

# Conclusions on the Quaternary stratigraphy of the area

ROLF W. FEYLING-HANSEN, SVEND FUNDER, MICHAEL HOUMARK-NIELSEN, MICHAEL KELLY, CHRISTIAN KRONBORG, JON Y. LANDVIK, VAGN MEJDAHL, HANS-PETTER SEJRUP and LENNART SORBY.

- Alluvial cones along Wolstenholme Fjord reflect at least three distinct transgression-regression cycles, each starting with glaciomarine mud or till and ending with littoral sand and shingle, and presumably controlled by isostatic movements in response to changing ice coverage.
- Extensive C-14 and thermoluminescence dating show that the most recent cycle began in the Early Holocene/Late Weichselian, while the two older ones took place during early and late isotope stage 5 (Saunders Ø and Qarmat interstades).
- Amino acid analyses of marine bivalve shells define the Thule aminozone with a TL age of 136–69 ka, and a younger zone, correlative with the Late Weichselian/Holocene.
- The amino acid results are consistent with the TL-dates, if it assumed that the rate of amino acid diagenesis has been controlled mainly by sea-level history, determining shifts between periods with high and low diagenetic temperatures (when sediments were below or above sea-level respectively).
- Foraminifer and mollusc faunas show that subarctic water penetrated as far north in Baffin Bay as it does today during all three marine cycles.
- The presence of the barnacle *Balanus balanoides*, and the plant *Menyanthes trifoliata*, as well as abundant well preserved *Mytilus edulis* and *Chlamys islandica* show that conditions were warmer during the Qarmat interstade than as yet recorded for the Holocene.
- Three periods of glacier advance have been recognised: the Agpat glaciation (?Saalian), the Narssârssuk stade ( $114 \pm 10$  ka), and the Wolstenholme Fjord stade (Late Weichselian), each less extensive than the preceding one.
- Similarities in setting and lithology, together with amino acid results, provide a base for correlation with sites elsewhere in northern Baffin Bay, and provide for the first time a link between events in North America and Greenland.
- During isotope stage 5 oceanographic and glacial events in the regions around Baffin Bay, north of lat.  $69^\circ$  N in West Greenland and of lat.  $65^\circ$  on Baffin Island, were in phase.
- This foregoing conclusions indicate that there is a strong oceanographic control over glaciation in this region, as has been pointed out earlier by researchers working in the Canadian Arctic.