Cambridge University East Greenland Expedition 2006 Report

www.greenland2006.org.uk

The compilers of this report and the members of the expedition agree that all or part of it may be copied for the purposes of private research.

Expedition Members:

Mark Reid, Lachlan Low, Stephen Mounsey and James Dynes (clockwise from top left in above photo).
Summary

This report is an account of the Cambridge University East Greenland Expedition 2006.

This document is intended to describe the entire expedition, beginning with the planning stages, in the hope of providing helpful guidelines to anybody planning a similar expedition in the future.

The expedition was to the Schweizerland Alps region of East Greenland, specifically the area to the east of the Knud Rasmussen Glacier. In this area the expedition party made eight first ascents over a period of five weeks. The expedition was unsupported and aimed to leave a minimal environmental footprint, using locally chartered boats to reach the area and buying supplies locally. The climbs were done in an alpine style in a single push, so that each only took a day.

1 Acknowledgements

We would like to thank everyone who made this expedition possible.

In no particular order these people and organisations were:

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2 Initial Stages

2.1 Who We Are

The earliest stages of planning (late September 2005) involved only two people: Mark Reid and Lachlan Low (then both Undergraduates at Cambridge University). They decided, more or less from the start, that a team of four would work well, and so went about finding a further two like-minded climbers within the university. About ten people (most of whom were members of the Cambridge University Mountaineering Club) expressed interest in joining the expedition. By December 2005 the team had been chosen, the remaining two members being James Dynes and Steve Mouney. Having read numerous expedition “horror stories”, it was extremely important to us that team members, as well as having sufficient climbing/mountaineering experience, were compatible in terms of their personalities. The team was chosen carefully in light of this.

The four team members were:

Mark Reid: Prior to the expedition, Mark had been rock climbing for four years and mountaineering for the last three of these. This took him on four trips to the French, Swiss and Italian Alps and also to the Italian Dolomites, climbing routes up to Alpine AD. His favorite ascents include those of Mt Blanc de Chelion (Swiss Valais), and Cima della Vezzana (Dolomites).

Figure 1: Mark Reid

Back home in the UK Mark enjoys trad. rock climbing (leading up to VS), as well as winter climbing in Scotland (although appalling weather in the past has resulted in more Scrabble games being played than Scottish winter routes climbed!). Mark also has a great deal of long distance trekking and scrambling experience in the UK, Poland and Andorra.

Lachlan Low: Lachlan’s first introduction to climbing was at his local crag of Harrison’s rocks on the Kent/Sussex border. Away from sandstone, he particularly enjoys climbing in Wales and the South West. Lachlan’s experience prior to the expedition included two seasons mountaineering in the Alps (climbing up to Alpine AD) especially enjoying climbs on Pointe de Moiry (Valais Alps) and La Tesenta (Gran Paradiso National Park). He has also experienced two seasons of Scottish winter climbing (leading up to Scottish grade III), with particular fun being had on Dorsal Arete.

Figure 2: Lachlan Low

Lachlan’s first expedition was to Alaska in 2001 with BSES (British Schools Exploring Society). He has also led novice trekking groups on expeditions throughout the UK. His leadership skills were further developed through completion of the Frimley Park Army leadership course.

Following an extremely tough selection process, Lachlan was chosen for the BBC TV programme “SAS: Are you tough enough?”. Unfortunately his first year exams coincided with this, and the university was having none of it!

James Dynes: James has been climbing seriously since he started University, predominantly climbing with the Churchill College Mountaineering Club. During this time he has spent at least a week in the Cairngorn (Scotland) and at least a fortnight in Chamonix (French Alps) every year, building his climbing experience. He has also completed an ISM Alpine climbing course to consolidate his experience.

Figure 3: James Dynes

He has completed routes up to ‘AD’, including such alpine classics as the Plan du Midi Traverse, Mont Blanc du Tacul and the Cosmiques Arete.
2.2 The Birth Of The Idea

Whilst in the Alps he has also climbed trad. rock routes up to grade V+ (e.g. TM and Arrete du Papillons) and sports rock routes up to French grade 6a. A keen winter climber, James has also enjoyed countless Scottish routes, leading up to grade III (e.g. Trident Gulley, Red Gulley). He has climbed rock extensively throughout England, leading trad. routes up to HVS 5b.

In addition to the above, James has led groups of novices on trips to Scotland, Chamonix and the Peak District, handling the logistics, training and safety of all concerned. He has also completed a St John’s Ambulance first aid course.

Steve Mounsey: Steve has been rock climbing for as long as he can remember, although he started climbing more seriously about five years ago. Much of his rock climbing experience was gained at his local crags on the North Yorkshire Moors, where he now leads up to E1 on a good day. Progression to bigger things led him to many long and arduous routes in the Lake District and Snowdonia, which have nurtured his enjoyment of bad weather!

Figure 4: Steve Mounsey

Steve is relatively new to winter and Alpine climbing, but prior to the expedition had gained experience of mixed climbing in Scotland and mountaineering in the French Alps. He is a keen rower and graduated from Homerton College Cambridge in 2006 after studying Materials Sciences.

2.3 Ethos

a year they might be working, and limited to only a few weeks of holiday per year. The feeling that the summer of 2006 presented such a perfect opportunity spurred them into action, and serious planning began in late September 2005.

2.3 Ethos

From the very start of the expedition we adhered to a motto of “physical rather than financial hardship” in order to make the very most of the resources we had, and to climb to our last penny. For all of us this expedition was a chance to realise two long-standing dreams; to establish new routes on unclimbed peaks and to spend time climbing in a remote, beautiful and unspoilt Arctic wilderness.

Despite a high level of interest in participating in the expedition we made a concerted effort to align to a small team philosophy, namely to utilise a simple, lightweight Alpine expedition style as we believed this would keep our costs down and maximise our chances of meeting our initial aim of memorable first ascents.

2.4 Initial Ideas

So far we had a team of four, all of whom wanted to go on a climbing expedition somewhere. It was now time to decide upon a destination.

Rather than heading to a region with a definite objective (i.e. a particular route on a particular peak) we preferred the idea of choosing a region where there would hopefully be a number of unclimbed mountains, or at least previously climbed mountains with new-routing potential. We hoped to be able to explore an area and choose climbing objectives once we were out there. This was to be our first climbing expedition and we wanted as much flexibility as possible as far as picking routes was concerned.

We wanted to be able to travel around our expedition area on snow (as much as possible). This would facilitate covering larger distances as it would be possible to drag all our equipment in sledges/pulks rather than having to carry it all. Setting up base camps on snow would also mean that we could build large snow walls to protect tents and dig shelters/snow caves etc.

Although we wanted snow cover, we hoped to minimise the likelihood of having to contend with seriously harsh conditions and extreme cold. We thought the Patagonian winter, for example, would be better left for a future expedition!

Because this was to be our first expedition, we decided to avoid altitude related complications. This pretty much ruled out the “greater ranges” (Andes, Himalaya etc.).

We felt it was important for our first expedition to strike a balance between choosing adventurous and challenging objectives and being overtly ambitious. Not only would achieving this balance greatly increase our chances of success but it would also enable us to gain more funding etc. It was very important to be able
to convey to funding organisations that our plans were within our capabilities and were appropriate to our level of experience as a team.

Taking all of the above points into account we decided that cold regions within the Northern Hemisphere would be a good place to start looking. Three possible destinations grabbed our attention:

1. Greenland (specifically the East coast since this is very mountainous, unlike the West coast and ice-capped interior).
2. The Canadian Arctic (islands such as Ellesmere Island).
3. Spitsbergen (Svalbard archipelago).

It quickly became apparent that an expedition to the Canadian Arctic would be massively expensive because of the huge cost of chartering a plane to get us there; scheduled flights can only get one so far. Given our ethos and financial limitations we soon ruled this out as an option.

We soon discovered that Spitsbergen is often considered the polar bear capital of the world - apparently expeditions here typically involve watching all through the night. Having studied many photos we also found ourselves less inspired by the potential climbing in Spitsbergen, particularly when compared with what we had seen of East Greenland in photos.

So we came to focus our attention on the East coast of Greenland. Now all we had to do was decide where on this incredibly vast coastline we would go.

2.5 Why We Chose The Schweizerland Alps

There are essentially two places on the East Coast of Greenland that can be reached by normal scheduled flights. These are Kulusuk (near the larger settlement of Tasilaq, just South of the Arctic Circle) and Constable Point, which is considerably further north (slightly South of the boundary of the North-East Greenland national park).

To reach anywhere on the East coast beyond these two places necessitates chartering a plane/helicopter/boat, or overland travel e.g. by ski if conditions permit. Chartering is very expensive, especially in the cases of planes and helicopters, for which you could certainly expect to pay upwards of £1000 per hour. Boat chartering costs a great deal less than this. The down sides are that it is only possible for a few months each summer (when the sea is passable - i.e. not iced over) and range is more limited than that of aircraft.

Helicopters can be chartered within Greenland (Kulusuk/Tasilaq or Constable Point) whereas Twin Otter planes have to be chartered from Iceland as none are based in Greenland (please note - this may no longer be true at the time of reading!). There are sections of the East coast of Greenland that can only be reached (neglecting long distance skiing) by chartering a ski-equipped Twin Otter aircraft from Iceland. These parts are beyond the range of helicopters based in Kulusuk/Tasilaq and Constable Point. This is a popular strategy with many expeditions but costs a fortune given the flying distances involved and the charter rate per hour. We know of several other expeditions that have chosen to go down this route (unlike us) - their overall budgets were roughly double that of our expedition for similar sized teams spending similar lengths of time in the field.

Since we were working to a tight budget we sought to minimise any necessary chartering in an effort to constrain costs. We knew we wouldn't be able to cover too much distance overland (by ski) with only five weeks in the field (which we wanted to mostly spend climbing rather than trying to reach our climbing area!) and likely unfavourable late summer snow conditions (potentially making skiing problematic and slow). We therefore went about trying to find a suitable expedition area within a few hundred kilometres of either Kulusuk or Constable Point.

Immediately the Schweizerland Alps, approximately 150km North of Kulusuk, stood out as a possibility. Knud Rasmussen Land (South-West of Constable Point) was an alternative. Our research led us to believe that there was significant new-routing potential in both areas (see sections 1.6, 2.1 and 2.2 for details). We ultimately chose the Schweizerland Alps for two main reasons:

1. Firstly, it became apparent that this region would be the more accessible of the two; we eventually discovered the best option was to charter twin otter boats. By contrast it looked highly likely that reaching Knud Rasmussen Land from Constable Point would involve expensive chartering; this would only have been to cover a short distance, but it could easily have cost about £4000.

2. Secondly, we were simply much more inspired by the Schweizerland Alps. The many photos we had seen showed the Schweizerland Alps to be much more jagged and imposing. We had also read that the quality of the rock was generally very poor in Knud Rasmussen Land and not good enough for rock or mixed climbing. We read reports that the rock quality is often better in the Schweizerland Alps, although it was likely to be variable. Ultimately, gut feeling played a part. It is obviously very important to make sure that the expedition you plan really inspires you, and this played a big part in our choosing the Schweizerland Alps.

In many ways the Schweizerland Alps is the perfect destination for a first expedition. It is a huge area of vast glaciers and inspiring jagged peaks. It is remote enough for there to be great potential for making first ascents / putting up new routes, yet it is near enough to civilisation to be relatively cheap and easy to access (at least when compared to other parts of East Greenland).

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2.6 Logistics Support

During the course of the planning we had contact with two expedition logistics companies:

Tangent Expeditions\(^1\) logistics packages revolve around the chartering of a ski-equipped Twin Otter aircraft to take your team to remote parts of East Greenland. They can also help with equipment hire, supplies e.g. fuel, insurance etc. The cost is likely to be pretty high; your overall budget will probably end up being about double that of a team that opts not to charter a Twin Otter aircraft. If you don’t want to charter a Twin Otter, Tangent Expeditions is probably not the logistics company for you.

Greenland Expedition Specialists (GES)\(^2\) is able to offer extremely flexible, reliable and cost-effective logistics packages for a huge range of different Greenland expedition objectives. Their local expertise and connections are unrivalled. Through GES you can charter motor boats, Twin Otter planes, helicopters and dog-sleds. GES also provide superb advice and specialist information, hire of a dog-sled and GES provides superb advice and specialist information, hire of a dog-sled, helping you obtain the various permits you may need, the cost is likely to be pretty high; your overall budget will probably end up being about double that of a team that opts not to charter a Twin Otter aircraft. If you don’t want to charter a Twin Otter, Tangent Expeditions is probably not the logistics company for you.

We initially chose to work with Greenland Expedition Specialists because they were able to arrange the charter of Inuit boats for our expedition (much cheaper than planes/helicopters) and they provided excellent advice (e.g. suggestions for how to negotiate with the Inuit). We quickly became very glad that we chose GES, as the support and service we received was outstanding. Quite apart from arranging boat charter, permits, supplies, equipment hire, accommodation and GES promptly answered almost all our questions with the excellent information we needed when planning an expedition (especially if it’s your first one); we highly recommend the company.

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1 Tangent website: www.tangent-expeditions.co.uk
2 GES website: www.greenlandexpedition.com

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3 In-Depth Planning

3.1 Past expedition reports

During the planning of the expedition we visited several libraries which held past expedition reports as well as thoroughly searching the internet. Being based in Cambridge, our first port of call was the Scott Polar Research Institute (SPRI) which in its library has copies of a large number of past Greenland expedition reports. While reading these we mainly looked for sponsors, logistics information, climbing area, nutritional and medical information. A brief list of the expedition reports we found useful is listed in the appendices.

We also paid a visit to the Royal Geographical Society (RGS) in London to read some more expedition reports. However most of them were just duplicates as most people send them to both of these institutions.

One of the best documented expeditions we came across on the internet was the Lanchester expedition\(^3\). In the report it had listed every minute detail of their planning, which sometimes bordered on excessive; however, it will be very useful to anyone planning a similar expedition.

3.2 Evolution of the plan

We wanted to incorporate a certain amount of overland travel into our expedition plan. One of the earliest ideas was therefore to fly to Kulusuk on scheduled flights via Reykjavik, to take a scheduled boat or helicopter to the settlement of Isortoq (west of Tasilaq), and then to travel overland on skis up the edge of the Greenland icecap to access the Mount Forel area of the northern part of the Schweizerland Alps. We hoped that this might save us quite a bit of money as we could quite possibly avoid having to pay for boat/helicopter charter altogether.

It was at around this time that we first got in touch with Matt Spenceley of Greenland Expedition Specialists (GES). We actually came across him on an internet forum\(^4\). Reading several posts it became clear that Matt knew a great deal about this area of Greenland so we contacted him hoping for some advice on the feasibility of our plan. Matt advised us that our plan would be much more suited to an expedition in the Spring (when snow/ice conditions on the icecap are generally much more suited to cross-country skiing) than an expedition in the summer (when exposed crevasse fields and large pools of surface water could make skiing very problematic).

Matt suggested instead that we consider chartering Inuit boats, which would be much easier and quicker than a long-distance ski-approach yet much cheaper than plane/helicopter charter. Prior to contacting GES we had pretty much discounted the possibility of boat-chartering since other people (including one

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4www.eastgreenland.com
3.2 Evolution of the plan

Previous East Greenland expedition had led us to believe that the fjords would be too full of ice; this was not the case.

We then began working more closely with GES; they could, amongst other things, arrange the boat-chartering for us. They advised that the region east of the Knud Rasmussen glacier showed a great deal of climbing potential and that it could be accessed by land, a boat near the snout. They didn't know of any previous expeditions having visited that region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region. Our own research (see section other climbing teams that had visited the region.}

3.3 Patrons

We decided that, much like other expeditions in the past, if we had some patrons for the expedition then that would lend us more credibility for fund raising. As such we had to write to potential patrons and wait for responses before going about any fund raising. Since we anticipated a less than fifty percent success ratio we applied to six people initially.

Of the six people that we applied to, we tried to make sure we had a good selection of celebrities who would be known by most potential sponsors. As such we wanted a patron who was well known by the climbing community and also one who was less associated with climbing, but more of a generally well known figure.

We only got three replies; a hand written letter from Sir Ran Fiennes giving us his patronage, a letter from Ray Mears' company giving us his patronage and an email from Doug Scott wishing us luck with our expedition and keen to know how we got on.

Encouraged by the patronage of such eminent gentlemen, we commenced our search for funding.

3.4 Grants and donations

Before we sent off applications for funding we put together a double sided A4 leaflet detailing our plans for the expedition and headed note paper on which to write the applications.

We accumulated a list of funds to apply for by searching the internet, reading past expedition reports, and from a book entitled The Directory of Grants. The latter is a comprehensive list of various charitable organisations, grouped by their cause and location, to which parties can apply for funding. A copy should be available in every public library.

A full list of bodies applied to, as well as which applications were successful, is included in the Appendix.
3.5 Sponsorship/support

As well as seeking money for the expedition we also sought companies to give us discounts. To this effect we wrote to a number of gear manufacturers asking for discounts in return for gear reviews or publicity photos while we were out in Greenland.

A table of the companies we wrote to is included in the appendix. The companies which agreed to give us discounts allowed us to put in one order for the group, upon which we would pay trade prices.

The companies by which we were sponsored were DMM, First Ascent and Rab. DMM offered us trade price kit as did First Ascent, and Rab allowed us to purchase equipment at their staff store. First Ascent are a UK distributor for various American makes such as Black Diamond, Platypus and MSR.

3.6 Full detailed budget

Upon reading past expedition reports, with an expedition to Greenland in mind, it was evident that costs could run as high as £34 000. Further analysis of past reports and some preliminary investigations into the more expensive components of the expedition, particularly transportation, showed us that we could not achieve our expedition aims on a budget less than £10 000.

The £10 000 budget we had set ourselves was to include all group equipment. Different expeditions will spend different amounts on gear depending on their circumstances. Although we had estimated around £1000/person, different team members spent different amounts depending on the standard of their existing gear.

The tables below aim to give an indication to future expedition groups as to the cost of the main components of an expedition and how much they can expect to receive in sponsorship. As a group of impoverished students, we placed a high importance on gaining sponsorship and spent a lot of time and effort searching for and filling in application forms. We are very grateful to all our sponsors, without whom this expedition could not have taken place. Different expeditions raise very different amounts of sponsorship depending on their type of expedition, as this determines which sources of funds are available. Time and dedication is needed if sponsorship is to reap rewards.

<table>
<thead>
<tr>
<th>Item</th>
<th>Amount</th>
</tr>
</thead>
<tbody>
<tr>
<td>Gino Watkins Memorial Fund</td>
<td>£1500</td>
</tr>
<tr>
<td>The Shipton/Tilman Grant</td>
<td>£2677 ($5000)</td>
</tr>
<tr>
<td>The Mount Everest Foundation</td>
<td>£650</td>
</tr>
<tr>
<td>The British Mountaineering Council</td>
<td>£300</td>
</tr>
<tr>
<td>The Andrew Croft Memorial Fund</td>
<td>£600</td>
</tr>
<tr>
<td>Ernest Kleinwort Charitable Trust</td>
<td>£1000</td>
</tr>
<tr>
<td>Augustine Courtauld Trust</td>
<td>£500</td>
</tr>
<tr>
<td>Janet Cameron</td>
<td>£100</td>
</tr>
<tr>
<td>Estimated sum of personal contribution</td>
<td>£3053</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>£10 680</strong></td>
</tr>
</tbody>
</table>

Table 1: Finances, income
3.6 Full detailed budget

3.6.2 Expenditure

<table>
<thead>
<tr>
<th>Item</th>
<th>Description</th>
<th>Sub Totals</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accommodation</td>
<td>4 nights in Iceland per person (Payment through GES)</td>
<td>£76</td>
<td>£624</td>
</tr>
<tr>
<td></td>
<td>5 nights in Greenland per person (Payment through GES)</td>
<td>£80</td>
<td></td>
</tr>
<tr>
<td>Insurance</td>
<td>BIC</td>
<td>£605</td>
<td>£605</td>
</tr>
<tr>
<td>Food</td>
<td>Shipped food from UK (Payment through GES)</td>
<td>£320</td>
<td>£1020</td>
</tr>
<tr>
<td></td>
<td>Food bought in Greenland</td>
<td>£700</td>
<td></td>
</tr>
<tr>
<td>Fuel</td>
<td>13.5 Litres (Payment through GES)</td>
<td>£80</td>
<td>£80</td>
</tr>
<tr>
<td>Communications</td>
<td>Satellite phone (Returnable deposit of £750 was required)</td>
<td>£309</td>
<td>£309</td>
</tr>
<tr>
<td>Transport</td>
<td>London – Iceland return</td>
<td>£590</td>
<td>£3990</td>
</tr>
<tr>
<td></td>
<td>Approx. Iceland – Greenland return (Payment through GES)</td>
<td>£1400</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Approx. Boat Charter (Payment through GES)</td>
<td>£2000</td>
<td></td>
</tr>
<tr>
<td>Printing/Publicity</td>
<td>Includes: Domain name, colour printing, paper, postage, report distribution.</td>
<td>£70</td>
<td>£70</td>
</tr>
<tr>
<td>Medical Kit</td>
<td>See 3.14 for medical kit section</td>
<td>£200</td>
<td>£200</td>
</tr>
<tr>
<td>Equipment</td>
<td>Group equipment includes: Stoves and cooking equipment, crampons, walking poles, ropes, racks, tents, solar panels, radios, medication. The amount each team member spent on personal equipment varied.</td>
<td>£3452</td>
<td>£3452</td>
</tr>
<tr>
<td>Greenland Expedition Specialists</td>
<td>Sundries – including expedition and logistic planning and advice. Equipment hire (pulks and pulk bags, flares, satellite photographs, maps, EPIRB and permit etc.)</td>
<td>£330</td>
<td>£330</td>
</tr>
</tbody>
</table>

Table 2: Finances, expenditure

3.7 Maps and aerial photos

We used a 1:250000 map of the Tasilaq area published by Saganmaps and purchased through Stamfords of London. We were also able to acquire high resolution aerial photographs of the area, provided by GES.

Only a small part of the map was relevant to us, so we scanned it into a computer and printed off expanded copies of our climbing area. On the other side of these maps we printed our aerial photographs. We laminated these sheets, resulting in a handy map card, showing our whole climbing area, which could be left in the side of a bag.

3.8 Expected weather and conditions

Having looked at previous expeditions’ reports, most of which had been in the spring, we thought that the temperature in the area we were travelling to would be between –20oC and +5oC, and that from satellite photos and expedition reports that the snow line would be at approximately 700m.

We studied the weather for the area over the past few years in detail. We obtained the records from www.wunderground.com, and also from weather.noaa.gov.4

From this we had surmised that it would be a reasonable temperature during the day and pretty cold at night. Based on this we chose our sleeping bags and other warm items to be comfortable at these temperatures.

When we actually got to the area we discovered that it was fairly warm on the whole, and that when there was precipitation it fell as rain. This meant that our waterproofs were absolutely indispensable to avoid getting all our clothes completely soaked. It also meant that if it rained then we sheltered, as we had no other option other than hanging out clothes to dry in the sun and wind, and because of our light-weight approach we only had one change of clothes each.

3.9 Getting to and from our expedition area

The nearest settlement to our expedition area was the main airport on the east coast of Greenland and the town of Kulusuk. We flew to Kulusuk on standard commercial flights via Reykjavik, Iceland.

From there we chartered two local hunting boats which dropped us off at the end of the glacier and picked us up at the end of the trip. The boat journey was about one and a half hours each way, at the limit of the range of the boats we were using.

The area in which we were planning to climb required moving up a large glacier and then heading up one of its tributaries. In our initial planning we had a map and aerial photos. The problem was that the map proved to be inaccurate and had an unhelpfully large scale for our needs (1:250 000) while the satellite

4Web ref to Kulusuk weather reports.
photos had no scale at all! This meant that judging distances and terrain was very difficult.

We planned to head up the Knud Rasmussen glacier to the Idraac Glacier and then up to our climbing area. However when we got to the Knud Rasmussen we discovered that it was very heavily crevassed and that moving up it was slow and indirect. From this we decided to try and get to the snow line as soon as reasonably possible, which meant heading up the unnamed glacier before the Idraac.

Once we had crossed the snow line and were pulling sledges, rather than load-ferrying as we had been all the way up the Knud Rasmussen, our rate of progress increased massively and so did morale. Whilst load carrying, we were carrying the absolute maximum we sensibly could (upwards of 40 kg), and this required us to cover each distance seven times to get all the kit in one place. This meant that we were averaging about 1.5km per day, as the crow flies, up the glacier but actually covering about 12km on foot. When we switched to pulking we were able to cover over 14km on a good day.

3.10 Strategy

From the outset of the expedition we had decided to adopt a light-weight alpine style approach. This meant taking the minimum of kit and load-ferrying it all ourselves.

3.11 Accommodation

In the previous section, the initial aim was to reach the snow line and then travel dragging sledges in order to establish base camps at interesting climbing areas.

For the climbing we planned to attack routes in two roped pairs moving together alpine style wherever possible to maximise the speed of ascent. For most of the climbs there were only a couple of pitched parts, and these were mainly only because we were being cautious. Due to the mountains being completely unexplored we took full racks with us on most climbs as we normally couldn’t judge the severity of the climbing until we were actually on it. After one of our ropes was severed by a stone fall on one route, we used the two halves as walking ropes for our pairs, and took one other rope in case there were any difficult sections which required pitching.

3.11 Accommodation

While travelling through Reykjavik we stayed in the Salvation Army Youth Hostel, which we found to be friendly, comfortable, central, but most importantly the cheapest accommodation available. However, due to an administrative error, the staff booked us in for the previous night. This meant that we ended up getting individual rooms for the price of a shared room, but this was only because the hostel was not completely full. At this point we also decided to check that our reservations were correct for the way back.

The distance from the Hostel to the domestic airport is only a couple of miles, but at Icelandic rates this cost around £20 for the taxi. So on the return we just walked the distance. The international airport, Keflavik, is served by a regular bus service which will take you to the Hostel directly.

In Kulusuk, we stayed in the house of Georg Utuaq, from whom we had chartered boats. This was very comfortable, and infinitely preferable to wild camping considering this is what we would be doing for the rest of the expedition. The airport in Kulusuk is a couple of miles outside the town, but right next to the hotel, so on the way in we had booked the local taxi. This turned out to be a pick-up, which carried us and all of our gear on the bumpy ride into town. On the return journey we decided to walk to the airport and it took about forty minutes with all our gear.

3.12 Equipment

As well as standard camping and climbing gear we also had to take some extra kit which would not otherwise be needed for a standard alpine climbing trip.

Since we did not know what the snow conditions would be like we took snow shoes, as well as extra flotation tails to expand the footprint if in soft powder, as we weren’t taking skis. We were also taking a fairly large selection of electronic equipment on the trip, such as cameras, camcorder, walkie talkies, GPSs
3.13 Full kit list

Figure 6: Accommodation in Kulusuk

and satellite phone. In order to charge these we brought along two folding, crystalline silicon photovoltaic solar panels and a ‘home brew’ connector to couple the two cells into one device on overcast days. The connector proved very useful and allowed us to charge our batteries in conditions that would otherwise have provided insufficient sunlight.

The satellite phone was hired from a company called G-Comm. The phone operated on the Iridium satellite system as this is the only network to support coverage for the poles. The phone was hired at a monthly rate and we were also pre-charged for a minimum number of calls. We also paid a large deposit for the phone, which had our call charges deducted from it before being refunded to us on return of the phone.

Another piece of safety kit we took was an EPIRB (radio distress beacon). This was carried by someone in their pack at all times as a precaution. It was hired from GES for minimal cost and could have proved to be life-saving if it had been needed.

3.13 Full kit list

Below is a comprehensive list of the equipment we took with us on the expedition.

<table>
<thead>
<tr>
<th>Task</th>
<th>Items</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cooking</td>
<td>Pans 1.5 + 2 litre</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Washing up bowl</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Washing up liquid</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Washing up towel</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Sponge</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Bowls / plates</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Sporks</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Pan Grippers</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Stoves</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Stove repair kits</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Mugs</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Fuel bottles (stove attachment)</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Plastic fuel cans @ 5 litre</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>Fuel</td>
<td>25 litres</td>
</tr>
<tr>
<td></td>
<td>Nalgene (food storage)</td>
<td>2 x 1 litre</td>
</tr>
<tr>
<td></td>
<td>Food</td>
<td>630,000 kcal</td>
</tr>
<tr>
<td></td>
<td>Coffee filter</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Lighting stuff (matches/lighter)</td>
<td>Several</td>
</tr>
<tr>
<td></td>
<td>Magnesium flint</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Personal water bottles</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Knives</td>
<td>3</td>
</tr>
<tr>
<td></td>
<td>Heat exchanger</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Trillium stove base</td>
<td>1</td>
</tr>
</tbody>
</table>

Table 3: Kit list, cooking

<table>
<thead>
<tr>
<th>Task</th>
<th>Items</th>
<th>Quantity</th>
</tr>
</thead>
<tbody>
<tr>
<td>Sleeping</td>
<td>Tents</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Sleeping bags</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Bivvy bags</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Plastic bags (tent anchors)</td>
<td>40</td>
</tr>
<tr>
<td></td>
<td>Thermarests</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Roll mats</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Silk sleeping bag liners</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Eye masks</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Snow shovel</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Tent repair kits</td>
<td>2</td>
</tr>
</tbody>
</table>

Table 4: Kit list, sleeping
### 3.13 Full kit list

<table>
<thead>
<tr>
<th>Climbing</th>
<th>Ropes - half ropes</th>
<th>2</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sledges / pulks</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Climbing Racks</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Whistle</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Rock shoes</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Harnesses</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Helmets</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Finger tape</td>
<td>4 rolls</td>
</tr>
<tr>
<td></td>
<td>Chalk bags + chalk</td>
<td>4 bags 4 balls</td>
</tr>
<tr>
<td></td>
<td>Axes</td>
<td>8</td>
</tr>
<tr>
<td></td>
<td>Crampons</td>
<td>5</td>
</tr>
<tr>
<td></td>
<td>File (for axes/crampons)</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Snow shoes</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Ski Poles</td>
<td>4 pairs</td>
</tr>
<tr>
<td></td>
<td>4&quot; Snow shoe flotation tails</td>
<td>4</td>
</tr>
</tbody>
</table>

**Table 5:** Kit list, climbing

<table>
<thead>
<tr>
<th>Sun protection</th>
<th>Sun block factor 40</th>
<th>1 litre</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Sun glasses</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>After sun / moisturiser 500ml</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 6:** Kit list, sun protection

<table>
<thead>
<tr>
<th>Washing</th>
<th>Personal wash kit</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Towel</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Toilet rolls</td>
<td>20 sheets/day/person</td>
</tr>
<tr>
<td></td>
<td>Washing bowl</td>
<td>1</td>
</tr>
</tbody>
</table>

**Table 7:** Kit list, washing

<table>
<thead>
<tr>
<th>Medical</th>
<th>Med kit</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Blisters kit</td>
<td>4</td>
</tr>
</tbody>
</table>

**Table 8:** Kit list, medical

<table>
<thead>
<tr>
<th>Electronics &amp; Misc</th>
<th>Digital compact</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Digital SLR Camera</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Stills camera battery charger</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Hard disk memory</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Memory cards</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Camcorder</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Camcorder batteries</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Camcorder tapes</td>
<td>6</td>
</tr>
<tr>
<td></td>
<td>Camcorder mic</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Camcorder charger</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Solar panels</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Walkie talkies (incl batteries)</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>AA / AAA battery charger</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>GPS</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Sat phone</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Compression straps</td>
<td>4 per person</td>
</tr>
<tr>
<td></td>
<td>Sat phone charger</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>EPIRB</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Tripod</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Head torches</td>
<td>4</td>
</tr>
<tr>
<td></td>
<td>Compasses</td>
<td>2</td>
</tr>
<tr>
<td></td>
<td>Maps</td>
<td>4 copies</td>
</tr>
<tr>
<td></td>
<td>Binoculars</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>Dry bags</td>
<td>many</td>
</tr>
<tr>
<td></td>
<td>Diaries/ notebook/ 4 books/ 1 pack cards/ chess etc</td>
<td>1</td>
</tr>
<tr>
<td></td>
<td>3mm cord for spare shoe laces/guys</td>
<td>10m</td>
</tr>
</tbody>
</table>

**Table 9:** Kit list, electronics and miscellaneous
3.14 Medical kit

The expedition carried a large medical kit, containing an imaginative selection of drugs and treatments, and two smaller identical first aid kits which were carried by each climbing pair.

3.14.1 Climbing first aid kits
- Triangular bandage x 2
- Small standard dressing
- Large standard dressing x 2 (NATO type)
- Finger tape (zinc oxide)
- Glucose tablets
- Glow-stick
- Length of elastoplast
- Roll of self adhesive crepe bandage tape (for immobilising and splinting limbs)

The base camp medical kit contained the drugs, creams/ointments and some spare quantities of those items which were in the climbing kits.

3.14.2 Drugs

The group took a fairly comprehensive selection of drugs, dressings and remedies. A short list, with dosing and explanations, follows:

**Antibiotics**

- **Ciprofloxacin** 500mg twice daily for five to seven days. This drug was carried for the treatment of diarrhoea, chest infections and urinary tract infections. One of our number had an allergy to penicillin; unlike augmentin, ciprofloxacin contains no penicillin.

- **Clarithromycin** 500mg twice daily for five to seven days. This drug is a broad spectrum antibiotic which we carried for treatment of wound infections, chest infections, diarrhoea, tendon infections and animal bites.

- **Augmentin** 500mg three times daily for five to seven days. This drug was carried for the treatment of infected wounds, and also for short term treatment of appendicitis. Augmentin is a broad spectrum antibiotic.

The group took six courses in total, which may have been slightly excessive.
3.14 Medical kit

**Analgesics**

Tramadol 100mg up to four times daily. This is a strong opiate pain killer.

Co-codamol Two 30/500mg tablets to be taken up to three times daily. This is also a moderately strong pain killer.

Diclofenac Two 50mg tablets up to three times daily. This is a non-steroidal anti-inflammatory which is used to treat muscle and joint pain.

Ibuprofen 400mg up to four times daily. This is a less strong anti-inflammatory which was carried for more routine use.

The group carried around 100 doses of ibuprofen, three weeks worth of co-codamol and diclofenac and about one week’s course of tramadol. We thought it best to be prepared for any eventuality.

**Other medicines**

- Burn cream
- Savlon
- Anti-fungal cream
- Fucidic acid ointment
- Two different types of anti-histamine
- Laxatives
- Intestinal sedatives
- Indigestion pills

In addition to the group kit, each member of the team was responsible for his own personal medications, including blister plasters. It was found that Compeed plasters were very effective, however they should be kept quite dry. The Compeed dressings will stay in place longer when the edges are protected with a strip of finger tape, this will also prevent them from bonding with the wearer’s socks.

3.15 Polar bear protection

3.14.3 Training

The group carried and frequently perused a superb first aid handbook for mountaineers. In addition, the group underwent a one day training session with a seasoned mountain rescue paramedic, the idea of which was to prepare the climbers for any eventualities.

It’s true that preparation can minimise risk and maximise survival probabilities in many situations such as hypothermia, burns or even infections, but when somebody is very seriously injured in the mountains, there is not a whole lot a first aider can do about it. The first aid book stated that “whilst an ice screw could be a life saving trepanning tool in the hands of a skilled neurosurgeon”, such procedures should not be attempted by amateurs (although it is the view of this group that anyone who has trepanned a skull using an ice screw IS a skilled neurosurgeon).

3.15 Polar bear protection

While we were in Kulusuk on the way out, the locals discovered a polar bear out on the floss and shot it. We were advised that our expedition area was much further South of typical polar bear habitat and that they spend most of their time out on the floss hunting and very rarely venture inland.

As our expedition area was inland, the likelihood of meeting a polar bear was slim. If we did meet one then it would probably be very lost and hungry, and only an accurate shot with a rifle would kill it. If we had taken a shotgun it would have merely been to scare it, as the chances of killing it with a shotgun are slim. So we opted to take a flare gun to scare polar bears instead, and it also doubled as a distress beacon. We were advised that if we did feel threatened by a bear, we could call the Tasilaq police who could shoot it from a helicopter, although we’d obviously never wish this to happen.

3.16 Emergency contingency

In the event of an injury, we’d have the option of treating the casualty using our first aid training and extensive first aid kit. For more serious problems we could phone for helicopter rescue, by the police in Tasilaq, using our satellite phone. If this was not possible then we could set off our EPIRB radio beacon to summon help as a last resort.

A full risk assessment was carried out as part of our planning, this is available on our website.
3.17 First aid training

We looked into going on a mountain first aid course, but due to our limited budget decided we could not afford it. So instead Steve was taught mountain first aid by his father, who has advanced training as part of a mountain rescue team. This, along with our general first aid knowledge and a mountain first aid book, was our first aid training.

Due to the remoteness of the region we were going to be travelling in we decided we needed to bring a good selection of prescription anti-biotics and painkillers. These were prescribed for us for the expedition by a doctor (Mark's brother) and paid for by the expedition. Everyone was instructed on the recommended uses and doses of these medicines by Mark's brother, and this information was copied into the front of everyone's diaries should it be needed.

3.18 Training

As part of our preparation for the expedition we all undertook some training. We all had fairly good levels of basic fitness through playing various sports whilst at university, however we also felt that we should try and do more specific training geared towards the expedition.

To this end, we decided to meet once a week at the indoor climbing wall at the Cambridge sports centre (Kelsey Kerridge) and have a progress meeting before doing some climbing. To prepare for pulling sledge we got four old tyres from the local garage and bolted them together so that we had two pairs of tyres. We then had sessions dragging them round the local park, to try and simulate dragging sledges.

To check that we would work well as a team we had a few trips to the Peaks to go climbing and also spent a weekend away in the Caingorms in February camping in Coire an t'Sneachta. Sadly there was too much powder and we were unable to do any Scottish routes, however it did give us practise camping in the snow and an insight into how difficult it could be to travel without any snow shoes or skis in deep powder.

3.19 Permits and paperwork

An expedition permit is required for most Greenland expeditions and this can be obtained through the Danish Polar Centre. The DPC website contains useful information on permit requirements for expeditions depending on the destination in Greenland and the purpose of the expedition (e.g. mountaineering, scientific research etc.). Application deadlines can also be found on the DPC website. At the time of writing this report most expedition permits must be obtained at least 3 months prior to the start of the expedition (6 months for biomedical projects).

3.20 Insurance

The process of obtaining an expedition permit may be more complicated if you are heading to the national park in North-East Greenland.

The Danish Polar Centre requires that most expeditions have extensive search and rescue (SAR) and air-evacuation insurance. The level of cover required will usually necessitate special arrangements with your insurance company; BMC insurance can arrange the necessary cover for an additional premium.

The Danish Polar Centre introduced some new regulations in 2006 stating that expedition permits and full SAR/evacuation insurance are no longer required for teams operating within 150km of Tasiilaq. Since our destination was within this zone we benefited from these new regulations (we actually modified our plans slightly to take advantage of them; see section 2.2). Ultimately we saved about £250 - £300 per person in insurance premiums (see section 3.20).

Expedition parties must also apply to the DPC for licences for radios and firearms at least 3 weeks prior to the start of the expedition (at the time of writing this report). If you intend to take an EPIRB distress beacon (and you are strongly recommended to do so) you must also register this with the DPC. Greenland Expedition Specialists arranged this on our behalf.

3.21 Food

On any expedition, food is one of the most important considerations: It affects performance due to its nutritional impact and the weight of carriage, but most importantly food has a large bearing on morale.

From reading various books including Mountaineering and Leadership (Langmuir 2000), the average adult male requires 2500 calories/day; a mountaineer requires 4500 - 5000. Although this was our aim, we found it very difficult in practice to reach this target and maintain a sensible calorie to weight balance.
In light of the high cost of freighting we only took a small amount of food from the UK, which was freighted over by GES. This consisted of a selection of ready-made meals. The bulk of the food was bought in the local store\textsuperscript{7} in Kulusk. Below is a rough indication of the variety of food we had and some comments about our choices.

Having bought our food, we repacked it into daily ration bags. This meant very little effort was needed to sort out the food each day. It also ensured we did not overeat at the beginning of the expedition and were able to monitor our food supplies. We effectively took about a week’s extra food with us in case of emergencies. This proved, however, to be essential when we began to loose food to the foxes.

We rated the food out of ten in terms of calories, tastiness, ease of use etc.

<table>
<thead>
<tr>
<th>Breakfast</th>
<th>Rating</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forridge</td>
<td>9</td>
<td>Highly recommended, filling, slow energy release, quick to cook. For a bit of variety see “additions section”. (In a particularly low moment we tried adding butter and cornflakes making it inedible.)</td>
</tr>
<tr>
<td>Cereal</td>
<td>5</td>
<td>We brought a couple of boxes of cereal for variety, but ended up eating them as a snack at lunch or adding them to hot chocolate or pudding.</td>
</tr>
</tbody>
</table>

Table 12: Expedition breakfast food list

<table>
<thead>
<tr>
<th>Lunch</th>
<th>Rating</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Ships biscuits</td>
<td>9</td>
<td>Absolutely brilliant. Almost indestructible. Travelled well, dried well when wet and provided a filling lunch. A favourite of all.</td>
</tr>
<tr>
<td>Ryvita</td>
<td>3</td>
<td>About a third of our biscuits were Ryvita. This was a mistake! It was a bad day when it was a “Ryvita day”. These were not filling at all and were completely inedible when wet; imagine soggy stale weetabix, impossible to even dry out and salvage.</td>
</tr>
<tr>
<td>Cheese</td>
<td>9</td>
<td>Very good. Kept well and could be melted into evening meals if left over.</td>
</tr>
<tr>
<td>Salami</td>
<td>9</td>
<td>We all looked forward to salami. Could have done with more, but weight meant this was not possible.</td>
</tr>
<tr>
<td>Figs</td>
<td>8</td>
<td>Very expensive (we spent £40 on figs getting 4 each every second day). However, very tasty and kept us regular.</td>
</tr>
<tr>
<td>Biscuit bag</td>
<td>5</td>
<td>A bag/day consisting of 6 squares of chocolate, 1 (\frac{1}{2}) fig rolls and some biscuit crumbs each. We could have taken much more chocolate and fig rolls. The biscuits were not worth taking, but were a good sweetener when added to hot chocolate as we cut the sugar a bit fine. For future expeditions I would recommend taking chocolate bars/packets of sweets (e.g skittles). As they can be eaten throughout the day and will provide more calories.</td>
</tr>
<tr>
<td>Raisins</td>
<td>8</td>
<td>About half a cup each every second day. Mostly we saved them for the rice pudding.</td>
</tr>
<tr>
<td>Peanuts sweet nuts</td>
<td>7</td>
<td>Good source of protein, but taste terrible if get wet.</td>
</tr>
<tr>
<td>Mackerel Gulf</td>
<td>7</td>
<td>This fish paste was a surprisingly tasty change. We only brought a few tubes, but was good given the dubious sounding name.</td>
</tr>
</tbody>
</table>

Table 13: Expedition lunch food list

\textsuperscript{7}Pileesuaq Supermarket http://www.pileesuaq.gl
### Evening Meal

<table>
<thead>
<tr>
<th>Main Course</th>
<th>Rating</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Selection of dried packet meals</td>
<td>7</td>
<td>These were shipped in for us by GES. They were tasty but bear in mind that the portion sizes do not account for the empty stomachs of hungry mountaineers.</td>
</tr>
<tr>
<td>Rice and a selection of packet sauces</td>
<td>9</td>
<td>Boil in the bag rice. Very good, very filling, lots of butter was added to the sauces to increase the calorie count.</td>
</tr>
<tr>
<td>Spaghetti and selection of packet sauces</td>
<td>9</td>
<td>Was perhaps the favourite meal of the expedition. Very filling, easy to cook and once again anything could be added to give a bit of variety and extra calories.</td>
</tr>
<tr>
<td>Polenta</td>
<td>4</td>
<td>Lacked any real substance, would not take on another expedition.</td>
</tr>
<tr>
<td>Soup</td>
<td>7</td>
<td>We brought two kinds. One was a thick, creamy soup, a good snack. The other kind was effectively a few strips of pasta floating in water. Not worth taking. We brought stock cubes which slightly enhanced the flavour.</td>
</tr>
<tr>
<td>Instant mashed potato</td>
<td>8</td>
<td>Only occasionally used as a main meal. Mainly used when left unsatisfied by a main meal, mash filled an empty stomach well. Light to carry, would not be without it on any expedition. Lots of different things can be added to give a bit of variety to a bland food. Needs to be cooked on a stove with variable heat.</td>
</tr>
</tbody>
</table>

Table 14: Expedition dinner food list

### Puddings

<table>
<thead>
<tr>
<th>Pudding</th>
<th>Rating</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pudding rice (μ powdered milk)</td>
<td>10</td>
<td>When coupled with spaghetti as a main course, this was the ultimate evening meal. It took a while to cook, but was well worth it. Especially good with a variety of additives (raisins, drinking chocolate).</td>
</tr>
<tr>
<td>Budding</td>
<td>8</td>
<td>We had no idea what this was when we bought it, just that it had a high calorie count. It turned out it was supposed to be cold custard. The first time we made it we followed the instructions (see photo below), which was a mistake</td>
</tr>
<tr>
<td>Pancake mix</td>
<td>7</td>
<td>Due to our lack of frying pan we had a few experimental cooking sessions until we got anything edible. Resembling fried breadcrumbs more than pancakes these turned out to be a hit when sugar and syrup was added. Constant minding and lots of patience needed with the cooking.</td>
</tr>
</tbody>
</table>

Table 15: Expedition pudding food list

Figure 7: Lachlan making Budding at Base Camp 1
### 3.21 Food

<table>
<thead>
<tr>
<th>Additions</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Milk powder</td>
<td>High in protein, essential for a creamy rice pudding. Only drawback was that the cans were rather bulky.</td>
</tr>
<tr>
<td>Salt</td>
<td>Essential for replacing the salts lost when sweating, but take less than you think you will need, a small amount of salt goes a long way.</td>
</tr>
<tr>
<td>Pepper</td>
<td></td>
</tr>
<tr>
<td>Sugar</td>
<td>Take more than you think you will need.</td>
</tr>
<tr>
<td>Syrup</td>
<td>When added to porridge a good way of getting an energy boost in the morning.</td>
</tr>
<tr>
<td>Mixed dried vegetables</td>
<td>A nice addition to make smash more interesting</td>
</tr>
<tr>
<td>Stock cubes</td>
<td></td>
</tr>
<tr>
<td>Tabasco</td>
<td>Essential!</td>
</tr>
<tr>
<td>Garlic powder</td>
<td></td>
</tr>
<tr>
<td>Butter</td>
<td>Good for trying to get in some extra calories.</td>
</tr>
<tr>
<td>Curry powder</td>
<td></td>
</tr>
<tr>
<td>Mixed herbs</td>
<td></td>
</tr>
<tr>
<td>Kendal Mint Cake</td>
<td>We only took one bar each and used it as our emergency rations. Would take more in the future.</td>
</tr>
</tbody>
</table>

Table 16: Expedition food additions list

<table>
<thead>
<tr>
<th>Drinks</th>
<th>Comment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hot chocolate</td>
<td></td>
</tr>
<tr>
<td>Tea</td>
<td>Lady Grey was a favourite</td>
</tr>
<tr>
<td>Coffee</td>
<td>As we were all “coffee-holics” we brought with us an MSR coffee filter. Coffee proved to be our little bit of luxury.</td>
</tr>
<tr>
<td>Alcohol</td>
<td>A small amount used to mark special points throughout the expedition.</td>
</tr>
</tbody>
</table>

Table 17: Expedition drinks list

### 3.22 Water

On previous expeditions Lachlan had used Mountain House dehydrated meals. He found that although they were a very good tasty meal, they had the disadvantage of leaving the eater with a messy wet plastic bag which has to be carried around. The question which has to be asked is whether you would prefer to have to wash bowls each night or carry around wet waste. The advantage of all our meals was that they enabled all of our waste to be “dry waste”.

For transporting food, we bought a series of Nalgene bottles of differing sizes. These were very effective. We also used a lot of small plastic bags. Although secure, these were hard to open with cold/wet hands. It might be advisable to look into taking double topped zip-lock bags.

### 3.23 Fuel

When preparing for the trip we used various sources to try and calculate how much water we would need and therefore how much fuel we would require to melt snow. We were using an MSR XKG stove and so worked from the figures and suggestions on the MSR website for the amount of fuel we would need to melt snow.

This meant that we ended up taking 25 litres of white gas with us. This turned out to be complete over-kill, as we found running water sources at many of our camps. We ended up only using 13.5 litres of fuel and taking the rest back to Kulusuk with us.

### 3.24 Waste

One of the more entertaining train journeys we went on was when travelling from Cambridge to London for the MEF/BMC interview. We caught many puzzled glances as the four of us discussed our potential waste management techniques and drew up an intricate spider diagram to present to the interviewers. We had a comprehensive understanding of all the human and other waste options available to us, having read the Lancaster expedition report. Many of the solutions we dismissed due to the negative impact we perceived them having on health and hygiene.
3.24 Waste

3.24.1 Human Waste

The way in which we planned our expedition meant that we did not intend to stay in any one camp for more than a week. This considerably reduced the impact our human waste had on the environment. How we created our latrine area varied depending on the terrain we were in. When load-ferrying we were mostly on dry glacier, so our latrine was a suitable crevasse in the glacier. On arriving at each camp we quickly identified a latrine area downstream, scouted out a safe route to it, and proceeded to dig a latrine protected from the elements by snow walls on three sides.

![Image of Lachlan modelling the toilet pit with privacy wall](image)

Figure 8: Lachlan modelling the toilet pit with privacy wall

3.24.2 All Other Waste

All other waste was put into black bin bags and carried back out with us disposed of in Kulusuk. As mentioned earlier the food section (see section 3.21) our choice of dry food such as pasta, meant rather than carrying out soiled plastic, such as would be the case with boil-in-the bag meals, we just ended up having to wash our pans a little more often. Although we accept the argument that this would produce a large amount of grey water, the impact this had on the environment was reduced as birds and foxes soon cleaned up after us. There was not enough waste food, nor were we in one area long enough, for them to become dependent on us.

3.25 BBC

While looking for ways to publicise our expedition, mainly to give our sponsors some more exposure, we looked into getting onto the TV. It turned out that the BBC website had a “be on a show” link at the base of their main page, so we applied to a couple of programmes. At the same time we discovered the BBC Video Nation website. This is a selection of short films made by people in local areas with help from the BBC. We applied to the program and managed to get hold of a video camera to make a short film about our expectations, of and training for the expedition. This is now on the internet and a there is a link on our website.

After this first film, we managed to secure a video camera for the expedition itself. The footage we shot in Greenland is, at the time of writing, being edited into a series of short films by the BBC, and James is also editing a slightly longer version for an expedition DVD.

The camera was lent free of charge, we only needed to make sure we had a charger which would be able to take the correct batteries and could be rigged up to our solar panels.
4 The Expedition

4.1 Expedition overview

The expedition can be broken down into three main stages: getting to our climbing area, climbing and getting back out. Getting into the climbing area took us five days and required ferrying large packs up a heavily crevassed dry glacier. Once we got to the snow line progress was a lot faster since we could load all our kit into the pulls and drag them, so we didn’t have to keep covering the same ground over and over again.

When we were in an area we planned to climb in we set up base camps. We then either went on day climbs from these camps or sat around waiting for it to stop raining, as happened all too frequently. We spent three weeks climbing peaks and moving base camps. During this time we climbed nine peaks, eight of which were first ascents. We also had a couple of climbs which we abandoned due to lack of time or the weather closing in.

On the way back to the boat drop off point we were able to cover ground far more quickly because we knew the way and also because we had far less food to carry. A week was allowed to get back to the boat drop point, but it took less than this and we had a couple of rest days at the end of the trip. We covered the ground on the dry glacier in two large loads each over two days.

4.2 Diary excerpts

21st July Got up at 4am to catch the 7.30am flight from Gatwick. Mrs. Low cooked us a full fried breakfast before we piled all our kit into two Landrovers and headed over to Gatwick. Met the BSES expedition to Greenland on the flight and had a few G&T’s.

The Youth Hostel in Reykjavik had us booked in for the wrong day, but we managed to get rooms and made sure of our booking on the way back. Had a walk round Reykjavik, left amazed at how expensive everything is, and had a look at the cathedral before cooking dinner.

22nd July Got an expensive taxi (£20) to Keflavik airport and had to wear almost all our kit to get within the 20kg baggage limit. The plane was a Focker F80. Met a French group who were off to Constable Pt for a kayak expedition. In Kulusuk we got the local taxi (a pick-up) from the airport to the place we were staying and met Matt Spenceley (our logistics guy).

Went sea kayaking with Matt and then cooked one of the ready meals we would be taking with us on the expedition, stayed up late chatting with Matt about various aspects of the trip.

23rd July Had a lie-in and woke up massively dehydrated due to the temperature at which the house is kept. Sorted out our kit in the store under the house and went cracking after lunch and put up some new routes.

24th July Bought a huge amount of food from the local shop, and documented the calorific value of it all to try and make sure we had enough food. One of the main items we bought was 20kg of porridge! Met two kayakers Matt was organising logistics for who were also staying at the house and arranged to go to the all-you-can-eat buffet at the hotel in the evening.

Buffet was great with some wonderful fish and squid rings, but we had to borrow a small amount of money off the kayakers as we had spent all our cash on food!

25th July Woke up early and carried all our kit down to the dock, with the help of a wheel-barrow from Georg, and loaded it all into two small boats. Got some food for the journey from the shop (including Danish pastries) and it took an hour and a half to get to the glacier.

Load-ferried all our kit to our first camp up difficult moraines to our first camping spot, and had our first encounter with a very bold arctic fox.

Figure 9: Mark and Lachlan in one of the boats on the journey to the glacier

26th July Got up late as it was raining initially, then started load-ferrying up the slightly easier dry glacier, with packs so heavy we could only just get them on unaided. The end result of the day was that we managed to move all the kit a further 2km up the glacier in four loads, also rigged up some cord in the tents to try and dry stuff off.

27th July Woke a bit earlier and went for a recce having decided that through the binoculars it looked as though the inside of the corner of the glacier could
be the best bet. Having got there and decided against it we scaled a steep scree and grass covered spur to get a better view, and discovered it would be much easier to move further into the middle of the glacier.

The scoping took longer than we had hoped and so we only spent the afternoon ferrying. However with the size of the loads, when Mark and Lachlan went back to get the final load, Steve and James took another load to an advanced position and scouted the next day's route.

Steve lost his spork in a crevasse and also managed to throw Mark's cup into a crevasse, which he was then made to fetch. Much digging did not retrieve the spork.

28th July Moved fairly easily up "The Motorway" and travelled further than we had expected, so set up camp and left the final group load to collect the next day. We finally figured out exactly where we were in relation to our satellite maps, which was difficult since there were no grid lines on them.

29th July Woke to rain again, so had a later start. Collected the final load from the previous depot then set about load-ferrying the kit in two loads on the sledges. Reached the snow line at 350m and decided to camp shortly after this. Steve and Lachlan fell in a couple of crevasses up to their waists, but we were roped and crossing the crevasses perpendicularly so there was no real danger.

30th July Got up relatively early, but it took a while to pack the pulks. The going was tough, but a lot easier with the snow shoes, as we were pulking straight up a hill. We gained 520m height by lunch and stopped at the pass at the top of the "Horseshoe". Over lunch we decided that with the fresh water supply here and the dry rocks to sit on, it would make a good first base camp, so set about digging the tent pits and got everything out to dry in the 20°C heat!

31st July More rain, so we dug a shelter and spent the day trying to stay dry. Overnight a fox had managed to get into our food and destroyed a day's rations.

1st August Still raining in the morning, so had breakfast in the shelter we had built. In the afternoon the rain cleared and the sun came out, so we got everything out to dry on the rocks and packed up for going climbing the next day. Spent the afternoon reading and playing cards.

2nd August Got up early and set off to climb Mount Reid. Arrived at the base of the ridge at 11am after a 2 hour walk. Scrambled up the initial loose rock to the ridge, then continued up the ridge moving together and placing runners wherever the exposure was too great. The ridge was simple with only a small piece of rock climbing right at the top. On the way down it started raining again and we managed to get off the ridge by the time it had started properly bucketing. Got back to the camp early afternoon rather wet and resorted to sheltering from the rain again.

3rd August Woke up to rain again and spent the morning hanging out all the wet gear to dry in the breaks in the rain and hurriedly packing it all away again when the rain re-started. Due to all the rain, where the water had been running off the tent, the snow had melted massively, so Steve and James dug a new pit for their tent. We estimate that about 1ft of snow has melted in the last couple of days.

4th August Lost another two bags of food to the fox overnight, despite Mark and Lachlan's best efforts to scare it away through the night. Spent the morning clearing up after the fox and devising new ways to secure our food. After lunch we set off to climb a snow gully on the horseshoe, but since it had melted so much decided to try the rock face instead. At 7pm after a lot of pitches (at roughly VS) we were nowhere near the summit so decided to traverse off and down the gully. If we had started earlier we might have summited.

5th August As usual it rained in the morning, so we had a late start after the previous day's climb. The fox had managed to drag our rubbish bag out from the tent...
Figure 11: Sheltering from the rain at Base Camp 1

porch and had liberally distributed it across the glacier. In the afternoon the rain eased and Mark and James went for a stroll to see if they could find the ice screw we had lost on the first day and decided to do some ice climbing on a large (40m) vertical ice wall near to the camp. Spent the rest of the afternoon playing on the ice wall and refreshing crevasse rescue technique.

6th August Sunshine! Woke to a glorious morning and decided to climb Mount Mounsey. Finally got all our gear together and set off at about 11am. Took a line up the snow patches on the north face, leading to rock climbing to the summit. Then the descent was a nasty amount of scree skiing back to the saddle which we gained to start Mount Reid.

7th August Got up to an overcast sky and decided to try a gulley on the horseshoe. Just as we were setting off it started to drizzle, so we all got kitted up in full waterproofs. As the day wore on the rain got worse, but as it had stopped us climbing so much we decided to try climbing in the rain. After having lunch, soaked, hunched half under a boulder we decided that it was unsafe and to descend. Once we had got back to the tents the rain got even harder.

8th August Got up and dried off all the kit in the sunshine before packing it into the

sledges and moving camp to the Idrac Glacier about 3 hours pulking away (5km). The fox failed to get into our food overnight with the new method of 'double sledging' it then burying the lot with stones.

9th August Light rain all day, so we spent it digging a shelter and toilet, and playing cards in the tents.

10th August Got up early to a cloudy but bright day and decided to climb Mount Dynes. Managed to leave camp by 8am and headed up the circuitous glacier at the start of the route across some huge snow bridges. The route then covered a small stretch of rock before the second snow field, where we broke out above the cloud into the sunshine. After this there was some more rock climbing to the summit where we had lunch. The descent was quite fast and we got back to camp by 4pm and got everything out to dry and got the solar panels going.

11th August Woke early to a clear sky and decided to do a route Lachlan had been looking at through the binoculars on the Horseshoe. The route was loose and exposed all the way to the summit, and the descent involved negotiating a vegetated gully on equally loose rock followed by a gisaccade down a snow gully. We got back to the camp just before 10pm and had some soggy spaghetti.

12th August Had a rest day after the climbing on the previous two days, and especially the stressful climbing on Lachy's Jaws the day before. It rained in the morn-
ing and then cleared to sunshine in the afternoon. We all did some washing, checked over our food supplies and serviced the stoves. The sunshine also allowed us to get the Satellite Phone fully charged up.

13th August  Moved base camp through a pass only shown on the satellite photos, and not on the map. We spent the first three hours slogging up a hill to the pass then sledged down the other side, riding our pulks. We got to a new camp at approximately 3pm and started digging the camp. At about 10pm we had finished digging in the tents and building a shelter pit, also managed to get the camcorder battery charged up in the sunshine so we can use it again tomorrow.

14th August  Got up reasonably late after the previous day’s exertions and set off up one of the peaks we had spotted on our pulk over. Decided not to climb the other peak we were considering as we were all exhausted and it looked like a dull snow plod. The down climb was a bit loose, but not as bad as some of the previous climbs we had done.

15th August  Got up early and off promptly (only took just over 2hrs to get up and going) and headed over to a pair of peaks we hoped to climb. After snow shoeing as far as we could we switched to crampons and then back to boots to cross a scree band. After ascending a second snow field we continued up the rock to the summit. On the descent James was trying to put something back in Steve’s bag when they dropped the binoculars, which went bouncing down the glacier into a crevasse. James then descended and managed to retrieve them, however they had been bent and gave the impression of looking cross-eyed when you looked through them. Having descended to the scree band we then climbed the second peak which was easier and on worse rock.

Figure 13: Crevasse crossing on the ascent of Mt Dynes

Figure 14: View out to sea from the summit of Mt Dynes

15th August  Moved camp again today, left the old campsite at approximately midday and headed off across the glacier to an incline. Just before the second incline there was a wide watery patch which you couldn’t help but get soaked feet while crossing. When we pitched camp we managed to dig tent pits that were deep enough for the tops of the tents to be completely below the surface of the snow.

17th August  Rain again. Planned to be a rest day due to the last few days’ activities, so we spent it digging a toilet pit and a group shelter in which to shelter from the rain. The temperature dropped dramatically, however it still just rains!

15th August  More rain. Having woken up early to check the weather for potentially going climbing we discovered it was raining heavily and there was zero visibility. Despite this we got ready for going climbing on the off-chance that the weather would clear. It didn’t. Spent the day in the tents reading and doing some filming, appearing occasionally to huddle in the group shelter for a brew or some food. Mark and Lachlan’s tent is proving to be less than waterproof and they have both been sleeping inside their bivvy bags in the tent to try and stop their sleeping bags getting soaked.

19th August  Got up without the sound of rain on the tent! But the visibility was practically zero, so we debated for a while whether to go climbing and as the
4.2 Diary excerpts

cloud lifted a bit we decided to go ahead. On the ascent of the glacier the weather got strangely warm and we were all sweating furiously. Having got to the top of our first peak and found an old sardine tin (which we took down with us) we were disappointed to find obvious signs of previous ascents. On the way to the second peak Lachlan fell 10m into a crevasse and almost took Mark with him. We got two ropes onto Lachlan and dragged him out, a little shaken, but otherwise unhurt. After continuing a little bit, and almost everyone falling some way into a crevasse, we decided to bin the climb due to the danger of the melting crevasse bridges.

20th August Got up promptly to find the visibility restored, so decided to climb the highest peak on our map at 1588m. Set off at about 9am for the 1hr approach, before heading off up a steep snow field. This then led to a rock section and then an ice ridge to take us to the rock ridge. We followed the rock ridge to the summit, which required a steep section of climbing to gain the summit. James lost his watch on the summit, and since the alarm was set for 6am, and would go off every day until the battery died, we named the summit ‘6am Peak’. From there we reversed the route but opted for the scree slope instead of the ice ridge and glissaded the snow slope. Finally got back to camp just before midnight and cooked dinner.

Figure 15: Covering water-logged ground pulking, getting soaked frozen feet

21st August Had a rest day after the long day previously, and the sun was out so we got a chance to air our sleeping bags, dry stuff out and charge the batteries. We prepared for the pulking in a couple of days time doing stuff like splitting the

diary excerpts

large rubbish bag into three smaller ones, and filled all our water containers from the sledge we had been using as a solar still.

22nd August Got up early to go climbing, only to hear the all too familiar sound of heavy rain on the tent. Had a reduced syrup ration on our porridge in the morning as we’re down to the last bottle and went back to the tents to snooze and read as usual. Tomorrow is the last scheduled climbing day, however if it’s grim we’re just going to start pulking back.

23rd August Started the day with rain again, and our hopes of getting another climb in destroyed. So we loaded up the pulks, broke camp in the pouring rain and set off as it started sleeting. We stopped at approximately base camp three for lunch and continued on to the site of base camp two. This required the descent of a large, and crevassed, glacier. This was made difficult by our rope traces causing the sledge to want to run away. We set up camp incredibly cold, wet and exhausted all having repeatedly pulled our sledges out of crevasses.

24th August We were woken at about 7am by the sun shining through the tents, so we got a huge washing line set up and got everything out to dry. When we finally set off pulking we made it to base camp one in one push. After a break, we continued to about where our icy puddles camp was. This was mainly due to the fact that we couldn’t pulk any further as the glacier was dry from then on.

25th August Got up early and packed all our non-essential gear to take down to the boat drop off point. It took 4hrs to make the 6km (as the crow flies) to the boat drop point and when we got there we could clearly see where the French camp had been with the rocks they had moved to create a table and chairs. We then went back to our camp for dinner having stashed the kit securely in sledges.

26th August Carried the rest of the kit, either in or strapped loosely to our bags. Spent a bit more time on the journey doing some photography and filming. Got to the boat drop point fairly easily as we knew the way much better. When there we set up a washing line again to dry out all the kit. In the evening we were visited by a completely fearless arctic fox, which persisted in sniffing round our camp and wouldn’t be deterred by anything. Had some whisky and cigars to celebrate the end of the trip and noticed exactly how much rubbish the French group had left behind. We tried to clear most of this rubbish up.

27th August Had a rest day doing some washing, battery charging and trying to deter the foxes. One of the solar panels was destroyed by the foxes chewing through the cable and they proved to be a general nuisance.
28th August Spent the day resting again and watching huge lumps of the snout of the glacier fall off. In the evening we went up to a raised grassy mound to bivvy as it was a clear night. We got to see an impressive display of the Northern Lights reaching from the far end of the glacier all the way to the other end of the fjord.

Figure 16: The Northern Lights

29th August Since today was the first potential pick up day we moved all our kit down to the waters edge and spent the day having brews, reading and sleeping in the chilly sun. In the evening we moved back up to the grassy spot to bivvy again, but didn’t get the Northern Lights on this occasion.

30th August We got up fairly early and had breakfast before packing up our bivvies and heading down to retrieve the sledges we had fox-proofed by the water. No sooner had we done this than two boats came into view across the fjord. We hurriedly tried to get them loaded, but half way through loading them a large chunk of the glacier fell off and the boat raced back into the fjord to avoid getting dashed against the rocks. Once loaded it was a simple journey back to Kulusuk. Went to the shop and bought a load of food we had been fantasising about and spent the evening chatting with Matt Spencely and two Canadians he had been guiding over a few beers.

31st August Had our first full day in Kulusuk sorting through our kit, cleaning it (especially the stoves) and drying out the pulks for storage. We were cooked octail soup for dinner by Georg’s wife and had salmon too. Steve, James and Lachlan walked to the hotel to get some postcards and decided that the group could walk the 45mins to the airport rather than pay the £15 for the taxi.

1st September Got an early start and had a large amount of porridge for breakfast before walking quickly through town to the airport to avoid the end-of-the-month drunks! After waiting around for a while at the airport, we checked in our bags and managed to get our hand luggage checked into the hold at no extra cost. In Reykjavik we decided to avoid another expensive taxi and walked the 45mins to the hostel, then booked to go to the thermal spa the next day.

Figure 17: Getting clean at the Blue Lagoon spa in Iceland

2nd September Went into town early to find that nowhere was open before 10am and so went to the spa without any food. At the spa we all had our first proper wash in about six weeks, and then caught the 4pm bus back. Once back we organised a hire car for the next day and planned where to go and what to see. Lachlan’s name was drawn from the hat to drive us for the day and we sorted out the hire car that evening.

3rd September Had another early start and got going around the route we had planned the previous day taking in the Icelandic Parliament, Geysir, Gullfoss waterfalls and a crater lake before stopping at a picturesque church by the sea. We got back in time for a drink at a bar to finish off the last of our Kronen.

4th September The alarms went off at 3.45am so we could catch a 5am bus and be at the airport for 8.30am. We got to the airport before sunrise and spent our wait racing the scooters meant for the staff to get around the airport. When we came to check in the scales weren’t working on the desk, so we piled all the
4.3 Travel notes

For the flights we had a baggage allowance of 23kg per person in the hold (for British Airways but only 20kg for Air Iceland), so before we set off for the airport we had separated everything into what could be allowed into the cabin of the plane and what had to go in the hold. We then filled up the four hold bags to the 23kg limit on our initial leg to Iceland.

At the airport we checked in keeping our “hand luggage”, which probably weighed as much as the hold luggage, out of sight. Then when we were in the queue for passport control one of the staff questioned us about the size of our hand luggage, so Steve demonstrated that his bag, which was the same make and model but not stuffed to overflowing, fitted into the little box for checking the luggage size, while the rest of us hurried through.

Then when we came to board the plane Mark was asked to demonstrate that his bag would fit in the box, at which point he unloaded almost everything from it, blocking everyone else from getting on the plane, and stuffed it into the box before refilling it again. This caused so much confusion that the stewardess just wanted to get us out of the way, so we got on the plane without paying any excess.

In Iceland we adopted a different approach, which was to try and wear absolutely everything we possibly could with all the pockets stuffed, to the amusement of the French kayaking expedition on the same flight. This turned out to be completely pointless as they didn’t weigh our hand luggage anyway.

On the way back from Greenland the weights of our bags weren’t checked, so James asked if we could put our hand luggage in the hold as well, which we did, making the journey much more comfortable. On the way back from Iceland we happened to queue up in front of the check in desk whose scales simply read ‘Error’, so we piled everything we could into our hold luggage and put it on.

To get to the glacier snout we chartered two small boats to take us there and drop us off. The journey in these boats was amazing, with the experienced helmsmen steering effortlessly between all the huge icebergs. The scenery was stunning, with huge mountains towering out from the fjord. However if anyone else is considering a similar journey then our advice would be to wrap up very warm, as sitting completely still for a number of hours combined with the wind chill due to the speed of the boats leads to a very cold journey.

4.4 Weather

When researching what we thought the weather might have in store for us, we were assured that the East coast of Greenland has one of the most stable weather systems in the world. This would mean that we either got long spells of miserable weather, or that it would be glorious for a prolonged period. As it turned out this was completely wrong.

The experience we had was that when it precipitated, it rained rather than snowed. However when the sun shone the temperatures could reach as high as 20°C. We were advised to look out for lenticular clouds as a sign of bad weather approaching, but we did not spot any during our expedition.

4.5 Terrain and ground conditions

The large amount of rain that we experienced had a profound effect on the environment. It meant that a lot of the snow melted, so when we had pitched camp at Base Camp 1 the tents were pitched on a couple of feet of snow. However after a few days the snow had completely melted leaving one of the tents perched on a snow pedestal on its own. We roughly calculated that the snow had melted three feet in about a week.

The thaw also had an effect on the safety of the crevasses bridges. After a day’s warm weather we went to climb Mount Sardine, and in the process fell varying amounts into crevasses, with Lachlan taking a full ten metre plunge into one of them. It also meant that the position of the snow line moved due to the thin snow cover.

4.6 Navigation

We used a variety of navigation techniques throughout the expedition. We bought from Stamford’s a 1:250000 map of the Tasilaq area (published by Sagampe). This provided us with a useful overview of the area, in particular the coastline and fjords from Kulusuk to our area. Although this had lots of use when in the planning stages of the expedition and provided us with spot heights of peaks, it was not topographically accurate given the dynamic nature of the landscape. As a result we found navigation much easier by using the aerial photographs provided by GES of our area.

Once in the field, macro navigation was relatively easy. Given the size of the glaciers we effectively used them like a road network. Micro navigation was harder and involved a different technique. During our time on the dry glacier most navigational difficulty arose when load ferrying. We often had to make about seven trips a day over the same ground, but seldom ended up taking exactly the same route! When ferrying loads, initially we would take a light load and find a way through the crevassed sections, using a GPS and taking waypoints on the way. Once a route had been established, we would use the GPS to guide us through the crevasses on subsequent ferries.

Once we had identified a peak to climb we would visually chart a route up peaks, getting height information from the 1:250 000 map and terrain information.
4.7 Typical base camp arrangement

form the aerial photographs. However we found great difficulty accurately judging distances by sight and also judging slope angle and difficulty. Binoculars were of limited help in this respect. Much of the route finding once on the climb required skill and judgement.

4.7 Typical base camp arrangement

Base camps quickly developed a standardised style in order to minimise construction effort and maximise shelter. There were variations depending on how long the group stayed at a given camp and on how much shelter was required. Constructing an elaborate dining area, complete with an arching vaulted chimney, made an entertaining rainy morning activity.

![Diagram of base camp arrangement]

Figure 18: Typical base camp arrangement.

4.7 Typical base camp arrangement

Notes on diagram:

A One of two tents.

B A snow wall. It was found that the most efficient way to construct such a wall was to have one man cutting blocks from the upper layers of snow, one or two men collecting the blocks and/or passing them, and one man placing them. The tasks can be rotated to make sure everyone stays warm.

C Tarpsulin.

D Length of cord stretched tight to act as a ridge pole. Ski poles were used to tension this rope and to prop up the ends of the ridge.

E A gap to act as a chimney; the cooking area was cut into this wall of the shelter.

F Ice axes or sections of ski pole were used as anchors.

G & H The tent pits; dug as deep as the snow would allow, ultimately aiming for the top of the tent to sit below ground level.

I Steps cut down to the tents and to the shelter.

J Fox-proofing measures; and upturned sledge with all the goods packed securely in the sledge bag; snow or rocks piled around the edge to make it more secure.

K Floor of the shelter pit; again, dug as deep as the snow will allow.

L Seats dug out of the snow to a slightly shallower depth than the floor.

Note: Latrine typically situated a fair way from camp, downstream of any water sources. The safe route to the latrine should be scouted for crevasses and marked out. The group built a snow wall adjacent to the latrine for shelter and privacy.
4.8 Route descriptions and photos

4.8.1 Mount Reid

Date climbed: 2nd August 2006
Height: 931m
GPS Coordinate of peak: 66°4.465/36°8.717
Grade: PD

Route Description:
Ascend the steepening snow slope to the shoulder between Mt Reid and Mt Mounsey. Gain the ridge through unstable ground and continue along the ridge to the summit, with one small piece of technical climbing near the summit. Descend the ridge directly to the shoulder, possibly requiring a short abseil.

Photo of route:

Figure 19: Route up Mount Reid

4.8.2 Mount Mounsey

Date climbed: 6th August 2006
Height: 1001m
GPS Coordinate of peak: 66°4.085/36°8.300
Grade: AD

Route Description:
Climb the lower snow slope diagonally to the left, then over a rocky area and onto the second snow slope. Follow this to the top and then trend left across the rock to the left hand corner. Follow the ledge round the corner and up a short bit of rock climbing. Continue over the rock to the faux summit, then scramble the last section to the flattish summit. We descended via the saddle between Mount Reid and Mount Mounsey.

Figure 20: Route up Mount Mounsey
4.8 Route descriptions and photos

4.8.3 Lachy’s Jaws

Date climbed: 11th August 2006
Height: 1117m
GPS Coordinate of peak: 6°6.459/36°7.988
Grade: AD
Route Description:
Ascend the snow gully almost to the top before breaking out onto the rock on the right hand side just before a small waterfall. Continue up the loose and unstable death climbing until the second gully is gained. From there top out at the saddle, then start up the crumbling and chossy ridge until the rock improves. Some exposed climbing leads to the summit. From there descend on the left hand side heading down the other side of the mountain, pass behind the next peak on flat ground then descend the couloir to the right.

Figure 21: Route up Lachy’s Jaws

4.8.4 Mount Dynes

Date climbed: 10th August 2006
Height: 1242m
GPS Coordinate of peak: 66°7.461/36°2.970
Grade: PD
Route Description:
Ascend the circuitous glacier to the crest, then head left and up a small rock section to the second snow field. Ascend this then some more rock before cutting left across some black rock and up to the summit. Descent is the reverse of ascent.

Figure 22: Route up Mount Dynes
4.8 Route descriptions and photos

4.8.5 Sara’s Left

Date climbed: 14th August 2006
Height: 1110m
GPS Coordinate of peak: 66°11.485/36°3.920
Grade: PD

Route Description:
Climb the steepening couloir to a patch of 70 degree ice towards the top, then head right along the ridge to the second peak which is the highest. It is then possible, but not recommended, to descend the other side down some steep rock and then down another couloir.

Figure 23: Route up Sara’s Left

4.8.6 Lesser Guf

Date climbed: 15th August 2006
Height: 1152m
GPS Coordinate of peak: 66°10.843/36°7.979
Grade: PD

Route Description:
Gain the saddle through a slog up a couloir then head right and up the easy but loose rock to the summit. Descent is ascent reversed.

Figure 24: Route up Lesser Guf
4.8 Route descriptions and photos

4.8.7 Greater Guf

Date climbed: 15th August 2006
Height: 1231m
GPS Coordinate of peak: 66°10.445/36°7.210
Grade: AD-

Route Description:
Ascend the couloir to the shoulder then head left along the ridge and up a second steep couloir. Then continue on right up the final rock ridge, which is easier than it looks, to the flat topped summit. Descent is ascent reversed.

Figure 25: Route up Greater Guf

4.8.8 Mount Sardine

Date climbed: 19th August 2006
Height: 1326m
GPS Coordinate of peak: 66°16.436/36°5.947
Grade: PD-

Route Description:
Climb the crevassed glacier spiralling round to the left and up the snow ridge, followed by a rock ridge to the summit. Collect any rubbish left there by previous expeditions and reverse the route to descend.

Figure 26: Route up Mount Sardine
4.8 Route descriptions and photos

4.8.9 6am Peak

Date climbed: 20th August 2006
Height: 1589m
GPS Coordinate of peak: 66°14.890/35°58.924
Grade: AD

Route Description:
Take the snow slope in the gap between two mountains and ascend this until it turns into an easy angled sharp ice ridge. Ascend this and then a rock ridge to the initial mini summit. Then descend and re-ascent staying to the left hand side when the rock steepens. Just before the summit there is a short section of vertical rock. Descent is the reverse of the ascent, but stay left of the ice ridge on the rock for a quicker descent.

![Route up 6am Peak](image.jpg)

Figure 27: Route up 6am Peak

4.9 Drying wet gear

4.9.1 Drying wet gear

One of the most pervasive elements of the whole expedition was the rain. This meant we spent a lot of time in wet clothes. We all adopted the policy of having one set of dry clothes kept safely in a dry bag for use in the tent. In order to dry small items such as gloves and socks we set up a clothesline in each tent.

![Washing line](image.jpg)

Figure 28: Washing line made from ab-tat and ski poles

During the dry spell after a period of heavy rain we set up an external clothesline using our walking poles and dried out everything as much as possible. This included turning the tents upside down, and even drying out the wet food. If we had not done this a lot more food would have been lost to the damp and moisture.

The hardest things to get dry were our boots; all of ours were permanently wet. We tried a variety of different techniques to keep our feet dry, such as wearing plastic bags over our socks. This kept out the water well, but was very slippery when walking. In the end we resigned ourselves to putting on wet socks in the mornings.

A further unexpected problem was the level of condensation inside the tents. Although we kept the vents open most night, most mornings the ground sheet would be soaked with condensation, which would make our sleeping bags wet. In addition to a therm-a-rest we had taken some cheap rollmats with us. These served as an excellent way of absorbing some of the condensation. We would certainly advise future expeditions to take extra roll mats to cover the whole floor of the tent. They are cheap and very lightweight.

4.10 Gear comments and recommendations

Whilst in the field, during a particularly rainy and cold afternoon, the team decided to make a list of all the equipment we were glad of, and all the things we wish we'd thought of. The following section consists of random points which came to us at that cold time.

General note on weight allowance:
4.10 Gear comments and recommendations

- The expedition carried with it over 200kg of rations. In view of this, it became evident that perhaps our self-imposed limit of one book each was a little unnecessary (especially after the fifth read of the first aid manual). The point is that leaving that extra last behind might be false economy when one is carrying so much weight anyway. Little luxuries may make an enormous difference.

Clothing:

- More socks! As mentioned above, for the sake of a few extra grams, an extra pair of socks may spare a cold Arctic explorer great hardship and allow him to remain in communication with his toes for a few extra weeks. In addition, consider the use of insulating in-socks, as these also seem to have a beneficial effect.

- It goes without saying that the expedition should invest in high quality waterproof clothing. We found “Gore-Tex” and “eVent” fabric garments to perform extremely well. A simple repair kit may be useful in order to prevent crampon damage from causing lasting discomfort.

- We experimented with an item known as a “bivi-boot”. These wind-proof, fleece-lined booties proved an effective means of re-establishing that all important toe-brain communication link overnight (i.e. warming up one’s frozen feet). The bivi-boots were an inexpensive and yet invaluable addition to our kit list.

- Following on from the point about weight limits, some more substantial camp foot wear would have been useful. Although bivi-boots were warm, wearing them about camp, even under flip-flops, would get them wet and therefore render them useless. Some light trainers should be included if weight allows, or at least some decent quality sandals which will take a bivi-booted foot properly.

- Montain extreme smocks come highly recommended.

Equipment:

- A six foot by eight foot tarpaulin will allow the expedition to put a roof on a dug-out shelter. This will provide a dry place to eat lunch on a rainy day. Tent foot-prints are a good idea to prevent sharp icicles from puncturing groundsheets.

- Alcohol gel proved effective for cleaning our hands before meals and after our biological necessities.

- Dry bags of the roll-top variety - we took plenty and found them immensely useful (as well as being in-expensive).

- It is a very good idea to have an adjustable stove so as to avoid the pasta boiling over and to reduce fuel consumption. The ability to simmer food is very useful.

- Wide mouth “nalgene” bottles proved useful when collecting water.

- It seemed a good idea to have enough roll mat to cover the entire ground sheet in order to prevent puddles of condensation forming overnight. We suggest that a savvy expedition might take the time to cut the roll mat into the shape of the ground sheet so as to ensure complete coverage.

- Plenty of “al-tat” i.e. disposable rope/cord should be included. This could have myriad uses from washing lines to extra guy ropes. Do not forget to include plenty of cord thin enough to replace worn boot laces/guy ropes.

- A flint and steel proved an effective and wind resistant method of lighting our stoves. We recommend the “Swedish Fire Steel” variety.

- We printed off our satellite photos and relevant extracts of our maps on A4 card and laminated them. This proved to be a very practical idea.

- Small “nalgene” bottles were used to store herbs, spices etc. These were useful, but ensure that the lids are secure.

- Sporks/foons - they’re useful. Make sure you bring spares (one of our number lost his spork/foon down a crevasse at the beginning of the expedition and spent 6 weeks perfecting the design of a coke bottle spoon. The PET used in coke bottles has a tendency to melt and curl up when thrust into a bowl of hot porridge, prompting a string of angry expletives from the unfortunate spork-less mountaineer).

- Our sledges/pulks came with large orange bags. These proved useful for a wide variety of applications including anti-fox/anti-rain storage for gear and food, protection for groundsheets on rough ice and roofing for our shelters.
4.10 Gear comments and recommendations

- Weather monitoring apparatus may prove beneficial if the group has expertise enough to properly utilise such equipment. We had neither the equipment nor the expertise.

- "GoLite" ruck sacks proved very effective. They are incredibly light weight and also comfortable.

- To augment our GoLites, we cut pieces of roll matt to fit the backs and make them even more comfortable at a minimum weight cost. These small pieces of insulation made superb seats for around camp or for lunch time, and we would therefore recommend the practice to anyone.

- Our photovoltaic cells came with a standard cigarette lighter socket output. In order to use the output from both our solar cells to charge one device, one of our number constructed a simple device (later christened a "George") consisting of two cigarette lighter plugs wired into one cigarette lighter socket. This arrangement allowed us to charge our appliances even in partial sunlight.

Practices:

- Make the toilet hole deep; enough said.

- A black plastic bin bag with snow on top placed in a sledge will produce a surprising amount of water on a sunny day.

Food:

- When mixing powdered milk, we used an insect head-net as a sieve. Future expeditions might consider taking a more suitable utensil for this purpose, as it greatly simplifies milk-mixing and custard production.

- Curry powder adds instant flavour, garlic powder adds instant tang and Tabasco is, without a doubt, the king of sauces. We suggest that future expeditions take large amounts of condiment in order to jazz up the same dull pasta you’ve been eating for weeks and/or to mask the taste of rottenness. Cocoa is nice when mixed in to almost anything.

- A serving spoon might be of use.

- Ship’s biscuits proved a delicious and weight-efficient way of packing a lunchbox. The biscuits were especially nice when eaten with the day’s chocolate ration. Unlike Ryvita, ship’s biscuits remain palatable when damp.

4.11 Cooking and water

Our initial plan was to do all our cooking on an MSR XKG Expedition stove. However, in the event of the MSR XKG breaking down we also took with us a second hand Primus Omnifuel stove from BSES (The British Schools Exploring Society), which they were retiring from their expedition stores. After a few nights of cooking we realised that the drawback of the MSR was the lack of heat variation, which made cooking rather difficult. As a result for most of the expedition we used the Primus Omnifuel for cooking. The speed of heating and overall efficiency however of the MSR was irreplaceable when snow needed to be melted to fill up the water bottles. As we were constantly cooking on snow/ice the trillium stove base was essential for ensuring the stove did not melt its way into the snow. Due to the inefficiency of heating in low temperatures, we also brought with us a heat exchanger which went around our pans and a heat shield which prevented heat escaping from the cooking system.

For cooking we took a MSR Duralite mini cook set, containing a 11 and 1.5l pan. This set proved very robust and easy to clean. To ensure we maintained high standards of health and hygiene throughout the expedition we used washing up liquid and usually boiling water to clean the pans. We did not just rely on the abrasive properties of snow as other expeditions reported to have done. A further point of note is that care should be taken to ensure the ‘pan handler’ works well with the pans bought to prevent lost food.

When in Kulusuk we bought some lighters in order to light the stoves. However these proved to be next to worthless as after a few uses they were soon broken. For more useful were the magnesium fire strikers we had brought. Although sometimes great perseverance was required to get the sparks to land on the fuel, once the knack was perfected they proved to be a very reliable way of lighting the stoves.

Given the airline restrictions on carrying anything flammable we were a bit concerned about transporting stoves soiled in fuel. This was solved by soaking them in Coke prior to any flight. This also proved a brilliant way of cleaning off an expedition’s worth of carbon and grime on return to the UK.

4.12 Hygiene

Not much can be said about hygiene, as it tends to be something which is quickly forgotten about on an expedition such as this one. The main point to bring up is that of alcohol gel. As mentioned earlier, spirit sanitising gel allows one to at least partially clean one’s hands after visiting the latrine or prior to making a meal. As no members of the expedition fell ill, we can only assume that our hygiene measures were sufficient. A list of our standard practices:

- Alcohol gel applied to hands before preparing meals and after the toilet.
4.12 Hygiene

- All wounds kept clean and taped up with finger tape (zinc oxide).
- Toilet was placed far from camp and down stream (when on a glacier). Toilet dug very deep (at least a metre).
- Clothes were washed when possible; bodies were washed when brave.
- All dishes were usually washed up immediately after meals using eco-friendly detergent and warm water.
- Items of food soiled by the exploits of the foxes were not eaten... unless there really was nothing else.

5 Scope For Further Expeditions

5 Scope For Further Expeditions

The potential for climbing in the small area of Greenland which we explored was immense. The number of interesting looking routes and peaks would take a lifetime to climb, so if anyone tries to convince you that the area is "all climbed out" then ignore them.

The climbing we did was predominantly based on the best route to get to the top of the objective we were looking at. There were many climbs which we did not have time to do, and which we spent many hours staring at through the rain and hoping to climb. The potential for more new routes and first ascents is huge, however judging the rock type and stability of it takes some practice and quite a lot of guessing, as some of it is great and other bits less so.
Figure 29: Area of Greenland visited, expedition area marked with a cross.

Figure 30: Section of the 1:250 000 map of the area.
7 Conclusions

As stated in our introduction, the original aim of undertaking this expedition was to realise two long-standing dreams: to establish new routes on unclimbed peaks and to spend time climbing in a remote, beautiful and unspoilt Arctic wilderness. These aims have been completely fulfilled and much more beside. Each one of us returned to the UK having successfully completed their first independent expedition to a truly remarkable area. Not only that, but we have successfully climbed 8 unclimbed routes on 8 unclimbed peaks, come back as friends and fully intact (except for a few numb toes which regained feeling within a month or so of return).

Figure 32: Sunset view from Kulusuk

We thank our sponsors, who in supporting us not only appreciated our desire and enthusiasm for the expedition, but also appreciated that all young explorers need a helping hand to undertake their first venture and realise their goals. For this we are ever thankful, as without their support the expedition could not have taken place.

This report represents our final aim, namely to pass on the knowledge and experience we have gained from planning and successfully completing this expedition, in order to aid others in the planning of future expeditions, and in realising their mountaineering dreams.
Sponsoring the expedition:

The expedition has been planned to a tight budget, totalling £10,000. This is extraordinary value for a remote arctic expedition. Whilst all the team members are making substantial personal contributions to the cost, we need to supplement this with grants and sponsorship.

If you’re interested in the expedition and would like to help support such an endeavour, or if you think your company could benefit from having its name and website spread across Cambridge and beyond, please contact us.

Please visit our website for more information:

www.greenland2006.org.uk

Or phone the expedition leader, Mark Reid, on 07813835303, or email him at mark@greenland2006.org.uk
Dear Sir or Madam,

We are a group of four Cambridge University students planning an exploratory mountaineering expedition to the Swiss Alps, East Greenland. Our primary aim is to make five first ascents of unclimbed peaks in a remote and largely unexplored corner of this mountain range. We are writing in the hope that you will consider sponsoring us for this expedition.

Our expedition aims and plans have been given full backing by Cambridge University. We have received the patronage of Sir Ranulph Fiennes, quoted in the Guinness Book of Records as being "the greatest living explorer". Ray Mears, a well-known TV celebrity and survival and bushcraft expert and Doug Scott, an experienced mountaineer who is most famous for making the first ascent of the South Face of Everest.

We all harbour big ideas and aspirations for the future, the realisation of which begins with this expedition. For all of us this expedition is a chance to realise two long-standing dreams: to establish new routes on unclimbed mountains and to spend time climbing in a remote, beautiful and unspoilt Arctic wilderness.

We have worked tirelessly to keep costs to a minimum in order to make the very most of the funds available to us and to climb to our last penny. Any financial support that you might be able to give us will make a huge difference and bring Greenland a step closer.

We ask that you consider supporting us in achieving our aims. We fully appreciate the reciprocity involved in sponsorship and we can ensure considerable advertising opportunities for your company prior to and after the expedition.

Please find enclosed a copy of our brochure containing more information. Please also see our website: www.greenland2006.org.uk. I can be contacted by email: mark@greenland2006.org.uk, by telephone: 07813335303 or at the address at the top of this letter. Please get in touch if you are interested in our plans or would like any more information.

Hoping to hear from you soon.

Sincerely,

Mark Reid (expedition leader) and the Greenland 2006 team.
Dear Mrs Crilley,

About this time last year, a group of four Cambridge Alumni returned to the UK after a successful exploratory mountaineering expedition to East Greenland. The Gino Watkins Memorial Fund provided a significant portion of this expedition's budget.

Please find enclosed a copy of our expedition report, and please also accept my apologies for the delay in getting it to you. Sadly, the four of us are now quite scattered and collaboration has been a challenge.

If you require a digital copy, or if there's anything else I can do for you or The Fund, please do get in touch.

The report is also available in hardback, via Lulu.com; just look for "Cambridge University East Greenland 2006".

Thanks again for your support. As you'll see from the report, the expedition left us with many skills, memories and insights to be grateful for, as well as invaluable practical experience and a hunger for more challenging exploration. Thanks.

Sincerely,

Steve Mounsey