

References

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Geological investigations in Lower Palaeozoic terrain of northern Greenland between 78°30'N and 81°30'N

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The 1977 field season concluded a three year programme in Washington Land (Henriksen & Peel, 1976; Peel, 1977) aimed at the compilation of standard profiles through the Lower Palaeozoic and the ultimate production of a 1:500 000 geological map. Members of the party of six worked in Washington Land, southern Hall Land and Inglefield Land (fig. 5) with the support of a Greenlandair Charter Bell 204 helicopter periodically travelling north from Thule Air Base.

The season commenced at Alakratiak Fjord where excellent sections through the Upper Ordovician and Lower Silurian provided a link between Ordovician and Silurian sections compiled in the previous season by Peel and J. M. Hurst (GGU), respectively. A prominent cliff-forming limestone unit was found to include both the highest unit of the Ordovician Cape Calhoun Formation of Koch (1929a) and equivalents of the lowest Silurian Cape Schuchert Formation of Koch (1929b).

J. M. Hurst and *H. F. Jepsen* (GGU) studied various sections in the Silurian platform carbonate sequences exposed in the northern part of Washington Land, around Bessel Fjord. Here, some 2000 m of limestones, limestone breccias, dolomites and thin interbedded shales, including strata which Koch (1929b) referred to the Offley Island Formation, pass south-westwards into basinal graptolitic shales, cherty black limestones and biostromal limestone, with carbonate mounds. There is an apparently continuous section from known Upper Ordovician to known lower Upper Llandovery, suggesting that the whole of the Lower and Middle Llandovery may well be present.

Hurst also visited Kap Tyson in Hall Land to investigate the Offley Island and Cape Tyson Formations of Koch (1929b). The Offley Island Formation is recognisable in Washington

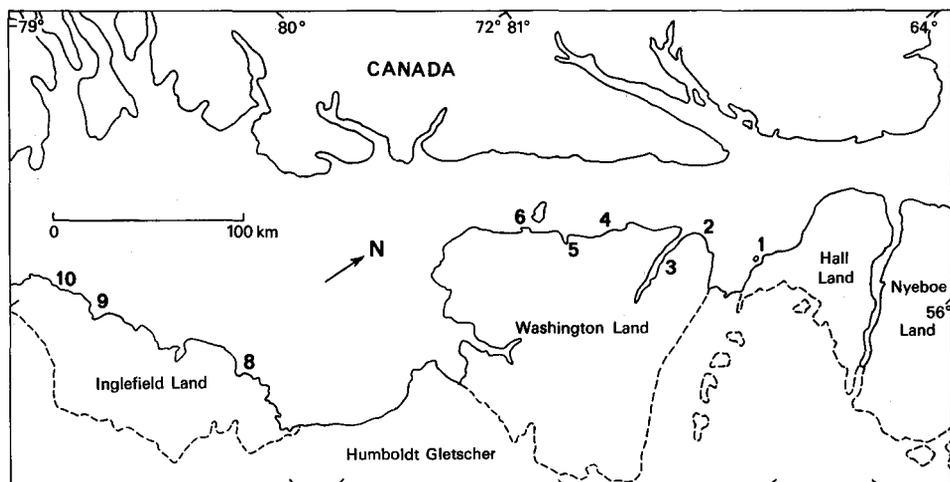


Fig. 5. Localities in North-West and North Greenland. 1: Kap Tyson with Offley Ø to the south; 2: Kap Morton; 3: Bessel Fjord; 4: Kap Godfred Hansen; 5: Alakratiak Fjord; 6: Kap Constitution, Kap Independence; 7: Cass Fjord; 8: Dallas Bugt; 9: Rensselaer Bugt; 10: Force Bugt.

Land in the 2000 m thick Bessel Fjord section, but is only some 300 m thick. Contrary to the opinion of Norford (1972), the Offley Island Formation is not considered to be present in the basin sequences. The sedimentary facies of the Kap Tyson carbonate mound are identical to those at Kap Constitution and Kap Independence.

At a locality 10 km north of the head of Cass Fjord, altitude 350–400 m, Jepsen observed a 50 m thick carbonate cemented fluvial conglomerate (Quaternary), hanging on the steeply dipping slopes of a V-shaped valley eroded into the Ordovician Poulsen Cliff Formation. In some places the conglomerate is covered by non-consolidated recent fluvial strata. Field observations strongly suggest that the deposit has been cut off by an east–west trending fault along which the Ordovician strata have been displaced about 150 m vertically.

Many pieces of driftwood found downstream of the conglomerate were probably washed out of the consolidated conglomerate by recent river erosion. C-14 age dating of driftwood sampled in 1976 in the south-eastern part of Washington Land at a locality 250 m above sea level has given an age of > 51 000 years (see Weidick, this report). The conglomerate probably represents an interstadial or interglacial deposit laid down in a near coastal environment.

Clare Hurst (Copenhagen University) studied Pleistocene and Holocene glacial phenomena in northern Washington Land and at Kap Tyson in Hall Land. Spatial distribution and characteristics of glacial and marine sediments were recorded. Shell samples were collected at Kap Morton, Kap Tyson and Kap Godfred Hansen up to heights of 310 m, 70 m and 180 m respectively.

Peel and J. D. Collinson (Keele University, U.K.) measured profiles through the Kastrup Elv, Telt Bugt, Cass Fjord and basal Cape Clay Formations (Cambrian–Lower Ordovician) about 40 km north-west of Cass Fjord. A number of collections of Upper Cambrian trilobi-

tes were made from the Cass Fjord Formation. Sandstones with *Skolithos* and *Cruziana* (provisionally referred to as the Humboldt formation) occurring below the Kastrup Elv Formation were examined in southern Washington Land.

Later in the season, sections were measured along the coast of Inglefield Land, from Dallas Bugt to Force Bugt. In north-eastern Inglefield Land, a unit of cross-bedded sandstones overlying the Precambrian basement yielded *Cruziana* and *Skolithos* in its upper levels, and is correlated with the Humboldt formation in Washington Land. Overlying dolomites of the Cape Leiper and Cape Ingersoll Formations are hence considered to be equivalent to the lower part of the Kastrup Elv Formation, and of Lower Cambrian age.

In more south-westerly outcrops in Inglefield Land, the sandstones with *Skolithos* and *Cruziana* are thinner, and overlie an older, Middle Proterozoic sequence, with dolerite intrusions, which can be followed southwards into the Thule area (Dawes, 1976). Thus, the Rensselaer Bay Formation of Troelsen (1950) was found to consist of two sandstone units of widely differing ages. At Rensselaer Bugt, much the greater part of the formation is composed of the older sandstone unit.

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