

Queen's University of Belfast Mountaineering Club



Renland Expedition

June 2008

Final Report

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Cover Photograph:

The team on the summit of Donal Deery, Renland, Greenland

Back row: (L to R) James McKeivitt, Anthony Garvey, Fred Maddalena,
Jonathon McCloy

Front row; (L to R) Dave Leonard, Les Ross

End Photograph:

The team assembled at base camp at the end of the expedition, Slieve Lucia and Ten Fingers Mountain visible behind.

This report has been produced as a record of our efforts and achievements and to encourage others to explore this stunning arctic region.

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Abstract

In June 2008, six members of the Queen's University Belfast (QUB) Mountaineering Club travelled to Renland, a remote region of East Greenland. The aim was to explore the glacier systems and make first ascents of unclimbed mountains, all in the setting of a remote, arctic environment.

For three and a half weeks the team were based on the Edward Bailey glacier and used this as a base to make explorations into two previously unexplored glacial systems and a number of recesses into previously visited glaciers. After a number of failed ascents, two new peaks were summited by ski ascent, with three sub peaks and two impressive summits climbed in alpine style over rock and snow.

Introduction

During June 2008 a group of mountaineers from the QUBMC undertook an expedition to eastern Greenland, to the remote and largely unexplored region of Renland.

Our objectives were simple:

1. To survive in an arctic environment,
2. To climb remote, virgin peaks in an alpine style,
3. To explore the complex glacial systems,
4. To promote QUBMC and climbing in Ireland.

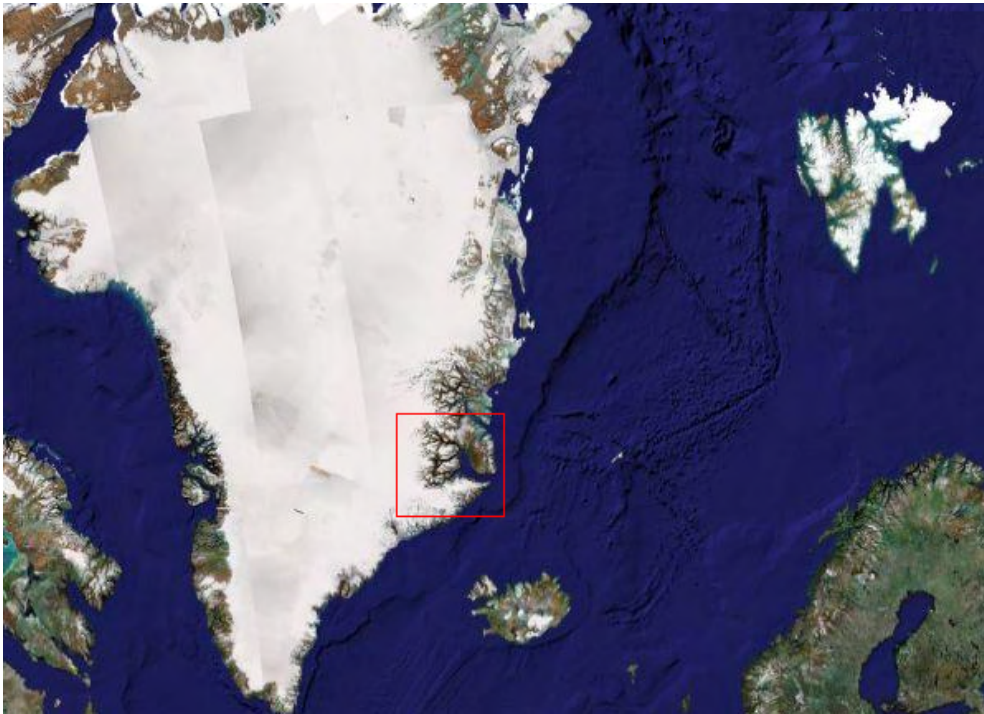
The desire to travel to such a place and attempt such objectives had arisen from our personal climbing experiences, and a sense that there was a level of experience and commitment within the club to safely complete such an expedition.

This was a university-based expedition, and as such, one of our aims was to show that university climbing clubs can be successful in exploratory mountaineering in the modern era. This impacted directly on our planning, as the student members of the team were committed to final exams in May and (hopefully!) graduations in July, leaving June as the obvious window in which to travel.

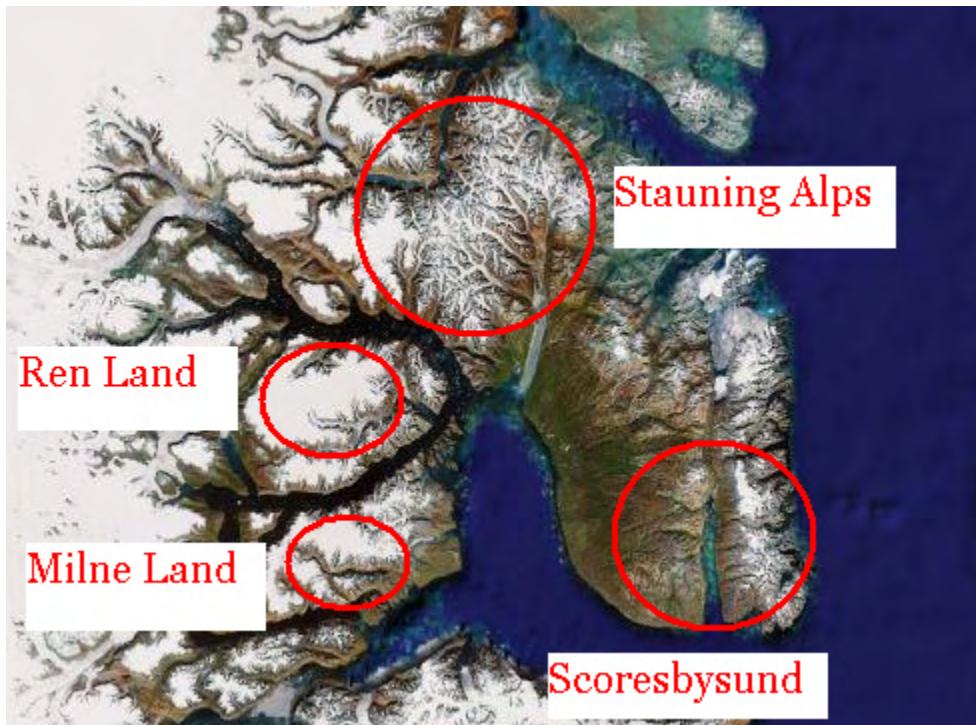
Deciding to visit Renland followed the assessment that Greenland would hold suitable targets. Greenland has a number of benefits that other regions couldn't offer; a large number of unclimbed mountains in unexplored regions which are of reasonable size (approx 1500m, glacier to summit) but do not present the problem of altitude, relatively quick travel time from UK, and less red-tape than (for example) India. Combined with 24-hour daylight during our proposed expedition period, it was a very attractive option.

There have been numerous mountaineering visits to the Renland coast but the interior has seen little interest to date, except from the West Lancashire Scouts. In September 2006 a group of scout leaders carried out a reconnaissance of the Edward Bailey glacier and followed this up with a major expedition in July 2007. Their expedition leader, Dick Griffiths was very helpful with the provision of information, and the many photographs brought back by the members of these expeditions showed us a stunningly spectacular place, much more impressive than anywhere else that we had considered. We were hooked and gave no further serious consideration to alternative locations.

Location



Lying on the east coast of Greenland, at the head of Scoresbysund, Renland is situated between the well-explored regions of the Stauning Alps and Milne Land at approximately 71°N 26°W.



Renland is a glaciated peninsula, the central plateau being fringed with steep cliffs and spires falling away to Scoresbysund and its tributaries. The most striking feature of the interior is the Edward Bailey Glacier, which runs in a roughly west-east direction for almost 50km. Aerial photographs indicate an area of steep spire-like summits in the south east of the peninsula. It was in this area of the Edward Bailey Glacier that we planned to establish base camp.



Team members

The team of six was chosen from the student and associate members of Queen's University Belfast Mountaineering Club.

Anthony Garvey – Expedition Leader



Primarily a mountaineer, with some 8 years experience of long days on large mountains, this was Anthony's first expedition as team leader. In addition to the challenges of the mountain environment he enjoys pushing his technical abilities on steep rock and ice.

He has climb rock across Ireland, France and North America, principally on traditionally protected lines, around grade HVS/E1. Winter has seen him climb in Scotland, France and Norway to Scottish IV and WI IV. Recent alpine trips have taken him to the summit of the Eiger via its south ridge and the north face of the Tour Ronde. The last few years have seen him diversify into cross-country and backcountry skiing, along with some forays into ski mountaineering.

Dave Leonard – Expedition Medical Officer



Recently returned to Northern Ireland following a period of study in Glasgow, David brought back with him not only a medical degree, but also an enthusiasm for climbing and mountaineering in the wilds of the Scottish mountains. His interest in wilderness medicine, and his experience of working in Accident & Emergency will hopefully not be called into action in Renland.

A preference for winter conditions has seen him accumulate experience on Scottish gullies and buttresses to Grade III, and on Norwegian icefalls to WI3. His alpine experience includes ascents of the Aiguille du Tour, a traverse of the Tete Blanche and the Petit Fourche, the Cosmiques arête and ascent of the Petit Aiguille Verte via the NW ridge.

Les Ross



With fourteen years climbing behind him, Les is the most rounded, technically able and experienced member of the team. His experience includes a large number of the alpine classics with many more technically difficult rock and ice climbs in the Alps, including routes on the north face triangle of Mont Blanc du Tacul, Le Minaret and Pointes des Natillons.

His UK undertakings include a significant amount of rock climbing up to E2 grade in the Mournes, Fairhead and Donegal, Cornwall, Wales, the Peak District, the Lake District, Syke and the Scottish Highlands. He has been on many winter mountaineering trips to Scotland climbing routes up to grade V. He has climbed in Norway, New Zealand, the USA and trekked in the Himalaya. His experience will be invaluable in addressing many of the challenging problems that Renland will doubtless provide.

Fred Maddalena



With Fifteen years mountaineering at home and in Europe, Fred has climbed over 30 alpine peaks, mostly in the PD/AD grades including the Breithorn, Eiger west flank, Wetterhorn, Mettlehorn and Mont Blanc.

He enjoys cragging at around VS grade in the Mournes, Donegal, Wicklow, Wales, Lake District, and has made numerous trips to France and Spain visiting Orpierre, Saou, Mazet, El Chorro, etc.

In winter he has climbed Scottish gullies to grade III and made traverses of the Aonach Eagach ridge and the Black Cuillin on Skye. Trips to Norway, include summers in the Jotunheimen and Jostedalbreen areas with two winter trips to the Hardangervidda for ski touring and winter camping. He has been very active in QUBMC and has lead many novices on their first winter climbs.

James McKevitt



James has been mountaineering for six years, climbing some technically difficult rock and ice climbs in Scotland, including classics on Stob corrie nan Lochan, Aonach Mor, Cairngorms, Glencoe and Nevis areas. He has alpine experience in both the Ecrins area and the Southern Alps of New Zealand. An enthusiastic rock climber he has lead routes up to HVS throughout the UK and Ireland, and has made a number of cragging trips to mainland Europe.

In Norway and New Zealand he has gained experience of ski touring and ice climbing around the Hardangervidda and Mt Aspiring regions respectively.

Jonathon McCloy



The youngest member of the group, McCloy has a long mountain history as a fell runner, representing Ireland. A strong rock climber he has completed leads to E1 at Fair Head, Gola and in the Mourne.

His enthusiasm and natural talent have seen him progress rapidly in his early forays into the Scottish winter, and in the Alps where he has climbed with both Fred and Dave, along with other members of QUBMC. His athleticism will be a useful asset to the group.

Logistics

At first sight, planning an expedition to Greenland seemed a daunting task; although it was possible to book all of our flights and charter local aircraft using the internet, none of us had any experience of international freight – which would be essential to mount a properly equipped expedition.

Early in the planning phase, we identified that it would both reduce our workload (leaving us free to go climbing!) and provide some security, if we were to hire an expedition provider to manage our logistics. We perceived that such a provider would be in a much stronger position with their experience and local contacts to deal with any problems that might arise.

Deciding to go engage the logistical support was not without its complications however, as from the outset we had conceived an independent expedition, rather than an “off the shelf” package. We approached the two main operators in the UK, Tangent Expeditions and Greenland Expedition Specialists (GES), for further information and quotations. Both these companies have a long history and extensive track record, and offer both guided package deals to Greenland, and logistical support to independent expeditions.

We approached both companies who were very helpful and patient with our many questions and it became apparent that there were three options for getting into Renland:

1. Fly to Constable Point by commercial scheduled flights and charter a boat to take us to the coast of Renland. This was the cheapest option but was decided against, as it would entail carrying all of our equipment and supplies up the Edward Bailey glacier in relays. Due to the time constraints upon us this was not felt appropriate. In addition, the condition of the ice floes in Scoresbysund might make amphibious access impossible. The winter of 2008 was long and we observed that this was indeed the case, with ice blocking the sound even at the end of the expedition.
2. Fly to Iceland and charter a twin otter plane to deposit us on the main Renland icecap. Paul Walker from Tangent offered this as a possibility but he did stress that there was an element of uncertainty about landing on the icecap. Depending on snow conditions the aircraft might be unable to land or be at risk of entrapment in a crevasse, a problem that is not unknown. On paper this looked attractive as we would be in a fairly central location and it offered the possibility of exploring mountains on the north side of Renland. However descent routes onto the Edward Bailey Glacier were not plentiful. A base camp on the icecap would be exposed to the harsh winds that Greenland experiences.

Although the scouts had cleared a runway on the shore of Renland in 2006, this proved to be too soft to support the weight of an aircraft. If we could have used this we would still be faced with the prospect of hauling our gear up the glacier.

3. Fly to Constable Point by commercial scheduled flights and charter a helicopter to deposit us directly on the Edward Bailey Glacier. This was the most attractive option from a climber's point of view but we knew that it would be the most expensive. The largest helicopter available at Constable Point was a Bell 222 which would have to carry us into Renland in two journeys but could lift all six of us at once for the return journey since it would be carrying less fuel. This option was chosen as it offered the greatest time for climbing, without extended gear-hauling relays, and allowed access to Renland regardless of the ice conditions in the sound.

We asked both expedition providers for quotations for option three, based on a group size of six. This number was critical and we were concerned that if anyone dropped out the others would have to make up a huge financial shortfall. At this point the trip was closed to any more members, so that detailed planning could begin.

Paul Walker advised us that helicopter charter would be in the order of £2500 per hour, a staggering sum with a rough estimate of the flight time 45 minutes in each direction. This was reflected in both quotes, which were reasonably similar. It should be noted that if the aircraft couldn't land for whatever reason, we would have to pick up the cost of another attempt, one of the pitfalls of private charter. The quote from GES was the cheapest but didn't include the cost of freight shipping, which they stipulated would have to be done in the autumn, just a month away and an unrealistic timeframe for us.

We ultimately chose to go engage the services of Tangent expeditions, and were encouraged by their experience of air access to Renland in support of the Scouts expedition in 2007. In addition, he could ship our gear out in the spring, providing a necessary window for further preparation.

Tangent Contract

Tangents quote was for £4350 per person, which meant that with additional costs we could each expect to pay over £5000 for the expedition. We all evaluated our individual financial situations and unanimously agreed to proceed with the expedition although fund raising would have to be taken more seriously.

This price included helicopter flights, freight to Constable Point, hire of specialist equipment and connecting flights between Iceland and Greenland. We were

comfortable with this because the price for these services was fixed within reasonable limits and there was some security in the event of problems. Hiring the specialist equipment from Tangent saved us a lot of hassle and expense.

It may be of interest to future expeditions that Tangent could provide additional services such as hotel booking and internal transfers in Iceland but we avoided these to keep our costs down, and to preserve the independent nature of our expedition

After a visit to Paul Walker at his home/office in Kendal by the group, a contract was drawn up and the expedition became a reality. Paul was good enough to give our two student members a discount of £400 each. Payments were to be in three instalments, the first of which was due in December 2007.

Flights to Iceland were booked with Icelandair from Heathrow to Keflavik, following a BMI transfer from Belfast.

Tangents contract was thorough and included a lot of important details such as stove fuel provision and helicopter weight allowances.

Weight limits

We were allowed two outbound payloads of 490kg each, and one return payload of 700kg inclusive of bodyweight. Meeting these targets would require careful weight budgeting – no bad thing on an alpine style expedition! Allowing 75kg per person for bodyweight, we had a remaining cargo allowance of 530kg which we roughly broke down to 6 personal allowances of 30kg of food, 30kg of personal equipment and 30kg of shared equipment. For the return journey we would have to lose 280kg unless we wanted to leave someone behind!

We fortunately had access to a high quality digital balance, and each item of gear was weighed regardless of what the manufacturer claimed. It was surprising how many items, especially garments and sleeping bags weighed more than the manufacturer's specifications. Gear choice promoted considerable debate, especially when the purchase of new items was being considered. A list of weights is included in the appendices.

Freight

The majority of our equipment and food was freighted out ahead of us; we would travel with only a small amount of personal clothing, equipment and last minute supplies.

Equipment was packed in PVC "base-camp" bags, and a blue barrel. Skis were wrapped in karrimats on Paul's advice and the pulks wrapped in karrimats and bagged. The food was purchased and packaged in cardboard boxes during the

Easter holiday – obviously the necessity of freighting the food so many months before the expedition was an important factor in menu planning.

Anthony hired a van and transported everything to Kendal a few weeks later. It was very reassuring to receive a message from Paul in mid May advising us that all our equipment was waiting for us in a hangar at Constable Point. When we travelled out in June we took the remainder of our personal equipment making up the airline allowances of 20kg each.

With such a complex arrangement of flights, and no reserve equipment or time available we were wary of the potential impact of delays or lost baggage, but were fortunate in that all our travel was free of complication. The service provided by Tangent was excellent and if we were doing this again we wouldn't do it differently.

Our one problem of note occurred following our return, when our equipment was delayed at Constable Point due to airport management problems. We were unaware of the details of this but Paul was eventually able to organise its return some 5 ½ months after our return home.

Equipment

We had read many expedition reports relating to Greenland and it was apparent that groups had widely differing experiences of climate, depending on location, time of year and altitude. We anticipated daytime temperatures in the mid teens, dropping to well below zero at night. Our choice of clothing and equipment was made with this in mind. The reality was rather milder, due to a less marked diurnal variation.

Clothing systems

Experience in Norway in 2007 showed that we could cope with very cold conditions using our normal alpine clothing systems.

Systems varied from one person to another but usually consisted of thermal base layers, micro fleece mid layer and a soft shell top. Bottoms varied from paramo salopettes to schoeller fabric trousers. Down jackets were used mainly in camp, but in the main were found to be more luxury than necessity.

Merino wool base layers were noted to perform particularly well, and stood up to continual abuse well. They were considerably less malodorous than synthetic alternatives.

Footwear

The choice of boot received much discussion. To keep within our weight limit we all agreed to only take two pairs of boots each, in addition to rock shoes. These were mountaineering boots and a pair of comfortable boots for around base camp.

Most of the group purchased Scarpa Omega plastic boots which were the lightest boot of that type readily available. Generally these performed well and were always warm. Two of us experienced problems with the inner boot breaking up around the ankle fastening which caused some chafing. It is worth noting that the ski performance of these boots in ascent was fairly good, but the lack of support made descent by ski unfeasible.

Our comfortable boots varied from wellingtons to snow boots, while two members chose basic down booties in the name of weight saving. These wore rapidly as the snow melted and camp moved increasingly onto moraine.

Cooking equipment

The team had three stoves to allow cooking in pairs. These were an MSR XGK, an MSR Dragonfly and a Primus Himalayan multifuel, which were already owned by team members. All performed well using SBP (Coleman fuel) provided by Tangent. The fine flame control on the Dragonfly and Himalayan multifuel was a real asset, especially when cooking pancakes! The Himalayan multifuel was probably the lightest and therefore the most popular for bivis on technical routes. For each stove we had a pair of non-stick pots and in addition brought a small frying pan, for pancakes at base camp.

We used a total of only ten litres of fuel, as clean melt water was readily available at base camp.

Sleeping bags

We anticipated that the coldest nights might be as low as minus fifteen degrees, although in reality this was not the case. Experience in Norway in 2007 showed that down sleeping bags performed badly at temperatures around freezing since they were useless when wet.

Bearing this in mind, and following a trial by Dave in Chamonix during a chilly spell in March, we either took warm synthetic bags or a double bag system. In this case, a lightweight down bag was paired with a (outer) synthetic bag which protected the down from dampness, and gave the flexibility of using the bags individually in warmer conditions or for light bivis.

Sleeping mats

Most brought two mats, an inflatable Thermarest or similar and a foam matt. This gave the benefit of the comfort of both mats at base camp, while carrying only one up to bivouacs. This also gave us some redundancy in the event of a punctured Thermarest. The foam mats were also useful padding for the skis while in transit.

Tents

The team slept in pairs in three tents, a Force Ten Baltoro, A Force Ten Vortex and a Terra Nova Quasar. All of these performed satisfactorily although we didn't have any weather bad enough to test them. We purchased snow pegs which were essential for pitching on the soft snow, but we were eventually forced to re-pitch on the moraine when the snow thawed. At this stage, redundant cardboard from the food packing boxes was useful for protecting the tent bases from the rough ground.

Skis

Most of us had purchased touring skis and enjoyed their use in Norway and France during the previous winters. Although most Greenland expeditions take them, the scouts didn't need them during their 2007 Renland expedition, however the winter of 2008 was very prolonged and we thought it would be safer with skis. This turned out to be a good decision. For the first half of the expedition our area was covered in deep soft snow which was thawing rapidly and getting around without skis was hard work. We used a variety of skis, but all were fitted with Alpine Touring bindings capable of holding a mountaineering boot (Silvretta 404 or 500). The 500 gave a more hassle free performance, and are lighter, but this is offset by the ready available of affordable second hand 404s.

Pulks

As with the skis, we were unsure of the usefulness of pulks in Renland but we were able to borrow two from QUB geography department at no cost and decided to take them along to facilitate extended recesses out from base camp, considering it likely that there would be sufficient snow to make progress with heavy packs painstaking.

These were good quality fibreglass pulks made by Fjellpulken of Norway. They were only used for a couple of outings but performed well and were worth taking. In common with the skis, their use ended after roughly two weeks when the thaw had exposed large tracts of bare moraine.

Safety equipment

The Danish Polar Centre insist that all expeditions to Greenland carry certain safety items.

We were obligated to take a rifle in case of encounters with polar bears, although we were over ten kilometres inland and the likely hood of encounter seemed small. Although it would have been possible to carry one from the UK we would anticipate a lot of hassle at airport security checks so we hired one from Tangent. We collected this from the airport manager at Constable Point along with a box of ammunition. It would have been anti social to practice with it at the airport so we saved that activity for our first day on Renland, to ensure that in an emergency each member of the team was competent in it's use. After practice it was stored in Les's tent where it was used as a pillow in its padded case for the remainder of the expedition.

Tangent also supplied a set of distress flares and smoke signals which we kept in a barrel at base camp. Before leaving the UK Tangent sent Fred a handheld VHF air band transceiver and an EPIRB. The transceiver was intended to

communicate with our helicopter in the immediate area of base camp but wouldn't have the range to reach the airport at Constable Point. The EPIRB was to be activated in emergency requiring evacuation only, and would relay our position to the emergency services via satellite.

Fortunately none of these items needed to be used.

A comprehensive, but compact emergency medical kit was assembled by Dave, the contents of which are detailed in the appendices. Each person also had a small kit of dressings to deal with blisters and minor cuts.

Bothy-bags were carried by climbing teams, but again did not require use in anger.

Satellite phone

A Motorola Iridium phone with two batteries was kindly donated on loan to the expedition, free of charge, by Mr J Taggart. This was both an essential part of the emergency kit, and a means of communication with home for Les whose family had grown a few short weeks before our departure! General use by the rest of the team was discouraged on grounds of cost, preservation of battery for emergencies, and to preserve the sense of wilderness. Paul Walker also requested periodic check-ins.

A Sunling folding solar panel with cigarette lighter adapter was used to charge the batteries. This was rated at 12W and could trickle charge the phone even in overcast conditions. It rapidly became clear that one battery held charge for only a few minutes of call time; this was a cause for concern, but fortunately the other was reliable. The weak battery was used for routine calls and the second held in reserve for emergencies.

Navigation equipment

Magnetic variation in Renland is in the region of 22 degrees. We had two Garmin GPS units which were useful for logging summits and important waypoints, otherwise, we didn't rely on them for navigation.

We had three altimeters, two of which were Suunto digital wristwatches, and the third a Thommen Classic aneroid instrument. All of these generally concurred with regard to altitude but the Suunto units had the advantage of a graphical display of barometric trends. Although we hoped to use them for weather prediction, the changes in pressure were very subtle and weren't a reliable indication of changing conditions. We used these instruments to measure our summit altitudes in preference to the less accurate GPS measurements.

Maps

Tangent provided a Danish 1:250,000 scale map covering Renland but at this scale it was of limited value. We also obtained some aerial photographs which were more useful. When the West Lancashire Scouts visited Renland in 2007, they had a professional land surveyor in their group who was able to produce a very good map on a UTM grid. This was published on their website so we were able to print it at about 1:50,000 scale which proved to be very useful. It was strange visiting a relatively unexplored region and yet having a fairly accurate map. Most of our measured altitudes concurred quite closely with heights stated on the map.

Climbing equipment

We planned to be operating in two groups of three, so brought two equivalent trad racks. We also brought a collection of pitons and 50m of 7mm cord for abseils. On the steep ground encountered this turned out to be an underestimate for the number of abseils required. We rapidly exhausted the cord, and resorted to abandoning slings as well as a number of nuts and hexes for anchors. Unfortunately a complete set of nuts was inadvertently lost on the penultimate day. See appendices for gear list.

We had two pairs of half ropes and one single rope. The single rope was a reserve which could be used for glacier travel, this was eventually sacrificed to provide more abseil tat! We would recommend that groups visiting Renland and planning to do rock climbs should bring a considerably larger quantity of cord and large slings than we did.

Everyone had a pair of technical axes and crampons but due to the poor snow conditions these items were hardly ever used. We packed an ice screw each for glacier travel and a number of spares for potential ice routes, but these were also unused (although they would have been beneficial on one route when they were not carried!) Two snow stakes were also packed although they rarely left base camp.

Base camp equipment

We obtained a large blue plastic tarpaulin which we anchored to a massive boulder to make a lean-to shelter. This was a useful communal area, providing both a shelter for cooking under during inclement weather, and a focal point for the camp. Its bright colour also was handy for locating our camp when returning from climbs.

Two snow shovels were though one might have been enough. Toilet paper was packed according to individual requirements/taste in personal supplies. For

hygiene purposes we provided two bottles of alcohol hand wash, one for the toilet and one for the cooking area.

The small repair kit saw a surprising amount of use, mainly for stitching torn garments. It contained a sewing kit, glue, cord, fasteners and a couple of tools. A small pair of binoculars was very useful for inspecting routes. We brought some black plastic bags with the intention of producing solar stills for melting snow, but this was completely unnecessary on account of the glacial streams near camp. Anthony had experimented using this method to melt snow in the Alps and it worked well, even in cold conditions. We also brought two collapsible water cubes, one of which was cut down to make a wash basin.

Food & Nutrition

Our total weight limit allowed for 1kg/person/day of food. Meals needed to be nutritious, lightweight, easy to prepare and easy to clean up. In addition, the food had to be storable for a prolonged period without spoiling, as it would be shipped several months in advance of the expedition. This provided an interesting challenge in designing a balanced menu capable of meeting our estimated requirement of 4000 kcal per day. "Mountain Craft and Leadership" by Eric Langmuir proved a very useful reference in planning our requirements.

We agreed to take 25 days rations and although we were in Renland for fewer days, this allowed for meals to be consumed at Constable Point with a small surplus in case of delayed pickup at the end of the expedition. Fred's status as the expedition's only vegetarian was accounted for from the outset.

The winter months gave us opportunities to experiment with food in the mountains and it was clear that all of our requirements could be met by items readily available in local supermarkets. Although we tried some of the specialist outdoor meals they didn't offer any significant advantage for their greater cost. Many of these were supplied in a partially hydrated condition which would have been too heavy anyway.

The final menu plan (per person, for the 25 days) was as follows:

Breakfast

10 porridge breakfasts - two sachets of Quaker Oat so Simple porridge and 50g of dried fruit.

15 Cereal breakfasts - 90g of either mini Wheatabix or Jordans crunch cereal plus 50g of dried fruit.

Lunch/ Day-Food

Everyone made up their own lunches with an allowance of 450g and a target of 2000kcal. Choices varied considerably from the well balanced to the heavily chocolate dependent.

Dinner

14 pasta meals containing 150g of pasta, half a pouch of Dolmio sauce (170g), hot chocolate drink and a dessert of custard and Aunties pudding.

6 couscous meals containing 110g couscous sachet, Cuppa soup, hot chocolate and either 100g halva bar or biscuits.

4 Noodle meals containing one and a half packets of Super noodles, cuppa soup, hot chocolate and a pepperami sausage.

In addition to this, Les was tasked with producing one “special meal” to mark a significant point in the expedition. This was a closely guarded secret until the last minute, but contained tinned ham, instant mashed potatoes, gravy, peas and a dessert of tinned raspberries with Birds Angel Delight topping!

Quaker porridge sachets were chosen for convenience of storage and quantity control. These sachets were made of waxed paper which doubled as a measure for the correct amount of water or milk. These were popular, worked well and are highly recommended for future expeditions. We purchased various dried fruit, apricots, raisins, apples, etc in bulk and divided them up into 50g resealable bags which were packed with every breakfast portion. The cereal breakfasts were also divided up into individual portions and although 90g was adequate, larger servings would have been preferred. Powdered milk was available from our communal stock for these. Although the fruit and cereal had been repackaged, it did not deteriorate during the three months storage.

Due to the differing tastes of individuals, we decided to let everyone make up their own day rations for lunches themselves. Each day ration had an allowance of 450g and would contain various chocolate bars, Nutri-grains, nuts, boiled sweets, oatcakes, etc. This worked well since everyone had their favourite snacks.



A selection of day rations

On our departure from home, we took out an additional allowance of cheese and Matheson's smoked sausage which contributed to the fat and protein content of our diet. The sausages were supplied in foil sealed packets and could be stored without refrigeration. These were popular throughout the expedition.

The evening dinners were divided into two categories; base camp meals, which should be very filling, and lightweight bivouac meals to take into the mountains. We chose to take quick cooking pasta to conserve fuel. The best pasta sauce that we could find was Dolmio express which was available in three flavours (one of which was vegetarian) and was sold in lightweight sachets big enough to serve two.

"Aunties" individual puddings were difficult to heat on camp stoves but remained popular throughout the trip, in fact many evenings were spent perfecting the correct cooking technique!

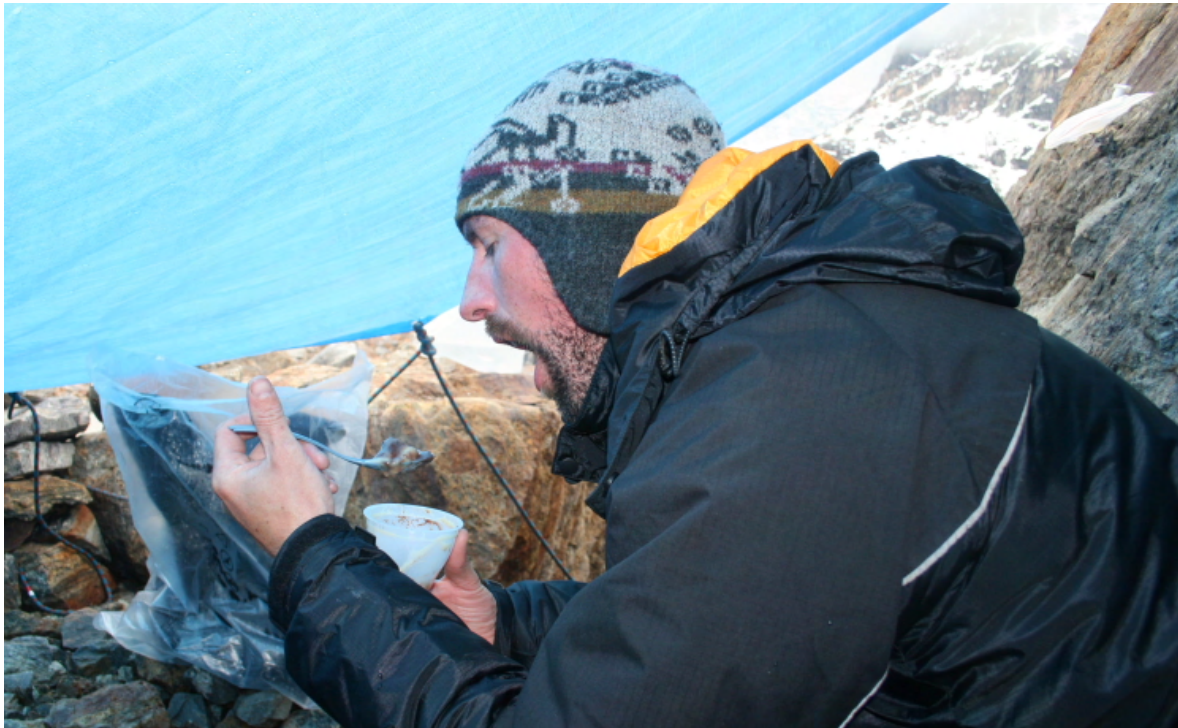
The bivouac meals worked out well using supermarket own-brand couscous which was available in several flavours and best of all, could be cooked in its foil packet just by adding hot water. These were the bivi meal of choice, and would be highly recommended to future expeditions. The Super noodle meals were less successful because they were a bit bulky to pack in a rucksack. The bivouac meals also contained either halva or an equivalent weight of biscuits (custard creams, chocolate digestives, etc.). The halva was very popular and we would recommend it for future expeditions. Halva, made from crushed sesame seeds is available in foil sealed packets and its nutritional content was ideal for mountain activities.

The biscuits had to be repackaged to achieve the suggested weights but this turned out to be a mistake. Almost all of them deteriorated to some extent and although they were still edible they tended to be slightly damp/stale. We would recommend that on future expeditions they should be left in their original packaging for transit and divided into portions at base camp.

We also brought along some pancake mix as a morale booster and bread substitute. These were always well received although they did take a long time to cook. Dave's mum provided us with a fruit cake which was gratefully devoured, and again was outwith the menu weight calculation as a moral booster.

Importance of good hydration was emphasised by the teams medical members, so we brought plentiful supplies of tea, herbal tea, drinking chocolate and powdered milk to encourage intake. Some of the group also took personal supplies of SIS energy drink powder to make the water more palatable.

We purchased a low cost domestic vacuum sealer to package the food but this was not very effective so we opted to pack food in resealable plastic bags. All of the food was divided into the correct portions and packaged as day meals so that it was easy to keep track of our consumption. The meals were bundled into robust cardboard boxes with plastic bag liners for shipping to Constable Point in April. With the exception of the biscuits, all the food survived the journey without deterioration and we consider this aspect of the expedition completely successful.



Medical Report

Expedition Medical Officer

Dr David Leonard

A month long mountaineering expedition to a wilderness environment such as Renland requires at least some degree first aid experience within the group, and a sound plan for management and evacuation of a casualty in the event of incident. This expedition was in the position of having two qualified doctors within the team – this may have been the only area of duplication allowed by our weight limit!

It was agreed at the outset that as Anthony was team leader, I would take responsibility for the medical kit and fill the role of medical officer, and in preparation for this I completed the Expedition Medicine & Leadership course (www.expeditionmedicine.co.uk) which I would highly recommend to anyone with an interest in wilderness and expedition medicine.

Prior to departure each team member was asked to complete a medical questionnaire, giving information of past medical history, regular medications and allergies. There were no areas for concern identified.

A casualty evacuation (cas-evac) plan was developed, and copies of this were kept with the medical kit, by Anthony, and by Paul Walker at Tangent during the expedition. Thus the plan could be activated with the briefest of communications, and if necessary be carried out without further communication between the team and the outside world. This is an important fail-safe mechanism. Copies of the medical questionnaire and cas-evac plan are included in the appendices.

The expedition medical kit was comprehensive, yet lightweight, and was carried in it's own small rucksac to allow it's easy transport from base camp to a casualty in the field. This kit was assembled with two aims in mind; management of simple, frequently occurring complaints and minor injuries and stabilisation of one major casualty for evacuation to definitive medical care. It was anticipated that an incident resulting in the later would be likely to lead to evacuation of the whole team.

The minor ailments kit contained a selection of oral antibiotics, pain killers of varying strength and mode of action, anti-emetics, anti-diarrhoeals, piriton, and oral rehydration salts. Polyfax was taken for burns, along with a selection of dressings. Cold injury was considered a real possibility, for which Aspirin 300mg was included in the kit.

A range of sutures and single-use instruments were included, along with local anaesthetic, for management of wounds. On two occasions Petzl Spatha knives

inflicted injuries which were close to requiring suturing, but fortunately closed satisfactorily with steri-strips.

The major injury kit was designed to allow support of a casualty following a major trauma such as a fall. This included a laryngeal mask airway and ambu-bag, a folding cervical spine collar, intravenous cannulae, and IV analgesics and sedatives. IV fluids were not included on grounds of weight and the unpredictable effect of freezing. Circulatory support would therefore be limited to control of haemorrhage.

There have been recent changes in the legislation regarding export and import of controlled drugs, and I would refer any medical practitioner assembling an expedition medical kit including such items to the Home Office website www.drugs.homeoffice.gov.uk for the latest information.

Camp hygiene would be important, and I considered infective gastroenteritis due to poor hand hygiene a potentially serious risk to the expedition's success. To combat this alcohol hand gel was provided for the latrine area and for use prior to cooking. We were fortunate in the position of our camp atop a moraine bank, with well separated glacial streams flowing down either side. One was designated "clean side" for collection of drinking water, and further downstream, washing dishes. The other side was the "dirty side" and housed the latrine. This became an area of some fascination for the student engineers in the group, who constructed a most impressive dry stone structure!

A number of minor injuries were treated, including one severe case of blisters following an extended ski tour, and two digital lacerations requiring closure with steristrips. No wounds required suturing. It was noticed by all members that even minor wounds healed very slowly in Renland, and it was hypothesised that this might be due to high levels of UV exposure. There was only one case of vomiting & diarrhoea, and this lasted less than 24 hours, and was contained to one individual who received oral rehydration solution. Excess dietary chocolate following a successful ascent was the working diagnosis.

Thankfully the expedition passed without major incident, and the extensive preparation and training before hand was not put to the test.

Travel

Departing from Belfast on 2nd June the team travelled via Reykjavik in Iceland and Kulusuk on the east coast of Greenland to arrive at the remote airfield of Constablepynt, Scoresbysund.

Using chartered flights, the team flew BMI from Belfast City Airport to Heathrow where we connected with an Icelandair flight to Keflavik. This is a 30min drive from Reykjavik and can be covered by bus, or by taxi, who should be asked if they will match the bus price.

The team had two nights in Iceland, the first spent on the airport floor, before spending the second night in a youth hostel. It would be recommended that anyone travelling through Reykjavik should take advantage of the cheap and relaxing swimming pools/thermal baths, as they served as a great way to unwind both on the way out and on returning.

The flight to Kulusuk left from the small domestic airport in Reykjavik which made a refreshing change from the heavy handed security checks and queues experienced in the UK. Kulusuk is little more than a strip of runway near a very small settlement, and is the main transport hub for south east Greenland. A second flight left here and flew north towards Constablepynt, a yet more isolated airstrip containing a main building which served as the arrivals / departures, crews quarters and control tower. The Constablepynt "Hilton" (- 4 Stars) was adequate enough, having warm showers, clean toilets and at €45 per night included a cooked breakfast in the crews quarter. We eschewed this on our way out, preferring to bivi in the hangar or in the snow, however there was some enthusiasm for it on our return - especially when informed that a bear had passed through with its cub just days before.

Following a one night stay at Constablepynt we flew by Bell 222 helicopter the 45 miles or so into Renland. The route and landing area was discussed with the pilot and planned with aerial photos and a latitude / longitude reference gained from the internet using a google earth tool. The flight was very smooth, flying 50 – 100m from the surface which varied between tundra to frozen sea, between large trapped icebergs, up glaciers and over mountain passes. There were two flights of base camp bringing in equipment and three people each. Only a single flight was required for our extraction.

The flights home were uneventful, following the same routes as the way out, but with a large night on the town in Reykjavik to celebrate, and taking advantage of a free concert which happened to be being held in the park beside our campsite. This is adjacent to the Rejkavik youth hostel, which was booked out at this point peak season.

In total we spent 23 days on the glacier and 29 days away from home.

Environmental Conditions

Weather

Overall the weather was very settled in Renland. There was only one day of bad weather, when a front of low cloud moved up the glacier bringing poor visibility, wind and rain. The remainder of our trip was marked with quite a few days of wall to wall sunshine and blue skies, the longest period being four straight days.

There were periods when clouds descending low enough to cover the summits only. These days luckily coincided with our chosen rest days. When there was blanket cloud like this the temperature would remain constant throughout the 24 hr periods, at around 5°C. In direct sunshine air temperature would rise, on one occasion reaching 15°C, then falling to around freezing when the camp was in the shade of the mountains (our so called “night”).

For one 72hr period there were no clouds noted at all. The coldest temperature recorded at base camp was -2°C.

As previously mentioned, barometric changes were subtle, and were not found to be a good predictor of weather changes.

Rock

The rock within the area of climbing was a solid and fairly clean granite / granite like rock. There were small bands of less desirable rock on most climbs, but they were short lived and not technically difficult, but did pose a problem of rock fall to the seconds. All routes were easily protectable with a standard modern alpine climbing rack.

Most of the rock climbing took place to the peaks directly north of the base camp. This rock was a lighter colour to those peaks directly to the south of the base camp, but from experience it was of overall similar characteristics to the north with small bands of weak rock.

Travelling to the west of the base camp, up the Edward Bailey glacier, the rock changed to a more friable type, red in colour presumably high in iron content. The glacier was covered with a large proportion of debris of this sort.

Snow & Ice

Quite simply the snow was awful, the worse white stuff the group had ever seen. It was largely unconsolidated and wouldn't support body weight when walking resulting in regular post holing up to knee depth and beyond, necessitating the use of skis, or sticking to moraine where possible.

Passage on moraine was also favoured from a safety point of view, for although the glacier was relatively flat and safe with few large crevasses, the snow bridges were very weak and even collapsed once whilst using skis. It was surprising how quickly the snow melted. The base camp was initially camped on snow, around 3 – 4ft deep which completely melted in around two weeks so camp was moved on cleared moraine. This rate of melt was similar on the mountain sides and avalanches from south facing snow bowls and gullies were very common.

Ice was encountered on only one route, above an altitude of 1000m in a south facing gully to the north of base camp.

Another notable risk was the large seracs which overhung many routes from the ice cap above, with a few areas having very active and regular falls clearly visible from camp.



Climbing

The expectation was to make alpine style ascents and on the whole they were, with perhaps less snow travel than envisaged, as it was of such poor quality. The routes were roughly 1000m – 1900m in length and were all multiday exploits.

A number of unsuccessful attempts on routes were required before the best way to tackle the peaks was found. All had to be multiday attempts with the best technique being to push to a high bivi from base camp on the first day, make a summit push the next day, returning, generally late, to the bivi and then back to base camp the following morning.

Initial failures were due to a number of reasons. The 24hr daylight lead to excessive long single day pushes which were too ambitious, and resulted in dehydrated climbers retreating for want of sufficient water.

We soon discovered that routes identified from base camp were unreliable, as the topography was incredibly complex. What appeared an easy line from camp, would often be found impassible due to the presence of an unseen gully or steep face on closer inspection. This problem reduced as the trip progressed and additional reconnaissance was gained from trips up and down the Edward Bailey glacier.

Although the team did climb many fine peaks, they did not succeed in climbing those they had proposed in the MEF proposal. The primary reason for this was the markedly different conditions encountered by the team, in comparison to the photographs from the Lancashire scout expedition the previous year from which the objectives had been selected. While the Scouts met lean conditions, we found routes anticipated to be simple rock lines banked out with unconsolidated snow, or threatened by objective dangers.

The scouts were in Renland in July / August of a lean snow year whilst this expedition was in Renland in June at the end of a long winter with much snow. The proposed routes were therefore mixed and harder than expected, especially given the poor snow quality.

We must also admit to a classic mistake; the mountains never look so steep in photographs as in reality!

Descent tended to be the most serious and challenging aspect of our routes. Pre trip plans for descending the glaciers from the summit quickly disappeared when we arrived and saw the complexity, steepness and highly fractured nature of these glaciers. They were quickly deemed excessively dangerous and disregarded. The safest option was abseil descent on rock and this required a greater degree of tat that had been envisaged.

In addition to alpine rock routes climbed, we made two first ascents on ski, in a three day round trip of some 50km from base camp. The summits we reached without any real technical difficulties and provided an interesting break from the technical climbing.

Route descriptions and photo-tops can be found in appendix 1.



Exploration

In addition to attempts on new climbs, we carried out a substantial degree of exploration of the eastern part of the Edward Bailey glacier, and its tributaries. While the Edward Bailey has undoubtedly seen some degree of passage over the years, we know of no attempts to penetrate several of its major side branches.

A number of attempts to force lines up these secondary glaciers found them to be very complex and broken, with steep seracs, unpredictable crevasses (often running in multiple directions within a small area), and very poor snow bridges. We had hoped that routes could be found to a number of impressive looking, but otherwise inaccessible peaks.

A recce of the "Roe Valley Glacier" which runs northwest from 0533700, 7904700 UTM gained useful information on the topography of the peaks forming the northerly border of the Edward Bailey glacier, but did not yield an feasible access to climbs.

On one occasion, exploring what we loosely named the "Hidden Valley Glacier" (running southwards from 0535500, 7900500 UTM) good progress was made in ascent on ski, until an impassable obstruction forced retreat, and a subsequently challenging descent over terrain too complex to ski safely, but too soft to allow secure progress on foot. Following these experiences major exploratory objectives were felt unlikely to be met with success, and focus turned firmly to climbs.



Media coverage

One of the stated aims of this expedition was to promote QUBMC and climbing in Ireland.

In order to achieve this, it was first necessary to promote the expedition in the run up to our departure. Press releases were issued, and resulted in articles in four local and three regional newspapers with interest for a follow up story.

We also maintained an expedition website www.qubgreenland.com, with regular updates on our progress to departure day. It was decided that, while technically possible, regular updates from Greenland would be prohibitively expensive, and would intrude on our wilderness experience. A few brief updates were posted following brief check-in calls with home.

Following our return, a presentation was given in the David Keir building, of Queen's University. This was attended by around 75 people and was very well received.

Further lectures planned including one at the Belfast Cotswolds store, as part of the sponsorship agreement and another to be given to a number of Dublin university clubs which there are close ties.

Conclusion

The members of the Queen's University Belfast Mountaineering Expedition Greenland 2008 started the journey to Renland with a range of experience levels, and from the outset we described ourselves as a "grass-roots" expedition.

We believe that we successfully and safely achieved all our aims and objectives, and returned from Renland stronger, wiser and more experienced than when we set out.

We made first ascents on a number of virgin mountains, in a largely unexplored region, survived in a true wilderness, remained friends and came back eager for future adventures.

Acknowledgements

Any successful expedition relies not only on the efforts of its members, but on the encouragement, support and advice of a great many friends, relatives, and other individuals and organisations.

The members of the QUB Mountaineering Greenland Expedition 2008 would like to acknowledge the role of all those who lent a hand, a wise word, a pound or two, some gear, or helped in any way. We can't list everyone, but specific thanks are due to:

Vincent McAlinden – for patronage, advice and encouragement

Moureen Cusdin, Director of Queens Sport – for patronage, and support

Hanna Shields – information and advice

John Meneeley, QUB Geography dept – for loan of pulks

Shauna Hughes, QUB alumni office – for assistance with fundraising

Lesley Culbert, QUB student services – for assistance with our accounts

QUB Chemistry store staff – for provision of packing boxes and fuel cans

Paul Walker, Tangent Expeditions – for logistic support and advice

Dick Griffiths, West Lancashire Scouts – for information and advice

Grant Funding

We would like to acknowledge the grant support given to this expedition by the BMC and the MEF.

Sponsors

We would like to thank all our sponsors for their generous and enthusiastic support.





Appendix I

Routes

Below are descriptions and photo-topos of the new routes completed. Also included are descriptions of a number of attempted routes. These are not claimed as new ascents, but rather are included where we feel the route attempted to be of interest, or where it provided useful recce information.

Peak heights were recorded by altimeter, and route heights calculated accordingly. Adjectival alpine grades are offered, along with British adjectival and/or technical grades for individual pitches were relevant.

The Thumb (800m, PD)

A. Garvey, J. McKevitt, D. Leonard

11th June 2008

The most southern spur of Ten Finger's ridge contained a number of smaller peaks, the furthest south and smallest being "The Thumb".

Approach from the Edward Bailey Glacier (the first ascent was made via the gully later used to ascend Ten Fingers peak and Slieve Lucia, leaving it shortly after gaining it, as a means to pass over a large crevasse system). Travelling rightwards the broken ground levels off and meets steep lean rock about 200m after leaving the glacier. From here the rock is climbed by the easiest route, which is initially to the right, before tending leftward at half height. Near the summit a small gully system can be followed easily to some short steep steps before easier ground gives way to the summit. Technicalities to HS 4b grade.

Descend by two 50m abseils down a steep gully immediately below the summit, to a small snow filled gully to the left of the peak, as viewed from the bottom.

President's Peak

The Presidential Route (1500m, TD-)

A. Garvey, J. McCloy, J. McKeivitt

23rd June 2008

President's Peak is the most prominent summit of a group of distinctive spires to the north of our base camp, which became collectively known as Ten Fingers Mountain.

Leaving the Edward Bailey Glacier, move up the diamond of easy angled rock between two prominent snowy gullies to a small snow filled gully on the right. Follow this for about 300m to where it opens up.

An obvious line appears to go straight up but this is another summit, instead trend leftwards and gain rock to its left, eventually reaching a col where the west ridge of Ten Finger's meets the east ridge of the Slieve Lucia group. From here a relatively flat ridge line can be followed for about 1km. Where the ridge starts to steepen, traverse a small gully, over a rock step and then into another wider gully. Follow this for 50m, traverse rightwards and gain a split rock from where there is a clear view of the summit. Move over a series of rock steps, the steeper of which may be pitched at up to HS, before a tricky, committing pitch at HVS/E1 leads to the summit.

Descend by the route of ascent.



The Thumb (right, abseil descent to gulley in blue)

The "Presidential route" to President's peak on Ten Fingers mountain (left)

Slieve Lucia 2075m

Ross-Leonard Couloir (1700m, AD)

L. Ross, D. Leonard

22nd June 2008

Start easily up grassy slopes to the left of the principle snowy couloir which meets the Edward Baily Glacier at 400m 0530950/7901600. Step into the couloir just below a fork at 650m. Taking the left-hand fork a 20m vertical step is turned via easy rocks to the left of the snow. The couloir proper begins above this step. The route follows the line of least resistance, initially toward the right hand side until an obvious rock outcrop at about $\frac{1}{4}$ height. The next major feature is a massive boulder to the left hand side at around $\frac{1}{2}$ height. There is a large cave underneath. Above this the couloir narrows and steepens, and above 1400m we encountered hard blue ice. There is limited protection on the side walls of the couloir.

The col is reached at 1840m, and there are numerous bivi sites available. (Note that our bivi on an elevated ledge may have been less comfortable than some alternatives, but was chosen for it's spectacular panorama!)

The following day we moved left across the col to ascend the obvious ridge. There are two rocky point heights on this ridge, the first of which we climbed, turning the second in favour of speedy progress up the increasingly steep ice toward the summit proper. Sections of 55-60° are overcome before meeting the large platform of summit rocks (0529926/7902801) from where there is a huge vertical fall to the south.

Descend via the route of ascent. Only occasional abseils are available, necessitating several hours of in-facing down-climbing on both hard ice and poor snow.



Ross-Leonard Couloir (1700m, AD) on Slieve Lucia 2075m

Bivi at col marked in yellow

The Northern Forepeak (750m, PD)

A. Garvey, D. Leonard, F. Maddelena

25th June 2008

From the Edward Bailey glacier, to the south of base camp, ascend the obvious snow-filled gully for some 600m. Just below the headwall, follow the gully leftwards to join a loose rocky ridge. Follow this for about 150m to the summit.

Descend by the route of ascent. The gully may be exposed to some avalanche risk.

Attempt on “The Gerkin”

L. Ross, J. McCloy

9th June 2008

From the junction of the Edward Bailey and Alpine Bowl glaciers, to the right of the Northern Forepeak gully, begin on easy rock alongside a major snow chute, which was prone to frequent avalanches/debris falls. Where the chute narrows join the snow and continue along an objectively dangerous line to a cave below a massive chock stone. This chock-boulder is obvious from the glacier. Gain the rocky ridge on the gully's left hand with modest difficulty, and continue on slaby granite interspersed with steeper steps (up to 4c/5a, 4b obligatory) and bands of snow. At 1140m a vertical 25m face is encountered, split by two thin cracks.

These cracks were estimated to be 5a or harder, with limited protection and a fall onto broken ground. No alternative route could be found, and having been climbing for 13 hours it was decided to retreat. Two abseils off less than perfect gear led to an uncomfortable bivi spot, for a few hours rest, before continuing by abseil to the glacier. Abseil anchors were generally difficult to find due to the slabby nature of the rock.

The intended route would continue with difficulties upward of 5a along the prominent ridge line to the summit of “The Gerkin”

Attempt on Northern Forepeak (eastern buttress)

L. Ross, J. McCloy

6th June 2008

Followed an obvious line through various buttresses on eastern side of northern forepeak. Turned back due to exceptionally poor snow conditions as 820m at a point near left hand ridge line. It became clear during this recce that the northern forepeak did not hold the key to accessing the main spires above.



The Northern Forepeak (left)

Attempted route on "The Gherkin" (right)

Red Gate Point 1626m (1200m, D)

L. Ross, J. McCloy, D. Leonard

18th June 2008

Ascend right-wards over broken ground to a bivi spot at 0532200/7903500. Immediately above lies an obvious gully line, the entrance flanked by towers of red granite (these are obvious from the glacier below). Climb easily on snow and rock for 100m, the branch right up a widening basin. Trend right-wards out of the basin eventually emerging onto the right-hand ridge proper with easy climbing up to 3c. The ridge then runs leftward, and becomes exposed, with several steps of 4b, and one awkward groove pitch at 4c/5a. Above this the ridge merges with the main bulk of the mountain, and an obvious, narrow gully is followed to the col. The summit is reached a short distance to the right of the ridge at 0531675/7904135.

Descend by abseil, mainly along line of ascent but avoiding ridge in central part. Abseil gear sound in upper section, but awkward lower in gully system.



Red Gate Point 1626m

The red granite towers for which the peak is named are visible at the start of the marked line

Attempt on South Ridge of Point 2185m (2km traverse, 1000m ascent to high-point at UTM 0528588/7901662, AD+, HS/VS)

A. Garvey, J. McKeivitt



From the glacier, ascend the lower section of the south ridge on easy ground to reach the first shoulder and the rock step above it. Although it looks steep, the easiest line is up the middle of this, trending rightwards, before returning to the middle and finishing in a loose chimney. This brings you to a second shoulder after about 300m of climbing. Continue to a small gully containing a chockstone. Exit the gully by its left wall, cross the chockstone and gain a third shoulder by climbing the wall to the right in about five pitches. From here the ridge levels off and travelling is easier, but becomes very steep below a steep crack. Turn this difficulty by abseiling into a gully on its right and traversing to meet the ridge further along.

Beyond this the ridge drops away considerably before continuing its rise, and the summit is visible above a snow slope bounded by seracs. Retreat from this point was forced by lack of water and food.

Descend the route of ascent until the second shoulder where it is easier to descend the gully by abseil.

Donal Deery 2083m (PD) and Queen's Centenary 2001m (PD)

A. Garvey, L. Ross, D. Leonard, J. McCloy, J. McKeivitt, F. Maddalena

14th June 2008

These remote peaks lie well to the west of our base camp, overlooking the Catalinadal from the north. They were ascended by the team en-masse during a three day ski-tour of over 50km.

A day's skiing in two ropes, each towing a pulk, led to an exposed bivi on the lateral moraine of the Edward Bailey Glacier at 900m. The following day we ascended the Mashed Potato Glacier, the initial difficulties of which were turned on the left hand snow slope to avoid the worst of the soft snow bridges. This route crossed avalanche debris and was overlooked by seracs from the summit plateau. Technically easy skiing led to the summit of Donal Deery (UTM 0512406, 7890901) 5.5km from the bivi, a further 7km was covered to Queen's Centenary (UTM 0531323, 7903309).

Descent of the Mashed Potato glacier on foot was necessitated by the harrowing nature of ski-descent in climbing boots, and was achieved without major incident. Ski mountaineering boots would undoubtedly make this an enjoyable descent. Returned to bivi around midnight after 16 hour round trip. Descended to base camp the following day in rain and wet snow.

The route from base camp to Queen's Centenary Peak 2001m (PD)

Donal Deery 2083m (PD) lies to the right and is obscured in this view.



Appendix II

Gear List

Shared Equipment

Tent Force Ten Vortex
Snow pegs for above
Tent Force Ten Baltoro
Snow pegs for above
Tent Terra Nova Quasar
Snow pegs for above
Tarpaulin and poles
Snow saw
Snow shovel
Snow shovel
Group emergency shelters
MSR Expedition stove/windshield/spares
MSR Whisperlite
Small MSR bottle 1/3 L
Large MSR bottle 1L
MSR Expedition stove/windshield/spares
Primus stove/windshield/spares
Stove board
Fuel tins 5x5 Litres
Fuel
Funnel
Pots/pans
Basin
Knives
Detergent/scrubbies
Rubbish bags
Toilet paper
Sterile handwash
Solar snow melter
Tool/repair kit
Medical kit
Pulks
Rifle /Ammunition/Case
Rope (half rope)
Ropes (half ropes)
Ropes (single)
Climbing racks
Snow stakes
Ice screws

Disposable tat
File to sharpen axes/crampons
GPS unit
GPS unit
Thermometer
EPIRB
VHF Airband Radio
Binoculars
Satellite phone and charger
Spare batteries, various types
Distress Flare kit
Maps
Satellite photographs
Expedition log book
Note pads/pens
Cardboard Boxes

Typical personal equipment	Weight (g)
Waterproof outer jacket	680
Down jacket	704
Thinsulate pullover	361
Salopettes	416
Waterproof overtrousers	446
Buffalo Jacket with hood	584
Microfleece top	245
Thermal base layers	345
Thinsulate Hat	67
Sun hat	78
Neck gaiter/scarf	57
Technical gloves	185
Mittens	72
Fleece gloves	67
Gaiters	295
Socks – Various types	270
Plastic boots	1789
Snow boots	1172
Spare laces	17
Glacier goggles	52.5
Ski goggles	101
Change of underwear	117
Climbing harness	422
Belay device and Karabiner	135

Karabiners	242
Pulley	46
Crampons and Bag	988
Helmet	464
Rock shoes	439
Nut key	42
Technical axes	1330
Ice screw	146
60cm Slings	61
120cm Sling with Krab	120
Skis	4200
Ski poles	445
Skins	428
Compass/whistle	98
Rucksack – 50litre	1100
Water bottle	192
Personal cutlery	15
Plate	74
Cup	58
Lighter and firestick	66
Thermarest	448
Karrimat	297
Sleeping bag	1770
Bivvi bag	673
Eyeshield/earplugs	11
Wash kit	200
Towel	103
Personal first aid kit	180
Sun block/lip balm	90
Pen knife	86
Camera	311
AA cells	327
Altimeter/barometer	100
Midge Net	24
Duffle bag	969

Total

24902.5

Appendix III

Menus

	Weight	kcal
Hot breakfast		
2 porridge sachets	72g	262
Dried fruit portion	50g	90
Total	122g	352
Cold Breakfast		
Jordan's crunch cereal	100g	461
Dried fruit portion	50g	90
Total	150g	551
Cold Breakfast		
Mini Wheatabix	90g	333
Dried fruit portion	50g	90
Total	140g	423
Base Camp Meal		
Pasta	150g	520
½ pack Dolmio sauce	170g	224
Aunties pudding	110g	322
½ pack custard	38g	162
Hot Chocolate	28g	120
Total	496g	1348
Bivvi Meal		
Couscous packet	110g	300
Cuppa soup	25g	92
Hot Chocolate	28g	120
Halva bar	100g	505
Total	263g	1017
Bivvi Meal		
1 ½ pack instant noodles	150g	780
Cuppa soup	25g	92
Hot Chocolate	28g	120
Pepperami sausage	25g	134
Total	228g	622

A typical day lunch is listed below but the contents of these meals varied considerably, and included items as diverse as trail mix and pepperami according to personal preference.

	Weight	Kcal
2 Nutri-grain elevenses bars	95g	365
Oatcakes portion	75g	340
Milk chocolate bar	100g	550
Kitkat chunky bar	55g	260
Halva bar	100g	505
Rocky bar	21g	107
Total	446g	2127

Appendix IV

Medical Proforma



Dr David Leonard
20 Edenderry Village
Belfast
BT8 8LG

dave@gubgreenland.com

12th March 2008

To: Anthony Garvey, Leslie Ross, Jonathan McCloy, James McKeivitt, Fred Maddelena

Guys,

As we are all well aware, in June we will be undertaking an extended expedition to an extremely remote environment. The success, and enjoyment of this expedition will be dependent on many factors, not least our health and fitness.

It should not need pointed out that mountaineering is an activity requiring the acceptance and management of risk, but conscious of the remoteness of the area we will visit, and the resulting isolation from outside assistance I remind you of the BMC participation statement:

"The BMC recognises that climbing and mountaineering are activities with a danger of personal injury or death. Participants in these activities should be aware of and accept these risks and be responsible for their own actions."

The reality however, is that while serious accidents can happen, by far the most common medical problems encountered on expeditions to remote environments are those pre-existing issues which are easily dealt with at home, but which can pose a much more serious problem when far from conventional medical services.

Effectively managing the risk of medical problems affecting our team during the expedition has to start before we even leave Northern Ireland.

I should appreciate it if you would all please complete the attached medical summary and return it to me at our next meeting or by post. This information is essential in allowing preparation for likely medical eventualities – while keeping the weight of the medical kit to a minimum! If anyone has any specific concerns they should let me know. All responses will be held in confidence.

Secondly, I would request that we all arrange a dental check-up prior to departure. Please do this in good time, to allow time for correction of any problems that turn up!

Finally, if you have any chronic conditions e.g. Asthma, for which you regularly take medication, please ensure that you have a sufficient supply with you, as the expedition medical kit will not include personal medications.

Regards

Dave



Pre-Expedition Summary of Medical History

Past Medical / Surgical History

Please list any conditions for which you receive continuing treatment (e.g. asthma, diabetes, epilepsy, heart disease, psychiatric illness etc) and any conditions for which you were admitted to hospital or underwent surgery.

Have you ever suffered frost-bite or other “cold injury”?

Allergies

Please list all allergies to day-to-day substances, food, or medications.

Have you ever experienced an anaphylactic reaction? Do you have to carry an epi-pen?

Medications

Please list any medications you are currently taking.

Any thing else you feel is relevant?

Appendix V

Medical Kit

Expedition Medical Kit - Medication List

Item	Dose	Form	Quantity
Co-amoxiclav	375mg	21 Tablet course	6
Metronidazole	400mg	21 Tablet course	6
Ciprofloxacin	500mg	10 tablet course	6
Paracetamol	500mg	32 tablets	
Ibuprofen	400mg	40 tablets	
Dihydrocodeine	30mg	28 tablets	
Aspirin	300mg	10 tablets	
Diazepam	2mg	10 tablets	
Loperamide	2mg	20 tablets	
Buccastem	3mg	20 tablets	
Chlorpheniramine	4mg	28 tablets	
Prednisolone	5mg	60 tablets	
Fybogel		15 sachets	
Rehydrat		16 sachets	
Hydrocortisone cream 1%		1 tube	
Polyfax cream		1 tube	
Midazolam	5mg/ml	2ml ampule	
Metoclopramide	5mg/ml	2ml ampule	
Water for injection		10 vials	
Lignocaine 1%		4 vials	
Morphine sulphate	10mg/ml	1ml ampule	5
Ketamine	10mg/ml	20ml ampule	1

Expedition Medical Kit – Equipment

Diagnostic

Stethoscope
Thermometer strips

General Items

Non sterile gloves
10ml syringes
5ml syringes
Green needles
Orange needles
Medical log book/ prescription book
Pen
Scissors

Wound Management

Single use suture pack x2
Single use scalpels
Assorted sutures absorbable/ non-absorbable
Assorted steristrips
Assorted dressings
Sterile solution for washing

Major Trauma Pack

Laryngeal mask airway
Guedel airway
Ambu-bag
Spinal collar
Compression bandages
SAM splint

IV Access

Assorted IV cannulae
Water for injection
5ml syringes
IV dressings
Sterets
Tournique

Appendix VI

Cas-evac Plan

QUEEN'S UNIVERSITY MOUNTAINEERING CLUB GREENLAND 2008 EXPEDITION

CASEVAC PLAN

Main Contacts

Team Sat Phone

Dave Leonard (while in UK/Iceland)

Paul Walker

Mr Alan Leonard
(fall back home contact)

Constable Pynt Airport Manager 00 299 99 3850

Constable Point AFIS Airport Tower 00 299 99 3854

Scoresbysund Police 00299 99 1022

Chief of Police (Nuuk) 00299 32 14 48

Greenland/Iceland to UK code 0044

Scoresbysund hospital (Constable Pynt) 00 299 99 1011
(doctor at home) 00 299 99 1021

Insurance

Tangent Insurance – P J Hayman & Company Ltd.
0845 230 3526

Travellers Protection Services Claims Line
0845 218 7869

Adventures 07/08 ST Certificate Number 200782400

Information Protocol

First point of contact for any emergency situation is Paul Walker, who is on-call throughout the expedition. Should an emergency situation arise he will co-ordinate, his time and expenses for such work will be recoverable under insurance.

Should Paul Walker be un-contactable for any reason the situation can be coordinated directly by the team in Renland. In this circumstance the priority is contact with Constable Point Airport and Scoresbysund Hospital, UK contact to follow as appropriate once rescue underway. (As per main expedition information protocol)

Medical Incident Plan

1. Management immediate scene of incident. Priority – prevent further harm to casualty or other team members.
2. If team separated and away from base camp medical kit assess casualty ability to move to camp. If yes do so safely. If no, MO/ assistance must be summonsed from camp/other team.
3. If evacuation needed contact Paul Walker
4. If Paul not available contact Constable Pynt Airport, then Scoresbysund Hospital

Medical/Incident Details to be given as below

5. Await further instruction regarding evacuation plans
6. Determine Latitude/Longitude position of nearest safe landing zone if casualty cannot move to camp
7. Ensure comms remain available – both sat phone and VHF to be on, and on correct channel throughout evacuation phase. If not possible agree pre-arranged communication times and methods.

Medical Details “Situation Report”

In event of medical incident details to be communicated as follows:

1. State name and sat phone number
2. Position – Lat and Long
3. Casualty number
4. If greater than one casualty deal with most serious first
5. Accident/Illness Description eg “Frostbite”
6. Clinical Description
 - a. Conscious Level – AVPU
 - b. Airway
 - c. Breathing – resp rate, depth
 - d. Circulation – bleeding, skin colour, pulse, (BP), (CRT)

7. Treatment given eg splinting, IV access, analgesia
8. Next course of action eg moving to camp,
9. Assistance needed – evacuation, priority as below.
10. Additional info – eg weather on scene, other relevant

Casualty Priorities

- Priority 1A** Immediate evacuation, if possible from accident area
- Priority 1B** Immediate evacuation but can transfer from accident area (eg to camp)
- Priority 2** Urgent evacuation
- Priority 3** Evacuation needed soon
- Priority 4** Evacuation needed, but not life threatening

Debrief

Minor incidents will be debriefed informally at the request of the parties involved/group at large.

In the event of a major incident requiring casevac a full debrief will take place following resolution of the incident and/or on return to Northern Ireland. Debrief to be led by Medical Officer or Expedition Leader.

Dr David Leonard
May 2008

Appendix VII

Financial Report

From the outset it was clear that this was going to be a costly affair. Initial costings were carried out whilst deciding on the location of the expedition, taking in to consideration the aims of the expedition and the financial constraint put on it by the student members. Various logistics options were explored and it was Tangent Expeditions Ltd who were chosen.

As there was obviously going to be financial strain put on the student members of the expedition, it was decided that all sponsorship money should initially be used to ease this so as not to effect the students studies or training.

Fundraising

As the makeup of the team was mainly of full time employed participants, the use of fundraising in terms of events was relatively low. The club held a 'Climb Everest' day in partnership with Action Cancer at the club wall and Jonathan chose to rid his head of his locks to raise some extra money. Instead, a more corporate approach was taken through private donations with the aid of The Annual Fund in Queens and through corporate sponsorship.

Grants were received from the British Mountaineering Council and from the Mount Everest Foundation.

Alongside these, substantial contributions were made by each member of the team.

Outgoings

Every opportunity was taken to minimise the outgoings, from haggling with the logistics provider to buying the offers in the local supermarket. Personal Transport (Flights to Iceland) were taken on low cost airlines and accommodation in Iceland was at the Youth Hostel in Reykjavik, one night in a bed and one night camping on return. Local Freight included the transport of our gear to Tangent Expeditions in Kendal and was done as cheaply as possible. Regards food, the teams nutritionist enthusiasts came up with suitable rations that were more than ample, whilst Fred hunted down the cheapest options possible to fulfil the requirements. An amount of team equipment had to be paid for including the sat phone, radio licence, medical supplies and the cost of replacing some climbing equipment.

From the 'Climb Everest' day, a donation was made to the charity Action Cancer.

Sponsors

Many thanks to everyone who contributed to the success of the expedition including our sponsors:

AES Kilroot
AES Kilroot Clean Coal Project
Queen's Sport
AH Fuel Oils

Bank of Ireland
Zenith Structural Access Solutions
Cotswold Outdoor
Snar Monevmore

Financial Summary

Income	31882.63
Fundraising Events	602.38
Sponsorship	3150.00
Grants	1400.00
Donations	6330.01
Members Contributions	20400.24
Outgoings	31283.65
Tangent Expeditions	27070.00
Personal Transport	1836
Local Freight	777.03
Food	348.98
Equipment	1001.64
Charity	250.00
Balance	598.98



