

Noe-Nygaard, A. and Ramberg, H. (1961) Geological reconnaissance map of the country between latitudes 69°N and 63°45 N, West Greenland Medd. Grønland, Bd.123, Nr.5.

Windley, B. F. (in press) On the classification of the West Greenland anorthosites. Geol. Rdsch.

MIGMATIZATION AND DEFORMATION IN AMERALIK, GODTHÅB COMMUNE, WEST GREENLAND, AND THEIR AFFECT ON A SWARM OF BASIC DYKES

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Basic dykes 35 km south of Godthåb were recognized by Berthelsen (1955) as separating two periods of plutonic activity. This swarm has now been traced over the outer 40 km of Ameralik and north into the southern part of Godthåbsfjord, and may extend over a much larger area. A study of the deformation and migmatization of these dykes has been used to work out the history of the outer part of Ameralik.

The K/Ar published for a pegmatite cutting the Qorqut granite (Larsen, this report) suggests that the youngest plutonic rocks in the Ameralik - Godthåbsfjord region were formed at about 1810 m.y. This is considerably younger than the dates published from the retrograde gneisses of the Ipernat dome to the north and the granulitic rocks of the Fiskenæsset area and supports the idea that there has been a local development of late granitic rocks in the Ameralik - south Godthåbsfjord region.

The geological history of the outer part of Ameralik can be summarized as follows:

(h) Faulting and intrusion of dolerite and lamprophyre dykes.

Later phase:
(g) Emplacement of the Qorqut granite and associated dykes.
(f) Broad folding about NNE-SSW axes; emplacement of syntectonic granites and pegmatites.

(e) "Reactivation" (homogenization) of quartzo-feldspathic rocks over limited areas

Earlier phase:

(d) Deformation, possibly major folding, producing abundant mesoscopic folds.

(c) Migmatization, in many places the emplacement of granitic sheets.

(b) Intrusion of a swarm of basic dykes.

(a) At least one and possibly more periods of folding and granite formation.

The plutonic events that affected the basic dykes of (b) can be broadly separated into two phases. The earlier phase consisted of migmatization (c) closely followed by the first deformation (d). The later phase includes the second deformation (f) and the granite formation that accompanied it and continued after the deformation had ceased (g). "Reactivation" (e) in some areas and the emplacement of some of the granitic rocks included in (f) may partly bridge the time between the two phases.

The basic dykes range in thickness from tens of metres to a few centimetres; dykes less than 50 cm are especially abundant. All are now composed of amphibolite except for the inner part of one very thick body which is partly recrystallized dolerite. Some of the less deformed dykes have relict feldspar phenocrysts up to 5 cm long and remnants of phenocrysts can sometimes be recognized in more strongly deformed dykes. Over most of the area the dykes have been so strongly deformed that their original discordant relations to the older rocks can no longer be recognized.

There was considerable variation in the intensity of migmatization in the earlier phase of plutonic activity that affected the basic dykes. In some areas there was none; in others homogeneous granitic rocks, recrystallized during the later foldings to homogeneous gneisses, were formed and all except the thickest basic dykes were destroyed. Over much of the area discordant sheets of granite, now homogeneous gneiss, and very numerous pegmatites were emplaced. Almost the whole area was affected by the following deformation which produced close mesoscopic folding of the basic dykes. These folds are tight or isoclinal in areas where the flattening associated with the later phase of deformation was strong. They are usually asymmetrical and the direction of overturning, which is constant over large areas, is generally to the west. The earlier folding appears to have followed closely after the

migmatization and, where the latter had been strong and the rocks were probably still plastic, rather "wild" flow folding occurred.

In the later phase of deformation broad folds with NNE-trending axes were formed. In many places an intense flattening accompanied the later folding and rotated all the earlier structures, including the basic dykes, into parallelism and concordance so that the geology appears superficially to be very regular and simple. Elsewhere there is usually a strong lineation plunging at moderate angles to SSW which appears to have been produced by movement parallel to the fold axes. Sheets of foliated granitic rocks were emplaced during the deformation. Granite-forming processes continued after deformation had ceased with the formation of the anatectic Qorqut granite and the emplacement of a swarm of gently-dipping sheets of pegmatite, layered aplite-pegmatite and fine-grained granite. The Qorqut granite is composed mainly of fine-grained adamellite, but is rather complex and includes foliated syntectonic granitic rocks. Many relicts of the basic dykes can be recognized among the very abundant inclusions of gneiss and amphibolite in the granite.

Reference

Berthelsen, A. (1955) Structural studies in the pre-Cambrian of western Greenland. I. A small body of diorite, Godthaab district. Medd. Grønland, Bd. 135, Nr. 6.

THE CHROMITE DEPOSITS AT FISKENÆSSET

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Since the discovery of chromite associated with the anorthosites at Fiskenæsset in 1964 a programme of detailed mapping and sample collecting has been undertaken in the region. During the summer of 1966 mapping of the anorthosite horizons was completed in the eastern part of the region, and a