In the Olympen area the tripartition of the formation so characteristically developed south of Olympen (loc. 6) (described in Surlyk *et al.*, 1973), was found also north of Olympen (loc. 7). At Draba Sibirica Elv (loc. 2) and Depotelv (loc. 3) the occurrence of the lower and middle units was established. The middle unit contains ammonites of Lower Oxfordian age in concretionary limestone layers. A tendency to a higher content of body fossils as well as of trace fossils to the west and south-west of Olympen in the lower unit, together with occurrences of *Chondrites* in the middle unit at Depotelv and Draba Sibirica Elv, seems to indicate more offshore conditions in that direction.

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The Kap Parry complex, central East Greenland

John Engell

The Kap Parry complex belongs to the NE–SW trending zone of subvolcanic centres extending from the Werner Bjerge massif (72°N) to Kap Broer Ruys (73°31'N) in East Greenland. The existence of the Kap Parry complex (fig. 26) has been known since the beginning of the last century. A map and a short description is given by Schaub (1942). It is a semicircular subvolcanic complex about 11 km in diameter, partly covered by the sea to the east and south. The rock types involved are, listed in the order of formation, acid volcanic breccias, alkaline quartz-syenite and at least two generations of alkali granite. The whole complex is cut by a suite of alkaline acid dykes and dolerites. The

complex is younger than the numerous dolerite sills intruded into the surrounding shaly sequence of presumed Cretaceous sediments; no traces of macrofossils were found. Hydrothermal alteration is widespread in the complex, especially in connection with the alkali granites. Advanced physical weathering makes detailed mapping of especially the southern part of the complex difficult.

Emplacement and structure

The complex was emplaced by a combination of stoping and forceful injection. During the emplacement of the quartz-syenite the sequence of sediments and sills was broken up into large blocks. Those surrounding the intrusion were uplifted and tilted and now dip away from the centre of the complex. The roof of the intrusion was downfaulted along a semicircular fault and tilted so that the large roof pendants now dip towards the centre of the complex. The magnitude of the downfaulting has not been established, but appears to be small. Roof pendants of country rock are restricted to a one to two kilometre wide zone along the northern and western border of the complex and small areas along the east coast of the peninsula. Inside this zone roof pendants are composed of acid volcanic breccias of variable structure and composition.

The quartz-syenite reaches its highest levels along the boundary fault where it forms an arched intrusion widening rapidly downwards, and in the central part of the complex where it attains an altitude of more than 900 m at the highest point in the area.

The alkali granites occur as large elongated irregular intrusions from which numerous dykes and sheet-like apophyses of microgranite extend into the older rocks. At least two generations of alkali granite occur. The oldest is found around Flade Gletscher; on the northern slope of Ødedal it is veined by a younger granite. An intrusion breccia, composed of large blocks of sediments and dolerite sills, with thin granitic veins, formed in connection with the emplacement of the first granite. This breccia cuts across the earlier formed ring fault to the north and terminates at a steep fault along which renewed sagging of the roof has occurred.

Volcanic breccias

In the central 60 km² of the complex roof pendants are composed of volcanic breccias. A crude zonation indicates the existence of at least three eruption sites; one at the east end of Ødedal, one around Stormdal and one in the south-east corner of the complex. The boundaries of these vents are indicated by relicts of breccia dominated by shattered sediments and dolerite sills, and breccias dominated by xenoliths of feldspar porphyries.

The most common breccia type is a quartz-feldspar porphyric breccia composed of abundant phenocrysts and centimetre-sized rounded fragments of rhyolite, together with a variable proportion of xenoliths of sediment and dolerite in a rhyolitic matrix. The breccia shows no internal structure except on the east side of Stormdal; here the breccia shows banding marked by closely spaced thin black schlieren mainly composed of matrix.

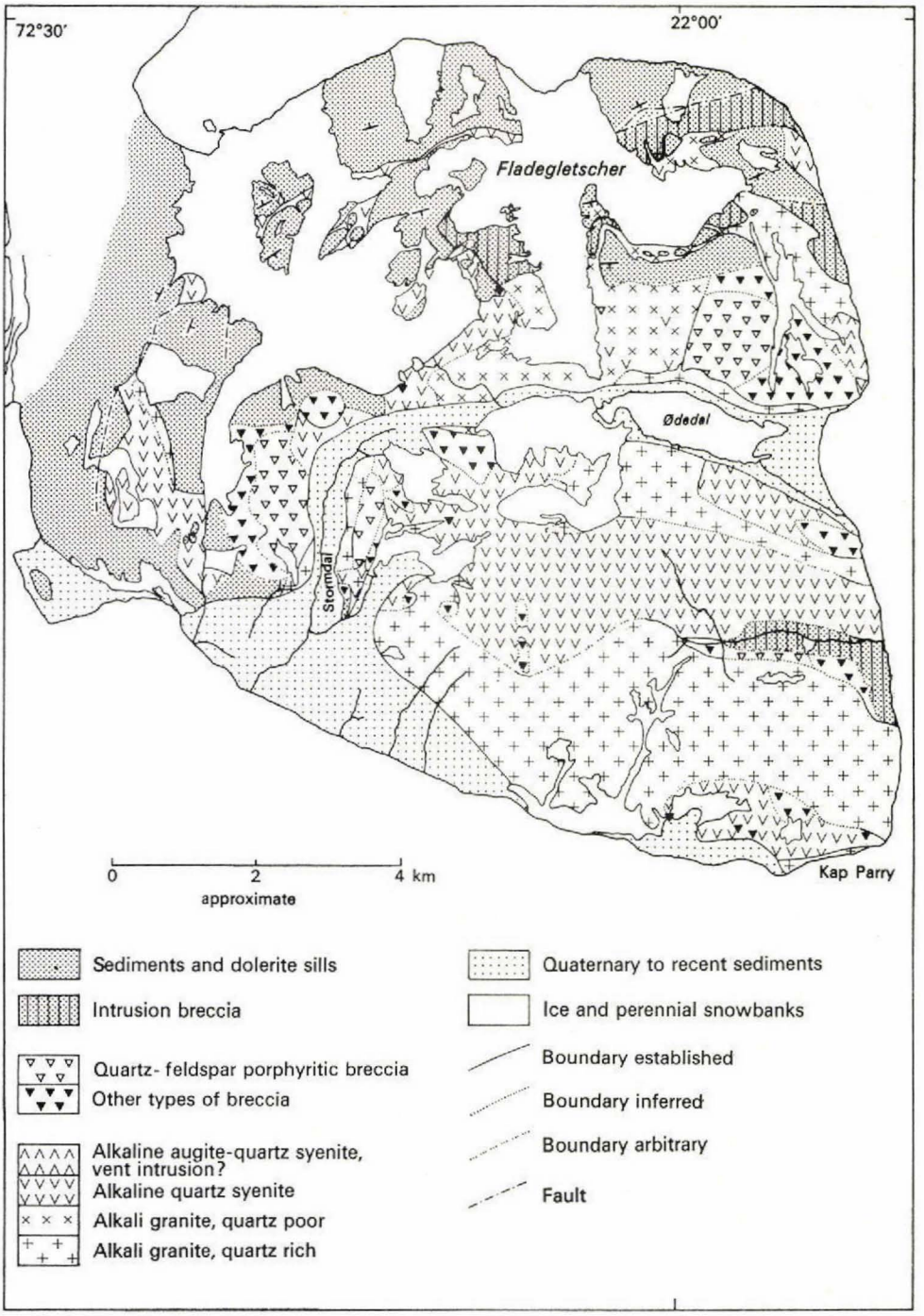

Fig. 26. Geological sketch map of the Kap Parry complex.

At Stormdal the rhyolitic breccia is surrounded by a breccia dominated by up to metre-sized rounded xenoliths in a dense black matrix. The xenoliths include sediment, dolerite and syenite fragments, and a suite of feldspar porphyries. No sills or dykes corresponding to these feldspar porphyries have been found.

In the breccia area north of Ødedal a feldspar porphyric breccia is seen east of a rhyolitic breccia. The form of the latter indicates that it is the youngest. To the east the feldspar porphyric breccia seems to grade into a quartz bearing feldspar porphyric augite-syenite vent intrusion.

Alkaline quartz-syenite

The alkaline quartz-syenite is a leucocratic, feldspar porphyric rock composed of about 1 cm large phenocrysts of alkali feldspar (30%) in a fine to medium-grained quartz bearing (8%) matrix. The most basic variety contains semi-phenocrysts of augite and later kataphoritic amphibole. In the more differentiated varieties the mafic minerals are amphibole, strongly zoned from kataphorite to arfvedsonite, aenigmatite and late aegirine. Accessory and secondary minerals include opaques, titanite, apatite, iron hydroxides and calcite.

Alkali granites

The alkali granites are fine to coarse grained, and a miarolitic facies is developed close to the contacts of larger bodies. Cavities are often filled by calcite. The two generations of granite can be distinguished by their quartz content, the older containing about 20%, and the younger about 30% quartz. The mafic minerals in the older granite include alkali-amphibole, strongly zoned from kataphorite to arfvedsonite, aenigmatite and late aegirine. The younger granite contains zoned arfvedsonitic amphibole and aegirine in variable proportions.

Dykes

The whole complex is cut by numerous dykes including feldspar-clinopyroxene porphyric dolerites, a suite of feldspar and quartz-feldspar porphyric acid dykes and aphyric spherulitic dykes. The dykes tend to occur in swarms with maximum intensity in trends of 42°, 106°, 146° and 174°, but other directions also occur. Dykes are very scarce outside the intrusion.

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