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RIGNYS BJERG 1998

Expedition Report

MOUNT
EVEREST
FOUNDATION

Expedition Summary

On 11 June 1998 four mountaineers from Bristol (Mark Bailey and Sean Franks) and Edinburgh (Ruth and Simon Love) set off on an expedition to the Rignys Bjerg Mountains in Arctic East Greenland. Our research suggested that had been no previous mountaineering expeditions to the area. It is 300 km from the nearest habitation - Ittoqqortoormiit (Scoresbysund), a small settlement with a population of 480.

After being landed on the glacier at 1555m, the expedition was self sufficient for three weeks. We headed west up a high subsidiary glacier to spend eight days climbing the summits that formed a rim round our camp at a high col.

Three of the most significant peaks of the region formed a chain stretching 4 km to the southwest of the camp. The first of these, the impressive and aptly named Pyramid received two first ascents on the night of the 14/15 June. Ruth and Simon by the southeast ridge and Mark and Sean by the steeper northeast ridge. Four nights later (after one day of light snowfall) Ruth and Simon made a first ascent of Octopus (the middle one) by its fine east ridge. This was June 18/19 - Simon's best birthday (37th) climb yet! Meanwhile Mark and Sean made a bold attempt on the tallest mountain in the area (affectionately known as Mr Big). They reached our high point at 2600m, but turned back on a steep, narrow ridge of dangerously loose snow - leaving a very attractive objective for future parties.

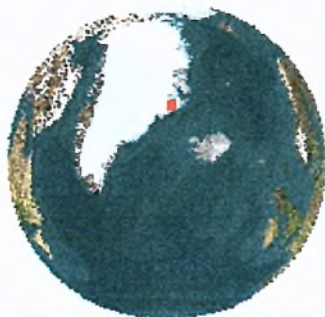
We then left the high camp with its views out across extensive ranges to the distant pack ice, and headed north picking up more food and fuel from a cache. After another first ascent (in deteriorating weather) of a challenging mixed ridge, Dreadlocks, we became storm bound for four days and were reduced to melting snow with body heat as the tents became almost completely buried by drifting snow.

The last five or six days were spent in the vicinity of the landing zone - hopes to visit the ice-cap having been dashed by the storm. Mark and Sean focussed on climbing many fine peaks in Monument Valley, to the west of the Main Glacier. The tallest, Centrepiece at 2280m was climbed from the col to the southwest. Ruth and Simon broke up the climbing with a major ski-tour, circumnavigating the massifs to the northeast. They were away for a worrying 19 hours - having taken in 57 km and two high passes.

In summary the three weeks were well used, 14 new mountains were climbed, and many of the region's glaciers and passes were explored. Apart from the storm, the weather was generally very good, and most of the climbing was done at night when snow conditions were better.

We used a digital camera, laptop and satellite phone to send back reports to our website, where more detail is available:

<http://www.mountain.force9.co.uk/greenland1998>



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Preparation

The original idea for an expedition to a remote mountain area was hatched by Mark and Sean in The Prince of Wales pub in December 1996 (eighteen months before we actually went). Research showed that East Greenland still had plenty of areas with unclimbed mountains and that there were opportunities for a significant expedition, given four weeks and a reasonable budget. Deciding on the exact area took time, and consultation with Paul Walker from Tangent Expeditions. Paul has a wealth of Greenland experience and we planned to share some logistics with him.

A large number of people considered joining the expedition. Eventually we settled on a team of four.



Mark Bailey, 31, Expedition Leader.

Mark lived in Snowdonia for two years, where he spent most of his spare time climbing. He has previously led mountaineering expeditions to Eastern Turkey, the USA, Morocco, Norway and the Alps, but this trip will be the most ambitious to date. He works as a research engineer for Hewlett-Packard Laboratories Bristol.



Sean Franks, 33, Logistics Co-ordinator.

Sean has travelled all over the world and climbed in many countries, particularly in South America. He spent Christmas Day at 6200m on Aconcagua, the highest mountain in the western world. He is a construction site manager in Bristol.



Ruth Love, 36, Medical Officer.

Ruth is a dentist and has trained in expedition medicine. She is married to Simon and they live in Edinburgh, giving them quick access to winter climbing in Scotland. She completed the Munros in 1995 (Munroist 1443) and regularly runs half marathons.



Simon Love, 36, Quartermaster.

Simon also completed the Munros in 1995 (Munroist 1444) and they have now started travelling south to the French Alps. Last year they climbed the Barre des Ecrin and the Traverse of the Pelvoux. He works for Hewlett-Packard in South Queensferry.



For value for money on the logistics, more would be better, but a smaller team is easier to organise and we were able to work efficiently during planning and in the mountains. This was the most ambitious expedition any of us had been on and we were nervous about including more inexperienced people.

As the team was split between Bristol and Edinburgh, most training happened separately. However, we had all known each other for a number of years and had climbed together. At the time the expedition was suggested Ruth and Simon had no alpine or technical winter experience. They had however completed a round of the Munros, and done a fair amount of summer climbing and winter walking/scrambling in Scotland. Part of the appeal of the trip was the impetus it would give to developing new skills, and pushing their mountaineering into new areas. As such they regarded the eighteen months of preparation and planning as an extended training course, which was tackled with the help of the following courses:

- February 1997 - Snow and Ice Climbing course, based in Fort William with Mountaincraft
- September 1997 -Five day alpine course with Murray Hamilton in the Ecrins (French Alps) - including an ascent of the Barre Des Ecrins and a traverse of the Pelvoux.
- February 1998 - Ruth attended an "Advanced Medicine for Remote Foreign Travel" course given by Wilderness Medicine Training.
- March 1998 - A weekend's Avalanche awareness course given by Glenmore Lodge.
- May 1998 - Ruth had an evening's instruction with the Edinburgh Gun Club.

We managed to get together as a team of four on a few occasions to pore over aerial photographs, climb together and go through procedures such as crevasse rescue:

- Three training (and shopping) weekends in the Lake District.
- New Year 1998 was spent by Mark, Ruth and Simon, ski touring in the Vercors (France). This was the first time any of us had been on our new Nordic Skis. Sean, meanwhile was attempting Aconcagua in Chile.
- Easter 1998 was spent in brilliant but freezing weather on Arran.

On the Bank Holiday weekend at the beginning of May we met in Yorkshire to pack our food and equipment and deliver it to Paul Walker in the Lake District. With the Tangent supplies, it was then freighted by sea to Reykjavik and on to Constable Point, Greenland by air. The next time we met was in Iceland.

Journal

6 June 1998

The team met up in Keflavik International Airport, Iceland. Mark and Sean flew from Heathrow, Ruth and Simon from Glasgow. Together we took the 40 minute Fly Bus into Reykjavik, where we were staying at the Smarar guesthouse. We had a look around the city that evening. The sun had still not set by midnight.

7 June 1998

We checked out some more of the city and planned our itinerary for the next few days. We tested the communication equipment - using the satellite phone to send in our first report and photos from the digital camera.

8 June 1998

The 24-hour daylight was making us all quite tired so we were glad we had a few days to acclimatise before travelling to Greenland. We hired a car and set off on some sight-seeing. We visited Pingvellir, Geysir, Gullfoss and Hekla before stopping for the night in Hella.

9 June 1998

We drove east along the south coast to Vik, visiting more waterfalls, lava beaches and sea stacks, before returning to Reykjavik along highway one. We stopped for a couple of 18" pizzas on the way. Members of other expeditions had arrived at the Smarar guesthouse while we were away.

10 June 1998

We started early, to get all our gear to the airport before returning the hire car. This worked fine, despite going to the wrong terminal initially. The arrangements for the flight seemed informal, as is usual in Iceland. We spotted our freight being loaded, then set off on the two-hour flight over the Denmark Strait, full of broken packice as we approached Greenland. Most of the other passengers were members of expeditions organised by Tangent, but there were also a few Inuits returning to Scoresbysund. We landed at Constable Pynt, where there was still a fair

amount of snow, and met up with Paul Walker and Benny, the airport manager. All our freight had arrived safely and we now collected our fuel, pulks and the rifle. We had the use of a hanger to check and re-pack our gear.



The position of the area of operation.

11 June 1998

We had breakfast in the airport staff canteen. At 2:00 pm we took off for the mountains in the Twin Otter. We shared the flight with another team from the UK (Ogwen Mountain Rescue - John Hulse, Al Read and Russ Hore). This was a stunning flight, low over the mountains before a perfect landing on Main Glacier.

"I'd expected the plane to circle and select a landing spot, after all they had never been here before. However, the shadow just kept getting larger and suddenly we were down and stopped. When the engines were turned off it was quiet. But that was nothing to quietness we were left with after the departing drone had faded into the distance and we were left with our kit piled around us. The agreement was to be back here in three weeks. The mountains in the immediate vicinity were quite intimidating and we had our eyes on a glacier round the corner - it seemed to have some easier stuff to calibrate ourselves with, and the highest peaks in the area for the challenge. We dug a cache for our spare gear, buried it, packed the pulks and headed off to the west. Ruth took first stint pulling. It gave a flavour of being a British polar explorer, man-hauling a pulk uphill with a heavy load (21 days of food and gear for two people). When we stopped to make camp I think we'd all have like to have gone further, but we all needed the break." - SL

We left a cache of three days food and fuel at the landing zone and skied off west. By now it was late afternoon and the snow was soft. We left a 12-day cache at the head of Main Glacier before turning south-west into Bristburgh Bowl to make Camp 1.

12 June 1998

At 8:00 am we were woken by the heat of the sun. We tested the satellite phone at 9:00 am and managed to talk to Paul - but the signal was very broken. In the afternoon we skied for 45 minutes to First Peak on the other side of the bowl. This was a simple snow slope with some loose unpleasant rock at the summit. For the ascent the snow was soft, but it started to improve as we descended.

"Yesterday this mountain had not been climbed. Today it has. As we eat our tea, the sun is shining on our tracks to the top." - MB

13 June 1998

We decided to move camp further into the bowl to be better placed for more peaks. This also meant we would start climbing later, when the snow was better. That evening we traversed Dolphin, a superb snow ridge. We skied back down to Camp 2 at 1:30 am, still sunny and quite warm.

14 June 1998

We split into two pairs for the first time. Ruth and Simon climbed the southeast ridge of Pyramid and returned the same way. Mark and Sean climbed the steeper northeast ridge with some steep ice, a large crevasse and a knife-edge ridge. They reached the summit a little later and followed the others down.

We had seen Pyramid from afar, as obvious as its name, what else could we call it? We'd moved camp to be close to it, though being careful to stay out of its early-evening shadow. Now we were setting off to climb it. It felt like a big mountain, a Munro's height above our camp, with seracs and icefalls between the summit and us. Mark and Sean were going to approach it from the NE ridge, which looked a bit steeper and had a bigger bergschrund than the SE ridge Ruth and I were attempting. It was late and cold when we set off, cutting left up the slope behind camp, avoiding the dangerous territory to arrive at the ridge, which was already in shadow and cold in the cutting wind. From there it was an interesting snow ridge, without being too technical. There were a few crevasses but generally the snow was in good condition. Ruth was pretty cold and could probably have done with me going at a less dignified pace. The summit had all the interest one could hope for it was carved snow, more of a sharks fin than a whale back. I led up and cut myself a bucket seat, brought up Ruth and we sat there taking photographs, with one leg dangling over the camp, the other over unknown territory to the west. Just before a steeper section on the NE ridge we could see a tiny figure, that kept moving forwards a few paces, then back a few. It looked as if someone was having a bit of interest. It was too cold to wait for an outcome so we headed down the way we had come. A short while later we were relieved to see that two figures were progressing solidly along a higher section of the ridge. It was an elated party that exchanged stories in camp that morning." - SL

15 June 1998

We skied up to the col to the east, from where three summits were in reach. As a four we tried the highest. We had a look at two possible routes, but decided the south face was too avalanche prone. We split again. Ruth and Simon climbed the Serpent - a long, exposed ridge with awkward corncicing.

"It looked like a simple undulating ridge - we'd backed off a larger summit due to avalanche potential (and the bergschrund had creaked at us). Mark and Sean were going to attempt the Rock Twins (very appropriate). Ruth thought that Serpent was a fitting name and led off. We'd probably have been happier sticking to the ridge, but what with the small crusty cornice and two exposed sides, we opted for a rising traverse, crossing a narrow crevasse that seemed to dissect the serpents spine was a definite highlight. We enjoyed the summit astride, and decided to return with one of us each side of the ridge. It was half way back, having cleared half a kilometre of cornice (two blows to the meter), that I remembered a quote from the Water Margin, I just could not get it out of my mind. "Do not despise the Serpent, for who is to say that one day he will not grow up to become a dragon." We rejoined M&S on an exuberant ski back down to camp. Ruth and I made the mistake of removing our skins and both took minor falls on the icy surface. In Ruth's case she had a sore thumb, with me it was the shoulder, both survived the trip." -SL

Mark and Sean attempted the steep rock pinnacles of The Twins. They proved very loose, and they decided to turn back 10 metres from the top. The ski back to Camp 2 was good but icy. By now we were climbing through the night.

16 June 1998

As a four we climbed Horse, a peak to the north-west with a long, sharp snow ridge and an icy dome at the top. From here we got a good view of the two high summits to the west, behind Pyramid and spotted some possible routes we could try tomorrow.

17 June 1998

A warm front came though while we slept, bringing cloud cover and the promise of snow. We prepared the camp and watched for a while. We decided against trying the big peaks, but thought the one where we had turned back due to avalanches would be a sensible objective. This turned out to be a fine mixed ridge, climbed as a four with an eye on the weather. We only had an inch of snow.

18 June 1998

A few post-cold front "galleons" remained and the possible start of another front was on the way, but not too threatening. We skied into the bowl to the west which gave stunning views over hundreds of miles of peaks. Ruth and Simon climbed Octopus by its fine East Ridge.

"We had not been able to see the route all the way and were not at all sure it would go. In retrospect we had been able to see it all from Pyramid - we even have the photo to prove it, but our minds were on where we were, not planning the next climb! The route had started up a couloir between Pyramid and Octopus, then following the ridge southwest as it steepened to a fine arete. It then broadened and turned south, but was split laterally by a large crevasse. The right hand side of the ridge seemed poised to fall to the glacier below. The summit was then approached up a broad westerly ridge, with soft snow. Fortunately there were rock anchors, and we stood one at a time on the summit, the easterly and taller of two tops separated by 500m of loose ridge. This was a real treat, summiting at 3:15 am on the 19th, my 37th Birthday." --SL

Meanwhile, Mark and Sean attempted the highest mountain in the area Mr Big. They reached a high point of 2600m but turned back at a long runout on poor snow.

19 June 1998

Simon's Birthday. We struck camp and returned to cache 2 to resupply.

"We'd spent six days at camp 2 climbing most of the surrounding mountains and were running out of food. We decided to have one last climb then move on - head back down the glacier for a resupply at cache 2 then onwards to snowscapes new. The walls round the cooking area had been thinning every day - you could see through them in places. We got used to this high pass beneath Pyramid, with its views out over the ranges to the partly frozen Arctic Ocean. It was sad to leave, I don't suppose we'll ever go back." -SL

Heading north, we set up cache 3 near the low point of the bowl before continuing and ascending to camp 3. More signs of another weather front.

20 June 1998

Full cloud cover and a cold wind made us consider taking our first rest day. Instead, we decided to try Dreadlocks, the prominent ridge to our west. The weather was OK once we were moving and we reached the fine summit via some steep ice to avoid rock bands. While we cooked, some snow fell and it became colder.

21 June 1998

The storm was now in full swing so we stayed put. This was longest day of the year and it seemed it.

22 June 1998

The weather was the same. The blizzard from the north forced snow up between the tent and the fly sheet where it solidified. The depth of snow kept increasing, but the wind seemed to prevent us from being completely buried.

23 June 1998

Still no let up. We were bored, but warm and eating plenty, though nothing hot as it did not seem worth the hassle of getting the stove going.

24 June 1998

The snow stopped and the cloud began to break, but the wind was the strongest yet and there was plenty of spindrift. We were considering how best to use the rest of our time.

25 June 1998

The sun hit the tent at 4:15 am and the sky was mostly blue. The wind was still strong but we ventured out to get the stoves going and have our first hot food for four days. We skied north to the col to look at the icecap beyond. Because of the delay and uncertainty about what else the weather might do, we decided against moving camp further north. Mark and Sean returned, struck camp and collected cache 3 before returning to camp 4 back at the landing zone. Ruth and Simon skied further and took in a small peak before following later that night.

"During the four days we were pinned down by the storm we lost the opportunity to visit the icecap. We all felt that we could not risk pushing further into the unknown with the possibility of being pinned down again, and not having time to get back to the landing zone. So the plan was to stretch our legs and move camp. We got to the landing zone well after M&S, our longer ski meant that we ended up digging out later, when the snow was harder, it took us three hours. When we reached M&S they were tucked up in the tent. Rather than crash about setting up camp we decided to bivi, after all having spent four days and nights in a snow cave it was good to sleep in the open." -SL

26 June 1998

It was sunny enough to recharge batteries for the laptop, so we sent through a batch of photos. Mark and Sean

receded Monument Valley, the bowl to the south, finding a way in through the crevasses and skiing round to pick out some routes on the peaks. After climbing a couple of small summits they left the climbing gear in the pulk and returned to Camp 4. Simon and Ruth set off at 11:00 pm to circumnavigate the massif to our northeast in an anticlockwise direction, travelling light.

"Ruth thought her way round the disappointment of our restricted exploration. If we couldn't do it with the pulks, couldn't we do it as a long ski tour, travelling light? I allowed myself to be persuaded and we set off to circumnavigate the massif to our east. Because this involved crossing a highly crevassed area to reach the first pass we went roped and took a small amount of technical gear for glacier travel. The message I left for M&S (who were off exploring the bowl to the south) read:

Hi, we put off the set off time to 10:00 pm to let the snow bridges harden (a bit). It's a bit less than 40km, so probably 10-12 hours (maybe longer). Back Lunchtime tomorrow (today?).

We actually left about 11, with a bit of faffing on my part. It took an age to get through the crevasses and up onto the pass, but the early morning light and the views were fantastic. Skiing down the other side the snow was icy - a shiny sea far to the east. We could not get a wax to bite, so skated on down for km's and hours. The sun was rising and it was getting warmer, but it seemed to be going well. We decided (I agreed) to extend the route, to take in the next massif and ski back along the glacier adjacent to the icecap. It met our urge to explore, and we knew the pass at the end, we had explored it the day before on our post storm stretch. Once we had finished the downhill we went back to skins, no wax seemed to work in the warming snow (I think klister might have, but had not brought it). Ruth seemed OK skating on the flat but it was not to my taste. Breakfast time (8:45 am, but our second lunch) saw us at the far point of the circuit. We were suddenly aware of how far we were from base, and that we had eaten most of our food and drunk all our water. We also lacked lightweight clothing or headgear. Still we were heading for home. The next ten hours were the longest and hardest I've experienced. I finished the film in my camera and just did not have the energy to reload. We just plodded on through the heat and softening snow, scooping mouthfuls when we were thirsty, and taking it in turns to despair. We must have looked a right sight as we slid back into camp, half dressed, me wearing a triangular bandage as headgear and with a desperate thirst. M&S were about to abandon their planned climb and follow our ski-tracks, after all we had been gone nineteen hours (twenty by their count) and they were wondering what had happened. They'd had a climb and a sleep since we'd last seen them. In that time we'd skied 57km on a variety of difficult surfaces, with two passes, one highly crevassed. A stupendous experience, but not one to repeat too often. We slept while they went for their climb, then slept again. I took the next day off to eat, while Ruth got back into the swing, climbing with the boys." -SL

27 June 1998

Simon and Ruth returned later than planned after extending the route, giving Mark and Sean an anxious few hours. Mark and Sean returned to Monument Valley to climb its highest peak, Centrepiece. They returned by lowering Sean and the pulk into U Valley, then skiing downhill right back to camp.

28 June 1998

Mark, Sean and Ruth climbed the southeast summit of Quasar Peak which overlooked the camp. The continuation ridge to the northwest summit (estimated 1km away, a couple of metres taller) looked good.

29 June 1998

Returning to Monument Valley, Mark and Sean climbed Mitten, while Simon and Ruth went further, to Sisters. The Ogwen expedition returned to the landing zone as we got back and we opened the whiskey together.

30 June 1998

Simon and Mark opted to spend the last day on a ski tour. They skied up into Monument Valley and dropped down between The Nob and Sisters, through an extended crevasse field to the Edintol Glacier. They followed this to its head and crossed the col into U Valley for a fine ski home.

"Ten hours before our flight out of the wilderness and Mark and I are at the apex of our last ski tour - reviewing the last three weeks' activity from a new valley. Ten kilometres from base and we head down onto a new glacier. Roping up for the crevasse field turns out to be a good idea. A snow bridge collapses under my heels and a few minutes later another crevasse appears and swallows a ski on seemingly smooth snow. The level of intensity increases and we tentatively zigzag out of trouble. Four hours later we were chased back to camp by threatening dark clouds." -SL

Sean and Ruth crossed Main Glacier to climb Boundary Peak. The weather had started to turn. Cloud was building

and we were worried that the plane may not be able to land to pick us up tomorrow.

1 July 1998

Cloud, rain and snow - not good for landing a plane on a glacier. We packed, hoping for the best and phoned Air Iceland. The plane was on the way, but would assess the weather when it arrived. We marked a runway with bags and boxes. This showed enough of the shape of the glacier for them to land, and we were soon back at Constable Point. We returned to Iceland (Akureyri) that evening and crashed out as soon as we got to our accommodation.

2 July 1998

We slept late into the afternoon, then went out for a meal in town. Mark and Sean had the guillemot.

3 July 1998

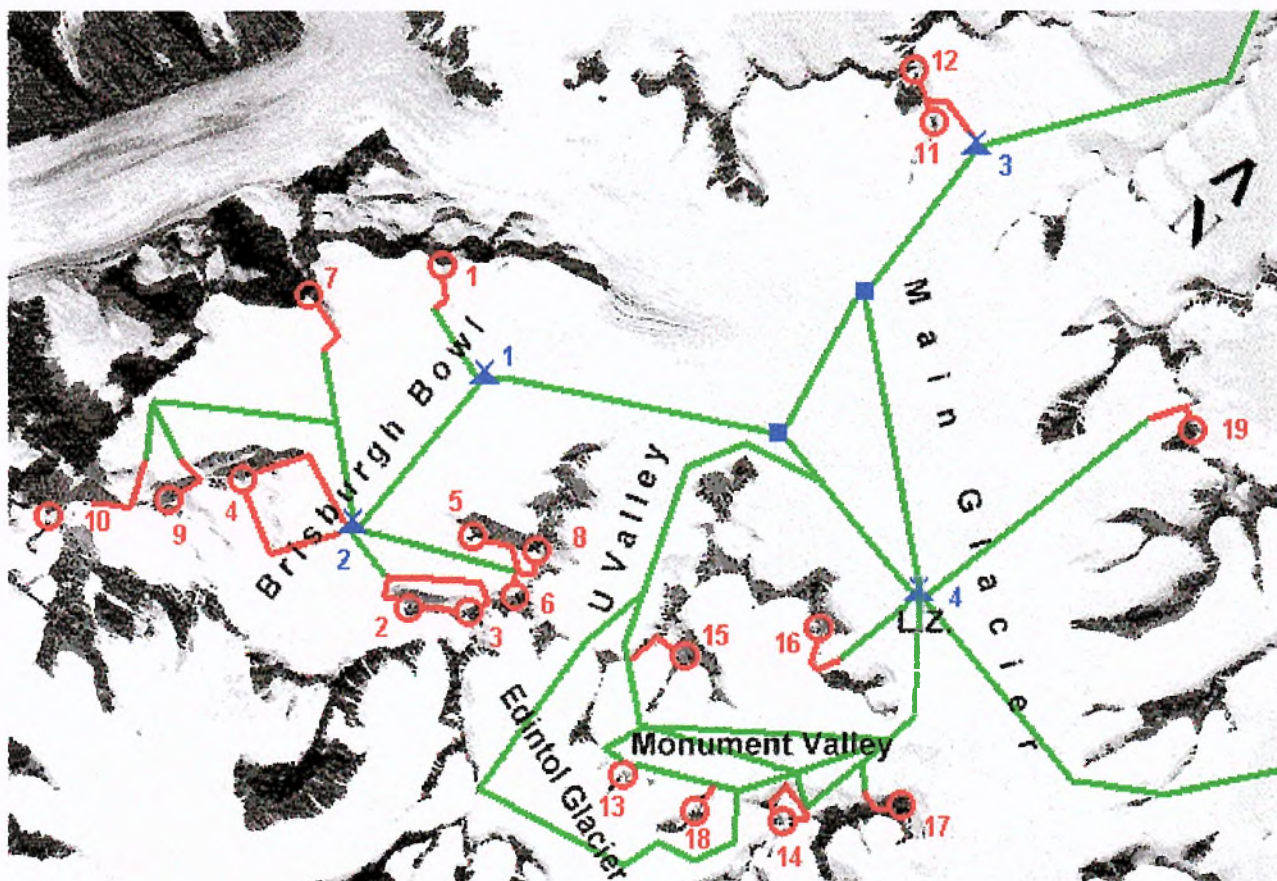
Seeing the sites - Mark and Sean went whale-watching from Husavik. Simon and Ruth went to the volcanic lake at Myvatn.

4 July 1998

We flew back down to Reykjavik for one more night at the Smarar guesthouse.

5 July 1998

Our flights were first thing in the morning, so we had to leave at 5:00 am. By the afternoon we were all home in the UK.



An aerial photo of the area with peaks, camps, caches and routes marked.

Geographic Data

Peak	Date	Location	Altitude	Latitude and Longitude	Comments
	11 June	Landing Zone	1555m	N 69° 07.460', W 26° 31.988'	
		Cache 1	1555m	N 69° 07.412', W 26° 32.126'	
		Cache 2	1665m	N 69° 07.307', W 26° 36.821'	
	11 - 13 June	Camp 1	1845m	N 69° 06.207', W 26° 41.940'	2 nights
P1	12 June	First Peak	2130m	N 69° 07.054', W 26° 45.426'	South Ridge - Easy snow with a loose rock summit.
	13 - 19 June	Camp 2	1980m	N 69° 04.408', W 26° 44.147'	6 nights
P2	13 June	Dolphin, West Summit	2300m		West Ridge - Well defined snow ridge to a fine rock summit. Descent by the continuation ridge to the col at 2215m.
P3		Dolphin, East Summit	2295m	N 69° 04.486', W 26° 40.296'	West Ridge - Easy snow to a spacious summit.
P4	14 June	Pyramid	2525m	N 69° 04.162', W 26° 46.415'	Southeast Ridge (Ruth and Simon) - Snow with an icy finish. Northeast Ridge (Mark and Sean) - Steep start, large crevasse at half height, followed by a long sharp arete.
P5	15 June	Serpent	2250m		East Ridge (Ruth and Simon) - Gently angled, but sharp with poor snow and some crevasses.
P6		The Twins	2360m	N 69° 04.928', W 26° 39.246'	North Face (Mark and Sean) - Snow to a pair of rock pinnacles. Loose rock turned us back ten metres below the summit.
P7	16 June	Horse	2275m	N 69° 05.743', W 26° 48.270'	East Ridge - A well defined snow ridge.
P8	17 June	Dragon	2455m	N 69° 05.325', W 26° 39.801'	South Ridge - Mixed snow and rock up a broad ridge.
P9	18 June	Octopus	2555m		Northeast Ridge (Ruth and Simon) - A fine arete followed by a broader ridge.
P10		Mr Big			Northeast Ridge (Mark and Sean) - Hard route finding through rock bands. Turned back at 2600m, some way below the summit.
	19 June	Cache 3	1640m	N 69° 08.374', W 26° 37.042'	
	19 - 25 June	Camp 3	1890m	N 69° 10.742', W 26° 38.086'	6 nights, mostly storm.
P11	20 June	Three Bears	2050m	N 69° 10.503', W 26° 39.004'	Subsidiary top.
P12		Dreadlocks	2250m	N 69° 10.718', W 26° 40.204'	East Ridge - Mixed.
	25 June - 1 July	Camp 4	1560m	N 69° 07.412', W 26° 32.126'	6 nights
P13	26 June	Pinnacle View	1890m	N 69° 04.311', W 26° 33.943'	North Face (Mark and Sean) - Short easy snow slope.
P14		The Nob	1905m	N 69° 04.881', W 26° 31.040'	Northeast Ridge (Mark and Sean) - Descent by the continuation ridge which curves to the north.
P15	27 June	Centrepiece	2280m	N 69° 05.376', W 26° 35.463'	Southwest Ridge (Mark and Sean) - Convoluted snow ridge followed by a broader rockier ridge.

P16	28 June	Quasar Peak, Southeast Summit	2050m	N 69° 06.378', W 26° 33.113'	Southeast Ridge (Mark, Sean and Ruth) - Steep ice to the col, then a narrow, mixed ridge with some interesting climbing at the top.
P17	29 June	Mitten	1850m	N 69° 05.531', W 26° 28.230'	Southwest Ridge (Mark and Sean) - Steep, poor snow to the col, then a broad ridge with two good rock pitches at the summit.
P18		Sisters	1690m	N 69° 04.392', W 26° 32.547'	East Face (Simon and Ruth) - Steep summit rocks led to the north top, then the ridge was followed to the higher south top. Descent to the northwest.
P19	30 June	Boundary Peak	1920m	N 69° 10.129', W 26° 29.390'	Northwest Ridge (Sean and Ruth).

Equipment

Equipment divides into individual, pair and shared. Where possible we used compatible equipment to save on spares. There were differences in individual's kit, but this gives an idea.

Per individual

Plastic boots, gaiters
 Pile/Pertex shirt, jacket, salopettes, trousers
 Goretex jacket and overtrousers
 Down jacket (optional)
 Underwear, thermal vests, long johns, T-shirt, socks, shorts
 Hats, gloves, sun hat

Kit bag or large sack
 Sleeping bag (down or synthetic)
 Bivi bag (Simon & Ruth Rab premier 900 with survival zone)
 Therm-a-rest (full length lightweight), Karrimat
 Bowl, mug, cutlery, water bottle

Climbing sack
 Harness, helmet, 5 locking karabiners, belay plate, prussics, pulley
 Ice axe, hammer, crampons
 Nordic ski boots, skis, ski poles, skins, waxes, scrapers
 Glacier glasses and ski goggles

Cameras (including Nikon FM2, and Yashica T3 for slide, Olympus Zoom and AF10 for print)
 Film - 20 x Kodachrome 64, 60 * Kodak Gold 100.
 Compass, altimeter (Mark & Sean), avalanche beacon (Ruth & Simon)
 Wash kit, sunblock, matches, lighter

Per pair

Pulk
 Tent - Terra Nova Super Quasar (Simon & Ruth), Ultra Quasar (Mark & Sean), SOS pegs, ground sheet, gear loft
 MSR XGK shakerjet II stove, fuel bottle in Tupperware box
 Pan set (one with heat exchanger)

Rack - set of nuts, 3 hexes, 4 rock pegs, 4 ice screws, 5 long slings, 5 quickdraws, nutkey, abseil tape
 GPS receiver - Garmin GPS 12, emergency radio beacon

Shared

Fuel (5 x 5 Litres)
 Ropes (2 x 9mm, 1 x 11mm)
 Ice saw, snow shovel
 Flares, VHF radio, binoculars

Laptop - OmniBook HP 600 CT, spare battery
Solar charger - KISS Mercury
Digital camera - HP C20
Satellite phone

Spares & Tools

Axe pick, crampon bars (L&R), bolts, spare crampons
Glacier glasses, 2 x 180cm laces
Ski binding springs, quick release housing, skin glue, ski baskets, ski-pole
Tent repair kit, extra guys, extra pole sleeves
MSR XGK repair kit, MSR fuel bottle with pump
Therm-a-rest repair kit, Karrimat
Batteries - for cameras, beacons and GPS
Duck tape - 1/2 roll, nylon patches, para-cord, seam seal, sewing kit (incl. leather), Araldite, super-glue, baling wire
Crampon screwdriver/spanner; stove-spanner; 2 allen keys (for axe), Leatherman & socket set; Swiss Army knife
Nuts & bolts

The only spares we used were:

- Seamseal to mend crampons lacerations in Gaiters - particularly in Simon's case - he claimed a particular combination of sharp crampons and gaiters that had a weak spot just where they ballooned.
- Sewing kit to sew shut the ventilation vent in the tent flysheets during the storm, the Velcro would not hold under the combination of wind and weight of the snow.

Books

We agreed to pool books, but go for individual choice - co-ordinating only to avoid duplicates. During the storm the only contact between the tents (3m apart) was the occasional book exchange - we all ended up reading most of the library.

- Whit by Ian banks (SL)
- Poetry By Heart, Ed. Ted Hughes (RL)
- Captain Corelli's Mandolin, by Louis De Bernier (RL)
- Great Apes, by Will Self (SF)
- The Beach, by Alex Garland (SF)
- The Sixth Day, by Primo Levi (MB)
- Snow Sense, by Fredston & Fesler
- Glacier Travel and Crevasse Rescue, by Andy Selter
- Medical Handbook (RL)
- 4 diaries

Food

We organised food as tent pairs. Simon and Ruth are vegetarian, and Mark and Sean ate little meat. We chose to pack the food in 3 day x 2 person bags. This worked well.

For Simon and Ruth a typical 3 day bag contained the following:

- 3 * porridge (1/2 pint of porridge oats with dried fruit - pineapple, coconut or papaya)
- Packet of 8 flour tortilla (long life) with tube of tofu vegetarian pate.
- Packet of oatcakes with cheese spreads
- 3 bars of Fudge, 1 of Rum truffle.
- 6 Misc. chocolate/confectionery bars
- A surprise ... e.g. some Turkish delight, or Yogurt Gingers
- Small bag of organic dried apricots and dates
- 3 * evening meal (each 6* fantastic foods meals decanted into a plastic bag)
- 12* tea-bags, 6* soups, 6 * hot chocolate.

Mark and Sean had:

- 3 bags of porridge (1/2 pint of porridge oats with milk powder, peanuts, raisins, chocolate chips and brown sugar)
- 1 Packet of Cheese Sandwich biscuits and 24 cream crackers.

- 24 cheese slices.
- 3 bars of Fudge, 1 of Rum truffle.
- 6 Misc. chocolate/confectionery bars
- 6 Peppermis
- 2 packets of chocolate chip cookies
- 3 Flapjacks
- 3 evening meals (each 6 fantastic foods meals decanted into a plastic bag)
- Coffee, tea-bags, 6 soups

Each food bag came to an incredibly light 2.7kg, but was augmented with 750g of fruitcake.

The total food load was:

- 14 food-bags (each 2 people for 3 days)
- Fruitcake 12 KG packed as 16 x 0.75 kg blocks
- Carry food-box (salt, sugar, milk-powder etc.)
- Basecamp food-box (5/6 days misc. supplies - soup, mash potato, rice, chocolate, fudge, cake etc.)

Medical

Ruth is a dental surgeon, so was the obvious choice as the medical officer, although all the other team members are trained first aiders (in Mark's case mountain first aid - Sean and Simon are industrial first aiders). To get a broader and more pertinent view of expedition medicine, Ruth attended a five day residential course, "Advanced Medicine for Remote Foreign Travel", given by Wilderness Medicine Training. This covered a whole range of relevant issues as well as the immediate diagnosis and treatment of a patient. Of particular help were:

- The categorisation of problems as treatable-on-the-spot or requiring evacuation. This was a perspective that we would really need given that we were to be operating well outside occupied territory - rescue (if it was available at all) would be difficult and would take days to arrive.
- Planning a medical kit - and how to go about acquiring it and taking it out of the country.

In pulling together a medical kit we used three scenarios that we wanted to be able to cope with:

1. Keeping a seriously ill casualty alive until they could be rescued (e.g. an infected appendix, or a broken femur with internal bleeding). We might have to cope with a situation for three/four days before help arrived - even after we decided to evacuate by setting of a satellite beacon.
2. Preventing a minor situation from having to become an evacuation (common infections or minor trauma). Here we might have to treat a minor illness for an extended period say for two of the three weeks, without having to call out a rescue just because we ran out of dressings or antibiotics.
3. Keeping minor problems at bay - so that blisters or sunburn do not get out of hand and spoil the enjoyment.

Ruth also managed to get some sessions observing at the accident and emergency department of the Edinburgh Royal Infirmary. This was invaluable as clinical experience and consolidation for what she had learnt on the course.

The Medical Kit was divided up as follows:

- A first aid kit for the Rucksack - this was taken with us when climbing.
- An immediate medical kit (including fluids) for the pulk - taken from camp to the base of climbs when we skiing to the start of a climbing route.
- Main medical kit - to be left in the tents - or transported with the Pulks when we were moving camp.
- Additional Items (such as Ruth's dental extraction kit) which was left at the landing zone cache - if anyone had really bad toothache they would not mind the trek back.

The medical kit weighed about 10 kg, of which the largest component was the fluids - 3 litres weighing 3 kg. On return to the UK many of the more serious drugs were returned to the dispensing chemist for destruction.

Here is the full inventory:

Antibiotics

Penicillin V 56 tablets; Amoxicillin 40 capsules; Trimethoprim 45 tablets; Augmentin 42 tablets; Flucloxacillin 1 course; Tetracycline 1 course; Metronidazole 63 tablets; Erythromycin (500mg) 10 tablets; Ciprofloxacin 1 course; Ceftriaxone & Lignocaine 5 ampoules; Quinine Sulphate 30 tablets; Chloramphenicol ointment 1 tube.

Painkillers

Disprin (soluble) 16 tablets; Aspirin 67 tablets; Paracetamol 66 tablets; Co-proxamol 40 tablets; Disprin (chewable) 12 tablets; Ibuprofen (200mg) 60 tablets; Ibuprofen (400mg) 45 tablets; Tramadol 60 capsules; Voltarol 23 tablets, 10 suppositories; Poristan 50 capsules; Codis 12 tablets; Lignocaine Hydrochloride 2% 10 x 2ml cartridges.

Anti-Sickness, etc.

Zantac 16 tablets; Immodium 30 tablets; Dequadin 20 tablets; Diocalm 15 tablets; Stemetil 10 suppositories, 5 ampoules; Stugeron 15 tablets; Diazepam 20 tablets, 5 ampoules; Piriton 25 tablets, 2 ampoules (10mg in 1ml); Hydrocortisone 2 ampoules (100mg in water); Dulcolax 6 suppositories; Glycerin 6 suppositories; Canestan 2 pessaries; Bi-So-Dol 20 tablets; Enterotabs 6 tablets; Day Nurse 12 capsules; Arnica (homeopathic); Adrenalin 5 ampoules (1mg in 1ml); Lignocaine Hydrochloride 1% 10 x 5ml ampoules; Lignocaine Hydrochloride 2% 10 x 2ml cartridges; Salbutamol inhaler.

Creams, Sprays, Sachets

Flamazone 50g tube; K-Y Jelly; Ibuleve 2 x 30g tube; E45 50g; Caladryl cream; Anusol cream; Hydrocortisone cream; Blisteeze; Zovirax 2g tube; Magnesium Sulphate paste; Arnica cream; Canestan pessaries & applicator; Tisept 6 sachets; Dioralyte 6 sachets; Lemsip 5 sachets; Savlon spray.

Dental Materials

Zinc Oxide leugenol paste; Sensodyne toothpaste; Duraphate paste; Cavit Chemfil powder; Dental mirror (plastic); Flat plastic instrument; Dental syringe; Dental needles for injection; Plastic spatula; Bocasan 9 sachets; Dental forceps & elevator.

Eyes and Ears

Amethocaine eye drops 3 minims; Fluorescein eye test strips; Vital Eyes eyewash 2 vials; Eyebath; Chloramphenicol eye ointment; Optrex eye masks 4; Sinex bottle 4; Betnosol ear drops 1 bottle.

Hardware

Stethoscope; Sphygmomanometer; Otoscope; Neck splint; SAM splint; Ryle's tube; Thermometer (ordinary); Thermometer (low reading); Small plastic magnifying glass; Cling film; Space blanket; Tweezers (small mini pair); Needle holders; Spare pill bottle; Tongue depressors; Geudel airways 2 - size 2 & 3; Saline giving sets 2; Blood giving sets 2; Universal tourniquet; Venflons (18g) 7; Venflons (14g) 1; Syringes (2.5ml) 12; Syringes (5.0ml) 8; Syringes (10.0ml) 2; Needles (blue) 19; Needles (green) 24; Needles (white) 3.

Bandages and associated materials

Second Skin jelly 2 packets of 2; Moleskin 18 sheets; Fleece padding (thin) 3 sheets; Fleece padding (thick) 3 sheets; Jelonet 10x10cm 4; Sofra-tulle 10x10cm 4; Mepore (adhesive) 9x25cm 2; Mepore (adhesive) 9x15cm 6; Mepore (adhesive) 9x10cm 4; Mepore (adhesive) 6x7cm 4; Mepore (adhesive) 8.3x6cm 3; Melonin (non-adhesive) 10x20cm 3; Melonin (non-adhesive) 8.3x6cm 1; Melonin (non-adhesive) 5x5cm 3; Melonin (non-adhesive) 10x10cm 2; Gauze swabs 7.5x7.5cm 2; Gauze swabs 10x10cm 2; Gauze swabs 5x5cm 2; Triangular bandage 2; Antibacterial wipes 10; Mediswabs 18; Tubigrip 2 - 1 small, 1 large; Micropore tape 1 roll; Zinc Oxide plaster 1 roll; Crepe bandage 3; Texband 10x2cm 1; Steristrips/Leukostrips (assorted) 15 packets; Safety pins (assorted) 1 packet; Plasters (assorted) 69; Long plaster strips 2; Active strips 10; Rubber gloves 4 small pairs, 3 large pairs; Waterproof pen; Gypsona plaster 1 roll; Velband 1 roll; Cotton wool pellets Small packet; Cotton wool buds A few; Silk sutures 3/0 22cm 3; Etnilon sutures 5/0 16cm 2; Etnilon sutures 6/0 35cm 2; Sterile paper surgical mask; Sterile paper sheet; Tampons; Sanitary towels .

Accounts

Expenditure			
Item		Per Person	Total
Flights			
UK/Keflavik (return)		295	1 180
Keflavik to Constable Pynt, and return to Akureyri		350	1 400
Akureyri to Reykjavik		120	480
Twin Otter positioning outbound			1 400
Twin Otter positioning return			1 400
Twin Otter charter to Rignys Bjerg (return)		450	1 800
			7 660
Freight			
Outward (by sea and air)			960
Return (by air)			600
Storage and handling			100
			1 660
Equipment Purchase (We all spent at least this.)		1 000	4 000
Food (We were given a lot through sponsorship)		100	400
Equipment Hire			
2 Pulks			240
2 Emergency Radio Beacons			180
VHF Radio (line of site for plane)			150
Rifle and Ammunition			120
Emergency flares			60
			750
Miscellaneous			
Tangent consultancy fee		150	600
Firearms certificate			50
Radio permit			70
Expedition permit			150
Insurance		180	720
Fuel & shipping (25 litres Heptane)			125
Administration			25
			1 740
TOTAL			16 210

Income			
Item		Per Person	Total
Grants			
Mount Everest Foundation			700
British Mountaineering Council			600
Gino Watkins Memorial Fund			750
			2 050
Personal contributions		3 540	14 160
TOTAL			16 210

Flight logistics and specialist equipment hire were arranged through Tangent Expeditions International, and they were the major part of our expenses. We managed to keep to a relatively small food budget due the generosity of our sponsors.

Although members of the expedition had thought of themselves as well equipped, when reviewing equipment for the rigours of the arctic (albeit in the middle of summer) they ended up going on quite a shopping spree (Grade IV shopping according to Sean). For reasons of moral we don't want to do a complete calculation but the following is a selection of the gear that was purchased expressly for the expedition. We spent substantially more than the £1000 per person in the accounts, but it should see us through a good few similar adventures.

- 3 sets of Nordic Ski gear (skis, poles, boots, skins and waxes)
- 2 tents
- 4 bivi bags
- 2 sleeping bags
- 2 Therm-a-rests
- 2 Kit bags
- 3 down jackets
- 2 stoves
- 2 Avalanche beacons
- 2 cameras and tons of film
- Miscellaneous Montane and Buffalo jackets and salopettes
- 3 pairs of glacier glasses
- Technical equipment (ice saw, ice screws, pulleys, ascenders etc.)
- Miscellaneous medical equipment and provisions.

Sponsorship

The major contribution to the expedition expenses came from the team members. However, in addition to the grants mentioned in the accounts, we received sponsorship in kind of food, equipment and expedition discounts from several manufactures and retailers. We would like to acknowledge the help of the following.

Brewhurst Health Food Supplies Ltd. Of Byfleet

Brewhurst provided us with our main meals, these vegetarian meals - "Fantastic Foods Meals in a cup" which came in a variety of flavours: Jumpin black bean soup; Splitting pea soup; Cajun Beans and Rice; Tex Mex Rice and Beans; Caribbean Beans and Rice; Tomato Vegetable Noodles and Curry Vegetable Noodles. They are a tasty and nutritious variant on the pot-noodle style (just add hot water). Each meal was approximately 200-300 calories, and as they were to form our staple meal we allowed for three each per day, so we had a fun few hours decanting them from their cardboard cups into 6 per bag! Brewhurst had very generously provided us with 240 portions - which fed us for the entire trip (Simon and Ruth are vegetarian, Mark and Sean had a three week experiment, supplemented by Pepperoni) .

The Village Bakery

The village bakery provided cake, flapjacks and oatcakes. There were 40 packets of flapjacks enough for two each per day, along with oatcakes as a staple for lunches. Having solid food as well as dehydrated was a real boon, especially during the storm when we were tent-bound and were unable to make hot (re-hydrated meals)

Robertson's Orkney Fudge, Stromness, Orkney

The Robertson family have a long history of supplying Arctic explorers, many of the whaling ships would stop off in Kirkwall before heading further North. Following that tradition they provided us with enough fudge for a bar a day each, and they also gave us a healthy sample of their new chocolate rum truffle - which became a firm favourite.

Great Glen Fine Foods

Great Glen Fine Foods provided us with 20 boxes of goat's milk Tablet. This was one of our high-energy fuels, which we particularly used to keep us going when skiing and sledding.

Isle of Arran Distillers

After training on Arran and camping opposite the Arran Distillery we were honoured with two bottles of LochRanza blend. A bottle was left at the landing zone cache, and when we got back to it we decided it was OK to have a tippie, even at 4 am, as the sun had been above the yardarm for several weeks.

Hewlett-Packard South Queensferry provided us with the two GPS systems.

Hewlett-Packard Laboratories Bristol loaned us the electronic equipment that made the website possible.

Terra-Nova provided us with Ground-sheets, gear-loft, SOS pegs and repair kits, to compliment our two tents, an Ultra Quasar and a Super Quasar. It was during the storm that the benefits of having expedition quality tents became clear. During four days of wind and snow the tents were virtually buried - not by light snow but by hard-packed wind-slab. No amount of digging-out helped, and the winds were too strong to consider re-pitching. The tents were just progressively buried and once the storm had stopped it took us three hours to dig them out.

We would like to thank the following for the help and advice they gave us in equipping the expedition:

- Nordic Ski Centre, Braemar
- Climbers Shop, Ambleside
- New Heights, Edinburgh
- Montane
- Rab

Tips Based On Our Experience

A list of tips we wrote for ourselves, for next time.

Stoves

The MSR's were very reliable but flared badly during priming (we were using heptane), this was the reason we did not use them in the tents during the storm. Must experiment with priming paste to see if we can get a more controllable result. (During the storm we dug a pit in the tent bell end for the stove, to keep it clear of the tent, but a usable pit still presented problems). We used the MSR trillion bases, but they would still melt in, we needed a larger and better-insulated base, which would have saved much rearranging of the cook area. The heat reflector that fits round the burner is best when angled down at the edges, then stray melting snow does not dribble into the flames. Wide mouth bottles are so much easier when decanting melted snow from a pan.

Comfort

We only had plastic mountaineering and ski boots, I'd have loved a pair of camp boots. A pee bottle might have been nice during the storm, but not strictly necessary. Clothes - Even with the seeming minimum we took, we could have taken less. With pile/Pertex shirts, salopettes and jackets the down jackets were unnecessary.

Snow-tools

One shovel between four was not enough, we should have had two shovels (or more) and two snow saws. Anecdotally thin steel snow saws seem better than our thick aluminium folding one. We should have buried our caches deeper, when we got back to the landing zone our green plastic boxes were exposed - the snow level had dropped by half a meter or so in a fortnight.

Camping

We camped in an area of snow deposition and were buried. It's hard to know what we could have done, other than camp in a more exposed position and built a good wall. Need to think very carefully about positioning camps.

Observations

Obvious as it may seem, it took us a few days to realise that in climbing a summit, we should not only be thinking about the way up and way down that mountain, but be sussing out as much as possible about all the surrounding peaks. This is true whether we had at that time an intention to climb them or not. The prime example was Octopus. When we climbed Pyramid we had not been thinking of Octopus, so though we had prime views we did not assess them for climability. It was a couple of days later we started to discuss the route, and realised no-one had logged it! A Polaroid or digital camera would also help with this.

Photos



Ruth with the packed medical kit



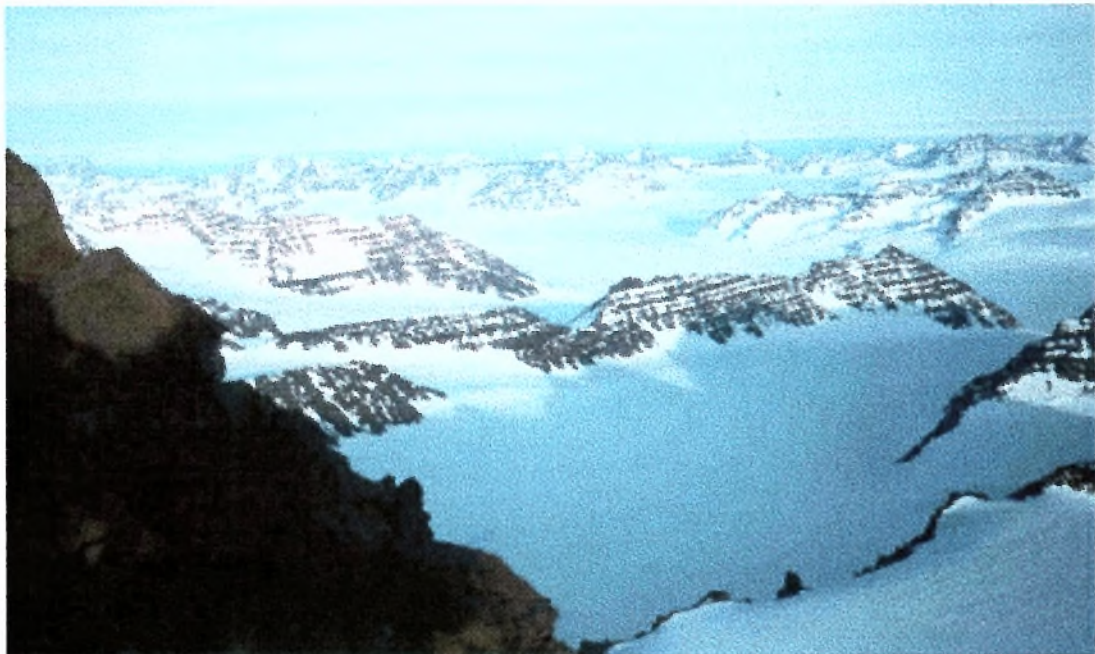
Ruth with a three-day food pack during packing



The landing zone, looking SE down the main glacier. Unpacking the kit before we were left on our own.



Sean on the ridge of Dolphin. Behind him is Pyramid, SE ridge to the left, NE ridge to the right.
To its left is Octopus, climbed by the connecting ridge (approached form the north).
To the far left is the ridge of Mr Big attempted by Mark and Sean.



View to the SW from the ridge of Dolphin. The arctic ocean can be seen with broken pack-ice.



Ruth descending a rocky section of the mixed ridge of Dragon.
Views to the south partly obscured by mist and snow.



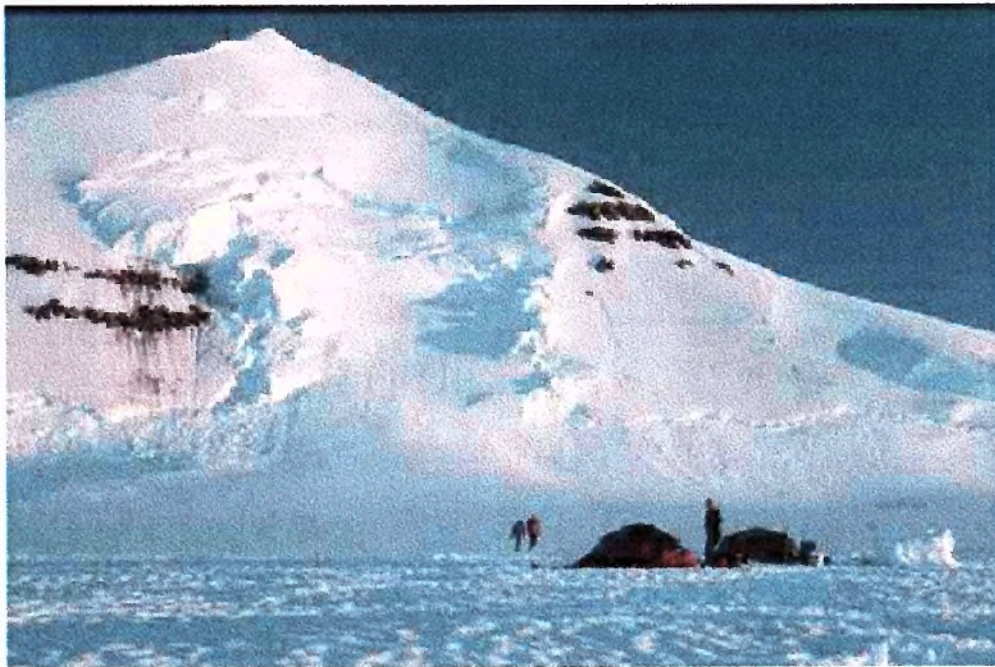
Descending from the Brisburgh Bowl back to Cache 2. The mountain in the foreground is Serpent, which was ascended from the col between it and Dragon, the mountain in the middle of the picture. Dragon was climbed by its SW ridge (on its right in this picture).



Ruth with Polar Bear deterrent, Dolphin behind and the twins to the left.



Ruth astride Pyramid, the camp is somewhere beneath her right foot.



Pyramid, rising 800m above Camp 2.



The party atop Dreadlocks, prior to the storm.
From L to R Mark, Ruth, Simon and Sean



Camp 3 below Dreadlocks. We ascended to the col in the ridge (far left) and followed the mixed ridge to summit. Four days later during a break in the storm only the roofs of our tents were showing.



Camp 4, back at the landing Zone



Ruth gazing into the Distance (NE)
at the apex of the ski tour.



Centrepiece viewed from Monument Valley



Something to come back for, unclimbed mountains to the west.



We were not entirely alone, plenty of Lichen and a single plant were spotted on sunny summits.



Mixed emotions as the Twin Otter arrived bang on time to take us back to the real-world.

