

After the removal of specimens that are unstable, samples from four Gardar dykes and two TD dykes remained for further study. The mean remanent direction of the Gardar dykes is very shallow and westerly although the scatter between site directions is large. The two TD dykes have a mean direction which is northerly, steep and positively inclined. This direction is similar to the mean direction obtained by A. C. R. Ketelaar on the TD swarm in the Ivigtut area in 1963 (GGU internal report).

It is clear that there is a difference of about 90° in the remanent magnetic directions of the Gardar and TD dyke swarms. The difference in direction of remanence is therefore optimum for distinguishing between the dyke swarms and most of the remaining dykes could be classified as probable Gardar or probable TD on the stable remanent directions.

CARBONATITE-LAMPROPHYRE DYKES OF MESOZOIC AGE

Brian Walton

Associated with the TD dolerites on Igaussaq island and the adjacent mainland south of Frederikshåb there occurs a parallel (NW-SE) swarm of carbonatite-lamprophyre dykes. These range in thickness from veins of a few millimetres to dykes of 1.5 m. The carbonatites are most abundant in the extreme west of the area, as are the TD dolerites, and die out towards the east. They cut all generations of dykes earlier than TD, and in one case can be seen to be intruded into a TD parallel to its margin. This field evidence suggests that they are probably contemporaneous with the TD dolerites. An isotopic age date for one of these carbonatites is given in the article by Ole Larsen at the end of this volume.

The carbonatites are perfectly fresh rocks consisting of a fine-grained carbonate matrix containing abundant euhedral to ovoid zoned phenocrysts of pyroxene, amphibole and biotite. In thin section the cores of the pyroxenes are pale green, the margins very pale pink, whilst the amphiboles have green cores and brown margins. Some dykes contain considerable olivine which is largely pseudomorphed by carbonate. The dominant accessory is magnetite.

Small xenoliths of probable eclogite have been found in some of the carbonatite-lamprophyres. One of these is seen in thin-section to be a medium- to coarse-grained rock consisting of garnet, very pale green pyroxene, brown hornblende and plagioclase. Precise mineral determinations have not yet been made but reasons for thinking the rock is eclogitic are a) it has a xenomorphic granular texture quite different from that of the surrounding hornblende gneisses or amphibolites, b) brown hornblende indicates a high temperature of formation and is not otherwise found in rocks of this area, except significantly as phenocrysts in the carbonatite-lamprophyres. Whilst plagioclase is not a typical constituent of eclogites it does commonly occur in rocks of this type.

THE RELATIONSHIP BETWEEN RELIC PILLOW STRUCTURES AND ZONED CALC-SILICATE SKARNS, AND THE SIGNIFICANCE OF TALC BALLS IN GNEISSES SOUTH OF FREDERIKSHÅB

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Amphibolite bands within the pre-Ketilidian gneisses on the island of Igaussaq and the adjacent mainland contain in places clearly recognizable epidotic relic pillow structures, together with probable meta-keratophyre layers and a meta-agglomerate horizon. Zoned calc-silicate skarn bodies have developed from the pillow structures in areas of more intense folding and granitization. In these areas the amphibolites have become agmatitic, and the pillows have suffered more thorough recrystallization and metamorphic differentiation to give zoned bodies consisting of calcite, garnet, diopside, epidote and hornblende.

The amphibolites also contain abundant metamorphosed ultrabasic lenses which were presumably intrusions of the geosynclinal phase, more or less disrupted during the subsequent folding. These now consist predominantly of tremolite, anthophyllite and diopside, but locally talc balls with anthophyllite and actinolite rims occur. The talc cores are foliated from which it may be deduced that the talc is of syn-tectonic crystallization, whilst the amphibole