in the Frederikshåb area (see S. Bak Jensen, this report) and if by this means a "MD" age can be established, then the metamorphic effects seen in the dykes on Dalagers nunataks may possibly be regarded as a Ketilidian influence.

Reference

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FIELD WORK IN THE FREDERIKSHÅB AREA

Stig Bak Jensen

In 1967 the systematic mapping of the area was continued mainly in the northern part, north of 62°N. It is planned to complete the whole area south of Frederikshåbs Isblink in 1968.

Ten geologists were mapping during the summer, each helped by an assistant. In addition one geologist collected Precambrian fossils from Ketilidian supracrustal rocks in the Ivigtut region (Raunsgaard Pedersen, this report), and one collected samples in the Ivigtut region for age determination.

The field groups were organised in the same way as in 1966, and were served from the base camp Mellembygden. Transport was supplied by two Bell 47J helicopters and one GGU cutter. One helicopter is owned by GGU while the other was chartered from "Heliswiss", Switzerland, who also supplied the pilots and technicians.

This summer all twelve field groups were supplied with small radios (receiver and transmitter) after a successful trial with four radios in 1966. The 1.5 watt HF radios (from Spilsbury & Tindall, Vancouver) weigh about 6 kg including batteries but excluding antennae. These radios have provided excellent security for the field groups and have greatly facilitated the organisation of transport.

On July 11th three geologists made a reconnaissance flight to J.A.D. Jensens Nunatakker, which are situated in the Inland Ice 75 km north-east of Frederikshåbs Isblink. The geology of the nunataks is of great importance for the correlation of the gneisses across Frederikshåbs Isblink. The nunataks have not been visited since 1878 when the Danish 4-man expedition led by Lieutenant J.A.D. Jensen made its long strenuous return journey to the nunataks under very bad weather conditions (J.A.D. Jensen, 1890). The cairn erected by the expedition on the main nunatak had collapsed and the sealed glass bottle containing the expedition's message was found to be broken. As yet it is not known whether it will be possible to unroll the message, or if the writing has been preserved. Later in the season, a 4-man Norwegian botanical expedition led by Professor Olav Gjærevoll was flown to J.A.D. Jensens Nunatakker by Alouette helicopter and were in radio communication with Mellembygden. The four men walked back to the to the coast at Bjørnesund north of Frederikshåbs Isblink.

Geology of the Frederikshåb area

The geology in the northern part of the Frederikshåb area is a continuation of that to the south in the Neria area (S.B. Jensen, 1966). Although a detailed correlation between the different geologist's areas cannot yet be made, it might be of interest to stress a few points.

The hornblende schists and amphibolites found as lenticular layers within the gneisses in the area both north and south probably belong to the same unit. The hornblende schists vary in character; some are well foliated, some more gabbroic and massive, some green hornblenditic, fewer are grey-brown and peridotitic. Only minor

semipelitic bands are found. Walton (1966) described relic pillow structures in amphibolite bands 16 km south-east of Frederikshåb, and these structures have been found by some geologists in 1967 farther north and north-east. During the reconnaissance to J.A.D. Jensens Nunatakker the hornblende schists on the main nunatak were examined. A. Kornerup (1890), who was one of the members of the 1878 expedition, has described the schists. The basic schists on the nunatak show the variation in type described above, and they form a band with a north-east trend, which is bordered by gneiss with a transitional border zone of migmatitic appearance. The small layers of hornblende schist in the succession are strongly small-folded, and there are some bigger mesoscopic folds. These, however, are not the strong folds which Kornerup (1890, fig. 8) indicated in his sketch. These "folds" are illusions created by the interplay of geology and the irregular face of the steep wall. Three smaller hornblende schist bands were seen on other nunataks of the same group.

Similar hornblende schists together with amphibolites resembling metavolcanic rocks occur on the northern member of Dalagers Nunatakker. These nunataks lie 50 km north-east of the front of Frederikshåbs Isblink. On the mainland south of the nunataks similar rocks occur within the gneisses.

Kornerup (1890, p. 84 and map B) recorded a belt of supracrustal rocks 10 km north of Frederikshåbs Isblink and described them as mica and talc schists. B. Windley has investigated these rocks and found them to consist mainly of metavolcanics, which in places display pillow structures (see Windley et al., 1966). The distance between the easterly limit of this belt, where it disappears under a lake at the Inland Ice, and the hornblende schists on Dalagers Nunatakker is only 25 km. The hornblende schists at the different localities around Frederikshåbs Isblink have the same appearance, and the schists around Mellembygden are of the same type. At present therefore it seems probable that the same unit of basic schists and gneisses occurs on both sides of Frederikshåbs Isblink.

Some of the basic lenses in the gneisses are more transformed than the hornblende schists described above, but they can be seen to have been derived from the hornblende schists. The small ultrabasic horizons are valuable because they survive such transformations well, being preserved as short lenses. Many amphibolitic lenses in the gneisses contain no primary structures, but some of them have ultrabasic (peridotitic) lenses, which suggest they are the most heavily transformed parts of hornblende schist layers. Such lenticular amphibolitic layers were mapped in the Neria area (south of 62°N), and peridotitic lenses are normally found with them.

The relation between the hornblende schists and the greenschists and hornblende schists of the Tartoq Group (Higgins and Bondesen, 1966) is more obscure. The Tartoq Group supracrustals around Sermiligârssuk (61°30'N) may belong to the same unit as the hornblende schists farther north, all of them being basic layers which have escaped gneissification of the surrounding rocks. On the other hand the Tartoq Group might belong to a completely different chronological unit.

In the north-eastern part of the Neria area the gneisses contain a band of brown garnet-mica schist and a band of amphibolite without ultrabasic lenses. The rocks are intricately folded and have been affected by several migmatisations. Henri Masson (1967), who mapped the area, has interpreted these gneisses as a unit different from the gneisses farther west, which are characterised by amphibolite horizons with ultrabasics but without mica schist remnants. Brown garnet-mica schists have not been encountered in the gneisses north of Frederikshåb.

The dolerite dyke generations (metadolerites, 120° dyke swarm, Gardar dykes and T. D. s) described from the Neria area (S. B. Jensen, 1966) seem to continue farther north to Frederikshåbs Isblink, but the regional pattern of the dykes from the northern area is not yet sufficiently known. It is of interest to mention that one 40-80 m wide dolerite with an ESE trend seems to appear on both sides of Frederiks-

håbs Isblink. It probably belongs to the youngest generation of the metadolerites. B. Windley (oral communication) has mapped the dyke north of the Isblink; here it cuts a north-east porphyritic dolerite and is cut by a north-west dolerite; in some places it contains black feldspar megacrysts. P. R. Dawes (oral communication) mapped the dyke on and south of Dalagers Nunatakker, where it is cut by a NW-trending dolerite. The dyke can be seen on aerial photographs to continue farther to the south-east, therefore it seems to be a good "marker dyke" for the chronology.

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