



Expedition Report

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Greenland 2006: Expedition Report

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Summary

The Brathay Exploration Group (BEG) Greenland 2006 expedition was conceived as a leader training expedition for experienced BEG members. Our aim was to go to an unknown part of the Greenland icecap and climb several new peaks. Leadership development would take place throughout the expedition process from conception, through planning, preparation and execution of the expedition. Our scientific objective was to examine what, if any, lichen species grew in the area we were going to visit.

Training took place in Chamonix and the Cairngorms. Planning and preparation was split between the expedition members, culminating in a packing weekend in May 2006 at the field quarters of the Brathay Exploration Group.

The expedition flew to Greenland in July 2006 and spent 24 days on the icecap. Four new peaks were climbed with five new routes. Three new peaks were skied. We collected approximately ten lichen samples which are being identified at the time of writing. The entire expedition experience has challenged us all and helped us develop as leaders. We all look forward to many years expeditioning building on the success of Greenland 2006.

Introduction

A BEG Greenland expedition was first discussed after Paul and Anna returned from their trip to Greenland in 2002. Paul's photo's inspired a few of us to consider a BEG journey into the unknown vastness of Greenland's icecap.

Greenland 2006 was announced at the 2003 BEG leaders weekend. Our original intention was to go in 2005. A variety of factors however meant that in October 2004 we had to postpone departure for a year to summer 2006. This meant we had a fairly concentrated 15 month lead into the expedition to get everything planned, packed and prepared.

The aims and mission statement of the expedition were the first items to be hammered out so that we had a clear goal in mind. Our mission statement was:

"Our expedition aims to develop the leadership capabilities of leaders within the Brathay Exploration Group, through the preparation, planning and execution of a challenging expedition to an unexplored and remote region of the Greenland icecap."

Taking out a BEG expedition of experienced members was a central part of our concept. This allowed us to concentrate on developing leaders rather than the business of living in the wild. We deided that everyone would be involved at all times, as much as possible it would be a peer group expedition with no leader as such. However Paul accepted the role of expedition leader for safety and logistical reasons.

While on expedition our aim was to climb several new peaks and also ski tour the area, as well as experiencing life in the arctic, on the ice. All we had to do was to raise the funds and plan everything!

Expedition Planning and Preparation

Paul's diary entry 15th July 2006 12:15

'All packed up, sat in sun in garden - Liz in kitchen doing lunch for Alyn, Anna & me. What a relief – it's been a tough few days/weeks. So many last minute things to do. I guess the adventure began over two years ago – first launched the idea at leaders weekend in 2003. BIG JOB! - but will be worth while! Can't wait to land and get digging in the snow! Just realised, sat here (in the garden) writing this, the 'transition' has begun - I think I am now 'in' Greenland!!!!!!

From October 2004 we started preparations in earnest. The team was finalised, with a definite commitment made by each member to the expedition. Fundraising started, individual training requirements were assessed, a budget and bank account organised. Our logistics support, Paul Walker of Tangent Expeditions International Ltd, was consulted on possible expedition areas, permits, equipment hire and many other things.

Our first milestone was a week long training trip to Chamonix $(19^{th} - 24^{th}$ September 2005) in the French Alps, see appendix 1. As well as serving as useful experience and training for all of us it also gave us the opportunity to discuss our plans and options for our time on the ice. We examined various options, and aerial photos as provided by our logistics support at Tangent Expeditions. Having hacked our way around the Mer de Glace and spent a goodly sum of Euros in the climbing shops of Chamonix our preparation for Greenland was well underway.

After the September training our preparations began to take on a more tangible form. After checking the Royal Geographic Society website for possible sponsors and grants, letters and an information pack were sent out to win some money for our truly exploratory adventure. Manufacturers and suppliers were approached for sponsorship of all manner of items; tents, climbing equipment, food to name but a few. See appendix 2 for the pre-expedition information pack. Appendix 3 contains details of companies and trusts we contacted during fundraising for the expedition.

Duties were divided up among the team so that everyone was involved in the preparatory phase of the expedition. Paul acting as overall co-ordinator kept things moving and ensured that we didn't miss any vital points. Efforts continued and were punctuated by some significant events. Paul and Andrew were invited to attend the Royal Geographic Society for an interview with the Mount Everest Foundation in January 2006. In March 2006 the Young Explorers Trust kindly examined our expedition during their vetting of all BEG expeditions and gave it a thumbs up.

Not only were mundane logistics being organised during this time. Individually many of us put in some effort to get some winter training done. A good few climbs were made in often soggy conditions in the Cairngorms, which proved to be realistic training for our first few outings on the ice.

Our biggest and last milestone prior to departure was our packing weekend held at the BEG member's lodge from 10th to 14th May. Almost the whole team came together; Pete was still sunning himself in California! Gavin, Anna and Andrew arrived on Wednesday 10th to get things kick started prior to everyone else arriving on the Friday evening. The aim of the weekend was to get everything packed ready to be freighted to Iceland. It was also our last chance to check we had all the correct kit. The next four days proved to be a frenetic exercise in organised chaos. Inevitably we had a few set backs but all was packed and finished by about midday on Sunday 14th. Tents were checked, the group tent had its seams sealed, dried and then coated in talcum powder. Sleeping tents had valances sewn on by our very own seamstress; Anna spent most of her time labouring over her sewing machine. Food was organised, weighed, packed into portions, portions into meals, meals into day bags, day bags into tent teams, extras added in and spares just in case we were delayed on the ice, which turned out to be quite useful. Crampons and ice axes were sharpened and checked. Skis were padded and packed. Boots were deliberated on and carefully packed. Climbing gear was labelled (mostly), noted down and packed, leading to endless confusion about how much of what we had. Eventually everything was ironed out. As it turned out we had just the right amount of kit.



The result of 4 days toil and strife

Expedition Schedule

Day and date	Activity	Significant GPS Co- ordinates
1. Saturday 15 th July	Fly Heathrow to Keflavík	
2. Sunday 16 th July	Fly Reykjavik to Isafjör_ur. Fly Isafjör_ur to icecap. Setup base camp.	Base: 69°39'02''N 027°44'07'' W Elevation: 1960m
3. Monday 17 [™] July	Finish organising camp. 1 st recce. Ski tour.	
4. Tuesday 18 th July	Move to snow hole Dig snow hole	Snow Hole: 69°36'46''N 027°44'37'' W Elevation: 1965m
5. Wednesday 19 th July	Ascent of people peak (peak 1). (Mount Brathay)	People Peak: 69°36'46''N 027°44'51'' W Elevation: 2224m
6. Thursday 20 th July	Ascent of peak 2 and move back to base camp.	Peak 2: 69°36'15''N 027°40'53'' W Elevation: 2262m
7. Friday 21 st July	Rest day and move into night climbing.	
8. Saturday 22 nd July	Ski tour of NE ridge and ski ascent of peak 3.	Peak 3: 69°42'13''N 027°39'38'' W Elevation: 2170m
9. Sunday 23 rd July	First 'proper' route. Ascent of peak 4.	Peak 4: 69°38'05''N 027°46'32'' W Elevation: 2172m
10. Monday 24 th July	Rest day. Bad weather. Pass the pig played.	
11. Tuesday 25 th July	Andy's crevasse discovered. Ascent of peak 5 for 6 of the team. Descend via abseil on an ice bollard.	Peak 5: 69°36'26''N 027°45'51'' W Elevation: 2172m
12. Wednesday 26 th July	2 ascend Peak 5, 6 undertake winter training. Paul remains in camp 'resting' a wrist injury.	
13. Thursday 27 th July	Bad weather day.	
14. Friday 28 th July	Bad weather day.	
15. Saturday 29 th July	Ski tour round back of SW ridge and ski ascent	Peak 6: 69°38'08''N 027°50'24'' W

Day and date	Activity	Significant GPS Co- ordinates
	of peak 6.	Elevation: 2304m
16. Sunday 30 th July	Long ski tour round SW ridge. Starting on the camp side of the ridge, finishing with exhilarating downhill ski. Ski ascent of peak 7.	Peak 7: 69°37'36''N 027°52'27'' W Elevation: 2287m
17. Monday 31 st July	Bad weather day. Built Igloo.	
18. Tuesday 1 st August	Bad weather day. Snow art proliferates.	
19. Wednesday 2 nd August	Last climb. Ascend different route to peak 4. Explore Andy's crevasse.	Last ski dump: 69°38'12''N 027°44'30'' W Elevation: 1979m
20. Thursday 3 rd August	Clean and pack. Get ready to fly out.	
21. Friday 4 th August	Stuck on ice by bad weather.	
22. Saturday 5 th August	Stuck on ice by bad weather.	
23. Sunday 6 th August	Stuck on ice by bad weather.	
24. Monday 7 th August	Fly out from icecap to Isafjör_ur and onto Reykjavik	
25. Tuesday 8 th August	Fly Keflavík to Heathrow	

Climbing & Skiing Routes



Aerial Overview



Climbing and Skiing Routes 1

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Climbing & Skiing Routes 2

Key	
↓ ·	Feature marker with label
•	Ski dump
	Climbed or skied route
	 Direction for orientation

Climbing

Peak 1: People Peak

Paul's diary entry

Climbed Peak 1 from snow hole. Peak 1 2222M N69,86,45.5 W27,44,51.4 very hot. Lovely route up east flank. Interesting and rocky summit. Magnificent views - everyone delighted. Collected lichen/moss samples and found small insect, Anna thinks springtail?

Andrew's diary entry

'I led my team, following the other two teams of three up the east flank of what we've come to call People Peak. Its name is due to the appearance of the rock formation at the top, which is similar to some of the Tors on Dartmoor. It looks like a group of people on top of the mountain, which considering where we are is quite amusing.'

Having spent the night in a snow hole that we had dug the previous day, we decided to climb the peak immediately above it. We were referring to this as 'People Peak' as there were some rock formations on the summit that looked like a group of people when seen from a distance. We set off at about 11.30am and were able to kick steps into the smooth snow slope above our snow hole to reach the top of a snow ridge. Here we stopped to put on crampons. We were climbing in three teams of three people. The snow was already starting to soften in the hot sun as we set off up a wide snow slope between rock ridges. Sticking close to the left-hand ridge we were able to kick good deep steps in all the way to where the snow slope narrowed towards the summit. At about 1.30pm we climbed over a final icy ridge of snow and were on the rocky peak, at 2222m, some 257m above our snow hole. Here we found small amounts of melt water running over the shattered rock where the snow was melting in the hot sunshine. There were several different brightly-coloured lichens growing on the exposed rock. We descended via the same route, feeling very hot as there was almost no wind. When we reached the top of the ridge above the snow hole we stopped to carry out a bit of practise in crevasse rescue techniques and the placement of snow stakes. Later we decided to name this Mount Brathay as it was our first peak and the most distinctive in the area.



Pete's Sketch of People Peak

Peak 2

Andrew's diary entry

'This morning we got up at 03:00 and left camp at 05:00 to try and make the most of the cooler morning temperatures. We skied out from the snow hole to the bottom of a snow slope that was to lead us onto a ridge and then onto peak number two. Tom led on the way up with me in the middle and Anna at the back. It was a steep climb but quite exhilarating. By the time we got to the top it was again very hot even though it was only 09:00. Views were excellent.'

Paul's diary entry

Peak 2 climbed. 2278m, N69,36,14.8 W27,40,53.2

Up at 3.30am and away for 5am. Skied about 40 minutes – small crevasses/slots at foot of route. One team went via Bergshrund, Alyn fell in a bit! Steepish ice but otherwise easy. Very soft snow and very hot about 7am. Walked along ridge about 3/4 mile (to reach summit) fab views. Very challenging climb down as snow soft (in some places over blue ice) & some people nervous, good training with 'stomper' belays etc. (Then skied back to BC)'

Got up at 3.00am to try and avoid the main heat of the day. After cooking breakfast and sorting out our climbing gear we set off on skis at about 5.00am, heading in an easterly direction to the base of a route that we had identified up a snow slope alongside an outcrop of rock. Near the base of the slope we found a slightly crevassed area which was only apparent when someone's feet suddenly

disappeared from under them. After roping up and putting our crampons on we were able to kick steps into guite soft snow for the first part of the climb. We then found an icy patch part-way up that was actually easier to climb on, as it wasn't too steep and it was good to feel our crampons biting into something solid rather than sinking in almost to the knee with every step. We were able to head almost straight up the slope, and from the top of the ridge we had a good view over the other side - snow and more mountains for as far as we could see. Continuing along the ridge towards the east, we headed for the next peak - at about 2273m a large snow dome with an overhanging cornice. In fact when we looked back along our route we could see that most of the far side of the ridge was corniced. It was another clear day with very little wind. Despite our early start the sun felt extremely strong and made it heavy-going through the softening snow. Coming down we stopped to put in belays to descend over the icy stretch that had seemed so simple on the way up. The convex slope made it impossible to see what was below and we soon realised the need for good communication within the climbing teams. We skied back across to the snow hole and had a bit of a rest in the sunshine - I started to feel the effects of the strong sun on my ears and lips, under my chin and on the bottom of my nose despite repeatedly applying factor 50+ sun cream and factor 30 lip protection.

Peak 4: Route 1



Andrew's diary entry 'The ridge to our SW is only 45 minutes ski away and has a number of likely looking routes on it. We skied in and had a look at several options and settled for a classic gully type route. I climbed with Anna and Tom again. Anna led and did a fantastic job of getting us up the mountain...'

Having realised that it was impractical to climb during the daytime, this was our first climb at night. We set off from base camp at about 1.06am, Miles pulling one pulk with all of our climbing gear in it. The surface of the snow had had time to freeze which made skiing much easier. We had a look through binoculars at several different routes on the way across to the southern edge of the glacier, and identified

one that we were going to have a go at. The snow was slightly firmer at this time of day, although it was still easier to climb on the patches of ice that we

encountered. We crossed a small bergschrund and then headed up a snow slope that steepened and narrowed towards the top. There was just enough snow for us to follow through a small gully and over a steep lip onto a projecting rocky ledge. This was the steepest climb so far and we had to put in runners all the way up. We reached the 'summit' (approx. 2170m) – actually a snowy ridge with a bit of a cornice – at about 3.30am. We stopped for some lunch and then descended with a series of stomper belays and ice screw runners via a similar route. Although we had been climbing at night, the sun barely went below the horizon and the lowest temperature overnight was about 0°C.

Peak 5

The start of the journey to Peak 5 didn't bode well! 45 minutes on our journey across the glacier we were brought to an abrupt halt by Andy finding a crevasse. Not an unusual occurrence you might think on a glacier but a new one to us and certainly to Andy as he fell in up to his knees. A quick unclipping from the pulk he was pulling and a careful crawl forward saw Andy safe on solid ice. The pulk was retrieved and we carried on our merry way only to be stopped a short time later, again Andy was causing a fuss! One of the snap pins that hold the two halves of the pulk trace together had sheared causing some discomfort. A quick field fix and off we set, only to stop yet again when the other pin sheared off! Eventually we got to the base of our climb but not without a good delay, which was to affect one climbing team later on.

Everyone geared up and formed into their climbing teams. The start of the climb was straight forward and all three teams made good time up the lower slopes. There were some steep patches of thinly covered ice but these were navigated without mishap. The crux of the climb was a 60 metre stretch of 70 degree ice



leading to the summit. Just below this was a band of rock which made a good rest stop. The rear team consisted of Andrew, Tom and Anna. Tom was ill at ease on steep ice and approached the final hurdle with some trepidation. Due to our earlier delays we had only about 1 hours to ascend and then descend back to the ski dump before it would be getting dangerously warm, making the snow conditions somewhat precarious. The first two teams

organised themselves with belays and runners etc and started on the last leg to the top. Andy's team had a frank discussion and decided it would be unwise to continue and risk climbing down in the heat of the morning. They descended from the rock band back to the ski dump. The other two teams made short work of the ice wall and were soon on the top. After stopping for the obligatory summit photo they started their descent. First a snow bollard was cut in the snow and reinforced with vertical ice axes. Everyone then abseiled down off the snow bollard, an exhilarating experience.

Andrew's diary entry

'Anna and I were both disappointed that we hadn't been able to complete our ascent. We both agreed to return and attempt the summit should time allow...Paul came up with a plan. The following day we would return, Anna and I would again attempt the peak while Tom and everyone else did some training on the area adjacent to the ski dump.

..Leaving Paul behind [due to a wrist injury] we made good time to the same ski dump. Anna and I then tooled up and headed up to our missed summit while everyone else donned waterproofs for ice axe arrest training.

Anna led this time. As the day was significantly cooler we took our time to enjoy the view and not over exert ourselves as both of us were tired from the previous day. It was a lovely climb, rewarding in its own right with fantastic views when we reached the summit.... I led on the way back down abseiling off the previous days ice/snow bollard. I then set up a belay and belayed Anna as she down climbed, passing me and then belaying me from the rock band approximately 60 metres below the summit..'

Peak 4: Route 2



Andrew's diary entry.

"...We'd changed teams so I was to climb with Anna (as before) and James. We let the other teams away first then I led the first half of the route, picking a different line to the first two teams which led us into an area with a distinct lack of ice – so I used our snow stake! Another first for me. Anna then took over as I'd pretty much used up all my kit and Anna had picked it all up. It was a fantastic route in all and a fitting end to a fabulous expedition. We came down via the route we had used to climb Peak 4. Miles, Alyn and Tom decided to try a different route down – a multiple abseil off snow bollards....'

Got up 8.15pm, had breakfast and set off towards the southern edge of the glacier to climb a route just slightly east of climb 3, again skiing roped up in 2 teams and climbing gear in one pulk. From the base of the route we crossed

over a small bergschrund and climbed a steep snow slope between narrowing ridges of shattered rock. As we reached the top we had to cross a narrow rock band and had to be very careful not to dislodge any boulders that could land on the climbers below. There was a cold breeze blowing from the west on the top, so again we didn't stop to admire the view for too long. Alyn, Miles and Tom decided to head west along the ridge and abseil off to descend a large snow ramp further The rest of us along. climbed down the route that we came up on peak 4, route 1. We let out the full rope length and Peter and Paul tied on about 10m apart at one end so I could belay them both



together - they then put in runners which I took out as I down-climbed. We traversed across a steep ice-slope and jumped across a bergschrund that appeared as a small crack on the surface. We saw that this was actually about 3 metres wide and at least 6 metres deep when we could see into it from further down.

<u>Skiing</u>

Peak 3

We set off in the cold evening light heading north over the glacier. It was a steady climb up onto the snow domes that topped cliffs hidden from view. As we neared the first summit dome the sunset was superb and we could see high cliffs and glaciers stretching as far as the eye could see. If anyone could have seen our return journey they would have been highly amused at our various levels of skiing expertise: everything from speedy skiers to steady beginners.



Skiing Across The Glacier

Peak 6

Andrew's diary entry

'Today the weather was looking good enough for another ski tour. It felt very cold, however actual temperature was only -1 °C at its lowest but I think the low cloud also made it damp and feel chillier. We skied round the back of the ridge to the south-west of camp. Again we were roped up to aid in crevasse protection. We managed to ski right to the top of the mountain! It was fab. The lighting changed constantly. Sometimes giving things an eerie almost eldritch feel, making distance judgement difficult too.'

Peak 7

Paul's expedition journal entry

Andrew's diary entry

'I was attending to Paul's hand so ended up with no choice as to which rope and position I was in. I ended up at the front on a rope with Alyn, Miles and Tom. We skied up the glacier parallel to the ridge behind camp. The snow was soft and heavy going, making breaking trail quite a chore... The weather was again overcast, warm and with horrendous flat light. I put on my category one lenses which are yellow and brighten things up considerably. Even so judging distance and ground covered was almost impossible. We got to the top of a ridge for lunch and then carried on up and over into the top of the valley behind the ridge west of camp. It was an odd climb with the top appearing very close and then suddenly distant within the course of a few steps. Anyway we made it up, had the obligatory photos and then had a very pleasant ski down the valley.'



On Top of Peak 7

The Snow-Hole

Paul's diary entry

'Come back from 2 days snow holing to east at N69,36,49.6 W27,44,12.5. Left BC at mid day, 2 hours ski. Took 8 hours to dig snow hole, with only enough room for 6! I slept in one entrance, Alyn and Anna slept outside - hit hard ice layer which was a night mare - VERY HOT. I have injured right hand, not sure why, will have to see doctor Watson!'



Andrew's dairy entry

'We are all back in base camp after our 2 night stop in a snow hole. It was my first experience of a snow hole so was quite exciting.

We chose a spot to dig our snow hole just below the first peak we were going to attempt. Unfortunately almost immediately after we had started digging we hit hard ice. This slowed us down

significantly and meant our entire day, bar skiing to the snow hole was spent digging through snow and ice. After eight hours hard work we had a suitable home for the next few days. We had originally planned to climb our first peak that night starting out late evening but due to the hard ice we were all too tired.'



The Snow Hole below People Peak

Lichen Project

What are lichens?

Lichens are unique organisms formed as a result of a stable association between a fungus and an alga. No one knows how many species of lichen there are in the world, estimates have ranged from 13 000 to 30 000!

Lichens can be found everywhere from the seashore to mountain tops, even on bone, rubber and glass. Lichens can grow in some of the most inhospitable places on earth and have been recorded at 7400m on Makalu! It has been calculated that a few alpine lichens are over 1000 years old, and perhaps as old as 4500 years!

Lichen hunting in Greenland!

Flying into a previously unvisited area gives a degree of uncertainty as to whether a project will be successful. Our expedition location – a landscape overwhelmingly dominated by snow and ice with rocky peaks and cliffs - seems too inhospitable a place for much life. Poke around a bit and it's amazing what survives and flourishes in such an environment.

Where our climbing routes safely passed rock outcrops a quick investigation was made. Much of the rock appeared bare, but a number of lichens were collected during two routes. The areas where these collections were made are shown as • in the panorama of the climbing area below.



Panorama of the 2006 expedition climbing area showing sites where lichens were collected •

Once a belay was set up rock outcrops could be safely explored. Rock samples with lichens attached were collected and a GPS reading taken. Trying to remove lichens from rock outcrops with a hammer and chisel proved quite entertaining when balancing on crampons! Most of the lichens collected came from the summit of the peak just right of centre. On this summit pioneer lichens were abundant. Small green, black, brown and orange lichen crusts, larger rock tripe

lichens (*Umbilicaria* species), and hair-like lichens (*Usnea sphacelata* and *Pseudoephebe* sp.) were collected. Approximately ten lichen species were collected, however closer examination of the rock samples collected may reveal twice that number!!

Some of the weird and wonderful lichens collected



Unidentified lichen collected from Greenland in 2006



Unidentified lichens collected from Greenland in 2006



Usnea sphacelata



Equipment for collecting and identifying lichens

Packet label for storing lichen samples

LICHENS OF GREENLAND

Locality: Latitude & longitude: Altitude:

Lichen (s):

I.d. confirmed by:

Collected by: Date:

Habitat: Substrate:

Notes:

An exciting discovery?

As yet very few of the lichens have been identified. The rather amazing 'stripy' lichen, *Usnea sphacelata* is not uncommon at lower altitudes in Greenland. At higher altitudes it has previously been recorded at c. 1700m only in southern Greenland. The sample the expedition collected was further north and from

2222m – possibly new information!

Almost all Greenland lichen records are from coastal areas due to their accessibility. This expedition was much further inland so who knows what other new records will be made once all lichens have been identified!



Usnea sphacelata

Mosses

Surprisingly the expedition also found some mosses growing along seepage lines on rock where just a little soil was beginning to build up. Samples of four species were collected for future identification.

What next?

Once Anna Griffith has attempted to identify the lichens collected samples will be sent to Eric Steen Hansen, curator of Lichens at the Botanical Museum of the University of Copenhagen, for general study. Eric Hansen is the leading authority in Europe on Greenland lichens and has welcomed our offer of material for his studies on taxonomy and distribution. We are hoping that our project will provide an interesting insight in to what is found further inland in remote and previously unvisited areas.

Camp life

Arrival on the ice meant a flurry of activity to get base camp established as described in the expedition journal.

'.. We were dropped off yesterday onto a pristine untouched ice field with some promising looking mountains in the distance. The rest of the day was spent setting up camp. Digging the loo – nice view to enjoy, Erecting tents, setting out water snow areas, training on emergency flares, shooting the shotgun, making contact on the satellite phone and all the other paraphernalia that occurs when setting up camp. The day ended at about 02:00 the following morning! Some of us were a little tired. It had been quite a hectic few days lead into the expedition....'

Our luxurious base camp consisted of three Mountain Hardwear Trango 4 tents together with a Mountain Hardwear Satellite group/cook tent.

The snow was perfect for construction work. We built a urinal; a double slot long drop with steps, toilet roll holders; a washing up pit and a series of snow walls around the tents to reduce snow and spin drift build up during storms. The best design for snow walls proved to be piling blocks to create a thick wall as they melt less quickly. Gavin proved to be champion toilet digger and wall builder.

The group/cook tent was excellent: we could all squeeze in, cook, chat play endless games of pass the pig and top trumps. Alyn had concocted some excellent meals: Korma, peanut soup, fried sausage, carrots, broccoli and mash, sponge pudding, rice pudding. Even the TVP tasted superb! See appendix 4 for our menu. Washing up with just snow and a brush was quite challenging at times, particularly when it was bitterly cold and the food had been welded to the bottom of the pan. Every expedition needs a James; his washing up was always spotless! Every few meals we would wash all pans, plates, mugs and cutlery in hot soapy water for hygiene purposes.

Rest days were spent washing clothes, cleaning, drying kit, moving tents, reading and playing with Paul's assortment of toys and games. Tom had a most unusual rest day activity – he practiced his fencing moves!

We were storm bound for several days – a testing experience. Some people loved the experience and others were frustrated by it. We didn't have very strong winds but the falling snow still tried to get in everywhere! Going to the toilet was quite entertaining and it was decided that you could only be a true arctic explorer if you have had snow in your pants!! Every few hours someone would have to extract themselves from their lovely warm sleeping bag to go out and clear snow from the flysheets. Loads of books were read, and Anna's Swedish book with naked women in it proved quite popular! Perhaps the most popular pastime for whiling away the hours during bad weather was pass the pig. Miles, Paul, Peter and Gavin must have broken the world record for the longest game of pass the pig.

During our time in camp it became apparent that there were a few items we had overlooked when packing in the UK. These were recorded in the expedition journal.



'Things we forgot to bring' Journal Extract

Toileting was a novel experience. 'Snow in your pants' has already been mentioned. We had a fantastic view down the glacier from all of our toilets. The only downside was that your time on the toilet was noted by all others in the group. James seemed to be taking a considerable length of time. When queried on his toilet habits he informed us that he burnt each individual toilet sheet in isolation to achieve a more complete combustion, the inspiration for another cartoon.



Waste Management in the Arctic

While resting in camp or passing time waiting for weather to clear we discussed our successes so far and the things that had not gone quite as well as we had hoped. We learnt a lot during our time on the ice and recorded some of our top tips and handy hints.

bring a Gavin for wall building + hole digging + toilet construction fumels + jugs are v. useful * transferring water + fuel, water scouping snow outd the bottom of the (unud !) tolet pit. a pillow is rather nice + so are GREENLAND EXAMINERS FOR - very useful space boots to wear nound cary -very so you can dry your other be " cooking texts/tops are great - the whole · Melting water in black and bags (twinne = better) bin bags + on solar stills works v. well + group for get together / individuals can escape their faity smelly test mates - with hangy pochats for shuffing lote of bits in saves a huge amount of full + time spent reliting · next exchanges on pars increax fuel afficiency . Make-up removal wipes are good for removing encousted layers of sur cream · store boards (which fit on top of loxed) are . Sturdy metal snow shovels are much better for digging and building than plastic ones. · a separate unitial provides hows of ontertainment . tent bags make good anchors for guy lines - when filled with know and buried they don't · don't forget you favourite tipple 1 melt out in the sur fram tent lines add extra insulation + l prevent any condensation coming into couplet with Kit. 1

'Top tips and handy hints' Journal Extract

<u>Snow Art</u>

Our time on the icecap would not have been complete without some time spent expressing our artistic sides using the mediums of snow and ice!

Apart from defensive walls round the tents and pits for the toilets we managed a few artful constructions. We started with an igloo. The igloo team consisted of James, Gavin, Anna, Miles, Paul and Andy. Having left the igloo construction instructions at home, our first challenge was to try and remember how to build an igloo! Undaunted we improvised with what we could remember and what we thought would work. The expedition journal compares and contrasts our building method with traditional methods.

IGIOO BUILDING BY DUMMIES CONTO Lay second on of blocks on top of first continuing the spiral with blocks learning top D with blocks in support ghthe 34 DUMMIES themselves care should blocks overlag to taken that maintain strength haphazardhy shereever they cut regular shaped blocks about & inches thick from Add blocks hapharzardly whereeve the get placed and get them to learn precisionly in on person stuck in me firm consolidated more using a snow sow. person stuck in the the iglos, thank blocks to Hack whatever humps of snow nidelle of snow, shorten when realize they're just sitting on top of each other ny implement you can be hands on, cut throat mplement Briffith saw, curry paky red painted spade or sophisticated continue laying subsequent rows of blocks as previously extendable unbrenkable sharel ntiming the spiral until on are almost completely nelosed depending on the contin. just your bare hands you are nines, enclosed Depending on the Starting from one place I the gloo take loutine adding blocks 6 and 8 rows gradually putards in a reat circle the size of blocks realising that there are and things are getting incernight pecarious inthe blocks that almost igloo. hungs wound vague circle foral jaggedly at various angles mit defy the cause of physics.

Igloo Building By Dummies

IGLOO BUILDING BY DUMMIES CONITION To complete roof of igloo small binch block should act or key together. This block may be a little difficult to place As blocks get gradually nove impossible seeming suddenly trink that this may not quite nork and that this slabs should be used Eventually have faith but have to bind from the inside ending with a 2 to round ude very carefully with a 2 jost at block and me ingenist with a pair of skis to slike it into place despite the gaps ratival chining 11 For the door way build a suitable sized worked trunked into the igloo oig bench into igtors with large slabs on roof but heard to replace the to inadequate signage and earlishness. Have five and general estino anna me when can plete whiskey and wat and see it sith

Igloo Building By Dummies



Actual Igloo construction commences....

Construction went a head at a break neck pace. So much so that Gavin couldn't keep up with the blocks being cut from the snow quarry and Paul got so excited he walked over the newly finished entrance, causing it to collapse. He looked somewhat surprised as he disappeared up to his chest into the snow.

After a thoroughly damp, snowy and enjoyable night we finished our igloo. The occasion was marked by a whisky from our somewhat scanty supply.

The next day provided us with time to put the finishing touches to our winter wonderland in a creative splurge that truly put our mark onto the glacier. These artistic flourishes included a pair of sphinx to guard the entrance to the igloo. Pete carved an amazing snowman pulling a pulk; and Paul and Anna built a Loch Ness monster. Peter, Alyn and Miles also invented the game of snow bowling! The snow was amazing you could make almost any snow sculpture with it – something that is impossible in the UK.



No igloo is complete without a pair of guardian sphinx



Snow people and the Loch Ness monster



Pete's Snow Mountaineer

Personal Reminiscences and Expedition Art

Andrew became known for finding holes in the snow, usually quite unexpectedly! These unfortunate events inspired the following page of cartoons.

THE ANDY	WATSON	GUIDE	TO	GOOD	HOLES
		The bu	wigschiv	d supriv	¢
		-			
IN SE		C C			
The ski dunp shuffle					
		The pu	ulk pul	ling creval	ve pluge
- Do			der and	·	

Occupational Hazards of Life in the Arctic

Time on the ice gave us all time to think about life, the universe and everything. Paul noted in the expedition journal,

'In some ways it seems a bit bonkers that 3 years from inception and after 18 months planning we will be here for just 20 days. Just shows how remote and challenging the place we have chosen to spend our holidays is!!!

All our planning/prep efforts have certainly paid off and we have ourselves a very comfy B.C. [base camp]. Our kit and tents are doing a great job – although we have not had any testing conditions.

....

- Q. Why do polar bears not eat Penguins?
- A. Because they can't get the wrappers off!'

At the end of the expedition we were weather bound on the ice for 3 days. The initial plan was to fly out on the Friday morning but poor weather kept us on the

ice until Monday midday. A frustrating situation eloquently recorded in the expedition journal.

Expedition journal entry

'6/8/06 Sunday

We are at the whim of the weather. Having expected to get off the ice on Friday we are still here. The weather closed in on Friday and has only just let up this afternoon. In fact we were going to be picked up this evening but apparently there was a problem with the skis on the plane so we're hoping it will be on for tomorrow morning.

At the moment we are passing round our attempt at a fruit and nut caramel. An attempt is all it can be called at the moment. One lot became crunchy, the other lot became gooey. As the saying goes: "this could be heaven, or this could be hell, but either is better than bad caramel." The rations are having to become increasingly more inventive the more days we spend out here, and if we have to spend much longer out here we're going to have to get used to porridge, porridge and more porridge.

Over the last couple of days we've been calling Paul Walker every couple of hours starting at 6am. Every time there is a silent hush of expectation and (so far) there has been a silent sigh of disappointment afterwards. At this stage it's a two way process with us giving Paul an update of the weather here and Paul giving us the current prognosis. There's another group about 100 miles south of us who made it out today and there's another group who should be coming in the plane that is picking us up. It must be worse waiting around in Iceland to be dropped off than waiting here on the ice to be picked up. Well hopefully we'll be off tomorrow morning at 10am, but at this stage it could be another week.'



Saved at last!

Thank Yous

Our gratitude and thanks to the following for their support.

Paul Walker of Tangent Expeditions Int. Ltd.

- The Brathay Exploration Group particularly
 - Alan Fishwick, Chairman of the Board
 - Graham Watson, Director
 - Vic Calland, Medical Officer

Eric Steen Hansen, The University of Copenhagen Dr Brian Coppins, The Royal Botanic Gardens, Edinburgh Sandy Coppins Mount Everest Foundation The Duke of Edinburgh's Trust No 2. The Young Explorers Trust Mountain Spirit First Ascent Outback Trading, Helston Iceland Air DMM Mountain Equipment Mountain Hardware Kavli UK Ltd Thomas Tunnocks Ltd

Conclusion

Expedition: noun

1. A journey undertaken by a group of people with a particular purpose. (Oxford English Dictionary)

2. A journey with an uncertain outcome.

(Paul Williams, Expedition Leader)

Our journey had a specific purpose, to develop leadership in BEG and to climb an unexplored area of Greenland. Did it have an uncertain outcome? Yes I believe it did. Would we find any lichens? Would we be able to climb any of the mountains? Would the weather be kind to us? Would we have to use the medical kit?

We prepared with these thoughts in mind and came out from the expedition knowing that our careful planning had been worthwhile. We climbed four new peaks with five new routes. We skied three further new peaks. We snow holed, we built an igloo, we survived three extra days on the ice in poor weather.

Individually much was learnt about the finer points of winter mountaineering, skiing, and living in the arctic. BEG as a group now has several members capable of leading a winter mountaineering expedition. Science has learnt more of the distribution of lichen on the Greenland icecap.

The last 18 months have been a challenge requiring hard work and dedication from the expedition team. Having been so completely immersed in a project it comes as a bit of a shock when you no longer have a goal to aim for and achieve. All is not lost however as the expedition has provided us all with new skills and confidence. This new confidence will be used to start planning new expeditions, some within BEG and others as personal journeys. We will individually and perhaps collectively build on our experience in Greenland to develop as leaders and provide exciting expeditions for young people and for ourselves.

Appendix 1

Chamonix Training Report

Glacier Training, Chamonix, 19th - 24th September 2005

In September the expedition members travelled to Chamonix for a week of glacier training. It was recognised that there are different levels of expedition and mountaineering experience between the members, and in particular most of us would benefit from either improving our snow and ice skills or would at least find it useful to have some practice in glacier travel techniques. Chamonix was chosen as a suitable and accessible location and at that time of year we found it to be very quiet as most climbers had left after the summer season.

We packed into a small apartment in the centre of town and this provided an ideal opportunity for some of us who hadn't met before to get to know each other. Unfortunately Peter couldn't make it as he is currently studying in the US. However, not wanting him to miss out on these few days with the other expedition members, Andy created 'Pete-onna-stick' from a foam mat so he could be with us at all times.

On our first day, after a visit to Snell Sports to make a few clothing and equipment purchases we took the Montenvers railway up from Chamonix and then descended by a series of fixed ladders onto the Mer de Glace. This proved to be a good way to warm up in the morning, but coming back up after a day on the glacier was not something to look forward to! In the low cloud/mist we walked a little way up the glacier and found a crevassed area suitable for our training. Under the expert guidance of Alyn and Paul we spent some time covering the basics of moving around on the glacier with crampons and ice axe and also placing ice screws to set up belay points.

We were lucky to have excellent weather conditions for the rest of our time in Chamonix and managed to spend two more days trying not to get sunburnt on the Mer de Glace. As a dry glacier this provided the perfect location to practice moving with crampons, prussiking and abseiling, crevasse rescue, ice axe belays and so on. The more experienced members of the group were able to pass on their knowledge to the novices and it was useful for all of us to start working together.

We had planned to take the cable car up to Grande Montets for a day in the snow but when we found it closed we opted for an afternoon on a crag on the edge of town. This gave us a good chance to get in a bit of rock climbing and rope work training including leading and multi-pitch belays.

As well as providing us with most of our training, Alyn showed us that he is the best cook, and after eating superb soup we were able to get on with some expedition planning. Paul had brought along aerial photographs of the expedition area and this was the first time some of us had seen the exact location we are heading for. Some time was spent discussing what equipment we would need to take on the expedition, how much of this we already have between us and what

items we could try and get funding and sponsorship for. Several further visits were made to Snell Sports who did very well out of us as a group that week!



Training on the Mer de Glace



Planning our expedition



Climbing outside Chamonix

Appendix 2

Pre-expedition Information Pack



Greenland Expedition 2006

Expedition Mission Statement

Our expedition aims to develop the leadership capabilities of leaders within the Brathay Exploration Group, through the preparation, planning and execution of a challenging expedition to an unexplored and remote region of the Greenland icecap.

Brathay Exploration Group and Leader Development

The Brathay Exploration Group (BEG) is a charity dedicated to the development of young people through expeditions that are proposed and led by volunteer leaders. The group was first established in 1947 and in 1997 the group was awarded the Royal Geographical Society Special Gold Medal to acknowledge 50 years of service to youth exploration and adventurous activities.

BEG likes to develop its leaders in house. Expedition members who show potential for leadership roles are helped to develop their skills through training, and experience as a trainee or assistant leader.

Most BEG expeditions are made up of many first time BEG expeditioners and a few who come back for a second or third expedition. The leader team is normally composed of former BEG members who have the right skills and experience for their expedition. Greenland 2006 is slightly different because it is made entirely of BEG expeditioners who have been on at least one BEG expedition. Many on the team have led previous expeditions for BEG. All the members of the expedition are committed to BEG and hope to continue helping young people explore the world, while encouraging their personal development. Appendix 1 has details of the Greenland 2006 team.

The expedition is going into a remote arctic environment that will challenge and stretch even the more experienced team members to develop their winter mountaineering, organisational, and teamwork skills. The end aim is to help

develop a stronger skills base within the BEG leader pool, which will allow BEG to confidently run winter mountaineering expeditions anywhere in the world.

The expedition will also be used to promote the BEG 'Club' ethos, where current members can use the group's resources to plan and execute their own expeditions with other members. BEG will also benefit from publicity generated by the expedition to help attract new members and leaders so that more people can benefit from the opportunities BEG provides.

Expedition Outline

The expedition will explore a remote area on the east of the Greenland icecap. We are currently looking at an un-named and previously unvisited area in the region called Knud Rasmussan Land. Our destination lies approximately 220 miles north of the Arctic Circle, just south of Gase Fjord (Geese Fjord). The area will provide us with good access to a variety of grades of climbs from easy to technical peaks and also provide us with opportunities for ski touring. However all this information is based on interpretation of aerial photos taken in 1981 from about 48,000 feet! Our plans will have to be flexible. Appendix 2 shows a map of the area.

Lichen Field Project

We are applying for a permit from the Danish Polar Center to collect lichens from rock outcrops in our expedition area. When Anna Griffith visited Greenland in 2002 she was amazed to find lichens growing on inhospitable rock outcrops high in the mountains, over 150 miles inland from the coast. Anna's interest in Lichens in the UK has made her extremely curious to investigate those growing in such remote and previously unvisited areas of Greenland.

Lichens are rather unique organisms in that they comprise an alga and fungus living together. This symbiosis enables lichens to colonise habitats that neither component would survive in alone. No one knows how many species there are in the world, estimates have ranged from 13 000 to 30 000! Even in the UK species new to the country are found each year. Lichen dominated vegetation covers approx. 8% of the world's land surface and has an important role in global ecology. For example: they are important carbon sinks helping to delay global warming; they are an important food source for animals; certain birds use lichens as nest building material; and some butterflies store lichen compounds in their tissues as a means of chemical defence. Man has found many uses for lichens: perfume; herbal remedies; dyes; environmental monitoring of pollutants; monitoring of glacial retreat. All samples collected will be labelled with date and location information and an attempt at identification will be made in the UK (chemicals and microscopes needed). All samples will be sent to Eric Steen Hansen, curator of Lichens at the Botanical Museum of the University of Copenhagen, for genera study. Eric Hansen is the leading authority in Europe on Greenland lichens and has welcomed our offer of material for his studies on taxonomy and distribution. Most, if not all specimens are collected from the more easily accessible coastal areas and nearby mountains and we are hoping that our project will provide an interesting insight in to what is found further inland in remote and previously unvisited areas.

We are also involved in discussions with Dr Peter Crittenden of the University of Nottingham. We may be able to help with his work on environmental monitoring in the arctic using lichens.

(All facts and figures taken from: Purvis, W. (2000) Lichens. The Natural History Museum, London.)

Provisional Programme

September 19 ^m – 24 ^m	Glacier training – Chamonix, Alps.
Autumn 2005	Fundraising begins in earnest.
Winter 2005/2006	Winter mountaineering training – Scotland.
May 2006	Buy and pack all equipment and food for sea freighting to Greenland.
July 15 th – August 6 th	Fly to Iceland, charter plane to Greenland.
October 2006	Expedition report produced and sent to sponsors. BEG reunion presentation.

Expedition Finances

Fundraising

Grants being sought	£35,000.00
Sponsorship – Money	£1,000.00
Sponsorship – Kit	£5,000.00
Sponsorship – Food	£300.00
Total Fundraising	£41,300.00

Expenditure per person

Flights UK-Iceland	£150.00
Ski plane charter, safety equipment	£3,100.00
hire etc	
Food	£80.00
Insurance	£350.00
Personal equipment – Sleeping bag,	£1,000.00
ice axes, crampons etc.	
Total per person	£4,680.00

Total Expedition Expenditure

Grand Total	£46,620.00
ropes, ice screws, snow saws etc.	
Group equipment – Tents, stoves,	£4,500.00
Total personal expenditure (Group of 9)	£42,120.00

Appendix 1: The Team

Andrew Watson



Andrew has been expeditioning since he was a 13 year old army cadet. His first BEG expedition was in 1997 as a member. Since then he has been on a further 7 BEG expeditions all round the world, 6 of them as a leader. A keen hill walker, Andrew has mountain experience all over the UK and passed his Mountain Leader (summer) assessment in 2004. Recently Andrew has

become more involved in climbing and winter mountaineering. The Greenland expedition is an opportunity for Andrew to further develop his mountaineering skills and explore one of the last great wilderness areas. Andrew is currently at medical school after deciding that engineering was not for him.

Miles Doughty



Miles has been a keen outdoor pursuits enthusiast since he was a Scout joining expeditions in the UK, Ardeche, France, America and Canada. This interest continued as chairman of the Caving club at Aston University, where he studied Chemical Engineering, and enabled further expeditions to France and Slovenia. He has been involved with Brathay since 2001 when he visited the Indian Himalayas and has since gone on to lead

expeditions to America, Corsica and the Alps. He hopes that this expedition will allow him to extend his experience to include winter mountaineering outside of the UK. Miles has recently become involved with marketing for BEG as a trustee and believes that this expedition is a perfect example of the fantastic opportunities available to BEG members.

Gavin Henderson



Gavin had his first experience of the Arctic in 1995 when he was a member of a BEG expedition to Norway. He has since been an assistant leader on two BEG expeditions, in Scotland and the Alps. After gaining a degree in Geography, he has worked in conservation and countryside management for 9 years and is currently employed as a countryside warden in Cornwall. Formerly a cross-country and long distance runner, Gavin is now

an active member of Cornwall Orienteering Club and also enjoys sailing. He is keen to get back into the mountains with this challenging expedition.

Anna Griffith



Anna climbed her first mountain in Snowdonia when she was three, and has since explored most of the mountainous regions of the UK. She went on her first BEG expedition as a member in 1994 and got the expeditioning bug! She has led BEG expeditions to the Alps, Norway and Alaska. Anna works as an ecologist, based on the

west coast of Scotland, near Oban. Her work has taken her all over Scotland from monitoring rare plants in the mountains of Perthshire to looking for deer dung on the vast bogs of Caithness! Anna is involved with the BEG expeditions and marketing groups and edits the BEG magazine 'No Limits!'

Paul Williams



Paul's introduction to all things outdoors started way back when he was in nappies, and continued through Cubs and Scouts and included several years serving with his local mountain Rescue Team. He became involved in youth expeditions through a full time career in outdoor education, and has been on and led expeditions all over the world, including Chile, Alaska, Nepal, Norway, Iceland, Kenya and Europe. In 2002, along with Anna

Griffith, he organised an expedition to a previously unvisited area of east Greenland, where they made six successful ascents of previously unclimbed peaks. Paul works for The Prince's Trust, where he manages a network of Personal Development Clubs, delivered in schools, for young people at risk of educational underachievement. By helping to introduce other Brathay leaders to the extremes of expedition life in Greenland, and the complexities of planning such an expedition, Paul hopes to further the development of a strong leader base for Brathay. Paul has been with Brathay for nine years, and has been involved as Trustee and Safety officer.

James Watson



James has been a keen trekker and camper since his time in the Cubs and Scouts. He successfully completed his Duke of Edinburgh gold expedition while at university, where he studied Chemical Engineering. James' first major expedition was with the BEG in 2001, going to Corsica and completing the GR20. Since that time James has become involved in leading expeditions with BEG, in the Lake District and Alaska. He hopes

that this expedition to Greenland will allow him to gain experience in snow and ice conditions beyond the little he has had on the ski slopes of the Alps, as well as having the chance to travel to such a remote location. James currently works for Rolls-Royce, performing probabilistic safety assessments of nuclear reactor plants.

Tom Moorcroft



Thomas has been a keen walker from a young age. His enthusiasm for outdoor activities helped him complete his Chief Scout Award and gold Duke of Edinburgh award. Tom's first major expedition was to Tanzania with BEG where he ascended Mt Meru and climbed to Stella Point on Mt Kilimanjaro. Since then he has been involved with two further expeditions to Bolivia and Morocco. Tom also has experience in climbing and winter

skills. He wishes to be involved with this expedition to Greenland as it will allow him to gain further experience on snow and ice. Thomas is currently a student in his first year at the University of Durham where he is studying geology.

Alyn Griffiths



Alyn has been participating in outdoor activities since he was a teenager; he is still a keen canoeist, mountaineer and caver. Alyn has been involved in BEG for almost 10 years. In that time he has led expeditions in Siberia, Alaska, Norway and Scotland as well as running elements of training for the group. Alyn also acts as safety advisor for BEG and is currently developing a new leader training programme. Alyn works in outdoor education

using activities as a development tool with young people.

Peter Clutton-Brock



Coming from the fens, Peter's love for mountains is something of an anomaly in the area. From an early age Peter was forced to look up in the Scottish Highlands for 'walks which go somewhere'. Since then Peter has been a mountainoholic and his wanderings have led him from the rocky High Atlas Mountains in Morocco to the Altai Mountains in Mongolia but always back to the west coast of Scotland. Recently Peter has

become more interested in technical mountaineering. Peter is currently studying environmental sciences at the University of East Anglia.

Appendix 2: Maps



Map 1, Greenland:



Map 2, Expedition Area:

Aerial Photo of Expedition Area:



Appendix 3 Fundraising

Fundraising

Trusts and foundations contacted for grants:

Organisation	Contact Information	Outcome
Neville Shulman Challenge Award	Neville Shulman Challenge Award Grants Officer Royal Geographical Society (with IBG) 1 Kensington Gore London SW7 2AR	Unsuccessful
British Mountaineering Council	www.thebmc.co.uk	Unsuccessful
The Captain Scott Society, Spirit of Adventure Award	www.captainscottsociety.co.uk	Unsuccessful
Augustine Courtald Trust	www.augustinecourtauldtrust.org	Unsuccessful
Andrew Croft Memorial Fund	www.acmf.org.uk	Unsuccessful
Edinburgh Trust No. 2	The Duke of Edinburgh's Office, Buckingham Palace, London SW1A 1AA	Successful
Nick Estcourt Award	c/o The secretary, 24 Grange Road, Bowdon, Altrincham, Cheshire, WA14 3EE	Unsuccessful
2111 Foundation for Exploration	www.2111.org	Unsuccessful
Mount Everest Foundation	www.mef.org.uk	Successful
Reverend D.J. Streeter Charitable Settlement	Barclays Bank Trust Co. Ltd, Executorship & Trustee Service, Osbourne Court, Gadbrook Park, Rudheath Northwich, Cheshire, CW9 7UE.	Unsuccessful
Gino Watkins Memorial Fund	www.spri.cam.ac.uk/about/funding/ginow atkins/	Unsuccessful
Edward Wilson Fund	As for Gino Watkins Memorial Fund	Unsuccessful
Arctic Club Award	As for Gino Watkins Memorial Fund	Unsuccessful

Information on grant giving bodies was obtained from the Royal Geographic Society website www.rgs.org and web searches.

Companies contacted for sponsorship

Company	Contact Information	Sponsorship
Mountain Spirit	62 Grampian Road Aviemore Inverness-Shire PH22 1PD	Free loan of 2 sets of ski mountaineering kit.
Mountain Hardwear	Bradshaw Taylor Ltd 16 Mill Street Oakham Rutland LE15 6EA	Trade Prices
DMM (Mammut)	Llanberis Gwynedd Wales LL55 4EL	Trade Prices
Mountain Equipment	Redfern House Dawson Street Hyde Cheshire SK14 1RD	Trade Prices
First Ascent	Units 2-7 Limetree Business Park Matlock Derbyshire DE4 3EJ	Trade Prices
Tunnocks	Thomas Tunnock Ltd Bishops House North Bath Road Taplow Berkshire S26 0NY	200 Caramel wafers
Kavli	Kavli UK Limited Team Valley Trading Estate Kingsway Tyne & Wear NE11 0ST	216 Tubes of Primula

Appendix 4

Menu & Stores

10 A

				I he I	Menu				
	Day 1	Day 2	Day 3	Day 4	Day 5	Day 6	Day 7	Day 8	Day 9
reakfast	Porridge & dried fruit	Porridge & dried fruit	muesli	Porridge &	Porridge & dried fruit	muesli	Porridge & dried fruit	Porridge &	muesli
hon	Biscuits brown.	Biscuits	Biscuits	Biscuits	Biscuits	Biscuits	Biscuits	Biscuits	Biscuits
	Primula cheese.	brown.	brown.	brown.	brown.	brown.	brown.	brown.	hrown
	pate, muesli	Primula	Primula	Primula	Primula	Primula	Primula	Primula	Primula
	bars, choc-bars,	cheese, pate,	cheese, pate,	cheese, pate,	cheese, pate,	cheese, pate,	cheese, pate,	cheese, pate,	cheese, pate,
	dried fruit &	muesli bars,	muesli bars,	muesli bars,	muesli bars,	muesli bars,	muesli bars,	muesli bars,	muesli bars,
	nuts. Biscuits	choc-bars,	choc-bars,	choc-bars,	choc-bars,	choc-bars,	choc-bars,	choc-bars,	choc-bars,
	fruit	dried fruit &	dried fruit &	dried fruit &	dried fruit &	dried fruit &	dried fruit &	dried fruit &	dried fruit &
		nuts. Biscuits	nuts. Biscuits	nuts. Biscuits	nuts. Biscuits	nuts. Biscuits	nuts. Biscuits	nuts. Biscuits	nuts. Biscuits
		fruit	fruit	fruit	fruit	fruit	fruit	fruit	fruit
inner	Soup 1	Soup 2	Soup 3	Soup 4	Soup 5	Soup 6	Soup 1	Soup 2	Soup 3
	Curry & rice	Couscous	Pasta	Quinoa &	Mushroom	Potato sausage	Curry & rice	Couscous	Pasta
	Instant pudding	Rice pudding	Fruit cake &	chilli	Risotto	& onion gravy	Instant	Rice pudding	Fruit cake &
			Custard	Semolina	Fruit salad &	Chocolate	pudding		Custard
					custard	sponge			
						pudding			
ondiments	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk
	powder (or	powder (or	powder (or	powder (or	powder (or	powder (or	powder (or	powder (or	powder (or
	tube) tea,	tube) tea,	tube) tea,	tube) tea,	tube) tea,	tube) tea,	tube) tea,	tube) tea,	tube) tea,
	coffee,	coffee,	coffee,	coffee,	coffee,	coffee,	coffee,	coffee,	coffee,
	chocolate	chocolate	chocolate	chocolate	chocolate	chocolate	chocolate	chocolate	chocolate
	powder,	powder,	powder,	powder,	powder,	powder,	powder,	powder,	powder,
	sweets,	sweets,	sweets,	sweets,	sweets,	sweets,	sweets,	sweets,	sweets,
	matches,	matches,	matches,	matches,	matches,	matches,	matches,	matches,	matches,
	isotonic drink	isotonic drink	isotonic drink	isotonic drink	isotonic drink	isotonic drink	isotonic drink	isotonic drink	isotonic drink
	powder, toilet	powder, toilet	powder, toilet	powder, toilet	powder, toilet	powder, toilet	powder, toilet	powder, toilet	powder, toilet
	roll, pad	roll, pad	roll, pad	roll, pad	roll, pad	roll, pad	roll, pad	roll, pad	roll, pad
	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &
	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock
	cuhe. cheese.	cube cheese.	cube. cheese.	cube, cheese.	cube, cheese.	cube. cheese.	cube. cheese.	cuhe. cheese.	cube. cheese.

	Day 10	Day 11	Day 12	Day 13	Day 14	Day 15	Day 16	Day 17	Day 18
Breakfast	Porridge & dried fruit	Porridge & dried fruit	muesli	Porridge & dried fruit	Porridge & dried fruit	muesli	Porridge & dried fruit	Porridge & dried fruit	Porridge & dried fruit
Lunch	Biscuits brown,	Biscuits	Biscuits	Biscuits	Biscuits	Biscuits	Biscuits	Biscuits	Biscuits
	Primula cheese,	brown,	brown,	brown,	brown,	brown,	brown,	brown,	brown,
	pate, muesli	Primula	Primula	Primula	Primula	Primula	Primula	Primula	Primula
	bars, choc-bars,	cheese, pate,	cheese, pate,	cheese, pate,	cheese, pate,	cheese, pate,	cheese, pate,	cheese, pate,	cheese, pate,
	dried fruit &	muesli bars,	muesli bars,	muesli bars,	muesli bars,	muesli bars,	muesli bars,	muesli bars,	muesli bars,
	nuts. Biscuits	choc-bars,	choc-bars,	choc-bars,	choc-bars,	choc-bars,	choc-bars,	choc-bars,	choc-bars,
	fruit	dried fruit &	dried fruit &	dried fruit &	dried fruit &	dried fruit &	dried fruit &	dried fruit &	dried fruit &
		nuts. Biscuits	nuts. Biscuits	nuts. Biscuits	nuts. Biscuits	nuts. Biscuits	nuts. Biscuits	nuts. Biscuits	nuts. Biscuits
		fruit	fruit	fruit	fruit	fruit	fruit	fruit	fruit
Dinner	Soup 1	Soup 2	Soup 3	Soup 4	Soup 5	Soup 6	Soup 1	Soup 2	Soup 3
	Curry & rice	Couscous	Pasta	Quinoa &	Mushroom	Potato sausage	Curry & rice	Couscous	Pasta
	Instant pudding	Rice pudding	Fruit cake &	chilli	Risotto	& onion gravy	Instant	Rice pudding	Fruit cake &
			Custard	Semolina	Fruit salad &	Chocolate	pudding		Custard
					custard	sponge			
						pudding			
	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk	Sugar, milk
	powder (or	powder (or	powder (or	powder (or	powder (or	powder (or	powder (or	powder (or	powder (or
	tube) tea,	tube) tea,	tube) tea,	tube) tea,	tube) tea,	tube) tea,	tube) tea,	tube) tea,	tube) tea,
	coffee,	coffee,	coffee,	coffee,	coffee,	coffee,	coffee,	coffee,	coffee,
	chocolate	chocolate	chocolate	chocolate	chocolate	chocolate	chocolate	chocolate	chocolate
	powder,	powder,	powder,	powder,	powder,	powder,	powder,	powder,	powder,
	sweets,	sweets,	sweets,	sweets,	sweets,	sweets,	sweets,	sweets,	sweets,
	matches,	matches,	matches,	matches,	matches,	matches,	matches,	matches,	matches,
	isotonic drink	isotonic drink	isotonic drink	isotonic drink	isotonic drink	isotonic drink	isotonic drink	isotonic drink	isotonic drink
	powder, toilet	powder, toilet	powder, toilet	powder, toilet	powder, toilet	powder, toilet	powder, toilet	powder, toilet	powder, toilet
	roll, pad	roll, pad	roll, pad	roll, pad	roll, pad	roll, pad	roll, pad	roll, pad	roll, pad
	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &	cleaner, salt &
	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock	pepper. Stock
	cube, cheese.	cube, cheese.	cube, cheese.	cube, cheese.	cube, cheese.	cube, cheese.	cube, cheese.	cube, cheese.	cube, cheese.

Notes:	peanut butter, flour, lentils, vegemite, herbs, spices, corn flour, lemon juice, soya sauce, veg oil, Egg nowder. Snare
Notes:	riour, ientus, vegemite, herbs, spices, corn flour, lemon juice, soya sauce, veg oil, Egg nowder. Snare
Notes:	vegemite, herbs, spices, corn flour, lemon juice, soya sauce, veg oil, Egg nowder. Snare
Notes:	neros, spices, corn flour, lemon juice, soya sauce, veg oil, Egg nowder. Snare
Notes:	lemon juice, soya sauce, veg oil, Egg nowder. Snare
Notes:	lemon juice, soya sauce, veg oil, Egg nowder. Snare
Notes:	soya sauce, veg oil, Egg nowder. Snare
Notes:	oil, Egg nowder Snare
Notes:	nowder. Snare
Notes:	
Notes:	rice. spare oats.
	 The main meals work on a 6 day cycle so are repeated three times over an 18 day stay on the ice. This makes for easy buying and packing. Main meals would be packed per meal for three people. Lunches, breakfasts & condiments would be packed in a 3 day ration pack for one person. Stores would contain extras just so people, time and weather permitting can vary their diet accordingly also this would make up the basis of extra rations. I suggest we use a mixture of bought sauces and ones we can make up ourselves (before hand) We add things to make food more interesting nuts, seed, sun dried veg. (meat like sausage we would probably pack in Condiments as it will travel better their and can be optional. Tuna like wise although I have just one

Drinks (tea coffee etc) as everyone drinks different stuff (tea, coffee, red bush, herbal, fruit, earl grey etc) I would suggest that everyone take their own supply sufficient for the trip. carefully.

Personal Equipment

5 Season sleeping bag Therma rest Foam sleeping mat Personal toiletries Personal clothing Camp Boots

Climbing Equipment

Climbing boots Crampons Pair of ice axes 4x 22cm ice screws 1x 240 cm sling 2x 120 cm sling 1x 60 cm sling Short extender sling 3x extenders 4x HMS karabiners 4x snap karabiners 1x pulley 2x short prussic loops 1x long prussic loop 1x belay device 1x sharp knife

Skiing Equipment

Skis Ski Poles Ski Boots Skins

Group Equipment

Mountain Hardwear Satellite group tent Three Mountain Hardwear Trango 4 sleeping tents 4 MSR whisperlite international stoves 4 Pulks 3 Super dry treated, 60 metre 9mm rope 2 EPIRBS Satellite phone VHF radio 4 walkie talkies Shotgun Flares, smoke bombs and mini flares 4 GPS units Repair kit Solar battery charger

Medical Equipment

Standard Brathay Exploration Group mobile kit plus:

Adjustable cervical spine collar Inflatable leg splint Inflatable arm splint Leg traction splint/ walking pole Pelvic splint (SAM splint) Suction device Nasopharyngeal airways, various sizes Guedel Airways, various sizes Larnygeal mask airway with two humidity filters Stethoscope Sphygmomanometer Otoscope Fundoscope Morphine . 1 Naloxone Metclopramide Midazolam Dihydrocodine Local anaesthetic Suture kit Syringes and needles

Appendix 5 Financial Report

2

Expedition Accounts

This appendix provides a summary of the expedition accounts, with table 1 outlining the costs of the expedition and table 2 outlining who provided the funds for these costs. At this stage the accounts do not include any re-imbursements through the sale of equipment following the expedition, and those costs in italics are estimates.

Expedition Costs

Expedition Logistic Support (provided by Tangent Expeditions Ltd)	£28,040.00
Expedition Insurance (provided by Tangent Expeditions Ltd)	£3,150.00
Return Flights to Iceland	£2,111.00
Expedition Tents and Ropes	£1,845.20
Camcorder, Head Cam, Batteries and Cassettes	£785.00
Expedition Food	£784.81
Other Expedition Group Equipment	£737.45
Training (in Chamonix)	£717.98
Expedition Report and DVD Production	£300.00
Grants Applications, Sponsorship Requests and Website	£148.60
Total	£38,620.04

Table 1: Expedition Costs

The costs outlined above do not include the costs for personal equipment, which were paid for by the expedition members depending on their requirements. The cost of the expedition logistic support includes the costs of, but not limited to, the following:

- Freighting equipment and food to Iceland.
- Accommodation in Iceland.
- Return flights from Iceland to Greenland on ski-plane.
- Safety equipment, including satellite phone, VHF radio, flares, smokes, shotgun and satellite beacon.
- Pulks.
- Fuel.

The grant applications resulted in some financial Awards, as outlined in the table below. Similarly, the sponsorship requests resulted in a number of reductions in the cost of the expedition food, group equipment and personal equipment.

Sources of Expedition Funds

Total	£38,620.04
Interest from Expedition Account	£107.62
Contributions from Expedition Members	£37,012.42
Other grants and donations	£750.00
Grant from Mount Everest Foundation	£750.00

Table 2: Funding Sources

The table above shows that the majority of the expedition funds were provided by the expedition members. To make the most of these contributions a high interest account was set-up to accrue interest on the members' contributions. Appendix 6

Greenland and Climate Change

Greenland and Climate Change

For nearly 500 years between the 10th and the 15th centuries Norse people used to live in Greenland. Then they disappeared: mysteriously, completely. Recently the mystery has been uncovered, piece by piece. The evidence reveals a story of environmental degradation, political instability and an inability to adapt. The Greenland Norse damaged their environment on which they depended by destroying natural vegetation and causing soil erosion. This created dwindling supplies of fuel wood and, unlike the Inuit that still live in Greenland, they did not adapt to using animal blubber as a fuel. The leaders exacerbated the problem by using the limited trade routes with Europe to import luxuries instead of the items that could have helped sustain them. The Norse society's structure created a conflict between the short-term interests of those in power and the long term interests of the society as a whole. Eventually the society collapsed and the settlements starved to death.

Why is all this relevant to an expedition to Greenland? Well Greenland is once again the focus of environmental degradation. The Greenland ice-cap is the second largest on earth after the Antarctic and it is melting at the rate of over 200 km³ every year. Climate change is already occurring and having a massive impact. If all the Greenland ice-cap melted sea levels would rise by 6.5 metres flooding coastal areas where billions of people live. It was a stark fact that as we climbed mountains, near the east coast of Greenland, the ice was melting around us. The mountains we climbed are sticking further and further out of the ice-cap. There is also the 'Day after Tomorrow' scenario where the Greenland melt water disrupts the Gulf Stream, diverting the source of our warm weather here in the UK.

Now, instead of the Norse society, whose failings seem so obvious in retrospect, it is ours that is currently undermining the environmental factors on which our society depends. No other species in the history of the earth has changed the world's climate to the same extent. So what responsibility does this give those of us that go on expeditions? Should we consider more carefully our contribution towards CO2 emissions? Probably. Should we try and understand the impacts of climate change in the countries we visit? Perhaps. Should we look at the cultures we visit and try and understand the cultural perspectives that allow or don't allow them to live in harmony with the natural world? Maybe. But perhaps the most important thing we can do is just change the way we live our lives. Cycle more, convert to a green electricity tariff, and maybe even try growing some of your own food. As a famous supermarket says: every little helps.

Appendix 7

A Young Leader's Development

A Young Leader's Development

Hi, my name is Pete Clutton-Brock. I'm 23 and have recently got back from an expedition to Greenland where, together with a team of eight other people, I was climbing unclimbed mountains. For me this was the culmination of a series of expeditions and has pushed me further towards being a fully blown expedition leader.

Do you want to be an expedition leader? You might be finishing school or be at University and you might have been on a couple of expeditions already. You feel like you've outgrown the need to have someone else doing the organisation for you. You want to have a go at doing it yourself.

That's how I felt after I'd done a couple of expeditions as a member. I wanted to do something else. Of course the most common next step is simply to grab a pack, head off to Thailand or Australia with your lonely planet guide under your arm, stay in traveller filled hostels, full of backpackers who are incredibly keen to tell you all their amazing stories that end up being the same as everyone else's.

The other option is to start trying to lead expeditions. Not holidays, expeditions.

Here's a personal perspective on one way to do this.

After a couple of years at University and after a couple of expeditions to the Shetland Islands and Morocco, I bit the bullet and organised a three month expedition for myself and a friend to Mongolia where we carried out surveys for a National Park in the Altai Mountains and lived with Nomadic herdsmen. It was a life-changing experience. Not only did I learn a bit of Mongolian, how to ride a horse and which spinners the Mongolian fish bite on, I also learnt how to plan and organise expeditions, how to make contacts for projects and how to assess risk when the nearest decent hospital is 2000 miles away.

Since that experience I have wanted to help others have the kind of lifechanging experience that I had. I wanted to show others the beauty of the remaining wild areas on our planet and the wisdoms of the people that live there. I wanted to lead expeditions.

As a member of an organisation called Brathay Exploration Group I was lucky in this respect. Brathay actively encourage young leadership development by offering positions on expeditions for trainee leaders. I applied for one of these positions and ended up helping take a group of teenagers to South Africa. Of course, it is a very different experience from being a member and it isn't everybody's cup of tea but it is incredibly rewarding when it goes well. You learn a huge amount about how to get around in a foreign environment and how to look after people who don't have any experience of living in country where you can't just call the police or an ambulance if something goes wrong. It is challenging, it can be tough, but we don't go on expeditions to have an easy time of it.

Greenland represented the wildest area that I had ever visited. We went to an area near the east coast where nobody had been before. Ever. The planning required for an expedition to environment this remote and harsh is considerable. Everything has to be thought of in advance as we had to be completely self-sufficient for the whole time we were there. Food, fuel, entertainment, communications and medical kit were all vital to our survival. Safety is a priority as we had to be able to deal with any problems ourselves, even down to bringing a rifle to deal with any marauding polar bears.

The aim of the expedition was to climb unclimbed mountains and in doing so build the experience of the members of operating in harsh environments. In the end we climbed five unclimbed peaks and explored much of the region by skis.

The expedition was an incredible experience and I learnt a lot about planning expeditions.

Next year I'm planning on being an assistant leader on an expedition to Romania and after that who knows.