Joint Universities Expedition to Northern Iceland, 1986

GORDON S. HAMILTON and H. ELIZABETH MARTIN

For six weeks in the summer of 1986 a team of 14 geographers, drawn from the Queen's University of Belfast, the universities of Aberdeen and Oxford, and Portsmouth Polytechnic, led by Elizabeth Martin, joined together to form the Joint Universities Expedition to Northern Iceland. Our goal was to continue a programme of rock glacier monitoring which began in 1977 and which was followed up by expeditions in 1985, 1986 and 1987.

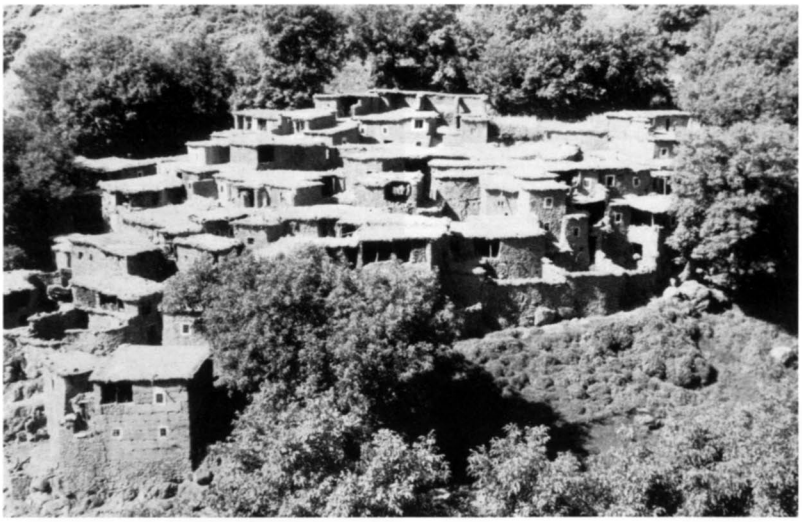
Rock glaciers are found in most high mountain regions of the world and are generally located in marginally glacierized and periglacial environments. They can be defined as a mass of rock-debris which displays a surficial pattern of ridges and furrows and is delimited from surrounding slopes by distinct and often steeply-angled lateral and terminal margins. The feature often contains an ice-core or an ice-rock matrix which allows it to exhibit flow velocities of less than one metre per year.

The expedition concentrated its attention on the rock glacier in Nautadalur, a tributary corrie of Skjóldalur, some 20km south of Akureyri in the Tröllaskagi peninsula. This rock glacier was found to be a downvalley extension of a small corrie glacier.

The expedition began in mid-June when an advance party of three arrived in Akureyri to take charge of the equipment and food shipped to Iceland from England. A four-day delay in the arrival of our freight frustrated our attempts to disappear from Akureyri, a major stop on the tourist trail around Iceland; but eventually we were able to transfer ourselves and our gear to Ysta-Gerdi, the farm at the head of Skjóldalur, which was to be our Base Camp.

Skjóldalur is one of many glacially-derived valleys which debouch into Eyjafjördur. These valleys extensively dissect the Tertiary basalt plateau which reaches from 1300–1500m above sea-level, forming the highest mountain massif in Iceland and providing the characteristic landscape of Tröllaskagi. In order to transfer our equipment and supplies the 9km distance to our Nautadalur camp at 900m a.s.l., we set up a hierarchy of camps with the assistance of two pack-horses under the able control of Audur Hallsdottir.

The weather remained settled throughout the first two weeks of the expedition, and by the time the rest of the group had arrived the camps were set up, research programmes had begun and the advance party were sunburnt. During this period the majority of the spring snow-melt occurred. Consequently, by the end of the expedition, access to the high camp from the bottom of Nautadalur, by the easiest route along the snow gully, was severely restricted. In the first week we had been able to descend from 900m to 250m a.s.l. along

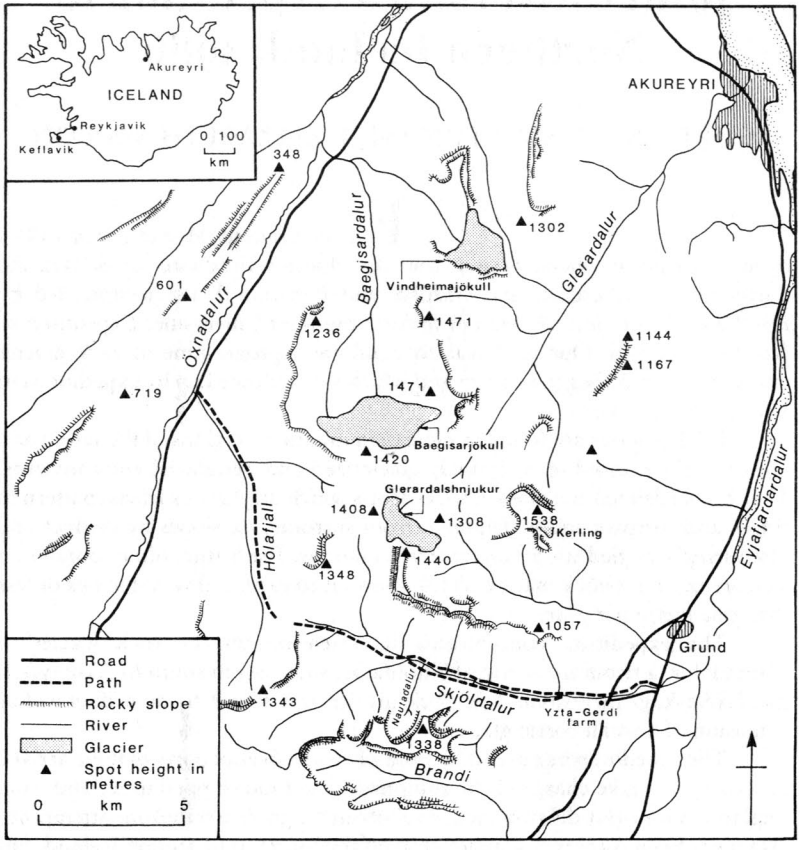


67. *Ouaneskra – mint tea stop for thirsty travellers.*



68. *Nautadalur rock glacier.*

LOCATION OF FIELD AREA, NORTHERN ICELAND



the central snow-gully in under five minutes. In general we found that climbing in this area was greatly facilitated by deep snow cover and, once this had melted to reveal an unstable rocky mantle, much more time and effort was called upon to cross the same route. The rocks in this region are particularly sharp and abrasive and were known to shred boots.

Apart from watching one's footstep, it was necessary to keep an eye on the surrounding cliffs and rock outcrops. These were extensively frost shattered and, with increasing pore-pressure in them from melt-water percolation, they were highly susceptible to rockfalls. We had a couple of very close calls when we really did see 'geomorphology in action'! The high frequency of rockfalls in this area was to form the basis of one of our research programmes and during a four-week period we recorded 52 rockfalls from the backwall of Nautadalur corrie.

Other projects included a detailed survey of the rock glacier and glacier surface, velocity profiles, lichenometry, rock-fabric analysis, and snow-pit

studies. The results of these are found in the expedition report (*Expedition to Tröllaskagi Scientific Reports 1985, 1986* and *1987*, in press; *Summary of Expedition Report in Expedition Yearbook 1986*, published by the Royal Geographical Society).

Mountaineering formed an integral part of the expedition, both as a means of access to the study area and as a sport in its own right. The plateau in this area can be reached by a great number of long, steep snow gullies giving climbing at Scottish Grade 1–2. Most gullies exceed 1000m in length, and it is noted that their snow content is exceedingly diminished by early August. No technical difficulties are to be encountered, except when crossing the often considerable cornices guarding the exits. As the plateaux are entirely surrounded by steep sides with often numerous stepped rock outcrops, these gullies provide the best means of access to the summit. However, from Skjóldalur, after a steep and strenuous walk up Nautadalur, two routes to the plateau top could be taken.

The first, chosen by most members of the expedition, was no more than a short, if energy-sapping, walk up the broad E flank of the valley. In mid-June this involved struggling through thigh-deep snow, but by early July it took the form of a scramble over slippery and unstable rock. Once on the summit, one could walk over areas of stone stripes and polygons with relative ease, and spectacular views to Vatnajökull in the south were well worth the effort.

The second and more adventurous route was the ascent of the Nautadalur corrie backwall. In mid-June this route was backed-out with winter snow, concealing most of the rock outcrops. However, a month later the severity of the climb was more appreciable, with sustained ice-pitches present on the now steeper upper reaches. Snow and rock avalanches were a constant hazard and a formidable cornice was encountered at the summit. This route was only undertaken by two expedition members who had considerable mountaineering skill, a keen sense of adventure and what the rest of us thought was a streak of madness.

Two expedition members, Andy Dugmore and Gordon Hamilton, ventured from Nautadalur via the plateau top into Brandi, the extensive valley system to the south. The climb was made in late June and was aided by the snow-covered gullies. However, scrambles along narrow precipitous ridges of crumbling basalt made for heart-stopping moments. The route from Nautadalur, to the southern plateau edge of Brandi and along the valley bottom to Ysta-Gerdi took over 15 hours and made good use of the extended hours of sunshine afforded by our northerly location.

The expedition was a success, both scientifically and as an adventure. For many of its young members it provided the impetus to participate in, and even lead, expeditions in the following year. We would like to thank the sponsors who made our venture possible: The Royal Geographical Society, British Sugar plc, the Mount Everest Foundation, the Gilchrist Educational Fund, the Dudley Stamp Memorial Fund administered by the Royal Society, the Royal Scottish Geographical Society, the Gino Watkins Memorial Fund administered by the Scott Polar Institute, and Icelandair.