

Thorson, G. 1934: Contributions to the animal ecology of the Scoresby Sound fjord complex (East Greenland). *Meddr Grønland* **100**, 3, 69 pp.

Washburn, A. L. & Stuiver, M. 1962: Radiocarbon-dated postglacial delevelling in northeast Greenland and its implications. *Arctic* **15**, 66-73.

THE GEOCHRONOLOGY OF THE SCORESBY SUND AREA

Progress report I: Rb/Sr mineral ages

B. T. Hansen and R. H. Steiger

Introduction

A general age determination programme has been proposed for the crystalline rocks of the Scoresby Sund region. The various field geologists are contributing to this by delivering material of significant rock types from their individual areas, and subsequently the actual age-determinations are carried out at the "Institut für Kristallographie und Petrographie" of the "Eidg. Technische Hochschule" in Zürich.

The first age determinations obtained from this programme are given in table 2 below.

Table 2. Preliminary Rb/Sr mineral ages

Age group	Location (longitude/latitude)	GGU No./Collector	Rock-type	Mineral	Rb/Sr age $\times 10^6$ y
1	"T-Sø" area (71° 43' N / 27° 13' W)	101926/Keller	pegmatite	biotite K-feldspar	395±5
2	SW Renland, "Skillebugt" (71° 14' N / 25° 52' W)	103290/Chadwick	grey-pink granite	biotite	428±10
	Hurry Fjord, Liverpool Land (70° 42' N / 22° 14' W)	105064/Coe	granite	biotite	434±10
3	"T-Sø" area (71° 43' N / 27° 13' W)	101927/Keller	metadole- rite	biotite hornblende	492±25
	E Stauning Alper (71° 37' N / 24° 57' W)	112015/Steck	porphy- ritic Bi-granite	biotite	481±10
4	Borgbjerg Gletscher region (71° 41' N / 25° 45' W)	109365/Keller	granodio- rite	biotite	633±15
	Bjørnbo Gletscher (71° 38' N / 24° 45' W)	111499/Rutishauser	aplite granite	muscovite	738±20
	Roslin Borg (71° 53' N / 25° 17' W)	107842/Henriksen	Bi-grano- diorite	biotite	1154±25

Interpretation

The data in table 2 are tentatively subdivided into four main age groups, for which the following interpretation is offered as a working hypothesis.

- 1) Pegmatite 101926 from inner Nordvestfjord appears to indicate the end of the tectonic movements connected with the Caledonian orogeny. This dyke is part of an extensive pegmatite system which penetrates a complex of banded gneiss affected by the Caledonian orogeny, but does not show any effects of metamorphism or mechanical deformation. Its age of 395 ± 5 m.y. is identical with the K-Ar biotite age of 395 m.y. of a post-tectonic intrusive granite in Bredefjord (Haller & Kulp, 1962, sample HN-7B).
- 2) Samples 105064 (age 434 m.y.) and 103290 (age 428 m.y.) originate from intrusions which may have been induced by the Caledonian orogeny. The Hurry Fjord granite (105064) is a massive post-tectonic granite, which cuts the surrounding metamorphic rocks and therefore indicates a minimum age for the last metamorphism of Liverpool Land.

The grey-pink granite (103290) is a product of the last phase of granitisation and is genetically related to granites intruding the extensive diorite sheets of Renland. A diorite body from Renland yielded a biotite K-Ar age of 435 m.y. (Larsen, 1969).

- 3) The ages of 470-490 m.y. may represent an early-Caledonian or pre-Caledonian phase. The dolerite dyke (101927) intrudes a thick sheet of banded gneiss with sharp contacts. The dolerite dyke is clearly metamorphic and is cut by pegmatite 101926. The age of 492 m.y. may be interpreted as the age of metamorphism of the dolerite. It may also represent a mixed age, the dolerite dyke being of pre-Caledonian origin with partial updating during Caledonian events.

Sample 112015 originates from a thick sheet of intrusive granite which is in sharp contact with the surrounding migmatites. The rock is very fresh and shows no sign of metamorphism. Its age of 481 m.y. may therefore represent an intrusive age. A similar age (K-Ar, 490 m.y.) was found by Haller & Kulp (1962, sample HN-89) on a biotite from a completely recrystallised and transformed migmatite in Grandjeans Fjord. Ages between 470 and 490 m.y. have also been determined in the Caledonides of Scotland.

- 4) The ages above 500 m.y. (109365, 111499, 107842) cannot clearly be interpreted without additional information. The samples are from intrusive bodies. Microscopic examination reveals that these rocks are fresh and non-metamorphic. Still, it seems improbable to us that all of the age values indicate true intrusive ages. They may represent mixed ages of Precambrian rocks which were affected in varying degree by the Caledonian metamorphic events.

References

- Haller, J. & Kulp, J. L. 1962: Absolute age determinations in East Greenland. *Meddr Grønland* **171**, 1, 77 pp.
- Larsen, O. 1969: K/Ar age determinations. *Rapp. Grønlands geol. Unders.* **19**, 62-67.

C¹⁴ DATES FROM THE SCORESBY SUND REGION, 1971

Abstracts by Svend Funder

Radiocarbon dates have been obtained on samples of post-glacial lake mud and marine bivalve shells collected by the author in 1969 and 1970. The material has been dated by two laboratories; those marked K by Henrik Tauber, Carbon-14 Dating Laboratory, National Museum, Copenhagen and those marked I by Isotopes Inc., Westwood, New Jersey, U.S.A.

GGU 106515: K-1740. Lake 2 km south of mouth of Fegins Elv. Jameson Land (71° 08' N, 24° 22' W).

Age: 2290 ± 140 years before 1950
340 B.C.

The lowermost 5 cm of a deposit of lake mud resting on (?) fluvial sand. Lake water level 26 m above sea level. The sample dates a period dominated by *Salix* in a pollen diagram from the site (unpublished).

GGU 106522: K-1741. Lake at Heden, Jameson Land (70° 46' N, 24° 07' W).

Age: 8580 ± 140 years before 1950
6630 B.C.

The lowermost 5 cm of a deposit of lake mud resting on (?) marine clay. Lake water level 53 m above sea level. The sample dates the immigration of *Betula nana* into the area (unpublished pollen diagram), and gives a minimum date for a sea level 53 m above the present.

GGU 134008: I-5420. At the edge of Eielson Gletscher in Rypefjord (71° 09' N, 27° 50' W).

Age: 6650 ± 125 years before 1950
4700 B.C.