

Introduction

North Greenland is overwhelmingly dominated by sedimentary rocks which outcrop in a broad belt between the permanent central ice cap of Greenland (the Inland Ice) and the Arctic Ocean (Figs 1–3). A succession of sedimentary basins contains strata of Proterozoic to Cenozoic age, forming the largest contiguous area of sedimentary rocks in Greenland. Most prominent is a tract of Lower Palaeozoic shelf and trough deposits, representing the continuation of the Franklinian Basin of the Canadian Arctic Islands (Trettin, 1989), which can be traced from Inglefield Land in the west to Kronprins Christian Land in the east.

The first geological study of this remote area is little more than a century old (Feilden & De Rance, 1878; Etheridge, 1878). However, the general inaccessibility

of ice-bound shores kept subsequent visitors to a trickle of hardy explorers, despite the fact that more than 100 000 km² of land area are free of ice and snow in the two months comprising the summer season. The Danish geologists Lauge Koch and Johannes C. Troelsen may be singled out for their contributions to sedimentary geology in North Greenland, although many of their observations were never fully published.

The advent of aircraft to arctic exploration heralded a new age in North Greenland geology. Exactly 45 years elapsed from the time that Lauge Koch first conducted airborne reconnaissance over eastern North Greenland until the Geological Survey of Greenland (Grønlands Geologiske Undersøgelse, GGU) launched the major regional geological programme, the North Greenland Project (1978–80, 1984–85), which has provided the bulk of the geological information upon which this present volume is based.



Fig. 1. The south-eastern margin of the Franklinian Basin in Greenland. Pale weathering Cambrian siliciclastic and carbonate sediments overlying darker Precambrian crystalline basement at Marshall Bugt, Inglefield Land. Aerial photograph looking north across Nares Strait toward Ellesmere Island. Copyright, Kort- og Matrikelstyrelsen, Denmark.

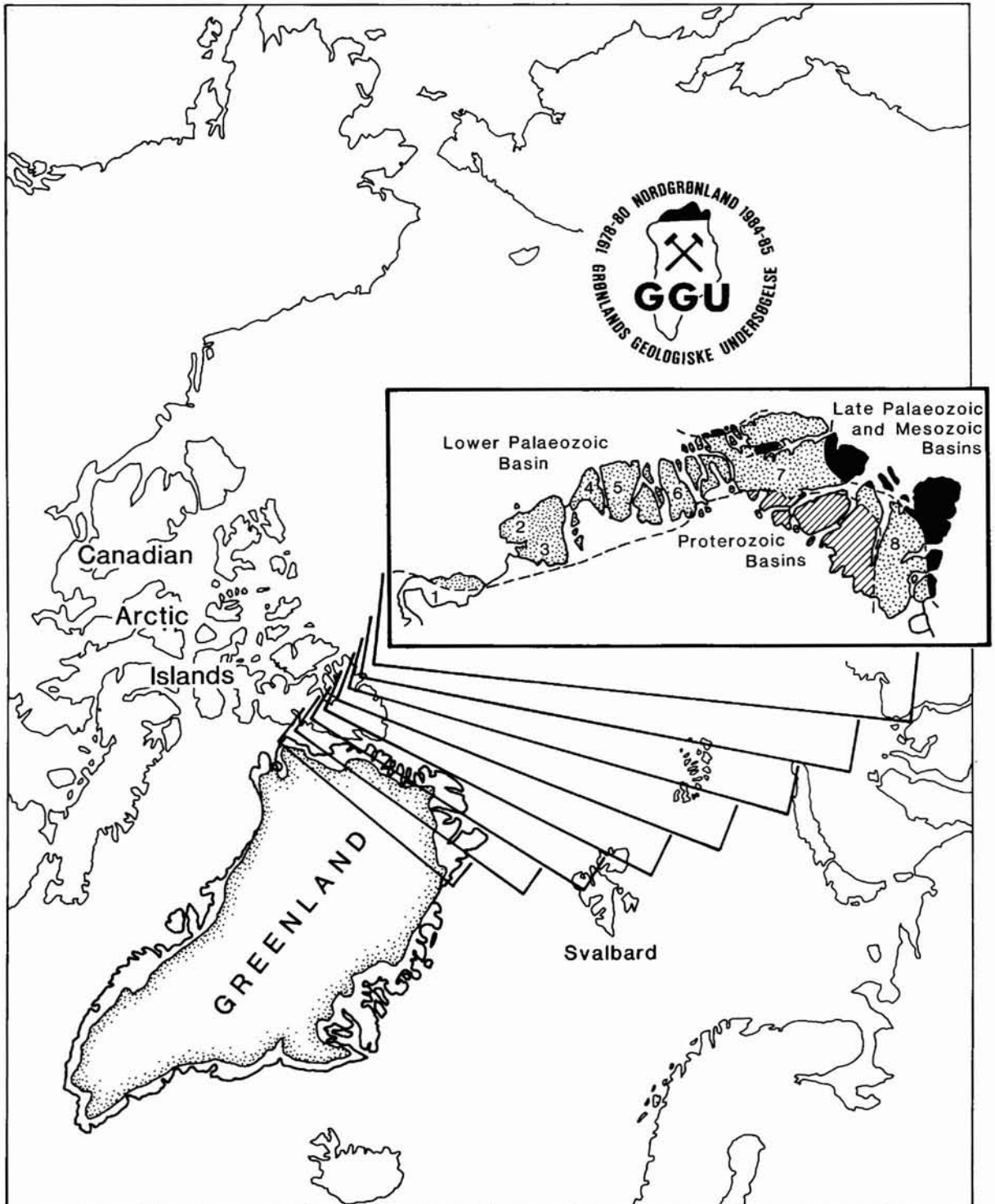


Fig. 2. Greenland viewed in polar projection showing the general distribution of sedimentary basins in North Greenland, based on present outcrops. Much of the geological information synthesised in the present volume was obtained during the North Greenland Project of the Geological Survey of Greenland; the project logo is reproduced in the upper right. 1, Inglefield Land; 2, Washington Land; 3, Daugaard-Jensen Land; 4, Hall Land; 5, Nyeboe Land; 6, Wulff Land; 7, Peary Land; 8, Kronprins Christian Land.



Fig. 3. The Navarana Fjord Escarpment, representing the juxtaposition of Cambrian-Silurian shelf carbonates against Silurian deep-water trough turbidites, is one of the principal tectonostratigraphic features within the Franklinian Basin succession of North Greenland. Cliffs approach 1000 m in height. Aerial photograph of the eastern side of J. P. Koch Fjord looking eastward across Peary Land. Copyright, Kort- og Matrikelstyrelsen, Denmark.

The planning of the North Greenland Project and its development into the largest programme ever mobilised by GGU are recounted in this volume by Niels Henriksen and A. K. Higgins, as a background to four papers describing the development of individual sedimentary basin successions – Proterozoic, Lower Palaeozoic, Upper Palaeozoic, and Mesozoic-Cenozoic. Finn Surlyk integrates these separate discussions into an overview of the geological evolution of North Greenland.

Sedimentary basins of North Greenland forms a companion volume to *Petroleum Geology of North Greenland* (Christiansen, 1989), providing a synthesis of all available information from the world's northernmost complex of sedimentary basins.

Acknowledgements. Many fellow participants in field work in North Greenland under the auspices of the Geological Survey of Greenland have generously contributed information incorporated into the individual papers in this volume and reviewed the manuscripts of their colleagues. Esben W. Glendal, Bodil Sikker Hansen, Bente Thomas and Jakob Lautrup have provided technical assistance in the final compilation of the text and illustrations.

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